UNIVERSITY OF THE WESTERN CAPE

Faculty of Community and Health Sciences

DOCTORAL THESIS

Title: **DEVELOPMENT OF STANDARDS FOR UNDERGRADUATE OCCUPATIONAL HEALTH IN A PHYSIOTHERAPY CURRICULUM: A CASE IN KENYA**

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DECLARATION

I declare that the thesis "**Development of Standards for Undergraduate Occupational Health in a Physiotherapy Curriculum: A Case in Kenya**" is my own work, that it has not been submitted for any degree of examination at any other university and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references.

Nancy E. N. Wanyonyi

Signature ..... … November, 2020

Witness:

..... November, 2020

Professor Jose Frantz

November, 2020

Professor Simon Kangethe

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ABSTRACT

Background: Occupational health (OH) in physiotherapy is well known for addressing work-related musculoskeletal disorders (WRMDs), which are high in number according to the available statistics (Fingerhut, Concha, Punnet, Steenland, & Driscoll, 2014). The introduction of the Bachelor of Science in Physiotherapy degree in Kenya in 2010 created a good platform for the development and review of occupational health content in the curriculum. **Aim:** To develop standards of competency, teaching, learning and assessment strategies that focuses on occupational health for an undergraduate physiotherapy curriculum in Kenya. **Objectives:** To determine the prevalence of WRMDs in Africa, conduct a situational analysis of the content of the occupational health course at the universities offering physiotherapy in Kenya with regard to the occupational health competency framework, explore the competencies needed by physiotherapists in relation to occupational health, explore the relevant content as well as the teaching, learning and assessment strategies that could be used to develop a draft occupational health module in the undergraduate physiotherapy curriculum. **Design:** A mixed method, exploratory, sequential design was implemented in four phases; systematic review, document analysis, Delphi study, and curriculum draft development. **Population and sampling:** Occupational health content for all universities offering physiotherapy degree course. A minimum of 15 experts within the field of occupational health were recruited in each round of the Delphi study which included both academic and clinical physiotherapists. **Data analysis**: Thematic content analysis was used for the qualitative data and descriptive statistics. This included frequencies, modes, and averages used for the analysis of the quantitative data. Ethical considerations for the study were observed. **Results**: The systematic review revealed a heterogenous prevalence of WRMDs throughout Africa with the highest prevalence in the administrative cadre. All professional cadres had complaints of lower back pain. Document analysis revealed that there

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was no stand-alone occupational health module in the Kenyan universities, but rather that it consisted of an aggregation of courses taught throughout the training, albeit with no clear links between them. Experts in occupational health shared their opinions via the Delphi study that determined the competencies needed by physiotherapists. These included the necessary OH topics, return to work process, how to assess risks for injury and prioritising hazards, and finally the medico-legal reporting and compensation, as well as how to communicate with various OH stakeholders. All these aspects of the study enabled the researcher to develop the draft OH course content for the undergraduate curriculum. **Conclusion:** The OH draft curriculum content is a stand-alone course composed of the findings from the different phases of this study. It will be used to equip the undergraduate Kenyan physiotherapist to develop the necessary competencies that aim to prevent and avoid the WRMDs that are prevalent in Africa.

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DEDICATION

To my dear parents for the unwavering support and constant encouragement given to me all through my academic journey. To my husband Geoffrey and my daughter Bracha, you have given my life a different meaning since you came along.

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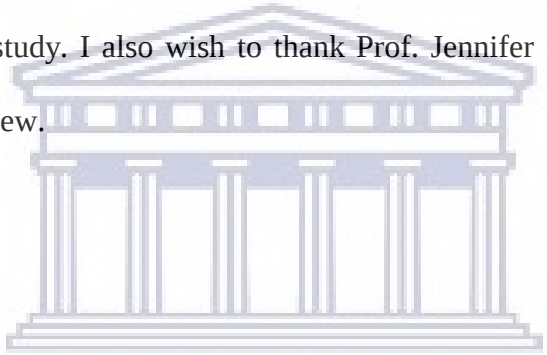

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DEFINITION OF TERMS

Business case – Proper assessment of an investment with full knowledge of the costs and benefits (Targoutzidis, et al., 2014).

Curriculum — Encompasses all the experiences which inform a student's development (cognitive, attitudinal, and affective) while undergoing their Higher Education studies (Jones & Killick, 2007)

Competence — A state of having the knowledge, judgement, skills, energy, experience and motivation to respond adequately to the demands of one's professional responsibilities (Roach, 1992 as cited in Royal College of Nursing, 2009).

Competency framework — A set of values that inform the behaviour of practitioners, and the knowledge and skills that the workforce uses and develops (Owen & Hunter, 2012).

Occupational health physiotherapy — Physiotherapy treatment that is not only aimed at the restoration of the physical and mental health of a patient, but rather contributes to the productivity of the workforce, and plays a crucial role in the tri-partite relationship between the worker, employer and other members of the occupational team (Owen & Hunter, 2012; Eastlake, Role of the physiotherapist in occupational health, 1994).

Biomechanics — Factors encountered in the work environment that cause or contribute to accidents, injuries, strain or discomfort (Kahn & Meyer, 2004).

Ergonomics — The science of designing the job and workplace to fit the individual, rather than forcing the individual to fit the job (Kahn & Meyer, 2004).

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LIST OF ABBREVIATIONS

CPD	Continuous Professional Development
KSP	Kenya Society of Physiotherapists
MSK	Musculoskeletal
OH	Occupational Health
OHPT	Occupational Health Physiotherapist
OHS	Occupational Health and safety
OT	Occupational Therapists
PCK	Physiotherapists Council of Kenya
PT	Physiotherapists
WCP	World Confederation for Physical Therapy
WHO	World Health Organisation
WIBA	Work Injury Benefits Act
WRMDs	Work-related musculoskeletal disorders

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AUTHORS CONTRIBUTIONS

CHAPTER ONE

Author Contributions	Introduction and Literature Review
Concept / idea:	N. Wanyonyi- including Competency Framework
Research design:	Prof .J. Frantz- including Conceptual Framework
Writing:.	N. Wanyonyi under guidance of J. Frantz

CHAPTER TWO

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Research design:	Prof .J. Frantz
Writing:.	N. Wanyonyi under guidance of J. Frantz and Prof S. Kangethe

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CHAPTER THREE

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Writing:.	N. Wanyonyi under guidance of J. Frantz and Prof S. Kangethe
Consultation (including review of manuscript before submitting):	Prof. J. Frantz Prof. Ann Mwangi-Statistical Consultation before conference presentation

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	Prof Chipps: Fourth Reviewer for journal submission

CHAPTER FOUR

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Research design:	Prof .J. Frantz
Writing:.	N. Wanyonyi under guidance of Prof. J. Frantz and Prof S. Kangethe

CHAPTER FIVE

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Research design:	N. Wanyonyi under guidance of Prof. J. Frantz
Writing:.	N. Wanyonyi under guidance of Prof. J. Frantz and Prof S. Kangethe

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CHAPTER SIX

Author Contributions	Summary, Conclusion & Recommendation
Concept / idea/design:	Prof .J. Frantz
Writing:.	N. Wanyonyi under guidance of Prof. J. Frantz

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CHAPTER ONE

INTRODUCTION AND LITERATURE REVIEW

1.1 Background

Work-related musculoskeletal disorders (WRMDs) are a significant problem in the world with an estimated prevalence of 160 million cases per year (Bammer, 2011). At the 21st World Congress on Safety and Health at Work, it was reported that the worldwide incidence of WRMDs was responsible for the loss of 3.9% of GDP, at an annual direct and indirect cost of €2 680 billion ($3 325 billion) as well as the loss of more than 120 million disability-adjusted life years (DALY) (Van Cauwenberghe, 2018). Globally, low back pain and neck pain were the leading cause of years lived with disability (YLDs) for the year 2015 (Vos *et al*., 2016). Musculoskeletal disorders cause disability by negatively affecting an individual's mobility and dexterity thus affecting their quality of life and economic capability (Briggs, *et al.*, 2016; March, *et al.*, 2014). These disorders have thus been seen to have a high impact on the occupational behaviour of the affected person, often leading to low productivity (Chetty, 2010b; Niu, 2010; Krismer & Van Tulder, 2007). Besides affecting the employers through low productivity, the cost incurred in managing WRMDs is exorbitant and therefore it also places a resource burden on health care professionals leading to a lot of advocacy for the prevention of WRMDs (Bammer, 2011; Chetty, 2010a). This burden of musculoskeletal disorders has recently been emphasised by the Lancet series on low back pain (LBP), which is seen as a major global health challenge with increasing and costly effects (Clark & Horton, 2018).

Occupational health is a branch of medicine that promotes the health of workers through prevention, clinical care, research and education (Kahn & Meyer, 2004). Physiotherapy deals with the restoration of the function of an individual through physical means (Sedgley, 2013), thus people suffering from WRMDs are often referred to a physiotherapist (PT) giving them a

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role in the tripartite relationship between the worker, employer and other members of the occupational team. An occupational health physiotherapist (OHPT) will therefore aim to restore the physical and mental health of a patient, as well as contribute to the productivity of the workforce (Eastlake, 1994; Owen & Hunter, 2012).

Reports from developed countries show that more than 80% of physiotherapists practice in hospitals, outpatient clinics or offices, homes, education or research centres, schools, hospices, industrial/occupational environments and fitness centres (APTA, 2013; WCPT, 2013b). However, physiotherapy in Kenya has yet to reach this diversity in practice and as a result the role of physiotherapists in occupational rehabilitation needs to be explored further. Physiotherapy training was started in 1942 after the Second World War in the form of apprenticeships but later progressed to formal diploma training in 1965 at The Kenya Medical Training College (KMTC) (Ndoria, 2001). Across Africa, there has been a need for physiotherapists to be recognised for the essential services that they offered to the population (Frantz, 2007). Within a time frame of more than ten years after the study by Frantz (2007), the level of education had changed with several countries within Africa having upgraded the Physiotherapy education from diploma level to degree, masters and even PhD level. All this way done, hoping for better recognition for the services offered, and Kenya also falls within this category. Kenya is amongst the countries that originally only offered diploma training and upgraded to degree training in the year 2010. Currently three universities are accredited to offer the programme across the country i.e. Moi University in 2010, Jommo Kenyata University of Agriculture and Technology (JKUAT) in 2011 and most recently Masinde Muliro University of Science and Technology (MMUST) in 2016. In addition, in 2016 a Master of Science degree in Physiotherapy has been rolled out at JKUAT; this being the first postgraduate training course in Physiotherapy in Kenya.

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Research conducted in Kenya has shown that the Kenyan population is no different from the rest of the world with regard to WRMDs. A study done by Wanyonyi, Frantz and Hassan (2015) highlighted a gap in creating awareness of physiotherapy services available to the general public through the Ministry of Health. The study found that administrators suffered from work-related musculoskeletal disorders (WRMDs) without knowing any of the prevention methods. Because of uncertainty about their knowledge of prevention it made compliance a problem that needed continual education. Another study carried out among bankers in five banking institutions within Nairobi highlighted the presence of WRMDs with no evident prevention strategies being used at the time (Boro, Mwisukha, & Onywera, 2012). Similarly, patients with lower back pain (LBP) in previous studies done in Kenya reported that they needed more education on how they had to deal with the pain they experienced (Kamau & Marais, 2005; Ng'uurah & Frantz, 2004). Most recently an unpublished Master's thesis by occupational safety and health students at JKUAT revealed a 98.1% twelve-month prevalence of WRMDs in housing construction workers in Mombasa, with the lower back implicated in 68% of the cases while only 2.7% of this population sought medical advice (Kisilu, 2018). Tanui (2015) also found a 70.8% twelve-month prevalence of WRMDs in nurses in Mombasa County, with lower back pain affecting 76.9% of participants, followed by neck pain (53.8%) and shoulder and ankle/feet pain (48.5%). All of these studies call for prevention strategies that will contribute towards a healthy population.

The majority of the working population are predisposed to common ergonomic mismatches such as awkward postures, repetitive tasks involving twisting and lifting, necessitating that physiotherapy be involved at the the level of prevention (Cromie, Robertson, & Best, 2001; Punnet, Cherniack, Henning, Morse, Faghri, & Research Team, 2009). The findings of the study by Wanyonyi *et al.* (2015) is aligned with the WHO report on Global Strategy on Occupational Health for All (2014 p.2) which reported that:

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> "In many developing and newly industrialized countries no more than 5-10% of the working population, and in several industrialized countries less than 20-50%, have access to competent Occupational Health and Safety (OHS) in spite of the evident needs. Yet, the emerging problems of occupational health call for the development of OHS for all workers in all sectors of the economy and in all enterprises, as well as for the self-employed."

The field of occupational health has become increasingly recognised in Kenya with employees' health recognised as being important (Mbakaya, Onyoyo, Lwaki, & Omondi, 1999; Nzuve & Lawrence, 2012). Occupational health training in Kenya began with the intention of training nurses, public health officers and doctors (Afubwa, 2004). However, a glimpse at literature from developed countries reveals that physiotherapy is a respected discipline in the occupational health team, even leading to the development of special charters for physiotherapists in the area of occupational health and ergonomics (ACPOHE, 2013; Richardson & Eastlake, 1994; WHO, 2014). A competency framework has been established to guide the behaviours, knowledge and skills required by physiotherapists working in occupational health (Owen & Hunter, 2012). A systematic review by Adam, Peters and Chipchase (2013) supports this framework with regard to the crucial attributes required by physiotherapists in a work-related practice. The review found that knowledge of injury prevention and management, skills in communication, and professional behaviours that include self-reflection and evaluation were some of the necessary attributes that would enable educators to plan programme content. They would also assist employers and experienced occupational therapy and physiotherapy practitioners to provide appropriate continuing professional development (Adam *et al*., 2013).

Occupational health in physiotherapy dates back to 1923 in Dublin when the Arthur Guinness brewery company became the first company to employ a physiotherapist (Hayne, 1977, as

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cited in Richardson & Eastlake, 1994). Physiotherapists employed at the site were thought to save time for the company by providing treatment facilities on site rather than employees needing to travel to local hospitals. They also provided job-specific rehabilitation to enable return to work which at present can also be guided by Sullivan's Progressive Goal Attainment Program so as to overcome any psychosocial barriers that may limit return to work (Sullivan, Adams, & Ellis, 2012). A study on work-related musculoskeletal compensation outcomes at a poultry meat processing plant in Australia demonstrated a significant reduction in the compensation claim rates, as well as fewer instances of work injury absence compared to when there was no on-site physiotherapist (Donovan, Khan, & Johnston, 2016). Similarly, a 13-year cohort study of musculoskeletal disorders treated in an auto plant in Canada demonstrated the early and cost-effective management of WRMSDs with the provision of an on-site physiotherapy clinic to attend to the workers' needs (Saidi, MacDermid, Chesworth, & Birmingham, 2007). Thus, there is some evidence that the presence of an on-site physiotherapist makes it possible to timeously prevent disease progression to a more disabling state. The presence of an on-site physiotherapist in the above-mentioned studies also facilitated easier follow-up sessions with patients and thus contributed to employees' adherence to treatment programmes.

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Some researchers have debated the validity of WRMDs, stating that these are iatrogenic and for the benefit of health personnel, affected workers and lawyers (Amell & Kumar, 2001). These authors note that the multifactorial aetiology of these disorders may give rise to these debates and thus proper assessment of musculoskeletal disorders needs to be conducted in order to warrant them being classified as WRMDs. In a conference proceeding entitled 'Workplace hazard identification: What do people know and how its done?' Bahn (2012 p.1), states that "correct and proactive identification of hazards in the workplace underpins all occupational health and safety practice and risk management strategies and is therefore

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paramount to effective business practices and the health and safety of all organizational members." This means that there needs to be a collective action from all stakeholders in order to effectively identify WRMDs. If we understand the perception of workers on the hazards present in the workplace it would help us know how to approach their prevention (Bahn, 2013; Graham & Gray, 2005). In previous studies, the perception of managers and employees revealed a lack of knowledge of the risk factors that they were subject to. In addition, physiotherapists may not perceive WRMDs as a great risk, since they had skills to manage them. It therefore seems evident that education on risk factors and self-management strategies might contribute to the prevention of WRMDs in the workplace (Potter & Jones, 2006; Sharan & Ajeesh, 2012; Sjogaard, *et al*., 2016).

The health belief model suggests that individuals' perceived susceptibility to their surrounding risk factors would prompt them to take action towards improving their health (Rosenstock, 1974). It is thus important for the tripartite stakeholders to present information on occupational risk factors in different work areas during the orientation of new employees, and as a continuous process throughout their employment, to ensure retention and compliance in respect of prevention strategies. The Kenya National Occupational Safety and Health Policy has identified poor communication between these stakeholders, which subsequently predisposed workers to various hazards and so developed a framework to enhance their commitment to prevent work injuries (Ministry of Labour, 2012).

Disease prevention is an important aspect of the primary health care approach, which is why health promotion is deemed to be a necessary component in curbing the burden of musculoskeletal disorders (Adam, Gibson, Lyle & Strong, 2010; Woolf, Brooks, Akesson, & Mody, 2008; WHO, 2002). Harden (2009) notes that the medical curriculum should not only address sickness salvaging, organic pathology and crisis care, but should also emphasise health promotion and preventive medicine. Furthermore, he states that there is a mismatch

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between the expectations of graduates' performance and the competencies gained from the training programme. He suggests that students should be exposed to cases that would enable them to have a bigger picture of the different health care needs that they would meet upon graduation. This is the same reason why Adam, Strong and Chipchase (2013a) introduced a clinical education initiative that would enable new occupational therapy and physiotherapy students to gain exposure for work-related practice due to limited clinical placements as a result of insurance and legal issues. There is therefore a need to embrace the preventive areas of physiotherapy to be part of our undergraduate programmes across the continent.

1.2 World Confederation for Physical Therapists and mandate for Physiotherapy practise

Physiotherapy is a renowned profession in most countries and has been in existence since the early 19th century (Ohtake, 2010). With the worldwide growth of physiotherapy, it was thus important for an association to be formed that would serve as a platform of knowledge exchange as well as defining the standards underpinning the practise. The World Confederation for Physical Therapy (WCPT) was formed in 1951 with only 11 registered member states, but which has grown over time to 120 in 2019 (WCPT, 2019). This growth has also seen the development of the WCPT Africa region, which began with only five members in 1991 and has since grown over the decades to 25 members (WCPT, Africa Region of WCPT, 2019a).

The physiotherapy profession provides services to individuals and populations in order to develop, maintain and restore maximum movement and functional ability throughout one's lifespan (WCPT, 2013b). This is made possible through identifying and maximising the quality of life and movement potential within the spheres of promotion, prevention, treatment/intervention, habilitation and rehabilitation (WCPT, 2013b). According to the guidelines provided by the confederation, the profession has embraced the bio-psychosocial

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model that aims to see a patient holistically in relation to their environment and disease-causing agents.

According to the Alma Ata Declaration (1978), all health care should implement prevention at all levels of healthcare provision. Physiotherapy's commitment to primary health care and disease prevention is therefore an answer to the call by the Alma Ata Declaration such that most physiotherapy institutions are making it a priority not only to look at hospital-based physiotherapeutic needs, but to also embrace other aspects within the domains of practice (Futter, 2003; Krause, Viljoen, Nel, & Joubert, 2006). Veras, Pottie, Deonandan, Welch, Ramsay and Tugwell (2014) describe a need for health professionals in the 21st century not to work in professional silos but rather to have global health competencies for the emerging challenges in the new century. Musculoskeletal diseases contribute to an increasing burden of diseases globally, which automatically depletes physiotherapy resources by treating some aspects which could have been prevented, especially those that involve modification of our working patterns (Prosser & Webb, 2010; Woolf & Akesson, 2007). Occupational health falls within this domain of physiotherapy practice, and teaming up with other health professionals to curb the global effects of WRMDs through sufficient health promotion may be an answer to the call presented by researchers in this area (Yasobant & Mohanty, 2017).

1.3 Occupational Health Physiotherapy around the world.

Globalisation has important effects on the working life of employees and the conditions of work everywhere in the world (Goldstein, Helmer, & Fingerhut, 2001 p.56). Occupational health and safety is an area of concern, especially in the field of physiotherapy, due to the fact that musculoskeletal conditions, such as lower back pain, have been shown to have a high attributable fraction for morbidity due to its occupational exposure which might have been averted (Fingerhut, Concha, Punnet, Steenland, & Driscoll, 2014; Luttmann, Jäger, & Griefahn, 2014; Thiese, *et al*., 2014). The WHO (2014a) and Fingerhut *et al*. (2014) note that

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accurate comparisons of data related to WRMDs between countries is difficult due to differences in legislation, criteria and reporting systems, that makes it difficult to quantify the magnitude of WRMDs. However, when occupational health and safety (OHS) profiles are documented as the WHO (2014a) advocates, they are then seen to help increase transparency and reflectiveness of OHS status and provide insight into its difficulty, priorities and the needs of countries.

In order to efficiently offer services, physiotherapists in some countries have identified a need to address injuries at the site of their occurrence rather than wait for the patient to visit hospitals (Chetty, 2010b; Eastlake, 1994b). The Occupational Safety and Health Association (OSHA, 2007), Centres for Disease Control and Prevention (CDC), Health and Safety Executive (HSE) and Association of Chartered Physiotherapists in Occupational Health and Ergonomics (ACPOHE) have kept profiles of WRMDs statistics in countries where physiotherapists have played a role in the management of these disorders. Recent evidence suggests that the integration of occupational health in the industry and the formation of an association for the physiotherapists in occupational health is cost effective (ACPOHE, 2013; APA, 2012). In their occupational health physiotherapy pilot project (OHPPP) in the Welsh Assembly Government Phillips *et al*. (2012) found that physiotherapy would be a cost-effective strategy in terms of quality adjusted life years (QALY). In addition, improved physical health status for patients with musculoskeletal disorders was important in decreasing work capacity problems and the related costs. A study done by Persson, Bernfort, Wahlin, Oberg and Ekberg (2014) in Sweden demonstrated an increased cost in production loss due to sickness absence of musculoskeletal and mental disorders and hence investment in early rehabilitation was preferred in order to minimise the costs to the individual and to society.

There is not much documentation about occupational health and safety with regards to physiotherapy in Africa (Niu, 2010; Nyakango, 2005). Part of this can be attributed to what

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Gupta, Castillo-Laborde and Landry (2011) called the limited availability of health personnel who are skilled in physical and rehabilitation services in low- and middle-income countries despite the need for these services and the important role they play (Chetty, 2011). This was further substantiated by a report that also showed unequal distribution of service provision in the rural and metropolitan areas (Jeebhay & Jacobs, 1999). The report by Jeebhay and Jacobs (1999) on occupational health services in South Africa showed that nurses spent less than half of their time (44%) on occupational health issues and doctors employed in this area did not even have the special expertise required to manage these problems. The report also noted that there was a poor link between orthopaedic surgeons, physiotherapists and occupational therapists who were seeing these patients in private, specialised facilities.

Additional literature from the *African Newsletter of Occupational Health and Safety* has reiterated the fact that there is a universal shortage of both expert resources and training in newly industrialised countries in the Sub-Saharan Africa (Goldstein, Helmer, & Fingerhut, 2001). The situation in Kenya was no different according to the report by Nyakango (2005) and Goldstein *et al*. (2001). The latest reports that documented OHS training stated that a training centre was yet to be established, but over time the centre was finished and started functioning from 2014 (ISTC, 2019; Makhonge, 2011). Recent studies conducted in Kenya (Boro, Mwisukha, & Onywera, 2012; Muigua, 2011; Nzuve & Lawrence, 2012; Wanyonyi *et al*., 2015) and the introduction of the International Safety and Training Centre, as well as physiotherapy degree programmes that include occupational health will hopefully see the development of this domain in the country. The presence of occupational health content in the physiotherapy curriculum would address the need raised in the Kenyan Ministry of Labour report (2013) for medical training schools to ensure training of students in this area, which has been understaffed due to lack of sufficient personnel. To date Kenya has 75 institutions, including one local university, that offers a Master's degree and postgraduate

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diploma in OSH training. That may help to create awareness about health and safety matters in the work environment.

1.4 Competency framework

According to the Association of Paediatric Chartered Physiotherapy Neonatal Group competence involves thinking, critical analysis and learning, assimilation of new learning with previous learning, integration of new knowledge, skills and abilities with previous knowledge, and the application of new learning in practice (Brady & Smith, 2011). The question then arises; when is one fit to acquire all these competencies?

The Association of Chartered Physiotherapists in Occupational Health and Ergonomics in the United Kingdom (UK), which has been in existence since 1947, saw a need to define the parameters within which occupational health could be practised and advanced. This led to meetings with the Chartered Association of Physiotherapists in the UK and thereafter, the development of the competency framework which would serve as a guideline of the four levels of behaviours, knowledge and skills required by physiotherapists to work in occupational health (ACPOHE, 2013; Owen & Hunter, 2012). The purpose of this framework was to promote the role and added value of physiotherapists working in occupational health settings, help individuals and organisations wanting to develop programmes of education to support the development needs of the physiotherapy workforce in occupational health (OH), as well as to promote and develop physiotherapists' careers in occupational health (Owen & Hunter, 2012).

A competency framework audit tool was developed that would help to align the practice of physiotherapy in occupational health and ergonomics. These four levels categorised as A, B, C and D were subsequently aligned with educational qualification descriptors that cut across a Bachelor's degree (A and B), Master's degree (C) and up to a Doctoral degree (D) (Owen

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& Hunter, 2012). However, this study only focused on levels A and B to come up with what is needed in the occupational health course of the undergraduate physiotherapy curriculum.

In addition, the competency framework has been divided into five major domains that are further subdivided into various subdomains to explain how the competencies in OH teaching will be arrived at in different levels of training. This is as stipulated in Figure 1.1 below.

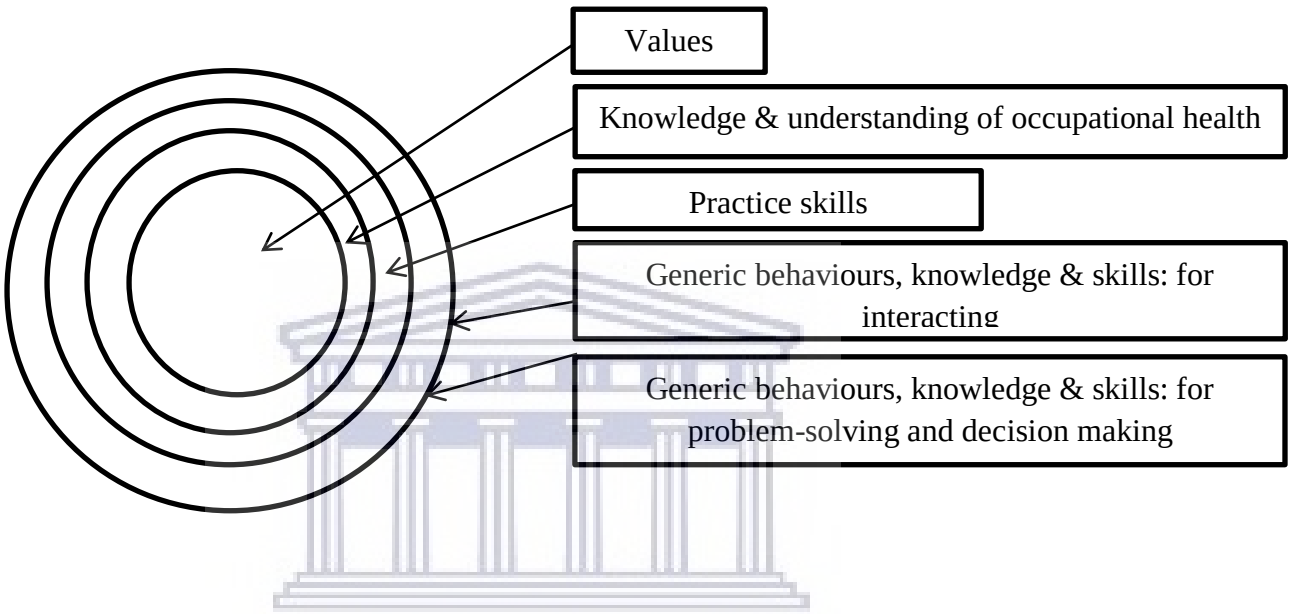

Figure 1.1: Structure of framework domains (Owen & Hunter, 2012)

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Values were described as attributes to be gained across all four levels of training (i.e. bachelor's degree to doctoral degree) and hence were not categorised as per the four classifications of A-D. Knowledge was the greatest domain that underpinned all of the subsequent domains within the competency framework, given that the other domains were extrapolated from the underlying knowledge that an individual had. The knowledge domain consisted of fourteen further sub-domains with attributes that were to be gained across the four different levels of training. Practice skills consisted of three other sub-domains whereas the generic behaviours, knowledge and skills for interacting as well as for problem-solving and decision-making were each divided into six further sub-domains, as stipulated in Table

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1.1 below. However, much information of the sub-domains in Table 1.1 is as stipulated in Appendices F and G.

Table 1.1: Five major domains and sub-domains of the competency framework.

	Five Major Domains				
	Values	**Knowledge & Understanding**	**Practice Skills**	**B. K. S for interacting**	**B. K. S. for problem-solving & decision making**
Sub-domains	1	2.1 (2.1.1-2.1.4) - 2.14	Self-awareness: 3.1	Communicating 6.1-6.7	Ensuring Quality: 12.1-12.3
			Political Awareness: 4.1	Helping others learn & Develop: 7.1-7.5	Improving & developing services: 13.1-13.4
			Psychomotor Skills: 5.1-5.7	Managing self & others : 8.1-8.5	Life-long learning: 14.1-14.4
				Promoting integration &teamwork: 9.1-9.3	Practice decision-making:15.1-15.4
				Customer Focus: 10.1-10.4	Researching & evaluating practice: 16.1-16.4
				Respecting & promoting diversity: 11.1-11.4	Using evidence to lead practice: 17.1-17.2

* B.K.S means Generic behaviour, knowledge and skills.

There is some tension around whether occupational health should be compulsory in the undergraduate curriculum. Broberg *et al*. (2003) studied the conceptual framework for a physiotherapy curriculum from an international perspective and reported that considerations must always be made for what should be included in the basic curriculum and in further education. When comparing countries around the world, special charters with different areas of expertise have been formed, and as part of the continuous professional education they have been able to add the necessary skills required for specialisation (Adam *et al*., 2010; Goldstein

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et al., 2001). The Chartered Society of Physiotherapists in the UK (CSP), the American Physical Therapy Association (APTA), the Australian Physiotherapy Association (APA) and the Swedish Association of Physiotherapists all acknowledge OH as a special interest group for the physiotherapists in those countries (WCPT, Member Organisations, 2017).

In Africa, the South African Society of Physiotherapists (SASP), the Nigeria Society of Physiotherapy (NSP) and the General Physical Therapy Syndicate of Egypt are the oldest members of WCPT since the years 1951, 1967 and 1978 respectively. South Africa has a formal Occupational Health Special Interest Group (OHSIG) formulated in 2011 with the aim of promoting OH among physiotherapists and other disciplines in order to ensure the implementation of OH care strategy in South Africa (SASP, 2017). For Nigeria, the website of the organisation notes that the physical areas where a physiotherapist works includes industrial clinics and acknowledges occupational health and ergonomics as an area of specialisation and interest (NSP, 2017; WCPT, Member Organisations, 2017). However, no information is availed about physiotherapists in occupational health in Egypt (WCPT, General Physical Therapy Syndicate of Egypt, 2017), and neither does any country in Africa provide clear information on the required competencies for practicing OH as a physiotherapist.

The Kenya Society of Physiotherapists (KSP) has been the only professional body governing physiotherapists in Kenya since 1982, and although there is an acknowledgment of various areas of expertise, occupational health is not mentioned at all (WCPT, Member Organisations, 2017). However, the launch of the Physiotherapy Bill in the Kenyan Parliament paved the way for the Physiotherapy Council of Kenya (PCK) to be gazetted on 18 September, 2015. This council seeks to standardise physiotherapy education and practice and it is hoped that special charters of different areas of specialisation would soon evolve in Kenya as well.

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1.5 Physiotherapy curricula

Curricula reforms must begin with a change in the mindset that acknowledges the challenges in the new century and seeks to overcome them (Veras *et al*., 2014 p. 2012). Determining curricular content is important because evidence suggests that curricular content influences preparedness to practice (Latter, Rycroft-Malone, Yerrell, & Shaw, 2000). Latter *et al*. (2000) came to this conclusion based on their findings in the case of medication education in nurses; whereby the students required multiple aspects together during their training to enable them to feel competent enough to educate their patients on medication. These included a number of sessions of preparation practice, sufficiently taught pharmacology during the training as well as opportunities for application and integration of pre-requisite knowledge and skills found in an evidence-based curriculum. Other studies support this finding that the curriculum content influences preparedness for practice in specific professional skills. Related to this, one would not expect successful outcomes when occupational health and safety (OHS) content is embedded in courses that are not specifically about work-related practice and OHS (Adam *et al*., 2013b; Boland *et al*., 2010; Chipchase, Williams, & Robertson, 2008; Doherty, Stagnitti, & Schoo, 2009; Merritt, Blake, McIntyre, & Packer, 2012). In particular, Merritt *et al*. (2012) found that mixed content may not be distinguishable to students as representing important practical knowledge in cases where the content was embedded in other courses.

The physiotherapy curriculum that is offered in most institutions is based on the entry requirements laid down by the WCPT regulation of the physiotherapy profession (WCPT, 2011). However, the inequity of resources and differences in regional needs required that WCPT give national physiotherapy associations the power to regulate PT education in their respective countries based on their specific needs (Broberg *et al*., 2003; Ramklass, 2009; WCPT, 2014; 2011;). According to Smeby (2007), a balance of theoretical teaching and

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practice is required for knowledge-based professions to develop practical experience. In her study that researched curriculum development for community-based physiotherapy rehabilitation in South Africa, Futter (2003) found that practical experience exposes students to processes that they would only have heard about in classrooms but not seen in practice. It is therefore evident that curriculum content needs to be comprehensive in order to encompass all necessary aspects to be learnt. Similarly, a study by Mostert-Wentzel, Frantz and van Rooijen (2013) highlighted that university curricula have gaps that need to be reviewed against the health policies and priorities of the country. This means that a specific country's requirements may result in extra content that needs to be added to the curriculum so as to effectively address the needs of that population.

Given that musculoskeletal disorders form a global burden of disease, their prevention should be prominent in curricula in order to prepare students for what awaits them in their different areas of expertise (Hutting *et al*., 2020; Prosser & Webb, 2010; Woolf & Akesson, 2007). Ramsay *et al*. (2006) as cited in Bahn (2013), note that, despite the fact that nurses were exposed to numerous hazards during their work, little knowledge of these risk factors formed part of their core competencies in their school curriculum. Studies have shown that workers are susceptible to WRMDs in their first five years after graduation (Graham & Gray, 2005; Potter & Jones, 2006), and consideration should thus be given to the inclusion of the prevention and management of WRMDs through practical training and role modelling by educators (Potter & Jones, 2006). This could be done at an individual level through self-assessment and management amongst students, or through observing the management of patients/clients in similar settings (Cromie, Robertson, & Best, 2000).

1.6 Conceptual framework

A conceptual framework has been defined as a visual or written product that "explains, either graphically or in narrative form, the main things to be studied — the key factors, concepts, or

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variables — and the presumed relationships among them" (Miles & Hubermann, 1994 as cited in Maxwell, 2005, p.39). The six-step model is a commonly used theoretical framework for curriculum development in medical education, which advocates linking the curriculum to the health care needs of the society, and is also based on the assumption that educators have a moral obligation to meet the needs of students (Kern, Thomas, & Hughes, 2009; Thomas & Kern, 2004). The steps are not necessarily sequential, but rather form a dynamic, interactive, on-going process where each step influences the next. For example, in a case of an existing curriculum, Steps 1 and 2 are used for refinement of the curriculum rather than developing a new one. The six steps of the six-step model are further outlined in Figure 1.2 below. However, in this study, only steps one to four will be implemented as shown in Figure 1.3.

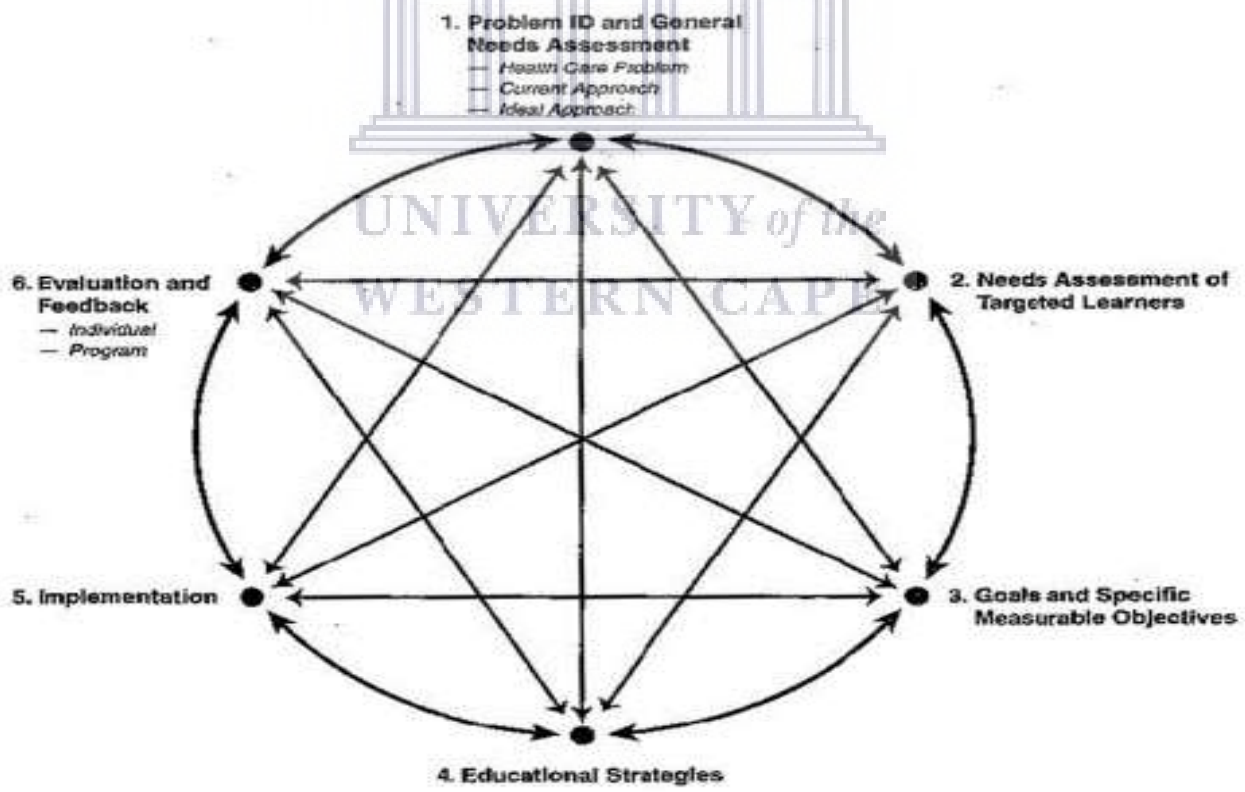

Figure 1.2: A Six-Step Approach to Curriculum Development (Kern, Thomas, & Hughes, 2009 p.6)

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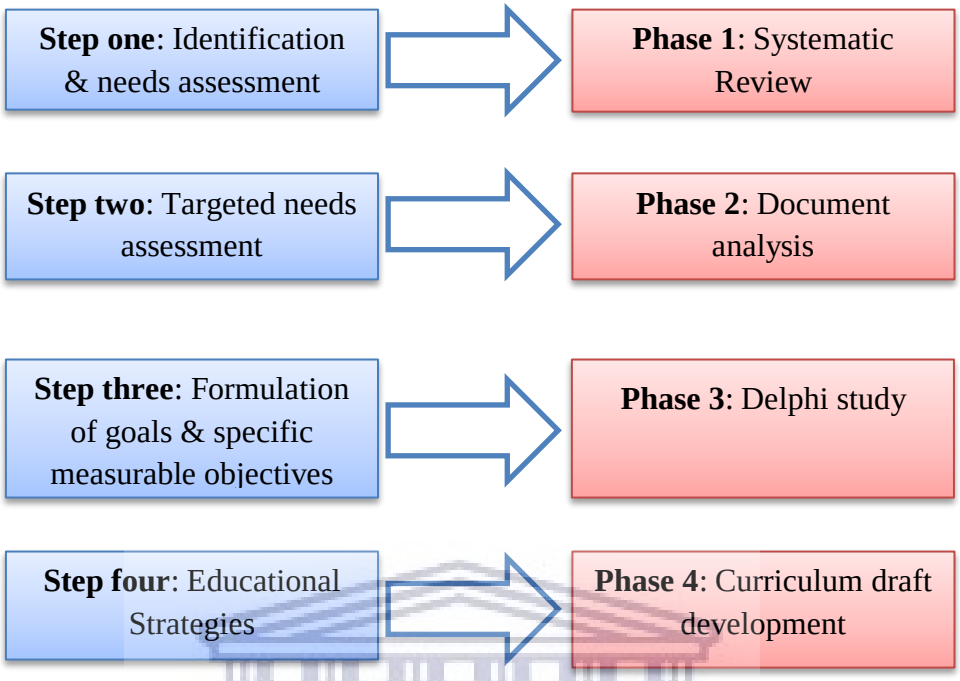

Figure 1.3: The conceptual framework of this study in relation to the six-step model to help develop OH course content

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1) **Problem identification and general needs assessment**

The goal of step one is to focus the curriculum by defining the deficits in knowledge, attitude, or skills that currently exist in practitioners, and then describe the ideal approach to teaching and learning with respect to these objectives (Thomas & Kern, 2004). Furthermore, Bass (2009, p.10) stated that the aim of the first step is to "identify and characterize the health care problem that would be addressed by the curriculum, how it is currently being addressed, and how it should be addressed."

This step thus resonates with a systematic review of occupational health related problems in Africa, which was deemed necessary in order to see how the current curriculum should be aligned to address the need that has been identified from the review. In the Kenyan context, step one included previous studies that identified the

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need for OHS to be implemented at the workplaces (Boro *et al*., 2012; Kisilu, 2018; Makhonge, 2009; Muigua, 2011; Mwanthi, 2009; Tanui, 2015; Wanyonyi *et al*., 2015). However, these studies also identified a need for interventions targeted at the different groups affected by WRMDs (Boro *et al*., 2012; Mwanthi, 2009). In addition, these studies also recommended that occupational health be introduced to school curricula in order to assist with the primary prevention of ergonomic-related hazards (Kenya, 2013; Wanyonyi *et al*., 2015). A needs assessment explores how a problem is being addressed and how it might be addressed more effectively. In other words, a needs assessment aims to identify the fundamental differences between current and ideal management (Kern *et al*., 2009).

2) Targeted needs assessment

Step two occurs at the level of the targeted learners and the targeted institution or learning environment. Curriculum developers identify the differences between the actual and ideal characteristics of the targeted learner group and the environment. In the current study practitioners' needs and their knowledge of OH was explored through the present OH curriculum content in the universities by means of a document analysis.

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3) Formulation of goals and specific measurable objectives

This step targeted the curriculum needs and therefore directed the choice of curriculum content. This enables the evaluation of learners and the curriculum, as well as communicating the intention of the curriculum to others. The current study will explore the competencies, content, teaching and learning strategies as well as the assessment strategies that will be needed for the development of the occupational health course in the undergraduate curriculum through a Delphi study.

4) Educational strategies

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This step was done with regard to the content and the method for implementing it. Multiple educational methods were selected to address the cognitive, affective and psychomotor objectives of the curriculum. This is a cycle that begins with the introduction of the skills with theory and then later further develops those skills in an environment that supplements practice with self-observation, observation by others, feedback and reflection to ensure mastery (Lynn, 2011; Kern *et al*., 2009).

1.7 Strengths and challenges for physiotherapy practice in Occupational Health and Safety

Differences in resources between countries around the world have influenced the practice of occupational health in physiotherapy (Adam *et al*., 2013b; Gupta *et al*., 2011; Goldstein *et al*., 2001; Jeebhay & Jacobs, 1999). Resources include financial, human resources, and legislation on compensation and rehabilitation requirements. Speaking on the role of occupational therapists and physiotherapists in work-related practice, Adam *et al*. (2010) noted that when this service was implemented with the appropriate resources, then the restoration and maintenance of health by means of primary prevention is possible. A survey of work-related practice educators that explored their perception of the preparedness of graduates for work-related practice revealed that external experts in work-related practice and OHS were regularly involved in teaching specific content when resources permitted it (Adams *et al*., 2013). This had the potential to stimulate interest in the field as a work placement option or as an employment opportunity after graduation. The presence of OHPT in the field also served as a check on industries to observe and comply with legislation and regulation requirements (Boucaut, 2003).

Similarly, work-related practice educators identified challenges faced with the proper implementation of occupational health content as a result of budgetary constraints that limited the use of specialist teaching resources and expertise (Adam *et al*., 2013b). A report on the

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state of occupational health in South Africa also raised the same concern that budget allocations for occupational health were inadequate to achieve their programme objectives (Jeebhay & Jacobs, 1999). Budgets for these departments were sometimes used to cover personnel expenses and general management and administration costs, showing that occupational health and safety was not being prioritised. Previous studies also revealed that ergonomics was seen as a costly and limiting activity and that such attitudes provided evidence of both an individual and organisational failure to support employee-centred design (Ibrahim, Noor, Nasirun, & Ahmad, 2012; Makhonge, 2009; Woodcock, 2007). It would therefore be important to secure the support of management who should lead the organisational changes in the workplace in situations of financial constraints (Dockrella, Earleb & Galvina, 2010; Goldgruber & Ahrens, 2010; Ibrahim *et al*., 2012).

Another challenge related to occupational health and safety was the lack of established structures associated with the mode of delivery of these service (Jeebhay & Jacobs, 1999; Kenya, 2013). Improper coordination in the tripartite stakeholders of occupational health saw therapists being forced to provide treatment only thus limiting them in the preventive practice of injuries at work (Adam *et al.*, 2010). There is thus also a lack of clarity around the distinction between stand-alone occupational health services and integrated services (as part of comprehensive health services), as well as uncertainty with regard to the most appropriate level at which they should be delivered (Jeebhay & Jacobs, 1999). This demonstrates a need for proper integration of intersectoral collaboration of health professionals at an early stage, rather than working within professional silos (Veras *et al*., 2014).

The aim of this research project is therefore to design occupational health content for a course within the physiotherapy curriculum that is a building block in the development of newly qualified physiotherapists to address the needs of patients with WRMDs.

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1.8 Problem Statement

Employers and employees are still in the process of complying with the requirements of occupational health and safety (OHS) in Kenya. As much as recent studies have shown an improvement in compliance with OHS regulations (64.49% in 2012, up from 35% in 1999) (Mbakaya *et al*., 1999; Nzuve & Lawrence, 2012) many people are still affected by work-related injuries which could have been prevented. Even though occupational health (OH) is a well-established field of practice within physiotherapy, and Kenya has had physiotherapy training at the diploma level for 49 years as of the commencement of this project in 2014, there is still no inclusion of OH in the curriculum. An increased awareness of this field of practice by physiotherapists will have a positive impact on patient and client education in all forms of preventive treatment, as well as enhance compliance with the occupational health requirements. With the current development of physiotherapy at the degree level in Kenya, there is an opportunity to ensure that all aspects of physiotherapy education are included, enabling the design and evaluation of a curriculum that will include aspects of OH. Thus, it is important that the content of physiotherapy curricula be reviewed so as to ensure that professional training equips physiotherapists with basic knowledge to deal with occupational health related problems, and a foundation for further professional development in this field.

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1.9 Research Question

What are the standards of competency, teaching and learning, and assessment strategies that are needed for occupational health to be included in an undergraduate physiotherapy curriculum in Kenya?

1.10 General Objective

To develop standards of competency, teaching and learning strategies, and assessment strategies that are needed for occupational health to be included in an undergraduate physiotherapy curriculum in Kenya.

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1.11 Specific Objectives

1. To determine the prevalence of work-related musculoskeletal disorders in Africa.
2. To conduct a situational analysis of the occupational health content in the curricula of universities offering physiotherapy in Kenya, as it relates to the competency framework for occupational health.
3. To explore the competencies needed by physiotherapists that relate to occupational health.
4. To explore the relevant content that needs to be included in the curriculum in order to achieve these competencies.
5. To explore teaching and learning, as well as assessment strategies that might be used in an undergraduate physiotherapy curriculum to develop competencies relating to occupational health.
6. To develop a draft undergraduate curriculum related to occupational health in physiotherapy in Kenya.

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1.12 Significance of the study

Occupational health is a new area of study that has been introduced into the curriculum of universities offering the physiotherapy degree in Kenya. This inclusion offers an opportunity for the growth and advancement of the physiotherapy services offered in Kenya after students graduate, as well as creating a potential area of specialisation through postgraduate studies in the future. The inclusion of occupational health content into the physiotherapy curriculum will also add credibility to the courses offered by the universities in Kenya with regard to the scope of training described by the World Confederation of Physical Therapists (WCPT, Policy statement: Occupational health and safety of physical therapists, 2011). The development of expertise in physiotherapy as health professionals who form part of the tri-partite stakeholders in occupational health will hopefully lead to the development of new

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policies and the strengthening of existing policies related to occupational health physiotherapy services. In addition, it will create a platform for future studies to evaluate the impact of the curriculum on the quality of life of the end users.

1.13 Outline of Chapters

Chapter One — Introduction and Literature Review

This chapter describes the background of this study as well as the extensive literature review around physiotherapy, occupational health and related injuries in the Kenyan and international context. It highlights both the competency framework that will be used to compare the competencies required by physiotherapists in occupational health as well as the conceptual framework that guides the execution of this study. It then outlines the aim and objectives of the study as well as the significance of the study.

Chapter Two — Methodology

This chapter outlines the steps taken to achieve all the objectives laid out in this study. It provides an account of the anticipated participants, the study design that was used, the instruments needed to acquire the data, as well as their validity and reliability. The chapter describes the process of acquiring this information and how challenges were overcome. Finally, the chapter outlines the ethical considerations taken throughout the data collection and execution of this study, including the dissemination of the study findings.

Chapter Three — Prevalence of work-related musculoskeletal disorders in Africa- A systematic review

This chapter describes Phase One in the conceptual framework of this study. It presents the prevalence of work-related musculoskeletal disorders in Africa. The results of this review will determine the significance of physiotherapists developing a better understanding of

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occupational health. This systematic review exploring WRMDs in Africa is the first known attempt to describe the prevalence of WRMDs in Africa. Therefore, physiotherapists as part of the team that deals with prevention and treatment of musculoskeletal disorders should thus be well prepared with the necessary competencies to manage and prevent these conditions especially in an African context.

This chapter was reviewed with BMC Musculoskeletal Disorders and is being revised as per the recommendation:

Prevalence of work-related musculoskeletal disorders in Africa: A Systematic Review, Wanyonyi, Nancy E. N. and Prof. Frantz, Jose

It has also been presented as:

Poster presentation at WCPT Congress in Singapore, May 2015 " **Prevalence of work-related musculoskeletal disorders in Africa: A systematic review**"

Chapter Four — Document Analysis

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Document analysis has been described as the process of evaluating documents in order to get a clearer picture of the topic under investigation. In this context, the documents of interest included the occupational health curriculum content that was analysed against the occupational health competency framework in order to determine if it addressed the necessary competencies needed by novice physiotherapists in the field of occupational health. This was the Second Phase of this study that aligned with step two of the conceptual framework. It was conducted by investigating the curriculum content related to occupational health of two universities offering undergraduate physiotherapy training in Kenya in 2015.

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Chapter Five — Delphi Study

This chapter describes the recruitment of content and context experts to explore their views on the competencies needed by physiotherapists in occupational health. In addition, this panel was asked to describe the content, learning strategies, and teaching and assessment strategies needed in an occupational health module. The purpose of the Delphi study was to seek consensus related to these curriculum components. This chapter is the Third Phase of the study and is aligned with step three of the conceptual framework, describing the formulation of goals and specific measurable objectives to inform the development of the OH curriculum content.

Chapter Six — Curriculum Draft Development, Summary, Conclusion and Recommendations

This chapter describes the last phase of this study, which is the development of a draft curriculum that is aligned with step four of the conceptual framework. It aimed to identify the educational strategies that may be suitable for the implementation of the objectives in this study. Finally, the chapter includes a summary of findings of the whole study, the strengths and limitations, and the conclusion and recommendations.

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CHAPTER TWO

METHODOLOGY

2.1 Research Setting

This research was conducted in Kenya at two higher education institutions offering a physiotherapy degree in 2014; i.e. Moi University in Eldoret, and Jomo Kenyatta University of Agriculture and Technology (JKUAT) in Nairobi. The two universities have different emphases on their programmes with the former concentrating on first entry students from high school, and the latter focusing on upgrading programmes from Diploma to a Bachelor of Science degree in Physiotherapy. Recently, JKUAT has also admitted first entry students from high school (2014). The University has also begun offering a Master of Science in Physiotherapy degree (2016). Three higher education institutions had been previously identified for the purpose of this research, but Great Lakes University, based in Kisumu, was eventually excluded because they did not have occupational health content in their curriculum.

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2.2 Research Design

A mixed method, exploratory, sequential design was used in the study (Tashakkori & Teddlie, 2010). ***Figure 2.1*** below highlights the mixed method approach used in the study.

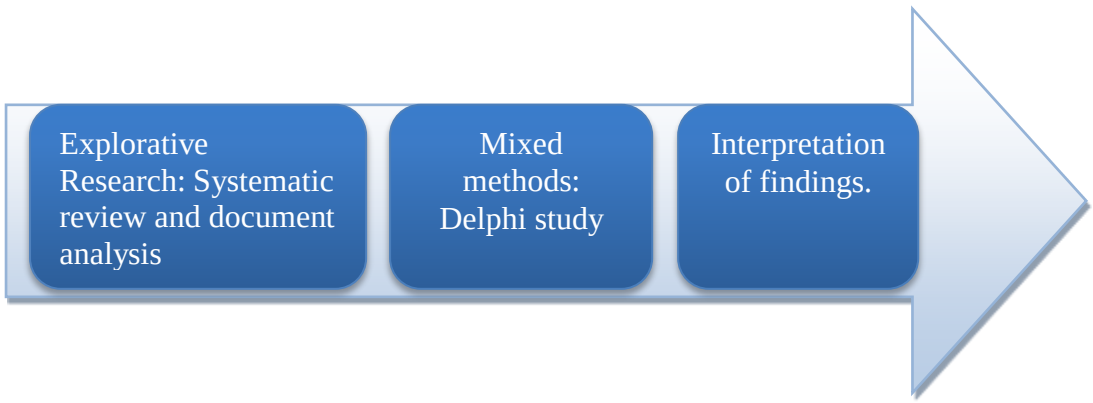

Figure 2.1: Mixed methods design (Source: Author's own construct)

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The explorative component consisted of a systematic review as well as a document analysis. A systematic review has been described as a form of research that brings together what is known in literature about a specific question with appropriate study designs in an explicit and accountable method (Gough *et al*., 2012). The systematic review was conducted to determine the prevalence of occupational health related disorders in Africa. This was followed by a document analysis of the occupational health-related contents in the physiotherapy program curricula of the two universities according to the competency framework of occupational health. Document analysis is a type of audit where documents are scoured to gain a clearer picture of a situation which is being investigated (Bowen, 2009).

Finally, a Delphi study was conducted in order to explore the competencies needed by physiotherapists (PTs) in occupational health (OH), as well as the content, teaching, learning and assessment strategies required. The Delphi study is "characterised as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem" (Turoff & Linstone, 2002 p.3). It may have a combination of qualitative and quantitative processes that draw upon the opinions of experts who aim to develop theories and projections for the future.

Triangulation of the research data from all of these different sources helped the researcher to design a draft undergraduate curriculum related to occupational health in physiotherapy in Kenya (Creswell, 2009; Leech & Onwuegbuzie, 2009).

2.3 Population and sampling

The population of this study constituted all universities offering Physiotherapy in Kenya, clinical physiotherapists, as well as alumni students of the Bachelor of Science in Physiotherapy programme and experts in various fields of occupational health and safety.

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2.3.1 Document analysis

The two training universities in Kenya were contacted for the current occupational health content in their curricula in April, 2015 and July, 2015 for Moi and JKUAT universities respectively.

2.3.2 Delphi study

Purposive sampling of participants was used to select participants for the Delphi study. Clinical physiotherapists involved in occupational health-related tasks, as well as experts in the field of occupational health, including local and international academics and practitioners, were the categories of the participants considered for the Delphi study. Fifteen participants were considered to be sufficient for each round of the Delphi study (Turoff & Linstone, 2002), so the researcher invited at least five per identified category.

2.3.3 Inclusion criteria

Physiotherapists had to have more than five years of work experience as this was deemed to have been sufficient time to be able to evaluate the approach of therapists in occupational health-related cases. In addition, physiotherapists who were alumni students from the university offering the Bachelor of Science in Physiotherapy were also eligible to participate in the study, as they had completed the occupational health course module as part of their studies.

2.3.4 Exclusion criteria

Institutions in Kenya offering physiotherapy training at the Diploma level were excluded, because there is no provision for Diploma training in the Occupational Health Competency Framework.

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2.4 Data collection method and procedure

Approval and ethical clearance were obtained from the UWC Senate Research Committee (Registration no. 14/5/33) as well as from the Institutional Research and Ethics Committee (FAN: IREC 1385) from Kenya (Appendices A & B). Permission to conduct the study was obtained from the management of the identified institutions and data was collected in different phases as they related to the study's objectives (Appendices D-M). The following three phases presents the data collection and analyses of different studies briefly described here, with further details and supporting evidence presented in each of the relevant chapters.

2.4.1 Phase one: Systematic review

A systematic review attempts to collate all relevant evidence that fit pre-specified eligibility criteria to answer a specific research question (Moher, *et al*., 2015, p.2). A systematic review of both local and international literature to answer the research question: What is the prevalence of occupationally related musculoskeletal disorders in Africa; was deemed necessary. Different sources, including relevant organisations and conferences, as well as electronic databases such as EBSCOhost which includes (Africa wide information, CINAHL Plus, Health Source: Nursing/Academic edition, Health Source: Consumer edition, MEDLINE and SPORTDiscus) were used to identify both published and unpublished data. In addition EBSCOhost, Science Direct, PubMEd, BioMed Central and the Cochrane Library, as well as the African Newsletter of Occupational Health and Safety were reviewed. Gough *et al*. (2012 p.4) states that aggregative systematic reviews are those that "rely on identifying studies that support one another and so give the reviewer greater certainty about the magnitude and variance of the phenomenon under investigation". It is for this reason that a systematic review was considered to be the most appropriate method to describe the prevalence of occupational related musculoskeletal disorders in Africa.

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To reduce bias and error, the reviews were done independently and the reviewers discussed the discrepancies found during the review process. Clear inclusion criteria were established using the PICO (target population, intervention, comparison and outcome) that was determined by the researcher and the supervisor. Once consensus was reached among the reviewers, the articles were included in the review. The articles selected were then charted in a narrative table format by three reviewers namely the researcher, the supervisor and the co-supervisor using the PICO. The outcome of the systematic review was summarized in evidence tables which were drawn up by the researcher as per the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher *et al*., 2015). The findings from this review were used to highlight the content and strategies that needed to be included in the curriculum.

2.4.2 Phase two: Document analysis

Document analysis has been described as a method of audit conducted in social research where documents, such as meeting minutes and reports are searched and analysed in order to gain a clearer picture of the situation under investigation (Bowen, 2009). In health science education, curriculum content can be used as documents as they strongly suggest where effort is focused around implementation. Thus, document analysis was thought to be appropriate to indicate if the current curriculum had the necessary content to enable students to practice upon graduation (Ward & Wach, 2015; Adam *et al*., 2013b ; Harden, 2009).

Both physiotherapy schools were contacted and asked to provide the researcher with an electronic copy of their current undergraduate physiotherapy program curriculum to explore the occupational health-related course content. The researcher did a comparison of the curricula focusing on the occupational health content, using the Occupational Health Competency Framework (Appendix F) as a guide for the document analysis (Owen &

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Hunter, 2012). The competency audit tool was coded for data to be analysed thematically in order to gain an idea of physiotherapy education in relation to occupational health.

2.4.3 Phase three: Delphi study

A Delphi study was conducted in order to explore the competencies needed by therapists, as well as the teaching, learning and assessment strategies used regarding the occupational health components. A Delphi study is a method in which a group of panellists are selected for their expertise to identify a range of opinions or to explore consensus on complex topics (Iqbal & Pipon-Young, 2009). Occupational health is a fairly new domain of practice for physiotherapists in Kenya with no guidance on the required competencies to be attained during training. Similarly, there are no well-established practising Occupational Health Physiotherapists (OHPTs) in Kenya. The selection of appropriate Delphi study participants has been considered to be the most important step as it determines the quality of the results generated (Hsu & Sandford, 2007). Cyphert and Gant (1971), Brooks (1979), Ludwig (1994, 1997), and Custer, Scarcella, and Stewart (1999), as cited in Hsu and Sandford (2007 p.2), point out that "three iterations are often sufficient to collect the necessary information and to reach consensus in most cases". An extra iteration can be added when necessary. This study consisted of three rounds in the Delphi study with a minimum number of 15 participants in each round (Turoff & Linstone, 2002).

2.4.3.1 Round one of the Delphi

In their study of developing a practice guideline for the occupational health services by using a community of practice approach, Kwak, Wahlin, Stigmar and Jensen (2017) noted the importance of including the end-user in the development process as this would enable the proper use of the guideline and facilitate evidence-based practice. While Hsu and Sandford (2007) noted the importance of including experts in the Delphi process, it was decided that the end-users of this curriculum - alumni students of the recently developed BSc

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Physiotherapy programmes in Kenya - be included too, in order to ascertain the necessary competencies to be included in the draft OH curriculum. In addition, the inclusion of students as stakeholders during the review of the curriculum was recommended (Kern *et al*., 2009).

Round one of the Delphi study included academics and clinical physiotherapists as well as other stakeholders in the occupational health team. These included occupational health doctors, OH physiotherapists, occupational health managers, as well as alumni students of the BSc Physiotherapy programmes in Kenya. Local, regional and international academics who were experts in the area of occupational health were also invited to participate in the study via e-mails. Purposive sampling of 15 participants was done from all the selected institutions. Open-ended questions guided by literature, were used to explore the OH competencies needed by physiotherapists. The second part of the questionnaire in the first round explored the relevant content, teaching, learning and assessment strategies that needed to be included in the curriculum in order to meet the relevant competencies (Appendix M1). This aspect of the Delphi study primarily had open-ended questions that allowed the participants the freedom to express their views (Iqbal & Pipon-Young, 2009). Thematic content analysis was used to analyse the content of the questionnaires (Lundman & Graneheim, 2004). The findings of round one were used to develop the questions that would be included in round two.

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2.4.3.2 Round two of the Delphi

This included similar participants to those of round one, with the aim of reaching consensus in respect of the responses received in round one. The questions included in round two were closed-ended (Appendix M2) and subjected to an internal consistency statistical test. Participants were then asked to rank the competencies according to importance, which were then analysed quantitatively. Consensus was considered to have been reached if 75% of participants had agreed with the ranking of each item in the second round.

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2.4.3.3 Round three of the Delphi

The purpose of this round was to invite panellists to consider their scores in the light of the group response and decide whether they wanted to change any of their previous responses (Iqbal & Pipon-Young, 2009). The items that did not reach consensus in round two were circulated again in round three (Appendix M3). A Likert scale style questionnaire was used and it was based on the findings of the previous phases to allow a consensus of the feedback (Iqbal & Pipon-Young, 2009). Data was analysed in the form of descriptive statistics.

2.4.4 Phase four: Curriculum Development

Based on the findings of the systematic review, document analysis, survey and Delphi study, a draft curriculum for occupational health content was designed by using the six-step model of curriculum development as an outcome of this study. The six-steps were used as the conceptual framework for this study, which involved problem identification and a general needs assessment of the healthcare need. This was followed by the targeted needs assessment of the learners and their environment. Third was the formulation of goals and specific measurable objectives for the curricula, followed by the identification of the necessary educational strategies that would help achieve the identified goals and objectives. The last two steps of this process will not be considered within the scope of this study as they involve the implementation of the curriculum with associated evaluation and feedback.

2.4.5 Instruments

2.4.5.1 Audit tool

The Occupational Health Competency Framework and its audit tool (Appendices F & G) was used to evaluate the physiotherapy curriculum standards of competencies, teaching, learning and assessment strategies as required by Levels A and B. This tool was piloted on a South African curriculum to assist the researcher to familiarise herself with the tool and identify any

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shortcomings. Changes were made to Section 2.6 of the tool to ensure that the regulations were relevant to the country of data collection.

2.4.6 Trustworthiness

Triangulation of information from different sources helped to improve the trustworthiness of the findings of this study (Shenton, 2004). Credibility was addressed through member checking and by providing a rich description of the context (Lincoln & Guba, 1985). Transferability and dependability were improved with clear description of the methodology to allow the study to be repeated (Guba, 1981). Raw record data collected in the study was reviewed to ensure confirmability.

2.5 Data analysis

Data was analysed in the three phases as described in Section 2.4 to enable the researcher to develop a draft undergraduate curriculum content related to occupational health physiotherapy in Kenya. The curricula of the universities in this study were analysed via a document analysis through comparing them to the competency framework (Bowen, 2009). Thematic content analysis was used to categorise the themes identified from round one of the Delphi study. Quantitative data was captured and analysed using version 22 of the Statistical Package for Social Sciences (SPSS). Univariate analysis was used by means of descriptive analysis. Demographic data was used as a control variable to see its influence on the independent (curricula) and dependent variables (knowledge, behaviour and skills). An internal consistency test was used for further analysis of the instruments of data collection.

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2.6 Ethical Consideration

Ethical clearance and approval to conduct the study was obtained from the UWC Research Ethics Committee as well as the Institutional Research and Ethics Committee (IREC) from Kenya (Appendices A & B). Permission to conduct the study was obtained from the

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management of the identified institutions (Appendix E). The aim of the study and additional background information was provided to participants, and their informed consent was obtained before their participation in the study (Appendices D, K & L). Participants were informed of their right to voluntary participation and the option to withdraw from the study without any consequence. Participants were assured of the confidentiality and anonymity of the information collected from them. All information obtained will be locked away for a minimum of five years following the conclusion of the study, after which it will be destroyed. The results of the study will be made available to the group participants and other relevant stakeholders and will be disseminated to the public in the form of publications and conference presentations.

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CHAPTER THREE

PREVALENCE OF WORK-RELATED MUSCULOSKELETAL DISORDERS: A SYSTEMATIC REVIEW

3.1 Introduction

Lower back pain is a musculoskeletal condition that has the highest attributable fraction for morbidity and mortality due to its occupational exposure, which could have been prevented (Fingerhut *et al*., 2014; Luttmann *et al*., 2014; Thiese *et al*., 2014). A systematic analysis for the Global Burden of Disease Study in 2015 revealed that "low back and neck pain was the leading cause of disability in all high income countries in 2015" (Vos *et al*., 2016 pp.1554). The World Health Organisation (WHO) (2014a) and Fingerhut et al. (2014) notes that efficient comparisons of data around work-related musculoskeletal disorders (WRMDs) between countries is difficult because of differences in legislation, criteria and reporting systems, making it difficult to quantify the magnitude of WRMDs. Database profiles increase transparency and reflectiveness of occupational health and safety (OHS) thus providing insight into difficulties, priorities and the needs of countries (WHO, 2014a).

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Work-related musculoskeletal disorders have been described in different ways. The Canadian Association for Occupational Health defines it as a group of painful disorders of muscles, tendons, and nerves, which includes some syndromes like carpal tunnel syndrome; tendonitis, thoracic outlet syndrome, and tension neck syndrome (CCOHS, 2014). The Centre for Disease Control (CDC) (2012) defined WRMDs as injuries to or any disorders of the nerves, tendons, joints, muscles and supporting structures of the upper and lower limbs, neck, and lower back that are caused, precipitated or exacerbated by sudden exertion or prolonged exposure to physical factors such as repetition, force, vibration, or awkward posture. They specifically excluded conditions such as fractures, contusions, abrasions, and lacerations resulting from sudden physical contact of the body with external objects (CDC, 2012).

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Despite the fact that some agencies only considered musculoskeletal disorders aggravated by work during reporting for compensation, it may be worth noting that organizations, such as the European Agency for Safety and Health at Work, include acute traumas and fractures within the WRMDs group (CCOHS, 2014). For the purpose of this review, we will adopt the definition by the CDC (2012) to address the prevalence of WRMDs, as this is more relevant for physiotherapists who manage conditions related to work activities that are frequent and repetitive, or activities with awkward postures, which may result in pain during work or at rest.

Epidemiological studies in general aim to define and describe the status of diseases and thus several terminologies have been put forth for this. During the review process it was apparent that some researchers use the words prevalence and incidence interchangeably. However, incidence has been used to refer to a change in status from no disease to a disease and prevalence has been defined as a term used to measure the extent of a disease in a population including the new cases and those who have contracted the disease in the past and are still alive (Ibrahim, Alexander, Shy, & Far, 1999). In this review, prevalence will be defined as "the total number of cases of a disease in a given population at a specific time" (Louw, Morris, & Grimmer-Somers, 2007 p.3).

Despite the difficulty in the comparison of WRMDs between countries as documented by Fingerhut *et al.* (2014) and the WHO (2014a), developed countries have been able to achieve a better system of reporting WRMDs. A database search has identified no conclusive summaries of work-related musculoskeletal disorders within Africa which constitutes the majority of developing countries. A systematic review of the literature from different sources was deemed necessary in order to determine the prevalence of WRMDs within Africa. Krnic Martinic, Pieper, Glatt and Puljak (2019, p.10) states that "a systematic review should include a research question, sources that were searched with a reproducible search strategy, inclusion

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and exclusion criteria, selection (screening) methods, a critical appraisal and report of the quality/risk of bias of the included studies, and lastly, information about data analysis and synthesis that allows the reproducibility of the results."

In their opening statement of internet resources for curriculum development, Kern, Thomas and Hughes (2009:1) state that "Curriculum development in medical education should be a methodical and scholarly, yet practical process that addresses the needs of trainees, patients, and society." This systematic review focuses on addressing the goal in the study of '*Problem Identification and General Needs Assessment*.' The prevalence of WRMDs in Africa will assess the needs for occupational health training amongst physiotherapists in Africa.

3.2 Research question

What is the prevalence of work-related musculoskeletal disorders in Africa?

3.3 Search strategy

Sources for the search included electronic databases such as EBSCOhost (Africa wide information, CINAHL Plus, Health Source: Nursing/Academic edition, Health Source: Consumer edition, MEDLINE, SPORTDiscus), Science Direct, PubMEd, BioMed Central and the Cochrane Library, as well as the African Newsletter of Occupational Health and Safety. These were used to identify both published and unpublished data from the year 2004 to 2014. If the articles selected for a full text reading could not be accessed from the electronic databases available at the university library, the researcher made use of the inter-library loan service to retrieve those articles from other institutions. An additional, secondary search was conducted by browsing the reference list of the selected studies for additional articles that aligned with the inclusion and exclusion criteria. These additional articles were obtained directly from Google Scholar or Research Gate. The reference lists of these articles were also reviewed until the search for studies had been saturated.

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3.4 Methodological framework for the systematic review

A comprehensive search was used to identify all of the relevant literature within Africa regardless of the study design. It was important for the researcher to keep the research question broad during the search strategy in order to include a wide range of coverage (Armstrong *et al*., 2011). The word "prevalence" was thus eliminated from the search terms and the researcher used "work-related musculoskeletal disorders" as the search terms for the article identification. The Boolean search methods using "OR" and "AND" were employed in this manner "work-related musculoskeletal injuries" OR "conditions" AND Africa. The synonym "occupational related musculoskeletal disorders" OR injuries OR conditions was similarly used to search for articles.

3.4.1 Study Selection

Although randomised controlled trials (RCTs) are often regarded as the highest form of evidence (Kitchenham, 2004), they were not best suited to answer the research question for this particular study (Division, 2014; Institute, 2014; Fineout-Overholt & Johnston, 2005; Mann, 2003). Cross-sectional studies are an appropriate study design to determine the prevalence of a particular health problem (Munn, Moola, Lisy, & Riitano, 2014), which is why the majority of the studies identified during the search process in this study were cross-sectional (Table 3.1). Studies that clearly described the prevalence of WRMDs were included in the review regardless of the occupation of the participants in the study. Additional inclusion criteria were that articles had to be published in English, and the sample of participants for the study had to be from Africa. Articles were excluded if the study population was not specified, or if the article related primarily to an intervention or incidence rather than prevalence, or if the sample size was smaller than 30 because of lack of generalizability of the findings.

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3.4.2 Reviews of articles

To reduce the influence of bias and error, the reviews were done independently. The reviewers assessed the articles and discrepancies were discussed at a later stage. Clear inclusion criteria were established using the PICO framework (target population, intervention, comparison and outcome) which is a standardised format for constructing searchable, answerable questions (Kitchenham, 2004). However, since it is a prevalence study much emphasis was given to P and O. Consensus was reached among the reviewers (i.e. the researcher and the supervisors of the study) to have the first aspect of the PICO question target population (P) as Africa, which included all populations apart from sports-related, then the Intervention/Issue of interest (I) being work-related musculoskeletal disorders and Comparison (C) would be made across different types of WRMDs encountered in Africa and the final aspect of a desired Outcome (O) would be considered as the prevalence of WRMDs (Fineout-Overholt & Johnston, 2005). The articles that were identified were then included in the review and after the critical appraisal the remaining articles were described using a narrative table (Table 3.3). Abstracts that met the inclusion criteria were subjected to a reading of the full text. The outcome of the systematic review was summarised in tables that were drawn up by the researcher.

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3.4.3 Search strategy results

The search strategy yielded a total of 3, 356 citations of which 3,051 articles were excluded after removing duplicates and the screening of the abstracts. The remaining 305 articles were subject to full text scrutiny and 252 were then excluded, yielding a total of 53 articles. On reading the full text articles of the selected studies, multiple articles by similar authors were sometimes found, and in these cases, the most recent article was included in the review Kitchenham (2004). However, during the review of the articles, there was a deficiency of information in some articles and previous articles were crosschecked in order to extract

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accurate data. Thus, for this study we picked a previous publication for Eltayeb and Sikiru instead of a later study as it better fits this review's inclusion criteria (Eltayeb, Staal, Hassan, Awad, & A de Bie, 2008; Eltayeb, Staal, Khamis, & de Bie, 2011; Sikiru & Shmaila, 2009; Sikiru & Hanifa, 2010). Four cohort studies, one case control, the mixed method and qualitative studies were articles excluded upon full text reading, since they did not specifically describe the prevalence of WRMDs (Appendix C*).* In addition, the two duplicate articles were also excluded. The literature search revealed a wide coverage of studies within Africa as stipulated in Table 3.1 below according to the Centre for Review and Dissemination (CRD) hierarchy of evidence (Kitchenham, 2004) and critical analysis of the 46 articles was now done for the systematic review as shown in Table 3.2.

Table 3.1: Centre for Review and Dissemination hierarchy of evidence

Level	**Study type**	**(n = 53)**
2	Case control	
	Cross sectional analytical	2
	Retrospective	1
3	Cohort	
	Retrospective	2
	Not specified-cohort	2
3a	Cross-sectional	
	Cross-sectional	26
	Descriptive	2
	Comparative	1
	Survey	9
	Not stated – cross-sectional	6
3b	Mixed method	
	Case control retrospective & descriptive cross sectional	1
4*	Qualitative	
	Not stated- Sounds qualitative	1

Key: * means that the author did not state the study type. However upon reading the article it fitted a qualitative description

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3.5 Methodological Quality Assessment

Once all irrelevant articles had been excluded, the quality of the primary studies was assessed for methodological quality (Kitchenham, 2004). Several accredited tools have been designed for this purpose and in this study the critical appraisal tool for quantitative studies was used (Law, Stewart, Pollock, Letts, Bosch, & Westmorland, 1998). Kitchenham (2004) states that there is no agreed definition of study "quality". However, the Centre for Review Guidelines (CRD) was used help rate the studies selected for this review. Besides using the hierarchy of evidence (Table 3.1*)* as stipulated by the CRD guidelines, the selected studies were outlined using the criteria identified by the critical appraisal tools for each study design *(*Table 3.2*)*. The critical appraisal tool for quantitative studies consisted of 15 criteria; each of which has a Yes/No response, each worth 1 point, with a maximum of 15 points that can be achieved. The overall rating score for each artcle is expressed as a total out of 15, with scores of 10 – 15 considered as good quality, while 7 – 10 is considered to be of reasonable quality, while scores below 7 are considered to be of poor quality. When used for other studies besides the RCTs, the critical appraisal tool consists of 10 questions where a maximum of 10 points can be achieved. Studies that achieve a score of 9–10 points, can be said to have achieved the study objectives. A score of 7-8 points corresponds to a methodologically well-designed study. Scores of 5-6 correspond to moderate quality and studies with a score of less than 5 are poor quality. Two independent reviewers assessed the methodological rigour and quality of articles included in this review and the findings are reported in a narrative (Popay *et al*., 2006).

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Table 3.2: Methodological Quality Assessment (n = 46)

Reference	Hierarchy & Tool Used											Total
	Cross-sectional Studies – Quantitative Law (1998)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**10/10**
Adedoyin, Idowu, Adagunodo, & Idowu, 2005	Not specified/ cross-sectional study	□	□	X	□	X	X	X	X	□	□	5/10*
Ajidahun & Phillips, 2013	Cross-sectional	□	□	□	□	□	□	□	X	□	□	9/10
Booyens, van Wyk, & Postma, 2009	Cross-sectional	□	□	□	□	□	X	X	□	□	□	8/10
Coggon, Ntani, Palmer, Feli, Harari, & Barrero, 2013	Cross-sectional	□	□	□	X	□	X	□	□	X	□	7/10
Naidoo, Kromhout, London, Naidoo, & Burdorf, 2009	Interview Survey	□	□	□	□	□	□	□	□	□	□	10/10
Munabi, Buwembo, Kitara, Ochieng, & Mwaka, 2014	Cross-sectional	□	□	□	□	□	□	□	□	□	□	10/10
El-Bestar, El-Mitwalli, & Khashaba, 2011	Cross-sectional comparative	□	□	□	□	X	X	X	□	□	□	7/10
Zytoon, 2012	Not specified/cross-sectional	□	□	X	X	X	X	X	□	□	□	5/10*
Osazuwa-Peters, Azodo, & Obuekwe, 2012	Cross-sectional	□	□	□	□	X	X	X	X	□	□	6/10*
Mogbeyiteren, Olowoyeye, Irurhe, Ibitoye, & Udo, 2012	Not specified/cross-sectional	□	□	□	□	X	X	X	X	□	□	6/10*

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Saidu, *et al.*, 2011	Not specified/cross-sectional	□	□	□	□	X	X	X	X	□	□	6/10*
Younes, Bejia, Aguir, Letaief, Hassen-Zrour, & Touzi, 2006	Cross-sectional	□	□	□	□	□	□	□	□	□	□	10/10
Kunda, Frantz, & Karachi, 2013	Cross-sectional	□	□	□	□	□	□	□	□	□	□	10/10
Zungu & Ndaba, 2009	Cross-sectional	□	□	□	□	□	X	X	□	□	□	8/10
Chidozie, *et al*., 2012	Survey	□	□	□	□	X	□	□	□	□	□	9/10
Kielkowski, Rees, & Bradshow, 2004	Survey	□	□	□	X	□	X	X	X	□	□	6/10*
Adegoke, Akodu, & Oyeyemi, 2008	Cross-sectional	□	□	□	□	□	X	X	□	□	□	8/10
Tinubu, Mbada, Oyeyemi, & Fabunmi, 2010	Cross-sectional/survey	□	□	□	X	X	□	□	□	□	□	8/10
Boro, Mwisukha, & Onywera, 2012	Not-specified/cross-sectional	□	□	□	□	□	X	□	□	□	□	9/10
Nkhata, Zyaambo, Nzala, & Siziya, 2010	Cross-sectional	□	□	□	□	□	X	X	X	X	□	6/10*
Ugwu, Egwu, Ochie, Ewunonu, Ovuoba, & Njoku, 2007	Survey	□	□	□	□	X	X	X	X	□	□	6/10*
Taiwo & Babatunde, 2013	Survey	□	□	□	□	X	□	□	□	□	□	9/10
Rongo, Barten, Msamanga, Heederick, & Dolmans, 2004	Descriptive	□	X	□	□	X	X	X	X	□	□	5/10*
Olowogbon, Fakayode, Jolaiya, & Adenrele, 2013	Not specified/cross-sectional	X	□	X	□	X	□	□	X	□	X	5/10*
Ableduu & Abledu, 2012	Cross-sectional	□	□	□	□	X	□	□	□	□	□	9/10

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Comlan, Ezinah, Nambo Wezet, Anyunzoghe, & Obiang Ossoubita, 2007	Cross-sectional	□	□	□	□	□	□	□	X	□	□	9/10
Alazab, 2004	Cross-sectional	□	□	□	□	X	□	□	□	□	□	9/10
Tella, Akinbo, Asafa, & Gbiri, 2013	Cross-sectional	□	□	□	□	X	□	X	□	□	□	8/10
Gbiri, Osho, & Olumiji, 2012	Cross-sectional	□	□	□	□	□	□	□	□	□	□	10/10
Botha, Chikte, Barrie, & Esterhuizen, 2014	Cross-sectional	□	□	□	□	□	□	□	□	□	□	10/10
Maduagwu, Majindandi, Duniya, Oyeyemi, Saidu, & Bukola, 2014	Cross-sectional	□	□	□	□	X	□	□	X	□	□	8/10
Onawumi & Babajide, 2012	Survey/cross-sectional	□	□	X	□	X	□	□	X	□	□	7/10
Egwuonwu, Abidemi, Aiyejunsunle, Ezeukwu, Auwal, & Okoye, 2013	Cross-sectional	□	□	□	□	X	□	X	□	□	□	8/10
Yitayeh, Mekonnen, Fasika, & Gizachew, 2014	Cross-sectional	□	□	□	□	□	□	□	□	□	□	10/10
Sikiru & Shmaila, 2009	Cross-sectional	□	□	□	□	X	□	□	□	□	□	9/10
Odebiyi, Ogwezi, & Adegoke, 2007	Survey/cross-sectional	□	□	X	□	X	□	□	□	□	□	8/10
Ekpenyong & Inyang, 2014	Cross-sectional	□	□	□	□	□	□	□	□	□	□	10/10
Ayanniyi, Ukpai, & Adeniyi, 2010	Cross-sectional	□	□	□	□	□	□	□	□	□	□	10/10
Abaraogu, Olawale, Odebiyi, Ezeukwu, & Ezema, 2012	Cross-sectional	□	□	□	□	X	□	□	□	□	□	9/10
Ojoawo, Onade,	Survey/cross-sectional	□	□	X	□	□	□	□	□	□	□	9/10

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Adedoyin, & Okonji, 2014												
Akinpelu, Oyewole, Odole, & Olukoya, 2011	Cross-sectional	□	□	□	□	X	□	□	□	□	□	9/10
Ezeukwu, Ugwuoke, Egwuonwu, & Abaraogu, 2011	Cross-sectional	□	□	□	□	X	X	X	X	□	□	6/10*
Labeodan, Olaseha, & Olaleye, 2013	Descriptive/cross-sectional	□	□	□	□	X	□	□	□	□	□	9/10
Eltayeb, Staal, Hassan, Awad, & A de Bie, 2008	Cross-sectional	□	□	□	□	X	□	□	□	□	□	9/10
	Case Controls-Quantitative Law (1998)											**10/10**
Abrahams, Ellapen, van Heerden, & Vanker, 2011	Controlled-descriptive epidemiological retrospective study	□	□	□	□	□	X	X	□	□	X	7/10
van Vuuren, Becker, van Heerden, Zinzen, & Meeusen, 2005	Cross-sectional Analytical	□	□	□	□	X	□	□	□	□	□	9/10

Key:

Case-control studies, * - Excluded studies

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3.6 Data Extraction Results

After the methodological appraisal, eleven studies were excluded. Thus only 35 studies qualified to be included in the systematic review. The following information was extracted from eligible papers that qualified to be included in the review: country of data, study population, prevalence of WRMDs, outcome measures used, and the sample size. This information enabled the researcher to understand how to interpret the results of these data. This information was then presented in a narrative format, as a summary of the current state of knowledge about the prevalence of WRMDs in Africa (Gough *et al*., 2012; Popay *et al*., 2006).

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Table 3.3: Data extraction (n = 35)

References	Country	Population & sample size	Prevalence	Outcome measure	Implications for practice
Coggon, Ntani, Palmer, Feli, Harari, & Barrero, 2013	South Africa	Nurses & office workers - 280 nurses, 90% participated, 285 office workers 83% responded.	**One-month prevalence** of Disabling LBP in nurses as 10% whereas that of Disabling wrist and hand pain in office workers was around 13%.	Standardised questionnaires were used	Presence of associations between adverse beliefs and its predisposition of disabling wrist/hand pain. No causal effects could, however, be established.
Ajidahun & Phillips, 2013	South Africa	Instrumentalists- 48 (40 students & 8 teachers) with a 41.7% response rate.	**12-month prevalence** of 82%, neck (29.4%), shoulder (23.5%), right elbow (23.5%), upper back (31.3%), and lower back (23.5%) were the most common sites of discomfort or pain.	Nordic questionnaire	Presence of playing-related musculoskeletal disorders was detected. Prevalence studies to find African specific instruments that are problematic and then have prevention strategies.
Naidoo, Kromhout, London, Naidoo, & Burdorf, 2009	South Africa	Women in small-farm agriculture-911 farmers.	**12-month prevalence** of pain ranged from 63.9% to 73.3% while the prevalence of self-reported chronic pain ranged from 42.8% to 48.3%.	Nordic questionnaire	Prevalence of pain reported was similar to those in other developing countries. Ergonomic interventions should be considered to reduce the pain.
Munabi, Buwembo, Kitara, Ochieng, & Mwaka, 2014	Uganda	880 nursing professionals, response rate was 85.4%.	**12-month prevalence** of any WRMDs 80.8%, LBP 61.9%, feet &ankle 38.1%, knees 37.1%, neck 36.9%, upper back 35.8% and shoulder 32.6%.	Dutch musculoskeletal (msk) questionnaire and the Nordic questionnaire	WRMDS are common with multifactorial aetiology. Nursing profession should have better remuneration of staff and management as well as challenging the Ministry of Health to create a culture of safety and reporting injuries.

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					Nursing curricula must also address body mechanics, injury prevention and safety improvement
Kunda, Frantz, & Karachi, 2013	Zambia	500 mine workers with 40.4% response rate (n=202).	The **12-month prevalence** of work-related musculoskeletal (MSK) injuries was 42.6%. The most affected body parts among the mine workers were the wrist/hand, lower back and neck.	Nordic questionnaire, Washington state risk factor & upper limb care questionnaire checklist	WRMDs are highly prevalent and require urgent intervention. Identification of risk factors is important to design effective prevention programmes.
Eltayeb , Staal, Hassan, Awad, & A de Bie, , 2008	Sudan	282 computer office workers with 88% response rate	**12-month prevalence** rate of 64% for neck symptoms, 41% for shoulder symptoms, 19% for elbow, 29.5% for hands/wrists.	Arab version of the Maastricht Upper extremity questionnaire	Complaints of arm, neck and shoulder (CANS) prevalence rates correlates with that of the Western countries.
Chidozie, *et al*., 2012	Nigeria	Health workers-200 questionnaires with a response rate of 91% (n=181)	**12-month and point prevalence** rates of WMSDs were 64.4% and 48.2% respectively. 12 months prevalence LBP 50%, shoulder29.7%, neck 27.5%, wrists/hands 18.0%, point prevalence shoulder 34.1%, LBP 26.4%, neck 17%, elbow 11%.	Adapted from the Nordic questionnaire	LBP prevalence was highest with nurses most affected with sickness absence. Preventive programmes and further research on work-associated factors are recommended.
Adegoke, Akodu, & Oyeyemi, 2008	Nigeria	Physiotherapists-217 questionnaires were distributed yielding a with	**12-month prevalence of** WRMDs was 91.3%, with LBP 69.8% followed by the neck at 34.1%.	A two-part questionnaire with items adapted from questionnaires used	High prevalence of WRMDs than stated in the literature. Further studies are needed to explain this and state why PTs

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		response rate of 58.1% (n=126).		for similar studies around the world [8,14] but adapted for use among Nigerians.	still remain in the profession despite the high prevalence of WRMDs.
Tinubu, Mbada, Oyeyemi, & Fabunmi, 2010	Nigeria	Nurses- 160 questionnaires distributed with a response rate of 80% (n=128).	84.4% **lifetime prevalence**, 78% **12-month** prevalence, 66.1% **point** prevalence.	The symptom-survey of the occupational health in nursing practice section was a modification of the standardised Nordic questionnaire.	High WRMDs with poor knowledge of ergonomics. Education programmes on prevention and coping should be made mandatory
van Vuuren, Becker, van Heerden, Zinzen, & Meeusen, 2005	South Africa	Steel industry- 366 plant steel workers.	**Lifetime and annual prevalence** of LBP 63.9% & 55.7% respectively, point prevalence 35.8%.	Functional Rating Index and Occupational Risk Factor questionnaires.	Different occupational risks such as trunk flexing, bulky manual handling, sitting, kneeling and squatting were statistically significant in causing LBP. Regional and industry specific studies to plan preventive measures that are needed.
Abledu & Abledu, 2012	Ghana	Bankers-400 workers with 60.3% response rate (n=241).	**12-month prevalence** of WRMDs 83.5%, LBP 64.8%, upper back 61.7%, neck 47.4%, shoulders 37.4%.	Nordic MSK questionnaire, a modified Goldberg's 12 item General Health questionnaire.	With small sample size, there is a need for a longitudinal study.
Tella, Akinbo, Asafa, & Gbiri, 2013	Nigeria	604 farmers farmers	**12-month prevalence** of LBP 74.4%	A 36-item closed-ended questionnaire translated to the Yoruba language and back with	LBP was a major public health concern, hence prevention needed to be prioritised.

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				content validity ascertained.	
Botha, Chikte, Barrie, & Esterhuizen, 2014	South Africa	Dentists- 400 members of South Africa Dental Association with a 10.9% response rate.	**12-month prevalence** of MSK complaints was 77.9% involving the neck, 69.8% lower back, 72.4% shoulders, 54.5% upper back, 49.7% wrist/hands.	Nordic MSK questionnaire.	12-month prevalence of WRMDs was high with a considerable effect on work and leisure activities. Earliest signs of MSK trouble should have the clinician transferring the patient to a physiotherapist for a tailor made preventive programme.
Gbiri, Osho, & Olumiji, 2012	Nigeria	Welders- 177 welders, all male.	98% had WRMDs with LBP 69.1%, **12-month prevalence** MSK complaints 68.9%, 28.8%, 87.5% MSK complaints were caused by work.	Modified Maastricht MSK questionnaire.	High prevalence of WRMDS amongst welders has a negative impact on job performance, leisure activities, and family roles among Nigerian workers.
Maduagwu, Majindandi, Duniya, Oyeyemi, Saidu, & Bukola, 2014	Nigeria	350 bankers with a response rate of 78.75% (n=275) but only 226 were used.	**12-month prevalence** of LBP, Neck pain and Shoulder pain at 45.13%, 56.64% and 46.02% respectively.	Modified short version Nordic questionnaire.	Bankers should be educated on safety measures regarding correct posture and ergonomics and should be advised on proper exercise programmes to improve their general well being and health.
Onawumi & Babajide, 2012	Nigeria	Taxicab Drivers- 1406	**12-month prevalence** of neck (64%), Rt and Lt Wrist 19%, 19%, upper back, mid-back and lower back respectively 25%, 28% 30.6%, and buttock 27%.	PEIA- Participatory Ergonomic Intervention Approach.	Government should establish an ergonomic department in the Ministry of Productivity/Works to develop a reliable database for different categories of user population in the country to enable user-friendly vehicles for Nigeria's population.
Egwuonwu,	Nigeria	114 quarry workers	**12-month prevalence** of	Standardised Nordic	Study highlighted the health

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Abidemi, Aiyejunsunle, Ezeukwu, Auwal, & Okoye, 2013		with a response rate of 75%	LBP 78.9% and wrist pain at 59.6%.	MSK questionnaire.	problems of quarry workers and if employers minimise the ergonomic challenges this would increase work productivity.
Ojoawo, Onade, Adedoyin, & Okonji, 2014	Nigeria	110 professional drivers, with a response rate of 90.9%	**12-month prevalence** of LBP 63.6%, Shoulder 44.1%, knees 38.9%, neck 33.7%, ankle 32.4%, elbow and hip 28.6%.	Adapted Nordic MSK pain questionnaire.	LBP was the most common site of WRMDs resulting in sickness absence.
Akinpelu, Oyewole, Odole, & Olukoya, 2011	Nigeria	159 occupational drivers	**12-month prevalence** of LBP 64.8%, shoulder 30.8%, knees 27% and neck 17%.	Standardised Nordic MSK questionnaire.	Need to organise education programmes on how to avoid and reduce the impact of ergonomic risk factors.
Yitayeh, Mekonnen, Fasika, & Gizachew, 2014	Ethiopia	Nurses at different government institutions- 389 participants	**12-month prevalence** of LBP 45%, Knee 21.1% and neck 17.2%.	Adapted from Standardised Nordic MSK questionnaire.	Enormous need for ergonomic intervention strategies and education to ensure proper health and safety of nurses. Nurses should also be encouraged to visit the PTs.
Sikiru & Shmaila, 2009	Ethiopia and Nigeria	Nurses- 508 questionnaires used (81.9%) response rate	**12-month prevalence** of LBP as 70.87% but 73.53% and 60% for Nigeria and Ethiopia respectively.	Self-structured validated questionnaire.	Poor knowledge of back care ergonomics and unavailability of lifting equipment are major predisposing factors to LBP in developing countries.
Abaraogu, Olawale, Odebiyi, Ezeukwu, & Ezema, 2012	Nigeria	Bottling workers (301)	**12-month prevalence of Shoulder** (95.4%), neck (93.6%) and LBP (88.1%)	Nordic and Organisational Factor questionnaire	Less time allowed for breaks of work led to longer working hours, hence workers have no control of work, predisposing them to WRMDs.
Ayanniyi, Ukpai, &	Nigeria	Computer and non-computer workers	**12-month prevalence** of LBP 50% vs. 32%, neck	Nordic questionnaire.	Caution should be taken with respect to prolonged no. of

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Adeniyi, 2010		(472)	pain 64% vs. 33%.		hours spent using a computer.
Labeodan, Olaseha, & Olaleye, 2013	Nigeria	Secretarial staff- 240 secretaries, 30 secretaries for observation and 50 HoDs.	**12-month prevalence** of neck (32.5%), upper back (21.7%), elbow (10%), (hip 5%), hand and wrist (23%), ankle and feet (10.8%), knee (9.6%), thigh (14.6%), low back (31.7%) and shoulder (25.8%).	A semi-structured pre-tested questionnaire.	Effort should be made to empower computer users on computer ergonomics.
Odebiyi, Ogwezi, & Adegoke, 2007	Nigeria	Commercial and Private Automobile drivers (C/PAD)– 250 CAD & 250 PAD.	**12-month prevalence** of LBP was 96% in CAD and 88% in PAD.	Structured questionnaire with 33 closed-ended questions.	Drivers should be educated on how to take care of their backs while those who drive long distances should take breaks in between to relax and stretch.
Ekpenyong & Inyang, 2014	Nigeria	Male Construction workers- 1200 workers.	**12-month prevalence** of neck and upper limb (48.2%), trunk and waist (25.3%), lower limb (26.5%).	Nordic MSK questionnaire and the Job Content questionnaire.	Important policy implications for measures to reduce evidence-based risk factors to decrease WRMDs.
Booyens, van Wyk, & Postma, 2009	South Africa	Oral hygienists - 949 with 38% response rate.	Hand 61.3%, neck 66.5%, shoulder 56.6% and lower back symptoms at 59.6%.	Custom designed questionnaire not tested for validity/reliability.	Prevalence of WRMDs in oral hygienists was similar to those of developed countries. Immobile operator stools and patient chairs that were difficult to adjust may contribute to these cases.
El-Bestar, El-Mitwalli, & Khashaba, 2011	Egypt	Video Display Terminal (VDT) users (95).	Prevalence of musculoskeletal disorders higher in VDT users 28.3% than in control 14.3%, cervical disorders 18.3%,	Dutch MSK questionnaire, X-ray.	There was no statistically significant difference in prevalence of neck-upper extremity musculoskeletal disorders among VDT users.

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			carpal tunnel syndrome 6.6%.		The risk increased with older age and static posture.
Younes, Bejia, Aguir, Letaief, Hassen-Zrour, & Touzi, 2006	Tunisia	General Adults- Participation rate was 86.7% (n= 4380).	Disc-related sciatica (DRS) prevalent in heavy manual labourers 43.2%, in heavy lifting 54.6%, vibrations 57.7%.	Physical examination and checking of available radiographs.	Prevalence of DRS was noted and knowledge of risk factors should be used to design preventive strategies aimed at reducing socio-economic burden of DRS.
Zungu & Ndaba, 2009	South Africa	Office workers in a hospital - 85 employees with a response rate of 85.9% (n = 71).	76.1% was the mean prevalence of musculoskeletal disorders. The most commonly affected regions were the back (71.8%) followed by the neck, wrists and shoulders (28.2%).	By asking participants if they were absent from work due to backache or any other musculoskeletal related problem at any time during their employment in this job.	Self-reported WRMDS prevalent with LBP, neck, wrists, shoulders being most affected. Office specific ergonomic programmes should be considered together with on-site curative and multidisciplinary support.
Boro, Mwisukha, & Onywera, 2012	Kenya	Bankers- 450 questionnaires with a response rate of 21% (n = 321).	63.86% suffered from various musculoskeletal injuries. LBP 86%, shoulder 66.7%, neck pain 61.4%, wrist/hands/finger pains was least with 42.4%.	A validated questionnaire.	WRMDs were prevalent with LBP being the highest, thus, calling for exercise ergonomic programmes to be initiated and further research to establish specific causes of MSK injuries.
Taiwo & Babatunde, 2013	Nigeria	Gari-frying workers - 40 (35 women and 5 men).	97.5% pain in shoulder/arm region & 35% back pain.	Elementary survey with a body map, Job hazard analysis survey (quick exposure check), arm reach ratio,	Pain was evident in the gari-frying workers hence advocating for improvement of rest breaks, stretches, and elevation of gari-frying surfaces.

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				Cornell MSK Discomfort questionnaire.	
Comlan, Ezinah, Nambo Wezet, Anyunzoghe, & Obiang Ossoubita, 2007	Gabon	Workers in a wood processing factory - 790 workers with 92.4% response rate.	LBP 64.3%	Standard questionnaire together with secondary data from medical records.	Registration and research of OH diseases should be improved, new criteria developed for assessing WRMDs risk factors, workers safety representatives to have access to information on OHS, compulsory medical examination in all workplaces.
Alazab, 2004	Egypt	Construction Industry- (487)	13.9% had musculoskeletal complaints (neck pain 3.7%, low back ache 5.5%, Osteoarthritis 4.7%).	Study forms (interview sheets) were used to collect the subjects' personal history, occupational history, present history, past history and their history of accidents and injuries. Also included were a general medical examination, local medical examination, the results of laboratory investigations, X-rays, computed tomography (CT), and magnetic	The use of personal protective equipment was advised, as this population did not only have MSK complaints, to transfer workers with WRMDs in other units as well as regular reviews of the safety regulations at work.

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				resonance imaging (MRI).	
Abrahams, Ellapen, van Heerden, & Vanker, 2011	South Africa	Schoolbag carriage among pubescent scholars - 187 pupils participated which is 72.76% of 257 pupils.	**12-month prevalence** of school bag carriage, musculoskeletal pain was 64.97% **(p<0.001),** with vertebral column (40.89%) and shoulders (33.99%) **(p<0.001)**	The pupils' biographical epidemiological, physical activity and lifestyle information were gathered by a parental guided self-reported questionnaire (adapted from Puckree et al. 2004). The musculoskeletal pain questionnaire	These students experienced schoolbag carriage musculoskeletal pain.

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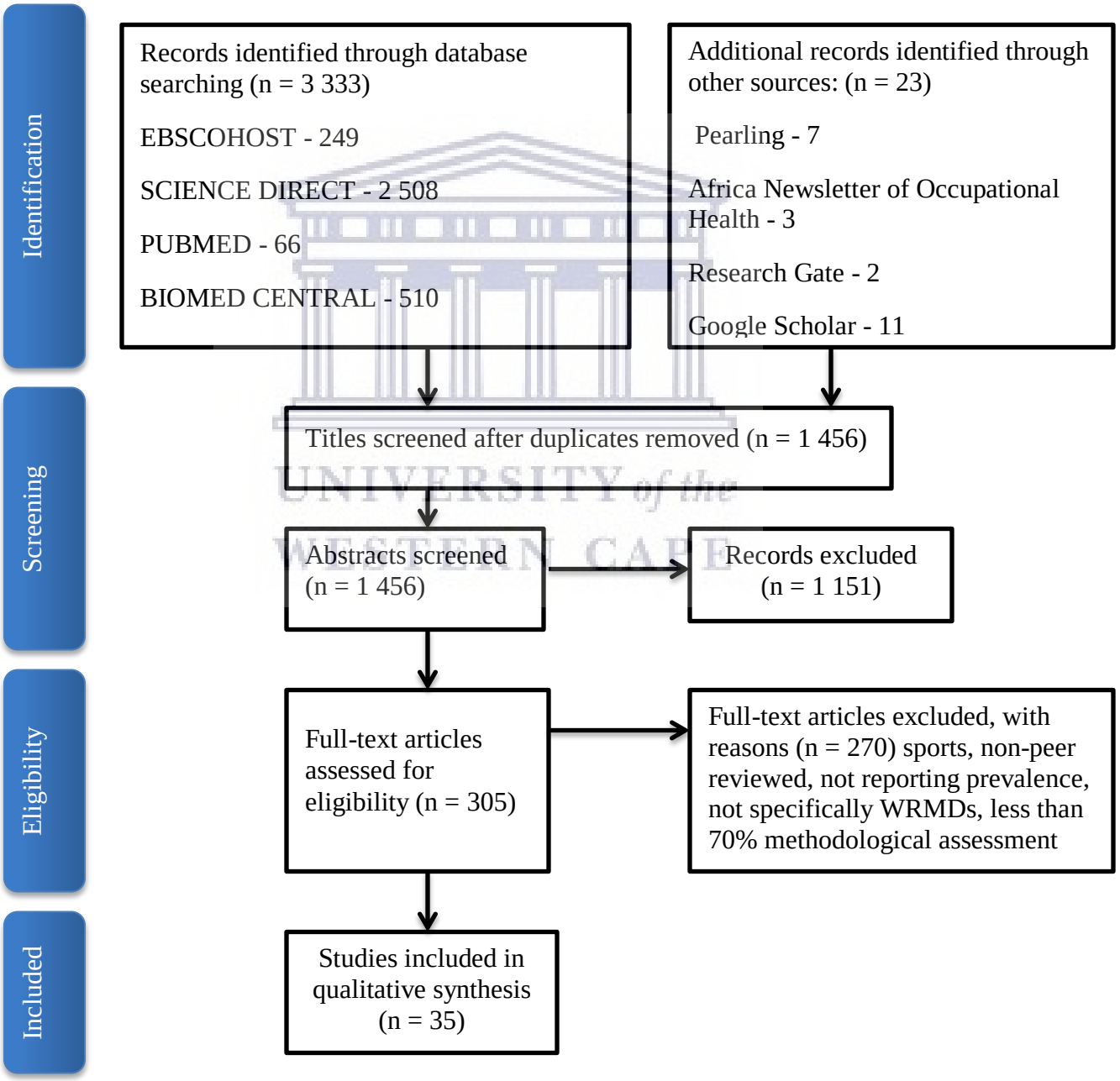
3.7 Results

The systematic search produced a total of 3 356 studies as represented in ***Figure 3.1*** below, which is presented in accordance with the PRISMA guidelines (Moher *et al*., 2015). However, the process in this case was concluded at the qualitative synthesis by using narrative synthesis due to the heterogeneity of the data.

Figure 3.1: Systematic Search by the PRISMA Guidelines



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During the search process two relevant studies focusing on WRMDs in bankers in Kenya and WRMDs in physiotherapists in Zambia (Boro *et al*., 2012; Nkhata *et al*., 2010) were omitted by the search filter. However, they were manually included. During the critical appraisal, only 35 articles qualified to be included in the review. Studies were excluded because they used different definitions of WRMDs (n=13), described *incidences* instead of *prevalence* (n=10), repetition of similar series of studies (n=2), small sample size (n=3) as well as a Master's level theses that were not peer-reviewed (n=3) (**Appendix C**). Sample size justification 48.5% (n=16), reliability 18.2% (n=6) and validity 18.2% (n=6) of the cross-sectional studies were the most inconsistent aspects of the critical appraisal (**Table 3.2**). The study by Abraham *et al*. (2011) did not report on a limitation of the study, which means that the conclusion was not a true reflection of the study.

The systematic review sought to answer the research question "What is the prevalence of work-related musculoskeletal diseases in Africa?" Further results related to this question will be presented in a narrative summary under the categories of Prevalence of WRMDs, Outcome measures used, Occupations and body areas commonly affected by WRMDs and the Distribution of WRMDs across Africa.

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3.7.1 Prevalence of WRMDs

WRMDs are very prevalent in Africa with any musculoskeletal pain ranging from 5.05% to 97.5% (Alazab, 2004; Taiwo & Babatunde, 2013). Duration of time was important when it came to the description of prevalence, and this review identified one study with a one-month prevalence of disabling lower back pain in nurses and disabling wrist and hand pain in office workers (Coggon *et al*., 2013). Twelve-month prevalence of WRMDs was reported by 20 studies, three gave a lifetime prevalence, and the remaining 11 studies

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did not give any time frame specifications of the reported prevalence. This is as presented in the data extraction results in **Table 3.3** above.

3.7.1.1 Outcome Measures

The standardised Nordic musculoskeletal questionnaire or a modified form of it was used by 45.7% (n = 16) of the studies and two studies used the Dutch Musculoskeletal Questionnaire (El-Bestar *et al*., 2011; Munabi *et al*., 2014). Other studies 5.7% (n = 2) used physical medical assessment as part of the criteria to determine WRMDs (Alazab, 2004; Younes *et al*., 2006), and ergonomic and anthropometric principles respectively (Onawumi &Babajide, 2012; Taiwo *et al*., 2013). Some studies adapted standardised tools but they did not report on the reliability and validity of the newly adapted questionnaires (Coggon *et al*., 2013; Egwuonwu *et al*., 2013 ; El-Bestar *et al*., 2011). Some studies did not report on any of the instruments that were used (Booyens *et al*., 2009; Zungu & Ndaba, 2009). Other studies described such a variety of outcome measures that it was difficult to decide on which tool to use in the report (Abrahams *et al*., 2011; Adegoke *et al*., 2008; Taiwo & Babatunde, 2013; Tella *et al*., 2013). A summary of the standardised outcome measures used in this review is provided in ***Table 3.4*** below.

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Table 3.4: Outcome measures used in the systematic review

Outcome Measure	Validity & Reliability
Nordic Musculoskeletal Questionnaire (n = 16)	(Kuorinka, *et al*., 1987)
Dutch Musculoskeletal Questionnaire (n = 2)	(Hildebrandt, Bongers, van Dijk, Kemper, & Dul, 2001)
Maastricht Upper Extremity Questionnaire (n = 2)	(Eltayeb, Staal, Kennes, Lamberts, & A de Bie, 2007)
Cornell Musculoskeletal discomfort questionnaire (n =1)	(Erdinc, Hot, & Ozkaya, 2011)
Functional rating index (n = 1)	(Felse & Menke, 2010)
Occupational Risk factor Questionnaire (n = 1)	(Halpern, Hiebert, Nordin, Goldsheyder, & Crane, 2001)
Participatory Ergonomic Intervention Approach (n = 1)	(Rivilis, *et al.,* 2008)
Organisational Factor Questionnaire (n = 1)	(Ergonomic working group, 2000)
Job content Questionnaire (n = 1)	(Karasek, Brisson, Kawami, Houtman, Bongers, & Amick, 1998)

3.7.2 Occupations and commonly affected body areas by WRMDs

The occupation that was most reported with participants who experienced WRMDs, according to Figure 3.2 below was the administrative sector. The instrumentalists, school students' and the general population were the least represented with just one study each. The lower back was the most commonly affected body part with 62.8% (n = 22) of the studies reporting on this. The body part that was least reported on was the ankle which had the lowest frequency of occurrence at 25.7% (n = 9).

In the administrative sector all studies reported on the presence of wrist pain, at 100% (n = 9), followed by the neck at 88.8% (n = 8) and lower back at 77.7% (n = 7). However the average prevalence of LBP was 52%, followed by the neck at 45.8% , and then the shoulders at 42.8%. Wrist and hand pain had a mean prevalence of 22% and the hips were least affected at 12.5%. Administrative work mostly involved the use of computers

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by bankers and office workers (Abledu & Abledu, 2012; Ayanniyi *et a*l., 2010; Boro *et al*., 2012; Coggon *et al*., 2013; El-Bestar *et al*., 2011; Labeodan *et al*., 2013; Maduagwu *et al*., 2014; Zungu & Ndaba, 2009).

Health workers reported the highest mean prevalence of LBP at 59.1% with all studies in the health sector category reporting LBP in their samples (n = 8). General work was obtained from census data from an urban population in Tunisia (Younes *et al*., 2006) with LBP at a prevalence of 13%. A study by Abrahams *et al*. (2011) amongst school students showed an increased prevalence of vertebral complaints as a result of carrying schoolbags (40.89%), whereas South African instrumentalists showed a general prevalence of 82.35%, with the upper back injuries having the highest prevalence of 31.25% (Ajidahun & Philips, 2013). Lower back pain had a mean prevalence of 63% (n = 4) among taxi drivers, with a study by Odebiyi *et al.* (2007) reporting a prevalence of 92%.

The neck was the second most prevalent body area that was affected by WRMDS (60% ; n = 21), with high frequencies observed in administration workers (n = 8) and health professionals (n = 7). Administrative workers mostly included those using computers with a high prevalence at 64% (Ayanniyi *et al.*, 2010; Eltayeb *et al*., 2007) with lowest at 12.5% in video display terminal users in Egypt (El-Bestar *et al*., 2011). Coggon *et al.* (2013) reported that there were no neck symptoms in the office workers included in their study. Within the health profession, dentists reported the highest prevalence of neck pain at 77.9%, followed by oral hygienists at 66.5% (Botha *et al.*, 2014; Booyens *et al*., 2009).

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Shoulder pain was reported to be the most affected region in farming and domestic workers at 97.5% among gari fryers in Nigeria (Taiwo & Babatunde, 2013). Figures 3.2 and 3.3 below presented the common occupations of affected participants as well as the associated prevalence of WRMDs.

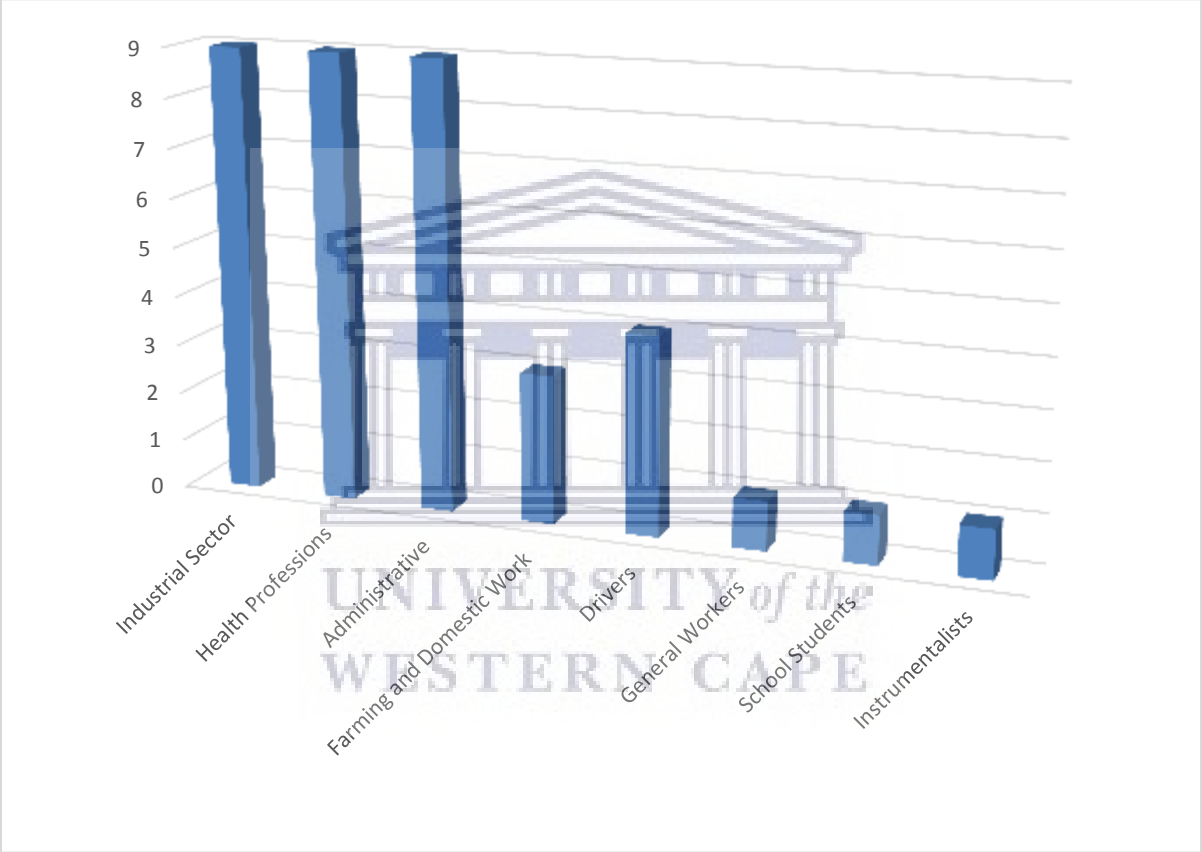

Figure 3.2: Occupations with participants who are most affected by WRMDs within Africa (n = 35)

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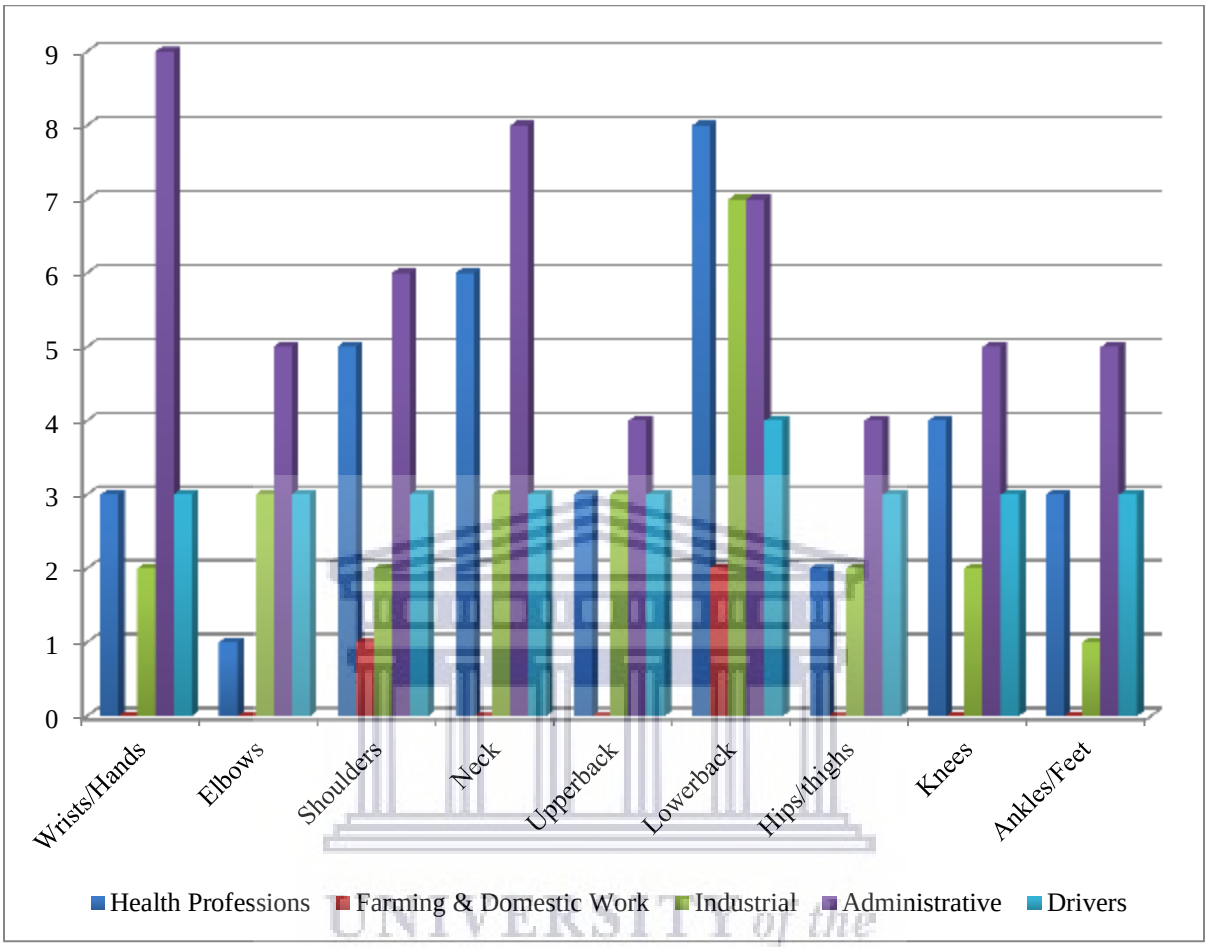

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Figure 3.2: Prevalence of WRMDs by occupation (n = 35)

3.7.3 Distribution of WRMDs across Africa

Figure 3.4 represents the eleven countries from which the data was collected that represents only 20.4% of the fifty-four sovereign African countries. The majority of the studies were conducted in Nigeria (48.6%; n = 17) and South Africa (22.9%; n = 8) respectively whereas Kenya, Uganda, Sudan, Tunisia, Egypt, Ghana, Gabon and Zambia had only single studies each. There were reports of every cadre of occupations shown in

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figure 3.8 in both Nigeria and South Africa. However, it was noted that there was only one study that reported on WRMDs in instrumentalists in South Africa (Ajidahun & Phillips, 2013), and one that reported on schoolgoing children (Abrahams *et al*., 2011) whereas all the studies on drivers (n=4) were from Nigeria (Akinpelu *et al*., 2011; Ojoawo *et al*., 2014; Onawumi & Babajide, 2012; Odebiyi *et al*., 2007). Tunisia is the only country in which a study included workers in general (Younes *et al*., 2006). The prevalence of WRMDs in this review were mainly reported by physiotherapists, which included the Medical Rehabilitation Departments 51.4% (n = 18), followed by the Public Health Department, which included the Epidemiology and Occupational health departments 8.6% (n = 3). Biokinetics, Recreation and Exercise Science made up 8.6% (n = 3) whereas Engineering and Dentistry departments had 8.6% (n = 3) and 5.7% (n = 2) respectively. The remaining reports were from Anatomy and Surgery departments (n = 2), Rheumatology (n =1), Medicine (n = 2) and Orthopaedics and Trauma (n = 1) departments.

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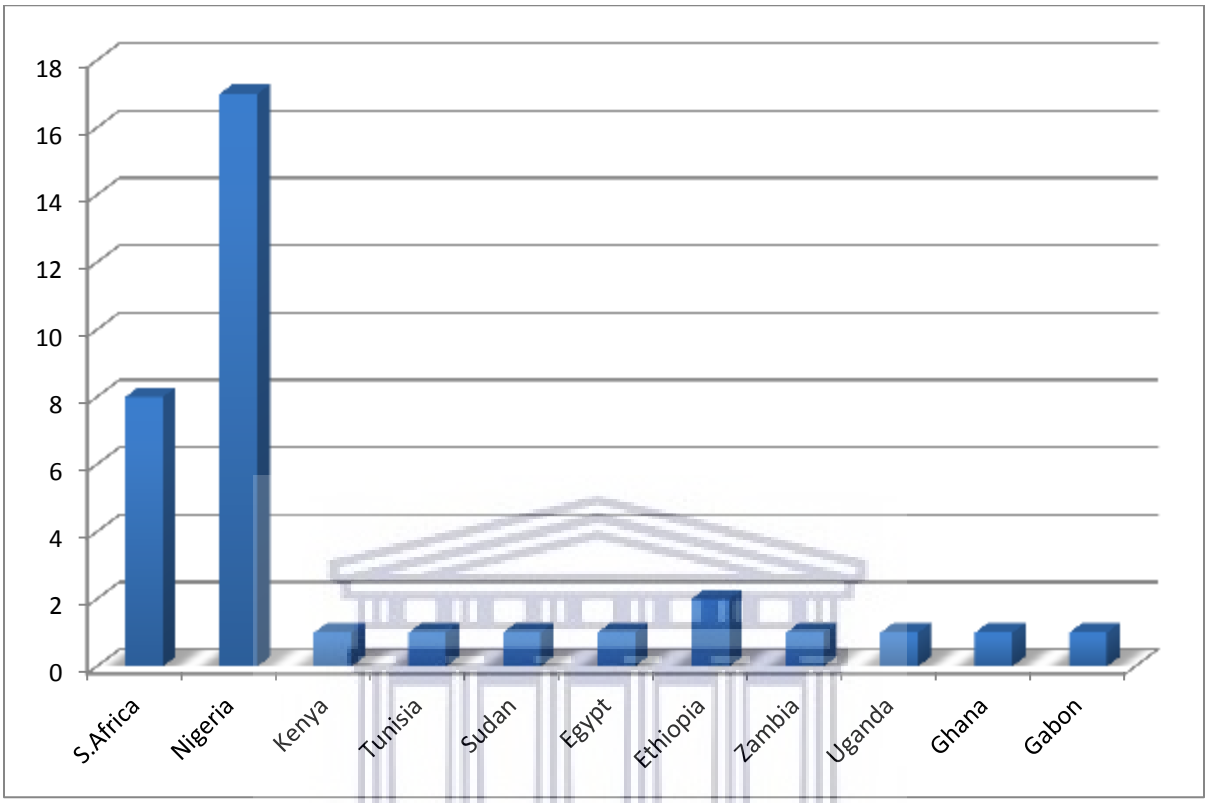

Figure 3.3: Countries where systematic reviews were conducted (n = 35)

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3.8 Discussion

The aim of this systematic review was to determine the prevalence of WRMDs in order with step one of the conceptual framework which seeks to define the deficits in knowledge, skills, or attitudes that currently exist in practitioners, and an appropriate method for teaching (Thomas & Kern, 2004). The general needs assessment in terms of the prevalence of WRMDs in Africa would therefore help to make an argument for what needs to be included in the curriculum and seeking to identify potential research questions that will help to plan the curriculum.

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3.8.1 Prevalence of WRMDs

This review included a range of studies that were used to determine the prevalence of WRMDs in Africa. While Pearce (2012; 2011) demonstrated that cross-sectional studies are unable to distinguish associations within WRMDs which affect the epidemiological results, Louw *et al.* (2007) and Fineout-Overholt and Johnston (2005) suggest that studies setting out to investigate prevalence are mostly cross-sectional in nature and can give researchers insight into the extent of the problem. In comparison with other systematic reviews or primary studies focusing on the prevalence of WRMDs, cross-sectional design formed the bulk of these studies (n = 33) thus demonstrating their use to determine prevalence (Tirgar, Khallaghi, & Taghipour, 2013; Osborne, *et al.*, 2012; Waersted, Hanvold, & Veiersted, 2010).

3.8.1.1 Prevalence of WRMDs *versus* outcome measures used

Work-related musculoskeletal disorders (WRMDs) are multifactorial in aetiology and therefore different questions are needed to determine the causation of the musculoskeletal disorders arising from work-related situations (Harcombe, McBride, Derrett & Gray, 2010; Wanyonyi *et al.*, 2015). Some of the multifactorial aetiologies include physical work, individual and environmental factors. Various outcome measures became evident in this review and were thus used to identify the various causative risk factors. The Nordic Musculoskeletal questionnaire is widely known for measuring musculoskeletal disorders arising from occupational factors in terms of the annual, monthly and one-week prevalence (Kuorinka, *et al.*, 1987). Sixteen studies (45.7%) in this review used the Nordic Musculoskeletal questionnaire to describe the 12-month prevalence of WRMDs, similar to other systematic reviews describing the prevalence of WRMDs (Osborne, *et*

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al., 2012; Oude Hengel, Visser, & Sluiter, 2011). The Dutch Musculoskeletal questionnaire also reports on the 12-month prevalence of musculoskeletal pain (Hildebrandt *et al*., 2001). However, only one of the studies that used it reported the 12-month prevalence of LBP (Munabi *et al*., 2014) and the other study did not categorise the time frame for neck and upper extremity disorders at all (El-Bestar *et al*., 2011).

Self-reported data and the duration of exposure has been seen as a limitation in most prevalence studies due to recall bias. For this reason, physical examination, in combination with other ergonomic and anthropometric data, can provide more useful detail on the nature and risk-factors for WRMDs. This was seen in some of the studies in this review (Adegoke *et al*., 2008; Ayanniyi *et al.,* 2010; Boro *et al.,* 2012; Chidozie *et al.,* 2012; Munabi *et al.,* 2014; Yitayeh *et al.,* 2014). The Functional Rating Index (Felse & Menke, 2010), Occupational Risk Factor questionnaire (Halpern *et al*., 2001), Participatory Ergonomic Intervention Approach (Rivilis *et al.,* 2008), Organisational Factor questionnaire (Ergonomic working group, 2000) and Job Content questionnaire (Karasek *et al.,* 1998) are some of the other standardised outcome measures that are specific to measuring the multifactorial constructs of WRMDs. However, other authors of studies included in this review had translated the standardised outcome measures with no reports of the findings after translation, hence the validity and reliability of these studies were questioned. In other instances, the authors did not report on the outcome measure at all, which has also been reported in other systematic reviews (Kumaraveloo & Kolstrup, 2018; Oude Hengel *et al.,* 2011), affecting the methodological quality of these studies. Future research should aim at identifying specific outcome measures that can clearly be

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used to determine the prevalence of WRMDs and authors should provide all the necessary information regarding the outcome measures they used.

It is therefore reasonable to state that the outcome measure used was the most important determinant of how the prevalence was reported. Boyle (1998) stated that identical methods of assessment and data collection are important to ensure comparison during analysis. Thus, the use of similar standardised outcome measures will enable appropriate pooling of results for the better analysis of outcomes (Jun, Zoe, Johnston, & O'Leary, 2017). The results of this review must thus be interpreted with caution when considering the different outcome measures that were used, even though they were standardised. Future systematic reviews should consider including studies that used similar outcome measure tools in order to verify that the constructs being measured are similar, making it easier to compare prevalence results. In determining the prevalence of WRMDs it seems that 12-month prevalence is the most common in studies that were conducted in Africa.

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3.8.2 Prevalence of WRMDs *versus* country of data origin

The continent of Africa was fairly represented in this review, with studies being conducted in 11 (20.4%) countries. Nigeria had a high number of articles in several cadres but especially among taxi drivers and industrial and health sector workers. South Africa was the country with the second highest number of studies included in this review. The systematic review on the prevalence of lower back pain by Louw *et al*. (2007) also showed that most studies were conducted in South Africa and Nigeria, which is similar to their recent update in 2018 where Nigeria had 47% (n = 31) and South Africa 25% (n = 16) of the included articles respectively (Morris, Daniels, Ganguli, & Louw, 2018). A study by Frantz (2007) on the challenges facing physiotherapy education in Africa

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showed that physiotherapy was only offered in countries such as South Africa, Zambia, Zimbabwe, Kenya, Tanzania, Uganda, Nigeria, Ethiopia, Rwanda and Egypt. At the time it was also evident that in the majority of countries it was being offered at a Diploma level, hence the lack of an effective research component. The above-mentioned countries are similar to those that have presented WRMDs in Africa in this review apart from Rwanda and Zimbabwe and currently offer degree programmes in physiotherapy which could be translated to inclusion in the research.

The World Confederation for Physical Therapists (WCPT) has specified that occupational health is a specialised area in physiotherapy (WCPT, Policy statement: Description of Physical Therapy, 2013b) and a question that arises is how much these countries have grown in relation to reporting of WRMDS by physiotherapists? Gupta *et al.* (2011) stated that there was limited availability of health personnel who were skilled in physical and rehabilitation medicine services in low and middle-income countries. Similarly, the study by Padula, Oliveira, Carregaro and Sato (2016) revealed that occupational health and ergonomics (OHE) is a new field hence with limited research impacting the scientific field of OHE and hence calling out for the need of more studies to strengthen the quality of research in this field. It is also evident that physiotherapists are not the only health professionals who were interested in reporting of WRMDs. This therefore demonstrates a multidisciplinary involvement in the competencies that are needed to holistically address WRMDs.

Some of the studies included in this review were from the engineering field, which, when one focuses on WRMDs in drivers (Onawumi & Babajide, 2012), they need to have competencies on the assessment of drivers' workspace elements, for example, the

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steering wheel, clutch, brake and pedals, in relation to the driver's ergonomic suitability. These assessment skills are hardly found within physiotherapy training from the researcher's experience in Kenya. In Israel, a study of LBP in professional bus drivers was led by a physiotherapist who highlighted the ergonomic factors associated with LBP as being a lack of a comfortable seat and back support (Alperovitch-Najenson, Santo, Masharawi, Katz-Leurer, Ushvaev, & Kalichman, 2010). Studies of urban bus drivers in Hong Kong and urban taxi drivers in China were conducted by the Rehabilitation Science and the Epidemiology/Occupational Health Departments respectively, with both showing anthropometric properties of drivers as well as ergonomic factors of the workspace elements as determinants of WRMDs in drivers (Chen, Chang, Chang, & Christiani, 2005; Szeto & Lam, 2007). According to Fay, Borrill, Amir, Haward and West (2006), multidisciplinary teams provide the scope of knowledge, skills and abilities to undertake complex decision-making and problem-solving expertise, thus improving the quality of a team's performance. The presence of physiotherapists and rehabilitation professionals involvement in 51.4% (n = 18) of the studies in this review may be seen as a fairly good representation. This highlights the importance of an interdisciplinary approach to identifying and managing the causes of WRMDs.

Occupational health in physiotherapy dates back to 1923 when the Arthur Guinness Brewing Company employed a physiotherapist in order to save time for the firm by providing treatment facilities on site and providing job-specific rehabilitation to employees (Richardson & Eastlake, 1994). Over time, the role of the physiotherapist has diversified to focus more on the preventive aspect of work and thus decrease the chances of being injured at work (Chetty, 2013; Chetty, 2011; Eastlake, 1994; Larson & Miller,

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2005). In the current review, it was clear that physiotherapists were involved in 50% (n = 4) of the industrial sector studies (n = 8). A study by Smith, Roberts, and Balme (2000) identified an overlap in occupational health screening between the physiotherapists and occupational therapists, although in this review there were no studies which described the involvement of occupational therapists. The outcome of this review has identified the emerging role of physiotherapists in occupational health whereby they make useful contributions in assisting under-resourced occupational health clinicians to manage their workload (Chetty, 2014).

3.8.3 Prevalence of WRMDs *versus* the professional cadres affected

The results of this review were heterogeneous in that the samples ranged from employees at bottling companies, taxi drivers, nurses, to instrumentalists, among others. It is therefore evident that WRMDs are prevalent in Africa among a variety of professions and it would thus be easier to make comparisons with other data from professional perspectives as reported in the literature. This systematic review highlighted a high prevalence of WRMDs in Africa, ranging from 5.05% in construction workers in Egypt to 97.5% in gari-frying women in Nigeria (Alazab, 2004; Taiwo & Babatunde, 2013). While the wrist showed the highest prevalence in administrative workers (100%; n = 9) (See figure 3.3), it had an overall mean prevalence of 54.3% (n = 19) thus rendering lower back pain with the overall highest mean prevalence of (88.6%; n = 31). The health profession was the professional cadre affected with the highest prevalence of LBP (25.8%; n = 8) whereby all health professions complained of LBP ranging from a minimum of 44.1% to 70.9% in nurses (Sikiru & Shmaila, 2009; Tinubu *et al.,* 2010). The majority of the studies reported in the health professionals cadre was by nurses

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(44.4%; n = 4) with the low back region being mostly affected (Munabi *et al.*, 2014; Sikiru & Shmaila, 2009; Tinubu *et al.*, 2010; Yitayeh *et al.*, 2014). Lifting was identified as a major cause of WRMDs in nurses, as well as activities which involves a lot of awkward postures for example, while delivering mothers in the maternity unit (Sikiru & Shmaila, 2009) and during administrative and academic responsibilities (Tinubu *et al.*, 2010). The findings of this study are in agreement with a previous systematic review on the prevalence of WRMDs in nurses, where the lower back was identified as the most symptomatic body region (Ellapen & Narsigan, 2014).

Most of these studies recommended refresher courses on ergonomic education and the provision of lifting aids at work, as this has been shown to be effective in decreasing LBP (de Castro, 2004). A study on Egyptian physiotherapists also showed the neck (25%) and lower back (23.4%) as the most affected anatomical sites whereas for Saudi Arabian physiotherapists it was the lower back (33%) and the neck (29%) (Al-Elisa, Buragadda, Shaheen, Ibrahim, & Melam, 2012). This is similar to the findings of this study, which found that physiotherapists were mostly affected at the lower back (69.8%), neck (31.1%) and the shoulder (22.2%) (Adegoke *et al*., 2008). These studies suggest prevention strategies for WRMDs, including the modification of work habits.

In the industrial sector, seven studies (87.5%) had participants complaining of LBP with a mean prevalence of 54% and highest of 88% among a bottling company in Nigeria (Abarogu *et al.*, 2013) and a minimum of 5.5% in Egyptian construction workers (Alazab, 2004). Other studies conducted among construction workers in Malaysia, the Netherlands and India showed a high prevalence of WRMDS at 45%, with 42% in brick layers and 30% in construction supervisors as well as 92% in the lower back region

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respectively (Bodhare, Valsangkar, & Bele, 2011; Boschman, van der Molen, Sluiter, & Frings-Dresen, 2012; Deros, *et al.,* 2014).

Farming and domestic work is a common practice in developing countries, which does predispose workers to unique injuries (Naidoo & Haq, 2008). A systematic review among farmers in Ireland showed a 12-month prevalence of WRMDs of 76.9% (Osborne, *et al.*, 2012). The differences observed in the prevalence among gari-frying women in Nigeria and the Irish farmers could be what Naidoo and Haq (2008) meant when they said that there were challenges when comparing WRMDs, especially between developing and developed countries. Very specific and common tasks like gari making are unlikely to be found outside the West-African region. Developed countries may not suffer from these unique injuries due to sophisticated technology that allows them to avoid manual labour. Similarly, there is paucity of literature with respect to agriculturally-related musculoskeletal disorders and their risk factors as was also evident by the review by (Kumaraveloo & Kolstrup, 2018). A study by Tewari, Dewangan and Karmakar (2004) in India, found a decrease in operator's fatigue and a 27% decrease in work-related body pain in those who used hand tractors with seats rather than those without seats. A study in Gambia investigated the effect of new long and new short-handled hoes, which were regarded as being safer, easier to use and more efficient than their traditional hoes (Vanderwal, Rautiainen, Kuye, Peek-Asa, Cook, & Ramirez, 2011). The study identified a decrease in the incidences of neck, shoulder, arm, lower back and leg discomfort in comparison with the use of the traditional hoe. The benefits of the new hoes, and their acceptability among men made it possible for 22.9% and 70.8% of the study participants to use the long-handled and short-handled hoes respectively, for 75% of their time, two

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months after the trial was over (Vanderwal *et al.*, 2011). While there is often resistance to newer forms of technology, there is still tangible evidence of behavioural changes and compliance when using modified equipment as long as there is evidence of the potential benefits with respect to decreasing WRMDs. This emphasises the need to find prevention programmes specific to farming hazards in Africa.

All administrative cadres had reports of wrist complaints with variations from 3% in Bankers in Ghana (Abledu & Abledu, 2012) to the highest of 42.4% in Kenyan Bankers (Boro *et al.*, 2012). While there is evidence that computer work is a risk factor for musculoskeletal symptoms in the upper limbs (Griffiths, Mackey, & Adamson, 2007), some studies have shown mixed outcomes with regards to the risk factors for wrist pain in administrative workers. Studies done in the Netherlands and the UK found limited evidence of an increased prevalence of carpal tunnel syndrome in computer workers. However, we also cannot ignore the fact that all of the administrators in this systematic review complained of wrist pain (Palmer, Harris, & Coggon, 2007; van Rijn, Huisstede, Koes, & Burdorf, 2009). A different set of studies found wrist and hand complaints as well as neck pain among computer users (Bongers, Ijmker, van den Heuvel, & Blatter, 2006; Korhonen, Ketola, Toivonen, Luukkonen, Hakkanen, & Viikari-Juntura, 2003). Additional studies on the associated risk factors for wrist and hand complaints in the African context needs to be conducted in order to identify the appropriate preventive strategies that should be implemented.

The lower back was the most symptomatic region among drivers in this study, which were mostly attributed to prolonged and akward postures and vibration. Studies conducted among Israel's professional bus drivers and Taiwanese taxi drivers showed a

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45% and 51% prevalence of LBP respectively, which were attributed to the same risk factors noted above (Alperovitch-Najenson *et al.,* 2010; Chen *et al.,* 2005). Prevention strategies for the associated risk factors among drivers included seat adjustments to prevent musculoskeletal disorders within this population.

A systematic review conducted of musicians found a range of musculoskeletal disorders as a result of playing their instruments (Bragge, Bialocerkowski & McMeeken, 2006). Their review focused on pianists whose prevalence of musculoskeletal disorders varied from 26% to 93% and is similar to the findings of this review where the prevalence among instrumentalists was 82.4%, despite the fact that ten participants played a string instrument, seven played the piano and three played a wind instrument (Ajidahun & Phillips, 2013; Bragge *et al.*, 2006). A later study among South African string instrumentalist orchestra players was conducted by Ajidahun, Mudzi, Myezwa and Wood (2017), which showed a prevalence of 77% in any body part. Similarly another study on South African undergraduate music students also showed a prevalence of 83% of musculoskeletal and related health problems (Panebianco, 2017). Despite the approximate similarities in their prevalence these results must be interpreted with caution as they did not use similar outcome measures, making it difficult to make proper comparisons. The other methodological limitation was the varied duration of time that the participants had with regards to the playing of the instruments. In addition, some studies focussed on professional players while others focused on students. Future studies need to embrace more systematic processes for determining the prevalence of conditions in Africa, as well as strategies for prevention. Evidence-based risk factors for those playing musical instruments should be determined and documented so as to allow preventive

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action, particularly with respect to instruments that are unique to the African community.

One study in this review sought to go further and determine the prevalence of disc-related sciatica in a general population in Tunisia, rather than only look at LBP (Younes *et al.*, 2006). A Finnish study conducted by the occupational health services among the general population revealed that multi-site pain should be screened in workers instead of only the traditional single-site pain (Miranda, *et al.,* 2009). This is because multiple-site pain was predictive of decreased work ability which would benefit from early, targeted preventive measures.

In this review, back pack carrying among school-going children was associated with musculoskeletal pain (Abrahams *et al.*, 2011; Haselgrove, Straker, Smith, O'Sullivan, Perry, & Sloan, 2008). The carrying of back packs is not the only activity that leads to musculoskeletal pain in school going children. There are other risk factors to be considered, including geographical and socio-economic differences that needs to be determined before targeted primary prevention can be implemented.

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3.9 Implications

Thirty-five studies were critically analysed and discussed in this review and their implications are now presented with respect to the major occupational cadres identified during the data analysis.

Industrial cadre: There is need for identification of evidence-based risk factors in the industrial sector and follow up preventive methods should be taken immediately. Medical check-ups for workers in this sector should also be made mandatory, as well as ensuring

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compliance with the occupational safety and health guidelines (Alazab, 2004; Comlan *et al*., 2007; Kunda *et al*., 2013; van Vuuren *et al*., 2005).

Agriculture and domestic work: Three studies concluded that there is a need for preventive ergonomic practices so as to decrease musculoskeletal pain within this population (Naidoo *et al.*, 2009; Taiwo *et al.*, 2013; Tella *et al.*, 2013).

Health Cadres: Several studies noted a lack of ergonomic knowledge and, proper biomechanics when using equipments for example dentists on a dental chair. Studies thus suggested the need for ergonomics information to be included in curricula, as well as having multidisciplinary involvement in the prevention of WRMDs with tailor made physiotherapy programmes (Sikiru & Shmaila, 2009).

Administrative cadre: Computer ergonomics and specific exercise prevention programmes should be provided. Further studies on associated risk factors should be conducted (Ayanniyi *et al*., 2010; Boro *et al*., 2012; Labeodan *et al*., 2013; Maduagwu *et al*., 2014; Zungu & Ndaba, 2009).

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Drivers: Only Nigerian studies reported on the prevalence of WRMDs in drivers and education on ergonomic risk factors in driving was deemed to be necessary. In addition, investment by the government in determining the needs of the population was necessary in order to ensure that imported vehicles would suit the majority of the population (Akinpelu *et al*., 2011; Odebiyi *et al*., 2007; Onawumi & Babajide, 2012).

3.10 Study limitation

Driscoll's findings highlighted the challenges of conducting prevalence studies in terms of the study design, sampling of participants, outcome measures used, and the

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confounding factors that may affect the outcomes of epidemiological studies (Driscoll, 2011). From an evidence-based perspective, the majority of the studies in this review were of Level 3a according to the Centre for Review Guidelines (CRD) hierarchy of evidence in Table 1 (Kitchenham, 2004).

This review of WRMDs focussed on different types of professional cadres, making comparisons between studies difficult owing to the heterogeneity of the data. While the narrative synthesis used in this study may be considered as a strength because it highlights further areas of research; the inability to quantitatively summarise the findings in a meta-analysis was considered to be a limitation. .

Publication bias may also be an important limitation for this study even though efforts were made to include the grey literature. Exclusion of articles not written in English may be a limitation considering that not all African countries use English as their first language of communication.

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3.11 Recommendations

Most studies in this review recommended education or the modification of risk factors with regards to ergonomics (Maduagwu *et al.,* 2014; Naidoo *et al.,* 2009; Onawumi & Babajide, 2012; Sikiru & Hanifa, 2010). Some other studies recommended exercises to be considered (Sikiru & Hanifa, 2010) that had some evidence in support of their efficacy (Chen, Coombes, Sjoogard, Jun, O'Leary, & Johnston, 2018; Da Costa & Vieira, 2008; Sjogaard, *et al., 2*016). In addition, participatory ergonomics interventions showed evidence of decreased musculoskeletal injuries (Tsang, So, Lau, & Szeto, 2018; Williams, Westmoreland, Lin, Schmuck, & Creen, 2007) and a reduction in work absence as a result of sickness (Rivilis *et al.,* 2008).

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Health promotion emerged as a general recommendation in all avenues, taking us back to the discussion around whether or not physiotherapists have the required competencies for this. Especially in the case of driving where one needs to understand the interaction between the vehicles components and the driver. This process requires anthropometric analysis, which means that it would need to be covered in the undergraduate curriculum. In as much as occupational health is an interdisciplinary field, most people affected with WRMDs are referred to see physiotherapists and doctors (Botha *et al.,* 2014; Louw *et al.,* 2007; Wanyonyi, Frantz & Hassan, 2015; Yitayeh *et al.,* 2014), thus suggesting a need for the inclusion of the required competencies in the curriculum. The systematic review by Louw *et al.* (2007) on the prevalence of low back pain and its recent update in 2018 also had similar recommendations for the primary prevention of low back pain (Morris *et al.*, 2018). To the knowledge of the researcher this was the first systematic review to have reported on the prevalence of WRMDs within Africa. The identification of evidence-based risk factors that are specific to the unique tasks carried out in Africa needs to be prioritised and preventive programmes developed for an African context.

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3.12 Conclusion

This systematic review completes step one of the study's conceptual framework, which sought to identify the problem and general needs assessment of society. Work-related musculoskeletal disorders are prevalent in Africa and they affect professionals in different cadres, including health care practitioners, thus affecting their quality of health, work ability and quality of life. Future studies should endeavour to present findings of the various cadres so as to create databases that will enable better comparison of data within the specific cadres and across countries. In addition, researchers should also strive to

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investigate the hazards that are associated with some of the unique activities within the African context.

It is evident that there are various stakeholders involved in the identification and prevention of WRMDs. Different outcome measures that are dependent on the professional cadre were used to describe the ergonomic deviations and subsequent WRMDs. International Labour Organisation (ILO) stated that the multifactorial aetiology of WRMDs is a limitation in their reporting. The use of standardised tools for the consideration of these factors will help countries develop databases that will make it easier for prevention strategies to be formulated. Multidisciplinary involvement will fulfil the tripartite relationship needed between the workers; the employer and other stakeholders involved with WRMDs, so as to curb the negative effects of work-related hazards on employees.

Finally, the challenge for medical educators is to ask if the medical trainee is fully equipped with the necessary competencies to address WRMDs? Various studies have highlighted the need for employees to be educated with respect to the ergonomic–related factors tthat lead to WRMDs. While acquired knowledge is not directly translated to behaviour change, all stakeholders should be able to identify the enabling factors in the work environment for example ensuring compliance with OSH legislations and regular medical check-ups. This should be led from the medical perspective and expand to other stakeholders.

Currently, occupational health is included in the undergraduate physiotherapy curriculum in Kenya, which is an improvement from the Diploma training in Physiotherapy. The next chapter will present the findings of the document analysis that made use of the

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occupational health competency framework in order to identify the assessment and determination of the required competencies in terms of the knowledge, skills and attitudes necessary to address the effects of WRMDs in the Kenyan context.

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CHAPTER FOUR

DOCUMENT ANALYSIS

4.1Background

Document analysis is a type of audit where documents are analysed in order to gain a clearer picture of a situation that is being investigated (Bowen, 2009). Although documents alone can by no means give a complete picture of an organisation's approach, they may provide an indication of where efforts and aims are focused (Ward & Wach, 2015). Curriculum content can be used as documents (Harden, 2009). Hence, in this study, analysis of the occupational health content in the physiotherapy undergraduate curriculum in Kenya was done to determine its alignment with the occupational health competency framework (Owen & Hunter, 2012).

This study was guided by the six-step model of curriculum development (Kern, 2009) as a conceptual framework. Step one of the study aimed at problem identification and a general needs assessment of work-related musculoskeletal disorders (WRMDs) in Africa through a systematic review. It was evident that WRMDs were prevalent in Africa and that physiotherapists, among other health personnel, were responsible for managing these disorders. Recommendations were made for educators to equip learners within Africa with the necessary competencies required to prevent the occurrence of WRMDs which is one of the challenges that has faced physiotherapy education within this region (Frantz, 2007).

Step two of the conceptual framework aimed to describe the crucial factors to be considered from the outcome of the analysis of the occupational health curriculum

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content. This step of the conceptual framework occurred at two levels that are focusing on the targeted learners and on the targeted institution/learning environment. The curriculum developer (the researcher) in this instance, identified the differences between the actual and ideal characteristics of the targeted learner group as well as their environment. This was the previous situation in Kenya where physiotherapy training was only offered on the Diploma level and with the exclusion of occupational health (OH) content. However, the need for improved competencies in physiotherapy services has given rise to the development of undergraduate physiotherapy programmes in two universities, which started in 2010. This has meant that it was the educators' responsibility to identify the differences between what should have been included in the OH module and what was currently being taught. Therefore, the document analysis in this study aimed to determine the actual characteristics of the learners in the programme, as well as their environment, as it related to the occupational health content in the undergraduate physiotherapy curriculum in comparison to the OH competency framework.

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According to Prior (2003) as cited in Owen (2014), a university's operations are found in its documents rather than its buildings. Owen emphasised the significant role of the curriculum documents in universities. Coffey (2014) also suggested that 'an institution's' documents provide evidence of how it is run. Good curriculum content enhances the implementation of the curriculum with regard to the educational objectives, content, teaching and learning activities, resources and student assessment (Harden, 2009). The end result of a properly implemented curriculum is the graduation of a student with the relevant competencies to practice in the field.

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The needs assessment of the learner as per the conceptual framework of this study involved finding the information that was most needed by the learner in terms of the content as well as their environment. Learners' content could include:

- their previous training and experience;
- their expectations regarding the scope of knowledge and skills needed for OH ;
- their current existing proficiencies in terms of cognitive (knowledge and problem-solving abilities), affective (attitudes & belief) and psychomotor (behaviour, skills and capabilities) proficiencies;
- perceived deficiencies and needs (evaluators' and or learners' perspective), measured deficiencies in knowledge or skills;
- reasons for past poor performance;
- learners' capacities and motivations to improve performance;
- attitudes about the current topic;
- their learning styles;
- preferred learning methods; and
- their experiences regarding different learning strategies (Hughes, 2009).

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The above-mentioned content requirements listed by Hughes (2009) will guide the document analysis in order to determine if the learners in this programme had the relevant information within their OH curriculum content. Similarly, the requirements also included the learning environment in order to determine if the existing curriculum has addressed questions around the alignment of the clinical training experience with students' learning needs; whether or not they had adequate clinical placement and

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supervised experience; whether the stakeholders, including educational leaders and accrediting bodies, sufficed to meet the learners' needs, and identifying the barriers, enabling and reinforcing factors in the targeted learner's environment. Identification of these factors in the existing curriculum content through the document analysis would ensure the inclusion of relevant content to meet the specific needs of the learners and their environments.

An Occupational Health Physiotherapist (OHPT) aims to restore the physical and mental health of a patient as well as to contribute to the productivity of the workforce (Owen & Hunter, 2012; Eastlake, 1994). To enable the OHPT to work successfully in a work environment, it is important to learn the scope of the work responsibilities, the necessary competencies required to fulfil those responsibilities, as well as the training requirements. Structuring the undergraduate curriculum to include OH content would enable newly graduates to offer the services for the specific job they work in, and providing them a good foundation to develop from, to provide specialised services. It is thus evident that there is a need to define the competencies that are sufficient at the degree entry level. This requires document analysis of the undergraduate OH physiotherapy content.

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4.1.1 Definition of terms

Psychomotor-skills - The behaviour or capability of performing some manual skills (Collins & O'Brien, 2011).

Affective - Used to denote those aspects of learning that involve emotions, feelings, and attitudes (Collins & O'Brien, 2011).

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Cognitive - The process people use in perceiving, reasoning, understanding, and judging their environment, and the information they receive (Collins & O'Brien, 2011).

Altruism - Unselfish regard for or devotion to the welfare of others (Merriam-Webster, 2019).

Implicit curriculum - Also referred to as the "hidden curriculum", or the lessons we teach in schools that are not explicitly stated in the curriculum (Collins & O'Brien, 2011).

Explicit curriculum - Also referred to as the "formal curriculum", or a written plan of educational action for any kind of learning community and found in many venues (Collins & O'Brien, 2011).

4.2 Methods

A document analysis was used as a method to explore the content of occupational health in the curricula of the two universities offering physiotherapy in Kenya according to the competency framework of occupational health. The competency framework audit tool served as a guideline of the four levels of behaviours, knowledge and skills required by Occupational Health Physiotherapists at a Bachelor's degree (Levels A and B), Master's degree (Level C) and Doctoral degree (Level D) (ACPOHE, 2013; Owen & Hunter, 2012). However, this study was limited to the bachelor's degree level (Levels A and B). The competency framework had five main groups of domains, presented in Figure 4.1 below, where each main group was further characterised into seventeen subdomains (**Appendix F**). The competency framework audit tool was piloted by analysing the Southern African Occupational Health curriculum content in the Physiotherapy undergraduate programme at the University of the Western Cape (**Appendix H**). This

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helped the researcher to familiarise herself with the tool and to identify any shortcomings. It was noted that there was a need to change all aspects of the tool that made reference to the UK legislation (sections 2.6, 2.11b, 4.1b,) and instead apply the respective country's legislation where the tool was being used. The tool was subsequently used for the analysis of occupational health content in the physiotherapy undergraduate programme of Moi University and the Jomo Kenyatta University of Agriculture and Technology in Eldoret and Juja, in Kenya (**Appendices I and J**).

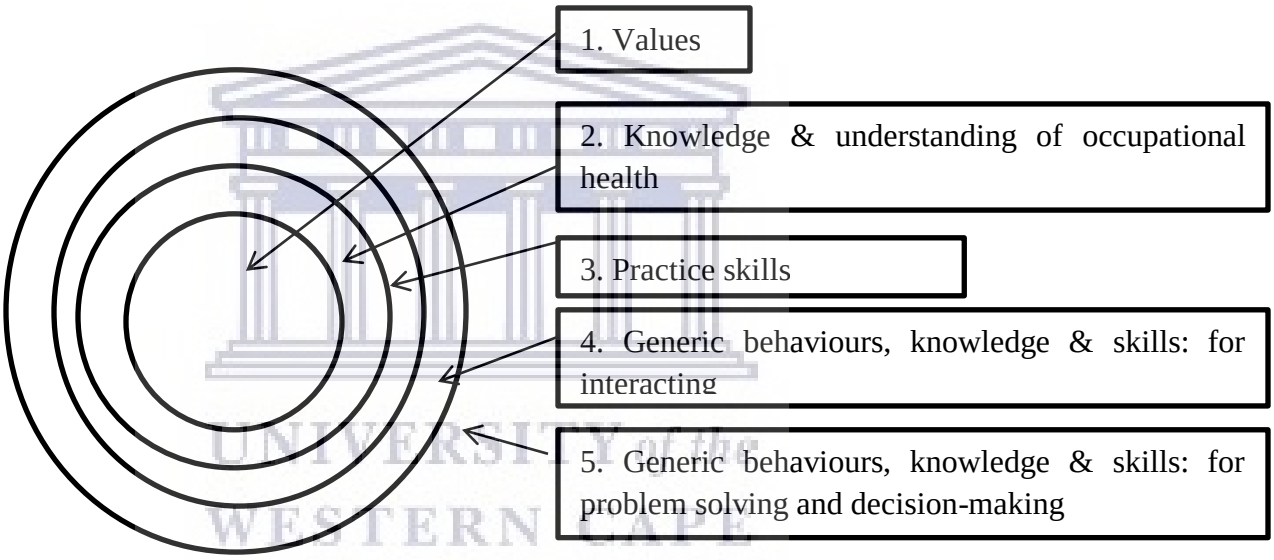

Figure 4.1: Structure of five main groups of framework domains

4.2.1 Procedure

Ethical approval was obtained from the UWC Research Ethics Committee (**Appendix A**). Thereafter permission was sought from the UWC Physiotherapy Department as well as the respective departments of Moi University and JKUAT (**Appendix E**). The document analysis was thereafter performed in three stages (Understanding the Document Analysis Technique, 2013), which involved:

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1. Preparation: Identifying the respective physiotherapy undergraduate curricula that would be used for this study. Four universities had been identified for the document analysis process, including one (UWC) that would be used for the pilot study. However, Great Lakes University of Kenya (GLUK) in Kisumu, Kenya did not have occupational health as part of their undergraduate physiotherapy modules and hence it was excluded from this study. Part of the preparation for document analysis was a framework that would help with interpretation of the content of the data that would be analysed (O'Leary, 2004). The framework that was used for the analysis of this study was from the UK, which assessed the competencies required by undergraduate students with regard to occupational health (Owen & Hunter, 2012).
2. Review: "Documents as the sedimentation of social practices… tell us about the aspirations and intentions of the period to which they refer…" (May, 1997 as cited in Prior, 2008, p. 823). The relevant curriculum content at the stipulated time of this study (2015-2016) was examined and compared to the competency framework and any lack of clarity of information was noted down. The document analysis was conducted by two reviewers.

   Further quantitative categorisation of the reviewed documents was completed in order to quantify how well they aligned with the OH competency framework (Ward & Wach, 2015). This categorisation was completed in four stages that aimed to consider the meaning and context of the curriculum content based on explanations and quotations provided. These stages were:

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High alignment: OH content strongly and clearly supported the competency framework domain. It was given a score of 4.

Partial alignment: OH content supported the competency framework domain although less clearly and distinctly. Given a score of 3.

Limited alignment: OH content provided some detail but evidence that aligned to the competency framework was found in other courses within the physiotherapy curriculum and reference was made to them. Given a score of 2.

Unclear alignment: OH content provided brief mention but details indicating alignment to the competency framework from the other physiotherapy courses are lacking. Given a score of 1.

No alignment: There was no evidence in the OH content nor in the rest of the curricum physiotherapy curriculum to suggest alignment with the competency framework. Given a score of 0.

3. Wrap-up stage: This involved the researcher contacting the lecturers responsible for teaching the occupational health course in order to clarify items that were not clear from the curriculum content.

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4.2.2 Pilot study Results

The OH competency framework was piloted with the UWC physiotherapy undergraduate curriculum in February 2015. The occupational health competency framework had a major focus on the behaviour, skills and knowledge required by a physiotherapist for working in occupational health, which were informed by five (5) main domains that were further subdivided into a set of 17 subdomains. The broad outcome of the document analysis with the South African occupational health content revealed that occupational

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health knowledge and skills was not taught in a stand-alone module but rather incorporated in different theoretical and practical modules (Appendices H1-H3). This meant that the researcher had to find the extra curriculum modules in order to identify the content that was not available in the occupational health component. This process prepared the researcher to address a similar challenge in the actual data collection. It was also evident that there was a need to change all the parts of the framework that made reference to the UK with regard to legislation (2.6, 2.11b, 4.1b,) and instead refer to the appropriate legislation for the country where the tool would be used. The above-mentioned process is what O'Leary (2004) described as the "reflect" stage of the document analysis, where the author went through an iterative process of reflecting on the difficulties associated with data collection and developing contingent plans to gather, review and interrogate additional documents when it was necessary.

Thus, the pilot study thus prepared the researcher for the process of data collection. It was clear that there was a need to sample from both the students and educators for the Delphi study, in alignment with the requirements of the six-step curriculum model.

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4.3 Data Analysis

The researcher read the contents of the curriculum and that of the competency framework iteratively in order to get a clear and deeper understanding of the texts. Thematic analysis was used to report the outcome of the document analysis (Flick, 2014). Averages were calculated for all the subdomains based on the categorisation done during the review stage as stipulated earlier in section 4.2.1. This was used to present the findings in terms of the five major domains of the competency framework.

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Triangulation of information obtained from the document analysis was achieved by getting in-depth information from the course coordinators about the course. The experience from the pilot study was that occupational health was not a stand-alone module and hence the researcher needed to get additional course content from other external modules in order to gather all of the content. Despite the fact that the OHS curriculum content of Moi and JKUAT universities did not have clear references to the other courses, the researcher was able to liaise with the course coordinators to find this content. In addition, the researcher also manually searched through the content of each course within the curriculum to draw out any meaningful links to the attributes required within the OHS course[1]. Flick (2014) described the above triangulated information as intertextuality of documents, meaning that there is interconnection between documents in an organisation, requiring the researcher to review all of these in order to develop a whole perspective of the document under study.

This study had pre-determined themes that emerged from the domains of the framework, and during the discussion of this chapter further areas of action were highlighted and possible recommendations made. The researcher was deeply immersed in the data, which enabled interpretation via philosophical hermeneutics, regarded in this study as the

[1] The words course and module have been used interchangeably in this project but they all have the same meaning. This is because the researcher interacted with curriculum content from South Africa and Kenya which uses the terminologies 'module' and 'course' respectively.

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science and art of interpretation, with knowing and understanding being generated through the researchers and the data (Trede, Higgs, & Rothwell, 2009).

4.3.1Trustworthiness

Triangulation of information from the different sources (in other words, the curriculum content of occupational health, other course content that contributed to the occupational health module, and various stakeholders-course coordinators), helped to enhance the trustworthiness of the study findings. According to Lincoln and Guba (1985) the credibility of a study is improved through member checking and by providing a rich description of the context. In the case of this study credibility was addressed through member checking via the course coordinators in order to determine that the information provided in the document analysis was a true reflection of the actual course content. Similarly, the researcher endeavoured to capture a rich description of the information from the curriculum documentation. Transferability and dependability were addresed with clear description of the methodology which would allow the study to be repeated (Guba, 1981). Raw record data including occupational health course content, as well as all other course content that contributed to the occupational health module, were reviewed in order to enhance confirmability.

4.3.1.1 Reflexivity

Reflexivity has been described as the "ability of the researcher to stand outside the research process and critically reflect on that process" so as to enhance the integrity of the research process (O'Leary, 2004, p.11). Throughout the document analysis process reflexivity was regarded as an important process due to the potential bias of the interpretation by the researcher during the analysis of the data (Coffey, 2014). Reflection

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in this project began at the onset of the pilot study as it helped the researcher to familiarise herself with the tool and the potential challenges that she might face. The researcher's pre-conceived ideas about the competencies required for occupational health practise was challenged by the information identified from the outcome of the document analysis. Vocational rehabilitation was an expected competency in occupational health, whereas the researcher only knew about that from an occupational therapy perspective. This brought to light areas that may cut across the training of both physiotherapists and occupational therapists in the multidisciplinary field of occupational health.

During the pilot study the researcher realised that occupational health was not a stand-alone module in all the institutions and hence needed to be patient for the iterative process of determining the relevant content with bulky excerpts to support the required competencies. One of the greatest limitations of the document analysis was that it was difficult to interpret some of the domains such as practical (domain 8) as one needed to be in the field in order to observe them. The researcher thus noted further questions concerning the different theoretical and practical modules that needed clarification from tutors during the interviews of the wrap-up stage as stipulated in the procedure of the document analysis.

Familiarity with the Moi University context made it easier for the researcher to understand which competencies were gained from which courses. In addition, the researcher was responsible for teaching occupational health for physiotherapy students, which meant that the researcher had to continually reflect on the documentation in order to avoid bias with respect to what she knew. Frequent comparison was made to the relevant occupational health content in the curriculum of Moi University to ascertain that

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what was written was a true representation of the actual content, which was supported with excerpts from the documents (May & Perry, 2014). Debriefing with the supervisor during a discussion of the content also helped with reflexivity and the analysed data was shared with peers for verification.

The researcher experienced several challenges when analysing the content from the JKUAT curriculum. This is because there was no link to the other courses that built up to the knowledge and practice of occupational health as was the case during the pilot study. Since the field of occupational health is new for physiotherapists in Kenya, it meant that there were not enough content experts to teach the course and therefore they had to rely on public health professionals. The researcher had to engage the coordinator of this course to begin with this process. In the course of this enquiry, it was discovered that there were more courses that built up to OH than what she had been led to believe. She therefore had to review the other course content in the undergraduate curriculum to identify the relevant links to the OHS content requirements as they related to the competency framework. This process made the researcher anticipate that students would go through similar challenges during their studies if the content were not clearly presented as required by Hughes (2009) in step two of the competency framework.

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4.4 Results

4.4.1 Moi University

Moi University is located in Eldoret, Kenya and was officially inaugurated in 1985. The physiotherapy programme in Moi University began in September 2010 and this was the first Bachelor of Science Programme to begin in Kenya.

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Occupational health (BPT 417) (Appendix J1) is a three-unit course offered in the fourth and final year of study for physiotherapy students and is a course that is also offered in the Bachelor of Medicine and Bachelor of Science in Environmental Health programmes. Teaching in this course is done independently by every programme and there is no point where the students mix, despite the fact that there are some principles which cut across the disciplines. It is a physiotherapist who takes the physiotherapy students through this course.

The occupational health competency framework was thus used to find out if the competencies required for physiotherapists to practice in this area were to be found in the current occupational health content from the curriculum in the year 2015.

4.4.1.1 Domain 1: Values

These are attributes that were not specifically taught in this course, but were rather entrenched in the School of Medicine and Physiotherapy programme core values. The courses that included these values were Behavioural sciences and ethics (MSB 102), Community and education-based services (MSB 105), Community based rehabilitation-CBR (CPT 310) and Health services management (BPT 316) which were taught in year one and three. It is believed that students would carry these values all through their clinical practice.

"Embracing excellence, transparency & accountability."

"Practicing professionalism, meritocracy, equality, integrity and social justice."

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The above two excerpts found in the core values of physiotherapy curriculum, as well as the excerpt below from the MSB 102 course content sought to describe some of the attributes of the Values domain of the competency framework.

> *"Medical health care professions codes; The code of Professional conduct and Discipline"*

In as much as the attribute of altruism is not explicitly described, the objective of OH that seeks to prevent disorders related to exposure to occupational hazards may be regarded as the selfless concern for all workers to be protected from occupational hazards. Values described in the competency framework inform the behaviour of practitioners as well as the knowledge and skills that they will use and develop. In the light of the excerpts above we can thus conclude that there is an unclear alignment (1) of domain one to the OH competency framework as stipulated in the procedure of the document analysis.

4.4.1.2 Domain 2: Knowledge and Understanding of Occupational Health (OH)

2.1: Building on undergraduate knowledge

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2.1.1-2.1.4: This section focused on the students' anatomical and physiological knowledge of the human body, pathology, applications of scientific enquiry and physical and movement science. All of these were categorized as 'A' because the students gained this information as part of the basic sciences and physiotherapy skills as shown in the excerpts below.

> *"Describe the neurological, gross anatomy, the physiology and biochemistry of bones, muscles, and other connective tissues and their roles in body movements."*
>
> **BPT 115**

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"Demonstrate the analysis of posture, gait and activities of daily living" **BPT 212**

"To equip the learner with the general knowledge of the causes and effects of diseases in the human body." **PPT 214**

However, no reference is made to this in the occupational health course outline (BPT 417), thus resulting in an unclear alignment (1) to the competency framework.

2.2: Epidemiological research knowledge establishing causal links with development of work relevant disease. This was categorised as 'A' as students are taken through research in an interdisciplinary course called COBES (Community Based Educational Services) that incorporates both the theoretical and practical aspects of research.

"Demonstrate understanding of the principles of Epidemiology, Biostatistics and Demography." **MSB 105**

"Describe the different data collection tools and data collection methods." **MSB 105**

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No mention of the information in the above excerpt is made as pre-requisite knowledge in the occupational health course content, thus it has an unclear alignment (1) with the competency framework.

2.3: Clinical sciences relevant to OH- Categorised as 'A' as it is learned in the second year, although no link is made to OH. However, objective three in the OH content (BPT 417) also addresses this domain and is thus regarded to have high alignment (4) with the competency framework. These are as described in the excerpts below.

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"To equip the students with the knowledge, skills and attitudes for medical diagnosis and management of common clinical conditions in relation to physical therapy management." **CPT 218**

"Describe the aetiology, pathology and prevention of disorders related to exposure to occupational hazards." **BPT 417**

2.4: Behavioural sciences relevant to OH. Categorised as 'A' given that it is learned in the first and second years (MSB 102), as well as communication skills (MSC 200).

"To equip the student with knowledge of the psychology, social, cultural, and environmental influences on behaviour, health, and disease processes." **MSB 102**

"To equip the student with the knowledge, skills, and attitudes necessary for effective and sensitive communication skills with patients, families, caregivers', professional colleagues and other stakeholders." **MSC 200**

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However, none of this content was embedded in the OH course as a pre-requisite hence it has an unclear alignment (1) with the competency framework.

2.5: Ethical principles underpinning practice in OH. Categorised as 'A' as it is covered in objectives one and two of the OH module. This is regarded as having high alignment (4) with the framework.

"Describe the evolution, concepts and principles of occupational health." **BPT 417**

"State the legislations related to Occupational health in Kenya." **BPT 417**

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2.6: Kenya's legal and policy frameworks governing OH. Categorised as 'B' since it is comprehensively covered under objectives two and four of the OH content and is thus regarded as having high alignment (4) with the competency framework.

"State the legislations related to Occupational health in Kenya." **BPT 417**

"Outline the organization and use of Occupational Health Services." **BPT 417**

2.7: Organisational factors and their impact on work and health. Categorised as A and is hidden under objective three as part of the factors that lead to occupational hazards. This was regarded as being partially aligned (3) with the competency framework.

"Describe the aetiology, pathology and prevention of disorders related to exposure to occupational hazards." **BPT 417**

2.8: Commercial knowledge to make a business case for OH. Categorised as 'A' as it is under objective one when outlining the concepts and principles of occupational health, and thus is considered to have high alignment (4) with the competency framework.

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"Describe the evolution, concepts and principles of occupational health." **BPT 417**

2.9: Applied workplace ergonomics. - This was categorised as 'B' as ergonomics is taught within the Kinesiology course (BPT 212) in the second year, though no reference is made to this in the OH content. In addition, objective three revisits ergonomic hazards and the prevention strategies that are used to reduce these hazards. This subdomain was thus considered to have partial alignment (3) with the competency framework.

"Principles of Ergonomics." **BPT 212**

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"Describe the aetiology, pathology and prevention of disorders related to exposure to occupational hazards." ***BPT 417***

2.10: The Bio-psycho-social model and its application to OHS. - Categorised as 'A' and is taught in CBR (CPT 310) and also as part of ergonomics in the occupational health content. No link is explicitly made between CBR and occupational health and thus this subdomain was considered to have partial alignment (3) with the competency framework.

"Models of rehabilitation." **CPT 310**

2.11 Disability rehabilitation and reintegration into the workplace. - Categorised as 'A' and is taught in CBR (CPT 310) where students learn how the International Classification of Function (ICF) is used to help affected individuals to return to work. No link is made between CBR and OH. Thus this competency is graded as having unclear alignment (1) with the competency framework.

"Rehabilitative and curative health care services as related to disability: Barrier free environment for persons with disabilities. Integration of persons with Disabilities, Social economic sustenance of persons with disabilities." **CPT 310**

2.12: Graded and paced occupational and vocational rehabilitation (work conditioning and hardening). – This was not present in the curriculum content and thus had no alignment (0) with the competency framework.

2.13: Assessment of fitness for work (work capability assessment or functional capability assessment). – This was not present in the curriculum content and thus had no alignment (0) to the competency framework.

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2.14: Health behaviour and health behaviour change. - Categorised as 'A' as it is taught in the first year in the Behavioural Sciences and Ethics course (MSB 102) and the nutritional aspect is taught in COBES I (MSB 105) as shown in the excerpts below. No direct link is made between the OH content and these modules, and hence it is considered to have an unclear alignment (1) with the competency framework.

> *"Theories of health seeking behaviour: Health and illness behaviour."* **MSB 102**
>
> *"Explain the role of nutrition and nutritional interventions in healthcare and disease."* **MSB 105**

Knowledge and understanding of occupational health describes the "theoretical and applied knowledge required for practice in occupational health." (Owen & Hunter, 2012 p.2). Finally, domain 2 of knowledge and understanding of occupational health had an average score of 2.1 with regard to alignment to the competency framework. This was mostly due to the fact that no reference and connection was made to previously taught courses that were building up to the OH course in the student's final year.

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4.4.1.3 Domain 3: Practice Skills

Domain 3: Self-awareness was not practiced, as no provision for this was described in the OH curriculum content. This was thus regarded as having no alignment (0) with the OH content.

Domain 4: Political awareness was well addressed by objectives two and four in the occupational health curriculum content (BPT 417) which focused on *"legislation of Occupational health in Kenya as well as the organization and use of occupational health services."* This sub-domain thus had high alignment (4) with the competency framework.

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Domain 5: Psychomotor skills entailed performance of bio-psychosocial assessment of patients with neuromusculoskeletal disorders in the occupational health context to allow return to work. This would be made possible by the use of reliable occupational health tools that would assist in the interpretation of clients' findings in order to offer treatment and monitor the progress of individuals and various groups of workers. The learner was expected to perform a formal, structured workplace assessment using ergonomic tools and thereafter reflect and evaluate their own performance of the psychomotor skill.

Reflection was meant to assist the learner to evaluate their own practice with the aim of improving their skills and capability. All attributes were present at level 'A' but there was no evidence (0) of formal workplace assessment using ergonomic tools and reflection. Minor aspects of domain five were covered in different places in different courses throughout the programme. For example, neuromusculoskeletal assessment of patients was taught in Exercise Therapy II (CPT 311) in the third year; pain and factors affecting pain were taught in Electrophysical therapy (CPT 217) in the second year (see the excerpts below). CBR (CPT 310), taught in the third year, was able to assist the learner with domain 5.2. Domains 5.5 and 5.6 were addressed by study objective three of the OH content (BPT 417) which required students to manage and prevent disorders related to exposure to occupational hazards.

> *"**Neuromuscular/skeletal:** Sensory assessment: central, peripheral, Musculo-skeletal assessment for the different body parts i.e. Upper quadrant, Spine and Lower quadrant, muscle girth, limb discrepancy, muscle tone."* **CPT 311**

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"Describe the effects and application of the various electro physical agents. Indications include pain relief." **CPT 217**

There was no provision for assessment using valid, reliable or using standardised tools, as well as no provision for reflection in the curriculum content. Kinesiology (CPT 212) done in the second year made provision for analysis of posture, gait and activities of daily living and students were expected to apply the concepts of biomechanics to assess and treat various clinical problems. However, the curriculum content did not explicitly have any links between all these previously learnt courses as required pre-requisites to this course and hence was considered to have unclear alignment (1) in most instances (5.1, 5.2, 5.3 and 5.4). Outcome three of the OH content (BPT 417), which sought to enable students to *"manage and prevent disorders related to exposure to occupational hazards"* tacitly supports sub-domains 5.5 and 5.6 as having partial alignment (3) with the competency framework. This meant that psychomotor skills had an average alignment (1.4) to the competency framework, which would definitely affect students' output.

In conclusion, the practice skills (which encompassed sub-domains 3-5) that are required for occupational health competency were partly available (1.8). However, there was a large gap with regard to reflection as this meant that students did not have an opportunity to do their own self-evaluation during this course. The lack of formal workplace tools, as well as no guidance on how students' previous knowledge would influence their practice in the OH course, is a gap in the curriculum that needs to be addressed.

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4.4.1.4 Domain 4: Generic behaviours, knowledge and skills for interacting

Domain 6: Communicating information with individuals and within the OH team in order to meet an individual's or organization's needs was categorised at level 'A'. Good communication skills would enable the learner to ask about work-related obstacles and how to avoid them to enable return to work. In addition, it would help to build an effective relationship with vital people within the organisation and thus groom them to report on OSH related information that is in line with the ethical guidelines and the legislative framework.

Domains 6.2-6.4 were categorised at level 'A' and were situated within several courses in the first to third years of the programme. These courses included Computer skills (MSE 101) in the first year, Communication skills in the first and second years (IRD 102, MSC 200), Exercise therapy I and II (CPT 216, 311) in the second and third years. However, no link was made between these previous courses as possible pre-requisite courses to the occupational health course and therefore they were considered to have unclear alignment (1) with the competency framework. Domain 6.1 was categorised at 'B', and 6.5 and 6.6 were categorised at 'A' and partly met by the prevention aspect of objective three of the OH content, whereas objective four partly met the attributes required for domain 6.5 (6.1-1, 6.5-3 and 6.6-4).

> *"This course provides students with an overview of Information Communication and Technology (ICT) and its application in health care and research."* **MSE 101**
>
> *"Speaking skills: effective speaking, public address, the art of persuasion, conducting interviews, conducting meetings and writing minutes, group*

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discussion, non-verbal communication cues, presenting papers/ reports in tutorials, seminars, seeking clarification and explanation, giving and justifying opinions, agreeing and disagreeing." **IRD 102**

"To equip the student with the knowledge, skills, and attitudes necessary for effective and sensitive communication skills with patients, families, caregivers', professional colleagues and other stakeholders." **MSC 200**

Domain 7: Helping others learn and develop were the required attributes of this domain, which would guide the learner with planned activities for occupational health, the necessary supervision, students' own reflections and evaluation with feedback in order to inform future practice.

Domains 7.1 and 7.5 were categorised at 'A' since they were addressed by objectives three and four of the occupational health module (BPT 417) with regard to *"education on prevention and management of disorders related to work"* as well as previous knowledge from Kinesiology (CPT 212) that was taught in the second year. However, no use of work tools was evident from the curriculum content and domains 7.2-7.4 were not being captured in the curriculum content, although there was some implicit expectation that students should meet these outcomes. Thus this domain had an average of 1.4 alignment with the competency framework (7.1-4, 7.2-1, 7.3-1, 7.4-0 and 7.5-1).

"Apply the concepts of biomechanics to assess and treat various clinical problems." **CPT 212**

Domain 8: With regard to managing the self and others the learner was expected to practice in accordance with the professional codes of conduct with supervisory guidance.

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Thus, a modification in behaviour was expected in response to reflections on their own performance or as a result of supervisor or peer feedback in order to implement established plans within occupational health services. The learners were also expected to take responsibility for delegating work to others effectively, as well as to come up with new thinking within OH services.

Apart from domains 8.1 and 8.5, which were categorised at 'A' as it was handled by occupational health content (BPT 417) *"to come up with roles and policies in promotion of health and safety in work environment"*, none of the other domains were captured in the OH curriculum content (0). Behavioural Sciences and Ethics (MSB 102), taught in the first year and Health Services Management (BPT 316) taught in the third year, could cover some aspects of this domain as presented in the excerpts below. However, there was no evidence of any link between these courses, thus, there was an average alignment of 1.4 with the competency framework (8.1-4 and 8.5-3).

> *"Medical health care professions codes; The code of Professional conduct and Discipline (R.O.K.); Ethical Principles for Physical Therapists (WCPT), The role of professional bodies."* **MSB 102**

> *"To equip learners with the knowledge, skills and attitudes that will enable them to provide leadership in the delivery of quality and sustainable health services. Explain management principles, functions of management, management processes, decision-making, communication and co-ordination."* **BPT 316**

Domain 9: Promoting integration and teamwork had three attributes which are expected to identify learners' awareness of the professional networks within occupational health.

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This would enable the learner to develop interpersonal relationships and be able to work in an interdisciplinary perspective and identify solutions that contribute to effective performance of teams in OH. Domains 9.1 and 9.2 were categorised at 'A' and 'B' respectively as the OH curriculum content explicitly described *"Occupational Health Services: Functions and types"* and were considered to have high alignment (4) with the competency framework, whereas no curriculum content (0) could be found to align with domain 9.3 of the competency framework.

Domain 10: In keeping customer focus at the centre of practice, the learner was expected to recognise conflicts between workers with assistance from a senior or peer, demonstrate respect for an individual's or organization's unique needs in accordance with legislation, policies, procedures and best practice. As a result, the learner was expected to provide information that involved empowering individuals or organisations in order to make informed OH choices.

All of these domains were categorised at 'A' whereby objectives one to three of the OH curriculum equipped learners with the required competencies. Thus, they were considered to have high alignment (4) with the competency framework.

Domain 11: With regard to respecting and promoting diversity, the learner was expected to have the knowledge and skills to respect and value diversity in accordance with the OH legislation. This would enable them to distinguish their own personal values and principles which may differ from an individual's or institution's practice and policies. This allows them to work constructively with people from all backgrounds, as well as empowering them to realise their full potential with a non-discriminatory culture.

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Domain 11.1 was addressed by objective two of the OH content and categorised at 'A', and domain 11.3 could be achieved through a learner's extended knowledge of objectives one, two and four, which looked at *"the different types of OH hazards and various services offered."* None of the other domains were explicitly explained in any of the curriculum content and hence they were not categorised (11.2-0 and 11.4-0). The CBR course (CPT 310) encouraged participatory assessment which could be equated with empowering individuals to realise their own potential that would help them adhere to the required OH legislation, policies, procedures and best practices.

> *"Use of participatory assessment techniques to identify and describe community based health programmes and the factors likely to affect the health and nutrition status of persons with disability."* **CPT 310**

The excerpt above infers the knowledge that might be beneficial for students to use during an occupational health placement. However, no link was made with this aspect and thus these two domains were considered to have high (11.1) and partial (11.3) alignment with the competency framework.

The behaviours, knowledge and skills for interacting are attributes to be possessed by physiotherapists working in occupational health, since there is quite a lot of diversity in workplaces and with clients. In general, this domain had an average alignment score of 2.2 with the competency framework due to the majority of the sub-domains that lacked links with the appropriate course where these attributes were taught.

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4.4.1.5 Domain 5: Generic behaviours, knowledge and skills for problem solving and decision-making

Domain 12: Ensuring Quality: This required the learner to ensure quality in execution of tasks at work, especially where these services are aligned with the legal and policy frameworks governing professional practice in OH. All of these domains were categorised at 'A' and considered to have high alignment (4) with the competency framework as they were covered by outcome two of the occupational health content (BPT 417) which required the learner to *"apply the legislations related to occupational health in Kenya."* The only missing aspect was domain 12.3, which required the learner to engage in critical reflection on practice, which was not present in the OH curriculum content (0).

Domain 13: Improving and developing services: The learners needed to be able to portray all four attributes in this domain and were categorised at level 'A' or 'B' except for domain 13.4, which were thus considered to have high alignment (4) with the competency framework. These attributes included being able to critically evaluate OH practice and provide recommendations to make improvements in various areas of their assessment and evaluation. All of these were covered by outcomes two and three of the occupational health content (BPT 417), as well the content on *"types of occupational health services."* Reflection was an important missing component in the curriculum content (0), even though the learner was implicitly expected to evaluate himself or herself through a SWOT analysis, it was important for reflection to be explicitly included in the curriculum content.

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Domain 14: Lifelong learning (CPD) This domain had four attributes that sought to engage the learner in continuous learning and self-evaluation, making space for professional development. Unfortunately, self-reflection during the industrial placement was not factored into the curriculum content and only sub-domains 14.1 and 14.4 could be categorised at 'A'. It was achieved by outcomes two and three as well as outcome four of the OH curriculum content (BPT 417) respectively. Alignment with the competency framework was scored at 4 (high) and 3 (partial) for subdomains 14.1 and 14.4, with alignment (0) for subdomains 14.2 and 14.3.

Domain 15: Practice decision-making: This domain also had four attributes that intended for the learner to make reasoned conclusions in the occupational health context following a critical evaluation of the information gathered at work, based on ethical and professional issues that were unique to occupational health settings. All these were categorised at level 'A' based on the information present in outcomes one, two and three of the OH curriculum content (BPT 417). However, subdomain 15.4 could not be met due to the lack of reflection in the curriculum content. Therefore, sub-domains 15.1-15.3 thus had high alignment (4) with the competency framework, whereas subdomain 15.4 had no alignment (0) at all.

Domain 16: Researching and evaluating practice (audit): This domain had four attributes which expected the learner to conduct an appropriate work-based project and be able to provide an appropriate evidence-based outcome to both specialist and non-specialist audiences. All these were categorised at level 'A' but with a lack of occupational health specific tools and reflection. Research skills and OH practice developed by learning from Communications Skills II (MSC 200), COBES courses and all OH course objectives

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(BPT 417), as demonstrated in the excerpts below. The average alignment of this domain to the competency framework was 2.3 (16.1-4, 16.2-2, 16.3-0 and 16.4-3).

> *"Biostatistics: Principles; Sampling methods; Data analysis and presentation; measurement of central tendency and dispersion and Statistical Methods."* **MSB 105**

> *"Research skills: understanding research, types of research areas, methods of research, and stages of research."* **IRD 102**

> *"Development of tools. Data collection (primary and secondary), Analysis, Applications of statistical methods in health and disease. Report writing, Feedback and Presentation."* **MSB 204**

Domain 17: Using evidence to lead practice: This was represented by two attributes requiring the learner to use evidence-based information to address specific issues faced in the working context. They were categorised at level 'A', based on the course objectives taught in OH (BPT 417), as well as Communication Skills II (IRD 102) and COBES. The lack of reference to these courses in the OH content made this domain only partially aligned (3) with the competency framework.

> *"Writing skills: thinking critically/selectively and writing clearly and precisely reports and academic essays; selecting relevant details, providing supporting evidence to the issues raised, quoting, citing and paraphrasing,, indicating reference, footnoting, writing bibliographies and being sensitive to observation of language appropriacy."* **IRD 102**

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The behaviours, knowledge and skills for problem-solving and decision-making are attributes that should be possessed by physiotherapists working in occupational health in order to deal with the diversity among workplaces and clients. This domain had an average alignment score of 2.6 with the competency framework.

A summary of the alignment of Moi University's occupational health content with the major domains of the competency framework is presented in figure 4.2 below. Domain five (that is, generic behaviours, knowledge and skills for problem-solving and decision-making) had the highest alignment with the competency framework at 2.6 over a maximum of 4 points. This means that the majority of what was required was well described in the OH curriculum content, or at least reference was made to where it could be found in the physiotherapy undergraduate curriculum.

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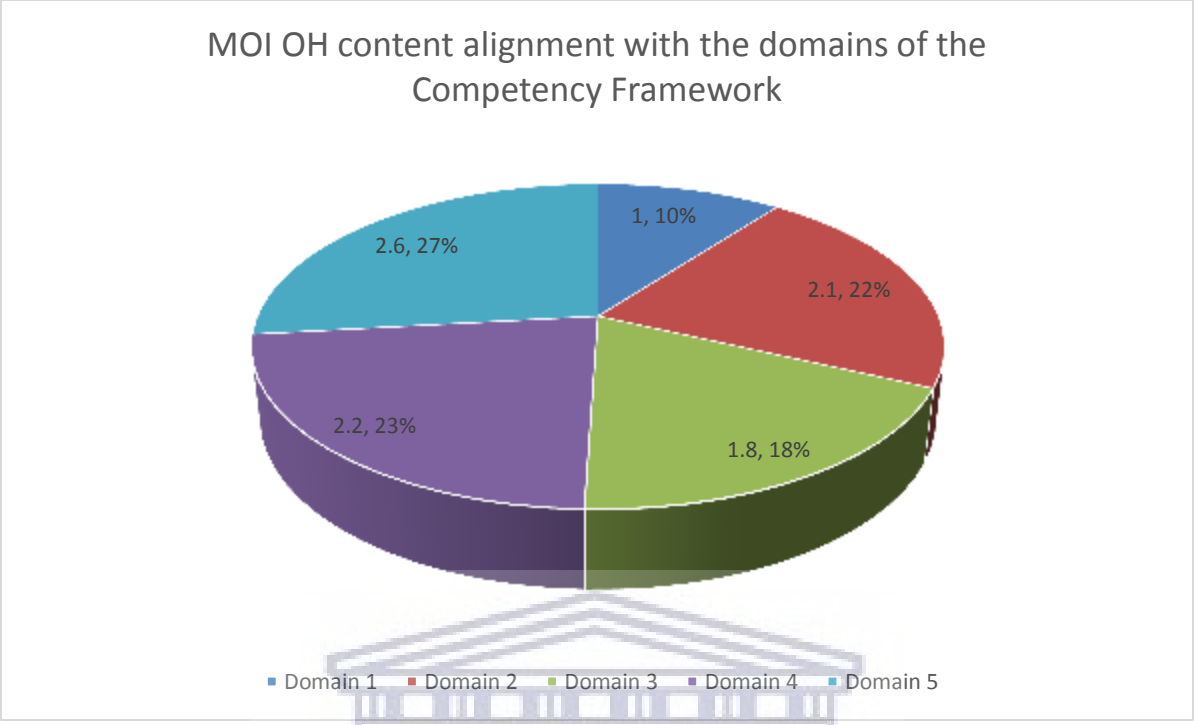

Key: Domain 1-Values, **Domain 2-** Knowledge and understanding of occupational health, **Domain 3-** Practice skills, **Domain 4**- Generic behaviours, knowledge and skills: for interacting, **Domain 5**- Generic behaviours, knowledge and skills: for problem solving and decision-making

Figure 4.2: Moi OH curriculum content vs. OH Competency Framework Domains

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4.4.2 JKUAT University

The Jomo Kenyatta University of Agriculture and Technology (JKUAT) is based in Juja and was the second university in Kenya to start physiotherapy education in Kenya. The programme began in the year 2011 with specialization on upgrading from a Diploma to get a Bachelor of Science Degree in physiotherapy and later progressed to taking direct entry students from the joint admissions board later in the same year (J. Matheri, personal communication, December 1, 2016). Currently JKUAT has become the first university in Kenya to start the Master of Science programme in Physiotherapy in the year 2016.

The Occupational Health and Safety content (IPT 2408) (Appendix I1) that is presented here is dated July 2015, which locates it as a course taught in the first semester of the third year and the industrial attachment was done later in the third year for a period of one month. Occupational Health and Safety (OHS) is a 45 hours course taught for three hours per week, and students are asked to identify a place of industrial attachment[2] and are expected to present a report upon return to school afterwards, which is graded together with the logbook. This course was not taught by the physiotherapist lecturers but rather they outsourced this service from the Public Health department.

[2] Industrial attachment in the Kenyan physiotherapy context is equivalent to a clinical placement. However, it has the name industrial attachment as the focus is on occupational health-related matters and not routine physiotherapy clinical placement in a hospital.

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4.4.2.1 Domain 1: Values

These are attributes that were not specifically taught in this course, but were spread out during the programme in some of the courses like Introduction to Global Health (IPT 2105) as shown below.

> *"Apply the theory of social justice in health profession."* IPT 2105

Values that are described in the competency framework informs the behaviour of practitioners as well as the knowledge and skills that they will use and develop. The other attributes needed in this domain were not explicitly described in any other curriculum content and thus have an overall rating of unclear alignment (1) with the OH competency framework.

4.4.2.2 Domain 2: Knowledge and Understanding of Occupational Health (OH)

2.1: Building on Undergraduate knowledge

2.1.1-2.1.4: This section focused on the students' anatomical and physiological knowledge of the human body, pathology, applications of scientific enquiry and physical and movement science. All of these were categorised as 'B' because they gained this information as part of the basic sciences and physiotherapy skills in the first and second years of the undergraduate programme, as is evident from the excerpts below. However, no reference was made to this in the occupational health course outline, thus it has unclear alignment (1) with the competency framework.

> *"To introduce students to basic concepts of human anatomy and to introduce students to gross anatomy of the lower limb, upper embryology and gross anatomy of the back and thorax."* **IPT 2103**

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"To make the students understand elements of neuron communication and organization cardiovascular system and respiratory system." **IPT 2107**

"passive movements, free active movements, reciprocal resisted exercises, Resisted exercises, sling suspension exercises, Mobilizing and stretching exercises. Functional movement re-education." **IPT 2101**

2.2: Epidemiological research knowledge. This was categorised as 'A'. Students covered Epidemiology I (IPH 2305) alongside OHS theory in the first semester of year three. Epidemiology I includes the fundamental aspects of research and the applied aspect of epidemiology is done in the second semester as Epidemiology II (IPH 2306).

"To equip the learners with knowledge and skills to plan epidemiological intervention programmes." **IPH 2305**

Research methodology is done in the second semester of the third year (IPH 2311) and the industrial attachment is completed towards the end of the third year, meaning that students are able to apply this knowledge as part of understanding the development of work-related diseases.

"To equip the learner with knowledge and skills of research methodology for effective medical data collection and management." **IPH 2311**

However, there was no explicit connection with the intertextual relationship between these courses, meaning that there was unclear alignment (1) with the competency framework.

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2.3: Clinical sciences relevant to OH. Categorised as 'A' as clinical science (IPT 2404) is learned in the second semester of the second year, as well as covered in part by objectives one and two in the OHS content (IPT 2408). However, for clinical science this information was general, addressing the cause of musculoskeletal disorders, unlike the OHS content as shown in the excerpts below. This sub-domain was thus regarded as having high alignment (4) with the competency framework.

> *"Describe etiology and pathogenesis of common cardio respiratory musculoskeletal, neurological and skin disorders."* **IPT 2404**

> *"Recognise work-place hazards and conditions,"* and *"Describe common occupational diseases."* **IPT 2408**

2.4: Behavioural sciences relevant to OH. This was evident in many courses across the curriculum such as Medical behavioural sciences (MLS 2108), taught in semester two of the second year, as is evident in the objective, *"This course is intended to equip the students with knowledge, skills and attitudes that are required for understanding of human behaviour and medical patients' guidance and counseling."* Clinical psychology (IPT 2207), Psychosocial Approaches in Rehabilitation (IPT 2304) and Communication Skills (HRD 2101) are other courses that contributed to this sub-domain.

> *"To introduce the students to concepts and principles in psychology and its application in patient management."* **IPT 2207**

> *"Identify and classify socio-psychological factors that affect society."* **IPT 2304**

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While there were no references to these courses within the OH module (unclear alignment; -1), the expectation was that students would be able to use the knowledge gained from these courses in the industrial attachment at the end of the year.

2.5: Ethical principles underpinning practice in OH. - Categorised as 'A' as it is covered in objective four of the OH module, as presented in the excerpt below, with high alignment (4) with the competency framework.

> *"Interpret laws related to Occupational health in Kenya."* **IPT 2408**

2.6: Kenya legal and policy frameworks governing OH: Categorised as 'A' since it was comprehensively covered under objective four of the OH content (IPT 2408), thus it was considered to have good alignment (4) with the competency framework.

2.7: Organisational factors and their impact on work and health: Categorised as 'A', because the objectives A-E of the industrial attachment covers this sub-domain. Thus, it has high alignment (4) with the competency framework. The two excerpts presented below are among the attributes that support this domain.

> *"Carry out Ergonomic assessments for all workers in their workstations,"* and *"Educate workers on manual handling skills."* **IPT 2408**

2.8: Commercial knowledge to make a business case for OH: Categorised as 'B' as all the industrial attachment objectives are based on this. This is described by some excerpts that are listed below and considered to have good alignment (4) with the competency framework.

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"Carry out a work site analysis and modification to increase worker safety," and *"Develop and implement a health promotion, wellness and injury prevention program for all workers."* **IPT 2408**

2.9: Applied workplace ergonomics: Categorised as 'B' since it is included with the industrial attachment objectives as shown below. There was high alignment (4) with the competency framework by this sub-domain.

"Carry out ergonomic assessments for all workers in their workstations," and *"Undertake analysis of the various tasks in each workstation and design working techniques/postures that increase work safety."* **IPT 2408**

2.10: The Bio-psycho-social model and its application to OHS. Categorised as 'A' because some of this information was taught in other courses with no link made with the relationship between those courses (unclear alignment; 1). Community-based rehabilitation (CBR) is taught in the first semester of the third year (IPT 2301) and ran concurrently with the occupational health course covering aspects of the ICF *"ICF and its application."* The *"bio psychosocial health model"* was taught as part of the factors affecting health in the Medical Behavioural Sciences **(MLS 2108)** course, which was taught in the second semester of the second year.

2.11: Disability rehabilitation and reintegration into the workplace. Categorised as 'B' as it is present in the occupational health course content (IPT 2408) with excerpts such as "*Management of sick employees"* and *"Medico-legal reports and compensation."* However, the concept of returning to work does not feature clearly at any point in the

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curriculum content. Thus, this sub-domain was considered to have limited alignment (2) with the competency framework.

2.12: Graded and paced occupational and vocational rehabilitation (work conditioning and hardening). Not rated as it was not present in the curriculum content (No alignment with the competency framework: 0).

2.13: Assessment of fitness for work (work capability assessment or functional capability assessment). Objective five of the OH content (IPT 2408) mentions of *"Advice on safe work postures and ergonomics,"* and there is also an aspect of "*management of sick employees."* However, there is no explicit information on the actual assessment of fitness for work or functional capability. Hence, this sub-domain was categorised to have unclear alignment (1) due to the lack of this evidence in the curriculum content.

2.14: Health behaviour and health behaviour change. Categorised as 'A' because several courses describe the attributes required for this sub-domain and are taught in the second semester of the second year despite the fact that the OH content does not highlight this link (unclear alignment-1). Health behaviour and behaviour change were well described in the Medical Behavioural Sciences (MLS 2108) course, as well as in Health Education and Promotion (IPH 2211).

> *"Behavioural change communication"* and *"Tools and methods of achieving behavioural changes."* **IPH 2211**

The Human Nutrition, Dietetics & Nutritional Disorders (MLS 2211) course covered this sub-domain, which required the provision of information by students on factors such as dieting activity *"Suggest dietetic treatment to deficiencies."*

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Knowledge and understanding of occupational health describes the "theoretical and applied knowledge required for practice in occupational health." (Owen & Hunter, 2012, p.2). In conclusion, domain 2 of knowledge and understanding of occupational health had an average score of 2.3 with regards to alignment with the competency framework. This was mostly due to the fact that no reference or explicit connection was made to previously taught courses that were building up to the OH course. While some courses that entailed research were taught after the occupational health course, it is not clear if students are able to link these with the OH course. Effort should be made to address these gaps by ensuring that there is a proper hierarchy of content that builds up to the OH course before the course is taught.

4.4.2.3 Domain 3: Practice Skills

Domain 3: Self-awareness, was not practiced, as no provision for this was made available in the OH curriculum content, and thus it had no alignment (0) with the competency framework.

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Domain 4: Political awareness was comprehensively addressed by objective 'H' of the industrial attachment, which focused on *"Government policy regulatory bodies and statutory authorities involved in Occupational health in Kenya"*. It was therefore categorised as 'A' and had high alignment (4) with the competency framework.

Domain 5: Psychomotor skills included the performance of the bio-psycho-social assessment of patients with neuromusculoskeletal disorders in the occupational health context in order to facilitate a return to work. This would be made possible by the use of reliable occupational health tools that would assist with the interpretation of clients'

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findings in order to offer treatment and monitor the progress of individuals and various groups of workers. The learner is then expected to perform a formal and structured workplace assessment using ergonomic tools and then reflect on and evaluate their own performance.

It was evident from the curriculum content that there was no provision for the use of formal ergonomic assessment tools or reflection during the course of assessment, despite the fact that performing formal and structured workplace assessment was part of the industrial objectives (IPT 2408). *"Carry out a work site analysis and modification to increase worker safety."* There was no explicit provision for occupational and vocational rehabilitation made in any of the curriculum content and thus this domain was considered to have no alignment (0) with the competency framework.

The bio-psycho-social health model was covered in the Medical Behavioural Science (MLS 2108), the Psychosocial Approaches in Rehabilitation (IPT 2304), and the Clinical Psychology courses (IPT 2207), thus grading sub-domains 5.1 and 5.2 at 'A'. However, none of this content was explicitly linked to the OH curriculum content and thus had unclear alignment (1) with the competency framework.

"Factors affecting Health: bio psychosocial health model." **MLS 2108**

"Identify and classify socio-psychological factors that affect society." **IPT 2304**

"Psychosocial approaches to personality, social learning approach." **IPT 2207**

Sub-domains 5.5 and 5.6 were categorised at 'A' and had high alignment (4) with the competency framework due to objectives C-E of the industrial attachment. These

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industrial objectives focused on workplace assessment, designing and implementation of health promotion, and injury prevention programmes.

"Educate workers on manual handling skills." **IPT 2408**

In conclusion, practice skills (which encompassed sub-domains 3-5) that are required for occupational health competency were partly available with an average of 1.6. This was below average for the required standards and the gaps with regard to reflection, the lack of a formal workplace tool, and the lack of explicit links between previously acquired knowledge with occupational health needs to be addressed.

4.4.2.4 Domain 4: Generic behaviours, knowledge and skills for interacting

Domain 6: It included communicating information with individuals and within the OH team in order to meet an individual's or an organisation's needs. Good communication skills would enable the learner to ask about work-related obstacles and how to avoid them in order to return to work, and also to help build effective relationships with significant people within the organisation, grooming them to report OSH-related information that is aligned with ethical guidelines and legislative frameworks.

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Sub-domain 6.1 was categorised as 'A', and achieved by industrial objectives 'D' and 'G', whereas domain 6.2 was achieved by objective 'D'. 'Introduction to Computer Systems' (ICS 2100) aimed to *"impart on the student with basic knowledge in computer science,"* although it was probably expected that students would be able to take this knowledge and apply it where it was relevant for sub-domain 6.3. Sub-domains 6.4-6.6 were categorised at level 'B' and were covered mostly by objectives 'F' and 'G' of the industrial attachment (IPT 2408).

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"Educate workers on manual handling skills" and *"Develop and implement a health promotion, wellness and injury prevention program for all workers."* **IPT 2408**

No link was made between any previous courses with regard to the occupational health course and an overall grading of 2.7 was given to domain six, thus bringing it into partial alignment (3) with the competency framework.

Domain 7: Helping others learn and develop were the required attributes of this domain, which would guide the learner with planned activities for occupational health, the necessary supervision, students' own reflection and evaluation with feedback to inform future practice.

Most of the sub-domains were categorised at 'B' and addressed by objective five of the OHS content and 'D' of the industrial attachment, which focused on "*advice on safe work postures and ergonomics"* as well as "*educating workers on manual handling skills."* While some aspects were not explicitly described in the OH curriculum content (for example, 7.2 and 7.5) it is not clear which materials and tools they used to meet the learners' needs. Sub-domain 7.5 was categorised as 'A' and no grading was done for 7.4, since there were no aspects of reflection that were captured in the curriculum. Domain 7 was thus partially aligned (3) with the competency framework.

Domain 8: With regard to managing the self and others the learner was expected to practice in accordance with the professional codes of conduct with supervisory guidance, hence modification in behaviour was expected in response to their own reflection of

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performance or supervisory or peer feedback. The learners were also expected to delegate work to others effectively as well as to come up with new thinking within OH services.

Most of the sub-domains in this section were categorised as 'A' with reflection (8.4) having no alignment with the competency framework, as well as the lack of OH supervisors in the field (8.3). Some of these attributes are self-dependent, given that they were not explicitly captured anywhere in the OH content. Objective 'F' of the industrial attachment, which focused on *"identifying and managing workers with work-related injuries/complaints,"* addressed most of the attributes expected by this domain. In addition, objective 'D' of the industrial attachment aimed to *"educate workers on manual handling skills"* and thus addressed sub-domain 8.5. Domain eight had an alignment of 1.8 with the competency framework.

Domain 9: Promoting integration and teamwork had three attributes that were expected to help learners' develop an awareness of the professional networks within occupational health, and to enable them to develop interpersonal relationships, and to work within an interdisciplinary perspective in order to identify solutions that contribute to the effective performance of teams in OH.

Sub-domain 9.1 was categorised as 'A' and had high alignment (4) with the competency framework as a result of objective 'H' of the industrial attachment, which aimed at *"identifying government policy regulatory bodies and statutory authorities involved in occupational health."* No curriculum content could be found that related to sub-domains 9.2 and 9.3 of the competency framework and thus they were regarded as having no alignment (0) with the framework. Sub-domain 9.2 is expected to foster multi-

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disciplinary collaboration in the management of OH diseases and hazards, which, together with reflection, is not addressed in the OH curriculum as required by sub-domain 9.3. This domain thus had an unclear alignment (1.3) with the competency framework.

Domain 10: In keeping client focus at the centre of practice, the learner was expected to be able to recognise conflicts between workers with assistance from a senior or peer, and demonstrate respect for an individual's or organisation's needs in accordance with legislation, policies, procedures and best practice. As a result, the learner was thus expected to provide information that involved empowering individuals or organisations to make informed OH choices.

Sub-domains 10.2 and 10.3 were categorised as 'B', given that objective one of the OH content, as well as objectives A, C, E, G and H of the industrial attachment, focused on *"recognition of workplace hazards and conditions in different work environments"* as well as needing to empower workers with ergonomic information and prevention after a thorough assessment of their different work environments. Sub-domain 10.1 was categorised as 'A' in view of the fact that learners' knowledge and interpretation of the laws related to OH in Kenya would assist the learner to *"identify and manage workers with work-related injuries/complaints."* Their senior in this context could be assumed to be their lecturer in their physiotherapy programme, since there are usually limited supervisors at the OH placement. No explicit provision for sub-domain 10.4 was made in the curriculum content although the learner was expected to *"develop and implement a health promotion, wellness and injury prevention program for all workers."* This domain is thus categorised as having an average of 3.5 alignment with the competency framework.

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Domain 11: With regard to respecting and promoting diversity, the learner was expected to have the knowledge and skills to respect and value diversity in accordance with the OH legislation and to distinguish their personal values and principles from an individual's or institutional practice and policies. This would enable them to work constructively with people from all backgrounds in order to enable them to realise their full potential with a non-discriminatory culture.

It was difficult to grade this domain, given that no specific curriculum content focused on diversity. However, given that objective one of the OH content (IPT 2408) expected the learner to *"recognize work-place hazards and conditions"* which varied from the *"industry, health services and other work environments,"* then learners should automatically be expected to have diversity of work stations in place as they implemented objectives E, G and H of the industrial attachment. These objectives suited all the sub-domains apart from 11.2, which had no aspects of reflection, thus giving this an overall alignment of 2.5 to the competency framework.

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The behaviors, knowledge and skills for interacting should be attributes of physiotherapists working in occupational health, since there is a lot of diversity within workplaces and between clients. This domain had an average alignment score of 2.5 with the competency framework because the majority of the sub-domains lacked links with the appropriate course where these attributes were taught, as well as not including reflection in the curriculum content.

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4.4.2.5 Domain 5: Generic behaviours, knowledge and skills for problem-solving and decision-making.

Domain 12: Ensuring Quality. This required the learner to ensure quality in the execution of tasks at work where these OH services are needed according to the legal and policy frameworks governing professional practice in OH.

All of these domains were categorised as 'B', as they were covered by objective four of the occupational health content as well as objective 'H' of the industrial attachment, and was thus considered to have high alignment (4) with the competency framework. The only missing aspect was sub-domain 12.3 which required the learner to demonstrate critical reflection on practice, as it was not present in the OH curriculum content.

Domain 13: Improving and developing services. The learners needed to be able to demonstrate all four attributes, including being able to critically evaluate OH practice and provide effective recommendations in order to make improvements in different areas of their assessment and evaluation.

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Only sub-domain 13.3 could be categorised as 'A', with evidence of industrial objectives A-E addressing this domain by means of bringing change within the profession through assessment and modification of work stations to enable prevention and management of work-related injuries. It was not clear from the curriculum content how the learner was expected to evaluate practice and share effective recommendations with the relevant personnel in order to improve OH practice. As indicated in the wrap-up stage of the document analysis, a further interview with one of the lecturers, he noted that the "l*ack of personnel made it impossible for the lecturers to go out and assess students in the field.*

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Therefore students wrote a report of the assessment that they did and that is what was presented for marking at the department." Reflection was a significant part that was missing from the curriculum content and thus the whole domain had an average alignment score of 1.3 with the competency framework.

Domain 14: Lifelong learning (CPD): This domain had four attributes that seek to engage the learner in continuous learning and self-evaluation as part of professional development. Unfortunately, no content in the OH curriculum could define all the attributes for this domain and so it was considered to have no alignment (0) with the competency framework. Reports from the lecturer indicated that students were placed at an industrial attachment for one month and were expected to write a report while in the field (14.4). All this information is not explicitly stipulated in the curriculum content and students thus do not get either formative or summative feedback about their placement.

Domain 15: Practice decision-making. This domain had four attributes that aim for the learner to make reasoned conclusions in the occupational health context after a critical evaluation of the information collected at the placement based on the ethical and professional issues that are unique to occupational health settings.

Sub-domains 15.1-15.3 were categorised at level 'A' based on the information present in all the industrial objectives in the OH curriculum content, thus having an overall alignment of 2.5 with the competency framework. However, sub-domain 15.4 could not be met due to a lack of reflection described in the curriculum content.

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Domain 16: Researching and evaluating practice (audit). This domain had four attributes that expected the learner to conduct an appropriate work-based project and to give an appropriate evidence-based outcome to both specialist and non-specialist audiences.

Research skills were developed in students as part of the Epidemiology I (IPH 2305) and II (IPH 2306) courses, as well as in Research Methodology (IPH 2311) in the third year, as is evident in the excerpts below.

> *"To impart to students knowledge and skills on carrying out surveys in public health."* **IPH 2306**
>
> *"To equip the learner with knowledge and skills of research methodology for effective medical data collection and management."* **IPH 2311**

However, the research project (MLS 2430) was implemented in the fourth year, which means that students do not get an opportunity to use this knowledge during implementation of the occupational health module. Similarly, no reference was made to any of these courses from the OH content, and thus it had an unclear alignment (1) with the competency framework.

Domain 17: Using evidence to lead practice. This was represented by two attributes that required the learner to use evidence-based information in order to address specific issues that were faced in the work context.

No content in the OH curriculum addressed this domain, despite the fact that students learned about Research Methodology (IPH 2311) in the third year and the Evidence Based Physiotherapy course (IPT 2403) in the first semester of the fourth year, which

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aimed *"To introduce to students the importance and applications of evidence based practice in Physiotherapy practice."* However, students could not use their knowledge of IPT 2403 as they went on their industrial attachment at the end of the third year. No description of the report writing was provided in the curriculum content and so this domain was categorised as 'A' and regarded to have unclear alignment (1) with the competency framework.

The behaviours, knowledge and skills for problem-solving and decision-making are attributes to be possessed by physiotherapists working in occupational health since there is a lot of diversity within workplaces and between clients. This domain had an average alignment score of 1.4 with the competency framework due to the lack of reflection in the curriculum content, the lack of linkage to other attributes taught in other courses, and because the research course is included in the fourth year, while students do their industrial attachment in the third year.

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A summary of the alignment of Jomo Kenyatta University's occupational health content with the major domains of the competency framework is presented in Figure 4.3 below. Domain 4 (that is, generic behaviours, knowledge and skills for interacting) had the highest alignment with the competency framework with an average score of 2.5/4, followed by knowledge and understanding of occupational health. Looking at the JKUAT OHS content it can be concluded that domain four had the highest alignment with the competency framework, because of the industrial attachment objectives that were carrried out with students in the second semester of their third year of study. The presence of these objectives ensured appropriate guidance of the students during the industrial attachment.

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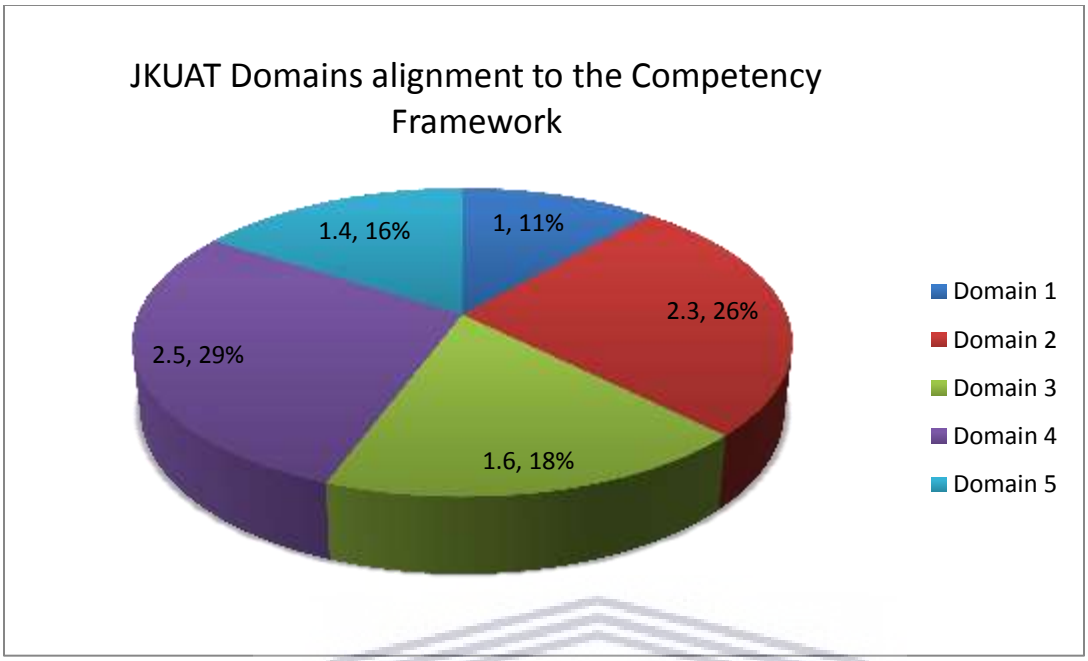

Key: Domain 1-Values, **Domain 2**- Knowledge and understanding of occupational health, **Domain 3**- Practice skills, **Domain 4-** Generic behaviours, knowledge and skills: for interacting**, Domain 5**- Generic behaviours, knowledge and skills: for problem solving and decision-making

Figure 4.3:JKUAT OH curriculum content vs. OH Competency Framework Domains

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4.4.3 Summary of Competency Framework alignment in MOI and JKUAT Universities

Occupational health content was present in the undergraduate physiotherapy curriculum for two universities in Kenya (that is Moi University and Jomo Kenyatta University of Agriculture and Technology). What is evident is that this course was implemented in the final year of the physiotherapy programme at Moi University, whereas at JKUAT the theoretical aspects of the course were taught in the first semester of the third academic year and the industrial attachment was completed in the second semester of the third year. There was no audit trail of the fragmented attributes relating to occupational health

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content that were taught in other courses across the curriculum. Explicit linking of these attributes would enable students to make the necessary connections that they needed in order to be competent in OH at an undergraduate level. The summary of the alignment of these university domains with the competency framework is as presented in Figure 4.4 below, while Table 4.1 presents the duration for the theory and practical aspect of the occupational health course as well as the mean scores of the domains in relation to the competency framework.

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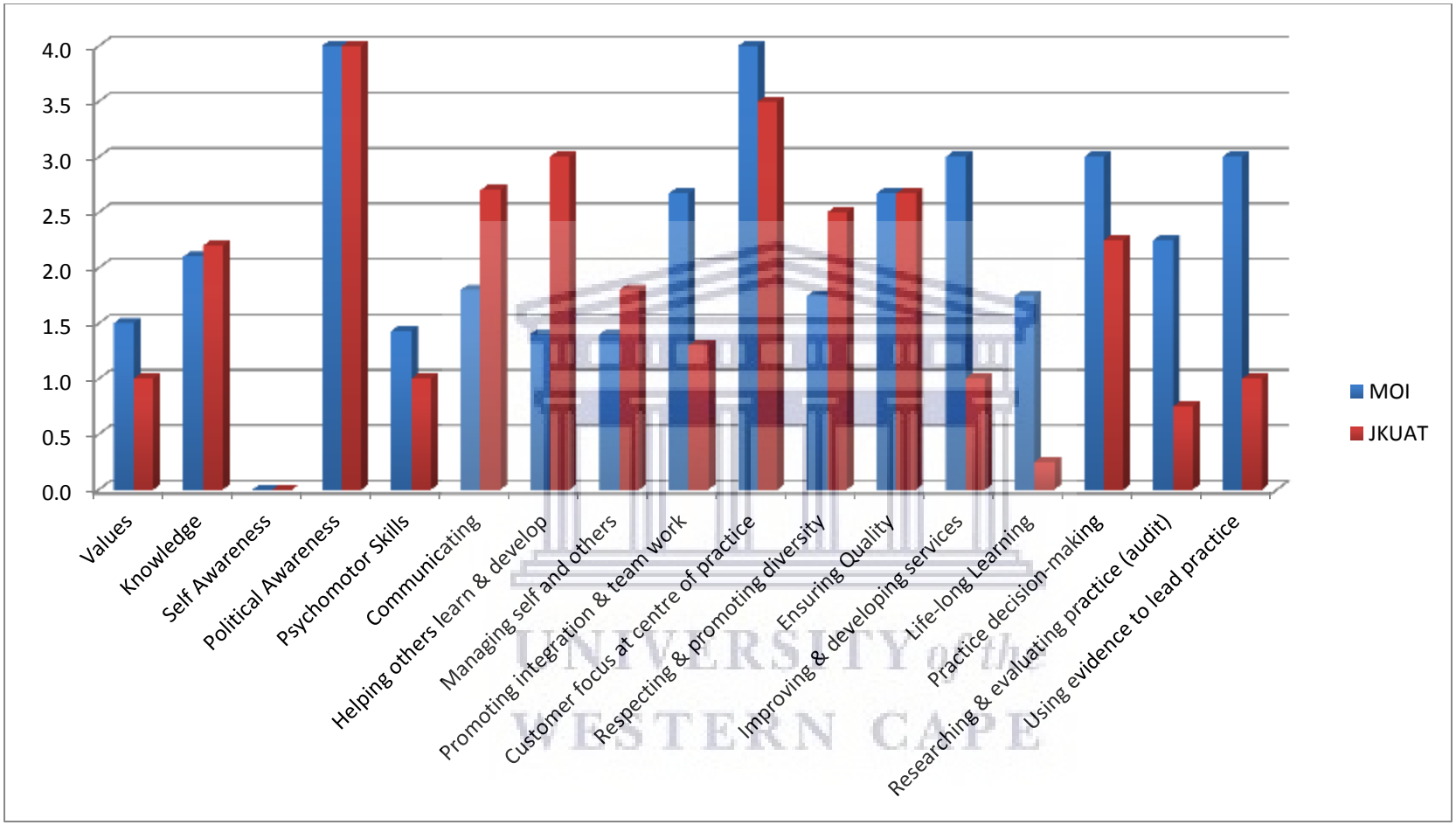

Figure 4.4: Mean score of the alignment of the universities in comparison to the Competency Framework sub-domains

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Table 4.1: Table showing summary of main domains mean scores in comparison to the competency framework (n = 4)

	MOI	**JKUAT**
COURSE UNIT	**3 Units**	**45 Hours**
Theory	Taught for two weeks by a Physiotherapist	Taught for 35 hours and 10 hours tutorials- Outsourced lecturer from Public Health Department
	No indication of pre-requisite courses for OH	No indication of pre-requisite courses for OH
Practical	- Practical for 2 weeks where all students attended in pre-determined areas by course coordinator. - Has no laid-out objectives for the industrial placement in the curriculum content	- Practical for one month where all students decide where they go for placement - Has well laid-out objectives in the curriculum for the industrial attachment
Examinations	Theory examination and report for industrial attachment	Theory examination and report for industrial attachment
Domain 1	**Values/**	
	1	1
Domain 2	**Knowledge and Understanding of Occupational Health**	
	2.1	2.3
Domain 3	**Practice Skills: Needed self-awareness, political awareness, & psychomotor skills**	
	1.8	1.6
Domain 4	**Behaviours knowledge and skills for interacting**	
	2.2	2.5
Domain 5	**Behaviours, Knowledge and skills for problem-solving and decision-making**	
	2.6	1.4
Average	1.9 (47.5%)	1.8 (45%)

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The results from Table 4.1 above suggests that there was an existing occupational health course in the undergraduate physiotherapy curriculum of the two universities sampled in this study. However, with Kenya's history of having only Diploma-level programmes for physiotherapy, this means that OH is fairly new in the physiotherapy field. Similarly, there was varied alignment of the OH curriculum content with the competency framework with mean scores of 47.5% and 45% across the two physiotherapy programmes. Document analysis has thus enabled the identification of gaps in the curriculum that needs to be addressed. Step two of the conceptual framework advises that curriculum developers in a new area may benefit from mentorship from those with expertise as well as with the help of existing stakeholders in the country, including the professional accrediting bodies (Hughes, 2009).

4.5 Discussion

The purpose of the undergraduate medical curriculum is to produce graduates who will care for patients by applying the knowledge and skills gained in a competent and ethical manner through analysis of complex and uncertain situations (Leinster, 2013). The author further states that a good curriculum must therefore be able to "define the learning outcome, the setting in which it should be performed and the standard to which it should be performed" (p.17). This is aligned with what Hughes (2009) discusses in step–two of the conceptual framework for this study about targeted needs assessment in terms of the content for the learners as well as their learning environment. The concept of the 'Targeted Needs Assessment' will thus guide the discussion of this chapter as it relates to the document analysis.

A systematic review by Adam, Peters and Chipchase (2013) supports the competency framework used in this study with regard to the key attributes required by physiotherapists in work-related practice. Broberg *et al*. (2003) reported that considerations must always be

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taken for what should be included in the basic curriculum and in further education. Comparisons between developed and developing countries with regards to occupational health shows special charters with different areas of expertise adding necessary skills for specialisation as part of continuous professional education (Adam *et al*., 2010; Goldstein *et al*., 2001).

The characteristics that best describe the learning content presented to learners are in the form of the cognitive, affective and psychomotor skills. These characteristics are well-aligned with the five domains of the competency framework. The cognitive aspect is addressed by domains two and five, which focuses on the knowledge and understanding of occupational health and ergonomics, as well as the behaviour, knowledge and skills for problem-solving and decision-making. The affective aspect is guided by the set of values presented in domain one of the competency framework. Domains three, four and five address the psychomotor aspect.

4.5.1 Targeted Learner's Content

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The targeted needs assessment of the learner involved identifying the information that was most needed by the learner in terms of the content as well as their environment. Content was described in terms of the knowledge, skills and attitudes that needed to be covered within a course, based on the intended learning outcomes (Leinster, 2013). Hughes (2009) stated that learners' content could include their previous training and experience as well as their expectations regarding the scope of knowledge and skills needed for occupational health (OH). Medical education is designed in such a way that the students are first exposed to the basic sciences, which then builds up to the knowledge and skills to be acquired at their clinical levels, which was evident in the two universities featured in this study. While the OH competency framework tool stated that the knowledge base was not compulsory and may not be introduced in the undergraduate curriculum, the two

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physiotherapy programmes that were evaluated in this study had occupational health content in various capacities, including theoretical and practical aspects. In defining the content to be included in a curriculum, Leinster (2013) noted that identification of the core knowledge in a specific course was of vital importance, and that this could be determined through existing statistics about the core clinical problems that one would find during practice. The presence of the OH module in the undergraduate physiotherapy curriculum in the Kenyan universities addressed the need identified in phase one of this study.

Knowledge and understanding of occupational health were important domains in the occupational health competency framework, including fourteen sub-domains which need to be properly integrated in order to be translated into skills (Owen & Hunter, 2012). The presence of this domain as an important aspect of the competency framework aligned well with the expectations of the targeted learners' content in the six-step development of a curriculum (Hughes, 2009). Evidence suggests that curriculum content influences preparedness for practice and one would not expect sufficient output when OHS content in curricula was taught when entrenched in courses that were not specifically about work-related practice, and occupational safety and health (Adam *et al*., 2013b; Merritt *et al*., 2012; Doherty *et al*., 2009; Chipchase, Williams, & Robertson, 2008; Latter, Rycroft-Malone, Yerrell, & Shaw, 2000). The results of this document analysis indicated that some significant attributes of OH content required by the competency framework were entrenched in other courses without any explicit information within the curriculum for students to identify the links to these other courses. Hughes (2009) has suggested that this may not meet the learners' expectations as they would therefore not be able to identify the scope of the knowledge and skills required of them. This placed the onus on the course coordinator or tutor to make explicit to the students the necessary links between these courses, which was not clear from the featured OH curricula content.

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Learners' existing proficiencies in terms of cognitive (knowledge and problem-solving abilities), affective (attitudes and beliefs) and psychomotor (behaviour, skills and capabilities) skills would enable them to achieve basic competency in the practice of whatever skills they had been taught (Hughes, 2009). In occupational health, "the ability to integrate anatomy, physiology, kinesiology and pathology with body function and movement principles positions therapists to be important contributors to healthy workers and work environments" (Larson & Miller, 2005 p.173). In the USA, there has been discussion around whether occupational health should be included among the eight accepted areas of specialisation (Daley & Miller, 2013). Comparisons were made between the knowledge and skills available in the entry-level physiotherapists and the OHPTs and it was observed that additional competencies were necessary to practice in the occupational health context, often requiring post-graduate studies. A review of the practice of OH physiotherapists identified the following professional guidelines (Larson & Miller, 2005):

Australia: Providing assessments of function in the workplace, job analysis, advice concerning job modification, work conditioning, functional education, identification of suitable duties and injury prevention, OH and ergonomic services.

Netherlands: Detection and development of successful intervention strategies for re-integration of individuals back into the workplace, and providing a low back pain guideline.

Canada: Physiotherapists were uniquely qualified to assume leadership positions in interprofessional teams in order to promote health, prevent injury, disability and disease. These physiotherapists were similarly expected to participate in research concerning the outcomes of physiotherapy interventions and to use scientific evidence in practice,

USA: Assessment and management of acutely injured workers, functional capacity evaluation, work conditioning and hardening, work-related injury prevention and ergonomics,

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legal and risk management issues and assessment of physiologic responses during work activities.

Physiotherapists therefore have a recognised role in occupational health but practice is dependent on the undergraduate programme, as well as further professional development (Boucaut, 2008; Ohtake, 2010). Results from this document analysis revealed that one of the universities in Kenya had students learning and practising OH in their third year of study, whereas the other university had students learn and practice OH in their final year of study. It therefore seems reasonable to ask what aspects of occupational health competencies should be included in the entry-level physiotherapy curriculum, and at what level of study are students fit to be exposed to occupational health practice.

A balance of theoretical teaching and practice was required for knowledge-based professions' practical experience (Smeby, 2007). Practical experience exposes students to processes that they may only have heard about in lectures, but not yet seen in action (Mostert-Wentzel, Frantz, & Van Rooijen, 2013; Patton, Higgs, & Smith, 2013; Futter, 2003). However, there is not much guidance around how much should be taught and practiced at the entry-level of physiotherapy education.

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Skills have been demonstrated as domain three of the competency framework, whereas attitude is situated in domain one. Self and political awareness, as well as psychomotor skills, were considered to be the most important attributes needed for practice in occupational health. Self-evaluation was needed to "both enable effective study, so that students can focus on the most important aspects of their work that they need to improve, and to build the skills that they will need in any area of work following graduation" (Boud, Lawson, & Thompson, 2013 p.942).

Self-awareness involved reflection on personal practice together with feedback from others in

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order to identify and articulate one's personal values and preferences, and then get to understand, with guidance, how these may influence their behaviour, judgement and practice. Reflection was regarded as an attitude or approach that enhanced professional development and practice, through day-to-day experiences by encouraging the practitioners to "think through decisions that have been made with respect to specific patient case or work scenarios" (Prenton, Dugdil, & Hollingworth, 2013 p.67). Reflection has been used iteratively (39 times) across the last three domains of the competency framework (Appendix F- 5.7, 7.4, 8.4, 9.3, 12.3, 13.4, 14.3, 15.4 and 16.3), and it may be worth noting that neither of the two universities in this study had mentioned reflection in any of the OH curriculum content. This made it difficult to objectively explain how students developed their self-awareness during practice.

> "Effective reflection should improve understanding of the positive and negative aspects of practice, and, subsequently, should enable more informed decisions to be made in the future, leading to a better quality of life and health outcomes for the patient. Over time, this enables practitioners to become expert at what they do" (Prenton, Dugdil, & Hollingworth, 2013 p. 68).

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Prenton *et al*. (2013) highlights the importance of reflection within a clinical course to ensure effective self-awareness and the improvement of service. He further stated that reflective practice was significant for continuing professional development (CPD) and evidence-based practice which led to high professional practice as is evident from attributes of domain five of the competency framework. Students at University of Technology in Sydney were asked to assess themselves in order to evaluate whether this task helped them to improve their capacity to make judgements about their performance in their courses (Boud, Lawson, & Thompson, 2013). In the same study, lecturers blindly made judgements about these students'

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performance and only afterwards were the student's self-assessment results revealed. The outcome of this study indicated that students had the capability to improve their grades through effective self-assessment practice and over time they became effective judges of their performance when their tutors provided objective feedback to focus their attention (Boud *et al*., 2013). This feedback enabled the students to monitor their strengths and weaknesses in order to reinforce aspects that were associated with success or high quality as well as to improve on unsatisfactory aspects of their practice (Sadler, 1989).

Similarly, excerpts from a study conducted on students' views of reflection showed that it was initially not meaningful to them, but simply a write-up of events that took place without much thought about it. Guidance from a senior colleague made reflective dialogue more meaningful to their day-to-day practice and indeed enhanced their actions (Smith & Trede, 2013).

The occupational health competency framework categorises Bachelor's degree competencies to be classified at levels 'A' and 'B' (Owen & Hunter, 2012). However, the framework's appendix clearly stipulates that therapists with level 'A' proficiency must work under the supervision of a level 'B' therapist. Kenya will have to find ways of integrating this into their implementation given the lack of enough supervisors in this field. Conducting formal and structured workplace assessment using ergonomics tools needs someone with proficiency at level 'B'. While it is difficult to assess psychomotor skills, we can evaluate them according to Miller's classification in Figure 4.5 below (Leinster, 2013; Miller, 1990). Tasks such as 'providing body mechanics education and training to workers' and 'providing assessment and treatment in an off-site clinic' needs supervision by clinicians at level 'B'. The next phase of the study must then clearly formulate occupational health objectives that will categorise

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students' intended expectations with regard to their practice skills for occupational health practice.

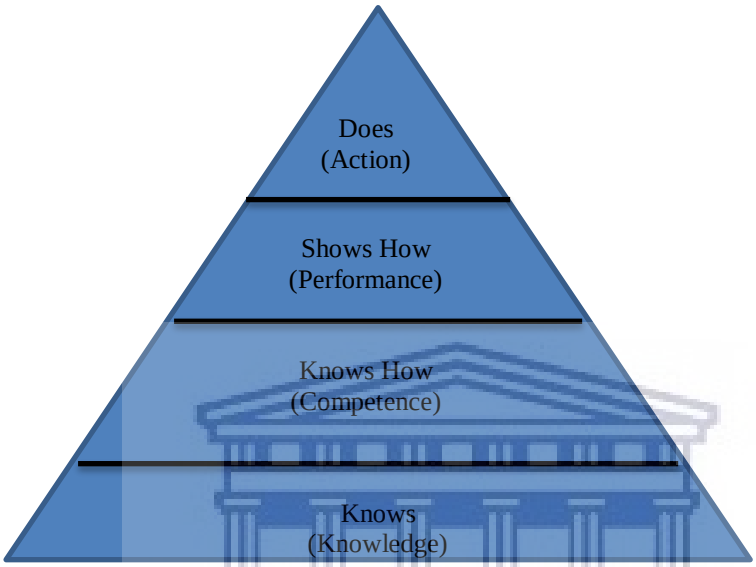

Figure 4.5:Miller's Skills Triangle (Source: Author's own construct)

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Political awareness was made evident in the Kenyan OH curriculum content where students were expected to identify government policy, regulatory bodies, and statutory bodies involved in occupational health, as well as knowing the organisation and structure of work environments. While there may be room for flexibility about what is included in the implicit and explicit curriculum, curriculum content still influenced preparedness for practice and thus it was important for policy regulating OH within a country to be brought to the attention of students (Adam *et al*., 2013b).

Effective demonstration of psychomotor skills in this sub-domain requires evidence of the use of ergonomic assessment tools. Exposure to the use of the relevant ergonomic assessment tools during the practical placement might act as explicit guides to facilitate the development

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of students' psychomotor skills by professional practice capabilities, as students are able to use these guides as models for their own practice (Patton *et al*., 2013; Smeby, 2007). While students were expected to assess and manage ergonomic-related conditions during their placement, no evidence of ergonomic tools was mentioned in any of the curriculum content of the two universities discussed in the document analysis. There was also variation with regard to the duration of time that students were placed for OH practice. At Moi University, students covered theory for two weeks and then had two weeks placement in the industry, whereas at JKUAT students were taught for three hours over a period of fifteen weeks and were sent to an in industrial placement for one month. It seems reasonable to suggest that consensus needs to be reached on the minimum duration that is required for the placement of students in order for them to achieve the required attributes as per the competency framework tool. In addition, possible suggestions could be made on the "standardised ergonomic tools that would be used for assessment during the placement."

The values of OH are attributes that cut across the execution of all the other domains of the competency framework and thus fulfilled the affective aspect of learners' content. These are values that an individual would rely on as part of occupational health practice, which range from altruism, advocacy, compassion and caring, commitment to excellence and impartiality, and accountability for decision-making and actions. None of these values were explicitly described in the OH curriculum content but they were described in some other course content. However, the expectation seemed to be that students would somehow learn these values and apply them in their studies (O'Donovan, Price, & Rust, 2008). While the explicit articulation of these values might appear elsewhere in the curriculum, O'Donovan *et al*. (2008) further states that it is the "mutual engagement of students in activities that allow them to construct meaning for themselves" that would promote more effective understanding and practice of these values (p. 215). It was thus important for students to be engaged and

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assessed in activities that would bring out these values in order to ensure effective demonstration of this behaviour as an expected outcome in OH practice.

The perceived deficiencies and needs of the learner would be measured from an evaluators' student perspective, and this would be possible when students are placed in their industrial placements for the occupational health unit. Dialogue with supervisors, peers and colleagues would aim to encourage reflection and assist learners to develop their self-assessment capabilities (Smith & Trede, 2013). JKUAT had clear industrial objectives from the curriculum content with students being placed for one month in non-specified placement areas, meaning that students were responsible for identifying placements that would fit ergonomic assessments. Moi University had no clear industrial attachment objectives in the curriculum content, but students were placed in pre-determined areas for two weeks by the tutor where they would carry out the necessary ergonomic assessments and needs. The lack of appropriate personnel meant that students worked under either the occupational health personnel or the human resources manager of the relevant institution. Working under a qualified OHPT would ensure adequate supervision throughout the attachment period and provide an opportunity for the physiotherapy student to develop self-awareness for the skills that were practiced. However, Boucaut (2008) stated that clear placement objectives might ensure adequate supervision of the students by the interdisciplinary personnel in any placement area. Kenyan universities should therefore aim to include reflection as part of students' awareness of their needs, as well as clear industrial placement objectives. This was especially relevant for Moi University, that did not have any explicitly stated placement objectives in their OH curriculum content.

Deficiencies in knowledge and skills could be determined by appropriate feedback, which might also be useful to identify reasons for a learner's previous poor performance. Feedback encourages learners to analyse their day-to-day practice introspectively, based on information

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that they receive from their peers or immediate supervisors and to work towards improving their practice. Formative assessment is "how judgments about the quality of students' responses (performances, pieces, or works) can be used to shape and improve the student's competence by short-circuiting the randomness and inefficiency of trial and error learning" (Sadler, 1989 p. 120). Furthermore, Sadler (1989) states that it was important to determine if the learners generated information by themselves, which meant that it was regarded as 'self-monitoring', and if the source of information was external to the learner then it was associated with 'feedback'. This is because both processes were important in formative feedback, especially in being able to identify learners' capacities and motivations to improve performance, attitudes about the current topic, their learning styles, preferred learning methods, and their experiences regarding different learning strategies (Hughes, 2009).

Different institutions embraced different learning methods, including problem-based learning, lecture-based, small group studies and tutorials. However, Leinster (2013) suggests that it is important for the learning outcomes to determine the teaching methods. Similarly, the mode of teaching should also influence the assessment methods. For example, in the context of this study, students needed to write reports for their ergonomic assessments during the placements, which was aligned with the expectations around actual practice. The provision of formative feedback and interaction during the course of the industrial placement would thus act as a motivation to the learners and enable them to understand their capacity and to use the best learning methods.

4.5.2 Targeted Learners Environment

The requirements by Hughes (2009) regarding the targeted needs assessment also researched the targeted institution or learning environment in order to identify if the existing curriculum had addressed the targeted problem. This included determining if their clinical training experience matched their learning needs, whether or not they had adequate placement and

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supervised clinical experience, whether the stakeholders were appropriate to meeting the learners' needs, and identifying the barriers, enabling and reinforcing factors in the targeted learner's environment. The identification of these factors in the curriculum content through the document analysis would ensure the inclusion of relevant content that would meet the needs of the learners and their environments.

The two Kenyan universities offering the Bachelor of Science in Physiotherapy degree had an existing occupational health content in their curriculum. This was an important first step to address the needs of the profession as per phase one of this study, as well as the diversification with regards to the growth of the profession internationally (ACPOHE, 2013; Adam *et al*., 2010; Larson & Miller, 2005). In order to thrive in occupational health physiotherapy, the needs of the stakeholders should be prioritised. This meant that the occupational health physiotherapist (OHPT) needed to build a business case and understand all the different aspects of the workplaces in order to decrease the cost effects of musculoskeletal disease in work productivity (Edwards, 1994; Phillips *et al*., 2012). Under usual circumstances, a physiotherapist was more interested in the patients' physical welfare, but in occupational health the physiotherapist needed to be conversant with the organisation of the company and thereafter provide positive outcomes to the employer as a result of their interaction with the employee. These outcomes, as cited by Handy (1985) in Edwards (1994) are largely dependent on the size of an organisation, its technology, its goals and objectives, the environment and the people in the organisation. Thus, in order for occupational health to be successful, the OHPT is required to satisfy the needs of the organisation's personnel in addition to treating and restoring an employee's health. The inclusion of graduated students who were working in the occupational health context in the next phase of this study will enable the researcher to establish if the needs of those learners had been met. Similarly, the managers of organisations where students were placed to receive occupational health

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physiotherapy services will be important to engage with, in order to determine if their needs were being met by what the students were being taught. This is especially important, given the context that the profession is growing in Kenya and with occupational health having only recently been included in the Bachelor of Science Degree in the Physiotherapy curriculum.

The fourth domain of the competency framework, which investigated the behaviours, knowledge and skills for interacting, had attributes that resonated well with building a business case for the training of OHPTs (Owen &Hunter, 2012). These attributes were entrenched in the six sub-domains which included communicating, helping others learn and develop, managing the self and others, promoting integration and teamwork, keeping customer focus at the centre of the practice and respecting and promoting diversity. These sub-domains focused on integrating occupational health specific outcomes with general physiotherapy practice. These included:

1. being able to communicate within the ethical and legal OH guidelines and constraints,
2. using ICT to inform practice,
3. building relationships in organisations with relevant OH stakeholders,
4. using guidance to facilitate learning and the development of individuals or groups within OH settings,
5. being able to carry themselves in accordance to the OH professional codes and practices and influence others to do this,
6. being able to foster teamwork through networking with the existing OH professional networks,
7. being able to monitor conflicts within these OH groups,

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8. being able to provide specific individual or organisational information that will enhance a participative approach to OH practice, while respecting individuals' and organisations values,
9. and finally, being able to promote diversity to enhance OH practice for people of all backgrounds.

Learners would find it difficult to articulate all of these components of the OH content that would enable them to build a business case for OH if they were not explicitly articulated in the curriculum and given room for practice within the OH practical session (Adam *et al*., 2013a; O' Donovan *et al*., 2008; Smeby, 2007). It was evident from the curriculum content of these two universities that none of these attributes were specifically embedded within one course. Instead, they were fragmented throughout the curriculum with no links as to how they related to each other, making it difficult for a student to connect them to each other. The concept of guidance was repeated (33 times) in the competency framework with a major focus in many of the sub-domains within the fourth domain (7.1-7.4, 8.1 & 8.4, 9.3, 11.2 &11.3). This means that learners would benefit from guidance in some tasks to enable them to practise effectively. Clinical educators who acted as mentors influenced students' perceptions of the reflective practice that occurred (Trede & Smith, 2012). Reflective and critical thinking would enable learners to make ethical decisions regarding treatment interventions with the enhancement of patients' well-being remaining the prime objective, and thus achieving domain ten of the competency framework (Patton, Higgs, & Smith, 2013). Physiotherapy is relational in nature (Patton *et al*., 2013) and hence occupational health placements should serve to create opportunities for learners to engage with their peers, senior colleagues and other professions in the placement areas, as well as with their clients in order to fulfill the requirements of the sub-domains in this area. The findings of this chapter raise a number of questions that will be answered in the next phase of the study in order to

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contextualise occupational health within an African, resource-constrained context sufficiently.

A prominent barrier that may affect learners' institutions and the learning environment in Kenya is a lack of physiotherapists with expertise in occupational health. This is due to the fact that occupational health has never been featured in the previous Diploma-level training of physiotherapists. This meant that current undergraduate students were placed under the care of other occupational health personnel and not Occupational Health Physiotherapists (OHPT) thus limiting their direct mentorship from OHPTs who might act as role models (Hughes, 2009). A study on work ability concept and assessment from a physiotherapeutic perspective revealed that physiotherapists did not readily undertake work ability assessment due to a lack of enough opportunities to write formal reports about patients during their training as they regarded it to be the role of a physician (Stigmar, Ekdahl, & Grahn, 2012). Physicians in primary care, on the other hand, regarded OH as a specialty and felt ill-equipped to deal with OH-related problems, due to minimal OH education during their own training (Elms *et al*., 2005). An excerpt from one of the interviewed physiotherapists in the study by Stigmar *et al*. (2012) supported this point of view:

> *...I don't believe that one can assign any PT to do a work ability assessment; (they) must have some experience*.

Musculoskeletal disorders are part of the common occupational health problems observed in primary health care (Elms *et al*., 2005). These findings support the need for physiotherapists to be exposed to a variety of roles in the course of their training in order to enable them to take responsibility for the different roles offered by occupational health upon graduation confidently. The Ministry of Labour in Kenya cites a lack of sufficient resource personnel in occupational health, thus leading to the under-reporting of occupational health related hazards

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(Kenya, 2013). This lack of human resources has been found in a recent study on the global survey on OH services in an international commission on occupational health (ICOH) member countries of which Kenya is also a member (Rantanen, Lehtinen, Valenti, & Lavicoli, 2017). A similar shortage of physicians in the United Kingdom led to the invitation of other health professionals with expertise in measuring occupational health outcomes in order to avoid becoming burdened with an unmanageable workload (Chetty, 2014). In his critical review study of physiotherapy as a clinical service in occupational health departments, Chetty (2014) demonstrated the capacity of physiotherapists as resource personnel to measure health outcomes in occupational health services. It was thus important to inform Kenyan physiotherapy faculties of the need for specialised practitioners in this domain of practice, and thus mentor those who are growing in the field as their presence was seen to influence and impact on students' reflective practice (Smith & Trede, 2013).

A look at the competency framework, several attributes within the last two domains of generic behaviour, knowledge and skills required for interacting, problem-solving and decision-making (Domains: 7.4, 8.4, 12.3, 15.4 and 16.3) required some aspect of guidance to achieve the required competencies within those domains. This meant that learners needed guidance from their placement supervisors to encourage them to gain the confidence to build on the required competencies within OH placements (Lo, Osadnik, Leonard, & Maloney, 2016). Discussions with supervisors, peers and colleagues during the placement helped to support reflection and to assist novice physiotherapy practitioners to develop confidence with their self-assessment capabilities. Similarly, peer review was seen as a way to provide a formative activity that supported the development of learning rather than judgement, especially when it was done prior to tutor marking (O'Donovan, Price, & Rust, 2008).

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professional development), practice decision-making, researching and auditing, as well as using evidence to lead practice, were the main domains that contained attributes that would ensure that learners developed the necessary behaviours, knowledge and skills for problem-solving and decision-making. Reflective practice was seen to dominate in all of these domains. Prenton *et al*. (2013 p.71) stated that "reflective practice should be seen as a central process for both continuing professional development (CPD) and evidence-based approaches, both of which are fundamental to high quality professional practice" and that is what would enable a learner to achieve his/her full potential as a physiotherapist.

4.6 Conclusion

Occupational health content was present in the undergraduate physiotherapy curriculum for both universities included in the study. The document analysis revealed that this course was not taught as a stand-alone module, but rather had several inputs from other courses within the undergraduate programme. This course was taught in the final year of the physiotherapy programme at Moi University, whereas in JKUAT the theoretical aspect of the course was taught in semester one of the third academic year and the industrial attachment completed in the second semester of the third year. Courses taught in senior years draw heavily from the foundation courses in the earlier years. However, at both universities, there were no explicit links for students to connect the relevance of content that had been learned in previous modules. In auditing, emphasis is placed on the audit trail as it is "entirely through these references and trails that decisions and everyday practices are documented and justified" (Coffey, 2014 p.10). Similarly, curriculum content needs to have reference to the required pre-requisite modules, as this helps to demonstrate the sequencing and hierarchy of how occupational health learning needs to take place.

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4.7 Limitation of the study

One of the greatest limitations of the document analysis was that practical aspects could not be investigated, as this requires one to be in the field for observation. Fragemented course attributes with no reference to the location of pre-requisite knowledge made it difficult for the researcher to make connections to attributes in other courses that would help to build it up for the OH module. Further interviews with course coordinators revealed their awareness of the links. However, this understanding of practice is often contextualised in the professional languages and norms of practitioners and hence is hidden from the undergraduate student (Higgs *et al*., 2004 as cited by Rowe, Frantz & Bozalek, 2012).

4.8 Recommendation

Document analysis has provided further insight into the intended goals and proposed strategies for the required competencies at an undergraduate level. It has given the impetus for discussion by content and context experts in the Delphi study for a consensus to be reached on what competencies are needed by an Occupational Health Physiotherapist, including the content that should be included in the undergraduate curriculum, as well as the learning, teaching and assessment strategies.

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CHAPTER FIVE

DELPHI STUDY

5.1 Background

A Delphi study was conducted to explore the competencies needed by physiotherapists (PTs), as well as the teaching, learning and assessment strategies that are necessary in the occupational health course. The Delphi study is characterised as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem (Turoff & Linstone, 2002, p.3). It has a combination of qualitative and quantitative processes that draws mainly upon the opinions of identified experts to develop theories and projections for the future. This process was used to reach consensus among content and context experts around developing curriculum content for an occupational health course in the undergraduate BSc Physiotherapy programme.

The Delphi study is aligned with step three of the conceptual framework, which researches the goals and objectives that are necessary for curriculum development (Thomas, 2009a). A goal is described as "an end toward which an effort is directed" and has been better referred to as a broad objective, whereas an objective would refer to when specific measurable objectives are being discussed (Thomas, 2009a, p.43). Goals and objectives in the conceptual framework are useful to help to determine the curricular content, learning methods, and the basis for the course evaluation (Kern, 2009). Thus, a Delphi study was thought to be an appropriate method for this phase of the study.

5.2 Methodology

A three-round Delphi study was conducted to determine competencies that are needed by physiotherapists in occupational health, which of this content needed to be included in the OH module of the undergraduate curriculum, the teaching and learning strategies used for

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this curriculum content as well as the assessment strategy necessary for the occupational health module. Data for the three rounds inclusive of the pilot study was collected from November 2017.

5.2 1 Population and Sampling

Purposive sampling was conducted among colleagues at universities offering physiotherapy in Kenya, clinical physiotherapists, alumni students of the Bachelor of Science in Physiotherapy programme, and experts in various fields of occupational health and safety. Clinical physiotherapists involved in occupational health related tasks (n = 11), as well as experts within occupational health, including academics from OT and PTs departments (n = 9) and OH practitioners nationally (n = 3) were considered for the Delphi study. Fifteen participants were considered to be a sufficient sample for each round of the Delphi study (Turoff & Linstone, 2002). Members were invited to participate via e-mails and some members who met the criteria for participating in the study were also invited after being suggested by participating members. Snowballing is further supported by Coolican (2004) as a convenient method of acquiring key informants to a study.

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As work injury management and prevention is an important and growing area of practice for PTs and OTs, it is important for educators to understand the attributes required by employers when they recruit graduates to work in injury management and prevention (Adam, Strong, & Chipchase, 2014 p.568). A Delphi study is a method whereby a group of panellists are selected for their expertise in order to provide a range of opinions as a way of reaching consensus on disputed topics (Iqbal & Pipon-Young, 2009). In the Kenyan context, expertise in OH among physiotherapists was based on their years of experience as clinical physiotherapists, their level of education, and their close engagement with work-related musculoskeletal disorders, because there are no established practising OHPTs. Given the heavy reliance on other multidisplinary team members in the area of OH, occupational

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therapists (OTs) and other occupational health practitioners were also invited to be part of the Delphi panel experts. The selection of appropriate participants is considered to be the most important step in the process, as it determines the quality of the results that are generated (Hsu & Sandford, 2007). Cyphert and Gant (1971), Brooks (1979), Ludwig (1994, 1997), and Custer, Scarcella, and Stewart (1999), as cited in Hsu and Sandford (2007, p.2), point out that three iterations are often sufficient to collect the necessary information to reach a consensus. An extra iteration may be added if deemed necessary. This study consisted of three rounds with a minimum number of 15 participants in each round (Hasson, Keeney, & McKenna, 2000; Turoff & Linstone, 2002).

5.2.2 Pilot study

The pilot study for the Delphi process was conducted with five participants whose demographic characteristics are as described below.

Table 5.1: Demographic Characteristics of the pilot study

	Age (Yrs)	**Gender**	**Level of Qualification**	**Years of general practice**	**Current Profession**	**Years of OH practice**	**Country**
1	54	Female	PhD	25	Lecturer/ researcher	15	Sweden
2	58	Female	PhD	30	Associate Professor inPT	20	Hong Kong
3	-	Male	PhD	-	Lecturer	N/A	South Africa
4	47	Female	MSc PT	24	Associate Lecturer	0	South Africa
5	43	Female	BSc PT, Ongoing MSc OH	15	Clinical PT	1	Kenya

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Key: - signifies missing value that the participant did not indicate

Four participants in this study were lecturers at the university and one was a clinical physiotherapist. The composition of these participants was considered appropriate as content and context experts[3], given the dynamics of the growth of OH in the African context. Two lecturers in Sweden and Hong Kong were involved in teaching OH and practising it, one lecturer in South Africa was involved in coordinating the occupational health attachment. Despite the fact that one other participant did not have experience in OH, all these participants were useful in order to determine the face and content validity of the questionnaire.

The Delphi questionaire was formulated by objectives three to five of this study and they formed open ended questions. Participants were invited to participate via e-mail which had an attachment of the information sheet about the Delphi study and the consent form (Appendix K and L). The participants then received the Delphi study questionnaire (Appendix M) upon consenting which was in the form of a Microsoft Word document. All the five participants consented and responded to the five questions in the two-part Delphi study questionnaire.

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One of the participants responded to questions three and four on the aspect of teaching and learning strategies, stating that there was no difference between these two terms. However, some OH content experts in academia responded differently to the same question and what emerged was that learning strategies were more student based whereas teaching strategies were lecturer based. So, it was agreed through a discussion with the supervisor that we leave

[3] Context experts in this study are considered to be practitioners who have interacted with matters of occupational health (OH) along their line of duty. It must be noted that apart from Occupational Health specialists, clinical physiotherapists in Kenya and those in academia in the African context of this study do not have formal education in occupational health and they have just learnt some aspects of OH in the course of their work.

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these two questions as they appeared and that we would assess based on the responses of the main study participants.

5.3 Procedure

The three rounds of Delphi study ran from November, 2017 to May, 2018. Email invitations were sent in the form of Blind Carbon Copies (Bcc) to all study participants and reminders were sent after every two weeks. A panel of experts were purposefully selected and snowballed for inclusion in this study. Five content and context experts were selected for the piloting of the Delphi study questionnaire in order to determine the content and face validity of the questionnaire. Electronically mailed invitations were sent to 23 experts from various parts of the world as shown in Table 5.2. A copy of the study information sheet (Appendix K) and a consent form (Appendix L) were included with the invitation. The information sheet explained the purpose of the study and what was expected from the panelists. Signing of the consent forms confirmed the willingness of the participants to be included in the study. Seventeen participants (73.9%) signed the consent form and agreed to participate in the study.

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5.3.1 Round one of the Delphi

In their study of developing a practice guideline for occupational health services by using a community of practice approach, Kwak, Wahlin, Stigmar and Jensen (2017) described the importance of including the end-user in the developmental process in order to drive appropriate use of the guideline and facilitating evidence-based practice. While Hsu and Sandford (2007) emphasised the process of including experts in the Delphi study, it was still beneficial to include the end-users of this curriculum, including alumni students of the BSc Physiotherapy programmes in Kenya, in order to identify the required competencies for inclusion in the draft OH physiotherapy curriculum content. Including students as part of the stakeholders' review of the curriculum was highly recommended (Kern *et al*., 2009).

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Thus, round one of the Delphi study included academics and clinical physiotherapists as well as other stakeholders in the occupational health team, for example, occupational health doctors, occupational health managers and alumni students. Purposive sampling of 23 participants was done. Open-ended questions guided by the literature and the objectives of the study were used in the first round to explore the competencies needed by physiotherapists in relation to occupational health. Part two of the questionnaire for round one of the Delphi study aimed to explore the content that is required in the physiotherapy undergraduate curriculum, as well as the teaching, learning and assessment strategies. Thematic content analysis was used to analyse the responses to the questionnaires (Lundman & Graneheim, 2004). The findings of round one were used to construct the questions to be included in round two.

5.3.2 Round two of the Delphi

The second round included similar study participants to those of round one with the aim of reaching consensus with respect to the competencies described in the previous round. The questions included in round two were closed-ended questions in the form of a six-point Likert scale which was later collapsed to two categories of *Agreed* and *Disagreed* on the final analysis to enable consensus to be reached. Participants were expected to rank the competencies according to importance and were thus analysed quantitatively. Space for open comments was provided to allow participants the freedom to express their views (Iqbal & Pipon-Young, 2009). When participants had reached consensus on 75% per item, round three of the Delphi study commenced.

5.3 3 Round three of the Delphi

The purpose of this round was to invite panellists to consider their scores alongside the group responses and then to decide if they wanted to change any of their previous responses for the items that did not reach consensus (Iqbal & Pipon-Young, 2009). The items which did not

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reach consesus in round two were included in round three. A Likert style questionnaire was used to try and reach consensus on the feedback that had been provided so far (Iqbal & Pipon-Young, 2009). Data was analysed in form of descriptive statistics.

5.4 Results

This study constituted three rounds of Delphi study and the results are as presented below.

5.4.1 Demographic Characteristics (n = 17)

Seventeen participants of the total of 23 (73.9%) signed the consent form and responded to round one of the Delphi study. Their socio-demographic characteristics are presented in Table 5.2 below. The mean age of the Delphi study participants was 45.7 years and their average years of general practice and occupational health (OH) practice were 22.2 and 12.1 years respectively. One of the participants included in the study was an alumni of one of the universities in Kenya. While this participant did not meet the inclusion criteria of having five years of working experience, he was nonetheless included because the university programme in which he participated had not been in existence for more than five years. It was therefore decided that, exclusion of this candidate would exclude representation of study participants from this university.

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Table 5.2: Demographic Characteristics of Delphi study participants

Part no.	Age (Yr)	Gender	Level of Qualification	Current Profession	Years of general practice	Years of OH practice	Country
3.	39	Male	MSc Physiotherapy	Senior Physiotherapist- OH	3	12	UK
7.	64	Female	BSc, PhD Physiotherapy	Physiotherapist	27	8	South Africa
16.	60	Female	PhD	Lecturer	40	30	Australia
17.	57	Female	BSc Physiotherapy, PhD	Academic	15	10	Australia
4.	70	Female	PhD Occupational Therapy	Occupational Therapist	48	35	Australia
2.	56	Female	PhD	Researcher, Ergonomist, Registered Physiotherapist	30	16	Sweden
8.	46	Female	BSc Physiotherapy, MSc Ergonomics, PhD Physiotherapy	Physiotherapy, Ergonomics, Management	25	20	Australia
11.	44	Female	BSc Physiotherapy	Occupational Health Physiotherapist	22	12	South Africa

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14.	47	Male	MSc Occupational Health	Occupational Safety and Health Specialist	20	6years 7 months	Kenya
13.	27	Male	BSc Physiotherapy	Physical Therapist	3	2	Kenya
1.	39	Female	BSc Physiotherapy	Physiotherapist	17	3months	Kenya
9.	52	Female	MSc Occupational Therapy	Occupational Therapist	31	4	Kenya
5.	47	Male	BSc Physiotherapy	Physiotherapist at Management level	27	-	Kenya
6.	48	Male	MSc Occupational Therapy	Occupational Therapist	25	2	Kenya
12.	49	Female	BSc Physiotherapy	Occupational Health Physiotherapist practice owner	10	18	South Africa
10.	40	Male	BSc (Hons) Physiotherapy, MSc Ergonomics	Occupational Health Physiotherapist	17	12	UK
15.	39	Male	PhD	Occupational Therapist	18	18	South Africa

Key: 'Part no.' means 'participant number'

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5.4.2 Round One

This round included seventeen participants with two parts of an open-ended questionnaire. The first part of the questionnaire was aimed at finding the competencies required by Physiotherapists in Occupational Health, and the second part was aimed at identifying the content to be included in the undergraduate physiotherapy occupational health module, as well as the teaching, learning and assessment strategies. This round had a 73.9% response rate from the participants. Content thematic analysis was used to group participants' responses into similar themes and categories that enabled the formulation of the closed-ended questions in round two.

5.4.2.1 Data analysis

Content thematic analysis enabled formulation of round two questionnaires from the responses received from round one of the Delphi study. Creswell (2003) states that the process of qualitative data analysis involves making sense of text data continually, and therefore several generic steps must be followed to ensure that the data is valid. Eleven major themes emerged in response to question one. Part two of the questionnaire in round one had six themes for question one, sixteen themes for question two, nineteen themes for question three and finally ten themes for question four. These themes were scrutinised by the supervisor to ensure that the participants' responses matched the themes that the responses were placed in. The questionnaire for round two was then subjected to a reliability test before administration to determine the internal consistency of the items placed within each theme which was expected to result in a Cronbanch Alpha of > 0.7. Internal consistency has been described as the degree to which the items that make up the scale all measure the same underlying attribute (Pallant, 2011). All the questions in the various categories had good internal consistency, apart from the four categories presented in Table 5.3. These questions/categories had low internal consistency (Cronbanch Alpha <0.7) and they were

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therefore subject to further discussion with the supervisor and statistician for re-categorisation. '*Knowledge of acts and regulations of the country's law and workers'* had a low internal consistency of 0.577, hence *'Knowledge of occupational health ethical practice'* was deleted as addition to this response had negative correlations with the rest of the data in this category. Similarly, as Streiner, Norman and Cairney (2015) state, the Cronbanch Alpha is dependent on the number of items in a scale with the fewer items in a scale depicting a lower Cronbanch Alpha, which was the case for item 4 in the table below. In addition, Kline (1986) as cited in Streiner *et al*. (2015 p.84), stated that "the usual rule of thumb is that an item should correlate with the total score above 0.30. Items with lower correlations should be discarded." With the elimination of part three of item one, the internal consistency improved to 0.701. Themes two and three with fewer items were combined and the internal consistency increased to 0.725. Finally, since item 4 could not be linked to any other, the last rule of thumb was applied and since the internal consistency was greater than 0.30, the item was retained, because communication was an important attribute for OHS.

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Table 5.3: Internal consistency

		Cronbach's Alpha if item deleted	Cronbach's Alpha
1	**Knowledge of the acts and regulations of the country's law and workers**		
	Knowledge of OHS legislation	.662	.577
	Knowledge of other relevant legislation including case law, privacy and industrial relations	-.503	
	Knowledge of occupational health ethical practice	.689	
	Eliminate item 3		0.701
2.	Return to work process	.	.780
	Business case for good rehabilitation and early return to work	.	
3.	Rehabilitation for work readiness e.g. work hardening programs	.	.357
	Management of workplace incidents, accidents and injuries	.	
	Combination of variables Two and Three		.725
4	Communication techniques	.	.595
	Negotiation and mediation skills	.	

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5.4.3 Round Two

5.4.3.1 Part One

The questionnaire for round two was distributed to a similar group of participants and this time the response rate was 100%. Participants responded more quickly than in round one and two international experts responded in this round despite them not having given feedback in the first round. Part one of the questionnaire sought consensus on the competencies required by a physiotherapist with regard to occupational health. The results were aggregated from the six-point Likert scale and are as presented in Table 5.4 below.

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Table 5.4: Frequencies of responses to part one (n = 17)

		Disagree	Agree
1	**Knowledge of Musculoskeletal Health**		
	Knowledge of human anatomy	-	100%
	Knowledge of physiology	5.9%	94.2%
	Knowledge of disease, disorder and dysfunction	-	100%
	Understanding of prognosis, recovery patterns and timeframes for musculoskeletal conditions	-	100%
2	**Knowledge of Biomechanics, Ergonomics and Injury prevention**		
	Knowledge of biomechanics and ergonomics in various workplaces	-	100%
	Understanding the physical and psychological effort required to perform a task	-	100%
	Understanding the risk factors for musculoskeletal injuries	-	100%
	Understanding and analysing the epidemiology of work-related injuries	-	100%
	Prevention of musculoskeletal injuries	-	100%
3	**Knowledge of functional outcome measures**		
	Understanding best practice evidence	-	100%
	Skills in assessment of specific workplace injuries	-	100%
	Knowledge of risk management tools	-	100%
	Understanding of monitoring and evaluation strategies	5.9%	94.1%
4	**Conflict resolution with variety of stakeholders**		
	Written and oral communication skills	-	100%
	Ability to write for different audiences e.g. legal, employer, insurer, other health professionals	-	100%
	Good listening skills* (16)	-	100%
	Negotiation and mediation skills	5.9%	94.2%
	Need to make a business case for occupational health and motivate change of behaviour	5.9%	94.1%
5	**Working in teams**		
	Understanding different stakeholder perspectives and rights	-	100%
	Develop understanding of organisational factors and impact on health and work	-	100%
	Competencies in offering relevant professional advice to employee and other team members* (16)	-	100%
	Rehabilitation of work done in consultation with other stakeholders	5.9%	94.1%
	Skills for interaction with stakeholders e.g. team player	5.9%	94.1%
6	**Occupational health theory and practice**		
	Understanding the role of work (paid and unpaid) in people's lives	11.8%	88.2%
	Commercial knowledge of occupational health physiotherapy	-	100%
	Good administrative skills	-	100%
	Knowledge of the bio-psychosocial model and its application to	5.9%	94.2%

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	work and disability		
	Critical analysis of various occupational health needs	-	100%
	Understanding impact of physical, psychosocial and organisational factors on injury and recovery* (16)	-	100%
	Knowledge of how to prevent and manage work-related disorders	-	100%
	Knowledge on how to evaluate effect of interventions in individuals and groups	-	100%
	Professional behaviour: confidentiality, objective practice, flexibility, self-reflection, assertiveness, responsible, impartiality, using evidence to lead practice, honesty, integrity, compassion, caring, accountability for actions, commitment to excellence	-	100%
	Appropriate rehabilitation skills including: work conditioning, work hardening, other work options or vocational options following injury, providing solutions of different work aids and equipment	5.9%	93.1%
	Focusing on the usefulness of interventions for the service user (patient/worker)	-	100%
	Keep up to date with evidence-based practice in occupational health	-	100%
	Basics on fitness for duty* (16)	-	100%
7	**Knowledge of the acts and regulations of the country's law and workers**		
	Knowledge of OHS legislation	-	100%
	Knowledge of other relevant legislation including case law, privacy and industrial relations	-	100%
8	**Skills for teaching and training others about health, work, ergonomics and prevention of musculoskeletal injuries* (16)**	6.3%	93.9%
9	**Good clinical knowledge of mental health**	5.9%	94.1%
10	**Knowledge of the neurophysiology of pain**	5.9%	94.1%
11	**Disaster management and mitigation strategies* (16)**	18.8%	81.3%

Key: * signifies that its less than the targeted sample size

In addition to the above quantitative responses participants also added several comments in relation to the above themes and competencies required for occupational health practice. These open responses are presented below.

Participant 16 reported that appropriate rehabilitation skills included: work conditioning, work hardening, other work options or vocational options following injury, providing solutions of different work aids and equipment, "*could be outsourced if the physiotherapist is unable to do it*." Similarly this participant reported that *"I think it is unrealistic to expect the*

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OHP to be excellent in all the above. Part of the skill set for the OHP is to understand the boundaries of their knowledge and skills and know when to refer to an occupational physician or psychologist. Also, many of the knowledge and skills required above would need to be context specific and the legislation in place."

Participant 15 noted that *"case law is not so important for students in our country similarly with industrial relations."* Hence the law in Kenya should be taken into consideration when developing the content of the occupational health module.

Participant 13 added, *"The OHS content in undergraduate physio programme should equip the learners with basic understanding of OHS issues in the workplace. How the programme is implemented and how a physio professional supports/works in partnership with the OHS department. Care should be taken that the physiotherapists are not loaded with what is more relevant to the OHS specialists themselves. They should understand others and refer to OHS department, psychologists, doctors etc."*

Participant 12 added that *"The role of technology in occupational health as well as the structural construction science in occupational health determination."*

Participant 11 added, *"Although it seems quite daunting, but I agree with all of the above is needed for effective implementation of occ. health. The legal aspects are obviously country specific but as you would want to training Kenyans for Kenya then this is good. However, if they move to a new country they will need to know they need to learn the law relevant for that country."*

Participant two added *"all the areas are most relevant knowledge for those working in OHS. It is hard to say they don't need it. I guess disaster management is relevant if you work in countries where it occurs or if you can work in those places."*

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All the above factors by the participants should thus be taken into consideration during the development of the objectives for the occupational health module.

5.4.3.2 Part two

This part of the questionnaire aimed to find consensus on the content to be included in the occupational health module as well as the teaching, learning and assessment strategies. The frequencies of the responses are as presented in Table 5.5 below.

Table 5.5: Frequencies of responses to part two (n = 17)

		Disagree	Agree
	Occupational Health Content		
1.	**Occupational health and safety topics**		
	Definitions and descriptions of what occupational health is all about	-	100%
	Occupational health stakeholders and their roles	-	100%
	The unique role of the Physiotherapist in Occupational Health	-	100%
	Wellness at work and effects of sedentary behaviour	-	100%
	Evidence for relationship between work and injury e.g. biomechanics, ergonomics, occupational hazards	-	100%
	Functional and structural anatomy, physiology* (16)	-	100%
	Epidemiology and types of occupational disorders and injuries	-	100%
	Economics of workplace injuries	5.9%	94.1%
	Workplace structure and organisation	11.8%	88.2%
	Assessment and safety audits of working environment	23.5%	76.4%
	Ethics related to occupational health and safety	-	100%
	Models of the labour market	23.6%	76.5%
	Practical: Evidence based work interventions	-	100%
	Research in occupational health	5.9%	94.1%
	Models of occupational health* (16)	18.8%	81.4%
	Bio-psychosocial model and occupational psychology	5.9%	94.1%
	Preventive measures for work-related disorders	-	100%
	Work disability models	11.8%	88.3%

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2.	Return to work process* (16)	6.3%	93.9%
	Business case for good rehabilitation and early return to work* (16)	12.5%	87.6%
	Rehabilitation for work readiness e.g. work hardening programs	5.9%	94.1%
	Management of workplace incidents, accidents and injuries	5.9%	94.1%
3.	**Assessment of risks for injury and prioritize hazards**		
	How to conduct workplace risk assessment, identify hazards and risk factors and control them	-	100%
	Assessment procedures for occupational health and safety	-	100%
	Medical examinations, management of sick employees and assessment of liabilities* (16)	18.8%	81.3%
	Select and accurately use a range of clinical outcome measures in OH service e.g. Quick exposure check (QEC), ICF	5.9%	94.2%
	Patient and staff safety as well as safety in the general workplace environment	-	100%
	Monitoring and evaluation for occupational health strategies	11.8%	88.2%
4.	Communication techniques	-	100%
	Negotiation and mediation skills	5.9%	94.1%
5.	Medico-legal reports and compensation	11.8%	88.2%
	Application of Work Injury Benefits Act (WIBA) 2007 during management of workplace injuries* (16)	12.5%	87.6%
	Leadership and governance	17.6%	82.4%
	Teaching Strategies		
1.	Lectures	-	100%
2.	Tutorials	-	100%
3.	Individual and group discussions	-	100%
	Provision of scenarios and case studies	-	100%
4.	Collaborative learning	-	100%
5.	Guest speakers e.g. formal lectures from experts in occupational health	-	100%
6.	Conferences and workshops	11.8%	88.2%
7.	Industrial attachment for practical experience in work place assessment and management	-	100%

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8.	Provision of coaching and mentoring opportunities	5.9%	94.1%
9.	Role playing for simulation of work scenarios	5.9%	94.1%
10	Use of videos of work settings and discussion of work processes	-	100%
11	Research	5.9%	94.1%
12	Occupational health report planning and writing	-	100%
13	Pre-course reading material with independent information e.g. work legislation, back pain and other body part protocols	-	100%
14	Modules of disaster management	35.3%	64.7%
15	Assignments	-	100%
16	Examination* (16)	6.3%	93.8%
	Learning Strategies		
1.	Lectures from various experts	5.9%	94.1%
2.	Group discussions	-	100%
3.	Logbooks/journal entries to monitor learning* (16)	25%	75.%
4.	Court procedures and insurance attachment exposures	31.3%	70.6%
5.	Clinical and industrial placements	5.9%	94%
6.	Student-centred activities* (7)	-	100%
7.	Pre-reading activities e.g. course work with clear goals for the course	-	100%
8.	Self-directed learning	5.9%	94.1%
9.	Independent lifelong learning	5.9%	94.1%
10	Individual reflections following workplace activities	-	100%
11	Active student engagement throughout the course* (16)	-	100%
12	Student assignment e.g. own literature review	5.9%	94.2%
13	Research, report writing and presentations	-	100%
14	Reinforcement of physiotherapy competence in all aspects of new-graduate practice besides occupational health	-	100%
15	Oral/written communication with stakeholders	-	100%
16	Basic understanding of legislation and societal pressures	5.9%	94.1%
17	Use of tools and outcome measures e.g. Rapid Entire Body Assessment (REBA), Rapid Upper Limb Assesment (RULA), Risk matrix	-	100%

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18	One on one guidance and mentoring	5.9%	94.1%
19	Increase use of multimedia activities	5.9%	94.1%
	Assessment Strategies		
1.	Practical skills demonstration e.g. Objective Structured Practicl Examination (OSPE) or in real working areas	5.9%	94.1%
2.	Assignments with either written or oral presentations	-	100%
3.	Research or field reports	5.9%	94.2%
4.	Theory question in form of continuous assessment test (CATs) and Final papers* (15)	6.7%	93.3%
5.	To assess risk management and return to work (RTW) of practical activity* (15)	6.7%	93.3%
6.	Workplace case study	-	100%
7.	Open ended or multiple-choice questions (MCQs) that are scenario based	11.8%	88.2%
8.	Students to name areas of practice	29.4%	70.6%
9.	Assessment of reflective portfolios	11.8%	88.3%
10	Learning logs	17.7%	82.3%

Key: * signifies that its less the targeted sample size, less than 75% consensus

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In addition to the quantitative responses in the table above, participants also added further comments which are presented below.

Participant 16, reporting on content that needed to be included added that, *"Some of the above skills and topics are best addressed in the workplace and gained with maturity and experience"*

On teaching strategies **participant 16** added that, *"I agree that all the above strategies are useful for helping students learn about OHP. What is possible within your context and budget*

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is another matter! The more engaged the student is in actually DOING, the better the understanding and appreciation for the role of an OHP."

On learning strategies, *"From my experience, students say they like flexible delivery of learning activities but I don't think they gain deep learning from this activity. Group discussions, industry placements, and the use of technology really engage students to learn. Have you thought of using virtual reality to give students the experience of walking through a workplace to identify hazards?* ***(P 16)***

On assessment strategies, *"I would suggest assessment strategies that enable the student to demonstrate the key learning outcomes and are least demanding on your time. Perhaps consider peer review of say a workplace case study where students can assess another student's case study and provide feedback on what could have been done differently."* ***(P 16)***

Participant 15 was not sure about the Kenya Act on occupational health and so could not effectively address the question on inclusion of content regarding Kenyan OHS legislation. On teaching strategies, the participant added a further consideration: *"Risk management model/approach or other model to assist independent reasoning of OHS issues and to provide students with a structure for this.*

Participant 13, responding to a question on "assessment and safety audits of working environments" added that, *"Audits, inspections and risk assessments required different levels of competencies; and that more structured audits were done internally or by external agencies for regulatory purposes."* With regard to occupational health content in general, this participant added, *"physiotherapists work in partnership with other professionals i.e. OHPs (doctors), who will be legally required to write medical reports. OHs professionals will also guide the organization in matters such as medical examinations etc. Therefore things that score '6' in the questionnaire are good to know but not a must."*

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With regard to teaching strategy no. 7: 'Industrial attachment for practical experience in workplace assessment and management', **participant 13** noted that *"Since these are not OHS students, I would reduce the industrial attachment to very few days less than one week, as their goals will be to see how physio works in OHS set up, their roles, linkages, referrals to who? etc"*

Related to strategy 14, which considered modules of disaster management, he stated that *"Disaster management (in) my opinion should be a topic not modules. The goal of this is to help learners understand workers safety issues when responding to disaster i.e. back injuries when lifting and transporting victims."* ***(P 14)***

The verbatim response from participant 13 comments on the OHS course is *"My understanding is that these are undergraduate physio students, with their core study area being physiotherapy. Their knowledge of OHS is key because of their contribution in this area. It also prepares them and broadens their skills and knowledge into areas of future career pursuit. But for undergraduate I am aware of time factor and other demands in the core subject area. I would therefore be careful not to overload their programme with OHS stuff. We need to examine this topic/module with rigor of the core subject area. Other areas that would also be important for them to be broad on their knowledge, understanding and practice are also things like infection control, HAZMAT (hazardous materials), which we only tackle when they start working but now should be included in training programme."*

Participant 11 on the content of the OH course stated that, *"I didn't understand what was meant by models of labour market. I sense a lack of the psychosocial elements (identifying, addressing, managing) and the huge bearing they have on all of the above."*

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With regard to learning strategies this participant also added, *"as research, tools, outcome measures, legislation continues to change it is vital to teach the elements that are needed and how to access rather than full focus on the use of current strategies as these will change."*

Participant 9 reported that *"These topics will be dependent on the time allocated for the OSH unit."*

Participant 4 when responding to an item related to 'Patient and staff safety as well as safety in the general workplace environment' suggested that *"please don't use 'patient' it is injured worker."* **Participant 2,** with regard to the number of learning strategies included, felt that there were *"Many good strategies, but all of them won't fit into a program?"*

5.4.3.3 Summary

Round two of the Delphi study unveiled rich inputs from the participants with regard to the included content, teaching, learning and assessment strategies. The participants' different environmental and professional background offered a variety of strategies to be used in the occupational health course, although the researcher would need to contextualise all of them for the Kenyan setting. These factors will be useful in the development of the curriculum content for the occupational health module.

Part two of the questionnaire had three items that did not reach 75% consensus, which are presented in Table 5.6 below. These items were included in round three in an attempt to reach consensus.

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Table 5.6: Lack of 75% Consensus

	Theme and variable	**Agreed %**
1.	**Teaching strategies**	
	Modules of disaster management	64.7%
2.	**Learning strategies**	
	Court procedures and insurance attachment exposures	70.6%
3.	**Assessment strategies**	
	Students to name areas of practice	70.6%

5.4.4 Round Three

Three questions did not reach consensus and were thus included in a third round of the Delphi study **(**Table 5.7**).** Therefore a lack of consensus in round three for these questions thus necessitated their withdrawal from the undergraduate core content and they should possibly be considered as electives.

Table 5.7:Frequencies of Round Three Responses

	Round Three		Round Two	
	Disagreed	**Agreed**	**Disagreed**	**Agreed**
Modules of disaster management	83.3%	16.7%		64.7%
Court Procedures and insurance attachment exposures	33.4%	66.7%		70.6%
Students to name areas of practice	50%	50%		70.6%

In addition to the above-mentioned quantitative responses from participants, one participant added regarding the item on disaster management - that

"There are other modules I would put in first, my course if full of information and this is not included. However, context is important and perhaps this is more of a priority

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in Kenya, not sure. It could be mentioned in passing (e.g. case study) within my own course rather than a large amount of content. It is not part of the current curriculum" ***(P15)***

Still on the above variable of inclusion of modules of disaster management as a teaching strategy, another participant suggested an additional topic of "*emergency preparedness and response and proposed that disaster management should be an independent module*". ***(P9)***

With regard to court procedures and insurance attachment exposures, participant 15 stated that,

"depending on context, I would see this as a post graduate level however I do believe students need to know about the importance of keeping adequate records so that if they are asked by courts then they are ready similarly with insurance – i.e. that students are aware of record keeping as an important part of practice – this is part of the curriculum – for us this is taught throughout the u-g program and just referred to in OHS – students do write a report and this year will prepare a RTW schedule for a patient, the form for this is provided by the regulator and it also helps with insurance cases in RTW. I think it also depends on the legislation because in other parts of this country it may be more important, here its more of a no-blame type of system when a worker is injured, although all parties have duties of care and responsibilities."

With regard to the last aspect of student assessment where the student was expected to name areas of practice, two participants ***(P9 and P15)*** stated that they did not fully understand the meaning of this question. However, an additional comment from participant 9 was that *"– as long as the area provides opportunities for the student to learn. This allows students set their own priorities towards becoming self-directed learners. It also allows positive perception of*

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the learning process." The correlation of the teaching variables would decrease to 0.882 from 0.885 if this variable were deleted.

5.4.5 Summary of results

The results presented in this section have provided insight into participants perspectives about the content that should be included in the undergraduate occupational health module, as well as the teaching, learning and assessment strategies to be used. The content included all the three aspects of learning, including cognitive, psychomotor and affective skills. It is evident that undergraduate students need to know what is involved in occupational health and how to perform the various aspects of assessments in OH. This is aligned with the Miller's skills triangle that was presented earlier on in the previous chapter. It was evident that there were a number of contextual factors to be considered. First, with the lack of response from OH experts where students are placed then this is possibly still a new field that needs more advocacy and intergration of the multidisciplinary teams. Secondly, we need a strategy for how to handle competent entry level physiotherapists working in the occupational health industry in order to ensure the presence of appropriate supervisors in the future. This could be done in the form of peer assessment and case presentations by using valid ergonomic assessment tools to help them gain mastery of the assessment process. The amount of time needed for this course, as well as whether it should be done at the third- or fourth-year level still remains a question to be answered. Thirdly, occupational health legislation varies from country to country, so students should be aware of this in order to prepare them better for practice. Lastly, the occupational health module will only provide students with basic knowledge for OH practice and that further post-graduate training will enable them practice efficiently as an OH PT. The discussion in the next section will contextualise several aspects brought about by the study participants.

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5.5 Discussion

The main finding in this study is the agreement among experts on the competencies needed by physiotherapists to work in occupational health, and the agreement on the content required in the occupational health module. These will be discussed in the sections presented below.

5.5.1 Competencies needed by Occupational Health Physiotherapists

The results of the Delphi study are aligned with the literature on the topic of the competencies required by physiotherapists working in occupational health. Eleven (11) major themes emerged in responses to question one: *Knowledge in musculoskeletal health; Biomechanics, ergonomics and injury prevention; Functional outcome measures; Conflict resolution with variety of stakeholders; Working in teams; Occupational health theory and practice; Acts and regulations of the country's law and workers; Training of staff on prevention of musculoskeletal injuries; Good clinical knowledge of mental health; Knowledge of the neurophysiology of pain and Disaster management and mitigation strategies*. The competencies described by the Delphi study participants resonates with those in the competency framework for physiotherapists in occupational health (Owen & Hunter, 2012). Occupational health practice for physiotherapists deviates slightly from knowledge of purely clinical competencies of patient assessment and hence it is important for students to be adequately prepared for what they experience upon graduation (Stigmar, Ekdahl, & Grahn, 2012). This is especially relevant in Kenya with the history of Diploma-level training in physiotherapy and no formal specialisation in other areas of practice.

Articles for the roles and competencies needed by physiotherapists in occupational health dates back to 1994, 1996 and 2013 and they feature the evolving requirements needed for Occupational Health Physiotherapists (OHPTs) (Adam, Peters, & Chipchase, 2013; Boucaut, 2003; Bryan, Geroy, & Isernhagen, 1994; Eastlake, 1994b; Johnston, 2013; Potts, 1996). Bryan *et al*. (1994;1993) in their previous study highlighted how OHPTs thrived with very

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little formal academic preparation in the field of OH. As seen in their subsequent study in (1994), a survey among OHPTs from the American Physical Therapy Association (APTA) showed the mean average rating of the importance of non-clinical competencies being higher (3.66) than the actual mean level of competence (3.17) that these PTs had to practice in OH. The authors summarised this as a gap and thus highlighted the need for continuing education for OHPTs, or even better, a change in the graduate preparation for this field (Bryan *et al*., 1994). A decade later, Boucaut (2003) wrote about physiotherapy student placement in industries within Australia as a way of learning about occupational health and safety. In her article, she describes the evolution of an OHS module in an undergraduate programme from being an elective curriculum component to becoming compulsory in their final year of study. This practical exposure and supervision during training prepares students for the management of work-related injuries upon graduation and helps to address the educational gap facing practicing OHPTs (Boucaut & McPhee, 2013; Boucaut, 2003).

Some of the non-clinical competencies mentioned that were in alignment with this study were: knowing key concepts and variables within business and industry organisations which matched the theme of OH theory and practice, having a clear understanding of federal law and state laws and regulations affecting business and industry, analysing organisational settings by getting information about the organisation, and establishing good rapport and good working relationships with key members of the organisation, and finally, enabling team work as one needs to understand how to manage the contributions of various stakeholders. Effective interpersonal communication techniques would enable good conflict resolution with stakeholders, and knowledge of adult learning theory and the use of effective presentation and delivery skills, would ensure proper training of staff on the prevention of musculoskeletal injuries (Boucaut & McPhee, 2013; Boucaut, 2003). Appropriate rehabilitation skills, such as work hardening and conditioning under the OH theory and practice may need embracing an

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interdiscplinary approach in the management of patients with work injuries and also further specialisation after the undergraduate training (Adam *et al*., 2013; Franchi, Carregaro, Souza, Leticia, Penha, & Padula, 2019; Stigmar *et al*., 2012). With regard to the laws and regulations affecting business and industry, a participant (P11) noted the need to be cognisant of the different laws governing different countries whenever one is practising OHPT.

Knowledge of musculoskeletal health was deemed necessary for occupational health as the use of the incorrect biomechanics at work is likely to result in repetitive strain injuries. Musculoskeletal injuries can be minimised and prevented through conducting risk assessments, running health promotion interventions, or conducting assessments to determine the match between the individual and work demands (Johnston, 2013). This makes it important for themes such as biomechanics, ergonomics and injury prevention, and functional outcome measures and knowledge of the neurophysiology of pain to be included in the undergraduate curriculum. Good clinical knowledge of mental health, as well as disaster management and mitigation strategies, also emerged as required competencies for physiotherapists in occupational health. In the current Kenyan curriculum context, occupational health considers the safety of workers in the environment, which includes occupational related accidents at the workplace including fire, collapsing buildings and machines. The majority of responses from the Delphi study participants around disaster management was mostly "somehow agree" and "strongly agree" and one of the participants (P2) noted that "*disaster management is relevant if you work in countries where it occurs or if you can work in those places."*

The competencies discussed in the section above by the Delphi study participants are in alignment with the findings of the first phase of this study; a systematic review of work-related musculoskeletal disorders (WRMDs) in Africa. Firstly, it was evident that a majority of the studies in the systematic review (51.4%; n = 18/35) were conducted by

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physiotherapists. This highlights the need for physiotherapists to have the necessary competencies in occupational health as they would be able to add to the body of knowledge in this area of practice. Secondly, the type of outcome measure used in describing the prevalence of WRMDs was described as being important. In the review, nine outcome measures were used, which was problematic because of the heterogeneity of data that made it difficult to compare the analysis of WRMDs. A recommendation for future use is that the use of similar outcome measures will enable a better comparison of WRMDs and thus help with developing effective prevention strategies for these disorders. The second part of the systematic review is aligned with the results of the Delphi study participants, who stated that physiotherapists require "*knowledge in musculoskeletal health; biomechanics, ergonomics and injury prevention; functional outcome measures; training of staff on prevention of musculoskeletal injuries"* among others. This was also highlighted by Chetty (2014) who suggested that physiotherapists in the UK were fit to be extra human resources to assist physicians in measuring occupational health outcomes,and would thus supplement the limited number of occupational health physicians with the competencies to do this.

In summary, the available literature about the competencies needed by physiotherapists in occupational health revealed that the majority of physiotherapists gained this competence through apprenticeship with no formal learning, because this content was not included in the undergraduate curriculum and that they did not attend further specialisation training. It was thus necessary to ensure that students in Kenya have the basic underlying knowledge for them to practice what is required in OH. This will also include the laws governing OH, as it will be a determinant of the scope to be covered.

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5.5.2 Content required in occupational health module

Part two of the first round one resulted in five themes for question one, including *Occupational health and safety topics, Rehabilitation for work readiness, Assessment of risks for injury and prioritize hazards, Communication techniques, Medico-legal reports and compensation*. Communication techniques, medico-legal reports, and compensation form an important part of the non-clinical competencies that are unique for occupational health practice (Bryan *et al*., 1994; Stigmar *et al*., 2012). In the study by Stigmar *et al*. (2012, p.351), physiotherapists reported that "they were generally not used to writing formal reports about patients and highlighted the need for experience in doing this." It was also important to include insurance medicine as a pre-requisite for physiotherapists engaging in work-ability and thus led to its inclusion in some physiotherapy curricula in Sweden. Inclusion of this content in the undergraduate physiotherapy curriculum would help to prepare physiotherapists in training for practice. The study by Adam (2014) on readiness for work injury management and prevention by early graduate physiotherapists reported that they needed communication capabilities and awareness about client needs to practice well in this field.

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Kenya has no background of occupational health in physiotherapy, which means that there is very much on-the-job-training in order to gain experience. Which is a similar situation of what was described in Bryan *et al*. (1994). This means that there is a possible lack of mentorship due to the lack of physiotherapists working in this field. The international effort by the Network of Physiotherapists in Occupational Health and Ergonomics to become a sub-group of the WCPT will provide support to those working in developing countries (WCPT, WCPT Physical Therapy Network for Occupational Health and Ergonomics, 2018). The purpose of this network is to provide an opportunity for the sharing of information among various regions of WCPT who may not have much of a representation in this field that has a

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global musculoskeletal burden of disease (Buchbinder *et al*., 2018; Clark & Horton, 2018; Vos *et al*., 2016) including countries in Africa where there are no formal OH subgroups in their WCPT member organisation (WCPT, WCPT Regions, 2018).

The study by Shaw, Main and Johnston (2011) highlighted the importance of addressing occupational factors in the management of lower back pain, which has been shown to reduce or prevent work-disability and ensure an early return to work. They outlined a framework for how assessment for this can be done. It was evident that inclusion of these aspects on the assessment was also based on the scope of services offered by PTs. For example, reporting to employers and insurers may require specialty training in ergonomics or return to work (RTW) coordination (Johnston, Nielsen, Corbiere, & Franche, 2012). Currently in Kenya, there is only availability of the Work Injury Benefits Act (2007), which does not have a well-described rehabilitation clause that covers the scope of return to work (RTW). A discussion with the Eldoret OSH county officer revealed that plans are under way to revise the existing act in order to incorporate the rehabilitation of workers with occupational injuries (Bett, 30th July, 2018 - personal communication). This would create a good platform for equipping physiotherapists for the future and for them to be ready to tackle WRMDs that may arise as PTs aim to minimise and prevent these conditions, and integrate affected workers back into the workplace. Shaw *et al*. (2011) indicated that provision of a larger role for occupational factors in the clinical management of LBP would thus necessitate the formal inclusion of such content into the physiotherapy training and mentoring programmes.

The content identified by the Delphi study participants regarding the undergraduate OH module revealed that there was a need for information on the unique role of an OHPT, and a need for evidence for the relationship between work and injury, thus necessitating evidence-based work interventions to show rehabilitation for work readiness. However, the same participants also noted a need for building up these skills *"in the workplace and gained with*

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maturity and experience (P16).” There was also a need for the inclusion of content related to medico-legal reports and compensation, as well as those with assessment and safety audits of working environments. However, concern of overloading the undergraduate OHS module thus makes it imperative for students to embrace other OH professionals and to understand their roles. The presence of all these expectations from the Delphi study participants, as well as evidence from various sources of literature, leads to the question of what actually needs to be included in the curriculum. Considering Kenya’s developing status in terms of physiotherapy education, more is demanded from the undergraduate PTs, as they are the only ones with some measure of formal OH education. In the USA, Daley and Miller (2013 p. 319) stated that, as much as “occupational health content may be introduced in professional entry-level education, the field has a unique depth and breadth that requires additional education and experience for proficient practice.” This clearly identifies a need for continuous professional education in this area of OH with facilitation by the Physiotherapy Council of Kenya (PCK) and as suggested by Chipchase, Johnston and Long (2012) about continuous professional development (CPD), this should be done in a long-term approach and not just one session. This is because professional growth and learning requires continued practice in the clinical setting, with room for returning for further training and feedback. A look at the socio-demographic profile and professional practices of Brazilian OHPTs showed that they mostly stayed up-to-date with current practices through training courses thus emphasizing the significance of CPDs (Franchi *et al*., 2019).

A major strength of this study is the incorporation of the Delphi study participants from countries that have well-established occupational health and ergonomics systems. This will be of benefit to Kenya in the development of this draft OH curriculum. All five themes identified by the Delphi study participants need to be considered for inclusion in the OH content, after being contextualised to the Kenyan context. The support of the OH network of

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PTs will now provide the impetus to the PCK in terms of support towards CPDs in this evolving area of PT in Kenya.

5.5.3 Teaching, learning and assessment strategies

This aspect of the study had sixteen themes for question two, nineteen themes for question three and ten themes for question four.

5.5.3.1 Teaching Strategies

This question had sixteen themes, although one did not reach 75% consensus *(Modules of disaster management)* which left fifteen, namely; lectures and also by guest speakers, tutorials, individual and group discussions (with provisions for scenarios and case studies), collaborative learning, conferences and workshops, industrial attachment for practical experience, coaching and mentoring opportunities, role playing for simulation of work scenarios, use of videos for work settings and discussion of work processes, research, OH report planning and writing, pre-course reading material with independent information and lastly assignments and examination.

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Teaching has been described as the act of helping others to learn (Abbat & Mc Mahon, as cited in Prozesky, 2000). These authors further noted that teaching has four elements, where the teacher must decide what the students will learn, help the students learn, make sure that the students have learnt, and look after the welfare of the students. All of these factors will help the teacher to come up with appropriate content and learning objectives, help the students to learn via teaching strategies (which will be explored in Section 5.5.3.2), and to prepare assessments to ensure that students have learnt (which is present in Section 5.5.3.3).

The process of acquiring new knowledge is complicated, which is where educators need to help the student understand how different concepts fit together (Taylor & Hamdy, 2013). Learning outcomes developed by educators helps to bring everything into perspective by

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helping the student to get advance information about what is expected in the course. Having lectures from various experts as well as attending workshops and conferences help to scaffold the complicated aspects of the OH module for students.

The Delphi study participants noted that clinical and industrial placements represent important opportunities for the acquisition of coaching, mentoring, and practical skills. Kusurkar and Ten Cate (2013 p. 904) stated that "Mentoring during all phases of medical education, including residency training, can stimulate intrinsic motivation by supporting a/the trainee's feelings of relatedness." A study by Adam (2014) on the significance of practical exposure to OH placements during training was recognised to be important and was echoed by both students and employers. This is supported by social theories of learning which suggest that learning and thinking are social activities and are hence influenced by the context in which an individual is learning (Durning & Artino, 2011; Taylor & Hamdy, 2013). Some participants in this study suggested the use of virtual reality in the absence of actual industrial placement as this would influence students' thinking in this context. This could be an important consideration in the Kenyan setting where OH is not well-established, making it difficult to secure placement. "The combination of vodcasting, self-study, tutor demonstration and repeated practising was perceived as the key combination in making links between theoretical learning and skill acquisition" (Hurst, 2016, p. 209).

With regard to teaching strategies the Delphi study participants indicated the need to include OH report planning and writing, which has been identified as an important aspect of communication skills within OH (Boucaut, 2003; Bryan *et al*., 1994; Stigmar *et al*., 2012). In the study by Boucaut (2008), host organisations reported that they valued the reports that students provided at the end of their placements, and that this influenced their decision to host final year students for OHS. The host representatives stated, *"the students suggested*

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practical control strategies for hazards they identified…the report was a useful resource for developing action plans to address safety issues identified by the students."

Assignments are simply described as " a task or piece of work allocated to someone as part of a job or course of study" and are seen to be useful as part of learning (Dictionaries, 2018). This is because assignments enable the student to develop their own independent literature search skills, which helps develop students' research writing skills, which had also been highlighted by the Delphi study participants. An assignment was seen as a possible teaching strategy to equip undergraduate students with evidence-based research skills that would be useful for student's life-long learning after graduation (Hess & Frantz, 2016). The outcome of the literature-searching behaviour for final year physiotherapy students at the University of the Western Cape in South Africa revealed that the majority of students searched for literature to inform their practice but felt the need for more training with respect to this important skill. The study by Hess and Frantz (2016) noted that literature-searching skills were only taught in the third and fourth year as part of their research modules in this programme. However, the outcome of their studies revealed that it might be more beneficial to teach these evidence-based practices in all clinical practice modules as well. The findings of this study may be helpful in the development of teaching strategies for the OH module, as it will help learners to acquire these important literature-searching skills.

The aim of the teaching strategies is to ensure the transfer of skills from the teacher to the student. This section of the study identified 15 strategies that will be considered when developing the OH module, since these teaching strategies have been shown to be beneficial in helping students to learn. Of vital importance will be the fact that OH is a new concept in the Kenyan PT curriculum with no previous programme to serve as guidance. It is therefore important for these teaching strategies to ensure that students are able to grasp concepts that will be useful for them upon graduation. This will give students the confidence to practice, as

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they would have experienced a safe environment in their undergraduate training introducing them to what is expected.

5.5.3.2 Learning Strategies

There were nineteen themes that emerged around the question of learning strategies. However, one theme did not reach 75% consensus (C*ourt procedures and insurance attachment exposures)* and was therefore eliminated. The remaining themes included;

- *Lectures from various experts,*
- *Group discussions,*
- *Logbooks/journal entries to monitor learning,*
- *Clinical and industrial placements,*
- *Student-centred activities* (6),*
- *Pre-reading activities,*
- *Self-directed learning,*
- *Independent lifelong learning,*
- *Individual reflections following workplace activities,*
- *Active student engagement throughout the course,*
- *Student assignment,*
- *Research report writing and presentations,*
- *Reinforcement of physiotherapy competence in all aspects of new-graduate practice besides OH,*
- *Oral/written communication with stakeholders,*
- *Basic understanding of legislation & societal pressures,*

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- *Use of tools and outcome measures e.g. assessment Rapid Entire Body Assessment (REBA), Rapid Upper Limb Assessment (RULA) and Risk matrix, One on one guidance and mentoring and Increased use of multimedia activities.*

Learning has been described as "the process of acquiring a modification in a behavioural tendency by experience (as exposure to conditioning) in contrast to modifications occurring because of development or a temporary physiological condition (as fatigue) of the organism" (Dictionary, 2018). Prozesky (2000 p.1) quotes educational psychology's definition of learning as "any activity which leads to a change in our behaviour". Learning has several descriptors ascribed to it in terms of being either formal or informal, learning of skills and attitudes apart from just knowledge and facts, having different styles, being superficial or deep, needing motivation and lastly, continuing throughout a person's lifetime (Prozesky, 2000). Some of these descriptors in the above study were part of the attributes mentioned by the study participants right from the first round of the Delphi study.

Learning styles were necessary to identify the student's preferred learning modes and the study by Hess and Frantz (2014) about understanding the learning styles of undergraduate physiotherapists demonstrated that students learn better by doing. Hence it was important for practice opportunities to be provided for students to apply what they had learned in the classroom. In the absence of practice opportunities, simulation opportunities could be considered to ensure that students have a practical component to their studies (Hess & Frantz, 2014). Taylor and Hamdy (2013) noted that it is important that learning includes the acquisition of the three domains.

This aspect of flexible delivery of learning is what Prozesky (2000) was describing with respect to superficial or deep learning. Taylor and Hamdy (2013) provide support for the comment of participant 16 with respect to group discussions, suggesting that deep learning

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can happen in the context of group discussion, research and evaluating evidence. Discussion forums (a form of collaborative learning) or opportunities to undertake research projects help students to test their reflective skills, and in the process, gives them a better understanding of the topic under discussion. These authors have also stated that curricula using problem-based learning (PBL), team-based learning (TBL) and case-based learning (CBL) have these factors in mind and that is why they best fit medical curricula (Taylor & Hamdy, 2013). This would be an added advantage in the case of some of the Kenyan institutions that are using a PBL process in the curriculum.

Students were also expected to learn the value of life-long learning, which will enable their professional development even after graduation. This characteristic has been enhanced by the integration of self-directed learning (SDL) opportunities for students. Actually, SDL has been emphasised as an important feature of learning strategies. In their Delphi study on the perceptions of clinicians and academics on the desirable and undesirable attributes of undergraduate physiotherapists, Cross (1999) showed that academics were more concerned about independent learning and critical thinking than clinicians and alternately, clinicians were more concerned about record keeping. Academics saw the purpose of education as producing independent, life-long learners who do not rely on the presence of a teacher for learning to take place. This would increase the learner's responsibility for having good problem-solving skills and an ability to evaluate their learning in accordance with the goal of adult education (Cross, 1999; Taylor & Hamdy, 2013). In a study by Adam (2014) on the topic of lifelong learning, early PT graduates employed in OH reported that learning was continuous and that in their employment they could observe more from their employed colleagues. In the same study, employers acknowledged that on-the-job training was important to help students to gain independence in their learning. However, Taylor and Hamdy (2013) have noted that self-directed learning by students should be discussed,

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monitored and recorded, which could be done in reflective journals, portfolios and logbooks, some of which have been mentioned by participants in the Delphi study.

Clinical and industrial placements were noted by study participants in both teaching and learning strategies. Daley and Miller (2013, p. 319) states that "practice of physical therapy in occupational health requires application, synthesis, and integration of contextual and situational skills." That is why some participants (for example, participant 16) suggested the use of virtual reality in the absence of actual industrial placement as this would influence students' thinking in this environment. This might be a valuable option, especially in the Kenyan setting where OH is not well-established, making it difficult to place students in appropriate workplace settings.

One-to-one guidance and mentoring was mentioned by the Delphi participants as one of the learning attributes needed by students. In their article on adult learning theories, Taylor and Hamdy (2013) suggested "Motivational Models" as one category of adult learning theory which must contain motivation and reflection. Similarly, deep learning is one component of adult learning facilitated by the PBL model, which is associated with intrinsic motivation. Hence SDL, reflection and one-to-one mentoring are seen as important aspects that can increase motivation and should therefore be included as part of the learning strategies in this OH curriculum.

There was also a need identified for the learner to have a basic understanding of OSH legislation, as well as knowledge of how to use tools and outcome measures. This needs to be embraced as a dynamic process to accomodate updates in practice evolving from research. Several articles have mentioned the roles of physiotherapists in OH and the basic requirements needed to practice, including the use of possible outcome measures (Boucaut, 2008; Daley & Miller, 2013; Escorpizo *et al*., 2011; Hart, 2001; Heerkens, Engels, Kuipers,

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Van der Gulden, & Oostendorp, 2004; Larson & Miller, 2005; Legge, 2013; Padula et al ., 2016). In addition, these authors have noted the fact that this is a new field and therefore new research findings in OH practice should be included in the curriculum. Legislation also differs from country to country; hence, it is important for students to have knowledge of what the laws of their country permit. Therefore, part of their pre-reading activities would be for students to be cognisant of such laws (Adam *et al*., 2013a). This is outlined well in the study by Larson and Miller (2005), which describes the different occupational health and ergonomics guidelines governing different countries. Daley and Miller (2013) also note that whereas countries like Australia have achieved specialization in OH (Boucaut & McPhee, 2013), the USA is still venturing on its journey towards specialisation, which is due to the different forms of legislation. With one of the roles of PT in OH being prevention of injury at work, this has led to OHPTs in some countries that evaluate employees' fitness for work, which may have serious legal implications, depending on the outcome of the evaluation (Legge, 2013).

While the inclusion of court procedures and an attachment at a medical insurer did not reach consensus at this point of the study, it is possible that the OHPT may end up doing assessments of this kind. It is possible that learners will therefore need to protect themselves by having a good understanding of the governing laws of the country. In the case of Kenya, there is the WIBA (2007), which stipulates how an injury at work has to be managed. In the future it is hoped that Return to Work as a Rehabilitation Act will be added to the legislation in Kenya.

The final point to discuss is that of participant two, who stated that there are *"Many good strategies, but all of them won't fit into a program."* It seems evident that there needs to be a clarification around what OH content should be included in the undergraduate physiotherapy programme. This may be why some study participants reinforced the mainstream

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competencies of PT in all aspects of new graduate practice besides occupational health. This should not be problematic as the OH module is just one module that includes several other core competencies of PT. As Daley and Miller (2013) showed, the competencies of OHPT were in addition to the expected competencies of a newly graduated physiotherapist.

This section has highlighted several strategies that will help students learn about OH and has been important as it has demarcated what is to be included in the undergraduate learning programme. There is some overlap with some of the teaching and learning strategies, emphasizing the importance of these attributes in the undergraduate curriculum. There is therefore a need to incorporate the eighteen attributes mentioned here alongside with what was discussed in the teaching strategies.

5.5.3.3 Assessment Strategies

This question elicited reponses that led to the emergence of ten themes. However, one theme did not reach 75% consensus *(Students to name areas of practice)* and thus it was removed. The remaining nine themes are presented below:

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- *Practical skills demonstration*
- *Assignments with either written or oral presentations*
- *Research or field reports*
- *Theory question in form of continuous assessment tests (CATS) and Final papers*
- *Assessment of risk management and return to work of practical activity*
- *Workplace case study*
- *Open-ended or multiple-choice questions (MCQs) that are scenario based*
- *Assessment of reflective portfolios and learning logs*

Assessment methods determine how the students will learn and there are a variety of approaches available to the student. This still ties back to the type of verbs used in the

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learning outcomes. There may be a tendecy for students to use surface approaches to learning to achieve outcomes related to knowledge becoming reliant on recall (Miller, 1990). However, curriculum components that focus on workplace-based study, assessment of risks at the workplace, and practical skills demonstration may depend on the higher elements of analysis, synthesis and evaluation thus demanding a deeper understanding of concepts. It is therefore necessary to expose students to active learning approaches that will help them to develop the necessary critical thinking skills to meet these demands of assessment (Carvalho *et al*., 2017; Popil, 2011). Case studies have been identified as active learning methods that will help students to develop the critical thinking skills that are necessary for healthcare practice, because they allow students to "experience" real client situations that they may not have access to in a clinical setting (Popil, 2011, p.205). In addition to this, Weeks and Horan (2013) have also noted that video-based learning activities can engage students in assessment preparation that is more likely to result in positive learning outcomes.

Reflective assessment can take different forms, including logs and journals, reflective essays, and portfolios (Cottrell, 2003 as cited in Friesner & Hart, 2005). A learning log has been described as a method that is used to assess learning from experience and is usually used in conjunction with work placements or work-based learning (Friesner & Hart, 2005). This form of assessment encourages learners to reflect on learning as they are writing. Taylor and Hamdy (2013, p.e1570) suggest that, "…a well thought through portfolio/log book with elements of reflection will allow for the learner's progress to be documented for themselves, and, importantly, for the educator/assessor." Van Tartwijk and Driessen (2009) have also noted that a portfolio needs to be organised by tasks and competencies that the learner wants to showcase, thus making it easier for the assessor to know what is needed for feedback. A logbook, journal entries, research, oral and written presentations require feedback, which helps with the learning process. A study among Australia's physiotherapy students on their

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perception of a reflective journal during their first clinical placement revealed that the journals were useful in assisting them to learn from their experiences and develop reflective thinking and practice (Constantinou & Kuys, 2013). These authors stated that reflective practice is beneficial to all health professions and helps to increase their self-awareness. The multi-theories model of adult learning proposed by Taylor and Hamdy (2013) gives a perfect example of how learning can take place with the presence of the attributes listed in the learning strategies. This model involves several phases with the learner and educator both assuming active roles that ensure that learning takes place as part of this cycle. The learner is able to identify their own needs and takes the necessary steps to acquire the information they need for learning. The educator, on the other hand creates an environment where the student can learn effectively, which includes providing feedback on assignments or tasks given throughout the course. These are all significant attributes mentioned by the Delphi study participants with regard to assessment.

Van Tartwijk and Driessen (2009) note that an assessment of competence is somewhat complicated, but refer to Miller's pyramid of clinical assessment by suggesting that the bottom and second levels of the pyramid (knowledge and application of knowledge, respectively) can best be assessed by written tests. At level three of the pyramid the learners are expected to demonstrate their ability to use the knowledge in a simulated environment, which is best assessed by a physical examination in a simulated environment. At level four a learner is expected to perform independently within day-to-day practice and requires the integration of knowledge, skills, attitudes and personal characteristics that signify full competence with good performance (Miller, 1990; Van Tartwijk & Driessen, 2009). When evaluating the level of competence described by the OH competency framework, there is an expectation that undergraduate learners will be at level 'A' and 'B', which is aligned with level three of Miller's pyramid as they will be working under supervision (Miller, 1990;

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Owen & Hunter, 2012). Thus, the attributes raised by the Delphi participants on 'theory questions in form of CATS and final papers, open-ended or MCQ's that are scenario based and practical skills demonstration' will be important at the formative and summative assessment as required. However, due to the lack of qualified OH PTs who would supervise undergraduate students, it would also be reasonable to assess students at level two of Miller's pyramid. Thus, the use of written tests with scenario-based questions would also be appropriate if the Kenyan context is considered.

There is evidence that some physiotherapists may not readily accept the responsibility of work ability assessment due to a lack of enough opportunities for practising the writing of formal reports about patients during their training, as they mainly regarded it as a physician's role (Stigmar, Ekdahl, & Grahn, 2012).

> *...I don't believe that one can assign any PT to do a work ability assessment; (they) must have some experience*.

It was thus important that there was provision for practical opportunities during training to enhance the practise of these skills.

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Assignments with either written or oral presentations might improve students' performance, as has been demonstrated with the flipped classroom approach (Stone, 2012). This method may increase students' engagement in classroom participation and ultimately increase exam and assignment scores when compared to traditional classroom contexts. Students reported that the flipped classroom approach gave them more opportunities to engage with the teaching material and thus they had a better understanding by being more prepared for their classes. Assignments, as described in Section 5.5.3.1, are seen to give students opportunities to conduct research on the topic at hand, and their written or oral presentations would also improve their communication skills, which is an important attribute in OH (Boucaut &

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McPhee, 2013; Bryan *et al*., 1993; Stigmar *et al*., 2012). Students are able to improve their grades through effective self-assessment practice and over time, become effective judges on their own performance when their tutors provide objective feedback for them to focus on (Boud *et al*., 2013). Interaction with literature during research and independent learning also helps students gain life-long learning skills, which are necessary attributes in healthcare where there is evolving practice on a daily basis (Cross, 1999; Franchi *et al*., 2019).

The Delphi participants' responses in this section were not always suitable, given that OH in Kenya is not well established. Thus, caution must be used while formulating the assessment strategies to fit Kenya's context of a lack of PT supervisors in the OH industry. However, a number of strategies that emerged from this study will be useful in the development of the assessment strategies.

5.6 Limitation of the Delphi

It was noted that quite a number of participants did not respond to round one of the Delphi study, despite the numerous reminders. For international participants this was noted to be due to their busy work schedules and for others it could be interpreted as a possible lack of knowledge in occupational health. This may be so especially for local participants (in an African context) as some admitted the limitations that they had in as much as they tried to manage occupational health-related cases in the course of their day-to-day practice. This was not unreasonable as most practitioners stated that they had acquired their competency through practice and not through any form of formal education.

5.7 Conclusion

The Delphi study has been important in highlighting and summarising what had emerged from the first two phases of this study (the systematic review of WRMDs in Africa as well as the document analysis of the OH curriculum content in the Kenyan undergraduate

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physiotherapy programmes). These findings will help the researcher to move into the final phase of the study, which is the development of a draft curriculum for the occupational health module in the undergraduate Bachelor of Science in Physiotherapy programme.

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CHAPTER SIX

CURRICULUM DRAFT DEVELOPMENT

SUMMARY, CONCLUSION AND RECOMMENDATION

6.1 Introduction

This is the last phase of the study which involves development of the draft curriculum and it is aligned with step four of the conceptual framework. Step four of the conceptual framework deals with educational strategies, which aim to achieve the educational objectives. This step is done according to the curriculum content and the appropriate method for implementing it with regard to the cognitive, affective and psychomotor objectives. This is a cycle that involves the introduction of the skills in the classroom and then later nurtures those skills in an environment that supplements practice with self-observation, observation by others, feedback and reflection, with the aim of developing mastery (Kern *et al*., 2009; Lynn, 2011).

This phase follows the conclusion of the Delphi study that sought consensus from content and context experts with regard to the competencies required by physiotherapists in occupational health, as well as the content required in the undergraduate occupational health module, and the teaching, learning and assessment strategies. Educational strategies involve the specific material to be included in the curriculum and the ways in which this content is presented (Thomas, 2009b). This author also states that the curriculum developer should integrate learning principles that relate to adult learning, for example, that '*teaching'* is what educators do and '*learning'* is what happens with the learner. These learning principles remind us that adults are goal-oriented in their learning and are able to evaluate their learning in the context of their previous experiences in order to enable current knowledge and skills acquisition. These principles from Thomas (2009b) were discussed at length in various aspects of the Delphi study, suggesting that the occupational health module should be

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implemented in the final year of study so that students are more likely to be able to apply the principles of occupational health.

Kenyan university education is accredited by the Commission for University Education (CUE) (CUE, 2014) which provides guidelines on the structure of university programmes and courses. The researcher will therefore use the format provided in the third schedule of the universities' standards and guidelines (CUE, 2014) PROG/STD/04 which describes how a course outline should be presented. A course in this guideline has been described as "*a single unit in a programme of study*" (p.46) and a few preliminaries have also been listed such as "*the course title should be reflected in the purpose of the course and the course's expected learning outcomes"* (p.54). The guideline also states that *"the expected learning outcomes, should be linked to the mode of delivery, instructional materials, assessment and reference materials"* (p.54). The universities' guideline (PROG/STD/02) also stipulates that higher levels of the academic programme should be described with more complex attributes that are aligned with different levels of Bloom's taxonomy. This is what is presented in phase four of the conceptual framework for this study, as described by Thomas (2009b).

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The Bloom's taxonomy is useful when it comes to a description of learning objectives (Conklin, 2005), however, Adams (2015) notes that the taxonomy focuses more on cognitive learning skills than psychomotor and affective skills, making it a challenge to describe these types of objectives. Thus, the use of the Bloom's taxonomy and the relevant educational method will make it possible to develop an appropriate draft of the curriculum.

6.2 Choice of Educational Method

The guidelines described by Thomas (2009b) around the choice of educational method will be helpful in this study as it is this conceptual framework that will drive the outline of the occupational health curriculum content. The first guideline notes the importance of choosing

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educational methods that are likely to achieve the curricula's goals and objectives. Thus these objectives should be classified into whether they are in the cognitive, affective or psychomotor domains, which should then be matched with appropriate educational methods. For example, higher cognitive skills that are needed for decision-making may require facilitated case discussions that enable the learner to apply the concepts in an authentic clinical scenario. Or there might be an affective objective that requires attitudinal change, and thus might see that students are being exposed to real-life situations that are combined with group discussions and reflections on their experiences. And finally, a psychomotor objective might require students to perform the correct procedures under supervision that is followed by feedback and discussion about the technique utilised.

Secondly, Thomas (2009b) advised that several educational methods may be used to achieve the objectives of this study. With regard to educational methods he noted that a curriculum developer should bear in mind the different preferences (learning styles) of the learner as it would enhance a learner-centred curriculum (Hess & Frantz, 2014). The use of multiple educational methods would ensure that different learners' needs and interests are met by providing opportunities to reinforce what is being learnt. The last guideline requires a choice of educational methods that are feasible in terms of the resources that are available. When resource limitations, such as reduced faculty time, limited availability of clinical material and experiences, and high costs threaten the achievement of curriculum objectives, then the curriculum developer must make choices within those constraints.

The guidelines above clearly resonate with the reports generated from the Delphi study with regard to the teaching and learning strategies. While there were some areas of uncertainty around the differences between teaching and learning strategies, this aspect was demystified by the definitions and illustrations provided by Thomas (2009b). The suggestion to include various learning styles provided by the Delphi study participants is aligned with guideline

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two related to the choice of educational methods. Participant 16 noted that *"I agree that all the above strategies are useful for helping students learn about OHP. What is possible within your context and budget is another matter!"* This excerpt also resonated with the third guideline in terms of the available resources. The next step will categorise the themes raised with regards to the cognitive, affective and psychomotor domains in respect of the suggested educational methods.

6.2.1 Matching educational methods to objectives

This section will describe the required educational methods needed to achieve the objectives for the occupational health course. The themes raised from the question that asked Delphi study participants about occupational health content to be included in the curriculum, will thus be regarded as the objectives/expected learning outcomes for this study. Table 6.1 presents the themes that emerged from the Delphi study participants, aligned with the objective it relates to, followed by Table 6.2 where educational methods are aligned with each type of objective.

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Table 6.1: Category of objectives raised from the Delphi study

Themes raised from Delphi study	**Type of objective**
1. Occupational health and safety topics	Cognitive: Knowledge objective
2. Return to work process	Cognitive: Problem-solving objective
3. Assessment of risks for injury and prioritise hazards	Psychomotor: Skills or competence objective
4. Communication techniques	Affective: Attitudinal objective, as well as Psychomotor: Behavioural or performance objective
5. Medico-legal reports and compensation	Cognitive: Knowledge objective

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Table 6.2: Educational method matching study objectives

Educational Method	Type of Objective				
	Cognitive: Knowledge	Cognitive: Problem-Solving	Affective: Attitudinal	Psychomotor: Skills or Competence	Psychomotor: Behavioural or Performance
Readings	+++	+	+	+	
Lectures	+++	+	+	+	
Programmed learning	+++	++		+	
Discussion	++	++	+++	+	+
Reflection on experience			+++	+++	+++
Feedback on performance	+	++	++	+++	+++
Small group learning	++	++	++	+	+
Problem-based learning	++	+++	+		+
Team-based learning	+++	+++	++	+	+
Learning projects	+++	+++	+	+	+
Role models	+	+	++	+++	++
Demonstration	+	+	+	++	++
Role-plays	+	+	++	+++	+
Artificial models and simulation	+	++	++	+++	+
Standardised patients	+	++	++	+++	+
Real-life experiences	+	++	++	+++	+++
Audio or video reviewer of learner	+			+++	+
Behavioural/environmental interventions*			+	+	+++

Note: blank = not recommended; + = appropriate in some cases as an adjunct to other methods; ++ = good match; +++ = excellent match; *Removal of barriers to performances; provision of resources that promote performance; reinforcements that promote performance

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Table 6.2 above presents the different teaching and learning methods aligned with the objectives that emerged from the Delphi study. These educational methods match the teaching and learning strategies suggested by the Delphi study participants. The next section presents the draft curriculum that has been developed as a result of the findings from each phase of the study.

6.3 Occupational Health Curriculum Content Draft

Course Title: Occupational Health
Purpose of the Course: To equip the learner with competencies required to practise in occupational health as a physiotherapist.
Expected Learning Outcomes: 1. To understand the concepts and principles governing occupational health and the role of physiotherapy. 2. To understand the return to work process. 3. To perform an assessment of risks for injury and to proritize hazards. 4. To demonstrate appropriate communication skills required in occupational health. 5. To understand medico-legal reports and compensation.
Content: Occupational health and safety topics: Definitions and descriptions of occupational health, occupational health stakeholders and their roles, the unique role of the Physiotherapist in Occupational Health, wellness at work and the effects of sedentary behaviour, evidence for relationship between work and injury e.g. biomechanics, ergonomics and occupational hazards. Functional and structural anatomy and physiology, epidemiology and types of occupational disorders and injuries, economics of workplace injuries, workplace structure and organisation, assessment and safety audits of working environment, ethics related to occupational health and safety, models of the labour market. Practical evidence-based work interventions, research in occupational health, models of occupational health, bio-psychosocial model and occupational psychology, preventive measures for work-related disorders, work disability models. Return to work process: Business case for good rehabilitation and early return to work, rehabilitation for work readiness e.g. work hardening programmes, management of workplace incidents, accidents and injuries.

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Assessment of risks for injury and prioritize hazards: How to conduct workplace risk assessment, identify hazards and risk factors and control them, assessment procedures for occupational health and safety, medical examinations, management of sick employees and assessment of liabilities, selection and accurate use of a range of clinical outcome measures in OH service e.g. quick exposure check (QEC), RULA, patient and staff safety as well as safety in the general workplace environment, monitoring and evaluation for occupational health strategies. Communication skills: Communication techniques, negotiation and mediation skills with stakeholders. Medico-legal reports and compensation: Application for work injury benefits act (WIBA) 2007 during management of workplace injuries, leadership and governance.
Mode of delivery: Pre-reading activities, lectures, discussions, problem-based learning, Role models, role-plays, simulations, industrial attachment, coaching and mentors, research, demonstrations.
Instructional materials and/or equipment: Laptops, Videos, Resource persons i.e lecturers, guest speakers, industrial placement.
Assessment: Assignments, reflective portfolios, oral and written presentations, theory exams, field reports.
Reference materials including textbooks, journals and e-materials: Lecturers should source updated course material.

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6.4 Summary, Conclusion and Recommendations

6.4.1 Summary

To date there is no global consensus on the education and competence that is required for one to become a specialised Physiotherapist in Occupational health (Stigmar, 2020). Different countries have outlined their own specifications based on the level of education and the legislations (ACPOHE, 2018; Larson & Miller, 2005; Padula et al., 2016). These guidelines eventually govern how OHE is practised in different states. A comparison of four undergraduate physiotherapy programmes in Kenya, Australia, Spain and Brazil revealed

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differences in the content and mode of delivery of the occupational health course that endeavoured to help novice graduates to effectively prevent work injury and the resultant work disabilty (Boucaut, Worth, Birbeck, Simprini, Sanz-Bustillo, & Wanyonyi, 2019). Recent studies have continued to highlight the importance of OH PTs and in their absence the need of working together of the various disciplines involved in OH together with the regular physiotherapist so as to effectively address work-focused healthcare to ensure productivity. It is with this regard that these researchers continue to advocate for embedding occupational health course in all undergraduate physiotherapy programs and where not possible to provide professional training courses about occupational health to general physiotherapists (Hutting *et al*., 2020). The OH competency framework used in this project has four levels looking at competencies required by physiotherapists practising in this field (Owen & Hunter, 2012). This study focussed on levels A and B meant for undergraduate Occupational health curriculum. Whereas the content of this study focused on occupational health as a module/course in the undergraduate physiotherapy curriculum, this framework together with findings from the delphi has helped to shape what needs to be included in the undergraduate curriculum. This as stated earlier will be subjected to the two remaining steps of curriculum development for universities to see what fits which level of study. This comes in a background where OH PT has a strong evidence for effectively reducing the pain in persons with musculoskeletal injuries in the workplace through strength training exercises (Pieper *et al*., 2019; Skamagki, King, Duncan, & Wahlin, 2018; Sundstrup *et al*., 2020).

However, there is still need for a strong scientific basis for proper evidence of economical benefits of OH which is reported to be limited due to heterogenous studies hence making it difficult to have conclusive recommendations (Pieper, Schroer, & Eilerts, 2019; Sundstrup, Seeberg, Bengtsen, & Andersen, 2020). In addition, Skamagki *et al*. (2018) found significant improvement in functional and pain status in workers having well-structured exercise

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programmes delivered by an allied health professional which includes OHPT. Unfortunately, workers lacking access to workplace interventions covered by health insurance may not experience the same effectiveness unless this financial cost is taken up by the employer or the government thus limiting the effectiveness of workplace interventions. This therefore calls out for support by all relevant stakeholders.

Finally, this thesis has come at a special time when the COVID-19 pandemic has led to development of new policies and guidelines in the work-place to help curb the spread of the virus and help workers manage their work from different environments (IFPTOHE, 2020). This has definitely had a toll in the health of workers in terms of adjusting to work in bulky personal protective equipments (PPE's) especially those in the health care; while other employees have been made to embrace the work from home policies whose environment may not be well suited as the official workplace. Such unforseen events therefore need to be anticipated in development of medical curriculums by making it to be dynamic so as to address the needs of ensuring a healthy workforce.

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6.4.2 Conclusion

The title of this thesis is 'Development of standards for undergraduate occupational health in a physiotherapy curriculum: A case in Kenya' and it sought to develop standards of competency, teaching, learning and assessment strategies focusing on occupational health for an undergraduate physiotherapy curriculum in Kenya. The study consisted of four phases which led to the development of a draft occupational health module which will be presented for adoption by the Kenyan Ministry of Education with the relevant stakeholders. The first phase featured in this study aimed to determine if WRMDs were worth focusing on, especially by physiotherapists. This led to a systematic review that identified the prevalence of WRMDs in Africa. The results of this first phase revealed such heterogeneity of data that further classification for better comparison of data amongst different occupations was

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warranted. This phase was aligned with the first step of the conceptual framework that guided this study on curriculum development. While it was clear that WRMDs were prevalent in Africa, much of the data were gathered from participants working in administrative jobs, followed by health professionals, and then those employed in the industrial sector. Few African countries were represented in this review, thus highlighting a paucity of research in many fields as well as a probable lack of competence in this area. Of the 25 countries who are members of WCPT Africa, only 11 were represented here. In addition, only South Africa and Nigeria acknowledged occupational health (OH) as a subgroup of physiotherapy practice. In order for the International Federation of Physiotherapists in Occupational Health and Ergonomics (IFPTOHE) to become a subgroup of WCPT, it needed representation from all WCPT regions, and there were only three African countries that registered (IFPTOHE, 2019). This shows that there is still a need for further education on this aspect of physiotherapy practice.

Phase two of this study was a document analysis that described the situation of the Kenyan occupational health curriculum content as it related to the OH competency framework. The OH competency framework classified the physiotherapy degree as being either A or B in the framework (in some instances needing supervision by qualified OH specialists). This phase was aligned with step two of the conceptual framework, which researched the targeted needs assessment of learners and their environment. Within the two universities under investigation in this study, the OH module was found in either of the senior years in the undergraduate curriculum. However, it was not being taught as a stand-alone course. Using the competency framework as a guideline led to the finding that several important attributes of OH were missing from the curricula of the two universities. This included the lack of opportunities for reflection as well as the lack of OH field supervisors for industrial placements. It will be worthwhile for these aspects to be considered in the future curriculum.

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Phase three of this project involved a Delphi study which was aligned with the third step of the curriculum development, which included the identification of goals and objectives for the desired curriculum. Conversations with content and context experts correlated with the findings of the document analysis, which enabled triangulation of information in this study, as it confirmed the competencies needed by an OHPT, the type of content to be included in the OH module in the undergraduate physiotherapy curriculum, and the learning, teaching and assessment strategies. One major strength of the outcome of the Delphi study is that it will make a future international contribution to the physiotherapy fraternity, given that physiotherapists in the field of occupational health and ergonomics are few in the African and in particular the Kenyan context.

The final phase of this study involved the development of a draft curiculum that was guided by step four of the curriculum development process, which included an overview of the educational strategies that will enable the implementation of the course objectives. The educational strategies were broken down to match the educational method with the appropriate objective in order to enable implementation of the required content. The draft curriculum will be presented to the Kenyan Physiotherapy Council for consideration to be included in the core curriculum of the undergraduate physiotherapy programme in Kenya. The occupational health curriculum content will need to be reviewed in two further stages of the six-step model of curriculum development. This means that it will need to be implemented and then evaluated through feedback by the institutions that choose to adopt it so that it fits the Kenyan context and also consider what is relevant for which level of study.

6.4.3 Strengths of the study

The findings of this study will make a significant contribution to the physiotherapy fraternity, as they come at a time when physiotherapists working in occupational health and ergonomics are being acknowledged internationally and are now an official subgroup of WCPT

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(IFPTOHE, 2019). The results of this study will be useful to further enhance the International Federation of Physical Therapists in Occupational Health and Ergonomics (IFPTOHE) agenda, especially in the African region, where active and formal physiotherapy practice in occupational health is limited to just two countries (South Africa and Nigeria). This is the first study of its kind in Kenya, and possibly in Africa, and it has highlighted the needs of the African population in terms of WRMDs. This knowledge will enable the development of strategies to minimise WRMDs and also prompt researchers to identify the unique factors that lead to WRMDs in Africa in order to develop prevention programmes.

Secondly, having international panellists participate in the Delphi study is a major strength of this study, because these practitioners work in the context of occupational health on a daily basis and so they are aware of the realities facing them. However, one cannot simply implement what is being done in other countries, because that needs contextualisation, especially with respect to the legal aspects of practice and the need for this area of practice to grow in Kenya.

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The six-step curriculum development model was an appropriate guide for the development of a medical education curriculum so this step is going to give proper guidance to Kenyan physiotherapy students. The use of the competency framework highlights the processes being used in countries like the UK where this model has had relative success.

The use of a Delphi study enabled the triangulation of data from all aspects of the study, as all of the questions were aligned with what was found in the literature, as well as in the competency framework.

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6.4.4 Limitations of the study

The heterogeneity of data in the systematic review, which was a result of different types of job cadres being researched, made it difficult to compare across studies, resulting in the need for a narrative synthesis.

In the document analysis component, it was found that the current curriculum does not have a stand-alone OH course, which made it difficult to review content from across other courses, in order to find the information. While it is unlikely, the researcher may have missed important aspects of the OH content that was covered elsewhere in the curriculum, despite the iterative searching and discussion with the course coordinators. These results should therefore be interpreted with caution.

While the Delphi study is an excellent methodology for seeking expert opinion, it does present challenges when participants do not respond.

6.4.5 Recommendations

The research question of this thesis asks, 'What are the standards of competency, teaching, and learning, as well as assessment strategies needed for the aspect of occupational health to be included in an undergraduate physiotherapy curriculum in Kenya focusing on occupational health?', and the summary of the thesis makes it clear that the question has been answered.

The following recommendations will be highlighted with regard to the systematic review.

1. As short-term recommendation, scholars will be encouraged to do as many studies as possible in order to increase the availability of the unique nature of the work on the African continent. These scholars will be encouraged to do methodologically sound studies with documentation provided of every step taken to ensure better study

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quality. The use of outcome measures that are specific to WRMDs will also be encouraged in order to help with easier comparison of data within African studies.

2. A long-term recommendation would be that, having identified the common WRMDS and related risk factors in Africa, it would be appropriate to design prevention strategies for them. This will be implemented at various stages beginning with health education which acts as primary prevention, as well as early identification of affected patients as secondary prevention to limit the advancement of disorders.

Document analysis revealed the presence of some occupational health content that was not well-aligned with the competency framework. The development of the undergraduate OH content with input from content and context experts during the Delphi study is part of the short-term recommendation for equipping new graduates with the required competencies. The inclusion of reflection, communication and appropriate assessment with reliable and valid occupational health tools and outcome measures will enable better results in occupational health practice and will also increase the confidence of physiotherapists working in this field.

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1. As part of the short-term recommendation from this study, the Ministry of Education, Health and Labour should expedite the piloting and implementation of this curriculum in universities offering the physiotherapy programme, with support from the Physiotherapy Council of Kenya which is the current regulatory body for physiotherapy practice in Kenya.
2. As part of the long-term recommendation, the Ministry of Labour report (2013) had advocated for the inclusion of OH content in all medical training institutions in order to increase the number of personnel working in OH. Evaluation can therefore be done after a full cycle of the programme at the university level, and then at a national level. The government should seek to consider the impact of the

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inclusion of this training at a national level. This would help to grow the current database of people affected with WRMDs, and will thus help in the development of prevention programmes at both the primary and secondary levels. In the long-term this will help to build a healthy working nation by reducing the resource burden through prevention.

3. Given that the undergraduate physiotherapy programme in Kenya was introduced less than a decade ago, the successful implementation and evaluation of the new occupational health curriculum content will create room for the development of a post-graduate training in Occupational Health targeting physiotherapists. This will enable physiotherapists to help curb the resource burden of OH specialists by assessing and documenting patients with WRMDs in Kenya. As seen in the Delphi study, this will help to explore further aspects that cannot be included in the undergraduate physiotherapy programme.
4. As part of the long-term recommendation, physiotherapists would gain new sources of employment in the industrial sector by being recognised as OHPTs. Insurance firms and other private stakeholders, who face financial constraints, could advocate for the employment of on-site PTs to do workplace assessment and rehabilitation for clients with WRMDs. This will increase the acquisition of appropriate working equipment or modification of the working environment in order to avoid ergonomic mismatch, and also to minimise the occurence of WRMDs. This would constitute a saving on the cost of treatment.
5. Having identified the magnitude of the prevalence of WRMDs, programs to facilitate return to work need to be designed through incorporation of the relevant stakeholders in occupational health.

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APPENDICES

APPENDIX A: ETHICAL APPROVAL UWC

UNIVERSITY of the WESTERN CAPE

OFFICE OF THE DEAN
DEPARTMENT OF RESEARCH DEVELOPMENT

12 June 2014

To Whom It May Concern

I hereby certify that the Senate Research Committee of the University of the Western Cape approved the methodology and ethics of the following research project by:
Ms N Wanyonyi (Physiotherapy)

Research Project: Development of standards for undergraduate occupational health in a physiotherapy curriculum: A case of Kenya.

Registration no: 14/5/33

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

The Committee must be informed of any serious adverse event and/or termination of the study.

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

Private Bag X17, Bellville 7535, South Africa
T: +27 21 959 2988/2948 . F: +27 21 959 3170
E: pjosias@uwc.ac.za
www.uwc.ac.za

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APPENDIX B: ETHICAL APPROVAL IREC

INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 33471//2/3

MOI UNIVERSITY
SCHOOL OF MEDICINE
P.O. BOX 4606
ELDORET

Reference: IREC/2014/243
Approval Number: 0001385

2nd April, 2015

Ms. Nancy N. Wanyonyi,
Moi University,
School of Medicine,
P.O. Box 4606-30100,
ELDORET-KENYA.

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
02 APR 2015
APPROVED
P. O. Box 4606-30100 ELDORET

Dear Ms. Wanyonyi,

RE: FORMAL APPROVAL

The Institutional Research and Ethics Committee has reviewed your research proposal titled:-

"Development of Standards for Undergraduate Occupational Health in a Physiotherapy Curriculum: A Case of Kenya."

Your proposal has been granted a Formal Approval Number: ***FAN: IREC 1385*** on 2nd April, 2015. You are therefore permitted to begin your investigations.

Note that this approval is for 1 year; it will thus expire on 1st April, 2016. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

cc Director - MTRH Dean - SOP Dean - SOM
Principal - CHS Dean - SON Dean - SOD

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APPENDIX C: LIST OF EXCLUDED STUDIES (n=31)

References	Study Design	Country	Population	Exclusion reason
(Geere, Gona, Omondi, Kifalu, Newton, & Hartley, 2012)		Kenya	Carers of patients	Sample size of 30 cannot be generalised
(Geere, Hunter, & Jagals, 2010)	Mixed method	South Africa	Women and children carrying water	Musculoskeletal complaint sample size is 29 and cannot be generalised
(Matinga, Annegarn, & Clancy, 2013)		South Africa	Programme Managers and Nurses	Sample size of 16 cannot be generalised
(Frocklin, Torre-Castro, Lindstrom, Jiddawi, & Msuya, 2012)	Not specified/ qualitative design	Zanzibar	Sea-weed Farmers	Study not exclusively describing WRMDs
(Ndlovu, Murray, & Seopela, 2006)	Not specified/ cohort	South Africa	Repatriated chinese miners	Study not exclusively describing WRMDs
(Haupt, Deacon, & Smallwood, 2005)	Not specified/cohort	South Africa	Construction Workers	Study not exclusively describing WRMDs
(Desai, Ellapen, & Van Heerden, 2012)	Retrospective cohort	South Afria	Surgeons	Study not exclusively describing WRMDs prevalence
(Joubert & London, 2007)	Case Control-Cross-sectional analytical	South Afrcia	Forklift drivers	Study not exclusively describing WRMDs prevalence
(Mull & Kirkhorn, 2005)		Ghana	Child labour in Ghana Cocoa Production	Study not exclusively describing WRMDs but rather on occupational hazards and their associated injuries
(Nimako, Baiden, Sackey, & Binka, 2013)		Ghana	Outpatient department patients	The musculoskeletal pain described is

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				not work-related
(Ayelo, Aguemon, Santos, Gounongbe, Fourn, & Fayomi, 2013)		Benin	Children crushing	Musculoskeletal injuries were due to accidents, sprains and fracture and hence not consistent with this study's definition of WRMDs
(Kofi & Sutherland, 2011)		Ghana	Gold mining	Different description of WRMDs
(Comlan, Mouanga, Ezinah, Nambo Wezet, & Ossoubita, 2007)		Gabon and Congo	Migrant female workers	Non-specific report on WRMDS
(Comlan, Ezinah, Mouanga, Kendjo, Roy, & Ossoubita, 2009)		Gabon	Woodwork-related accidents	Non-specific report on musculoskeletal injuries
(Siziya, et al., 2013)		Zambia	General workers	Focussed more on the prevalence of occupational health hazards than WRMDs
(Eltayeb S. M., Staal, Khamis, & de Bie, 2011)		Sudan	CANS in office workers	Previous article for 2008 fits the current aims of this review
(Sikiru & Hanifa, 2010)		Nigeria	Nurses	A repetition of data from a previous article in 2009
(Peek, 2005)		South Africa	Non-secretarial computer users in the banking environment	Unpublished Masters Thesis
(Hohls, 2010)		South Africa	Performance related musculoskeletal disorders of professional orchestral string musicians	Unpublished Masters Thesis
(Smith L. , 2007)		South Africa	Computer-related musculoskeletal dysfunction among adolescent	Unpublished Masters Thesis

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			school learners	
(Vanderwal, Rautiainen, Kuye, Peek-Asa, Cook, & Ramirez, 2011)		Gambia	Women Vegetable Farmers	Incidence
(Christie & Wolfe, 2011)		South Africa	Active Male Participants with no professions included	Incidence
(Ellapen, Narsigan, van Herdeen, Pillay, & Rugbeer, 2011)		South Africa	Dentists	Incidence
(Mbutshu, Malonga, Ngatu, Kanbara, Longo-Mbenza, & Suganuma, 2014)		Congo	Cassava/Corn Millers	Incidence
(Mostert-Wentzel, Grobler, Moore, Ferreira, Lumley, & Burelli, 2010)		South Africa	Seamstresses	Incidence
(Mogbeyiteren, Olowoyeye, Irurhe, Ibitoye, & Udo, 2012)		Nigeria	Radiographers	Incidence
(Brink, Crous, Louw, Grimmer-Sommers, & Schreve, 2009)		South Africa	Grade 10 High School Students	Incidence
(Schultz, Mostert, & Rothmann, 2012)		South Africa	Employees of different types	Incidence
(McNeil, 2005)		Ghana	Women in Agro-processing	Incidence
(Hinmikaiye & Bamishaiye, 2012)		Nigeria	Theatre Nurses	Incidence
(Sellschop, Myezwa, Mudzi, & Mbambo-Kekana, 2014)		South Africa	Grade 8 Learners	RCT which focused on impact of intervention on WRMDs reduction

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APPENDIX D: INFORMATION SHEET (DOCUMENT ANALYSIS)

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-9592542, Fax: 27 21-9591217

E-mail: mwarner@uwc.ac.za

INFORMATION SHEET

Project Title: DEVELOPMENT OF STANDARDS FOR UNDERGRADUATE OCCUPATIONAL HEALTH IN A PHYSIOTHERAPY CURRICULUM: A CASE OF KENYA

What is this study about?

This is a research project being conducted by Nancy Eileen N. Wanyonyi at the University of the Western Cape. We are inviting you to participate in this research project because you match the characteristics of the participants we are looking for in this research by virtue of your knowledge and expertise in your field of practice. The purpose of this research project is to develop standards of competency, teaching and learning strategies, and assessment strategies focusing on occupational health for an undergraduate physiotherapy curriculum in Kenya.

What will I be asked to do if I agree to participate?

Your institution will be asked to provide a copy of the occupational health content in the Physiotherapy curriculum to the researcher either in the form of a soft or a hard copy. This should enable the researcher to do a situational analysis of the content of occupational health in the curricula of the universities offering Physiotherapy in Kenya. Document analysis, which is a type of audit where documents are scoured to gain a clearer picture of a situation being investigated, will be done according to the guidelines of the competency framework of occupational health.

Would my participation in this study be kept confidential?

We will do our best to keep the institution's information confidential. Only the researcher and the research supervisor will know the specific details based on the information regarding your institution. To help protect your confidentiality, your institution's occupational health content of the curriculum will be locked in a filing cabinet and storage areas using identification codes only on data forms and using password-protected computer files. The document analysis is anonymous and will not contain information that may specifically identify your institution. If we write a report or article about this research project, your identity will be protected to the maximum extent possible.

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In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning the abuse or neglect of disabled or other vulnerable adults that may need to be disclosed to comply with legal requirements or professional standards.

What are the risks of this research?

There are no known risks associated with participating in this research project.

What are the benefits of this research?

Studies have shown that considerations must always be taken for what should be included in the basic curriculum and in further education. The overall results of this study will help the investigator learn more about the situational analysis of the occupational health content in the physiotherapy curriculum at the universities, the competencies needed by physiotherapists to practice in occupational health as well as the teaching, learning and assessment strategies that could be used in an undergraduate curriculum to develop competencies relating to occupational health. This will in return enable the investigator to design a draft undergraduate curriculum related to occupational health in physiotherapy in Kenya. The benefits to your institution include having curriculum content that addresses the health care needs of the society. We hope that, in the future, the general public might benefit from this study through improved awareness of their role in preventing work-related musculoskeletal disorders. This will in return decrease the resource burden placed on health professionals in treating these disorders which could have been prevented and as a result enhance productivity at workplace through decreased sickness absence and minimise costs spent on treatment of work-related injuries.

Do I have to be in this research and may I stop participating at any time?

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.

Is any assistance available if I am negatively affected by participating in this study?

Action will be taken to refer any participants requiring further attention to the necessary personnel.

What if I have questions?

This research is being conducted by ***Nancy E .N. Wanyonyi, Physiotherapy Department*** the University of the Western Cape. If you have any questions about the research study itself, please contact ***Nancy Wanyonyi*** at: University of Western Cape, Private Bag X17, Bellville 7535, Tel. +254721541080

E-mail: wanyonyi_nancy@yahoo.com

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

http://etd.uwc.ac.za/

Head of Department: Prof. Anthea Rhoda

Dean of the Faculty of Community and Health Sciences: Prof. Jose Frantz

University of the Western Cape

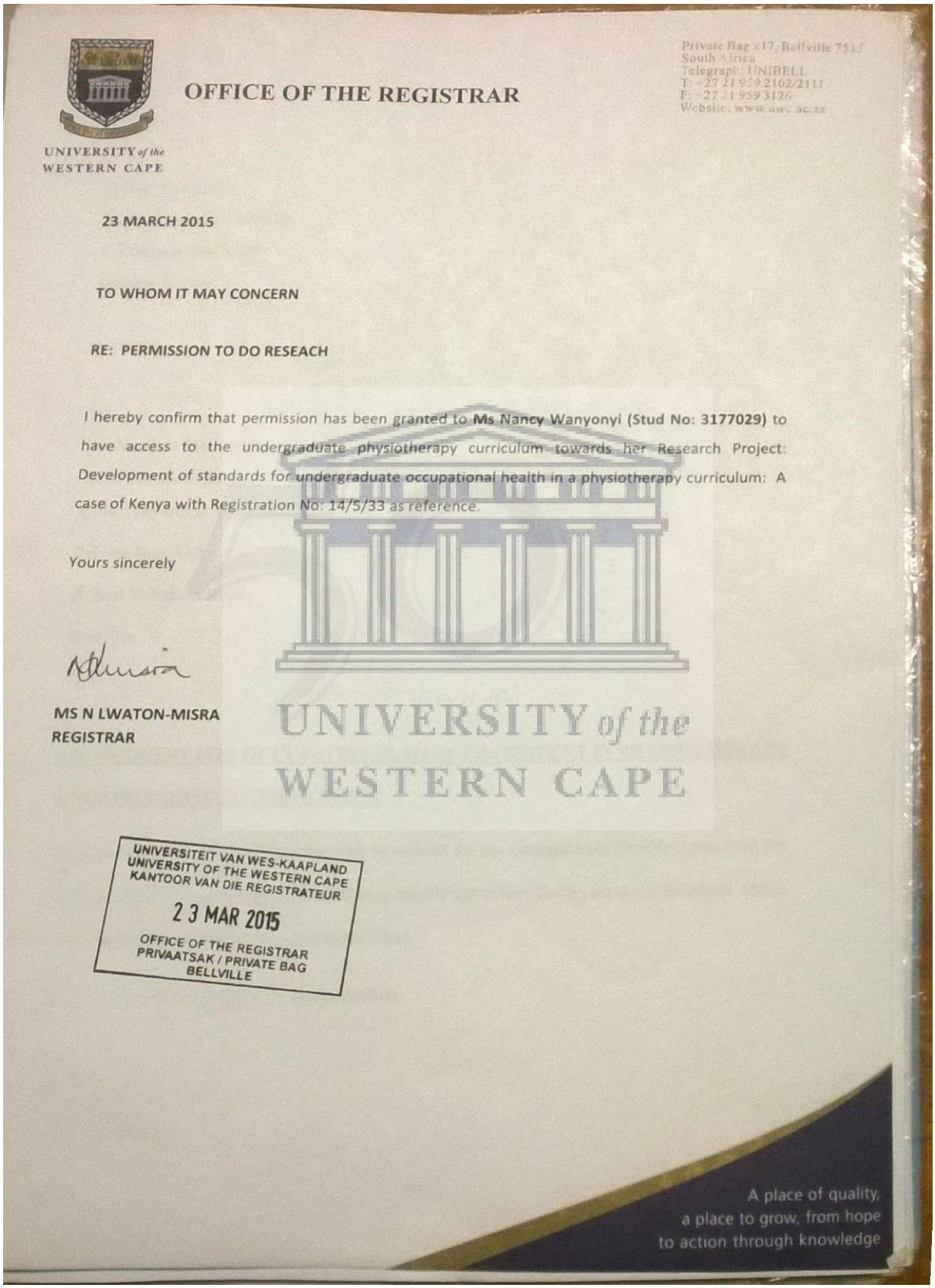
Private Bag X17

Bellville 7535

This research has been approved by the University of the Western Cape's Senate Research Committee and Ethics Committee.

http://etd.uwc.ac.za/

APPENDIX E: LETTERS OF PERMISSION TO CONDUCT THE DOCUMENT ANALYSIS



UNIVERSITY of the WESTERN CAPE

OFFICE OF THE REGISTRAR

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T: +27 21 959 2102/2111
F: +27 21 959 3126
Website: www.uwc.ac.za

23 MARCH 2015

TO WHOM IT MAY CONCERN

RE: PERMISSION TO DO RESEACH

I hereby confirm that permission has been granted to **Ms Nancy Wanyonyi (Stud No: 3177029)** to have access to the undergraduate physiotherapy curriculum towards her Research Project: Development of standards for undergraduate occupational health in a physiotherapy curriculum: A case of Kenya with Registration No: 14/5/33 as reference.

Yours sincerely

MS N LWATON-MISRA
REGISTRAR

UNIVERSITEIT VAN WES-KAAPLAND
UNIVERSITY OF THE WESTERN CAPE
KANTOOR VAN DIE REGISTRATEUR
23 MAR 2015
OFFICE OF THE REGISTRAR
PRIVAATSAK / PRIVATE BAG
BELLVILLE

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a place to grow, from hope
to action through knowledge

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INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

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P.O. BOX 3
ELDORET
Tel: 33471//2/3

MOI UNIVERSITY
SCHOOL OF MEDICINE
P.O. BOX 4606
ELDORET

Reference: IREC/2014/243
Approval Number: 0001385

2nd April, 2015

Ms. Nancy N. Wanyonyi,
Moi University,
School of Medicine,
P.O. Box 4606-30100,
ELDORET-KENYA.

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
02 APR 2015
APPROVED
P. O. Box 4606-30100 ELDORET

Dear Ms. Wanyonyi,

RE: FORMAL APPROVAL

The Institutional Research and Ethics Committee has reviewed your research proposal titled:-

"Development of Standards for Undergraduate Occupational Health in a Physiotherapy Curriculum: A Case of Kenya."

Your proposal has been granted a Formal Approval Number: ***FAN: IREC 1385*** on 2nd April, 2015. You are therefore permitted to begin your investigations.

Note that this approval is for 1 year; it will thus expire on 1st April, 2016. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

cc Director - MTRH Dean - SOP Dean - SOM
Principal - CHS Dean - SON Dean - SOD

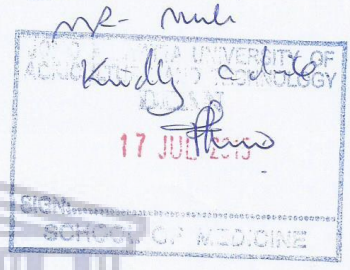
UNIVERSITY of the
WESTERN CAPE

http://etd.uwc.ac.za/

Nancy E. N. Wanyonyi,
Moi University, School of Medicine,
P. O. Box 4606-30100,
Eldoret, Kenya.
26/06/15

To,
The Dean,
College of Health Sciences,
Jomo Kenyatta University of Agriculture and Technology,
P.O. Box 62000 – 00200
Nairobi, Kenya.

17/7/15
Kindly advise



Dear Sir,

RE: REQUEST FOR OCCUPATIONAL HEALTH CONTENT IN PHYSIOTHERAPY UNDERGRADUATE CURRICULUM

In reference to the above content, I hereby write this letter to request for the Occupational Health content in the Bachelor of Science in Physiotherapy programme to enable me do data collection for my PhD study. I am a student at the University of the Western Cape, South Africa (UWC) with a PhD study on "Development of standards for undergraduate occupational health in a physiotherapy curriculum: A case of Kenya." Please find attached my proposal and ethical approval from UWC and IREC Kenya for your kind perusal.

Your kind consideration will be highly appreciated. Thank you in advance.

Yours sincerely,

Nancy Wanyonyi.

UNIVERSITY of the WESTERN CAPE

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INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 33471/2/3

MOI UNIVERSITY
SCHOOL OF MEDICINE
P.O. BOX 4606
ELDORET
Tel: 33471/2/3

Reference: IREC/2014/243
Approval Number: 0001385

2nd April, 2017

Ms. Nancy N. Wanyonyi,
Moi University,
School of Medicine,
P.O. Box 4606-30100,
ELDORET-KENYA.

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
02 APR 2017
APPROVED
P.O. Box 4606-30100 ELDORET

Dear Ms. Wanyonyi,

RE: CONTINUING APPROVAL

The Institutional Research and Ethics Committee has reviewed your request for continuing approval to your study titled:-

"Development of Standards for Undergraduate Occupational Health in a Physiotherapy Curriculum: A Case of Kenya".

Your proposal has been granted a Continuing Approval with effect from 2nd April, 2017. You are therefore permitted to continue with your study.

Note that this approval is for 1 year; it will thus expire on 1st April, 2018. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

cc:
CEO	-	MTRH
Dean	-	SOM
Dean	-	SPH
Dean	-	SOD
Dean	-	SON

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APPENDIX F: PERMISSION TO USE FIGURE 1.2

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May 13, 2020

Nancy Eileen Nekoye Wanyonyi

Moi University

3177029@myuwc.ac.za

INVOICE #098566

PERMISSION AGREEMENT/INVOICE

UNIVERSITY of the
WESTERN CAPE

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APPENDIX G: COMPETENCY FRAMEWORK AUDIT TOOL

Competency Framework Audit Tool

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ACPOHE Competency Framework audit tool

This is an audit tool to use with the Occupational Physiotherapy Competency Framework

Circle the level you believe that you meet in terms of your knowledge, skills or behaviours on the framework.

Use the right hand column to list the evidence that supports your knowledge skills or behaviour.

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The behaviours, knowledge & skills used by AHPs to practice in Occupational Health:

Domain 1 VALUES				
Level	**A**	**B**	**C**	**D**
VALUES Altruism; Advocacy; Honesty & integrity; Compassion & caring; Accountability for decision making & actions; Fulfilment of duty of care & social responsibility; Commitment to excellence. Impartiality	Values are not described at a specific level but are expressed through the behavioural elements of other domains within the framework.			

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	Domain 2 Knowledge & understanding of Occupational Health [OH] **Knowledge base : OH is generally not compulsory and may not be introduced in the undergraduate curriculum. Areas where specialist knowledge and understanding are required will have to be developed in post graduate education**

	Level	**A**	**B**	**C**	**D**	**My evidence**
2.1	**Building on undergraduate knowledge**					
2.1.1	Structure & function of the human body (undergraduate)	Working to consolidate the knowledge gained from qualifying programme practice Practising within straightforward &	Continuing to consolidate the knowledge gained from qualifying programme, & learning how that knowledge transfers from other areas/specialism's of practice into an Occupational Health context Practising within more complex & some	Demonstrate a critical awareness of current problems and/or new insights through application of research or advanced scholarship techniques relevant to Occupational Health practice Practising within complex, unpredictable	Working with a body of knowledge which is at the forefront of professional practice Creating and / or interpreting new	

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		generally predictable contexts but which requires the development of Occupational Health knowledge	unpredictable contexts which demands innovative work which may involve exploring current limits of Occupational Health knowledge	& normally specialised contexts demanding innovative work which may involve extending the current limits of Occupational Health knowledge	knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, and merit publication	
2.1.2	Health, disease, disorder & dysfunction (undergraduate)	ditto	ditto	ditto	ditto	
2.1.3	The principles & applications of scientific enquiry (undergraduate)	ditto	ditto	ditto	ditto	
2.1.4	Physical and movement science (undergraduate)	ditto	ditto	ditto	ditto	
2.2	Epidemiological research methods providing the knowledge and skills to evaluate research to establish causal links in the development of work relevant disease	Building new knowledge on to that gained in research methods from qualifying programme to extend scope of practice to contexts that require the application of current knowledge of epidemiology	Working to consolidate the knowledge gained from post registration programme into practice within complex & increasingly unpredictable contexts which requires the application of current knowledge of epidemiology	A systematic understanding of knowledge, much of which is at, or informed by, the forefront of professional practice in occupational health	A systematic acquisition & understanding of a substantial body of knowledge which is at the forefront of professional practice in occupational health	
2.3	Clinical sciences	Building awareness of	Extending knowledge	Demonstrate a critical	Create & interpret new	

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	relevant to professional practice in OH; evidence-base underpinning profession's contribution; concepts & approaches that inform the development of OH interventions	the wide scope of OH practice and developing knowledge a skills in areas relevant to current practice and the evidence base that supports the practice	and skills across a wider area of practice or specialising in one area: ie health & safety, ergonomics, occupational health, vocational rehabilitation	awareness of current problems and/or new insights through application of research or advanced scholarship techniques relevant to Occupational Health practice	knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, & merit publication	
2.4	Behavioural sciences relevant to professional practice in OH; occupational psychology; sociology of health & work; theories of communication, leadership & teamworking, organisations & pedagogy	ditto	ditto	ditto	ditto	
2.5	Ethical principles underpinning practice in occupational health	Developing awareness, knowledge and interpretation of the legal and ethical principles and practice that underpin work in and OH setting	Uses detailed knowledge of legal and ethical framework to inform service development and delivery	Demonstrates critical awareness of legal and ethical framework underpinning OH practice and drives development of current practice	Demonstrates critical awareness of legal and ethical framework underpinning OH practice and uses research techniques to evaluate the efficacy of current practice and to drive development	
2.6	UK legal & policy frameworks governing OH and including case law	Developing knowledge of UK legal & policy frameworks governing OH and interpretation of these in an OH setting	Uses detailed knowledge of UK legal & policy frameworks governing OH to inform service development and delivery	Demonstrates critical awareness UK legal & policy frameworks governing OH practice and relevant case law and uses this knowledge to drive	Demonstrates critical awareness of UK legal & policy frameworks governing OH practice and uses research techniques to evaluate the efficacy of current	

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				development of current practice	practice and to drive development	
2.7	Organisational factors and their impact on work and health	Developing an understanding of working within and for a clients organisation/s to deliver a service that contributes to that organisations success	Demonstrates insight into a client's organisational factors, and their impact on work and health of the OH team and the workforce	Acts on insights into the impact of organisational factors on work and health improve the health and wellbeing of the OH team and the workforce	Demonstrates ability to undertake qualitative and quantitave research to gain a detailed understanding of organsiational factors. Uses research outcomes to influence and create change within an organisation to improve the health and wellbeing of the workforce	
2.8	Commercial knowledge including the need for and methods to make a business case for occupational health, rehabilitation and ergonomic services	Demonstrates the ability to undertake accurate and timely collection and reporting of pre agreed data to demonstrate efficacy of OH practice	Demonstrates the ability to select collect, analyse and report on data to demonstrate efficacy of OH practice	Demonstrates the ability to select collect, analyse and report on service efficacy in terms of clinical and business outcomes that is of a quality to merit publication as a case study	Uses research knowledge and methology to set up systems to evaluate and report on service efficacy in terms of clinical and business outcomes that is of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, and merit publication	
2.9	Applied workplace ergonomics	Developing knowledge and understanding in the field of ergonomics and the need to develop skills in ergonomics assessment - currently refers on cases where ergonomic assessment is indicated	Uses knowledge and understanding to design and deliver services to individuals and small groups (micro-ergonomics) to analyse the risk of work tasks. Selects and appraises methodology in terms of its relative value in a	Demonstrates critical awareness of the science underpinning physical ergonomics techniques. Implements ergonomics principles within a workplace to prevent and manage work relevant ill health	Demonstrates critical awareness of the science underpinning ergonomics methods through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of applied	

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			given situation	(macro) Selects and appraises methodology in terms of its relative value in a given situation at systems level	ergonomics in the Occupational Health discipline, & merit publication	
2.10	The Bio-psycho-social model and its application to work and to disability; bio psychosocial assessment and management. Knowledge includes WHO International Classification of Functioning, Disability and Health (ICF) and its application in the design and delivery of occupational health services	Working to consolidate the knowledge gained from qualifying programme practice and to apply that knowledge in an occupational health context. Extending knowledge of disability and the relationship of work to health and health to work	Continuing to consolidate the knowledge gained from qualifying programme, & learning how that knowledge transfers from other areas/specialisms of practice into an Occupational Health context	Demonstrate a critical awareness of the bio psychosocial model and/or new insights into its application on OH through research or advanced scholarship techniques relevant to Occupational Health practice	Working with a body of knowledge which is at the forefront of professional practice. Through research or advanced scholarship techniques extending knowledge in the application of the bio psycho social model inan OH context	
2.11	Disability rehabilitation and reintegration into the workplace. Identification and management of issues that affect recovery and return to work	Developing awareness of the consequences of becoming workless due to ill health Use of assessment strategies and tools to identify risk of work incapacity	Knowledge of UK policy on incapacity and work & systems to support rehab & return to work for those with long term incapacity or disability. Recognition and active management of those at risk to prevent work incapacity	Demonstrates critical awareness of UK incapacity and return to work support systems and how this relates to OH practice. Drives development of current practice in terms of identifying risk of incapacity and supporting people to return to employment	Demonstrates critical awareness of UK incapacity and return to work support systems Uses research techniques to evaluate the efficacy of current practice and to drive development in terms of identifying risk of incapacity and supporting people to return to employment	
2.12	Graded and paced occupational and vocational rehabilitation (work conditioning and	Working to consolidate the knowledge gained from qualifying programme	Continuing to consolidate the knowledge gained from qualifying programme,	Demonstrate a critical awareness methods to grade and pace work conditioning and work	Working with a body of knowledge which is at the forefront of professional practice.	

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	work hardening)	practice and to apply that knowledge in an occupational health context in the delivery of work conditioning and work hardening programmes	& learning how that knowledge transfers from other areas/specialisms of practice into an Occupational Health context in the delivery of work conditioning and work hardening programmes	hardening programmes Uses new insights into the application oof paced and graded rehabilitation in OH through research or advanced scholarship techniques	Through research or advanced scholarship techniques extending knowledge in the delivery of graded and paced work conditioning and work hardening programmes	

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2.13	Assessment of fitness for work (work capability assessment or functional capability assessment	Developing knowledge and understanding in the field of assessment of fitness for work and the need to develop skills in work capability assessment - currently refers on cases where work capability assessment is indicated	Uses knowledge and understanding to design and deliver assessment of fitness for work services to clients Uses ability to analyse work tasks to inform the selection of tests . Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning assessment fo fitness for work. Uses ability to analyse work tasks to inform the selection of tests . Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning assessment of fitness for work. Through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of assessment of fitness for work in the Occupational Health discipline, & merit publication	
2.14	Health behaviour and health behaviour change	Developing knowledge and understanding of individuals health behaviours and their impact on the individuals long term health wellbeing and work capability . Provides information on factors such as diet activity and substance use when indicated. Refers on or into appropriate support programmes	Uses knowledge and understanding of health behaviours and health behaviour change to design and deliver programmes for individuals and small. Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning health behaviour change, Uses knowledge to select measures to inform the stages of a programme. Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning health behaviour change Through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of behavioural change programmes in the Occupational Health discipline, & merit publication	

PRACTICE SKILLS ie the skills necessary in OH to work effectively (Domains 3, 4 and 5)

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	Domain 3 Self awareness	**A**	**B**	**C**	**D**	
3.1	Self-awareness the behaviour, knowledge & skills required to: identify personal values, preferences & ways of working (e.g. likes & dislikes; strengths & weaknesses; emotions & prejudices; personal scope of practice), & understand how these can affect the practitioner's behaviour, judgement, & practice	demonstrate self-awareness by using reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & with guidance, analyse how these may influence behaviour, judgement & practice.	demonstrate self-awareness by using reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & with guidance, evaluate how these may influence behaviour, judgement & practice.	demonstrate strong self-awareness by using critical reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & critically evaluate how these may influence behaviour, judgement & practice.	demonstrate strong self-awareness by using critical reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & critically evaluate how these may influence behaviour, judgement & practice.	

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	Domain 4 Political awareness	**A**	**B**	**C**	**D**	
4.1	the behaviour, knowledge & skills required to: identify the political, social, economic & institutional factors influencing the delivery & development of work and health programmes and the development of Occupational Health engage with the implementation & development of policy in Occupational Health	knowledge of the political, social, economic & institutional factors that inform the delivery of Occupational Health services locally. Has awareness of the work of professional networks, learning from discussions relevant to professional practice in Occupational Health.	knowledge & understanding of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the design & delivery of Occupational Health services across the UK. Benefit from the work of professional networks, learning from discussions relevant to professional practice in Occupational Health.	critical awareness of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the current & future design, delivery & professional development of Occupational Health services at a local & regional level. Contribute to the work of professional or policy networks, relevant discussions & provide feedback to inform the implementation & development of policies relevant to professional practice in Occupational Health.	critical awareness of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the design, delivery & professional development of Occupational Health across the UK. Plays an active role in a wide variety of professional & policy networks that inform the development of policies that influence the shape the future of professional practice in Occupational Health.	

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	Domain 5 Psycho-motor skills	A	B	C	D	
5.1	The psycho motor skills and behaviours required to: perform structured bio psycho social assessment on individuals with neuro-musculo-skeletal disorders in an OH context	working to consolidate & refine the performance of complex skills gained from qualifying programme modify a technique in response to feedback (e.g. from a client, peer, supervisor)	using extended skills for individual assessment relevant to OH practice perform complex skills consistently with confidence & a degree of co-ordination & fluidity, learning how those skills transfer from one area of practice to another. becoming increasingly self-aware of when/how to modify a technique & less dependent on feedback from others.	demonstrate technical mastery of complex skills within unpredictable contexts modify a technique in-action	demonstrate technical mastery of complex skills within unpredictable & normally specialised contexts modify a technique in-action	
5.2	perform clinical assessments for a wide range of conditions that affect work capability in bio psychosocial framework	Working to consolidate & refine the psychosocial assessment skills gained from qualifying programme Extending skills to be able to identify workplace and societal obstacles to recovery and return to work for a wider range of conditions (Conditions are defined by scope of practice)	Competent in psychosocial assessment in a wide range of conditions and able to identify and tackle barriers to return to work (Conditions are defined by scope of practice)	Competent in psychosocial assessment in a wide range of conditions and in complex situations and unpredictable contexts (Conditions are defined by scope of practice)	Undertakes psychosocial assessment in a wide range of conditions and in complex situations and unpredictable contexts. Reviews efficacy of psycho-social element of interventions through research methodology and adding to evidence base	

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5.3	perform assessments using valid, reliable tools where available and where not using standardised testing protocols that are related to the demands of the job	Building capability to use the range of standardised measurement tools available in an OH setting	Competent in the use of a range of standardised measurement tools relevant to own area of practice	Competent in the use of a range of standardised measurement tools and will identify research regarding new and improved tools and implement into practice	Competent in the use of a wide range of standardised measurement tools, Able to identify gaps and may undertake research and development of new tools to add to the OH practice	
5.4	interpret the results of a cohort of psychosocial and functional assessment tools and use results to inform a treatment or rehabilitation programme and to monitor progress	Building capability to interpret the results of standardised measurement tools used in an OH setting and to use relevant tools to monitor progress	Competent in the interpretation of standardised measurement tools and uses tools to monitor progress towards return to work	Competent in the use of a range of standardised measurement tools and their interpretation Identifies research regarding new and improved tools and implement into practice	Competent in the use of a wide range of standardised measurement tools and their interpretation, Able to identify gaps and may undertake research and development of new tools to add to the OH practice	
5.5	design and deliver a programme of treatment or graded and paced occupational & vocational rehabilitation for individuals & groups	Building capability to design and to deliver work focused treatment and rehabilitation programmes	Competent to design and deliver work focused treatment and rehabilitation programmes and supervises others	Identifies research regarding return to work treatment and rehabilitation programmes and uses this to benchmark own outcomes and to improve practice	Undertake research and development into new ways to treat and rehabilitate to extend the knowledge and evidence base of OH practice	

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5.6	Perform formal and structured workplace assessment using ergonomics tools	Recognise when a formal workplace assessment is required and refer on	build skills to undertake workplace assessment within relevant to OH practice	Demonstrate technical mastery of workplace assessment procedures Critically appraise methodology and identify strengths and weaknesses	Demonstrate technical mastery of procedures Critically appraise methodology and identify strengths and weaknesses. Build body of knowledge in the area of workplace assessment through research and development	
5.7	Reflects and evaluates own performance of psychomotor skills required for clinical practice with a view to improving skills and capability	evaluate own performance	evaluate own & others' performance	evaluate own & others' performance in unpredictable contexts	evaluate own & others' performance in unpredictable & normally specialised contexts	

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	Behaviours, knowledge & skills for interacting (Domains 6,7,8,9,10,11)					
	Domain 6 Communicating	A	B	C	D	
6.1	Communicating the behaviour, knowledge & skills required to: facilitate the sharing of information, advice & ideas with a range of people, using a variety of media (including spoken, non-verbal, written & e-based); in the context of ethical and legal guidlines and constraints	use a wide range of routine communication skills to share information, ideas, problems & solutions, with individuals and within OH team.	use a wide range of routine & advanced communication skills to share specialised information, ideas, problems & solutions with audiences within Occupational Health and the workplace and relevant stakeholders.	use a range of advanced & specialised communication skills to share specialised information & ideas/engage in critical dialogue with a range of audiences within Occupational Health & beyond with different levels of knowledge & expertise.	use a broad range of advanced & specialised communication skills to share complex information & ideas/engage in critical dialogue with a wide range of audiences within Occupational Health & beyond with different levels of knowledge & expertise.	
6.2	Modify communication to meet individuals' preferences & needs client or organsiation;	modify communication in response to feedback (e.g. from a client, peer, supervisor) to meet the needs of different audiences & to enhance user involvement.	becoming increasingly self-aware & able to modify communication to meet the needs of different audiences & to enhance user involvement & collaboration.	modify communication to take account of the needs of different audiences & demonstrate a commitment to user involvement & collaboration.	modify communication in-action to take account of the needs of different audiences & demonstrate a commitment to user involvement & collaboration.	
6.4	Engage with technology, particularly the effective & efficient use of Information & Communication Technology	use a range of ICT to support & enhance practice	use a range of ICT to support & enhance the effectiveness of practice	use a wide range of ICT to support & enhance the effectiveness of practice.	use a wide range of ICT to support & enhance the effectiveness of practice & specify software requirements to enhance work.	
6.5	Extend communication to include therapeutic communication skills to be able to tackle psycho social issues	Building skills to ask directed questions about work to understand obstacles to return to work and to	Able to ask directed questions about work to understand obstacles to return to work and to develop	Developing and practicing therapeutic techniques eg cognitive behavioural approach, or motivational	Practicing therapeutic techniques eg cognitive behavioural approach, or motivational interviewing, mediation	

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	around work and health	develop shared goals to overcome the obstacles	shared goals to overcome the obstacles	interviewing, mediation skills) to recognise beliefs and behaviours that are inconsistent and to address these with the individual or other relevant stakeholders	skills) to recognise beliefs and behaviours that are inconsistent and to address these with the individual or other relevant stakeholders Undertakes research and development into effective communication in OH Extends the knowledge and evidence base of OH practice	
6.6	Build relationships in an organisation to facilitate rehabilitation of individuals and the health and wellbeing of the workforce	Builds effective working relationships with key people within the organisation	Demonstrates ability to build relationships and to work effectively within that organisation as a whole	Builds strong relationships within an organisation and demonstrates the ability to influence decisions around the health and wellbeing of the workforce	Demonstrates multi-level relationships within the organisation including senior management / board level and demonstrates the ability to provide insights and information to influence organisational change	
6.7	Communicating with the workplace and with other relevant stakeholders on a range of issues eg advice on fitness for work and recommendations for transitional work arrangements or modifications	Build skills to report information and to give advice on issues relevant to OH practice that is in line with ethical guidelines and legislative framework	Reports on complex issues coherently providing relevant advice and information to appropriate stakeholders	Critically appraise the reports of others providing relevant feedback Develops quality assured methods of reporting to ensure consistent and accurate reporting on issues across a team	Provides a range of reports to the organisation at a high level to influence strategy in terms of health and wellbeing of the workforce	

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	Domain 7 Helping others learn & develop	**A**	**B**	**C**	**D**	
7.1	The behaviour, knowledge & skills required to: • assess the learner's needs & preferences; design materials/experiences that facilitate learning & development;	with guidance, plan & deliver learning activities to a specified range of individuals/groups within Occupational Health.	design, plan & deliver learning sessions of activities & opportunities to a range of audiences in Occupational Health with similar levels of knowledge & expertise.	design, plan & deliver learning activities & opportunities to a range of audiences in Occupational Health & beyond with different levels of knowledge & expertise.	design, plan & deliver learning activities & opportunities to a wide range of audiences in Occupational Health & beyond with different levels of knowledge & expertise.	
7.2	• deliver materials/experiences that facilitate learning;	With guidance apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs.	select & apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs.	select & apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs & promote a change in behaviour and practice	develop & apply evidence based approaches to learning & teaching to meet learners' needs & promote a change in practice. Innovation and research	
7.3	• evaluate the effectiveness of the learning & development experience	with guidance, predetermined criteria to assess a learner's performance & progress & provide them with appropriate feedback	use predetermined criteria to assess a learner's performance & progress, & provide them with constructive feedback.	select & apply appropriate assessment tools to evaluate a learner's performance & progress, & provide them with constructive feedback	develop & apply evidence based approaches to assess a learner's performance & progress, & provide them with constructive feedback	
7.4	• reflect on the learning & development process	with guidance, reflect on learning & teaching performance & use this evaluation to inform future practice.	reflect on learning & teaching performance & use this evaluation to inform future practice.	critically reflect on learning & teaching performance & use this evaluation to inform future practice	critically reflect on learning & teaching performance & use this evaluation to inform future practice (self & others).	
7,5	• Demonstrate	Building capability to	Demonstrate work	Identifies research	Undertake research and	

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	recommended work methods to individuals and groups using own body (bodymechanics) and equipment	demonstrate work methods and use of work tools to individuals and groups using efficient techniques	methods and use of work tools to individuals and groups using efficient techniques Supervises programmes delivered by others	regarding work methods and use of work tools to inform education programmes and uses this to improve practice	development into new ways to demonstrate work methods and use of work tools Extends the knowledge and evidence base of OH practice	
	Domain 8 Managing self & others	**A**	**B**	**C**	**D**	
8.1	Managing self & others the behaviour, knowledge & skills required to: • plan, prioritise & organise personal workload/activities	behaves in accordance with current professional codes & practices seeking guidance where appropriate.	exercise autonomy & initiative in accordance with current professional codes & practices.	exercise autonomy & initiative in complex & unpredictable situations at the limits of current professional codes & practices.	Has authority to exercises high level of autonomy & initiative in complex & unpredictable situations not addressed by current professional codes & practice.	
8.2	• Plans use of resources to fulfil work requirements & commitments	take some responsibility for the work of others (e.g. delegation of tasks to support workers) & for a range of resources	take responsibility for the work of others (e.g. support workers, students) & for a range of resources.	take managerial responsibility for the work of others & for a significant range of resources.	take significant managerial responsibility for the work of others and/or for a significant range of resources.	
8.3	• adapt personal behaviour & actions in response to the demands of the situation;	modify personal behaviour & actions in response to feedback to meet the demands of the situation & to enhance own performance	becoming increasingly self-aware & able to modify personal behaviour & actions to meet the demands of the situation & to enhance own performance.	modify personal behaviour & actions to meet the demands of the situation & to enhance own & others' performance.	modify personal behaviour & actions 'in-action' to meet the demands of the situation & to maximise the impact of own & others' performance.	
8.4	• evaluate the effectiveness of performance (own & others);	with guidance, reflect on personal performance & use this evaluation to inform	reflect on personal performance & use this evaluation to inform future practice.	critically reflect on own & others' performance & use this evaluation to	critically reflect on own & others' performance & use this evaluation to inform future	

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		future practice.		inform future practice.	practice (own & others).	
8.5	• lead & inspire others.	assists in implementing agreed plans designed to bring about change, development and/or new thinking within Occupational Health services.	exercise leadership and/or initiative that contributes to change, development and/or new thinking within Occupational Health services.	exercise leadership with responsibility for decision making designed to bring about change & development within Occupational Health services.	exercise leadership with accountability for decision making & development across a range of contexts, including those within which there is a high degree of uncertainty & a need to take innovative approaches to Occupational Health service delivery & development.	

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	Domain 9 Promoting integration & teamwork	**A**	**B**	**C**	**D**	
9.1	the behaviour, knowledge & skills required to: • build, maintain & promote effective interpersonal relationships;	Is aware of professional networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	participates in professional/policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	support, lead & develop local/regional professional & policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	support, lead & develop regional/national professional & policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice. .	
9,2	• work collaboratively with others to achieve shared goals	work effectively with others to meet the responsibilities of professional practice in Occupational Health.	work effectively with others to meet the responsibilities of professional practice, & to identify situations where collaborative approaches could add value to practice in Occupational Health	work effectively with others to meet the responsibilities of professional practice, & to develop collaborative approaches that add value to practice in Occupational Health.	work effectively with others to meet the responsibilities of professional practice, & use innovative collaborative approaches that add value to & develop practice in Occupational Health	
9.3	• work with others to maintain & develop the effective performance of teams/networks in Occupational Health	reflect on experiences of collaborative working, & with guidance, use this information to identify solutions and contribute to the effective performance of teams/networks in Occupational Health	reflect on experiences of collaborative working, & use this information to identify & implement solutions to maintain & develop the effective performance of teams/networks in Occupational Health	critically reflect on experiences of collaborative working & use this information to identify & implement creative solutions to maintain & develop the effective & efficient performance of teams/networks in Occupational Health.	critically reflect on experiences of collaborative working & use this information to identify & implement innovative solutions to maintain & develop the effective & efficient performance of teams/networks in Occupational Health.	

	Domain 10	A	B	C	D	

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	Keeping customer focus at the centre of practice					
10.1	the behaviour, knowledge & skills required to: provide an professional and equitable service to two clients who may have conflicting needs; the Organsiation (customer) and the Worker (individual)	Recognises potential tensions /conflicts between the worker and the organisation and seeks assistance from a senior or peer	Recognises and manages potential tensions /conflicts between the worker and the organisation Seeks assistance in complex, unpredictable situations	Manages potential tensions /conflicts between the worker and the organisation in complex, unpredictable contexts. Work effectively with others to meet the responsibilities of professional practice	Manages potential tensions /conflicts between the worker and the organisation in complex, unpredictable contexts. Work effectively with others to meet the responsibilities of professional practice, & uses innovative collaborative approaches that add value to & develop practice in Occupational Health	
10.2	demonstrate respect for the individual and organisation;	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures & best practice.	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, & procedures, & by working to promote best practice in both clinical and occupational health management	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures, & by working to inform & promote legislation, policies, procedures & best practice both clinical and occupational health management	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures, & by working to inform, develop & promote legislation, policies, procedures & best practice both clinical and occupational health management	
10.3	provide information & support that enables an organisation and /or an	information & support that empowers an individual to make an	information & support that empowers an individual to make an	provide information & support that empowers an individual to make an	provide information & support that empowers an individual to make an	

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	individual to make informed choices;	informed choice & to exercise their autonomy in accordance with legislation, policies, procedures & best practice.	informed choice & to exercise their autonomy in accordance with legislation, policies & procedures, & work to promote best practice	informed choice & to exercise their autonomy in accordance with legislation, policies, procedures, & work to inform & promote legislation, policies, procedures & best practice.	informed choice & to exercise their autonomy in accordance with legislation, policies, procedures, & work to inform, develop & promote legislation, policies, procedures & best practice.	
10.4	involve the organsiation and individual in a participative approach to the shaping the design & delivery of their service	involve customers and clients in shaping the design & delivery of their service by working in accordance with policies & processes that promote a culture of service user involvement.	involve customers and clients in shaping the design & delivery of their service, & work with others to implement & support policies & processes that promote a culture of service user involvement.	involve customers and clients in shaping the design & delivery of their service, & work with others to critically appraise user involvement, & to develop & implement policies, & processes that promote a culture of service user involvement. Participatory approach	actively involve customers and clients in shaping the design & delivery of their service, & work with others to critically appraise user involvement, & to develop policies & processes that promote a culture of service user involvement that contribute to the development of best practice.	

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	Domain 11 Respecting & promoting diversity	**A**	**B**	**C**	**D**	
11.1	the behaviour, knowledge & skills required to: respect & value diversity;	respect & value diversity by working in accordance with legislation, policies, procedures & best practice.	respect & value diversity by working in accordance with legislation, policies, procedures, & to promote best practice.	respect & value diversity by working to inform & promote legislation, policies, procedures & best practice.	respect & value diversity by working to inform, develop & promote legislation, policies, procedures & best practice.	
11.2	examine own values & principles to avoid discriminatory behaviour & to minimise the potential negative effects of individual differences;	identify & articulate their own values & principles, & with guidance, evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, critically evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, critically evaluate how these may differ from other individuals/groups, & use this understanding to maintain excellent standards of practice even in situations of personal incompatibility.	
11.3	work constructively with people of all backgrounds & orientations;	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices.	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & with guidance, support individuals who need assistance in exercising their rights	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & support individuals who need assistance in exercising their rights.	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & support individuals whose rights have been compromised	
11.4	promote a non-discriminatory culture	identify discriminatory behaviour & take	identify & challenge discriminatory practices	identify & challenge discriminatory practices	identify & actively challenge discriminatory	

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	that values diversity, & enables individuals to contribute & realise their full potential.	appropriate action to challenge this behaviour.	& work with others to implement & promote policies & processes that promote a non-discriminatory culture.	& work with others to critically appraise current practice, & to develop & implement policies & processes that promote a non-discriminatory culture	practices & work with others to critically appraise current practice, & to develop policies & processes that promote a non-discriminatory culture that contribute to the development of best practice.	

Behaviours, knowledge & skills for PROBLEM-SOLVING & DECISION MAKING (Domains 12,13,14,15,16,17)

	Domain 12 Ensuring quality	A	B	C	D	
12.1	Ensuring quality the behaviour, knowledge & skills required to: fulfil the requirements of the legal policy and professional frameworks governing practice in Occupational Health;	fulfil the requirements of the legal & policy frameworks governing professional practice in OH .	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to promote best practice.	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to inform & promote legislation, policies, procedures & best practice.	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to inform, develop & promote legislation, policies, procedures & best practice.	
12.2	recognise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action;	with guidance, recognise situations where the effectiveness, efficiency & quality of a service are compromised, & with support, take appropriate action to challenge the situation	recognise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & with guidance, take appropriate action to challenge the situation	recognise & critically appraise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action to resolve the situation	recognise & critically appraise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action to resolve the situation & contribute	
12.3	critically reflect on practice in the context	with guidance, reflect on personal	reflect on personal performance & with	critically reflect on own & others' performance &	critically reflect on own & others' performance	

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	of quality	performance & use this evaluation to enhance the effectiveness, effic iency & quality of future practice.	guidance, use this evaluation to enhance the effectiveness, efficiency & quality of future practice	use this evaluation to enhance the effectiveness, efficiency & quality of future practice	& use this evaluation to enhance the effectiveness, efficiency & quality of future practice (own & others).	

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	Domain 13 Improving and developing services	**A**	**B**	**C**	**D**	
13.1	Improving & developing services the behaviour, knowledge & skills required to: critically evaluate practice & use this appraisal to inform Occupational Health service improvement, development & redesign	with guidance, critically evaluate practice, & share the outcome of this appraisal with relevant personnel	critically evaluate practice, & with guidance, use this appraisal in combination with knowledge of best practice & political awareness to inform Occupational Health service improvement.	critically evaluate practice & use this appraisal in combination with knowledge of best practice & political awareness to identify opportunities for Occupational Health service improvement & development.	critically evaluate practice & use this appraisal in combination with knowledge of best practice & political awareness to identify opportunities for Occupational Health service improvement, development & redesign.	
13.2	develop innovative & sustainable recommendations to improve the quality of the service in Occupational Health	use a problem-solving approach to develop safe & effective recommendations for improving the quality of Occupational Health practice in predictable contexts.	use problem-solving approaches to develop safe, effective & efficient recommendations for improving the quality of Occupational Health practice in increasingly unpredictable contexts.	use problem-solving approaches to develop original, safe, effective & efficient recommendations for improving the quality of Occupational Health practice in unpredictable contexts.	use problem-solving approaches to develop original, effective & efficient approaches that demonstrate evidence of positive risk taking, for improving the quality of OH practice in unpredictable & normally specialised contexts.	
13.3	plan, facilitate & manage change;	contribute to change & development within the profession or Occupational Health at a local level.	contribute to change & development within Occupational Health at a local level.	make an identifiable contribution to change & development within Occupational Health at a local & regional level.	make an identifiable contribution to change & development within Occupational Health & beyond – at a national or international level.	
13.4	critically evaluate the process & outcome		reflect on the change process, & use this information to appraise the outcome & inform future practice	critically reflect on the change process, & use this information to appraise the outcome & inform future practice	critically reflect on the change process, & use this information to appraise the outcome & inform future practice	

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	Domain 14 Lifelong learning (CPD)	**A**	**B**	**C**	**D**	
14.1	Lifelong learning CPD the behaviour, knowledge & skills required to: assess personal learning & development needs & preferences;	demonstrate self-awareness of learning preferences, & with guidance can identify personal learning & development needs	demonstrate increasing self-awareness of learning preferences, & with guidance can identify personal learning & development needs	demonstrate strong self-awareness of learning preferences, & with minimal guidance can identify personal learning & development needs	demonstrate strong self-awareness of learning preferences, & can independently identify personal learning & development needs	
14.2	• develop & engage in a personalised plan designed to meet those needs;	independently advance personal knowledge, understanding & skills in line with identified learning needs, & with guidance & support, can use a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs, & with guidance, can use a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs by making appropriate use of a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs by making appropriate use of a wide variety of learning & development resources & opportunities.	
14.3	• reflect on the learning process;	reflect on personal learning & development, & with guidance & support, use this information to inform the planning & management of future learning & development experiences.	reflect on personal learning & development, & with guidance, use this information to inform the planning & management of future learning & development experiences.	critically reflect on personal learning & development, & with guidance, use this information to inform the planning & management of future learning & development experiences.	critically reflect on personal learning & development & use this information to inform the planning & management of future learning & development experiences.	
14.4	• document the process	with guidance & support, record the outcome of personal learning & development in a format that meets personal preferences & professional requirements.	with guidance, record the outcome of personal learning & development in a format that meets personal preferences & professional requirements.	record the outcome of personal learning & development in a format that meets personal preferences & professional requirements	record the outcome of personal learning & development in a format that meets personal preferences & professional requirements	
	Domain 15 Practice decision	**A**	**B**	**C**	**D**	

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	making					
15.1	Practice decision making the behaviour, knowledge & skills required to: collect information from a variety of sources relevant to the decision making situation;	efficient & effective use of a wide range of routine & some specialised approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a wide range of routine & advanced approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a range of advanced & specialised approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a broad range of advanced & specialised approaches & techniques to systematically collect information from a wide variety of sources relevant to the situation	
15.2	process & analyse the information collected;	process & critically analyse information in complex & predictable situations where data/information comes from a range of sources or is incomplete.	process & critically analyse information in complex & unpredictable situations where data/information comes from a range of sources or is incomplete.	process & critically analyse information in complex & unpredictable situations where data/information is incomplete or consistent.	process & critically analyse information in complex, unpredictable & normally specialised situations where data/information is incomplete or inconsistent.	
15.3	draw reasoned conclusions & make informed judgements to address issues/resolve problems in Occupational Health practice; .	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health settings.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health settings.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make judgements to address ethical & professional issues in Occupational Health where situations are at the limits of current professional codes & practices.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health where situations are not addressed by current professional codes & practice.	
15.4	critically evaluate the decision making process	with guidance, reflect on their decision making process & use this evaluation to appraise the outcome & to inform	reflect on their decision making process & use this evaluation to appraise the outcome & to inform future	critically reflect on their decision making process & use this evaluation to appraise the outcome & to inform future	critically reflect on their decision making process & use this evaluation to appraise the outcome & to inform future	

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		future practice.	practice.	practice.	practice.	

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	Domain 16 Researching & evaluating practice (audit)	**A**	**B**	**C**	**D**	
16.1	Researching & evaluating practice audit the behaviour, knowledge & skills required to: • design, plan, conduct & manage the research/evaluation process;	with guidance, plan, conduct & manage evaluation & research projects to address a specific issue arising from Occupational Health practice.	plan, conduct & manage evaluation & research projects to address specific issues arising from Occupational Health practice	design, plan, conduct & manage evaluation & research projects to address problems & issues arising from Occupational Health practice.	design, plan, conduct & manage evaluation & research projects to address new problems & issues arising from Occupational Health practice.	
16.2	• use methods of enquiry to collect & interpret data in order to address problems or issues arising from Occupational Health practice;	with guidance, apply a range of standard research methods/tools of enquiry showing an appreciation of related ethical considerations.	becoming increasingly confident to apply a range of standard research methods/tools of enquiry showing an appreciation of related ethical considerations.	apply a range of standard & specialised research methods/tools of enquiry showing a detailed understanding of related ethical considerations	apply a range of standard & specialised research methods/tools of enquiry, contributing to the development of new techniques or approaches, & showing a detailed understanding of related ethical considerations	
16.3	• critically evaluate the research/evaluation process;	with guidance, reflect on the research process, & use this information to appraise the project & inform future practice	reflect on the research process, & use this information to appraise the project & inform future practice	critically reflect on the research process, & use this information to appraise the project & inform future practice.	critically reflect on the research process, & use this information to appraise the project & inform future practice	
16.4	• communicate the outcome of the research/evaluation	identify, & with support, promote the practical & professional applications	identify & promote the practical & professional applications of	identify & promote the practical & professional applications of	identify & promote the practical & professional applications of	

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	process.	of completed work, & seek opportunities to share & disseminate findings to both specialist & non-specialist audiences	completed work, & seek opportunities to share & disseminate findings to both specialist & non-specialist audiences.	completed work, & actively seek opportunities to share & disseminate findings to a range of audiences with different levels of knowledge & expertise	completed work, & actively create opportunities to share & disseminate findings to a wide range of audiences with different levels of knowledge & expertise	

	Domain 17 Using evidence to lead practice	**A**	**B**	**C**	**D**	
17.1	Using evidence to lead practice evidence based practice the behaviour, knowledge & skills required to: • systematically search for evidence;	with guidance, use a range of approaches & techniques to systematically search for evidence from a variety of sources relevant to the situation.	use a range of approaches & techniques to systematically search for evidence from a variety of sources relevant to the situation	efficient & effective use of a range of approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a broad range of approaches & techniques to systematically search for information from a wide variety of sources relevant to the situation	
17.2	• critically appraise evidence & use the information to address problems & issues arising in Occupational Health practice.	critically evaluate current research & scholarship & with guidance, use the appraisal to address specific issues arising in Occupational Health	critically evaluate current research & scholarship & use the appraisal to address specific issues arising in Occupational Health.	critically evaluate current research & scholarship & use the appraisal to address issues which are at the forefront or informed by developments at the forefront of Occupational Health.	critically evaluate current research & scholarship & use the appraisal to address new problems & issues arising in Occupational Health.	

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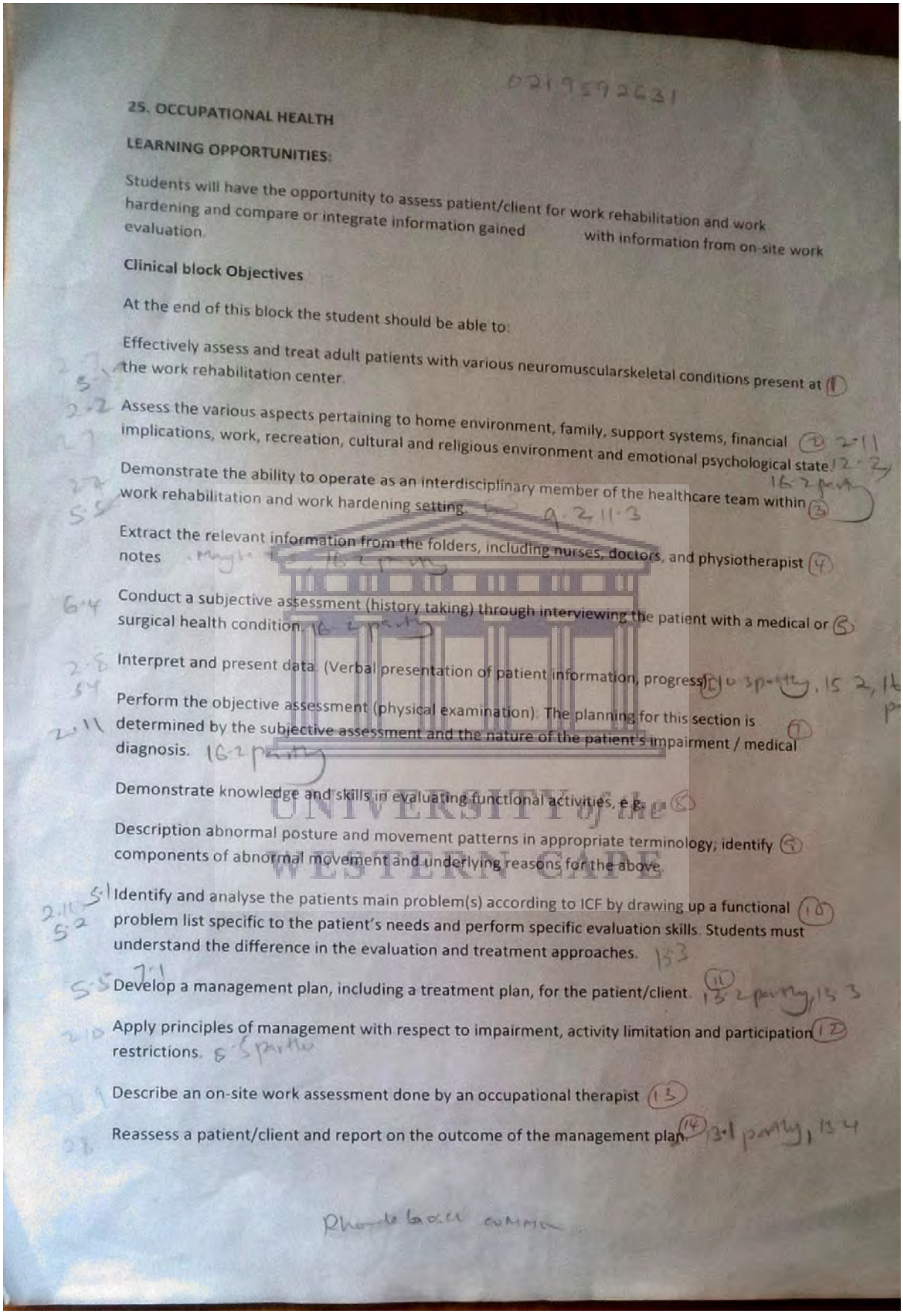
APPENDIX H1: UWC OCCUPATIONAL HEALTH COURSE CONTENT



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25. OCCUPATIONAL HEALTH

LEARNING OPPORTUNITIES:

Students will have the opportunity to assess patient/client for work rehabilitation and work hardening and compare or integrate information gained with information from on-site work evaluation.

Clinical block Objectives

At the end of this block the student should be able to:

Effectively assess and treat adult patients with various neuromuscularskeletal conditions present at the work rehabilitation center. (1)

Assess the various aspects pertaining to home environment, family, support systems, financial implications, work, recreation, cultural and religious environment and emotional psychological state. (2)

Demonstrate the ability to operate as an interdisciplinary member of the healthcare team within work rehabilitation and work hardening setting. (3)

Extract the relevant information from the folders, including nurses, doctors, and physiotherapist notes (4)

Conduct a subjective assessment (history taking) through interviewing the patient with a medical or surgical health condition. (5)

Interpret and present data. (Verbal presentation of patient information, progress) (6)

Perform the objective assessment (physical examination). The planning for this section is determined by the subjective assessment and the nature of the patient's impairment / medical diagnosis. (7)

Demonstrate knowledge and skills in evaluating functional activities, e.g. (8)

Description abnormal posture and movement patterns in appropriate terminology; identify components of abnormal movement and underlying reasons for the above. (9)

Identify and analyse the patients main problem(s) according to ICF by drawing up a functional problem list specific to the patient's needs and perform specific evaluation skills. Students must understand the difference in the evaluation and treatment approaches. (10)

Develop a management plan, including a treatment plan, for the patient/client. (11)

Apply principles of management with respect to impairment, activity limitation and participation restrictions. (12)

Describe an on-site work assessment done by an occupational therapist (13)

Reassess a patient/client and report on the outcome of the management plan. (14)

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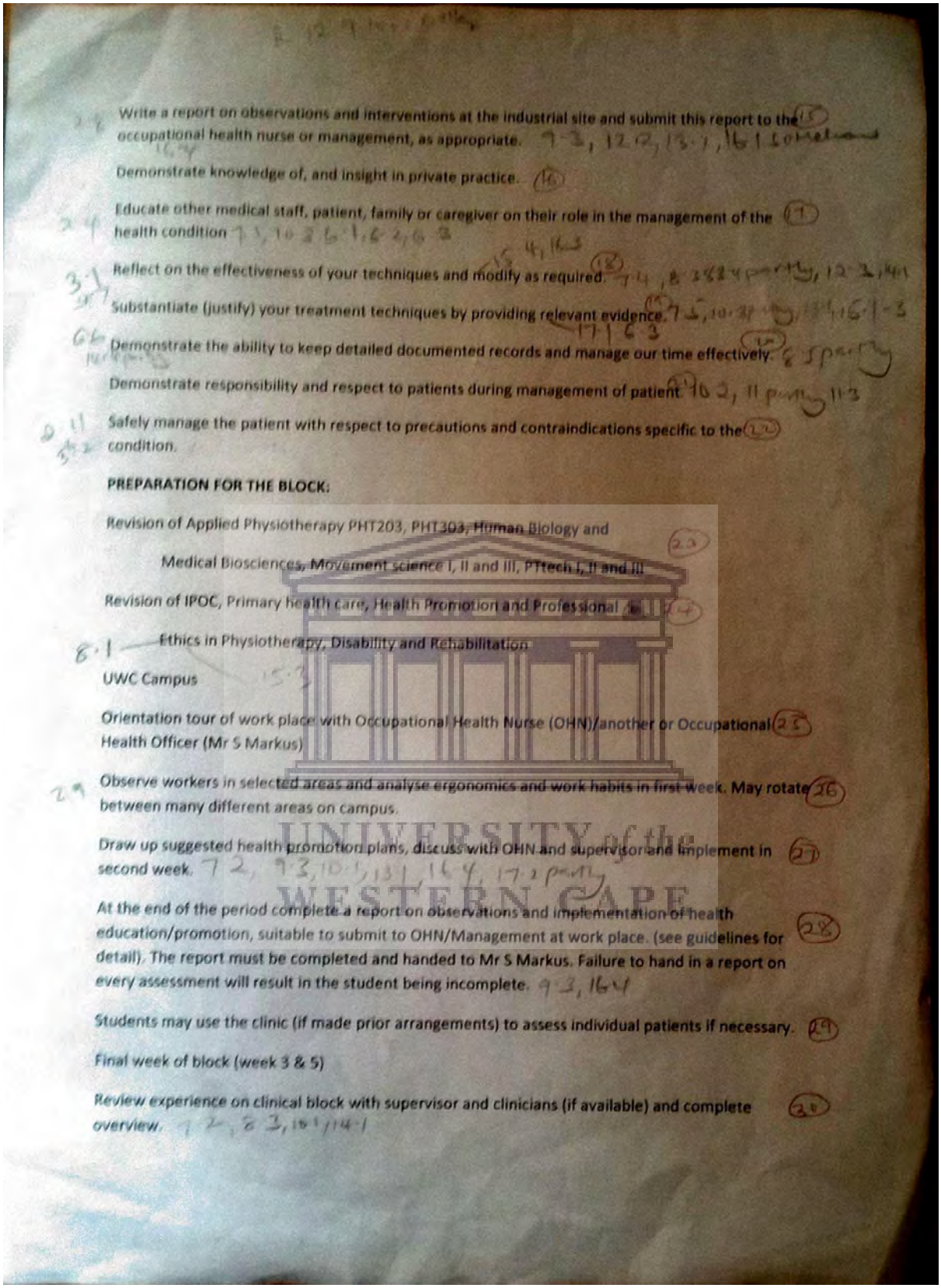
APPENDIX H1: UWC OCCUPATIONAL HEALTH COURSE CONTENT



Write a report on observations and interventions at the industrial site and submit this report to the occupational health nurse or management, as appropriate.

Demonstrate knowledge of, and insight in private practice.

Educate other medical staff, patient, family or caregiver on their role in the management of the health condition

Reflect on the effectiveness of your techniques and modify as required.

Substantiate (justify) your treatment techniques by providing relevant evidence.

Demonstrate the ability to keep detailed documented records and manage our time effectively.

Demonstrate responsibility and respect to patients during management of patient

Safely manage the patient with respect to precautions and contraindications specific to the condition.

PREPARATION FOR THE BLOCK:

Revision of Applied Physiotherapy PHT203, PHT303, Human Biology and Medical Biosciences, Movement science I, II and III, PTtech I, II and III

Revision of IPOC, Primary health care, Health Promotion and Professional Ethics in Physiotherapy, Disability and Rehabilitation

UWC Campus

Orientation tour of work place with Occupational Health Nurse (OHN)/another or Occupational Health Officer (Mr S Markus)

Observe workers in selected areas and analyse ergonomics and work habits in first week. May rotate between many different areas on campus.

Draw up suggested health promotion plans, discuss with OHN and supervisor and implement in second week.

At the end of the period complete a report on observations and implementation of health education/promotion, suitable to submit to OHN/Management at work place. (see guidelines for detail). The report must be completed and handed to Mr S Markus. Failure to hand in a report on every assessment will result in the student being incomplete.

Students may use the clinic (if made prior arrangements) to assess individual patients if necessary.

Final week of block (week 3 & 5)

Review experience on clinical block with supervisor and clinicians (if available) and complete overview.

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ACPOHE

Competency Framework Audit Tool

2012

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This is an audit tool to use with the Occupational Physiotherapy Competency Framework

Circle the level you believe that you meet in terms of your knowledge, skills or behaviours on the framework.

Use the right hand column to list the evidence that supports your knowledge skills or behaviour.

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The behaviours, knowledge & skills used by AHPs to practice in Occupational Health:

Domain 1 VALUES				
Level	A	B	C	D
VALUES Altruism; Advocacy; Honesty & integrity; Compassion & caring; Accountability for decision making & actions; Fulfilment of duty of care & social responsibility; Commitment to excellence. Impartiality	Values are not described at a specific level but are expressed through the behavioural elements of other domains within the framework.			

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	Domain 2 Knowledge & understanding of Occupational Health [OH] Knowledge base : OH is generally not compulsory and may not be introduced in the undergraduate curriculum. Areas where specialist knowledge and understanding are required will have to be developed in post graduate education

	Level	A	B	C	D	My evidence
2.1	Building on undergraduate knowledge					B- This is because OH is executed as a block in year 4 and the students are expected to apply skills learnt in previous years. Limitation: Not all students are able to go through this 5/6 weeks block.

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2.1.1	Structure & function of the human body (undergraduate)	Working to consolidate the knowledge gained from qualifying programme practice Practising within straightforward &	Continuing to consolidate the knowledge gained from qualifying programme, & learning how that knowledge transfers from other areas/specialism's of practice into an Occupational Health context Practising within more complex & some	Demonstrate a critical awareness of current problems and/or new insights through application of research or advanced scholarship techniques relevant to Occupational Health practice Practising within complex, unpredictable	Working with a body of knowledge which is at the forefront of professional practice Creating and / or interpreting new	B
		generally predictable contexts but which requires the development of Occupational Health knowledge	unpredictable contexts which demands innovative work which may involve exploring current limits of Occupational Health knowledge	& normally specialised contexts demanding innovative work which may involve extending the current limits of Occupational Health knowledge	knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, and merit publication	B
2.1.2	Health, disease, disorder & dysfunction (undergraduate)	ditto	ditto	ditto	ditto	B
2.1.3	The principles & applications of scientific enquiry (undergraduate)	ditto	ditto	ditto	ditto	B
2.1.4	Physical and movement science (undergraduate)	ditto	ditto	ditto	ditto	B

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2.2	Epidemiological research methods providing the knowledge and skills to evaluate research to establish causal links in the development of work relevant disease	Building new knowledge on to that gained in research methods from qualifying programme to extend scope of practice to contexts that require the application of current knowledge of epidemiology	Working to consolidate the knowledge gained from post registration programme into practice within complex & increasingly unpredictable contexts which requires the application of current knowledge of epidemiology	A systematic understanding of knowledge, much of which is at, or informed by, the forefront of professional practice in occupational health	A systematic acquisition & understanding of a substantial body of knowledge which is at the forefront of professional practice in occupational health	A- In the objective that seeks to assess the various aspects to home environment etc (2)
2.3	Clinical sciences	Building awareness of	Extending knowledge	Demonstrate a critical	Create & interpret new	A- Based on previous modules taught

	relevant to professional practice in OH; evidence-base underpinning profession's contribution; concepts & approaches that inform the development of OH interventions	the wide scope of OH practice and developing knowledge a skills in areas relevant to current practice and the evidence base that supports the practice	and skills across a wider area of practice or specialising in one area: ie health & safety, ergonomics, occupational health, vocational rehabilitation	awareness of current problems and/or new insights through application of research or advanced scholarship techniques relevant to Occupational Health practice	knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, & merit publication		

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2.4	Behavioural sciences relevant to professional practice in OH; occupational psychology; sociology of health & work; theories of communication, leadership & teamworking, organisations & pedagogy	ditto	ditto	ditto	ditto	A- Need to find out when and where the students learn psychology Team working, leadership and communication skills are part of learning outcomes in IPOC and PHC	
2.5	Ethical principles underpinning practice in occupational health	Developing awareness, knowledge and interpretation of the legal and ethical principles and practice that underpin work in and OH setting	Uses detailed knowledge of legal and ethical framework to inform service development and delivery	Demonstrates critical awareness of legal and ethical framework underpinning OH practice and drives development of current practice	Demonstrates critical awareness of legal and ethical framework underpinning OH practice and uses research techniques to evaluate the efficacy of current practice and to drive development	A- What is evident is the course outline is Ethics in Phsyiotherapy- There's also a need to find out if they're also taught about OH content separately- Not taught ethics in OH separately but rather general ethics taught in IPOC and in PT year 4	The physiotherapist has not been seen to possess these skills
2.6	SA legal & policy frameworks governing OH and including case law	Developing knowledge of SA legal & policy frameworks governing OH and interpretation of these in an OH setting	Uses detailed knowledge of UK legal & policy frameworks governing OH to inform service development and delivery	Demonstrates critical awareness UK legal & policy frameworks governing OH practice and relevant case law and uses this	Demonstrates critical awareness of UK legal & policy frameworks governing OH practice and uses research techniques to evaluate the	Need to know what is currently being done in UWC about these-Still not evident what is being done with regards to the regulating frameworks	Is the OH nurse competent in this area they take the students through this??

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				knowledge to drive	efficacy of current		

				development of current practice	practice and to drive development	
2.7	Organisational factors and their impact on work and health	Developing an understanding of working within and for a clients organisation/s to deliver a service that contributes to that organisations success	Demonstrates insight into a client's organisational factors, and their impact on work and health of the OH team and the workforce	Acts on insights into the impact of organisational factors on work and health improve the health and wellbeing of the OH team and the workforce	Demonstrates ability to undertake qualitative and quantitave research to gain a detailed understanding of organsiational factors. Uses research outcomes to influence and create change within an organisation to improve the health and wellbeing of the workforce	A- Several statements in the objectives seems to be addressing the outcomes (1, 2, 3)
2.8	Commercial knowledge including the need for and methods to make a business case for occupational health, rehabilitation and ergonomic services	Demonstrates the ability to undertake accurate and timely collection and reporting of pre agreed data to demonstrate efficacy of OH practice	Demonstrates the ability to select collect, analyse and report on data to demonstrate efficacy of OH practice	Demonstrates the ability to select collect, analyse and report on service efficacy in terms of clinical and business outcomes that is of a quality to merit publication as a case study	Uses research knowledge and methology to set up systems to evaluate and report on service efficacy in terms of clinical and business outcomes that is of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, and merit publication	A- Addressed by several objectives (6,14, 15)

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2.9	Applied workplace ergonomics	Developing knowledge and understanding in the field of ergonomics and the need to develop skills in ergonomics assessment - currently refers on cases where ergonomic assessment is indicated	Uses knowledge and understanding to design and deliver services to individuals and small groups (microergonomics) to analyse the risk of work tasks. Selects and appraises methodology in terms of its relative value in a	Demonstrates critical awareness of the science underpinning physical ergonomics techniques. Implements ergonomics principles within a workplace to prevent and manage work relevant ill health	Demonstrates critical awareness of the science underpinning ergonomics methods through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of applied	A- addressed by various objectives (13, 26) Also taught ergonomics as a previous module i.e. analysis of posture
			given situation	(macro) Selects and appraises methodology in terms of its relative value in a given situation at systems level	ergonomics in the Occupational Health discipline, & merit publication	
2.10	The Bio-psycho-social model and its application to work and to disability; bio psychosocial assessment and management. Knowledge includes WHO International Classification of Functioning, Disability and Health (ICF) and its application in the design and delivery of occupational health services	Working to consolidate the knowledge gained from qualifying programme practice and to apply that knowledge in an occupational health context. Extending knowledge of disability and the relationship of work to health and health to work	Continuing to consolidate the knowledge gained from qualifying programme, & learning how that knowledge transfers from other areas/specialisms of practice into an Occupational Health context	Demonstrate a critical awareness of the bio psychosocial model and/or new insights into its application on OH through research or advanced scholarship techniques relevant to Occupational Health practice	Working with a body of knowledge which is at the forefront of professional practice. Through research or advanced scholarship techniques extending knowledge in the application of the bio psycho social model inan OH context	A- Addressed (10) Also covered well in disability and rehabilitation module

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2.11	Disability rehabilitation and reintegration into the workplace. Identification and management of issues that affect recovery and return to work	Developing awareness of the consequences of becoming workless due to ill health Use of assessment strategies and tools to identify risk of work incapacity	Knowledge of UK policy on incapacity and work & systems to support rehab & return to work for those with long term incapacity or disability. Recognition and active management of those at risk to prevent work incapacity	Demonstrates critical awareness of UK incapacity and return to work support systems and how this relates to OH practice. Drives development of current practice in terms of identifying risk of incapacity and supporting people to return to employment	Demonstrates critical awareness of UK incapacity and return to work support systems Uses research techniques to evaluate the efficacy of current practice and to drive development in terms of identifying risk of incapacity and supporting people to return to employment	A- Addressed in a way (2,7) Whatever they cover in disability and rehab has an aspect of service-based rehab whose focus is integrating the patient into their services. Vocational rehabilitation should come out strongly under this course, if not reference should be made as to where students can learn this skill
2.12	Graded and paced occupational and vocational rehabilitation (work conditioning and	Working to consolidate the knowledge gained from qualifying programme	Continuing to consolidate the knowledge gained from qualifying programme,	Demonstrate a critical awareness methods to grade and pace work conditioning and work	Working with a body of knowledge which is at the forefront of professional practice.	A- Addressed by the main learning opportunities
	work hardening)	practice and to apply that knowledge in an occupational health context in the delivery of work conditioning and work hardening programmes	& learning how that knowledge transfers from other areas/specialisms of practice into an Occupational Health context in the delivery of work conditioning and work hardening programmes	hardening programmes Uses new insights into the application oof paced and graded rehabilitation in OH through research or advanced scholarship techniques	Through research or advanced scholarship techniques extending knowledge in the delivery of graded and paced work conditioning and work hardening programmes	Though since its evident that vocational rehabilitation has not been clearly referred to, then the assumption is that basic PT knowledge will be applied here which should not be the case. If no room for practie,

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						students should be given a simulative environment with simulated patients to be able to do this

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2.13	Assessment of fitness for work (work capability assessment or functional capability assessment	Developing knowledge and understanding in the field of assessment of fitness for work and the need to develop skills in work capability assessment - currently refers on cases where work capability assessment is indicated	Uses knowledge and understanding to design and deliver assessment of fitness for work services to clients Uses ability to analyse work tasks to inform the selection of tests. Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning assessment fo fitness for work. Uses ability to analyse work tasks to inform the selection of tests . Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning assessment of fitness for work. Through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of assessment of fitness for work in the Occupational Health discipline, & merit publication	- Does not explicitly come out from the given block objectives Similar to the above. What happens is use of the basic PT knowledge and comment in 2.12 should apply here as well. I will also talk to the occupational nurse/health officer to inform me of what he exactly does with the students when they arrive on the block
2.14	Health behaviour and health behaviour change	Developing knowledge and understanding of individuals health behaviours and their impact on the individuals long term health wellbeing and work capability . Provides information on factors such as diet activity and substance use when indicated. Refers on or into appropriate support programmes	Uses knowledge and understanding of health behaviours and health behaviour change to design and deliver programmes for individuals and small. Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning health behaviour change, Uses knowledge to select measures to inform the stages of a programme. Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning health behaviour change Through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of behavioural change programmes in the Occupational Health discipline, & merit publication	A- Most likely it could have been covered in health promotion (24) Health promotion course however during the OH block, emphasis should be made to the students on what is specific to OH with regards to this domain as a sort

Jose Frantz 4/4/2015 8:41 PM
Comment [1]: We need to get the module descriptors for this

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						of refreshment

PRACTICE SKILLS ie the skills necessary in OH to work effectively (Domains 3, 4 and 5)

	Domain 3 Self awareness	A	B	C	D	

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3.1	Self-awareness the behaviour, knowledge & skills required to: identify personal values, preferences & ways of working (e.g. likes & dislikes; strengths & weaknesses; emotions & prejudices; personal scope of practice), & understand how these can affect the practitioner's behaviour, judgement, & practice	demonstrate selfawareness by using reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & with guidance, analyse how these may influence behaviour, judgement & practice.	demonstrate selfawareness by using reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & with guidance, evaluate how these may influence behaviour, judgement & practice.	demonstrate strong self-awareness by using critical reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & critically evaluate how these may influence behaviour, judgement & practice.	demonstrate strong self-awareness by using critical reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & critically evaluate how these may influence behaviour, judgement & practice.	A- Evident from the objectives (18) Also a learning outcome in IPOC to a great extent

	Domain 4 Political awareness	A	B	C	D	

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4.1	the behaviour, knowledge & skills required to: identify the political, social, economic & institutional factors influencing the delivery & development of work and health programmes and the development of Occupational Health engage with the implementation & development of policy in Occupational Health	knowledge of the political, social, economic & institutional factors that inform the delivery of Occupational Health services locally. Has awareness of the work of professional networks, learning from discussions relevant to professional practice in Occupational Health.	Knowledge & understanding of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the design & delivery of Occupational Health services across the UK. Benefit from the work of professional networks, learning from discussions relevant to professional practice in Occupational Health.	Critical awareness of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the current & future design, delivery & professional development of Occupational Health services at a local & regional level. Contribute to the work of professional or policy networks, relevant discussions & provide feedback to inform the implementation & development of policies relevant to professional practice in Occupational Health.	Critical awareness of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the design, delivery & professional development of Occupational Health across the UK. Plays an active role in a wide variety of professional & policy networks that inform the development of policies that influence the shape the future of professional practice in Occupational Health.	- Not sure of how that is captured Ethics and politics has been covered in IPOC but not in relation to Occupational health

	Domain 5 Psycho-motor skills	A	B	C	D		

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5.1	The psycho motor skills and behaviours required to: perform structured bio psycho social assessment on individuals with neuro-musculo-skeletal disorders in an OH context	working to consolidate & refine the performance of complex skills gained from qualifying programme modify a technique in response to feedback (e.g. from a client, peer, supervisor)	using extended skills for individual assessment relevant to OH practice perform complex skills consistently with confidence & a degree of co-ordination & fluidity, learning how those skills transfer from one area of practice to another. Becoming increasingly self-aware of when/how to modify a technique & less dependent on feedback from others.	Demonstrate technical mastery of complex skills within unpredictable contexts modify a technique inaction	demonstrate technical mastery of complex skills within unpredictable & normally specialised contexts modify a technique inaction	- Maybe somehow addressed by (10) but not sure how that can be articulated Captured in physiotherap techniques t more so in three	
5.2	perform clinical assessments for a wide range of conditions that affect work capability in bio psychosocial framework	Working to consolidate & refine the psychosocial assessment skills gained from qualifying programme Extending skills to be able to identify workplace and societal obstacles to recovery and return to work for a wider range of conditions (Conditions are defined by scope of practice)	Competent in psychosocial assessment in a wide range of conditions and able to identify and tackle barriers to return to work (Conditions are defined by scope of practice)	Competent in psychosocial assessment in a wide range of conditions and in complex situations and unpredictable contexts (Conditions are defined by scope of practice)	Undertakes psychosocial assessment in a wide range of conditions and in complex situations and unpredictable contexts. Reviews efficacy of psychosocial element of interventions through research methodology and adding to evidence base	A- Maybe addressed in the ICF aspect and management of pt objective with precautions and contraindications specific to the condition (10, 22) Well captured in PT	

Jose Frantz 4/4/2015 8:43 PM
Comment [2]: This should emerge in Physiotherapy techniques 2 and 3 and we should get those module descritptors.

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						Techniques III	
5.3	perform assessments using valid, reliable tools where available and where not using standardised testing protocols that are related to the demands of the job	Building capability to use the range of standardised measurement tools available in an OH setting	Competent in the use of a range of standardised measurement tools relevant to own area of practice	Competent in the use of a range of standardised measurement tools and will identify research regarding new and improved tools and implement into practice	Competent in the use of a wide range of standardised measurement tools, Able to identify gaps and may undertake research and development of new tools to add to the OH practice	- Not explicitly coming out through the laid out objectives & prior knowledge	- Clinician needs to portray competency of these as well
5.4	interpret the results of a cohort of psychosocial and functional assessment tools and use results to inform a treatment or rehabilitation programme and to monitor progress	Building capability to interpret the results of standardised measurement tools used in an OH setting and to use relevant tools to monitor progress	Competent in the interpretation of standardised measurement tools and uses tools to monitor progress towards return to work	Competent in the use of a range of standardised measurement tools and their interpretation Identifies research regarding new and improved tools and implement into practice	Competent in the use of a wide range of standardised measurement tools and their interpretation, Able to identify gaps and may undertake research and development of new tools to add to the OH practice	A- Evidence of use of standardised OH tools is lacking	B-

NANCY WANYONYI 8/13/2016 9:35 AM
Comment [3]: How long should the OSH attachment or rotation be? If one needs to monitor progress of ones return to work???

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5.5	design and deliver a programme of treatment or graded and paced occupational & vocational rehabilitation for individuals & groups	Building capability to design and to deliver work focused treatment and rehabilitation programmes	Competent to design and deliver work focused treatment and rehabilitation programmes and supervises others	Identifies research regarding return to work treatment and rehabilitation programmes and uses this to benchmark own outcomes and to improve practice	Undertake research and development into new ways to treat and rehabilitate to extend the knowledge and evidence base of OH practice	A- Present in the objectives (3, 11)	B-

NANCY WANYONYI 8/13/2016 9:56 AM
Comment [4]: What is the realistic time frame for this to be done???

5.6	Perform formal and structured workplace assessment using ergonomics tools	Recognise when a formal workplace assessment is required and refer on	build skills to undertake workplace assessment within relevant to OH practice	Demonstrate technical mastery of workplace assessment procedures Critically appraise methodology and identify strengths and weaknesses	Demonstrate technical mastery of procedures Critically appraise methodology and identify strengths and weaknesses. Build body of knowledge in the area of workplace assessment through research and development	A- Not explicitly outlined as to which tools are Also covered in PHT 316
5.7	Reflects and evaluates own performance of psychomotor skills required for clinical practice with a view to improving skills and capability	evaluate own performance	evaluate own & others' performance	evaluate own & others' performance in unpredictable contexts	evaluate own & others' performance in unpredictable & normally specialised contexts	A- Evident in reflecting about techniques used in work (18)

NANCY WANYONYI 8/13/2016 9:57 AM
Comment [5]: Is there a need for standardised OSH tools to be created??? Probably this should form part of the questions for the Delphi study in terms of which tools should be adopted for use in occupational health??

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	Behaviours, knowledge & skills for interacting (Domains 6,7,8,9,10,11)					
	Domain 6 Communicating	A	B	C	D	
6.1	Communicating the behaviour, knowledge & skills required to: facilitate the sharing of information, advice & ideas with a range of people, using a variety of media (including spoken, non-verbal, written & e-based); in the context of ethical and legal guidlines and constraints	use a wide range of routine communication skills to share information, ideas, problems & solutions, with individuals and within OH team.	use a wide range of routine & advanced communication skills to share specialised information, ideas, problems & solutions with audiences within Occupational Health and the workplace and relevant stakeholders.	use a range of advanced & specialised communication skills to share specialised information & ideas/engage in critical dialogue with a range of audiences within Occupational Health & beyond with different levels of knowledge & expertise.	use a broad range of advanced & specialised communication skills to share complex information & ideas/engage in critical dialogue with a wide range of audiences within Occupational Health & beyond with different levels of knowledge & expertise.	A- Evident the only difficult part to determine is the context of ethical and legal guidelines and constraints (17). Also
6.2	Modify communication to meet individuals' preferences & needs client or organsiation;	modify communication in response to feedback (e.g. from a client, peer, supervisor) to meet the needs of different audiences & to enhance user involvement.	becoming increasingly self-aware & able to modify communication to meet the needs of different audiences & to enhance user involvement & collaboration.	modify communication to take account of the needs of different audiences & demonstrate a commitment to user involvement & collaboration.	modify communication in-action to take account of the needs of different audiences & demonstrate a commitment to user involvement & collaboration.	- Does not explicitly come out from the content, one needs to find out when students learn about communication skills. One may assume that students portray

Jose Frantz 4/4/2015 8:44 PM
Comment [6]: What about there ethics module in 3rd and 4th year

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						these skills as they interact with various people (17)
6.3	Engage with technology, particularly the effective & efficient use of Information & Communication Technology	use a range of ICT to support & enhance practice	use a range of ICT to support & enhance the effectiveness of practice	use a wide range of ICT to support & enhance the effectiveness of practice.	use a wide range of ICT to support & enhance the effectiveness of practice & specify software requirements to enhance work.	much in two. - As 6.2 above . Present evidence (17, 19)
6.4	Extend communication to include therapeutic communication skills to be able to tackle psycho social issues	Building skills to ask directed questions about work to understand obstacles to return to work and to	Able to ask directed questions about work to understand obstacles to return to work and to develop	Developing and practicing therapeutic techniques eg cognitive behavioural approach, or motivational	Practicing therapeutic techniques eg cognitive behavioural approach, or motivational interviewing, mediation	A- Present in the objectives (5)
	around work and health	develop shared goals to overcome the obstacles	shared goals to overcome the obstacles	interviewing, mediation skills) to recognise beliefs and behaviours that are inconsistent and to address these with the individual or other relevant stakeholders	skills) to recognise beliefs and behaviours that are inconsistent and to address these with the individual or other relevant stakeholders Undertakes research and development into effective communication in OH Extends the knowledge and evidence base of OH practice	

Jose Frantz 4/4/2015 8:45 PM
Comment [7]: Could have been covered in clinical practice 1 and 2 and 3 – check those module descriptors

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6.5	Build relationships in an organisation to facilitate rehabilitation of individuals and the health and wellbeing of the workforce	Builds effective working relationships with key people within the organisation	Demonstrates ability to build relationships and to work effectively within that organisation as a whole	Builds strong relationships within an organisation and demonstrates the ability to influence decisions around the health and wellbeing of the workforce	Demonstrates multilevel relationships within the organisation including senior management / board level and demonstrates the ability to provide insights and information to influence organisational change	A- Present in the objectives (3)
6.6	Communicating with the workplace and with other relevant stakeholders on a range of issues eg advice on fitness for work and recommendations for transitional work arrangements or modifications	Build skills to report information and to give advice on issues relevant to OH practice that is in line with ethical guidelines and legislative framework	Reports on complex issues coherently providing relevant advice and information to appropriate stakeholders	Critically appraise the reports of others providing relevant feedback Develops quality assured methods of reporting to ensure consistent and accurate reporting on issues across a team	Provides a range of reports to the organisation at a high level to influence strategy in terms of health and wellbeing of the workforce	A- The only part that is not clear with this objective is the part of ethical guidelines and legislative frameworks

	Domain 7 Helping others learn & develop	A	B	C	D	

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7.1	The behaviour, knowledge & skills required to: • assess the learner's needs & preferences; design materials/experience s that facilitate learning & development;	with guidance, plan & deliver learning activities to a specified range of individuals/groups within Occupational Health.	design, plan & deliver learning sessions of activities & opportunities to a range of audiences in Occupational Health with similar levels of knowledge & expertise.	design, plan & deliver learning activities & opportunities to a range of audiences in Occupational Health & beyond with different levels of knowledge & expertise.	design, plan & deliver learning activities & opportunities to a wide range of audiences in Occupational Health & beyond with different levels of knowledge & expertise.	A- Present in the objectives (11, 17)
7.2	• deliver materials/experienc es that facilitate learning;	With guidance apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs.	select & apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs.	select & apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs & promote a change in behaviour and practice	develop & apply evidence based approaches to learning & teaching to meet learners' needs & promote a change in practice. Innovation and research	A- Somehow covered as supervision and clinicians oversee their work (27,30)
7.3	• evaluate the effectiveness of the learning & development experience	with guidance, predetermined criteria to assess a learner's performance & progress & provide them with appropriate feedback	use predetermined criteria to assess a learner's performance & progress, & provide them with constructive feedback.	select & apply appropriate assessment tools to evaluate a learner's performance & progress, & provide them with constructive feedback	develop & apply evidence based approaches to assess a learner's performance & progress, & provide them with constructive feedback	A- Not explicitly explained from the content (18, 30)
7.4	• reflect on the learning & development process	with guidance, reflect on learning & teaching performance & use this evaluation to inform future practice.	reflect on learning & teaching performance & use this evaluation to inform future practice.	critically reflect on learning & teaching performance & use this evaluation to inform future practice	critically reflect on learning & teaching performance & use this evaluation to inform future practice (self & others).	A- Evident (18)
7.5	• Demonstrate	Building capability to	Demonstrate work	Identifies research	Undertake research and	A- Evident (19)

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	recommended work methods to individuals and groups using own body (bodymechanics) and equipment	demonstrate work methods and use of work tools to individuals and groups using efficient techniques	methods and use of work tools to individuals and groups using efficient techniques Supervises programmes delivered by others	regarding work methods and use of work tools to inform education programmes and uses this to improve practice	development into new ways to demonstrate work methods and use of work tools Extends the knowledge and evidence base of OH practice	
	Domain 8 Managing self & others	A	B	C	D	
8.1	Managing self & others the behaviour, knowledge & skills required to: • plan, prioritise & organise personal workload/activities	behaves in accordance with current professional codes & practices seeking guidance where appropriate.	exercise autonomy & initiative in accordance with current professional codes & practices.	exercise autonomy & initiative in complex & unpredictable situations at the limits of current professional codes & practices.	Has authority to exercises high level of autonomy & initiative in complex & unpredictable situations not addressed by current professional codes & practice.	A- Evident (24) It would be amazing to see some of their evaluation tools
8.2	• Plans use of resources to fulfil work requirements & commitments	take some responsibility for the work of others (e.g. delegation of tasks to support workers) & for a range of resources	take responsibility for the work of others (e.g. support workers, students) & for a range of resources.	take managerial responsibility for the work of others & for a significant range of resources.	take significant managerial responsibility for the work of others and/or for a significant range of resources.	- Can only be assessed in the field
8.3	• adapt personal behaviour & actions in response to the demands of the situation;	modify personal behaviour & actions in response to feedback to meet the demands of the situation & to enhance own performance	becoming increasingly self-aware & able to modify personal behaviour & actions to meet the demands of the situation & to enhance own performance.	modify personal behaviour & actions to meet the demands of the situation & to enhance own & others' performance.	modify personal behaviour & actions 'inaction' to meet the demands of the situation & to maximise the impact of own & others' performance.	A- Somehow addressed (18, 30)

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8.4	• evaluate the effectiveness of performance (own & others);	with guidance, reflect on personal performance & use this evaluation to inform	reflect on personal performance & use this evaluation to inform future practice.	critically reflect on own & others' performance & use this evaluation to	critically reflect on own & others' performance & use this evaluation to inform future	A- Somehow addressed (18)
		future practice.		inform future practice.	practice (own & others).	
8.5	• lead & inspire others.	assists in implementing agreed plans designed to bring about change, development and/or new thinking within Occupational Health services.	exercise leadership and/or initiative that contributes to change, development and/or new thinking within Occupational Health services.	exercise leadership with responsibility for decision making designed to bring about change & development within Occupational Health services.	exercise leadership with accountability for decision making & development across a range of contexts, including those within which there is a high degree of uncertainty & a need to take innovative approaches to Occupational Health service delivery & development.	A- Somehow explained though not explicitly (20)

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	Domain 9 Promoting integration & teamwork	A	B	C	D	
9.1	the behaviour, knowledge & skills required to: • build, maintain & promote effective interpersonal relationships;	Is aware of professional networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	participates in professional/policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	support, lead & develop local/regional professional & policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	support, lead & develop regional/national professional & policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice. .	- They learn about this in IPOC and PHT 203, also in clinical practice three - A- (1)
9,2	• work collaboratively with others to achieve shared goals	work effectively with others to meet the responsibilities of professional practice in Occupational Health.	work effectively with others to meet the responsibilities of professional practice, & to identify situations where collaborative approaches could add value to practice in Occupational Health	work effectively with others to meet the responsibilities of professional practice, & to develop collaborative approaches that add value to practice in Occupational Health.	work effectively with others to meet the responsibilities of professional practice, & use innovative collaborative approaches that add value to & develop practice in Occupational Health	A- Addressed (3) also similar to 9.1
9.3	• work with others to maintain & develop the effective performance of teams/networks in Occupational Health	reflect on experiences of collaborative working, & with guidance, use this information to identify solutions and contribute to the effective performance of teams/networks in Occupational Health	reflect on experiences of collaborative working, & use this information to identify & implement solutions to maintain & develop the effective performance of teams/networks in Occupational Health	critically reflect on experiences of collaborative working & use this information to identify & implement creative solutions to maintain & develop the effective & efficient performance of teams/networks in Occupational Health.	critically reflect on experiences of collaborative working & use this information to identify & implement innovative solutions to maintain & develop the effective & efficient performance of teams/networks in Occupational Health.	A- Partly addressed in several aspects (15, 27, 28)

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	Domain 10	A	B	C	D	
	Keeping customer focus at the centre of practice					
10.1	the behaviour, knowledge & skills required to: provide an professional and equitable service to two clients who may have conflicting needs; the Organsiation (customer) and the Worker (individual)	Recognises potential tensions /conflicts between the worker and the organisation and seeks assistance from a senior or peer	Recognises and manages potential tensions /conflicts between the worker and the organisation Seeks assistance in complex, unpredictable situations	Manages potential tensions /conflicts between the worker and the organisation in complex, unpredictable contexts. Work effectively with others to meet the responsibilities of professional practice	Manages potential tensions /conflicts between the worker and the organisation in complex, unpredictable contexts. Work effectively with others to meet the responsibilities of professional practice, & uses innovative collaborative approaches that add value to & develop practice in Occupational Health	A- Not explicitly explained but part(27 and 30) This domain may be most applicable with regards to ethics year 4 and clinical practice two
10.2	demonstrate respect for the individual and organisation;	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures & best practice.	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, & procedures, & by working to promote best practice in both clinical and occupational health management	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures, & by working to inform & promote legislation, policies, procedures & best practice both clinical and occupational health management	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures, & by working to inform, develop & promote legislation, policies, procedures & best practice both clinical and occupational health management	A- Very much evident only needs clarification on legislation and policies (21) Clinical practice II as well

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10.3	provide information & support that enables an organisation and /or an	information & support that empowers an individual to make an	information & support that empowers an individual to make an	provide information & support that empowers an individual to make an	provide information & support that empowers an individual to make an	A- Partly evident in many areas (6, 17, 19)
	individual to make informed choices;	informed choice & to exercise their autonomy in accordance with legislation, policies, procedures & best practice.	informed choice & to exercise their autonomy in accordance with legislation, policies & procedures, & work to promote best practice	informed choice & to exercise their autonomy in accordance with legislation, policies, procedures, & work to inform & promote legislation, policies, procedures & best practice.	informed choice & to exercise their autonomy in accordance with legislation, policies, procedures, & work to inform, develop & promote legislation, policies, procedures & best practice.	
10.4	involve the organsiation and individual in a participative approach to the shaping the design & delivery of their service	involve customers and clients in shaping the design & delivery of their service by working in accordance with policies & processes that promote a culture of service user involvement.	involve customers and clients in shaping the design & delivery of their service, & work with others to implement & support policies & processes that promote a culture of service user involvement.	involve customers and clients in shaping the design & delivery of their service, & work with others to critically appraise user involvement, & to develop & implement policies, & processes that promote a culture of service user involvement. Participatory approach	actively involve customers and clients in shaping the design & delivery of their service, & work with others to critically appraise user involvement, & to develop policies & processes that promote a culture of service user involvement that contribute to the development of best practice.	- Not really evident Looking at health promotion as a way of encouraging participative approach in management i.e. Physiotherapy technique III, health promotion module as well

	Domain 11 Respecting & promoting diversity	A	B	C	D	

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11.1	the behaviour, knowledge & skills required to: respect & value diversity;	respect & value diversity by working in accordance with legislation, policies, procedures & best practice.	respect & value diversity by working in accordance with legislation, policies, procedures, & to promote best practice.	respect & value diversity by working to inform & promote legislation, policies, procedures & best practice.	respect & value diversity by working to inform, develop & promote legislation, policies, procedures & best practice.	- Covered implicitly in Ethics year 4, also covered in Clinical practice II
11.2	examine own values & principles to avoid discriminatory behaviour & to minimise the potential negative effects of individual differences;	identify & articulate their own values & principles, & with guidance, evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, critically evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, critically evaluate how these may differ from other individuals/groups, & use this understanding to maintain excellent standards of practice even in situations of personal incompatibility.	- Coveredin Ethics PHT 404, also in Clinical practice II
11.3	work constructively with people of all backgrounds & orientations;	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices.	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & with guidance, support individuals who need assistance in exercising their rights	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & support individuals who need assistance in exercising their rights.	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & support individuals whose rights have been compromised	Covered in Ethics PHT404, same as above
11.4	promote a nondiscriminatory culture	identify discriminatory behaviour & take	identify & challenge discriminatory practices	identify & challenge discriminatory practices	identify & actively challenge discriminatory	- Ethics PHT 404, same as above

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	that values diversity, & enables individuals to contribute & realise their full potential.	appropriate action to challenge this behaviour.	& work with others to implement & promote policies & processes that promote a nondiscriminatory culture.	& work with others to critically appraise current practice, & to develop & implement policies & processes that promote a nondiscriminatory culture	practices & work with others to critically appraise current practice, & to develop policies & processes that promote a nondiscriminatory culture that contribute to the development of best practice.	

Behaviours, knowledge & skills for PROBLEM-SOLVING & DECISION MAKING (Domains 12,13,14,15,16,17)

	Domain 12 Ensuring quality	A	B	C	D	
12.1	Ensuring quality the behaviour, knowledge & skills required to: fulfil the requirements of the legal policy and professional frameworks governing practice in Occupational Health;	fulfil the requirements of the legal & policy frameworks governing professional practice in OH .	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to promote best practice.	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to inform & promote legislation, policies, procedures & best practice.	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to inform, develop & promote legislation, policies, procedures & best practice.	- Not explicitly explained and I need to find out what is covered in professional ethics in PT. Not covered
12.2	recognise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action;	with guidance, recognise situations where the effectiveness, efficiency & quality of a service are compromised, & with support, take appropriate action to challenge the situation	recognise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & with guidance, take appropriate action to challenge the situation	recognise & critically appraise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action to resolve the situation	recognise & critically appraise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action to resolve the situation & contribute	A- Evident (2, 15)

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12.3	critically reflect on practice in the context	with guidance, reflect on personal	reflect on personal performance & with	critically reflect on own & others' performance &	critically reflect on own & others' performance	A- Evident (18)
	of quality	performance & use this evaluation to enhance the effectiveness, effic iency & quality of future practice.	guidance, use this evaluation to enhance the effectiveness, efficiency & quality of future practice	use this evaluation to enhance the effectiveness, efficiency & quality of future practice	& use this evaluation to enhance the effectiveness, efficiency & quality of future practice (own & others).	

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	Domain 13 Improving and developing services	A	B	C	D	
13.1	Improving & developing services the behaviour, knowledge & skills required to: critically evaluate practice & use this appraisal to inform Occupational Health service improvement, development & redesign	with guidance, critically evaluate practice, & share the outcome of this appraisal with relevant personnel	critically evaluate practice, & with guidance, use this appraisal in combination with knowledge of best practice & political awareness to inform Occupational Health service improvement.	critically evaluate practice & use this appraisal in combination with knowledge of best practice & political awareness to identify opportunities for Occupational Health service improvement & development.	critically evaluate practice & use this appraisal in combination with knowledge of best practice & political awareness to identify opportunities for Occupational Health service improvement, development & redesign.	A- Evident in different parts (14, 15)
13.2	develop innovative & sustainable recommendations to improve the quality of the service in Occupational Health	use a problem-solving approach to develop safe & effective recommendations for improving the quality of Occupational Health practice in predictable contexts.	use problem-solving approaches to develop safe, effective & efficient recommendations for improving the quality of Occupational Health practice in increasingly unpredictable contexts.	use problem-solving approaches to develop original, safe, effective & efficient recommendations for improving the quality of Occupational Health practice in unpredictable contexts.	use problem-solving approaches to develop original, effective & efficient approaches that demonstrate evidence of positive risk taking, for improving the quality of OH practice in unpredictable & normally specialised contexts.	A- Partly evident (11)
13.3	plan, facilitate & manage change;	contribute to change & development within the profession or Occupational Health at a local level.	contribute to change & development within Occupational Health at a local level.	make an identifiable contribution to change & development within Occupational Health at a local & regional level.	make an identifiable contribution to change & development within Occupational Health & beyond – at a national or international level.	A- Evident (10, 11)
13.4	critically evaluate the process & outcome		reflect on the change process, & use this information to appraise the outcome & inform future practice	critically reflect on the change process, & use this information to appraise the outcome & inform future practice	critically reflect on the change process, & use this information to appraise the outcome & inform future practice	B- Evident (14)

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	Domain 14 Lifelong learning (CPD)	A	B	C	D	
14.1	Lifelong learning CPD the behaviour, knowledge & skills required to: assess personal learning & development needs & preferences;	demonstrate selfawareness of learning preferences, & with guidance can identify personal learning & development needs	demonstrate increasing self-awareness of learning preferences, & with guidance can identify personal learning & development needs	demonstrate strong selfawareness of learning preferences, & with minimal guidance can identify personal learning & development needs	demonstrate strong selfawareness of learning preferences, & can independently identify personal learning & development needs	A- Partly covered (18, 30)
14.2	• develop & engage in a personalised plan designed to meet those needs;	independently advance personal knowledge, understanding & skills in line with identified learning needs, & with guidance & support, can use a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs, & with guidance, can use a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs by making appropriate use of a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs by making appropriate use of a wide variety of learning & development resources & opportunities.	- Ditto
14.3	• reflect on the learning process;	reflect on personal learning & development, & with guidance & support, use this information to inform the planning & management of future learning & development experiences.	reflect on personal learning & development, & with guidance, use this information to inform the planning & management of future learning & development experiences.	critically reflect on personal learning & development, & with guidance, use this information to inform the planning & management of future learning & development experiences.	critically reflect on personal learning & development & use this information to inform the planning & management of future learning & development experiences.	- Ditto

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14.4	• document the process	with guidance & support, record the outcome of personal learning & development in a format that meets personal preferences & professional requirements.	with guidance, record the outcome of personal learning & development in a format that meets personal preferences & professional requirements.	record the outcome of personal learning & development in a format that meets personal preferences & professional requirements	record the outcome of personal learning & development in a format that meets personal preferences & professional requirements	- Ditto
	Domain 15 Practice decision	A	B	C	D	

	making					
15.1	Practice decision making the behaviour, knowledge & skills required to: collect information from a variety of sources relevant to the decision making situation;	efficient & effective use of a wide range of routine & some specialised approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a wide range of routine & advanced approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a range of advanced & specialised approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a broad range of advanced & specialised approaches & techniques to systematically collect information from a wide variety of sources relevant to the situation	A- Evident somehow (19) Clinical practice II
15.2	process & analyse the information collected;	process & critically analyse information in complex & predictable situations where data/information comes from a range of sources or is incomplete.	process & critically analyse information in complex & unpredictable situations where data/information comes from a range of sources or is incomplete.	process & critically analyse information in complex & unpredictable situations where data/information is incomplete or consistent.	process & critically analyse information in complex, unpredictable & normally specialised situations where data/information is incomplete or inconsistent.	A- Evident (6, 19) - Clinical practice II

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15.3	draw reasoned conclusions & make informed judgements to address issues/resolve problems in Occupational Health practice; .	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health settings.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health settings.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make judgements to address ethical & professional issues in Occupational Health where situations are at the limits of current professional codes & practices.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health where situations are not addressed by current professional codes & practice.	A- Evident but still need to find out if they learn OH professional ethics (19, 24) OH is not covered in professional ethics
15.4	critically evaluate the decision making process	with guidance, reflect on their decision making process & use this evaluation to appraise the outcome & to inform future practice.	reflect on their decision making process & use this evaluation to appraise the outcome & to inform future practice.	critically reflect on their decision making process & use this evaluation to appraise the outcome & to inform future practice.	critically reflect on their decision making process & use this evaluation to appraise the outcome & to inform future practice.	A- Evident (18)

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	Domain 16 Researching & evaluating practice (audit)	A	B	C	D	
16.1	Researching & evaluating practice audit the behaviour, knowledge & skills required to: • design, plan, conduct & manage the research/evaluation process;	with guidance, plan, conduct & manage evaluation & research projects to address a specific issue arising from Occupational Health practice.	plan, conduct & manage evaluation & research projects to address specific issues arising from Occupational Health practice	design, plan, conduct & manage evaluation & research projects to address problems & issues arising from Occupational Health practice.	design, plan, conduct & manage evaluation & research projects to address new problems & issues arising from Occupational Health practice.	A – somehow (15)
16.2	• use methods of enquiry to collect & interpret data in order to address problems or issues arising from Occupational Health practice;	with guidance, apply a range of standard research methods/tools of enquiry showing an appreciation of related ethical considerations.	becoming increasingly confident to apply a range of standard research methods/tools of enquiry showing an appreciation of related ethical considerations.	apply a range of standard & specialised research methods/tools of enquiry showing a detailed understanding of related ethical considerations	apply a range of standard & specialised research methods/tools of enquiry, contributing to the development of new techniques or approaches, & showing a detailed understanding of related ethical considerations	A- Evident partly in different areas (2, 4, 5, 6, 7)
16.3	• critically evaluate the research/evaluation process;	with guidance, reflect on the research process, & use this information to appraise the project & inform future practice	reflect on the research process, & use this information to appraise the project & inform future practice	critically reflect on the research process, & use this information to appraise the project & inform future practice.	critically reflect on the research process, & use this information to appraise the project & inform future practice	- Partly (18) Physiotherapy technique I

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16.4	• communicate the outcome of the research/evaluation	identify, & with support, promote the practical & professional applications	identify & promote the practical & professional applications of	identify & promote the practical & professional applications of	identify & promote the practical & professional applications of	A- Evident (15,27, 28)
	process.	of completed work, & seek opportunities to share & disseminate findings to both specialist & nonspecialist audiences	completed work, & seek opportunities to share & disseminate findings to both specialist & nonspecialist audiences.	completed work, & actively seek opportunities to share & disseminate findings to a range of audiences with different levels of knowledge & expertise	completed work, & actively create opportunities to share & disseminate findings to a wide range of audiences with different levels of knowledge & expertise	

	Domain 17 Using evidence to lead practice	A	B	C	D	
17.1	Using evidence to lead practice evidence based practice the behaviour, knowledge & skills required to: • systematically search for evidence;	with guidance, use a range of approaches & techniques to systematically search for evidence from a variety of sources relevant to the situation.	use a range of approaches & techniques to systematically search for evidence from a variety of sources relevant to the situation	efficient & effective use of a range of approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a broad range of approaches & techniques to systematically search for information from a wide variety of sources relevant to the situation	A- Evident (19)
17.2	• critically appraise evidence & use the information to address problems & issues arising in Occupational Health practice.	critically evaluate current research & scholarship & with guidance, use the appraisal to address specific issues arising in Occupational Health	critically evaluate current research & scholarship & use the appraisal to address specific issues arising in Occupational Health.	critically evaluate current research & scholarship & use the appraisal to address issues which are at the forefront or informed by developments at the forefront of Occupational Health.	critically evaluate current research & scholarship & use the appraisal to address new problems & issues arising in Occupational Health.	A- Partly (27)

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This is a good piece of work and I think we should expand it to look at occupational health as part of the curriculum in various institutions in South Africa BUT for your study what is evident is that knowledge and skills is not developed in one clear cut module but it would be good if curricula are integrated in such a way that the links are clearly demonstrated which our evidently absent in this module descriptor. Although there is clear indication made to modules that should be consulted in preparation for this block – what we need to see if reference is made in the modules referred to in this particular block so that students are able to see the connections.

It is also clear that this module lacks outcome measures that are used and this is a gap that should be addressed in any curriculum

Jose Frantz 4/4/2015 8:52 PM

Comment [8]: This part of the study I will expand. This is outside the scope of our PhD but I will keep you in the loop with this study.

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APPENDIX H3: UWC PILOT STUDY RESULTS
PILOT STUDY RESULTS
Domain 1: Values

These values of the competency framework focussed on 'altruism, advocacy, honesty and integrity, compassion and caring, accountability for decision making, and actions, fulfilment of duty care and social responsibility as well as commitment to excellence and impartiality.' These values were mostly entrenched in the Introduction to Philosophy of Care (IPOC) module and there was a definite expectation for students' to carry these values all along their practice. The below excerpts from the objectives of the IPOC (IPC 124) and Health Promotion module (IHP 211) further validate the above findings and we consider them to have had limited alignment to the competency framework and graded at 2.

"*…to develop skills in **understanding care as a social practice** and to recognise different moral arguments **about care**. Further, it is hoped that you begin to reflect on ideas or courses of action, as well on the decisions and choices you make in your own life, both for yourself and for those who are placed in your care." **(IPC 124 course description)***

*"…The most well-known are: respect for the client's autonomy, not harming the interests of the client, **beneficence and equity or fairness (equal treatment)**." **(IPC 124 course description)***

*"Good health is a major resource for social, economic and personal development and an important dimension of quality of life… Health promotion action aims at making these conditions favorable through **advocacy** for health." **(IHP 211 manual- prerequisites for health).***

Values as described by the competency framework, informs the behaviour of practitioners as well as the knowledge and skills that they will use and develop. With the above excerpts we

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can thus conclude limited alignment (2) of sub-domain one to the OH competency framework.

Domain 2: Knowledge and Understanding of Occupational Health –

2.1: Building on Undergraduate knowledge

The tool focused on the students' anatomical and physiology knowledge of the human body, pathology, applications of scientific enquiry and physical and movement science. – All these were categorized at 'B' and considered to have limited alignment to OHS content (2), since they were not found in the OH content. These courses are such like Analysis of posture and movement, ergonomics and kinetic handling (PHT 111) as well as Movement Science II (PHT 245) and are described by the below excerpts.

"*Demonstrate ability to screen functional activities**, risk factors and disease** by using interviews / questionnaires (PARQ).*" ***PHT 245***

(*"Identification of **anatomical structures and landmarks on the human body**. …Introduction to skeletal and major muscle groups...**Ergonomics of working postures and seating**, kinetic handling and lifting techniques…Working postures, **techniques of transferring and adaptive mobility**."* ***(PHT 111 main content)***

2.2: Epidemiological research knowledge establishing causal links in the development of work relevant disease- In as much as research as a module was not mentioned in the OHS course content, objective two of the OHS content is thus marked at level 4 of high alignment to the competency framework. "*Assess the various aspects pertaining to home environment, family, support systems…work, recreation…emotional psychological state*." ***(OH objective 2)***

2.3: Clinical sciences relevant to OH sought to equip the student's awareness to relevant areas of OH practice- This was present in previous modules from the Medical Biosciences as

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well as Movement Science II (PHT 245) and was given a score of 2 (limited alignment) to OHS competency framework. "*Demonstrate ability to screen functional activities**, risk factors and disease** by using interviews / questionnaires (PARQ*)" as well as "*Demonstrate the ability to design, prescribe and implement appropriate exercises for **different pathologies** and / or groups." **(PHT 245 learning outcomes)***

2.4: Behavioural sciences relevant to OH- Learnt in IPOC (IPC 124), Health promotion (IHP 211) and Primary Health Care (HDP 116) modules and graded to have limited alignment (2) to the competency framework. These below excerpts represent some of the competencies needed by the framework like sociology of work, theories of communication as well as team working and pedagogy:

*"To develop skills in understanding care as a **social practice** and to recognize different moral arguments about care." **(IPC 124 course description)***

*"Demonstrate an understanding of the importance and challenges involved in selecting and appropriate **communication strategies** to promote health." **(IHP 211 manual –assessment criteria)***

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*"A central idea about a Primary Health Care approach is that a team of health workers and community members plan and carry out programmes together. It is therefore necessary that all workers understand **what each team member can do** so that they can work together effectively." **(HDP 116 background)***

*"… to equip students with **a range of academic and professional skills** which will enable them to operate successfully in an academic and professional environment" **(HDP 116 module objectives)***

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2.5: Ethical principles underpinning practice in OH- General ethics taught in IPOC (IPC 124) and Ethics course (PHT 402) in year four and it was graded as having limited alignment (2) to the OH competency framework as it was rather general and did not directly speak to OH principles:

"*Demonstrate knowledge of some basic moral concepts, ethics and human rights relevant to service providing and an awareness of the* ***ethical responsibilities of health care workers in South Africa." (IPC 124 specific outcomes)***

"To help students develop the knowledge and skills required to engage with and work through ***complex ethical dilemmas that they are likely to encounter in clinical contexts." (PHT 402 module overview)***

2.6: SA legal and policy frameworks governing OH- there is no evidence of this being done since the block does not specifically have theory classes but rather draws from modules previously taught. In as much as it is evident that the students' work under an occupational health nurse, little evidence exists of whether they cover these aspects in full. Further interview with the occupational health coordinator revealed that they are not taught about this hence it was marked as having no alignment (0) to the competency framework.

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"I don't think we have, I don't know whether our students know that or where it's been taught to them at some level." ***OH Course coordinator***

2.7: Organizational factors and their impact on work and health- Graded A and marked as having high alignment (4) to the competency framework as it was well described by occupational health's course objectives 1, 2 and 3. These objectives would thus make contributions to the organisation's success.

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"Effectively assess and treat adult patients with various neuromusculoskeletal conditions present at the work rehabilitation centre." ***(OH objective 1)***

"Assess the various aspects pertaining to home environment, family, support systems…work, recreation…emotional psychological state." ***(OH objective 2)***

"Demonstrate the ability to operate as an interdisciplinary member of the healthcare team within work rehabilitation and work hardening setting." **(*OH objective 3)***

2.8: Commercial knowledge to make a business case for OH- The OH content needed to demonstrate an ability of students undertaking accurate collection and reporting of data to show efficacy of OH practice. These were thus classified as A and demonstrated high alignment (4) to the competency framework through objectives 1, 6, 14 and 15 of the OH content.

"Effectively assess and treat adult patients with various neuromusculoskeletal conditions present at the work rehabilitation centre." ***(OH objective 1)***

"Interpret and present data" ***(OH objective 6)***

"Reassess a patient/client and report on the outcome of the management plan" ***(OH objective 14)***

"Write a report on the observations and interventions at the industrial site and submit this report to the occupational health nurse or management as appropriate." ***(OH objective 15)***

2.9: Applied workplace ergonomics- This was graded at A and considered to have high alignment (4) to the competency framework as it was presented in objectives 13 and 26 of the OH content as well as being taught in Analysis of posture, ergonomics and kinetic handling (PHT 111).

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"Describe an on-site work assessment done by an occupational therapist" ***(OH objective 13)***

"Observe workers in selected areas and ***analyse ergonomics*** *and work habits in first week"* ***(OH objective 26)***

*"...****Ergonomics of working postures*** *and seating, kinetic handling and lifting techniques…Working postures, techniques of transferring and adaptive mobility."* ***(PHT 111 main content)***

2.10: The Bio-psycho-social model and its application to OHS- This was graded at A as objective 10 of the OH content addressed this. However grade 3 (partial alignment) was given as the disability and rehabilitation module (PHT 211) gave further descriptions of the competencies required.

"Identify and analyse the patients main problem(s) ***according to ICF*** *by drawing up a functional problem list specific to the patient's needs and perform specific evaluation skills."* ***(OH objective 10)***

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"The concept of disability: (ICF) ***Models of disability****."* ***(PHT 211 module outline)***

2.11 Disability rehabilitation and reintegration into the workplace- This can be graded as 'A' as there are some aspects of the OH course objectives (2 and 7) that enable identification of issues that affect recovery and return to work and now considered to have partial alignment (3) to the competency framework as use of assessment strategies to identify risk of work incapacity are also in Disability and Rehab course (PHT 211). However, apart from the ICF which embraces the bio-psychosocial approach, no other tools are evidently presented to identify risk of work incapacity.

"Assess the various aspects pertaining to home environment, family, support systems…work, recreation…emotional psychological state." ***(OH objective 2)***

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"Perform the objective assessment (physical examination): The planning for this section is determined by the subjective assessment and the nature of the patient's impairment/medical diagnosis." ***(OH objective 7)***

"The concept of disability: (ICF) Models of disability." ***(PHT 211 module outline)***

2.12: Graded and paced occupational and vocational rehabilitation (work conditioning and hardening)- The OH course objectives do not clearly outline this apart from only speaking about work rehabilitation and work hardening. Its thus graded as A and classified as to having partial alignment (3) to the competency framework.

"Demonstrate the ability to operate as an interdisciplinary member of the healthcare team within work rehabilitation and work hardening setting." ***(OH objective 3)***

2.13: Assessment of fitness for work (work capability assessment or functional capability assessment) - Not clearly captured in any of the objectives and was thus given a score of no alignment (0) to the competency framework. Upon further assessment with the occupational health coordinator, it was evident that the above was not done.

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"Nowhere have I seen occupational health fitting into a particular module, so it's possible they are just teaching components, and expecting students to just draw from there." ***OH Course coordinator***

2.14: Health behaviour and health behaviour change – this was classified as A and graded as having limited alignment (2) because students are taught about health and health behaviour change in the interdisciplinary health promotion course (IHP 211). There was however no evidence from the curriculum when students are being taught about the impact of the workers behaviour on their long-term health well-being and work capability as well as appropriate

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support programmes hence getting a score of no alignment (0). Thus average score for this sub-domain is 1 (unclear alignment).

*"Health education & behavior change – This was to be done using Behavior change theories: *Reasoned Action; *Health Belief; *Health Action; *Stages of Change."* ***IHP 211 approach and theory/model***

Knowledge and understanding of occupational health describes the "theoretical and applied knowledge required for practice in occupational health." (pp.2 Owen & Hunter, 2012). In conclusion, sub-domain 2 of knowledge and understanding of occupational health had an average score of 2.4 with regards to alignment to the competency framework. This score was due to the fact that there was no stand-alone course content for OH where all these attributes were taught. OH was regarded as a clinical rotation in the final year of PT studies and students were referred to pre-requisite courses to help them achieve the objectives set for the block. However, the content of some of these pre-requisite courses were rather general than specifically addressing occupational health practice hence making students to miss out on some OH specific content. In addition, all students did not have an equal opportunity to practice these skills in the OH block as it was only present for one group of students. This, as the course coordinator said during the interview was due to limited number of OH placement areas and recently limited number of students in the department hence OH block was not regarded as a core course in comparison to other Physiotherapy modules.

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Domain 3: Practice Skills

Domain 3: Self-awareness was practiced while students gave their physiotherapy techniques in occupational health block (objective 18) through reflection on the effectiveness of one's techniques as well as in previous knowledge on reflection acquired from the Introduction to

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philosophy of care (IPOC) course. *"The student will be able to reflect on and explore effective learning strategies."* ***(IPC124 critical course field outcomes)***

This sub-domain sought to identify an individual's personal values, preferences and how it affected their behaviour and was thus classified as grade A as there was evidence of high alignment (4) to the competency framework.

Domain 4: Political awareness was not clear from the curriculum content and how this aspect was captured especially in relation to professional networks. The IPOC (IPC 124) course content had ethics and politics as part of the module with the description: *"An ethic of care remains incomplete without a political theory of care.* ***(IPC 124 Ethics and politics)***

In as much as this content sought to show the connection between politics and health care delivery, no clear link was made to the occupational health module and thus this competency was graded as having unclear alignment (1) to the competency framework. In addition there was absolutely no information regarding awareness of the work of professional networks from the course content.

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Domain 5: Psychomotor skills entailed performance of bio-psychosocial assessment of patients with neuromusculoskeletal disorders in the occupational health context to allow return to work. This would be made possible by use of reliable occupational health tools that would assist in interpretation of clients' findings so as to offer treatment and monitor the progress of individuals and various groups of workers- The learner was thereafter expected to reflect and evaluate their own performance of psychomotor skill.

These attributes were presented in seven categories which varied in alignment to the competency framework (5.1-3, 5.2-3, 5.3-0, 5.4-0, 5.5-4, 5.6-2, 5.7-4) so as to get an average of 2.3 with most competencies being marked at level A but there was lack of evidence of

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knowledge to perform formal workplace assessment using ergonomic tools (5.3 & 5.4) which was further ascertained by the occupational health coordinator that no specific ergonomic tools were used.

5.1- Objective 10 of the OH course content focussing on ICF

Physiotherapy techniques two (PHT 314) *"Demonstrate an understanding of assessment and treatment techniques relevant to pathologies taught in Applied physiotherapy 1."*

"Introduction to health promotion programs that to promote healthy work- and recreation situations to prevent NMS problems."

Physiotherapy techniques III (PHT 311) *"The purpose of this module is to enable students to use neuromusculoskeletal principles in the assessment and management of patients."*

5.2 Clinical assessment using the bio psychosocial framework is best described by the objective 10 on ICF as well as objective 22 in the occupational health content "*Safely manage the patient with respect to precautions and contraindications specific to the condition."* Similarly the PHT 311 course objective *"The purpose of this module is to enable students to use neuromusculoskeletal principles in the assessment and management of patients."*

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5.5 Design and deliver work focused treatment including occupational and vocational rehabilitation- this was graded as having high alignment (4) to the competency framework as it was represented by objectives 3 and 11

"Demonstrate the ability to operate as an interdisciplinary member of the healthcare team within work rehabilitation and work hardening setting." ***(OH objective 3)***

"Develop a management plan, including a treatment plan, for the patient/client" ***(OH objective 11)***

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5.6 Graded at 2 because the alignment to the competency framework with regards to structured workplace assessment using ergonomic tools is partly evident especially from course objectives for Clinical practice II (PHT 316). *"The purpose of this module is to allow the student to assess and treat clients in the clinical setting."*

5.7 Graded at 4 considering the objective 18 aligns with the competency framework with regards to *"Reflect on the effectiveness of your techniques and modify as required."* ***OH objective 18***

In conclusion, practice skills required for occupational health competency were partly available at 2.4. However, there was lack of the contextual alignment with OH practice especially with regards to occupational health policies as well as workplace specific assessment tools. Limitation in the domain of knowledge and understanding subsequently affects alignment of the practice domain as practice is built up from what one cognitively knows and understands.

Domain 4: Behaviours, knowledge and skills for interacting

Domain 6: Communicating information with individuals and within OH team so as to meet individual's/organization's needs was done at level 'A'. Good communication skills was supposed to enable the learner to ask about work-related obstacles and how to avoid them to enable return to work, and in addition help to build effective relationship with key people within the organization and thus groom them on how to report OSH related information that is in line with ethical guidelines and legislative framework. All these six attributes were graded at level A (6.1-3, 6.2-3, 6.3-3, 6.4-4, 6.5-4, 6.6-1) with an average of 3 in terms of alignment to the competency framework. However it was not explicitly clear from the curriculum content how use of ICT would enhance practice as well as no presence of proper information on the legislative framework within South Africa.

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1.1 Communication is enhanced by objective 17 where students are expected to *"Educate other medical staff, patient, family or caregiver on their role in the management of the health condition."* Similarly the objective of the course PHT 402 addresses this *"To help students develop the knowledge and skills required to engage with and work through complex ethical dilemmas that they are likely to encounter in clinical contexts."*

However this domain was graded as 3 due to lack of content on ethical and legal OH guidelines.

1.2 Modify communication to meet individual's preferences was met by objective 17 of the OH content as above as well as PHT 110 and was thus graded as having partial alignment (3) to the competency framework *"Be able to conduct a basic assessment of patients with the various pathological conditions"* and also in PHT 316 *"To allow the student to assess and treat clients in the clinical setting, giving them the opportunity to apply the knowledge and practical skills."*

1.3 Use of technology to enhance evidenced practice was achieved by objective 17 above as well as objective 19 as outlined below and thus graded as having partial alignment (3). *"Substantiate (justify) your treatment techniques by providing relevant evidence."*

1.4 Therapeutic communication skills were graded as having high alignment (4) as it was addressed by objective 5. *"Conduct a subjective assessment (history taking) through interviewing the patient with a medical or surgical health condition."*

1.5 Building key relationships with the right people in an organisation was graded as having high alignment (4) as it was effectively addressed by objective 3. *"Demonstrate the ability to operate as an interdisciplinary member of the health care team within work rehabilitation and work hardening setting."*

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1.6 In as much as there is information on communication, nowhere in the curriculum content does it state how to have communication that's in line with ethical guidelines and legislative framework and hence graded as having unclear alignment (1).

Domain 7: Helping others learn and develop were five evident attributes of this domain according to level A and graded with a mean of 3.4 (7.1-4, 7.2-3, 7.3-3, 7.4-4, 7.5-3\) which guided the learner with planned activities for occupational health, the necessary supervision, students own reflection and evaluation with feedback to inform future practice. It was not evident which types of work tools could be used in accordance to the recommended work methods. -Tools help to greater understand the needs of a population and help them learn the role they would take. Tools are an objective way to gauge progress in any work done, however, no work tools were specifically taught to the students but rather they use their biomechanics knowledge for any postural assessment.

7.1 *"Develop a management plan, including a treatment plan, for the patient/client."* ***(OH objective 11)***

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7.2 *"Draw up suggested health promotion plans, discuss with Occupational Health Nurse (OHN)/another or Occupational Health officer (Mr. S Markus)."* ***(OH objective 27)***

7.3 *"Review experience on clinical block with supervisor and clinicians (if available) and complete overview."* ***(OH objective 30)***

7.4"Reflect on the effectiveness of your techniques and modify as required." ***(OH objective 18)***

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7.5 "Substantiate (justify) your treatment techniques by providing relevant evidence" ***(OH objective 19)*** As well as objective ***17*** *"Educate other medical staff, patient, family or caregiver on their role in the management of the health condition."*

Domain 8: Managing self and others was evident according to level 'A' except domain 8.2 and partly 8.5. The learners practiced in accordance to the professional codes of conduct with supervisory guidance, hence modification in behaviour was expected in response to their own reflection of performance or supervisory/peer feedback so as to implement laid out plans within occupational health services. It was however not possible to ascertain from the content if the learners could actually take delegation of others' work effectively as well as come up with new thinking within OH services. One of the greatest limitation of document analysis is that practical aspects could not be well interpreted as these aspects needed one to be in the field to be able to observe them, especially considering that this is a practical course. The fact that students worked under their supervisor could be interpreted as handling delegation of tasks. On further interview, it was noted that the occupational health officer was responsible for identifying the students placement within the school and thereafter a physiotherapy lecturer followed students up within their various placements for guidance like; *"What are you doing? Why do you think this is important? What does the literature say about this? And how are you going to implement your plan? What is your plan of action?"*

8.1 "Professional codes of ethics "As appears as module 5 of IPOC course, however, is knowledge directly translational to behaviour as is expected by the competency framework?

8.3 & 8.4 "Reflect on the effectiveness of your techniques and modify as required" and *"Review experience on clinical block with supervisor and clinicians (if available) and complete overview."* ***(OH objectives 18 & 30)***

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8.5 "Safely manage the patient with respect to precautions and contraindications specific to the condition" ***(OH objective 20)***

Domain 8 thus had an average alignment of 2.8 (8.1-3, 8.2-1, 8.3-3, 8.4-4, 8.5-3) with inability to grade practical aspects.

Domain 9: Promoting integration and teamwork had three attributes classified at A which are learnt at different levels to assist the learner to develop interpersonal relationships and be able to work in an interdisciplinary perspective so as to identify solutions that contribute to effective performance of teams in OH. There was however no content in the curriculum which addressed knowledge of the professional networks within Occupational Health but rather general relations with other colleagues. This domain thus had an average of 2.6 alignment to the competency framework (9.1-1, 9.2-4, and 9.3-3).

9.1 ***"3.2 Relationships with health professional colleagues*** *- Guiding Principle: Health professionals should co-operate fully with their colleagues in the interests of providing the best possible health care for their patients and the community." (****IPC 124 Session 5)***

"Understand the role of the members of the multi- and interdisciplinary team in the holistic management of patients with various pathologies." ***(PHT 203 Main outcomes)***

9.2 "Demonstrate the ability to operate as an interdisciplinary member of the healthcare team within work rehabilitation and work hardening setting." ***(OH objective 3 & same as 9.1 and 13)*** *"Describe an on-site work assessment done by an occupational therapist."*

9.3 "Write a report on observations and interventions at the industrial site and submit this report to the occupational health nurse or management as appropriate" ***(OH objective 15) as well as 27 and 28.***

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Domain 10: Keeping customer focus at the centre of practice was evident in terms of 'A' classification in that, students were able to recognize conflicts between workers with assistance from a senior or peer, demonstrate respect for the organization and provide information that empowered individuals/organizations to make informed choices. Awareness of the OSH legislation, policies and procedures of best practice lacked from the OH curricula content. They were graded as having some alignment to the competency framework at an average of 2.75 (10.1-3, 10.2- 3, 10.3-3, 10.4- 1). Further interview with the occupational health coordinator revealed that they are not taught about this and the researcher took a further step to invite the facilitator of the course to become a part of the Delphi study participants.

"I don't think we have, I don't know whether our students know that or where it's been taught to them at some level." ***OH Coordinator***

10.1 "Draw up suggested health promotion plans, discuss with OHN and supervisor and implement in second week." ***(OH objective 27) and 30, Ethics (PHT 402) and Clinical practice II (PHT 316)*** *"Conduct themselves in* ***professional manner*** *when interacting with patients and staff at clinical placements."*

10.2"Demonstrate responsibility and respect to patients during management of patient." ***(OH objective 21)*** *and* ***PHT 316*** *"Conduct themselves in* ***professional manner*** *when interacting with patients and staff at clinical placements."*

*10.3 "Educate other medical staff, patient, family or caregiver on their role in the management of the health condition."****(OH objective 17) and objectives 6 and 19***

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10.4 "Understand the main approaches to health promotion and that health promotion requires not only individual behavior change but also social, political and environmental changes that address the underlying causes of ill-health." ***(IHP 211 specific outcomes)***

Domain 11: Respecting and promoting diversity had no specific content in the occupational health module that addressed the attributes to be portrayed in this domain. Pre-requisite courses such as professional ethics (PHT 402) and clinical practice II (PHT 316) have attributes that related to this domain however it was difficult to explicitly deduce these components to directly relate with respecting and promoting diversity within the occupational health context. This domain was thus mostly graded at 'A' and as having an average alignment of 1.75 (11.1-2, 11.2-1, 11.3-2, and 11.4-2) to the competency framework.

11.1 "Describe and discuss policies relating to the physiotherapy profession in South Africa." ***(PHT 402 Learning outcomes)*** *and* ***also clinical practice II***

11.3 "Interpersonal ***flexibility*** *and confidence to* ***engage across difference****."* ***(PHT 316 UWC graduate attributes)***

11.4 "Discuss and debate issues around judgment and moral reasoning, ***respect for diversity****…"* ***(PHT 402 Learning outcomes)***

The behaviors, knowledge and skills for interacting are attributes to be possessed by physiotherapists working in occupational health since there is quite a lot of diversity with workplaces and clients. In general this domain had an average alignment score of 2.7 to the competency framework.

Domain 5: Behaviours, knowledge and skills for problem-solving and decision making

Domain 12: Ensuring Quality- Most of the attributes for ensuring quality in execution of tasks at work were evident in terms of 'A' classification apart from that which touched on the

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legal and policy frameworks governing professional practice in OH that was not taught (12.1-0). The other two domains were classified as having partial (12.2) and high alignment (12.3) to the competency framework.

12.2 "Write a report on observations and interventions at the industrial site and submit this report to the occupational health nurse or management, as appropriate." ***(OH objective 15) as well as objective 2***

12.3 "Reflect on the effectiveness of your techniques and modify as required." ***(OH objective 18)***

Domain 13: Improving and developing services: the learners are able to portray all the four attributes in this domain at level A and B respectively. They are able to critically evaluate OH practice and provide recommendations in various aspects, which is enhanced by the learners' continual reflection to make improvements in various areas of their assessment and evaluation. An average alignment of 3.75 to the competency framework was achieved (13.1-4, 13.2-3, 13.3-4, 13.4-4)

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13.1 "Reassess a patient/client and report on the outcome of the management plan" ***(OH objective 14) and*** *"Describe an on-site work assessment done by an occupational therapist"****13 and 15***

13.2 & 13.3 "Identify and analyse the patient's main problem(s) according to ICF by drawing a functional problem list specific to the patient's needs and perform specific evaluation skills. Students must understand the differences in the evaluation and treatment approaches." ***(OH objective 10)*** and *"Develop a management plan, including a treatment plan for the patient/client."* ***(OH objective 11)***

13.4 ***(Objective 14 as above)***

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Domain 14: Lifelong learning (CPD): This domain has got four attributes that seek to engage the learner with continuous learning and self-evaluation giving room for professional development. The curriculum content implicitly brings out all these attributes at level 'A' through self-reflection during the block and reviewing their experience of the occupational health block with their supervisor and giving an overview of it and hence given a full alignment (4) to the competency framework.

14.1-14.3 "Reflect on the effectiveness of your techniques and modify as required." ***(OH objective 18) and*** *"Review experience on clinical block with supervisor and clinicians (if available) and complete overview." (**OH objective 30)***

14.4 "Draw up suggested health promotion plans, discuss with OHN and supervisor and implement in second week." ***(OH objective 27)***

Domain 15: Practice decision-making: This domain equally has four attributes that seeks to have the learner make conclusions in occupational health set up after a critical evaluation of the information collected in the work set-up. All this was graded at level 'A' based on the information present in the content and other pre-requisite modules. Further interview with the module coordinator revealed that ethical and professional issues unique to occupational health (15.3) were not addressed in this module. Average alignment to OH practice to the competency framework was thus 3 (15.1-3, 15.2-4, 15.3-1, and 15.4-4).

15.1 "Assess the various aspects pertaining to home environment, family, support systems, financial implications, work, recreation, cultural and religious environment and emotional psychological state." ***(OH objective 2)*** and *"Substantiate (justify) you treatment techniques by providing relevant evidence."* ***(OH objective 19)*** and ***clinical practice II (PHT 316) main outcome*** *"Demonstrate the ability to effectively conduct a subjective and objective (physical) assessment on individual clients or groups with various pathological conditions."*

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15.2 "Interpret and present data. (Verbal presentation of patient information, progress)." ***(OH objective 6, 19 a***nd ***CPT 316 main outcome as above.***

15.4 "Reflect on the effectiveness of your techniques and modify as required." ***(OH objective 18)***

Domain 16: Researching and evaluating practice (audit): This domain had four attributes which were addressed by various aspects of the occupational health content in terms of conducting an appropriate work based project and be able to give an appropriate evidence based outcome for future recommendations. All this were graded at level A with a shortcoming of lack of occupational health specific tools. These attributes were partially (16.1-16.3) and fully aligned (16.4) to the competency framework.

16.1 "Write a report on observations and interventions at the industrial site and submit this report to the occupational health nurse or management, as appropriate." ***(OH objective 15)***

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16.2 "Extract the relevant information from the folders, including nurses, doctors, and physiotherapist notes." ***(OH objective 4) and 2, 5, 6*** *"Perform the objective assessment (physical examination): The planning for this section is determined by the subjective assessment and the nature of the patient's impairment/ medical diagnosis."* ***(OH objective 7)***

16.3 "Use best available evidence to inform treatment selection." ***(PHT 100- Learning outcomes)*** and ***OH objective 18***

16.4 "Communicate the rationale for treatment selection to patients and colleagues." ***(PHT 100- Learning outcomes) and OH objectives 15, 27 and 28***

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Domain 17: Using evidence to lead practice: This was represented by two attributes that needed the learner to use evidence-based information to address specific issues faced in the work set up and they were graded at level A. They were further classified as having high (17.1) and partial alignment (17.2) to the competency framework.

17.1 "Substantiate (justify) you treatment techniques by providing relevant evidence." ***(OH objective 19)***

17.2 "Draw up suggested health promotion plans, discuss with OHN and supervisor and implement in second week." ***(OH objective 27)***

The behaviors, knowledge and skills for problem-solving and decision making are attributes to be possessed by physiotherapists working in occupational health since there is quite a lot of diversity with workplaces and clients. In general this domain had an average alignment score of 3.3 to the competency framework.

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Summary of Pilot Study

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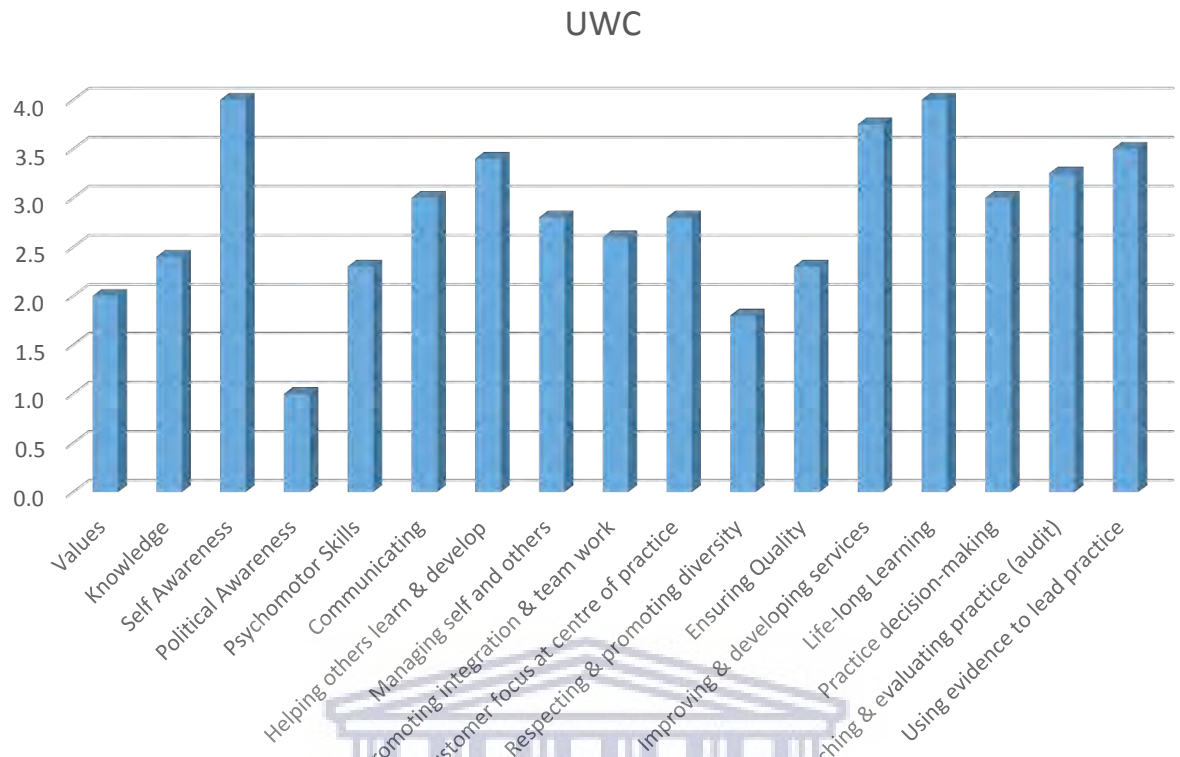
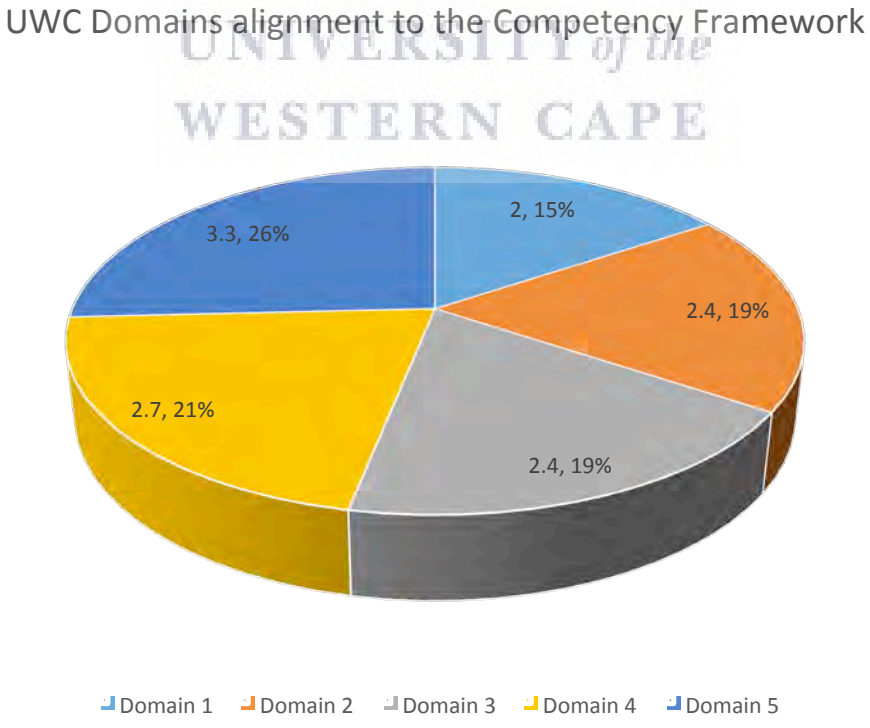


Summary of alignment to competency framework



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Conclusion

Given that occupational health at UWC was not taught as a stand-alone module, it would be better if the curricula is integrated in such a way that the links are clearly demonstrated which was absent in the occupational health (OH) block module descriptor. In as much as there was a clear indication made to modules that should be consulted in preparation for the OH block, no reference was made in the pre-requisite modules referred to in the block so as to ascertain if students are able to see the connections. Additionally, not all information related to the competency framework was found in the OH course content. In particular Clinical Practice modules (PHT 110, 316 & 405) and Analysis of posture module (PHT 111) were not among the pre-requisite course modules for occupational health block yet they had a lot of contribution in addressing the competencies within the framework. It was also clear that the occupational health module lacked outcome measures and that is a gap that should be addressed in any curriculum.

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The outcome of the document analysis and further interview revealed that aspects core to occupational health such as the legal policies governing occupational health practice in South Africa was not taught to the students. Similarly, no standardised outcome tools specific to occupational health were used during the students placement. Students' were expected to draw from their general biomechanical knowledge and transfer to the OH block. Aspects such as behavioural change and ethics were not specific to occupational health but rather gave a general perspective from a healthcare perspective. Lastly, only students attached to occupational health block were able to put to practice what they had learnt in the previous modules hence not giving every student an opportunity to practice occupational health.

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No one element can be defined as the 'active ingredient' which makes practice effective. The individual elements that make up practice ultimately influence one another (Owen & Hunter, 2012).

With regards to piloting the competency framework tool with the UWC tool, it was evident that one could not rely on the information presented in the curriculum content only. The researcher had to consult with various tutors of the pre-requisite modules to OH block and request for content of these modules so as to ascertain if all aspects of the competency framework domain and attributes were being implemented. After the document analysis, further interviews with the relevant stakeholders was done to ask further questions concerning the different theoretical and practical modules that built up to the execution of this block in year four as they were not explicitly described in the course content.

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APPENDIX I1: JKUAT OHS CONTENT

JKUAT OHS CONTENT

IPT 2408: OCCUPATIONAL HEALTH & SAFETY (45 hrs)

Purpose

To equip the students with knowledge in Occupational Health and safety.

Objectives

By the end of the study the student should be able to:

1 Recognize work-place hazards and conditions.
2 Describe common occupational diseases
3 Carry out own risk assessment
4 Interpret laws related to Occupational Health in Kenya.
5 Advice on safe work postures and ergonomics

Course description:

Concepts and principles of occupational health, industrial safety regulations, occupational hazards in industry, health services and other work environments. Occupation-related diseases and accidents; classifications, etiology, pathology, management and prevention. Role and functions of a physiotherapist in occupational health services. Structure and organization, assessment of working environment, work ergonomics and manual handling (manutention), medical examinations, management of sick employees, assessment of liability, Medico-legal reports and compensation.

Teaching methodologies

Teaching methodology	Hours
Theory	35
Tutorials	10

Three hours of lectures per week, practical and discussions

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Instructional material/Equipment

LCD projector, computers, e-learning materials, Internet, whiteboard,

Course Assessment

Continuous assessment tests, assignments, (30%) end of semester examinations (70%).

Course textbooks

1 Marci Z. Balge, & Gary R. Krieger. 2001. Occupational Health and Safety, 3rd Ed. National Safety Council Press.

2 Cameron MH. & Monroe, L. 2007. Physical Rehabilitation: Evidenced based examination, evaluation and Intervention. Saunders

Reference textbooks

1 Confronting Natural Disasters (current edit). An international decade of Natural harzards Reduction, National research Council.

Course journals

6. Industrial attachment

Objectives:

On completion of this rotation, students should be able to:

a. Carryout Ergonomic assessments for all workers in their workstations

b. Undertake analysis of the various tasks in each workstation and design working techniques/postures that increase work safety

c. Develop a manual handling skills program for workers

d. Educate workers on manual handling skills

e. Carryout a work site analysis and modification to increase worker safety.

f. Identify and manage workers with work-related injuries/complaints

g. Develop and implement a health promotion, wellness and injury prevention program for all workers.

h. Identify Government policy regulatory bodies and statutory authorities involved in occupational health.

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ACPOHE

Competency Framework Audit Tool

2012

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This is an audit tool to use with the Occupational Physiotherapy Competency Framework

Circle the level you believe that you meet in terms of your knowledge, skills or behaviours on the framework.

Use the right hand column to list the evidence that supports your knowledge skills or behaviour.

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The behaviours, knowledge & skills used by AHPs to practice in Occupational Health:

Domain 1 VALUES				
Level	A	B	C	D
VALUES Altruism; Advocacy; Honesty & integrity; Compassion & caring; Accountability for decision making & actions; Fulfilment of duty of care & social responsibility; Commitment to excellence. Impartiality	Values are not described at a specific level but are expressed through the behavioural elements of other domains within the framework.			

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	Domain 2 Knowledge & understanding of Occupational Health [OH] Knowledge base : OH is generally not compulsory and may not be introduced in the undergraduate curriculum. Areas where specialist knowledge and understanding are required will have to be developed in post graduate education

	Level	A	B	C	D	My evidence
2.1	Building on undergraduate knowledge					

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2.1.1	Structure & function of the human body (undergraduate)	Working to consolidate the knowledge gained from qualifying programme practice Practising within straightforward &	Continuing to consolidate the knowledge gained from qualifying programme, & learning how that knowledge transfers from other areas/specialism's of practice into an Occupational Health context Practising within more complex & some	Demonstrate a critical awareness of current problems and/or new insights through application of research or advanced scholarship techniques relevant to Occupational Health practice Practising within complex, unpredictable	Working with a body of knowledge which is at the forefront of professional practice Creating and / or interpreting new	B – because the assumption is that they have learnt all this in the junior years of the undergraduate programme as is the norm
		generally predictable contexts but which requires the development of Occupational Health knowledge	unpredictable contexts which demands innovative work which may involve exploring current limits of Occupational Health knowledge	& normally specialised contexts demanding innovative work which may involve extending the current limits of Occupational Health knowledge	knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, and merit publication	
2.1.2	Health, disease, disorder & dysfunction (undergraduate)	ditto	ditto	ditto	ditto	B
2.1.3	The principles & applications of scientific enquiry (undergraduate)	ditto	ditto	ditto	ditto	B
2.1.4	Physical and movement science (undergraduate)	ditto	ditto	ditto	ditto	B

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2.2	Epidemiological research methods providing the knowledge and skills to evaluate research to establish causal links in the development of work relevant disease	Building new knowledge on to that gained in research methods from qualifying programme to extend scope of practice to contexts that require the application of current knowledge of epidemiology	Working to consolidate the knowledge gained from post registration programme into practice within complex & increasingly unpredictable contexts which requires the application of current knowledge of epidemiology	A systematic understanding of knowledge, much of which is at, or informed by, the forefront of professional practice in occupational health	A systematic acquisition & understanding of a substantial body of knowledge which is at the forefront of professional practice in occupational health	A- To find out from Milimo at what point exactly are students taught about research and even when OHS is executed So OHS is executed in year 3 semester one and epidemiology 1 and 2 also starts in year 3 but the actual research is done in year 4. Industrial attachment is later in year 3 OHs and epidemiology done the same time that is epidemiology 1 – background basics-epidemiology2 is applied and done in semester 2
2.3	Clinical sciences	Building awareness of	Extending knowledge	Demonstrate a critical	Create & interpret new	

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	relevant to professional practice in OH; evidence-base underpinning profession's contribution; concepts & approaches that inform the development of OH interventions	the wide scope of OH practice and developing knowledge a skills in areas relevant to current practice and the evidence base that supports the practice	and skills across a wider area of practice or specialising in one area: ie health & safety, ergonomics, occupational health, vocational rehabilitation	awareness of current problems and/or new insights through application of research or advanced scholarship techniques relevant to Occupational Health practice	knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, & merit publication	A- As it is, clinical sciences is offered in year 3 second semester and therefore there is need to get the outline of their curriculum to be able to understand where the embedded courses lie.
2.4	Behavioural sciences relevant to professional practice in OH; occupational psychology; sociology of health & work; theories of communication, leadership & teamworking, organisations & pedagogy	ditto	ditto	ditto	ditto	Again need to find out when they learn psychology or behavioural sciences at JKUAT They do mental health year 4 semester 1, Psychosocial aspects of rehabilitation is done in second semester year 3. Hence some aspects are captured before these students go out for industrial attachment at the end of year
2.5	Ethical principles underpinning practice in occupational health	Developing awareness, knowledge and interpretation of the legal and ethical principles and practice that underpin work in and OH setting	Uses detailed knowledge of legal and ethical framework to inform service development and delivery	Demonstrates critical awareness of legal and ethical framework underpinning OH practice and drives development of current practice	Demonstrates critical awareness of legal and ethical framework underpinning OH practice and uses research techniques to evaluate the efficacy of current practice and to drive development	A- That is evident in the course description that they learn about the concepts and principles of occupational health

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2.6	Kenya legal & policy frameworks governing OH and including case law	Developing knowledge of Kenya legal & policy frameworks governing OH and interpretation of these in an OH setting	Uses detailed knowledge of UK legal & policy frameworks governing OH to inform service development and delivery	Demonstrates critical awareness UK legal & policy frameworks governing OH practice and relevant case law and uses this knowledge to drive	Demonstrates critical awareness of UK legal & policy frameworks governing OH practice and uses research techniques to evaluate the efficacy of current	A- The 4th course objective states that they are to interpret laws related to Occupational Health in Kenya.

				development of current practice	practice and to drive development	
2.7	Organisational factors and their impact on work and health	Developing an understanding of working within and for a clients organisation/s to deliver a service that contributes to that organisations success	Demonstrates insight into a client's organisational factors, and their impact on work and health of the OH team and the workforce	Acts on insights into the impact of organisational factors on work and health improve the health and wellbeing of the OH team and the workforce	Demonstrates ability to undertake qualitative and quantitave research to gain a detailed understanding of organsiational factors. Uses research outcomes to influence and create change within an organisation to improve the health and wellbeing of the workforce	A- The students go out for industrial attachment and part of the objectives are to assess the workplace and have modifications to increase the workers safety
2.8	Commercial knowledge including the need for and methods to make a business case for occupational health, rehabilitation and ergonomic services	Demonstrates the ability to undertake accurate and timely collection and reporting of pre agreed data to demonstrate efficacy of OH practice	Demonstrates the ability to select collect, analyse and report on data to demonstrate efficacy of OH practice	Demonstrates the ability to select collect, analyse and report on service efficacy in terms of clinical and business outcomes that is of a quality to merit publication as a case study	Uses research knowledge and methology to set up systems to evaluate and report on service efficacy in terms of clinical and business outcomes that is of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, and merit publication	A or B- Debating between these two responses since this is the outcome of the industrial attachment After discussion with Milimo response of B was finally agreed due to practical examples from tutor…safaricom visit

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2.9	Applied workplace ergonomics	Developing knowledge and understanding in the field of ergonomics and the need to develop skills in ergonomics assessment - currently refers on cases where ergonomic assessment is indicated	Uses knowledge and understanding to design and deliver services to individuals and small groups (microergonomics) to analyse the risk of work tasks. Selects and appraises methodology in terms of its relative value in a	Demonstrates critical awareness of the science underpinning physical ergonomics techniques. Implements ergonomics principles within a workplace to prevent and manage work relevant ill health	Demonstrates critical awareness of the science underpinning ergonomics methods through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of applied	B- since they go to the field and carry out ergonomic assessments for all workers and they develop a manual handling program for workers
			given situation	(macro) Selects and appraises methodology in terms of its relative value in a given situation at systems level	ergonomics in the Occupational Health discipline, & merit publication	
2.10	The Bio-psycho-social model and its application to work and to disability; bio psychosocial assessment and management. Knowledge includes WHO International Classification of Functioning, Disability and Health (ICF) and its application in the design and delivery of occupational health services	Working to consolidate the knowledge gained from qualifying programme practice and to apply that knowledge in an occupational health context. Extending knowledge of disability and the relationship of work to health and health to work	Continuing to consolidate the knowledge gained from qualifying programme, & learning how that knowledge transfers from other areas/specialisms of practice into an Occupational Health context	Demonstrate a critical awareness of the bio psychosocial model and/or new insights into its application on OH through research or advanced scholarship techniques relevant to Occupational Health practice	Working with a body of knowledge which is at the forefront of professional practice. Through research or advanced scholarship techniques extending knowledge in the application of the bio psycho social model inan OH context	Need to find out when they learn about the aspect of disability and the bio-psychosocial aspect including ICF!! This came up in CBR second semester year 3

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2.11	Disability rehabilitation and reintegration into the workplace. Identification and management of issues that affect recovery and return to work	Developing awareness of the consequences of becoming workless due to ill health. Use of assessment strategies and tools to identify risk of work incapacity.	Knowledge of Kenya policy on incapacity and work & systems to support rehab & return to work for those with long term incapacity or disability. Recognition and active management of those at risk to prevent work incapacity	Demonstrates critical awareness of Kenya incapacity and return to work support systems and how this relates to OH practice. Drives development of current practice in terms of identifying risk of incapacity and supporting people to return to employment	Demonstrates critical awareness of UK incapacity and return to work support systems Uses research techniques to evaluate the efficacy of current practice and to drive development in terms of identifying risk of incapacity and supporting people to return to employment	B- Part of the course objectives are to interpret laws related to occupational health in Kenya and medical examinations, mx of sick employees and medico-legal reports and compensation- again to find out how is this information useful to the students and how do they use it in the field? Again I get torn in between A & B as readings on the RTW formula are not evident Confirmed that RTW is a challenge so the advice was proper assessment by a qualified medical person and get advice on compensation as the students did not have these competencies
2.12	Graded and paced occupational and vocational rehabilitation (work conditioning and	Working to consolidate the knowledge gained from qualifying programme	Continuing to consolidate the knowledge gained from qualifying programme,	Demonstrate a critical awareness methods to grade and pace work conditioning and work	Working with a body of knowledge which is at the forefront of professional practice.	Not explicitly clear and need to find out on this Clearly this has not been addressed in all the curriculums.

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	work hardening)	practice and to apply that knowledge in an occupational health context in the delivery of work conditioning and work hardening programmes	& learning how that knowledge transfers from other areas/specialisms of practice into an Occupational Health context in the delivery of work conditioning and work hardening programmes	hardening programmes Uses new insights into the application oof paced and graded rehabilitation in OH through research or advanced scholarship techniques	Through research or advanced scholarship techniques extending knowledge in the delivery of graded and paced work conditioning and work hardening programmes	

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2.13	Assessment of fitness for work (work capability assessment or functional capability assessment	Developing knowledge and understanding in the field of assessment of fitness for work and the need to develop skills in work capability assessment - currently refers on cases where work capability assessment is indicated	Uses knowledge and understanding to design and deliver assessment of fitness for work services to clients. Uses ability to analyse work tasks to inform the selection of tests. Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning assessment for fitness for work. Uses ability to analyse work tasks to inform the selection of tests . Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning assessment of fitness for work. Through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of assessment of fitness for work in the Occupational Health discipline, & merit publication	Not clear whether they do assessment of fitness for work services It was clear that the students only focused on the workplace and not individuals.
2.14	Health behaviour and health behaviour change	Developing knowledge and understanding of individuals' health behaviours and their impact on the individuals long term health wellbeing and work capability. Provides information on factors such as diet activity and substance use when indicated. Refers on or into appropriate support programmes	Uses knowledge and understanding of health behaviours and health behaviour change to design and deliver programmes for individuals and small. Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning health behaviour change, Uses knowledge to select measures to inform the stages of a programme. Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning health behaviour change Through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of behavioural change programmes in the Occupational Health discipline, & merit publication	Not clear when this is done- need to find this out from Milimo Its entrenched in terms of advising for behaviour change but models are not learnt at all……

NANCY WANYONYI 8/18/2015 9:10 PM
Comment [1]: Which tests are we talking about here?? What assessments is done for work assessment???

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PRACTICE SKILLS ie the skills necessary in OH to work effectively (Domains 3, 4 and 5)

	Domain 3 Self awareness	A	B	C	D	
3.1	Self-awareness the behaviour, knowledge & skills required to: identify personal values, preferences & ways of working (e.g. likes & dislikes; strengths & weaknesses; emotions & prejudices; personal scope of practice), & understand how these can affect the practitioner's behaviour, judgement, & practice	demonstrate selfawareness by using reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & with guidance, analyse how these may influence behaviour, judgement & practice.	demonstrate selfawareness by using reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & with guidance, evaluate how these may influence behaviour, judgement & practice.	demonstrate strong self-awareness by using critical reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & critically evaluate how these may influence behaviour, judgement & practice.	demonstrate strong self-awareness by using critical reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & critically evaluate how these may influence behaviour, judgement & practice.	What I need to find out is if students are at any point subjected to do a personal reflection of what they learn. And do they get feedback on this???? Not strongly grounded in terms of institution based but more of a personal thing.

	Domain 4 Political awareness	A	B	C	D	

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4.1	the behaviour, knowledge & skills required to: identify the political, social, economic & institutional factors influencing the delivery & development of work and health programmes and the development of Occupational Health engage with the implementation & development of policy in Occupational Health	knowledge of the political, social, economic & institutional factors that inform the delivery of Occupational Health services locally. Has awareness of the work of professional networks, learning from discussions relevant to professional practice in Occupational Health.	knowledge & understanding of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the design & delivery of Occupational Health services across Kenya. Benefit from the work of professional networks, learning from discussions relevant to professional practice in Occupational Health.	critical awareness of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the current & future design, delivery & professional development of Occupational Health services at a local & regional level. Contribute to the work of professional or policy networks, relevant discussions & provide feedback to inform the implementation & development of policies relevant to professional practice in Occupational Health.	critical awareness of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the design, delivery & professional development of Occupational Health across the UK. Plays an active role in a wide variety of professional & policy networks that inform the development of policies that influence the shape the future of professional practice in Occupational Health.	A- Looks like it matches to objective H of the Industrial attachment and the content about the structure and organisation of the work

	Domain 5 Psycho-motor skills	A	B	C	D	

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5.1	The psycho motor skills and behaviours required to: perform structured bio psycho social assessment on individuals with neuro-musculo-skeletal disorders in an OH context This goes back to look at the whole of the assessment, do they look out at the other ergonomic risk factors i.e. individual and environmental apart from the physical aspect??	working to consolidate & refine the performance of complex skills gained from qualifying programme modify a technique in response to feedback (e.g. from a client, peer, supervisor)	using extended skills for individual assessment relevant to OH practice perform complex skills consistently with confidence & a degree of co-ordination & fluidity, learning how those skills transfer from one area of practice to another. becoming increasingly self-aware of when/how to modify a technique & less dependent on feedback from others.	demonstrate technical mastery of complex skills within unpredictable contexts modify a technique inaction	demonstrate technical mastery of complex skills within unpredictable & normally specialised contexts modify a technique inaction	Not extremely clear how this comes out. Need to find out if they do the full ergonomic assessment i.e. physical, individual and environmental -In CBR-however its not coming out clearly, also its not explicitly brought out as part of the assessment
5.2	perform clinical assessments for a wide range of conditions that affect work capability in bio psychosocial framework	Working to consolidate & refine the psychosocial assessment skills gained from qualifying programme Extending skills to be able to identify workplace and societal obstacles to recovery and return to work for a wider range of conditions (Conditions are defined by scope of practice)	Competent in psychosocial assessment in a wide range of conditions and able to identify and tackle barriers to return to work (Conditions are defined by scope of practice)	Competent in psychosocial assessment in a wide range of conditions and in complex situations and unpredictable contexts (Conditions are defined by scope of practice)	Undertakes psychosocial assessment in a wide range of conditions and in complex situations and unpredictable contexts. Reviews efficacy of psychosocial element of interventions through research methodology and adding to evidence base	A and B- however need to find out about the implementation of the biopsychosocial framework - Not clear enough on this as it seems to have been captured in CBR but not clear.

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5.3	perform assessments using valid, reliable tools where available and where not using standardised testing protocols that are related to the demands of the job	Building capability to use the range of standardised measurement tools available in an OH setting	Competent in the use of a range of standardised measurement tools relevant to own area of practice	Competent in the use of a range of standardised measurement tools and will identify research regarding new and improved tools and implement into practice	Competent in the use of a wide range of standardised measurement tools, Able to identify gaps and may undertake research and development of new tools to add to the OH practice	To find out if they use reliable tools for assessment process No reliable tools are used for assessment
5.4	interpret the results of a cohort of psychosocial and functional assessment tools and use results to inform a treatment or rehabilitation programme and to monitor progress	Building capability to interpret the results of standardised measurement tools used in an OH setting and to use relevant tools to monitor progress	Competent in the interpretation of standardised measurement tools and uses tools to monitor progress towards return to work	Competent in the use of a range of standardised measurement tools and their interpretation Identifies research regarding new and improved tools and implement into practice	Competent in the use of a wide range of standardised measurement tools and their interpretation, Able to identify gaps and may undertake research and development of new tools to add to the OH practice	To find out if they use any functional assessment tools and which amongst these tools are standardised - There were not available.
5.5	design and deliver a programme of treatment or graded and paced occupational & vocational rehabilitation for individuals & groups To still continue searching for the aspect of Vocational rehabilitation	Building capability to design and to deliver work focused treatment and rehabilitation programmes	Competent to design and deliver work focused treatment and rehabilitation programmes and supervises others	Identifies research regarding return to work treatment and rehabilitation programmes and uses this to benchmark own outcomes and to improve practice	Undertake research and development into new ways to treat and rehabilitate to extend the knowledge and evidence base of OH practice	Seems to come out in objectives C, D and E of the industrial objectives, however its clearly evident that occupational and vocational rehabilitation is not a part of the work.

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5.6	Perform formal and structured workplace assessment using ergonomics tools	Recognise when a formal workplace assessment is required and refer on	build skills to undertake workplace assessment within relevant to OH practice	Demonstrate technical mastery of workplace assessment procedures Critically appraise methodology and identify strengths and weaknesses	Demonstrate technical mastery of procedures Critically appraise methodology and identify strengths and weaknesses. Build body of knowledge in the area of workplace assessment through research and development	B- this is part of their objective for the industrial attachment. To find out which tools they use. -Do not have any formal ergonomic tools used
5.7	Reflects and evaluates own performance of psychomotor skills required for clinical practice with a view to improving skills and capability	evaluate own performance	evaluate own & others' performance	evaluate own & others' performance in unpredictable contexts	evaluate own & others' performance in unpredictable & normally specialised contexts	From the look of things I don't think this aspect is being captured explicitly because its about self evaluation and mastery of the skills being performed- No provision for this in the curriculum so students maybe doing it subconsciously

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	Behaviours, knowledge & skills for interacting (Domains 6,7,8,9,10,11)					
	Domain 6 Communicating	A	B	C	D	

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6.1	Communicating the behaviour, knowledge & skills required to: facilitate the sharing of information, advice & ideas with a range of people, using a variety of media (including spoken, non-verbal, written & e-based); in the context of ethical and legal guidelines and constraints	use a wide range of routine communication skills to share information, ideas, problems & solutions, with individuals and within OH team.	use a wide range of routine & advanced communication skills to share specialised information, ideas, problems & solutions with audiences within Occupational Health and the workplace and relevant stakeholders.	use a range of advanced & specialised communication skills to share specialised information & ideas/engage in critical dialogue with a range of audiences within Occupational Health & beyond with different levels of knowledge & expertise.	use a broad range of advanced & specialised communication skills to share complex information & ideas/engage in critical dialogue with a wide range of audiences within Occupational Health & beyond with different levels of knowledge & expertise.	B- thinking it's the education given to the clients during the ergonomic assessment as per the guidelines for OH Objectives 5 and also objectives d and g
6.2	Modify communication to meet individuals' preferences & needs client or organisation;	modify communication in response to feedback (e.g. from a client, peer, supervisor) to meet the needs of different audiences & to enhance user involvement.	Becoming increasingly self-aware & able to modify communication to meet the needs of different audiences & to Enhance user involvement & collaboration.	modify communication to take account of the needs of different audiences & demonstrate a commitment to user involvement & collaboration.	modify communication in-action to take account of the needs of different audiences & demonstrate a commitment to user involvement & collaboration.	It may be possible but how do we gauge it??- D on industrial objectives educate workers on manual handling skills
6.3	Engage with technology, particularly the effective & efficient use of Information & Communication Technology	use a range of ICT to support & enhance practice	use a range of ICT to support & enhance the effectiveness of practice	use a wide range of ICT to support & enhance the effectiveness of practice.	use a wide range of ICT to support & enhance the effectiveness of practice & specify software requirements to enhance work.	To find out what aspects of IT that they use for communication, is it in designing programmes or what???? C on industrial attachment objectives about development of manual handling skills – very much present by use of flyers

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6.4	Extend communication to include therapeutic communication skills to be able to tackle psycho social issues	Building skills to ask directed questions about work to understand obstacles to return to work and to	Able to ask directed questions about work to understand obstacles to return to work and to develop	Developing and practicing therapeutic techniques eg cognitive behavioural approach, or motivational	Practicing therapeutic techniques eg cognitive behavioural approach, or motivational interviewing, mediation	Not explicitly evident but can be assumed to be part F of the industrial attachment objectives
	around work and health	develop shared goals to overcome the obstacles	Shared goals to overcome the obstacles	Interviewing, mediation Skills) To recognise beliefs and behaviours that are inconsistent and to address these with the individual or other relevant stakeholders	skills) to recognise beliefs and behaviours that are inconsistent and to address these with the individual or other relevant stakeholders Undertakes research and development into effective Communication in OH Extends the knowledge and evidence base of OH practice	
6.5	Build relationships in an organisation to facilitate rehabilitation of individuals and the health and wellbeing of the workforce	Builds effective working relationships with key people within the Organisation	Demonstrates ability to build relationships and to work effectively within that organisation as a whole	Builds strong relationships within an organisation and demonstrates the ability to influence decisions around the health and wellbeing of the workforce	Demonstrates multilevel relationships within the organisation Including senior management / board level and demonstrates the ability to provide insights and information to influence organisational change	Achieved by Objective G of industrial attachment

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6.6	Communicating with the workplace and with other relevant stakeholders on a range of issues e.g. advice on fitness for work and recommendations for transitional work arrangements or modifications	Build skills to report information and to give advice on issues relevant to OH practice that is in line with ethical guidelines and legislative framework	Reports on complex issues coherently providing relevant advice and information to appropriate stakeholders	Critically appraise the reports of others providing relevant feedback Develops quality assured methods of reporting to ensure consistent and accurate reporting on issues across a team	Provides a range of reports to the organisation at a high level to influence strategy in terms of health and wellbeing of the workforce	Addressed by objective G of industrial attachment

	Domain 7 Helping others learn & develop	A	B	C	D	
7.1	The behaviour, knowledge & skills required to: • assess the learner's needs & preferences; design materials/experience s that facilitate learning & development;	with guidance, plan & deliver learning activities to a specified range of individuals/groups within Occupational Health.	design, plan & deliver learning sessions of activities & opportunities to a range of audiences in Occupational Health with similar levels of knowledge & expertise.	design, plan & deliver learning activities & opportunities to a range of audiences in Occupational Health & beyond with different levels of knowledge & expertise.	design, plan & deliver learning activities & opportunities to a wide range of audiences in Occupational Health & beyond with different levels of knowledge & expertise.	-Objective D- educate workers on manual handling skills

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7.2	• deliver materials/experiences that facilitate learning;	With guidance apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs.	select & apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs.	select & apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs & promote a change in behaviour and practice	develop & apply evidence based approaches to learning & teaching to meet learners' needs & promote a change in practice. Innovation and research	-Objective D on education but shortcoming on tools
7.3	• evaluate the effectiveness of the learning & development experience	with guidance, predetermined criteria to assess a learner's performance & progress & provide them with appropriate feedback	use predetermined criteria to assess a learner's performance & progress, & provide them with constructive feedback.	select & apply appropriate assessment tools to evaluate a learner's performance & progress, & provide them with constructive feedback	develop & apply evidence based approaches to assess a learner's performance & progress, & provide them with constructive feedback	- To develop &implement a health promotion and injury prevention program for all workers.- But shortcoming is assumption of this in the content needs to be emphaised
7.4	• Reflect on the learning & development process	with guidance, reflect on learning & teaching performance & use this evaluation to inform future practice.	reflect on learning & teaching performance & use this evaluation to inform future practice.	critically reflect on learning & teaching performance & use this evaluation to inform future practice	critically reflect on learning & teaching performance & use this evaluation to inform future practice (self & others).	- The aspect of reflection is not really captured explicitly
7,5	• Demonstrate	Building capability to	Demonstrate work	Identifies research	Undertake research and	- Objective D Educate workers on manual handling skills- but then how do we assess this being done
	recommended work methods to individuals and groups using own body (bodymechanics) and equipment	demonstrate work methods and use of work tools to individuals and groups using efficient techniques	methods and use of work tools to individuals and groups using efficient techniques Supervises programmes delivered by others	regarding work methods and use of work tools to inform education programmes and uses this to improve practice	development into new ways to demonstrate work methods and use of work tools Extends the knowledge and evidence base of OH practice	

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	Domain 8 Managing self & others	A	B	C	D	
8.1	Managing self & others the behaviour, knowledge & skills required to: • plan, prioritise & organise personal workload/activities	Behaves in accordance with current professional codes & practices seeking guidance where appropriate.	exercise autonomy & initiative in accordance with current professional codes & practices.	exercise autonomy & initiative in complex & unpredictable situations at the limits of current professional codes & practices.	Has authority to exercises high level of autonomy & initiative in complex & unpredictable situations not addressed by current professional codes & practice.	Objective F- Identify and manage workers with work-related injuries/complaints
8.2	• Plans use of resources to fulfil work requirements & commitments	take some responsibility for the work of others (e.g. delegation of tasks to support workers) & for a range of resources	take responsibility for the work of others (e.g. support workers, students) & for a range of resources.	take managerial responsibility for the work of others & for a significant range of resources.	take significant managerial responsibility for the work of others and/or for a significant range of resources.	Objective F- Identify and manage workers with work-related injuries/complaints- e.g. teaching other workers on prevention skills
8.3	• adapt personal behaviour & actions in response to the demands of the situation;	modify personal behaviour & actions in response to feedback to meet the demands of the situation & to enhance own performance	becoming increasingly self-aware & able to modify personal behaviour & actions to meet the demands of the situation & to enhance own performance.	modify personal behaviour & actions to meet the demands of the situation & to enhance own & others' performance.	modify personal behaviour & actions 'inaction' to meet the demands of the situation & to maximise the impact of own & others' performance.	- Objective F- Identify and manage workers with work-related injuries/complaints- e.g. teaching other workers on prevention skills
8.4	• evaluate the effectiveness of performance (own & others);	with guidance, reflect on personal performance & use this evaluation to inform	reflect on personal performance & use this evaluation to inform future practice.	critically reflect on own & others' performance & use this evaluation to	Critically reflect on own & others' performance & use this evaluation to inform future	No evidence of personal reflection
		future practice.		inform future practice.	practice (own & others).	

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8.5	• lead & inspire others.	assists in implementing agreed plans designed to bring about change, development and/or new thinking within Occupational Health services.	exercise leadership and/or initiative that contributes to change, development and/or new thinking within Occupational Health services.	exercise leadership with responsibility for decision making designed to bring about change & development within Occupational Health services.	exercise leadership with accountability for decision making & development across a range of contexts, including those within which there is a high degree of uncertainty & a need to take innovative approaches to Occupational Health service delivery & development.	This could be seen in the expectation of the students to educate workers on manual handling skills (objective D of industrial attachment).

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	Domain 9 Promoting integration & teamwork	A	B	C	D	
9.1	the behaviour, knowledge & skills required to: • build, maintain & promote effective interpersonal Relationships;	Is aware of professional networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	participates in professional/policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	support, lead & develop local/regional professional & policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	support, lead & develop regional/national professional & policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice. .	-Objective H on identifying government policy regulatory bodies and statutory authorities involved in OH
9.2	• Work collaboratively with others to achieve shared goals	Work effectively with others to meet the responsibilities of professional practice in Occupational Health.	work effectively with others to meet the responsibilities of professional practice, & to identify situations where collaborative approaches could add value to practice in Occupational Health	work effectively with others to meet the responsibilities of professional practice, & to develop collaborative approaches that add value to practice in Occupational Health.	work effectively with others to meet the responsibilities of professional practice, & use innovative collaborative approaches that add value to & develop practice in Occupational Health	- health services and other work environments from the course content
9.3	• work with others to maintain & develop the effective performance of teams/networks in Occupational Health	reflect on experiences of collaborative working, & with guidance, use this information to identify solutions and contribute to the effective performance of teams/networks in Occupational Health	reflect on experiences of collaborative working, & use this information to identify & implement solutions to maintain & develop the effective performance of teams/networks in Occupational Health	critically reflect on experiences of collaborative working & use this information to identify & implement creative solutions to maintain & develop the effective & efficient performance of teams/networks in Occupational Health.	critically reflect on experiences of collaborative working & use this information to identify & implement innovative solutions to maintain & develop the effective & efficient performance of teams/networks in Occupational Health.	- No reflection is evident from this content

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	Domain 10	A	B	C	D	
	Keeping customer focus at the centre of practice					
10.1	the behaviour, knowledge & skills required to: provide an professional and equitable service to two clients who may have conflicting needs; the Organisation (customer) and the Worker (individual)	Recognises potential tensions /conflicts between the worker and the organisation and seeks assistance from a senior or peer	Recognises and manages potential tensions /conflicts between the worker and the organisation Seeks assistance in complex, unpredictable situations	Manages potential tensions /conflicts between the worker and the organisation in complex, unpredictable contexts. Work effectively with others to meet the responsibilities of professional practice	Manages potential tensions /conflicts between the worker and the organisation in complex, unpredictable contexts. Work effectively with others to meet the responsibilities of professional practice, & uses innovative collaborative approaches that add value to & develop practice in Occupational Health	Not sure which part to score, however they put the customer at the focus as they identify WRMDs and make adjustments to the workplace
10.2	demonstrate respect for the individual and organisation;	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures & best practice.	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, & procedures, & by working to promote best practice in both clinical and occupational health management	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures, & by working to inform & promote legislation, policies, procedures & best practice both clinical and occupational health management	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures, & by working to inform, develop & promote legislation, policies, procedures & best practice both clinical and occupational health management	- I can maybe interpret this as B- to undertake analysis of the various tasks in each work station since they are mature students.

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10.3	provide information & support that enables an organisation and /or an	information & support that empowers an individual to make an	information & support that empowers an individual to make an	provide information & support that empowers an individual to make an	provide information & support that empowers an individual to make an	- It conforms to objectives A, C, G, and H
	individual to make informed choices;	informed choice & to exercise their autonomy in accordance with legislation, policies, procedures & best practice.	informed choice & to exercise their autonomy in accordance with legislation, policies & procedures, & work to promote best practice	informed choice & to exercise their autonomy in accordance with legislation, policies, procedures, & work to inform & promote legislation, policies, procedures & best practice.	informed choice & to exercise their autonomy in accordance with legislation, policies, procedures, & work to inform, develop & promote legislation, policies, procedures & best practice.	
10.4	involve the organisation and individual in a participative approach to the shaping the design & delivery of their service	Involve customers and clients in shaping the design & delivery of their service by working in accordance with policies & processes that promote a culture of service user involvement.	involve customers and clients in shaping the design & delivery of their service, & work with others to implement & support policies & processes that promote a culture of service user involvement.	involve customers and clients in shaping the design & delivery of their service, & work with others to critically appraise user involvement, & to develop & implement policies, & processes that promote a culture of service user involvement. Participatory approach	actively involve customers and clients in shaping the design & delivery of their service, & work with others to critically appraise user involvement, & to develop policies & processes that promote a culture of service user involvement that contribute to the development of best practice.	This is not being explicitly captured…but maybe objective G of industrial attachment can capture this.

	Domain 11 Respecting & promoting diversity	A	B	C	D	

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11.1	the behaviour, knowledge & skills required to: respect & value diversity;	respect & value diversity by working in accordance with legislation, policies, procedures & best practice.	respect & value diversity by working in accordance with legislation, policies, procedures, & to promote best practice.	respect & value diversity by working to inform & promote legislation, policies, procedures & best practice.	respect & value diversity by working to inform, develop & promote legislation, policies, procedures & best practice.	- Not sure how this can be gotten here. Its not explicitly clear from the curriculum but it could be covered by Objective H of industrial attachment
11.2	examine own values & principles to avoid discriminatory behaviour & to minimise the potential negative effects of individual differences;	identify & articulate their own values & principles, & with guidance, evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, critically evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, critically evaluate how these may differ from other individuals/groups, & use this understanding to maintain excellent standards of practice even in situations of personal incompatibility.	-Not sure how this can be gotten here. Its not explicitly clear from the curriculum. No reflection is present to enable this.
11.3	work constructively with people of all backgrounds & orientations;	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices.	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & with guidance, support individuals who need assistance in exercising their rights	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & support individuals who need assistance in exercising their rights.	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & support individuals whose rights have been compromised	Not sure how this can be gotten here as its not explicitly expressed from the curriculum- Maybe objective E and G as well as content of OH looking at hazards in industry, health services and other work environments.
11.4	promote a nondiscriminatory culture	identify discriminatory behaviour & take	identify & challenge discriminatory practices	identify & challenge discriminatory practices	identify & actively challenge discriminatory	Not sure how this can be gotten here- Its not explicitly clear from the

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						curriculum- Maybe objective E and G
	that values diversity, & enables individuals to contribute & realise their full potential.	appropriate action to challenge this behaviour.	& work with others to implement & promote policies & processes that promote a nondiscriminatory culture.	& work with others to critically appraise current practice, & to develop & implement policies & processes that promote a nondiscriminatory culture	practices & work with others to critically appraise current practice, & to develop policies & processes that promote a nondiscriminatory culture that contribute to the development of best practice.	

Behaviours, knowledge & skills for PROBLEM-SOLVING & DECISION MAKING (Domains 12,13,14,15,16,17)

	Domain 12 Ensuring quality	A	B	C	D	
12.1	Ensuring quality the behaviour, knowledge & skills required to: fulfil the requirements of the legal policy and professional frameworks governing practice in Occupational Health;	fulfil the requirements of the legal & policy frameworks governing professional practice in OH .	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to promote best practice.	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to inform & promote legislation, policies, procedures & best practice.	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to inform, develop & promote legislation, policies, procedures & best practice.	- Objective H of industrial attachment and Objective 4 of the course

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12.2	recognise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action;	with guidance, recognise situations where the effectiveness, efficiency & quality of a service are compromised, & with support, take appropriate action to challenge the situation	recognise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & with guidance, take appropriate action to challenge the situation	recognise & critically appraise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action to resolve the situation	recognise & critically appraise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action to resolve the situation & contribute	Objective H of industrial attachment and Objective 4 of the course
12.3	critically reflect on practice in the context	with guidance, reflect on personal	reflect on personal performance & with	critically reflect on own & others' performance &	critically reflect on own & others' performance	-No evidence of reflection from the course outline
	of quality	performance & use this evaluation to enhance the effectiveness, effic iency & quality of future practice.	guidance, use this evaluation to enhance the effectiveness, efficiency & quality of future practice	use this evaluation to enhance the effectiveness, efficiency & quality of future practice	& use this evaluation to enhance the effectiveness, efficiency & quality of future practice (own & others).	

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	Domain 13 Improving and developing services	A	B	C	D	
13.1	Improving & developing services the behaviour, knowledge & skills required to: critically evaluate practice & use this appraisal to inform Occupational Health service improvement, development & redesign	with guidance, critically evaluate practice, & share the outcome of this appraisal with relevant personnel	critically evaluate practice, & with guidance, use this appraisal in combination with knowledge of best practice & political awareness to inform Occupational Health service improvement.	critically evaluate practice & use this appraisal in combination with knowledge of best practice & political awareness to identify opportunities for Occupational Health service improvement & development.	critically evaluate practice & use this appraisal in combination with knowledge of best practice & political awareness to identify opportunities for Occupational Health service improvement, development & redesign.	- Not stipulated here but students are expected to write a report at the end of the industrial attachment. Hence in as much as they may not have the opportunity to offer feedback to the institution they may get formative feedback after the assignments
13.2	develop innovative & sustainable recommendations to improve the quality of the service in Occupational Health	use a problem-solving approach to develop safe & effective recommendations for improving the quality of Occupational Health practice in predictable contexts.	use problem-solving approaches to develop safe, effective & efficient recommendations for improving the quality of Occupational Health practice in increasingly unpredictable contexts.	use problem-solving approaches to develop original, safe, effective & efficient recommendations for improving the quality of Occupational Health practice in unpredictable contexts.	use problem-solving approaches to develop original, effective & efficient approaches that demonstrate evidence of positive risk taking, for improving the quality of OH practice in unpredictable & normally specialised contexts.	- difficult to assess this but maybe may do a follow up of this in the Delphi study where the OH experts may have an input in terms of how do they use the feedback from the student's reports???
13.3	plan, facilitate & manage change;	contribute to change & development within the profession or Occupational Health at a local level.	contribute to change & development within Occupational Health at a local level.	make an identifiable contribution to change & development within Occupational Health at a local & regional level.	make an identifiable contribution to change & development within Occupational Health & beyond – at a national or international level.	Objectives a, b, c, d and e of industrial attachment
13.4	critically evaluate the process & outcome		reflect on the change process, & use this information to appraise the outcome & inform future practice	critically reflect on the change process, & use this information to appraise the outcome & inform future practice	critically reflect on the change process, & use this information to appraise the outcome & inform future practice	-No evident reflection. To find out from Milimo how do they evaluate the effects of their industrial attachment. Are they

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						able to get feedback from the clientele or do they write a report??? As discussed with Davis there is no provision to get feedback as the attachment is just for two weeks where one does assessment and not really able to evaluate the recommendations given

	Domain 14 Lifelong learning (CPD)	A	B	C	D	
14.1	Lifelong learning CPD the behaviour, knowledge & skills required to: assess personal learning & development needs & preferences;	demonstrate self-awareness of learning preferences, & with guidance can identify personal learning & development needs	demonstrate increasing self-awareness of learning preferences, & with guidance can identify personal learning & development needs	demonstrate strong selfawareness of learning preferences, & with minimal guidance can identify personal learning & development needs	demonstrate strong selfawareness of learning preferences, & can independently identify personal learning & development needs	- difficult to assess maybe these are aspects that needs to be followed up with the respective tutor about giving them formative and summative feedback that enables continuous learning.
14.2	• develop & engage in a personalised plan designed to meet those needs;	Independently advance personal knowledge, understanding & skills in line with identified learning needs, & with guidance & support, can use a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs, & with guidance, can use a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs by making appropriate use of a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs by making appropriate use of a wide variety of learning & development resources & opportunities.	difficult to assess and I think the above comments go for this as well

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14.3	• reflect on the learning process;	reflect on personal learning & development, & with guidance & support, use this information to inform the planning & management of future learning & development experiences.	reflect on personal learning & development, & with guidance, use this information to inform the planning & management of future learning & development experiences.	critically reflect on personal learning & development, & with guidance, use this information to inform the planning & management of future learning & development experiences.	critically reflect on personal learning & development & use this information to inform the planning & management of future learning & development experiences.	difficult to assess no reflection component is evident
14.4	• document the process	with guidance & support, record the outcome of personal learning & development in a format that meets personal preferences & professional requirements.	with guidance, record the outcome of personal learning & development in a format that meets personal preferences & professional requirements.	record the outcome of personal learning & development in a format that meets personal preferences & professional requirements	record the outcome of personal learning & development in a format that meets personal preferences & professional requirements	Yes they do write a report of the same and are attached for 2 weeks. However the comments in 14.1 still remain valid as to whether the students get an opportunity of getting formative and summative feedback…..actually summative as that is when they have gotten done with the industrial attachment
	Domain 15 Practice decision	A	B	C	D	

	making					

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15.1	Practice decision making the behaviour, knowledge & skills required to: collect information from a variety of sources relevant to the decision making situation;	efficient & effective use of a wide range of routine & some specialised approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a wide range of routine & advanced approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a range of advanced & specialised approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a broad range of advanced & specialised approaches & techniques to systematically collect information from a wide variety of sources relevant to the situation	-The industrial objectives add up to this as they do their assessment for each station and use knowledge based on OH to help them make decisions on management.
15.2	process & analyse the information collected;	process & critically analyse information in complex & predictable situations where data/information comes from a range of sources or is incomplete.	process & critically analyse information in complex & unpredictable situations where data/information comes from a range of sources or is incomplete.	process & critically analyse information in complex & unpredictable situations where data/information is incomplete or consistent.	process & critically analyse information in complex, unpredictable & normally specialised situations where data/information is incomplete or inconsistent.	The industrial objectives add up to this as they do their assessment for each station and use knowledge based on OH to help them make decisions on management.
15.3	draw reasoned conclusions & make informed judgements to address issues/resolve problems in Occupational Health practice; .	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health settings.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health settings.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make judgements to address ethical & professional issues in Occupational Health where situations are at the limits of current professional codes & practices.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health where situations are not addressed by current professional codes & practice.	The industrial objectives add up to this as they do their assessment for each station and use knowledge based on OH to help them make decisions on management.
15.4	critically evaluate the decision making process	with guidance, reflect on their decision making process & use this evaluation to appraise the outcome & to inform	reflect on their decision making process & use this evaluation to appraise the outcome & to inform future	critically reflect on their decision making process & use this evaluation to appraise the outcome & to inform future	critically reflect on their decision making process & use this evaluation to appraise the outcome & to inform future	- Not clearly evident how to go about this since there is no reflection. Would love to know if they write reports after

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						the attachment!!! - Yes they do write reports on the same.
		future practice.	practice.	practice.	practice.	

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	Domain 16 Researching & evaluating practice (audit)	A	B	C	D	
16.1	Researching & evaluating practice audit the behaviour, knowledge & skills required to: • design, plan, conduct & manage the research/evaluation process;	with guidance, plan, conduct & manage evaluation & research projects to address a specific issue arising from Occupational Health practice.	plan, conduct & manage evaluation & research projects to address specific issues arising from Occupational Health practice	design, plan, conduct & manage evaluation & research projects to address problems & issues arising from Occupational Health practice.	design, plan, conduct & manage evaluation & research projects to address new problems & issues arising from Occupational Health practice.	To find out if they do a research during the industrial attachment- That was simply an industrial attachment, hence nothing much about the research aspect was followed up. This was just considered to be a normal clinical rotation
16.2	• use methods of enquiry to collect & interpret data in order to address problems or issues arising from Occupational Health practice;	with guidance, apply a range of standard research methods/tools of enquiry showing an appreciation of related ethical considerations.	becoming increasingly confident to apply a range of standard research methods/tools of enquiry showing an appreciation of related ethical considerations.	apply a range of standard & specialised research methods/tools of enquiry showing a detailed understanding of related ethical considerations	apply a range of standard & specialised research methods/tools of enquiry, contributing to the development of new techniques or approaches, & showing a detailed understanding of related ethical considerations	What tool did they use to collect the data….. No specific tool was put into use but rather one drew from their previous knowledge to identify how to manage cases in the specific industrial attachment
16.3	• critically evaluate the research/evaluation process;	with guidance, reflect on the research process, & use this information to appraise the project & inform future practice	reflect on the research process, & use this information to appraise the project & inform future practice	critically reflect on the research process, & use this information to appraise the project & inform future practice.	critically reflect on the research process, & use this information to appraise the project & inform future practice	No reflection so its difficult to assess this….

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16.4	• communicate the outcome of the research/evaluation	identify, & with support, promote the practical & professional applications	identify & promote the practical & professional applications of	identify & promote the practical & professional applications of	identify & promote the practical & professional applications of	To find out about the research implementation of the industrial attachment-In some instances there is actually no opportunity to have this done
	process.	of completed work, & seek opportunities to share & disseminate findings to both specialist & nonspecialist audiences	completed work, & seek opportunities to share & disseminate findings to both specialist & nonspecialist audiences.	completed work, & actively seek opportunities to share & disseminate findings to a range of audiences with different levels of knowledge & expertise	completed work, & actively create opportunities to share & disseminate findings to a wide range of audiences with different levels of knowledge & expertise	

	Domain 17 Using evidence to lead practice	A	B	C	D	
17.1	Using evidence to lead practice evidence based practice the behaviour, knowledge & skills required to: • systematically search for evidence;	with guidance, use a range of approaches & techniques to systematically search for evidence from a variety of sources relevant to the situation.	use a range of approaches & techniques to systematically search for evidence from a variety of sources relevant to the situation	efficient & effective use of a range of approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a broad range of approaches & techniques to systematically search for information from a wide variety of sources relevant to the situation	To find out what evidence they used for the project Literature Search-however students admitted challenges in that they were taught by OH specialists who are not Physiotherapists hence students needed to be innovative to be relevant with PT specific needs for OH.

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17.2	• critically appraise evidence & use the information to address problems & issues arising in Occupational Health practice.	critically evaluate current research & scholarship & with guidance, use the appraisal to address specific issues arising in Occupational Health	critically evaluate current research & scholarship & use the appraisal to address specific issues arising in Occupational Health.	critically evaluate current research & scholarship & use the appraisal to address issues which are at the forefront or informed by developments at the forefront of Occupational Health.	critically evaluate current research & scholarship & use the appraisal to address new problems & issues arising in Occupational Health.	To find out if they actually do research and what its about for the industrial attachment That was simply an industrial attachment and they search literature for any response

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APPENDIX J1: OCCUPATIONAL HEALTH CONTENT-MOI

BPT 417: OCCUPATIONAL HEALTH (3 UNITS)

Purpose

To equip the student physiotherapist with knowledge of work-related illnesses and injuries; the prevention of these disorders and their management, so as to enhance productivity and quality of life of workers.

Objectives:

1. Describe the evolution, concepts and principles of occupational health

2. State the legislations related to Occupational health in Kenya

3. Describe the aetiology, pathology and prevention of disorders related to exposure to occupational hazards.

4. Outline the organization and use of occupational Health Services

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Outcomes

5.4.2.1 Discuss the evolution, concepts and principles of occupational health

5.4.2.2 Apply the legislations related to occupational health in Kenya

5.4.2.3 Manage and prevent disorders related to exposure to occupational hazards

5.4.2.4 Document and appropriately report occupational hazards, disorders and injuries.

Content:

Introduction to Occupational Health: Historical background, Concepts and Principles, types of occupational health hazards, Vulnerable groups.

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Occupational Health Services: Curative and preventive, Functions: Medical exams and Surveillance; Types of Occupational Health Services, prevention and control of occupational hazards: Engineering, Administrative, Education, Personal Protection Gear. Occupational diseases and accidents: Repetitive strain injuries (Work-related musculoskeletal disorders), Occupational Chest/Lung Diseases: Pneumoconiosis including Asbestosis, Silicosis; Byssinosis, Bagassosis; Vulnerable workers to chest lung diseases; Occupational dermatoses: Contact and irritant dermatitis; Photosensitivity ; Occupational acne; Management and prevention. Occupational hazards in the agricultural sector: Chemical, Macrobiological and Microbiological hazards. Impact on agricultural workers and vulnerable groups. Industrial Hygiene. Occupational related accidents including fire, collapsing buildings and machines. Prevention and management of accidents.

Regulatory Frameworks in Occupational Health and Safety: International Labour Organisation, Directorate of Occupational Health and Safety Services: Composition of the personnel; Role and policies in promotion of health and safety in work environment; Services and functions related to work environment; Occupational safety and health act.

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Reference Materials:

1. Richardson, Barbara and Eastlake, Alfreda Physiotherapy in Occupational Health: Management, Prevention & Health Promotion in the Work Place. Great Britain: Butterworth Heinemann.

2. Khan, Ada P; Foreword by Meyer, Delbert H. The Encyclopedia of Work-Related Illnesses, Injuries, and Health Issues USA: Facts on file library of health and living

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ACPOHE

Competency Framework Audit Tool

2012

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This is an audit tool to use with the Occupational Physiotherapy Competency Framework

Circle the level you believe that you meet in terms of your knowledge, skills or behaviours on the framework.

Use the right hand column to list the evidence that supports your knowledge skills or behaviour.

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The behaviours, knowledge & skills used by AHPs to practice in Occupational Health:

Domain 1 VALUES				
Level	A	B	C	D
VALUES Altruism; Advocacy; Honesty & integrity; Compassion & caring; Accountability for decision making & actions; Fulfilment of duty of care & social responsibility; Commitment to excellence. Impartiality	Values are not described at a specific level but are expressed through the behavioural elements of other domains within the framework.			

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	Domain 2 Knowledge & understanding of Occupational Health [OH] Knowledge base : OH is generally not compulsory and may not be introduced in the undergraduate curriculum. Areas where specialist knowledge and understanding are required will have to be developed in post graduate education

	Level	A	B	C	D	My evidence
2.1	Building on undergraduate knowledge					

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2.1.1	Structure & function of the human body (undergraduate)	Working to consolidate the knowledge gained from qualifying programme practice Practising within straightforward &	Continuing to consolidate the knowledge gained from qualifying programme, & learning how that knowledge transfers from other areas/specialism's of practice into an Occupational Health context Practising within more complex & some	Demonstrate a critical awareness of current problems and/or new insights through application of research or advanced scholarship techniques relevant to Occupational Health practice Practising within complex, unpredictable	Working with a body of knowledge which is at the forefront of professional practice Creating and / or interpreting new	Gained all this in the undergraduate programme though its not anywhere explained in the course outline. Maybe this information needs to come outright and produce the link needed.
		generally predictable contexts but which requires the development of Occupational Health knowledge	unpredictable contexts which demands innovative work which may involve exploring current limits of Occupational Health knowledge	& normally specialised contexts demanding innovative work which may involve extending the current limits of Occupational Health knowledge	knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, and merit publication	
2.1.2	Health, disease, disorder & dysfunction (undergraduate)	ditto	ditto	ditto	ditto	Same
2.1.3	The principles & applications of scientific enquiry (undergraduate)	ditto	ditto	ditto	ditto	Same
2.1.4	Physical and movement science (undergraduate)	ditto	ditto	ditto	ditto	Same

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2.2	Epidemiological research methods providing the knowledge and skills to evaluate research to establish causal links in the development of work relevant disease	Building new knowledge on to that gained in research methods from qualifying programme to extend scope of practice to contexts that require the application of current knowledge of epidemiology	Working to consolidate the knowledge gained from post registration programme into practice within complex & increasingly unpredictable contexts which requires the application of current knowledge of epidemiology	A systematic understanding of knowledge, much of which is at, or informed by, the forefront of professional practice in occupational health	A systematic acquisition & understanding of a substantial body of knowledge which is at the forefront of professional practice in occupational health	Research was done in COBES III and since OHS is done in year IV they have some idea of how this is carried out. Though this is not explicit in the curriculum.
2.3	Clinical sciences	Building awareness of	Extending knowledge	Demonstrate a critical	Create & interpret new	
	relevant to professional practice in OH; evidence-base underpinning profession's contribution; concepts & approaches that inform the development of OH interventions	the wide scope of OH practice and developing knowledge a skills in areas relevant to current practice and the evidence base that supports the practice	and skills across a wider area of practice or specialising in one area: ie health & safety, ergonomics, occupational health, vocational rehabilitation	awareness of current problems and/or new insights through application of research or advanced scholarship techniques relevant to Occupational Health practice	knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, & merit publication	Clinical Science done in year 2 however its not linked to OH. Objective 3 in OH content addresses this domain as well.

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2.4	Behavioural sciences relevant to professional practice in OH; occupational psychology; sociology of health & work; theories of communication, leadership & teamworking, organisations & pedagogy	ditto	ditto	ditto	ditto	This is learnt in year 1 and 2 in these separate courses, as well as communication skills. This is again not embedded in OHS course
2.5	Ethical principles underpinning practice in occupational health	Developing awareness, knowledge and interpretation of the legal and ethical principles and practice that underpin work in and OH setting	Uses detailed knowledge of legal and ethical framework to inform service development and delivery	Demonstrates critical awareness of legal and ethical framework underpinning OH practice and drives development of current practice	Demonstrates critical awareness of legal and ethical framework underpinning OH practice and uses research techniques to evaluate the efficacy of current practice and to drive development	Objectives 1 and 2 of the Occupational health module
2.6	Kenya legal & policy frameworks governing OH and including case law	Developing knowledge of Kenya legal & policy frameworks governing OH and interpretation of these in an OH setting	Uses detailed knowledge of Kenya legal & policy frameworks governing OH to inform service development and delivery	Demonstrates critical awareness UK legal & policy frameworks governing OH practice and relevant case law and uses this knowledge to drive	Demonstrates critical awareness of UK legal & policy frameworks governing OH practice and uses research techniques to evaluate the efficacy of current	Objectives 2 and 4 in the module of OHS

				development of current practice	practice and to drive development	

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2.7	Organisational factors and their impact on work and health	Developing an understanding of working within and for a clients organisation/s to deliver a service that contributes to that organisations success	Demonstrates insight into a client's organisational factors, and their impact on work and health of the OH team and the workforce	Acts on insights into the impact of organisational factors on work and health improve the health and wellbeing of the OH team and the workforce	Demonstrates ability to undertake qualitative and quantitave research to gain a detailed understanding of organsiational factors. Uses research outcomes to influence and create change within an organisation to improve the health and wellbeing of the workforce	Its hidden under Objective 3 as part of the reasons that leads to occupational hazards.
2.8	Commercial knowledge including the need for and methods to make a business case for occupational health, rehabilitation and ergonomic services	Demonstrates the ability to undertake accurate and timely collection and reporting of pre agreed data to demonstrate efficacy of OH practice	Demonstrates the ability to select collect, analyse and report on data to demonstrate efficacy of OH practice	Demonstrates the ability to select collect, analyse and report on service efficacy in terms of clinical and business outcomes that is of a quality to merit publication as a case study	Uses research knowledge and methology to set up systems to evaluate and report on service efficacy in terms of clinical and business outcomes that is of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, and merit publication	Its under Objective 1 as part of concepts and principles of OH. I need to do a lot of reflexivity to avoid my bias in the study.
2.9	Applied workplace ergonomics	Developing knowledge and understanding in the field of ergonomics and the need to develop skills in ergonomics assessment - currently refers on cases where ergonomic assessment is indicated	Uses knowledge and understanding to design and deliver services to individuals and small groups (microergonomics) to analyse the risk of work tasks. Selects and appraises methodology in terms of its relative value in a	Demonstrates critical awareness of the science underpinning physical ergonomics techniques. Implements ergonomics principles within a workplace to prevent and manage work relevant ill health	Demonstrates critical awareness of the science underpinning ergonomics methods through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of applied	A- this is because Kinesiology is taught as a course before hand in year two though its not stipulated in this course outline. Also as part of objective 3 on aetiology of occupational hazards. B- Because of

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						prevention aspect of outcome 3where students are expected to manage and prevent disorders related to exposure to occupational hazards.

			given situation	(macro) Selects and appraises methodology in terms of its relative value in a given situation at systems level	ergonomics in the Occupational Health discipline, & merit publication	
2.10	The Bio-psycho-social model and its application to work and to disability; bio psychosocial assessment and management. Knowledge includes WHO International Classification of Functioning, Disability and Health (ICF) and its application in the design and delivery of occupational health services	Working to consolidate the knowledge gained from qualifying programme practice and to apply that knowledge in an occupational health context. Extending knowledge of disability and the relationship of work to health and health to work	Continuing to consolidate the knowledge gained from qualifying programme, & learning how that knowledge transfers from other areas/specialisms of practice into an Occupational Health context	Demonstrate a critical awareness of the bio psychosocial model and/or new insights into its application on OH through research or advanced scholarship techniques relevant to Occupational Health practice	Working with a body of knowledge which is at the forefront of professional practice. Through research or advanced scholarship techniques extending knowledge in the application of the bio psycho social model inan OH context	Biopsychosocial model and ICF is taught in CBR and also as part of ergonomics hazards looks at the Physical, environmental and Individual factors which is stipulated in course content in relation to hazards in the work environment.

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2.11	Disability rehabilitation and reintegration into the workplace. Identification and management of issues that affect recovery and return to work	Developing awareness of the consequences of becoming workless due to ill health Use of assessment strategies and tools to identify risk of work incapacity	Knowledge of UK policy on incapacity and work & systems to support rehab & return to work for those with long term incapacity or disability. Recognition and active management of those at risk to prevent work incapacity	Demonstrates critical awareness of UK incapacity and return to work support systems and how this relates to OH practice. Drives development of current practice in terms of identifying risk of incapacity and supporting people to return to employment	Demonstrates critical awareness of UK incapacity and return to work support systems Uses research techniques to evaluate the efficacy of current practice and to drive development in terms of identifying risk of incapacity and supporting people to return to employment	Covered in CBR where they will look at ICF and how the patient is affected in relation of return to work.
2.12	Graded and paced occupational and vocational rehabilitation (work conditioning and	Working to consolidate the knowledge gained from qualifying programme	Continuing to consolidate the knowledge gained from qualifying programme,	Demonstrate a critical awareness methods to grade and pace work conditioning and work	Working with a body of knowledge which is at the forefront of professional practice.	Not there in our curriculum
	work hardening)	practice and to apply that knowledge in an occupational health context in the delivery of work conditioning and work hardening programmes	& learning how that knowledge transfers from other areas/specialisms of practice into an Occupational Health context in the delivery of work conditioning and work hardening programmes	hardening programmes Uses new insights into the application oof paced and graded rehabilitation in OH through research or advanced scholarship techniques	Through research or advanced scholarship techniques extending knowledge in the delivery of graded and paced work conditioning and work hardening programmes	

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2.13	Assessment of fitness for work (work capability assessment or functional capability assessment	Developing knowledge and understanding in the field of assessment of fitness for work and the need to develop skills in work capability assessment - currently refers on cases where work capability assessment is indicated	Uses knowledge and understanding to design and deliver assessment of fitness for work services to clients Uses ability to analyse work tasks to inform the selection of tests . Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning assessment fo fitness for work. Uses ability to analyse work tasks to inform the selection of tests . Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning assessment of fitness for work. Through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of assessment of fitness for work in the Occupational Health discipline, & merit publication	Not there in our curriculum
2.14	Health behaviour and health behaviour change	Developing knowledge and understanding of individuals health behaviours and their impact on the individuals long term health wellbeing and work capability . Provides information on factors such as diet activity and substance use when indicated. Refers on or into appropriate support programmes	Uses knowledge and understanding of health behaviours and health behaviour change to design and deliver programmes for individuals and small. Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning health behaviour change, Uses knowledge to select measures to inform the stages of a programme. Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning health behaviour change Through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of behavioural change programmes in the Occupational Health discipline, & merit publication	Part A1 is evident in the Behavioural Sciences and Ethics module but part A2 i

NANCY WANYONYI 11/17/2016 9:45 AM
Comment [1]: Nutrition is taught in COBES I.

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PRACTICE SKILLS ie the skills necessary in OH to work effectively (Domains 3, 4 and 5)

	Domain 3 Self awareness	A	B	C	D	
3.1	Self-awareness the behaviour, knowledge & skills required to: identify personal values, preferences & ways of working (e.g. likes & dislikes; strengths & weaknesses; emotions & prejudices; personal scope of practice), & understand how these can affect the practitioner's behaviour, judgement, & practice	demonstrate selfawareness by using reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & with guidance, analyse how these may influence behaviour, judgement & practice.	demonstrate selfawareness by using reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & with guidance, evaluate how these may influence behaviour, judgement & practice.	demonstrate strong self-awareness by using critical reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & critically evaluate how these may influence behaviour, judgement & practice.	demonstrate strong self-awareness by using critical reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & critically evaluate how these may influence behaviour, judgement & practice.	Not stipulated as part of the curriculum

	Domain 4 Political awareness	A	B	C	D	

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4.1	the behaviour, knowledge & skills required to: identify the political, social, economic & institutional factors influencing the delivery & development of work and health programmes and the development of Occupational Health engage with the implementation & development of policy in Occupational Health	knowledge of the political, social, economic & institutional factors that inform the delivery of Occupational Health services locally. Has awareness of the work of professional networks, learning from discussions relevant to professional practice in Occupational Health.	knowledge & understanding of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the design & delivery of Occupational Health services across the UK. Benefit from the work of professional networks, learning from discussions relevant to professional practice in Occupational Health.	critical awareness of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the current & future design, delivery & professional development of Occupational Health services at a local & regional level. Contribute to the work of professional or policy networks, relevant discussions & provide feedback to inform the implementation & development of policies relevant to professional practice in Occupational Health.	critical awareness of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the design, delivery & professional development of Occupational Health across the UK. Plays an active role in a wide variety of professional & policy networks that inform the development of policies that influence the shape the future of professional practice in Occupational Health.	Objectives 2 and 4

	Domain 5 Psycho-motor skills	A	B	C	D	

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5.1	The psycho motor skills and behaviours required to: perform structured bio psycho social assessment on individuals with neuro-musculo-skeletal disorders in an OH context	working to consolidate & refine the performance of complex skills gained from qualifying programme modify a technique in response to feedback (e.g. from a client, peer, supervisor)	using extended skills for individual assessment relevant to OH practice perform complex skills consistently with confidence & a degree of co-ordination & fluidity, learning how those skills transfer from one area of practice to another. becoming increasingly self-aware of when/how to modify a technique & less dependent on feedback from others.	demonstrate technical mastery of complex skills within unpredictable contexts modify a technique inaction	demonstrate technical mastery of complex skills within unpredictable & normally specialised contexts modify a technique inaction	Some aspects of these are taught in Exercise Therapy1, Electrotherapy about pain and all its factors that needs to be addressed but it definitely doesn't come out explicitly in this module
5.2	perform clinical assessments for a wide range of conditions that affect work capability in bio psychosocial framework	Working to consolidate & refine the psychosocial assessment skills gained from qualifying programme Extending skills to be able to identify workplace and societal obstacles to recovery and return to work for a wider range of conditions (Conditions are defined by scope of practice)	Competent in psychosocial assessment in a wide range of conditions and able to identify and tackle barriers to return to work (Conditions are defined by scope of practice)	Competent in psychosocial assessment in a wide range of conditions and in complex situations and unpredictable contexts (Conditions are defined by scope of practice)	Undertakes psychosocial assessment in a wide range of conditions and in complex situations and unpredictable contexts. Reviews efficacy of psychosocial element of interventions through research methodology and adding to evidence base	This describes yellow flags which do not come out clearly in this course outline but could be covered in Exercise Therapy as well as CBR

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5.3	perform assessments using valid, reliable tools where available and where not using standardised testing protocols that are related to the demands of the job	Building capability to use the range of standardised measurement tools available in an OH setting	Competent in the use of a range of standardised measurement tools relevant to own area of practice	Competent in the use of a range of standardised measurement tools and will identify research regarding new and improved tools and implement into practice	Competent in the use of a wide range of standardised measurement tools, Able to identify gaps and may undertake research and development of new tools to add to the OH practice	-Nowhere is it explicitly explained in the course outline but somehow the course implementer uses some tools e.g. what was shared from AUSI
5.4	interpret the results of a cohort of psychosocial and functional assessment tools and use results to inform a treatment or rehabilitation programme and to monitor progress	Building capability to interpret the results of standardised measurement tools used in an OH setting and to use relevant tools to monitor progress	Competent in the interpretation of standardised measurement tools and uses tools to monitor progress towards return to work	Competent in the use of a range of standardised measurement tools and their interpretation Identifies research regarding new and improved tools and implement into practice	Competent in the use of a wide range of standardised measurement tools and their interpretation, Able to identify gaps and may undertake research and development of new tools to add to the OH practice	-may not be exactly possible since the time duration one is attached is short and doesn't give room for that. Or probably could it possible mean that the students are theoretically taught on how and when to do these implementation--- to look at how long are students placed in this rotation elsewhere and make a decision....
5.5	design and deliver a programme of treatment or graded and paced occupational & vocational rehabilitation for individuals & groups	Building capability to design and to deliver work focused treatment and rehabilitation programmes	Competent to design and deliver work focused treatment and rehabilitation programmes and supervises others	Identifies research regarding return to work treatment and rehabilitation programmes and uses this to benchmark own outcomes and to improve practice	Undertake research and development into new ways to treat and rehabilitate to extend the knowledge and evidence base of OH practice	

NANCY WANYONYI 11/17/2016 9:49 AM

Comment [2]: N/A in the curriculum contenct for OH. Students do some aspects in Kinesiology about assessment but no links is made to this while they are learning OH. The question that thus arises is what is the standard time that students' are expected to be placed in this rotation so as to practice the required attributes.

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5.6	Perform formal and structured workplace assessment using ergonomics tools	Recognise when a formal workplace assessment is required and refer on	build skills to undertake workplace assessment within relevant to OH practice	Demonstrate technical mastery of workplace assessment procedures Critically appraise methodology and identify strengths and weaknesses	Demonstrate technical mastery of procedures Critically appraise methodology and identify strengths and weaknesses. Build body of knowledge in the area of workplace assessment through research and development	Its possible that the current cohort will be able to determine this from the outcome of this course.
5.7	Reflects and evaluates own performance of psychomotor skills required for clinical practice with a view to improving skills and capability	evaluate own performance	evaluate own & others' performance	evaluate own & others' performance in unpredictable contexts	evaluate own & others' performance in unpredictable & normally specialised contexts	No opportunity in the curriculum for reflection but the implementor did this due to contact with team from AUSI

NANCY WANYONYI 11/17/2016 9:50 AM
Comment [3]: Maybe objective 3 could address this as the rest are not stipulated in the curriculum content.

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	Behaviours, knowledge & skills for interacting (Domains 6,7,8,9,10,11)					
	Domain 6 Communicating	A	B	C	D	

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6.1	Communicating the behaviour, knowledge & skills required to: facilitate the sharing of information, advice & ideas with a range of people, using a variety of media (including spoken, non-verbal, written & e-based); in the context of ethical and legal guidelines and constraints	use a wide range of routine communication skills to share information, ideas, problems & solutions, with individuals and within OH team.	use a wide range of routine & advanced communication skills to share specialised information, ideas, problems & solutions with audiences within Occupational Health and the workplace and relevant stakeholders.	use a range of advanced & specialised communication skills to share specialised information & ideas/engage in critical dialogue with a range of audiences within Occupational Health & beyond with different levels of knowledge & expertise.	use a broad range of advanced & specialised communication skills to share complex information & ideas/engage in critical dialogue with a wide range of audiences within Occupational Health & beyond with different levels of knowledge & expertise.	Learnt in communication skills in year two as well as their roles in promotion of health and safety in work environment.
6.2	Modify communication to meet individuals' preferences & needs client or organisation;	modify communication in response to feedback (e.g. from a client, peer, supervisor) to meet the needs of different audiences & to enhance user involvement.	becoming increasingly self-aware & able to modify communication to meet the needs of different audiences & to enhance user involvement & collaboration.	modify communication to take account of the needs of different audiences & demonstrate a commitment to user involvement & collaboration.	modify communication in-action to take account of the needs of different audiences & demonstrate a commitment to user involvement & collaboration.	Communication skills in year two
6.3	Engage with technology, particularly the effective & efficient use of Information & Communication Technology	use a range of ICT to support & enhance practice	use a range of ICT to support & enhance the effectiveness of practice	use a wide range of ICT to support & enhance the effectiveness of practice.	use a wide range of ICT to support & enhance the effectiveness of practice & specify software requirements to enhance work.	Learnt about computer skills in year one
6.4	Extend communication to include therapeutic communication skills to be able to tackle psycho social issues	Building skills to ask directed questions about work to understand obstacles to return to work and to	Able to ask directed questions about work to understand obstacles to return to work and to develop	Developing and practicing therapeutic techniques eg cognitive behavioural approach, or motivational	Practicing therapeutic techniques eg cognitive behavioural approach, or motivational interviewing, mediation	Learnt in therapeutic exercises one and two in year two and three respectively

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	around work and health	develop shared goals to overcome the obstacles	shared goals to overcome the obstacles	interviewing, mediation skills) to recognise beliefs and behaviours that are inconsistent and to address these with the individual or other relevant stakeholders	skills) to recognise beliefs and behaviours that are inconsistent and to address these with the individual or other relevant stakeholders Undertakes research and development into effective communication in OH Extends the knowledge and evidence base of OH practice	
6.5	Build relationships in an organisation to facilitate rehabilitation of individuals and the health and wellbeing of the workforce	Builds effective working relationships with key people within the organisation	Demonstrates ability to build relationships and to work effectively within that organisation as a whole	Builds strong relationships within an organisation and demonstrates the ability to influence decisions around the health and wellbeing of the workforce	Demonstrates multilevel relationships within the organisation including senior management / board level and demonstrates the ability to provide insights and information to influence organisational change	Not explicitly entailed in the curricula but is an expected outcome – This is met by objective 4 in use of OHS services.
6.6	Communicating with the workplace and with other relevant stakeholders on a range of issues eg advice on fitness for work and recommendations for transitional work arrangements or modifications	Build skills to report information and to give advice on issues relevant to OH practice that is in line with ethical guidelines and legislative framework	Reports on complex issues coherently providing relevant advice and information to appropriate stakeholders	Critically appraise the reports of others providing relevant feedback Develops quality assured methods of reporting to ensure consistent and accurate reporting on issues across a team	Provides a range of reports to the organisation at a high level to influence strategy in terms of health and wellbeing of the workforce	Roles in promotion of health and safety, as well as services and functions related to work environment

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	Domain 7 Helping others learn & develop	A	B	C	D	
7.1	The behaviour, knowledge & skills required to: • assess the learner's needs & preferences; design materials/experience s that facilitate learning & development;	with guidance, plan & deliver learning activities to a specified range of individuals/groups within Occupational Health.	design, plan & deliver learning sessions of activities & opportunities to a range of audiences in Occupational Health with similar levels of knowledge & expertise.	design, plan & deliver learning activities & opportunities to a range of audiences in Occupational Health & beyond with different levels of knowledge & expertise.	design, plan & deliver learning activities & opportunities to a wide range of audiences in Occupational Health & beyond with different levels of knowledge & expertise.	Promotion of health and safety in work environment. Management and prevention of Occupational diseases and accidents
7.2	• deliver materials/experiences that facilitate learning;	With guidance apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs.	select & apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs.	select & apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs & promote a change in behaviour and practice	develop & apply evidence based approaches to learning & teaching to meet learners' needs & promote a change in practice. Innovation and research	Not explicitly outlined in the curriculum but is an expected outcome. The tutor facilitated education by specific materials to determine WRMDs
7.3	• evaluate the effectiveness of the learning & development experience	with guidance, predetermined criteria to assess a learner's performance & progress & provide them with appropriate feedback	use predetermined criteria to assess a learner's performance & progress, & provide them with constructive feedback.	select & apply appropriate assessment tools to evaluate a learner's performance & progress, & provide them with constructive feedback	develop & apply evidence based approaches to assess a learner's performance & progress, & provide them with constructive feedback	Not explicitly addressed in the curriculum as is supposed to be part of industrial objectives
7.4	• reflect on the learning & development process	with guidance, reflect on learning & teaching performance & use this evaluation to inform future practice.	reflect on learning & teaching performance & use this evaluation to inform future practice.	critically reflect on learning & teaching performance & use this evaluation to inform future practice	critically reflect on learning & teaching performance & use this evaluation to inform future practice (self & others).	Reflection is not being captured in the curriculum but the implementer addressed this aspect

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7,5	• Demonstrate	Building capability to	Demonstrate work	Identifies research	Undertake research and	From Kinesiology knowledge and the education aspect in the course content.

	recommended work methods to individuals and groups using own body (bodymechanics) and equipment	demonstrate work methods and use of work tools to individuals and groups using efficient techniques	methods and use of work tools to individuals and groups using efficient techniques Supervises programmes delivered by others	regarding work methods and use of work tools to inform education programmes and uses this to improve practice	development into new ways to demonstrate work methods and use of work tools Extends the knowledge and evidence base of OH practice	
	Domain 8 Managing self & others	A	B	C	D	
8.1	Managing self & others the behaviour, knowledge & skills required to: • plan, prioritise & organise personal workload/activities	behaves in accordance with current professional codes & practices seeking guidance where appropriate.	exercise autonomy & initiative in accordance with current professional codes & practices.	exercise autonomy & initiative in complex & unpredictable situations at the limits of current professional codes & practices.	Has authority to exercises high level of autonomy & initiative in complex & unpredictable situations not addressed by current professional codes & practice.	Roles and policies in promotion of health and safety
8.2	• Plans use of resources to fulfil work requirements & commitments	take some responsibility for the work of others (e.g. delegation of tasks to support workers) & for a range of resources	take responsibility for the work of others (e.g. support workers, students) & for a range of resources.	take managerial responsibility for the work of others & for a significant range of resources.	take significant managerial responsibility for the work of others and/or for a significant range of resources.	Not explicitly outlined in the curriculum but is an expected outcome

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8.3	• adapt personal behaviour & actions in response to the demands of the situation;	modify personal behaviour & actions in response to feedback to meet the demands of the situation & to enhance own performance	becoming increasingly self-aware & able to modify personal behaviour & actions to meet the demands of the situation & to enhance own performance.	modify personal behaviour & actions to meet the demands of the situation & to enhance own & others' performance.	modify personal behaviour & actions 'inaction' to meet the demands of the situation & to maximise the impact of own & others' performance.	Not explicitly outlined in the curriculum but is an expected outcome
8.4	• evaluate the effectiveness of performance (own & others);	with guidance, reflect on personal performance & use this evaluation to inform	reflect on personal performance & use this evaluation to inform future practice.	critically reflect on own & others' performance & use this evaluation to	critically reflect on own & others' performance & use this evaluation to inform future	Not explicitly outlined in the curriculum but is an expected outcome. Reflection has not been captured at any point
		future practice.		inform future practice.	practice (own & others).	
8.5	• lead & inspire others.	assists in implementing agreed plans designed to bring about change, development and/or new thinking within Occupational Health services.	exercise leadership and/or initiative that contributes to change, development and/or new thinking within Occupational Health services.	exercise leadership with responsibility for decision making designed to bring about change & development within Occupational Health services.	exercise leadership with accountability for decision making & development across a range of contexts, including those within which there is a high degree of uncertainty & a need to take innovative approaches to Occupational Health service delivery & development.	Not explicitly outlined in the curriculum but is an expected outcome

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	Domain 9 Promoting integration & teamwork	A	B	C	D	
9.1	the behaviour, knowledge & skills required to: • build, maintain & promote effective interpersonal relationships;	Is aware of professional networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	participates in professional/policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	support, lead & develop local/regional professional & policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	support, lead & develop regional/national professional & policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice. .	Types of occupational health services offered
9,2	• work collaboratively with others to achieve shared goals	work effectively with others to meet the responsibilities of professional practice in Occupational Health.	work effectively with others to meet the responsibilities of professional practice, & to identify situations where collaborative approaches could add value to practice in Occupational Health	work effectively with others to meet the responsibilities of professional practice, & to develop collaborative approaches that add value to practice in Occupational Health.	work effectively with others to meet the responsibilities of professional practice, & use innovative collaborative approaches that add value to & develop practice in Occupational Health	Types of occupational health services offered
9.3	• work with others to maintain & develop the effective performance of teams/networks in Occupational Health	reflect on experiences of collaborative working, & with guidance, use this information to identify solutions and contribute to the effective performance of teams/networks in Occupational Health	reflect on experiences of collaborative working, & use this information to identify & implement solutions to maintain & develop the effective performance of teams/networks in Occupational Health	critically reflect on experiences of collaborative working & use this information to identify & implement creative solutions to maintain & develop the effective & efficient performance of teams/networks in Occupational Health.	critically reflect on experiences of collaborative working & use this information to identify & implement innovative solutions to maintain & develop the effective & efficient performance of teams/networks in Occupational Health.	No aspect of reflection is featured in the curriculum

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	Domain 10	A	B	C	D	
	Keeping customer focus at the centre of practice					
10.1	the behaviour, knowledge & skills required to: provide a professional and equitable service to two clients who may have conflicting needs; the Organsiation (customer) and the Worker (individual)	Recognises potential tensions /conflicts between the worker and the organisation and seeks assistance from a senior or peer	Recognises and manages potential tensions /conflicts between the worker and the organisation Seeks assistance in complex, unpredictable situations	Manages potential tensions /conflicts between the worker and the organisation in complex, unpredictable contexts. Work effectively with others to meet the responsibilities of professional practice	Manages potential tensions /conflicts between the worker and the organisation in complex, unpredictable contexts. Work effectively with others to meet the responsibilities of professional practice, & uses innovative collaborative approaches that add value to & develop practice in Occupational Health	Present in Historical Background, concepts and principles of OHS as well as that of Vulnerable groups
10.2	demonstrate respect for the individual and organisation;	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures & best practice.	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, & procedures, & by working to promote best practice in both clinical and occupational health management	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures, & by working to inform & promote legislation, policies, procedures & best practice both clinical and occupational health management	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures, & by working to inform, develop & promote legislation, policies, procedures & best practice both clinical and occupational health management	Outcomes 1 and 2 of the course outline

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10.3	provide information & support that enables an organisation and /or an	information & support that empowers an individual to make an	information & support that empowers an individual to make an	provide information & support that empowers an individual to make an	provide information & support that empowers an individual to make an	Outcome two and three of the course outline
	individual to make informed choices;	informed choice & to exercise their autonomy in accordance with legislation, policies, procedures & best practice.	informed choice & to exercise their autonomy in accordance with legislation, policies & procedures, & work to promote best practice	informed choice & to exercise their autonomy in accordance with legislation, policies, procedures, & work to inform & promote legislation, policies, procedures & best practice.	informed choice & to exercise their autonomy in accordance with legislation, policies, procedures, & work to inform, develop & promote legislation, policies, procedures & best practice.	
10.4	Involve the organisation and individual in a participative approach to the shaping the design & delivery of their service	Involve customers and clients in shaping the design & delivery of their service by working in accordance with policies & processes that promote a culture of service user involvement.	involve customers and clients in shaping the design & delivery of their service, & work with others to implement & support policies & processes that promote a culture of service user involvement.	involve customers and clients in shaping the design & delivery of their service, & work with others to critically appraise user involvement, & to develop & implement policies, & processes that promote a culture of service user involvement. Participatory approach	actively involve customers and clients in shaping the design & delivery of their service, & work with others to critically appraise user involvement, & to develop policies & processes that promote a culture of service user involvement that contribute to the development of best practice.	Outcome two and three of the course outline though maybe not categorically as is required by A

	Domain 11 Respecting & promoting diversity	A	B	C	D	

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11.1	the behaviour, knowledge & skills required to: respect & value diversity;	respect & value diversity by working in accordance with legislation, policies, procedures & best practice.	respect & value diversity by working in accordance with legislation, policies, procedures, & to promote best practice.	respect & value diversity by working to inform & promote legislation, policies, procedures & best practice.	respect & value diversity by working to inform, develop & promote legislation, policies, procedures & best practice.	Outcome two of the course
11.2	examine own values & principles to avoid discriminatory behaviour & to minimise the potential negative effects of individual differences;	identify & articulate their own values & principles, & with guidance, evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, critically evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, critically evaluate how these may differ from other individuals/groups, & use this understanding to maintain excellent standards of practice even in situations of personal incompatibility.	Not explicitly outlined in the curriculum
11.3	work constructively with people of all backgrounds & orientations;	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices.	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & with guidance, support individuals who need assistance in exercising their rights	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & support individuals who need assistance in exercising their rights.	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & support individuals whose rights have been compromised	Not explicitly outlined in the curriculum- by objectives 1, 2 & 4
11.4	promote a non-discriminatory culture	identify discriminatory behaviour & take	identify & challenge discriminatory practices	identify & challenge discriminatory practices	identify & actively challenge discriminatory	Not explicitly outlined in the curriculum

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	that values diversity, & enables individuals to contribute & realise their full potential.	appropriate action to challenge this behaviour.	& work with others to implement & promote policies & processes that promote a nondiscriminatory culture.	& work with others to critically appraise current practice, & to develop & implement policies & processes that promote a nondiscriminatory culture	practices & work with others to critically appraise current practice, & to develop policies & processes that promote a nondiscriminatory culture that contribute to the development of best practice.	

Behaviours, knowledge & skills for PROBLEM-SOLVING & DECISION MAKING (Domains 12,13,14,15,16,17)

	Domain 12 Ensuring quality	A	B	C	D	
12.1	Ensuring quality the behaviour, knowledge & skills required to: fulfil the requirements of the legal policy and professional frameworks governing practice in Occupational Health;	fulfil the requirements of the legal & policy frameworks governing professional practice in OH .	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to promote best practice.	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to inform & promote legislation, policies, procedures & best practice.	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to inform, develop & promote legislation, policies, procedures & best practice.	Outcome two of the course
12.2	recognise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action;	with guidance, recognise situations where the effectiveness, efficiency & quality of a service are compromised, & with support, take appropriate action to challenge the situation	recognise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & with guidance, take appropriate action to challenge the situation	recognise & critically appraise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action to resolve the situation	recognise & critically appraise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action to resolve the situation & contribute	Outcome two of the course also in the course content the aspect of learning about the types of occupational health services

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12.3	critically reflect on practice in the context	with guidance, reflect on personal	reflect on personal performance & with	critically reflect on own & others' performance &	critically reflect on own & others' performance	No provision for reflection in the curiculum
	of quality	performance & use this evaluation to enhance the effectiveness, effic iency & quality of future practice.	guidance, use this evaluation to enhance the effectiveness, efficiency & quality of future practice	use this evaluation to enhance the effectiveness, efficiency & quality of future practice	& use this evaluation to enhance the effectiveness, efficiency & quality of future practice (own & others).	

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	Domain 13 Improving and developing services	A	B	C	D	
13.1	Improving & developing services the behaviour, knowledge & skills required to: critically evaluate practice & use this appraisal to inform Occupational Health service improvement, development & redesign	with guidance, critically evaluate practice, & share the outcome of this appraisal with relevant personnel	critically evaluate practice, & with guidance, use this appraisal in combination with knowledge of best practice & political awareness to inform Occupational Health service improvement.	critically evaluate practice & use this appraisal in combination with knowledge of best practice & political awareness to identify opportunities for Occupational Health service improvement & development.	critically evaluate practice & use this appraisal in combination with knowledge of best practice & political awareness to identify opportunities for Occupational Health service improvement, development & redesign.	Outcome two and three of the course also in the course content the aspect of learning about the types of occupational health services
13.2	develop innovative & sustainable recommendations to improve the quality of the service in Occupational Health	use a problem-solving approach to develop safe & effective recommendations for improving the quality of Occupational Health practice in predictable contexts.	use problem-solving approaches to develop safe, effective & efficient recommendations for improving the quality of Occupational Health practice in increasingly unpredictable contexts.	use problem-solving approaches to develop original, safe, effective & efficient recommendations for improving the quality of Occupational Health practice in unpredictable contexts.	use problem-solving approaches to develop original, effective & efficient approaches that demonstrate evidence of positive risk taking, for improving the quality of OH practice in unpredictable & normally specialised contexts.	Outcome two and three of the course also in the course content the aspect of learning about the types of occupational health services
13.3	plan, facilitate & manage change;	contribute to change & development within the profession or Occupational Health at a local level.	contribute to change & development within Occupational Health at a local level.	make an identifiable contribution to change & development within Occupational Health at a local & regional level.	make an identifiable contribution to change & development within Occupational Health & beyond – at a national or international level.	Outcome two and three of the course also in the course content the aspect of learning about the types of occupational health services
13.4	critically evaluate the process & outcome		reflect on the change process, & use this information to appraise the outcome & inform future practice	critically reflect on the change process, & use this information to appraise the outcome & inform future practice	critically reflect on the change process, & use this information to appraise the outcome & inform future practice	Not outlined in the curriculum however was implemented

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	Domain 14 Lifelong learning (CPD)	A	B	C	D	
14.1	Lifelong learning CPD the behaviour, knowledge & skills required to: assess personal learning & development needs & preferences;	demonstrate selfawareness of learning preferences, & with guidance can identify personal learning & development needs	demonstrate increasing self-awareness of learning preferences, & with guidance can identify personal learning & development needs	demonstrate strong selfawareness of learning preferences, & with minimal guidance can identify personal learning & development needs	demonstrate strong selfawareness of learning preferences, & can independently identify personal learning & development needs	Outcome two and three of the course
14.2	• develop & engage in a personalised plan designed to meet those needs;	independently advance personal knowledge, understanding & skills in line with identified learning needs, & with guidance & support, can use a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs, & with guidance, can use a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs by making appropriate use of a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs by making appropriate use of a wide variety of learning & development resources & opportunities.	Not outlined in the curriculum
14.3	• reflect on the learning process;	reflect on personal learning & development, & with guidance & support, use this information to inform the planning & management of future learning & development experiences.	reflect on personal learning & development, & with guidance, use this information to inform the planning & management of future learning & development experiences.	critically reflect on personal learning & development, & with guidance, use this information to inform the planning & management of future learning & development experiences.	critically reflect on personal learning & development & use this information to inform the planning & management of future learning & development experiences.	Not outlined in the curriculum

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14.4	• document the process	with guidance & support, record the outcome of personal learning & development in a format that meets personal preferences & professional requirements.	with guidance, record the outcome of personal learning & development in a format that meets personal preferences & professional requirements.	record the outcome of personal learning & development in a format that meets personal preferences & professional requirements	record the outcome of personal learning & development in a format that meets personal preferences & professional requirements	Not outlined in the curriculum however was implemented in the form of reflection
	Domain 15 Practice decision	A	B	C	D	
	making					
15.1	Practice decision making the behaviour, knowledge & skills required to: collect information from a variety of sources relevant to the decision making situation;	efficient & effective use of a wide range of routine & some specialised approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a wide range of routine & advanced approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a range of advanced & specialised approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a broad range of advanced & specialised approaches & techniques to systematically collect information from a wide variety of sources relevant to the situation	Outcome three of the course outline
15.2	process & analyse the information collected;	process & critically analyse information in complex & predictable situations where data/information comes from a range of sources or is incomplete.	process & critically analyse information in complex & unpredictable situations where data/information comes from a range of sources or is incomplete.	process & critically analyse information in complex & unpredictable situations where data/information is incomplete or consistent.	process & critically analyse information in complex, unpredictable & normally specialised situations where data/information is incomplete or inconsistent.	Outcome three of the course outline

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15.3	draw reasoned conclusions & make informed judgements to address issues/resolve problems in Occupational Health practice; .	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health settings.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health settings.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make judgements to address ethical & professional issues in Occupational Health where situations are at the limits of current professional codes & practices.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health where situations are not addressed by current professional codes & practice.	Outcome three as well as one and two of the course outline
15.4	critically evaluate the decision making process	with guidance, reflect on their decision making process & use this evaluation to appraise the outcome & to inform	reflect on their decision making process & use this evaluation to appraise the outcome & to inform future	critically reflect on their decision making process & use this evaluation to appraise the outcome & to inform future	critically reflect on their decision making process & use this evaluation to appraise the outcome & to inform future	No provision for reflection in the curriculum but it was implemented
		future practice.	practice.	practice.	practice.	

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	Domain 16 Researching & evaluating practice (audit)	A	B	C	D	
16.1	Researching & evaluating practice audit the behaviour, knowledge & skills required to: • design, plan, conduct & manage the research/evaluation process;	with guidance, plan, conduct & manage evaluation & research projects to address a specific issue arising from Occupational Health practice.	plan, conduct & manage evaluation & research projects to address specific issues arising from Occupational Health practice	design, plan, conduct & manage evaluation & research projects to address problems & issues arising from Occupational Health practice.	design, plan, conduct & manage evaluation & research projects to address new problems & issues arising from Occupational Health practice.	All the course objectives as well as the research skills learnt in COBES
16.2	• use methods of enquiry to collect & interpret data in order to address problems or issues arising from Occupational Health practice;	with guidance, apply a range of standard research methods/tools of enquiry showing an appreciation of related ethical considerations.	becoming increasingly confident to apply a range of standard research methods/tools of enquiry showing an appreciation of related ethical considerations.	apply a range of standard & specialised research methods/tools of enquiry showing a detailed understanding of related ethical considerations	apply a range of standard & specialised research methods/tools of enquiry, contributing to the development of new techniques or approaches, & showing a detailed understanding of related ethical considerations	All the course objectives as well as the research skills learnt in COBES. Some special tools were used during this practise from Ausi but not present in the curriculum
16.3	• critically evaluate the research/evaluation process;	with guidance, reflect on the research process, & use this information to appraise the project & inform future practice	reflect on the research process, & use this information to appraise the project & inform future practice	critically reflect on the research process, & use this information to appraise the project & inform future practice.	critically reflect on the research process, & use this information to appraise the project & inform future practice	No provision for reflection in the curriculum but it was implemented

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16.4	• communicate the outcome of the research/evaluation	identify, & with support, promote the practical & professional applications	identify & promote the practical & professional applications of	identify & promote the practical & professional applications of	identify & promote the practical & professional applications of	All the course objectives as well as the research skills learnt in COBES.
	process.	of completed work, & seek opportunities to share & disseminate findings to both specialist & nonspecialist audiences	completed work, & seek opportunities to share & disseminate findings to both specialist & nonspecialist audiences.	completed work, & actively seek opportunities to share & disseminate findings to a range of audiences with different levels of knowledge & expertise	completed work, & actively create opportunities to share & disseminate findings to a wide range of audiences with different levels of knowledge & expertise	

	Domain 17 Using evidence to lead practice	A	B	C	D	
17.1	Using evidence to lead practice evidence based practice the behaviour, knowledge & skills required to: • systematically search for evidence;	with guidance, use a range of approaches & techniques to systematically search for evidence from a variety of sources relevant to the situation.	use a range of approaches & techniques to systematically search for evidence from a variety of sources relevant to the situation	efficient & effective use of a range of approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a broad range of approaches & techniques to systematically search for information from a wide variety of sources relevant to the situation	All the course objectives as well as the research skills learnt in COBES.
17.2	• critically appraise evidence & use the information to address problems & issues arising in Occupational Health practice.	critically evaluate current research & scholarship & with guidance, use the appraisal to address specific issues arising in Occupational Health	critically evaluate current research & scholarship & use the appraisal to address specific issues arising in Occupational Health.	critically evaluate current research & scholarship & use the appraisal to address issues which are at the forefront or informed by developments at the forefront of Occupational Health.	critically evaluate current research & scholarship & use the appraisal to address new problems & issues arising in Occupational Health.	All the course objectives as well as the research skills learnt in COBES.

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APPENDIX K: INFORMATION SHEET (DELPHI STUDY)

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-9592542, Fax: 27 21-9591217

E-mail: mwarner@uwc.ac.za

INFORMATION SHEET

Project Title: DEVELOPMENT OF STANDARDS FOR UNDERGRADUATE OCCUPATIONAL HEALTH IN A PHYSIOTHERAPY CURRICULUM: A CASE OF KENYA

What is this study about?

This is a research project being conducted by Nancy Eileen N. Wanyonyi at the University of the Western Cape. We are inviting you to participate in this research project because you match the characteristics of the participants we are looking for in this research by virtue of your knowledge and expertise in your field of practice. The purpose of this research project is to develop standards of competency, teaching and learning strategies, as well as assessment strategies focusing on occupational health for an undergraduate physiotherapy curriculum in Kenya.

What will I be asked to do if I agree to participate?

You will be asked to participate in several rounds of Delphi study which will be conducted to determine a range of opinions and explore consensus on the competencies needed by physiotherapists in occupational health as well as the teaching, learning and assessment strategies used for occupational health in an undergraduate Physiotherapy curriculum.

Would my participation in this study be kept confidential?

We will do our best to keep your personal information confidential. Only the researcher and the research supervisor will know that you participated in the study. To help protect your identity and ensure confidentiality, your answers will be locked in a filing cabinet and storage areas using identification codes only on data forms and using password-protected computer files. The surveys are anonymous and will not contain information that may personally identify you. If we write a report or article about this research project, your identity will be protected to the maximum extent possible.

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In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning abuse or neglect of disabled or other vulnerable adults that may need to be disclosed to comply with legal requirements or professional standards.

What are the risks of this research?

There are no known risks associated with participating in this research project.

What are the benefits of this research?

Studies have shown that considerations must always be taken for what should be included in the basic curriculum and in further education. The overall results of this study will help the investigator learn more about the situational analysis of the occupational health content in the undergraduate curriculum of the universities offering a degree course in Physiotherapy, the competencies needed by physiotherapists to practice in occupational health as well as the teaching, learning and assessment strategies that could be used in an undergraduate curriculum to develop competencies relating to occupational health. This will in return enable the investigator to design a draft curriulum content for an occupational health module in the undergraduate Physiotherapy programme in Kenya. The benefits of this research to you includes having played an significant role in determining the content to be included in the basic undergraduate curriculum that addresses the health care needs of the society. We hope that, in the future, the general public might benefit from this study through improved awareness of their role in preventing work-related musculoskeletal disorders. This will in return decrease the resource burden placed on health professionals in treating these disorders which could have been prevented and as a result enhance productivity at the workplace through decreased sickness absence and minimise costs spent on treatment of work-related injuries.

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Do I have to be in this research and may I stop participating at any time?

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.

Is any assistance available if I am negatively affected by participating in this study?

Action will be taken to refer any participants requiring further attention to the necessary personnel.

What if I have questions?

This research is being conducted by ***Nancy E .N. Wanyonyi, Physiotherapy Department*** the University of the Western Cape. If you have any questions about the research study itself, please contact ***Nancy Wanyonyi*** at: University of Western Cape, Private Bag X17, Bellville 7535, Tel. +254721541080

http://etd.uwc.ac.za/

E-mail: wanyonyi_nancy@yahoo.com

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Head of Department: Dr. Nondwe Mlenzana

Dean of the Faculty of Community and Health Sciences: Prof. Anthea Rhoda

University of the Western Cape

Private Bag X17

Bellville 7535

This research has been approved by the University of the Western Cape's Senate Research Committee and Ethics Committee.

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APPENDIX L: CONSENT FORM DELPHI STUDY

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-9592542, Fax: 27 21-9591217

E-mail: mwarner@uwc.ac.za

Title of Research Project: DEVELOPMENT OF STANDARDS FOR UNDERGRADUATE OCCUPATIONAL HEALTH IN A PHYSIOTHERAPY CURRICULUM: A CASE OF KENYA

The study has been described to me in language that I understand and I freely and voluntarily agree to participate. My questions about the study have been answered. I understand that my identity will not be disclosed and that I may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way.

Participant's name……..

Participant's signature……

Witness…….

Date……

Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study coordinator:

Study Coordinator's Name: Nancy Eileen Nekoye Wanyonyi
University of the Western Cape
Private Bag X17, Belville 7535
Telephone: (021) 959 -2542

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Cell: +254721541080

Fax: (021) 959-1217

Email: wanyonyi_nancy@yahoo.com

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APPENDIX M: DELPHI STUDY QUESTIONNAIRES

M1: DELPHI STUDY QUESTIONS- ROUND ONE

Participant identification number _____

Title: DEVELOPMENT OF STANDARDS FOR UNDERGRADUATE OCCUPATIONAL HEALTH CONTENT IN A PHYSIOTHERAPY CURRICULUM: A CASE OF KENYA

Please complete the information below if you have agreed to participate in the study.

A: Demographic Characteristics

Age: _____

Gender: _____

Level of qualification: _____

Current profession: _____

Years of general practice in your profession: _____

Years of Practice in Occupational Health: _____

B: **Part One Delphi Study Questions**

1 What are the competencies needed by physiotherapists working in occupational health?

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DELPHI STUDY QUESTIONNAIRE PART TWO

DELPHI STUDY QUESTIONS –ROUND ONE

Participant identification number _____

Title: DEVELOPMENT OF STANDARDS FOR UNDERGRADUATE OCCUPATIONAL HEALTH CONTENT IN A PHYSIOTHERAPY CURRICULUM: A CASE OF KENYA

Please complete the information below if you have agreed to participate in the study.

A: Demographic Characteristics

Age: _____

Gender: _____

Level of qualification: _____

Years of general practice in your profession: _____

Current profession: _____

Years of Practice in Occupational Health: _____

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B: **Part Two Delphi study Questions**

1. What content needs to be included in the occupational health module in the undergraduate physiotherapy curriculum?
2. What are the teaching strategies that need to be included in the occupational health module in the undergraduate physiotherapy curriculum?
3. What are the learning strategies that need to be included in the occupational health module in the undergraduate physiotherapy curriculum?
4. What are the assessment strategies that need to be included in the occupational health module in the undergraduate physiotherapy curriculum?

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M2: DELPHI STUDY QUESTIONS- ROUND TWO

Participant identification number _____

Title: DEVELOPMENT OF STANDARDS FOR UNDERGRADUATE OCCUPATIONAL HEALTH IN A PHYSIOTHERAPY CURRICULUM: A CASE OF KENYA

Part One Delphi Study Questions

Below are the identified competencies needed by physiotherapists working in Occupational Health during the first round of the delphi study. Please indicate to what extent you agree or disagree with the information indicated below.

Rating	1	2	3	4	5	6
Meaning	Completely disagree	Strongly disagree	Somehow disagree	Somehow agree	Strongly agree	Completely agree

1.	**Knowledge in Musculoskeletal Health**	
	Knowledge of human anatomy	1 2 3 4 5 6
	Knowledge of physiology	1 2 3 4 5 6
	Knowledge in disease, disorder and dysfunction	1 2 3 4 5 6
	Understanding of prognosis, recovery patterns and timeframes for musculoskeletal conditions	1 2 3 4 5 6
2.	**Knowledge in Biomechanics, Ergonomics & Injury prevention**	
	Knowledge of biomechanics and ergonomics in various workplaces	1 2 3 4 5 6
	Understanding the physical and psychological effort required to perform a task	1 2 3 4 5 6
	Understanding the risk factors for musculoskeletal injuries	1 2 3 4 5 6
	Understanding and analyzing the epidemiology of work-related injuries	1 2 3 4 5 6
	Prevention of musculoskeletal injuries	1 2 3 4 5 6
3.	**Knowledge of functional outcome measures**	
	Understanding best practice evidence	1 2 3 4 5 6
	Skills in assessment of specific workplace injuries	1 2 3 4

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		5 6
	Knowledge of risk management tools	1 2 3 4 5 6
	Understanding of monitoring and evaluation strategies	1 2 3 4 5 6
4.	**Conflict resolution with variety of stakeholders**	
	Written and oral communication skills	1 2 3 4 5 6
	Ability to write for different audiences e.g. legal, employer, insurer, other health professionals	1 2 3 4 5 6
	Good listening skills	1 2 3 4 5 6
	Negotiation and mediation skills	1 2 3 4 5 6
	Need to make a business case for occupational health &motivate change of behavior	1 2 3 4 5 6
5.	**Working in teams**	
	Understanding different stakeholder perspectives and rights	1 2 3 4 5 6
	Develop understanding of organizational factors and impact on health and work	1 2 3 4 5 6
	Competencies in offering relevant professional advice to employee and other team members	1 2 3 4 5 6
	Rehabilitation of work done in consultation with other stakeholders	1 2 3 4 5 6
	Skills for interaction with stakeholders e.g. team player	1 2 3 4 5 6
6.	**Occupational health theory and practice**	
	Understanding the role of work (paid & unpaid) in people's lives	1 2 3 4 5 6
	Commercial knowledge of occupational health physiotherapy	1 2 3 4 5 6
	Good administrative skills	1 2 3 4 5 6
	Knowledge of the bio-psychosocial model and its application to work and disability	1 2 3 4 5 6
	Critical analysis of various occupational health needs	1 2 3 4 5 6
	Understanding impact of physical, psychosocial and organizational factors on injury and recovery	1 2 3 4 5 6
	Knowledge of how to prevent and manage work-related disorders	1 2 3 4 5 6
	Knowledge on how to evaluate effect of interventions in individuals and groups	1 2 3 4 5 6
	Professional behavior: confidentiality, objective practice, flexibility, self-reflection, assertiveness, responsible, impartiality, using evidence to lead practice, honesty, integrity, compassion, caring, accountability for actions, commitment to excellence	1 2 3 4 5 6
	Appropriate rehabilitation skills including: work conditioning, work hardening,	1 2 3 4

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	other work options or vocational options following injury, providing solutions of different work aids and equipment	5 6
	Focusing on the usefulness of interventions for the service user (patient/worker)	1 2 3 4 5 6
	Keep up to date with evidence based practice in occupational health	1 2 3 4 5 6
	Basics on fitness for duty	1 2 3 4 5 6
7.	**Knowledge of the acts and regulations of the country's law and workers**	
	Knowledge of OHS legislation	1 2 3 4 5 6
	Knowledge of other relevant legislation including case law, privacy and industrial relations	1 2 3 4 5 6
	Knowledge of occupational health ethical practice	1 2 3 4 5 6
8.	Skills for teaching and training others about health, work, ergonomics and prevention of musculoskeletal injuries	1 2 3 4 5 6
9.	Good clinical knowledge of mental health	1 2 3 4 5 6
10.	Knowledge of the neurophysiology of pain	1 2 3 4 5 6
11.	Disaster management and mitigation strategies	1 2 3 4 5 6

Any other observation can be noted here_____

_____

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DELPHI STUDY QUESTIONS- ROUND TWO

Participant identification number _____

Title: DEVELOPMENT OF STANDARDS FOR UNDERGRADUATE OCCUPATIONAL HEALTH IN A PHYSIOTHERAPY CURRICULUM: A CASE OF KENYA

Part Two Delphi Study Questions

Please indicate to what extent you agree or disagree with the information indicated in the four sections listed below regarding different aspects of the occupational health module in the undergraduate physiotherapy curriculum.

Rating	1	2	3	4	5	6
Meaning	Completely disagree	Strongly disagree	Somehow disagree	Somehow agree	Strongly agree	Completely agree

I. Below is the identified content to be included in the occupational health module in the undergraduate physiotherapy curriculum.

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1.	**Occupational health and safety topics**	
	Definitions and descriptions of what occupational health is all about	1 2 3 4 5 6
	Occupational health stakeholders and their roles	1 2 3 4 5 6
	The unique role of the physiotherapist in occupational health	1 2 3 4 5 6
	Wellness at work and effects of sedentary behavior	1 2 3 4 5 6
	Evidence for relationship between work and injury e.g. biomechanics, ergonomics, occupational hazards	1 2 3 4 5 6
	Functional and structural anatomy, physiology,	1 2 3 4 5 6
	Epidemiology and types of occupational disorders and injuries	1 2 3 4 5 6
	Economics of workplace injuries	1 2 3 4 5 6
	Workplace structure and organization	1 2 3 4 5 6
	Assessment and safety audits of working environment	1 2 3 4 5 6
	Ethics related to occupational health and safety	1 2 3 4 5 6
	Models of the labor market	1 2 3 4 5 6
	Practical: Evidence based work interventions	1 2 3 4 5 6
	Research in Occupational health	1 2 3 4 5 6
	Models of occupational health	1 2 3 4 5 6
	Bio-psychosocial model and occupational psychology	1 2 3 4 5 6

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	Preventive measures for work-related disorders	1 2 3 4 5 6
	Work disability models	1 2 3 4 5 6
2.	Return to work process	1 2 3 4 5 6
	Business case for good rehabilitation and early return to work	1 2 3 4 5 6
3.	Rehabilitation for work readiness e.g. work hardening programs	1 2 3 4 5 6
	Management of workplace incidents, accidents and injuries	1 2 3 4 5 6
4.	**Assessment of risks for injury and prioritize hazards**	
	How to conduct workplace risk assessment, identify hazards and risk factors and control them	1 2 3 4 5 6
	Assessment procedures for occupational health and safety	1 2 3 4 5 6
	Medical examinations, management of sick employees and assessment of liabilities	1 2 3 4 5 6
	Select and accurately use a range of clinical outcome measures in OH service e.g. Quick exposure check (QEC), ICF	1 2 3 4 5 6
	Patient and staff safety as well as safety in the general workplace environment	1 2 3 4 5 6
	Monitoring and evaluation for occupational health strategies	1 2 3 4 5 6
5.	Communication techniques	1 2 3 4 5 6
	Negotiation and mediation skills	1 2 3 4 5 6
6.	Medico-legal reports and compensation	1 2 3 4 5 6
	Application of Work Injury Benefits Act (WIBA) 2007 during management of workplace injuries	1 2 3 4 5 6
	Leadership and governance	1 2 3 4 5 6

Any other observation can be noted here_____

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_____

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_____

II. Listed below are the teaching strategies that need to be included in the occupational health module in the undergraduate physiotherapy curriculum.

1.	Lectures	1 2 3 4 5 6
2.	Tutorials	1 2 3 4 5 6
3.	Individual and group discussions	1 2 3 4 5 6
	Provision of scenarios and case studies	1 2 3 4 5 6
4.	Collaborative learning	1 2 3 4 5 6
5.	Guest speakers e.g. formal lectures from experts in occupational health	1 2 3 4 5 6
6.	Conferences and workshops	1 2 3 4 5 6
7.	Industrial attachment for practical experience in work place	1 2 3 4 5 6

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	assessment and management	
8.	Provision of coaching and mentoring opportunities	1 2 3 4 5 6
9.	Role playing for simulation of work scenarios	1 2 3 4 5 6
10.	Use of videos of work settings and discussion of work processes	1 2 3 4 5 6
11.	Research	1 2 3 4 5 6
12.	Occupational health report planning and writing	1 2 3 4 5 6
13.	Pre-course reading material with independent information e.g. work legislation, back pain & other body part protocols	1 2 3 4 5 6
14.	Modules of disaster management	1 2 3 4 5 6
15.	Assignments	1 2 3 4 5 6
16.	Examination	1 2 3 4 5 6

Any other_____

_____

_____

_____

III. Listed below are the learning strategies that need to be included in the occupational health module in the undergraduate physiotherapy curriculum.

1.	Lectures from various experts	1 2 3 4 5 6
2.	Group discussions	1 2 3 4 5 6
3.	Logbooks/journal entries to monitor learning	1 2 3 4 5 6
4.	Court procedures and insurance attachment exposures	1 2 3 4 5 6
5.	Clinical and industrial placements	1 2 3 4 5 6
6.	Student-centered activities	1 2 3 4 5 6
7.	Pre-reading activities e.g. course work with clear goals for the course	1 2 3 4 5 6
8.	Self-directed learning	1 2 3 4 5 6
9.	Independent lifelong learning	1 2 3 4 5 6
10.	Individual reflections following workplace activities	1 2 3 4 5 6
11.	Active student engagement throughout the course	1 2 3 4 5 6
12.	Student assignment e.g. own literature review	1 2 3 4 5 6
13.	Research, report writing and presentations	1 2 3 4 5 6
14.	Reinforcement of physiotherapy competence in all aspects of new-graduate practice besides occupational health	1 2 3 4 5 6
15.	Oral/written communication with stakeholders	1 2 3 4 5 6
16.	Basic understanding of legislation & societal pressures	1 2 3 4 5 6
17.	Use of tools and outcome measures e.g. assessment REBA, RULA, Risk matrix	1 2 3 4 5 6
18.	One on one guidance and mentoring	1 2 3 4 5 6
19.	Increase use of multimedia activities	1 2 3 4 5 6

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Any other_____

_____

_____

_____

IV. Listed below are the assessment strategies that need to be included in the occupational health module in the undergraduate physiotherapy curriculum.

1.	Practical skills demonstration e.g. OSPEs or in real working areas	1 2 3 4 5 6
2.	Assignments with either written or oral presentations	1 2 3 4 5 6
3.	Research or field reports	1 2 3 4 5 6
4.	Theory question in form of CATs and Final papers	1 2 3 4 5 6
5.	To assess risk management and RTW of practical activity	1 2 3 4 5 6
6.	Workplace case study	1 2 3 4 5 6
7.	Open ended or MCQs that are scenario based	1 2 3 4 5 6
8.	Students to name areas of practice	1 2 3 4 5 6
9.	Assessment of reflective portfolios	1 2 3 4 5 6
10.	Learning logs	1 2 3 4 5 6

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M3: DELPHI STUDY QUESTIONS- ROUND THREE

Participant identification number _____

Title: DEVELOPMENT OF STANDARDS FOR UNDERGRADUATE OCCUPATIONAL HEALTH IN A PHYSIOTHERAPY CURRICULUM: A CASE OF KENYA

Part Two Delphi Study Questions

Please indicate to what extent you agree or disagree with the information indicated in the three sections listed below regarding different aspects of the occupational health module in the undergraduate physiotherapy curriculum.

Rating	1	2	3	4	5	6
Meaning	Completely disagree	Strongly disagree	Somehow disagree	Somehow agree	Strongly agree	Completely agree

II. Listed below are the teaching strategies that need to be included in the occupational health module in the undergraduate physiotherapy curriculum.

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14.	Modules of disaster management	1 2 3 4 5 6

Any other_____

_____

_____

_____

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III. Listed below are the learning strategies that need to be included in the occupational health module in the undergraduate physiotherapy curriculum.

4.	Court procedures and insurance attachment exposures	1 2 3 4 5 6

Any other _____

_____

_____

_____

IV. Listed below are the assessment strategies that need to be included in the occupational health module in the undergraduate physiotherapy curriculum.

8.	Students to name areas of practice	1 2 3 4 5 6

Any other _____

_____

_____

_____

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APPENDIX N: OCCUPATIONAL HEALTH COMPETENCY FRAMEWORK

Behaviours, knowledge & skills required by Physiotherapists for working in Occupational Health

This paper presents the specific behaviours, knowledge & skills required for physiotherapy practice in Occupational Health. It is derived from the paper describing Behaviours, knowledge & skills required by Allied Health Professionals AHP's.

The framework of behaviours, knowledge & skills required for working in Occupational Health can be used:

- to promote the role & added value of Physiotherapists working in an Occupational Health setting (to policy-makers/commissioners/service planners/employers etc);
- by individuals/organisations wanting to develop programmes of education to support the development needs of the Physiotherapy workforce in Occupational Health;
- to promote & develop Physiotherapists careers in Occupational Health (to the public/new Physiotherapists graduates/practitioners considering a move into Occupational Health);
- to understand the behaviours/knowledge/skills shared by Physiotherapists working in Occupational Health & the unique contribution each profession brings to an Occupational Health setting.
- By the Association of Chartered Physiotherapists in Occupational Health and Ergonomics (ACPOHE) to define the behaviours knowledge and skills for physiotherapists who work in occupational health and ergonomics and to provide a standard for registered membership of ACPOHE .

Overview of Physiotherapists **in Occupational Health** [have structured content to reflect the structure of the framework (values; knowledge; skills)]

Physiotherapists in Occupational Health use their professional knowledge & skills, together with skills for interaction & decision-making/problem-solving to assess the Occupational Health needs of the workforce, & to design & deliver personalised advice & interventions that maximise an individual's performance at work. This combination of knowledge & skills means that Occupational Health practitioners contribute to the productivity of the workforce, & play a key role in the tri-partite relationship between the individual worker, the employer & other members of the Occupational Health team.

Physiotherapistss in Occupational Health are autonomous professionals. This means that they can accept referrals for assessment from a range of sources. The values underpinning Physiotherapists' practice in Occupational Health means that practice is both ethical & effective. The evidence-base underpinning their practice is constantly evolving as practitioners develop new knowledge & understanding through critical reflection, evaluation & research. By maintaining strong links between clinical & academic settings, Physiotherapists inform & respond to developments in practice, education or research to deliver high quality innovative services that are accessible, effective & efficient.

Analysis of a range of documents describing Occupational Health practice:

- analysis/risk assessment of the referral for an Occupational Health assessment to make an informed decision about whether to accept/decline the referral, &/or need for referral to another professional;
- assessment of the individual's needs (physical, psychological & social) & their capacity for work & assessment of potential risks associated with work;
- personalised goal-setting – informed by assessment of occupational, physical, psychological, social, & environmental factors & demands;

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- advice/education about necessary adjustments required to occupational practices & environments to enable the individual to remain in (or return to) employment;
- design & implementation of a evidence-based programmes of intervention (e.g. assessment and treatment, rehabilitation, work-hardening, work place adaptions or modifications, education and training) that enables the individual or groups of clients to meet the occupational demands of their employer;
- design & implementation of a evidence-based programmes of intervention (e.g. health promotion) that enables the individual or groups of clients to improve their health and wellbeing for the mutual benefit of both employer and employee;
- evaluation & adjustment of the intervention & goals – to ensure that programme continues to be effective/efficient/safe for the individual & employer

Depending on the context & level of the role, practitioners may also be involved in:

- evaluation of an existing Occupational Health service;
- designing & implementing an Occupational Health service to meet the needs of a specific employer & their workforce;
- designing & conducting research in Occupational Health & disseminating the outcomes of the research;
- education/training of others e.g. individuals or groups within a workforce own profession, other professional groups, locally, nationally & internationally;
- promotion of the added value of Occupational Health services - locally (e.g. to local employers), regionally (e.g. to service planners, regional government), nationally (e.g. to politicians & decision makers)

Framework structure

The structure of the framework reflects that Physiotherapists practice in Occupational Health is a complex intervention made up of many different sets of behaviours, knowledge and skills - all essential to practice. No one element can be defined as the 'active ingredient' which makes practice effective. The individual elements that make up practice ultimately influence one another - a real example of the whole being greater than the sum of its component parts (as illustrated in figure 1).

At the heart of practice in Occupational Health is a set of **values** which inform the behaviour of practitioners, and the knowledge & skills that the workforce uses & develops. The **knowledge and understanding** layer of the framework describes the theoretical & applied knowledge required for practice in Occupational Health – which is used in practice to underpin an individual's **practice skills**. While there are elements of knowledge & understanding & practice skills that are shared across all Physiotherapists working in Occupational Health (e.g. understanding of the ethical & legal context of Occupational Health practice), some aspects may be more developed in a particular profession – according to their role/profession's scope of practice. The final layer of the framework is made up of **generic behaviours, knowledge & skills** – shared by all Physiotherapists working in Occupational Health. This layer can be subdivided into behaviours, knowledge & skills for interacting; & behaviours, knowledge & skills for problem-solving & decision making.

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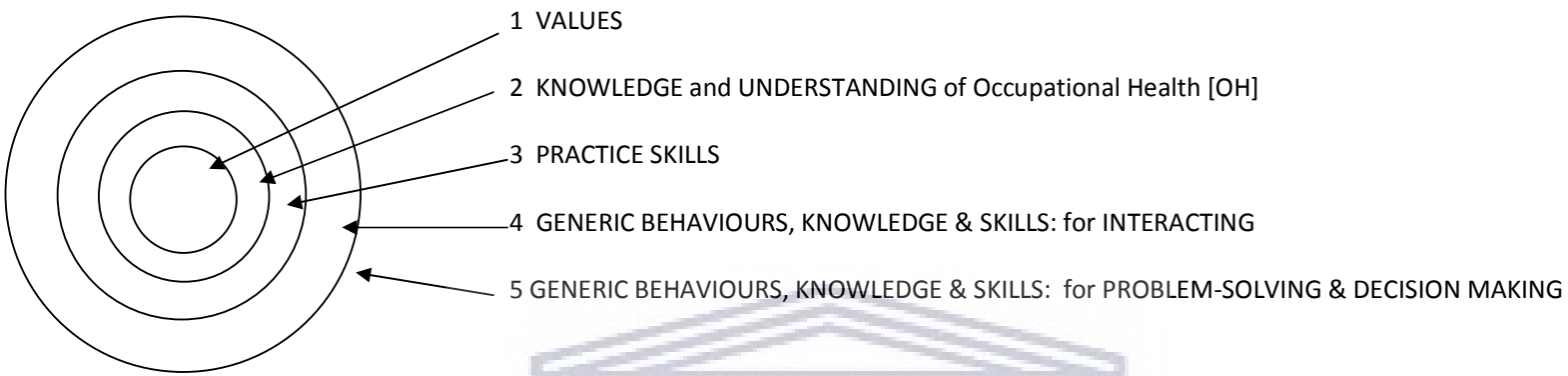

Figure 1: structure of framework domains

The domains are divided into 5 main groups

- Values
- Knowledge and understanding in Occupational Health and Ergonomics
- Practice skills
- Generic behaviours knowledge and skills for interacting
- Generic behaviours knowledge and skills for problem solving and decision making

Each main group has subgroups.

The framework presents the behaviours, knowledge & skills required by Physiotherapists to work in Occupational Health. The four levels of behaviours, knowledge & skills defined by the framework are broadly aligned with the educational qualification descriptors (QAA, 2008; SCQF, 2007) for a Bachelor's degree [A & B]; a Master's degree [C] & Doctoral degree [D]. It is hoped that use of these levels will provide a recognisable pathway for individual practitioners seeking to develop a career in Occupational Health.

The document is currently structured:

- Framework of behaviours, knowledge & skills used Physiotherapists to practice in Occupational Health – described at 4 levels (ABCD)
- Appendix 1 maps the domains of behaviours, knowledge & skills listed in the table against the following competency frameworks/standards of practice:
    - Case Management Society UK (2009) Standards & best practice guidelines (2nd ed). London; CMSUK
    - Chartered Society of Physiotherapy (2010) Physiotherapy Framework: putting physiotherapy behaviours, knowledge & skills into practice. London; CSP.
    - College of Occupational Therapy (2006) Postgraduate qualifying framework. London; COT
    - Department of Health(2004) The NHS knowledge & skills framework & the development review process. London; DoH

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- Health Professions Council (2008) Standards of conduct, performance & ethics. London; HPC
- Health Professions Council (2007) Standards of Proficiency: Psychologists. London; HPC
- Public Health Resource Unit/Skills for Health (2008) Public health skills & career framework. Oxford; PHRU

Appendix 2 presents two examples of how the individual domains work together to enable an individual to perform a specific task (have taken the example of conducting a workplace assessment, & leading a team).

Appendix 3 relates the framework to the ACPOHE salary and grading document

Appendix 4 This links to the ACPOHE courses. These indicate the current Level B knowledge and skills required in OH practice. This can be used to check the level of knowledge and skills required for specific competencies

Appendix 5 is working party members

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Behaviours, knowledge & skills required by Physiotherapists for working in Occupational Health

The behaviours, knowledge & skills used by Physiotherapists to practice in Occupational Health:

1 VALUES				
Level	**A**	**B**	**C**	**D**
VALUES Altruism; Advocacy; Honesty & integrity; Compassion & caring; Accountability for decision making & actions; Fulfilment of duty of care & social responsibility; Commitment to excellence. Impartiality	Values are not described at a specific level but are expressed through the behavioural elements of other domains within the framework.			

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2	**Knowledge & understanding of Occupational Health [OH]** **Knowledge base : OH is generally not compulsory and may not be introduced in the undergraduate curriculum. Areas where specialist knowledge and understanding are required will have to be developed in post graduate education**				
	Level	**A**	**B**	**C**	**D**
2.1	**Building on undergraduate knowledge**				
2.1.1	**Structure & function of the human body (undergraduate)**	Working to consolidate the knowledge gained from qualifying programme practice	Continuing to consolidate the knowledge gained from qualifying programme, & learning how that knowledge transfers from other areas/specialism's of practice into an Occupational Health context	Demonstrate a critical awareness of current problems and/or new insights through application of research or advanced scholarship techniques relevant to Occupational Health practice	Working with a body of knowledge which is at the forefront of professional practice

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		Practising within straightforward & generally predictable contexts but which requires the development of Occupational Health knowledge	Practising within more complex & some unpredictable contexts which demands innovative work which may involve exploring current limits of Occupational Health knowledge	Practising within complex, unpredictable & normally specialised contexts demanding innovative work which may involve extending the current limits of Occupational Health knowledge	Creating and / or interpreting new knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, and merit publication
2.1.2	**Health, disease, disorder & dysfunction (undergraduate)**	ditto	ditto	ditto	ditto
2.1.3	**The principles & applications of scientific enquiry (undergraduate)**	ditto	ditto	ditto	ditto
2.1.4	**Physical and movement science (undergraduate)**	ditto	ditto	ditto	ditto
2.2	**Epidemiological research methods providing the knowledge and skills to evaluate research to establish causal links in the development of work relevant disease**	Building new knowledge on to that gained in research methods from qualifying programme to extend scope of practice to contexts that require the application of current knowledge of epidemiology	Working to consolidate the knowledge gained from post registration programme into practice within complex & increasingly unpredictable contexts which requires the application of current knowledge of epidemiology	A systematic understanding of knowledge, much of which is at, or informed by, the forefront of professional practice in occupational health	A systematic acquisition & understanding of a substantial body of knowledge which is at the forefront of professional practice in occupational health

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2.3	**Clinical sciences relevant to professional practice in OH; evidence-base underpinning profession's contribution; concepts & approaches that inform the development of OH interventions**	Building awareness of the wide scope of OH practice and developing knowledge a skills in areas relevant to current practice and the evidence base that supports the practice	Extending knowledge and skills across a wider area of practice or specialising in one area: ie health & safety, ergonomics, occupational health, vocational rehabilitation	Demonstrate a critical awareness of current problems and/or new insights through application of research or advanced scholarship techniques relevant to Occupational Health practice	Create & interpret new knowledge, through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, & merit publication
2.4	**Behavioural sciences relevant to professional practice in OH; occupational psychology; sociology of health & work; theories of communication, leadership & teamworking, organisations & pedagogy**	ditto	ditto	ditto	ditto
2.5	**Ethical principles underpinning practice in occupational health**	Developing awareness, knowledge and interpretation of the legal and ethical principles and practice that underpin work in and OH setting	Uses detailed knowledge of legal and ethical framework to inform service development and delivery	Demonstrates critical awareness of legal and ethical framework underpinning OH practice and drives development of current practice	Demonstrates critical awareness of legal and ethical framework underpinning OH practice and uses research techniques to evaluate the efficacy of current practice and to drive development
2.6	**UK legal & policy frameworks governing OH and including case law**	Developing knowledge of UK legal & policy frameworks governing OH and interpretation of these in an OH setting	Uses detailed knowledge of UK legal & policy frameworks governing OH to inform service development and delivery	Demonstrates critical awareness UK legal & policy frameworks governing OH practice and relevant case law and uses this knowledge to drive development of current practice	Demonstrates critical awareness of UK legal & policy frameworks governing OH practice and uses research techniques to evaluate the efficacy of current practice and to drive development

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Behaviours, knowledge & skills required by Physiotherapists for working in Occupational Health

2.7	**Organisational factors and their impact on work and health**	Developing an understanding of working within and for a clients organisation/s to deliver a service that contributes to that organisations success	Demonstrates insight into a client's organisational factors, and their impact on work and health of the OH team and the workforce	Acts on insights into the impact of organisational factors on work and health improve the health and wellbeing of the OH team and the workforce	Demonstrates ability to undertake qualitative and quantitave research to gain a detailed understanding of organsiational factors. Uses research outcomes to influence and create change within an organisation to improve the health and wellbeing of the workforce
2.8	**Commercial knowledge including the need for and methods to make a business case for occupational health, rehabilitation and ergonomic services**	Demonstrates the ability to undertake accurate and timely collection and reporting of pre agreed data to demonstrate efficacy of OH practice	Demonstrates the ability to select collect, analyse and report on data to demonstrate efficacy of OH practice	Demonstrates the ability to select collect, analyse and report on service efficacy in terms of clinical and business outcomes that is of a quality to merit publication as a case study	Uses research knowledge and methology to set up systems to evaluate and report on service efficacy in terms of clinical and business outcomes that is of a quality to satisfy peer review, extend the forefront of the Occupational Health discipline, and merit publication
2.9	**Applied workplace ergonomics**	Developing knowledge and understanding in the field of ergonomics and the need to develop skills in ergonomics assessment - currently refers on cases where	Uses knowledge and understanding to design and deliver services to individuals and small groups (micro-ergonomics) to analyse the risk of work tasks. Selects and appraises	Demonstrates critical awareness of the science underpinning physical ergonomics techniques. Implements ergonomics principles within a workplace to prevent and manage work relevant ill health (macro) Selects and	Demonstrates critical awareness of the science underpinning ergonomics methods through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of applied ergonomics in the

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		ergonomic assessment is indicated	methodology in terms of its relative value in a given situation	appraises methodology in terms of its relative value in a given situation at systems level	Occupational Health discipline, & merit publication
2.10	**The Bio-psycho-social model and its application to work and to disability; bio psychosocial assessment and management. Knowledge includes WHO International Classification of Functioning, Disability and Health (ICF) and its application in the design and delivery of occupational health services**	Working to consolidate the knowledge gained from qualifying programme practice and to apply that knowledge in an occupational health context. Extending knowledge of disability and the relationship of work to health and health to work	Continuing to consolidate the knowledge gained from qualifying programme, & learning how that knowledge transfers from other areas/specialism's of practice into an Occupational Health context	Demonstrate a critical awareness of the bio psychosocial model and/or new insights into its application on OH through research or advanced scholarship techniques relevant to Occupational Health practice	Working with a body of knowledge which is at the forefront of professional practice. Through research or advanced scholarship techniques extending knowledge in the application of the bio psycho social model inan OH context
2.11	**Disability rehabilitation and reintegration into the workplace. Identification and management of issues that affect recovery and return to work**	Developing awareness of the consequences of becoming workless due to ill health Use of assessment strategies and tools to identify risk of work incapacity	Knowledge of UK policy on incapacity and work & systems to support rehab & return to work for those with long term incapacity or disability. Recognition and active management of those at risk to prevent work incapacity	Demonstrates critical awareness of UK incapacity and return to work support systems and how this relates to OH practice. Drives development of current practice in terms of identifying risk of incapacity and supporting people to return to employment	Demonstrates critical awareness of UK incapacity and return to work support systems Uses research techniques to evaluate the efficacy of current practice and to drive development in terms of identifying risk of incapacity and supporting people to return to employment

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2.12	**Graded and paced occupational and vocational rehabilitation (work conditioning and work hardening)**	Working to consolidate the knowledge gained from qualifying programme practice and to apply that knowledge in an occupational health context in the delivery of work conditioning and work hardening programmes	Continuing to consolidate the knowledge gained from qualifying programme, & learning how that knowledge transfers from other areas/specialism's of practice into an Occupational Health context in the delivery of work conditioning and work hardening programmes	Demonstrate a critical awareness methods to grade and pace work conditioning and work hardening programmes Uses new insights into the application oof paced and graded rehabilitation in OH through research or advanced scholarship techniques	Working with a body of knowledge which is at the forefront of professional practice. Through research or advanced scholarship techniques extending knowledge in the delivery of graded and paced work conditioning and work hardening programmes
2.13	**Assessment of fitness for work (work capability assessment or functional capability assessment**	Developing knowledge and understanding in the field of assessment of fitness for work and the need to develop skills in work capability assessment - currently refers on cases where work capability assessment is indicated	Uses knowledge and understanding to design and deliver assessment of fitness for work services to clients Uses ability to analyse work tasks to inform the selection of tests . Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning assessment fo fitness for work. Uses ability to analyse work tasks to inform the selection of tests . Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning assessment of fitness for work. Through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of assessment of fitness for work in the Occupational Health discipline, & merit publication

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2.14	**Health behaviour and health behaviour change**	Developing knowledge and understanding of individuals health behaviours and their impact on the individuals long term health wellbeing and work capability . Provides information on factors such as diet activity and substance use when indicated. Refers on or into appropriate support programmes	Uses knowledge and understanding of health behaviours and health behaviour change to design and deliver programmes for individuals and small. Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning health behaviour change, Uses knowledge to select measures to inform the stages of a programme. Selects and appraises methodology in terms of its relative value in a given situation	Demonstrates critical awareness of the science underpinning health behaviour change Through original research or other advanced scholarship, of a quality to satisfy peer review, extend the forefront of behavioural change programmes in the Occupational Health discipline, & merit publication

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Behaviours, knowledge & skills required by Physiotherapists for working in Occupational Health

Domain 3	PRACTICE SKILLS ie the skills necessary in OH to work effectively				
3.1	**Self-awareness** **the behaviour, knowledge & skills required to:** • **identify personal values, preferences & ways of working (e.g. likes & dislikes; strengths & weaknesses; emotions & prejudices; personal scope of practice), & understand how these can affect the practitioner's behaviour, judgement, & practice**	demonstrate self-awareness by using reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & with guidance, analyse how these may influence behaviour, judgement & practice.	demonstrate self-awareness by using reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & with guidance, evaluate how these may influence behaviour, judgement & practice.	demonstrate strong self-awareness by using critical reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & critically evaluate how these may influence behaviour, judgement & practice.	demonstrate strong self-awareness by using critical reflection on personal practice & feedback from others to identify & articulate their personal values, preferences & ways of working, & critically evaluate how these may influence behaviour, judgement & practice.

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Domain 4	**Political awareness**				
4.1	**the behaviour, knowledge & skills required to:** • **identify the political, social, economic & institutional factors influencing the delivery & development of work and health programmes and the development of Occupational Health** • **engage with the implementation & development of policy in Occupational Health**	knowledge of the political, social, economic & institutional factors that inform the delivery of Occupational Health services locally. Has awareness of the work of professional networks, learning from discussions relevant to professional practice in Occupational Health.	knowledge & understanding of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the design & delivery of Occupational Health services across the UK. Benefit from the work of professional networks, learning from discussions relevant to professional practice in Occupational Health.	critical awareness of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the current & future design, delivery & professional development of Occupational Health services at a local & regional level. Contribute to the work of professional or policy networks, relevant discussions & provide feedback to inform the implementation & development of policies relevant to professional practice in Occupational Health.	critical awareness of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the design, delivery & professional development of Occupational Health across the UK. Play an active role in a wide variety of professional & policy networks that inform the development of policies that influence the shape the future of professional practice in Occupational Health.

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Behaviours, knowledge & skills required by Physiotherapists for working in Occupational Health

Domain 5	Psycho-motor skills	A	B	C	D
5.1	**The psycho motor skills and behaviours required to:** • **perform structured bio psycho social assessment on individuals with neuro-musculo- skeletal disorders in an OH context**	working to consolidate & refine the performance of complex skills gained from qualifying programme modify a technique in response to feedback (e.g. from a client, peer, supervisor)	using extended skills for individual assessment relevant to OH practice perform complex skills consistently with confidence & a degree of co-ordination & fluidity, learning how those skills transfer from one area of practice to another. becoming increasingly self-aware of when/how to modify a technique & less dependent on feedback from others.	demonstrate technical mastery of complex skills within unpredictable contexts modify a technique in-action	demonstrate technical mastery of complex skills within unpredictable & normally specialised contexts modify a technique in-action
5.2	• **perform clinical assessments for a wide range of conditions that affect work capability in bio psychosocial framework**	Working to consolidate & refine the psychosocial assessment skills gained from qualifying programme Extending skills to be able to identify workplace and societal obstacles to recovery and return to work for a wider range of conditions	Competent in psychosocial assessment in a wide range of conditions and able to identify and tackle barriers to return to work (Conditions are defined by scope of practice)	Competent in psychosocial assessment in a wide range of conditions and in complex situations and unpredictable contexts (Conditions are defined by scope of practice)	Undertakes psychosocial assessment in a wide range of conditions and in complex situations and unpredictable contexts. Reviews efficacy of psycho-social element of interventions through research methodology and adding to evidence base

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		(Conditions are defined by scope of practice)			
5.3	• **perform assessments using valid, reliable tools where available and where not using standardised testing protocols that are related to the demands of the job**	Building capability to use the range of standardised measurement tools available in an OH setting	Competent in the use of a range of standardised measurement tools relevant to own area of practice	Competent in the use of a range of standardised measurement tools and will identify research regarding new and improved tools and implement into practice	Competent in the use of a wide range of standardised measurement tools, Able to identify gaps and may undertake research and development of new tools to add to the OH practice
5.4	• **interpret the results of a cohort of psychosocial and functional assessment tools and use results to inform a treatment or rehabilitation programme and to monitor progress**	Building capability to interpret the results of standardised measurement tools used in an OH setting and to use relevant tools to monitor progress	Competent in the interpretation of standardised measurement tools and uses tools to monitor progress towards return to work	Competent in the use of a range of standardised measurement tools and their interpretation Identifies research regarding new and improved tools and implement into practice	Competent in the use of a wide range of standardised measurement tools and their interpretation, Able to identify gaps and may undertake research and development of new tools to add to the OH practice
5.5	• **design and deliver a programme of treatment or graded and paced occupational & vocational rehabilitation for individuals & groups**	Building capability to design and to deliver work focused treatment and rehabilitation programmes	Competent to design and deliver work focused treatment and rehabilitation programmes and supervises others	Identifies research regarding return to work treatment and rehabilitation programmes and uses this to benchmark own outcomes and to improve practice	Undertake research and development into new ways to treat and rehabilitate to extend the knowledge and evidence base of OH practice

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5.6	• **Perform formal and structured workplace assessment using ergonomics tools**	Recognise when a formal workplace assessment is required and refer on	build skills to undertake workplace assessment within relevant to OH practice	Demonstrate technical mastery of workplace assessment procedures Critically appraise methodology and identify strengths and weaknesses	Demonstrate technical mastery of procedures Critically appraise methodology and identify strengths and weaknesses. Build body of knowledge in the area of workplace assessment through research and development
5.7	• **Reflects and evaluates own performance of psychomotor skills required for clinical practice with a view to improving skills and capability**	evaluate own performance	evaluate own & others' performance	evaluate own & others' performance in unpredictable contexts	evaluate own & others' performance in unpredictable & normally specialised contexts

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	Behaviours, knowledge & skills for interacting				
	Domain 6 Communicating	**A**	**B**	**C**	**D**
6.1	**Communicating** **the behaviour, knowledge & skills required to:** • **facilitate the sharing of information, advice & ideas with a range of people, using a variety of media (including spoken, non-verbal, written & e-based); in the context of ethical and legal guidliens and constraints**	use a wide range of routine communication skills to share information, ideas, problems & solutions, with individuals and within OH team.	use a wide range of routine & advanced communication skills to share specialised information, ideas, problems & solutions with audiences within Occupational Health and the workplace and relevant stakeholders.	use a range of advanced & specialised communication skills to share specialised information & ideas/engage in critical dialogue with a range of audiences within Occupational Health & beyond with different levels of knowledge & expertise.	use a broad range of advanced & specialised communication skills to share complex information & ideas/engage in critical dialogue with a wide range of audiences within Occupational Health & beyond with different levels of knowledge & expertise.
6.2	**Modify communication to meet individuals' preferences & needs client or organisation;**	modify communication in response to feedback (e.g. from a client, peer, supervisor) to meet the needs of different audiences & to enhance user involvement.	becoming increasingly self-aware & able to modify communication to meet the needs of different audiences & to enhance user involvement & collaboration.	modify communication to take account of the needs of different audiences & demonstrate a commitment to user involvement & collaboration.	modify communication in-action to take account of the needs of different audiences & demonstrate a commitment to user involvement & collaboration.
6.3	**Engage with technology, particularly the effective & efficient use of Information & Communication Technology**	use a range of ICT to support & enhance practice	use a range of ICT to support & enhance the effectiveness of practice	use a wide range of ICT to support & enhance the effectiveness of practice.	use a wide range of ICT to support & enhance the effectiveness of practice & specify software requirements to enhance work.
6.4	**Use therapeutic communication skills to be able to tackle psycho social issues around work and health**	Building skills to ask directed questions about work to	Able to ask directed questions about work to understand	Developing and practicing therapeutic techniques eg cognitive	Practicing therapeutic techniques eg cognitive behavioural approach, or

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		understand obstacles to return to work and to develop shared goals to overcome the obstacles	obstacles to return to work and to develop shared goals to overcome the obstacles	behavioural approach, or motivational interviewing, mediation skills) to recognise beliefs and behaviours that are inconsistent and to address these with the individual or other relevant stakeholders	motivational interviewing, mediation skills) to recognise beliefs and behaviours that are inconsistent and to address these with the individual or other relevant stakeholders Undertakes research and development into effective communication in OH Extends the knowledge and evidence base of OH practice
6.5	**Build relationships in an organisation to facilitate rehabilitation of individuals and the health and wellbeing of the workforce**	Builds effective working relationships with key people within the organisation	Demonstrates ability to build relationships and to work effectively within that organisation as a whole	Builds strong relationships within an organisation and demonstrates the ability to influence decisions around the health and wellbeing of the workforce	Demonstrates multi-level relationships within the organisation including senior management / board level and demonstrates the ability to provide insights and information to influence organisational change
6.6	**Communicating with the workplace and with other relevant stakeholders on a range of issues eg advice on fitness for work and recommendations for transitional work arrangements or modifications**	Build skills to report information and to give advice on issues relevant to OH practice that is in line with ethical guidelines and legislative framework	Reports on complex issues coherently providing relevant advice and information to appropriate stakeholders	Critically appraise the reports of others providing relevant feedback Develops quality assured methods of reporting to ensure consistent and accurate reporting on issues across a team	Provides a range of reports to the organisation at a high level to influence strategy in terms of health and wellbeing of the workforce

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	Domain 7 Helping others learn & develop	A	B	C	D
7.1	**The behaviour, knowledge & skills required to:** • **assess the learner's needs & preferences; design materials/experiences that facilitate learning & development;**	with guidance, plan & deliver learning activities to a specified range of individuals/groups within Occupational Health.	design, plan & deliver learning sessions of activities & opportunities to a range of audiences in Occupational Health with similar levels of knowledge & expertise.	design, plan & deliver learning activities & opportunities to a range of audiences in Occupational Health & beyond with different levels of knowledge & expertise.	design, plan & deliver learning activities & opportunities to a wide range of audiences in Occupational Health & beyond with different levels of knowledge & expertise.
7.2	• **deliver materials/experiences that facilitate learning;**	With guidance apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs.	select & apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs.	select & apply appropriate approaches to learning & teaching (techniques & material) to meet learners' needs & promote a change in behaviour and practice	develop & apply evidence based approaches to learning & teaching to meet learners' needs & promote a change in practice. Innovation and research
7.3	• **evaluate the effectiveness of the learning & development experience**	with guidance, predetermined criteria to assess a learner's performance & progress & provide them with appropriate feedback	use predetermined criteria to assess a learner's performance & progress, & provide them with constructive feedback.	select & apply appropriate assessment tools to evaluate a learner's performance & progress, & provide them with constructive feedback	develop & apply evidence based approaches to assess a learner's performance & progress, & provide them with constructive feedback
7.4	• **reflect on the learning & development process**	with guidance, reflect on learning & teaching performance & use this evaluation to inform future practice.	reflect on learning & teaching performance & use this evaluation to inform future practice.	critically reflect on learning & teaching performance & use this evaluation to inform future practice	critically reflect on learning & teaching performance & use this evaluation to inform future practice (self & others).

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7,5	• **Demonstrate recommended work methods to individuals and groups using own body (bodymechanics) and equipment**	Building capability to demonstrate work methods and use of work tools to individuals and groups using efficient techniques	Demonstrate work methods and use of work tools to individuals and groups using efficient techniques Supervises programmes delivered by others	Identifies research regarding work methods and use of work tools to inform education programmes and uses this to improve practice	Undertake research and development into new ways to demonstrate work methods and use of work tools Extends the knowledge and evidence base of OH practice
	Domain 8 Managing self & others	A	B	C	D
8.1	**Managing self & others** **the behaviour, knowledge & skills required to:** • **plan, prioritise & organise personal workload/activities**	behaves in accordance with current professional codes & practices seeking guidance where appropriate.	exercise autonomy & initiative in accordance with current professional codes & practices.	exercise autonomy & initiative in complex & unpredictable situations at the limits of current professional codes & practices.	Has authority to exercises high level of autonomy & initiative in complex & unpredictable situations not addressed by current professional codes & practice.
8.2	• **Plans use of resources to fulfil work requirements & commitments**	take some responsibility for the work of others (e.g. delegation of tasks to support workers) & for a range of resources	take responsibility for the work of others (e.g. support workers, students) & for a range of resources.	take managerial responsibility for the work of others & for a significant range of resources.	take significant managerial responsibility for the work of others and/or for a significant range of resources.
8.3	• **adapt personal behaviour & actions in response to the demands of the situation;**	modify personal behaviour & actions in response to feedback to meet the	becoming increasingly self-aware & able to modify personal	modify personal behaviour & actions to meet the demands of	modify personal behaviour & actions 'in-action' to meet the demands of the situation

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		demands of the situation & to enhance own performance	behaviour & actions to meet the demands of the situation & to enhance own performance.	the situation & to enhance own & others' performance.	& to maximise the impact of own & others' performance.
8.4	• **evaluate the effectiveness of performance (own & others);**	with guidance, reflect on personal performance & use this evaluation to inform future practice.	reflect on personal performance & use this evaluation to inform future practice.	critically reflect on own & others' performance & use this evaluation to inform future practice.	critically reflect on own & others' performance & use this evaluation to inform future practice (own & others).
8.5	• **lead & inspire others.**	assists in implementing agreed plans designed to bring about change, development and/or new thinking within Occupational Health services.	exercise leadership and/or initiative that contributes to change, development and/or new thinking within Occupational Health services.	exercise leadership with responsibility for decision making designed to bring about change & development within Occupational Health services.	exercise leadership with accountability for decision making & development across a range of contexts, including those within which there is a high degree of uncertainty & a need to take innovative approaches to Occupational Health service delivery & development.

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	Domain 9 Promoting integration & teamwork	A	B	C	D
9.1	**the behaviour, knowledge & skills required to:** • **build, maintain & promote effective interpersonal relationships;**	Is aware of professional networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	participates in professional/policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	support, lead & develop local/regional professional & policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice.	support, lead & develop regional/national professional & policy networks to foster collaboration, share information & ideas to enhance Occupational Health practice. .
9,2	• **work collaboratively with others to achieve shared goals**	work effectively with others to meet the responsibilities of professional practice in Occupational Health.	work effectively with others to meet the responsibilities of professional practice, & to identify situations where collaborative approaches could add value to practice in Occupational Health	work effectively with others to meet the responsibilities of professional practice, & to develop collaborative approaches that add value to practice in Occupational Health.	work effectively with others to meet the responsibilities of professional practice, & use innovative collaborative approaches that add value to & develop practice in Occupational Health
9.3	• **work with others to maintain & develop the effective performance of teams/networks in Occupational Health**	reflect on experiences of collaborative working, & with guidance, use this information to identify solutions and contribute to the effective performance of teams/networks in Occupational Health	reflect on experiences of collaborative working, & use this information to identify & implement solutions to maintain & develop the effective performance of teams/networks in Occupational Health	critically reflect on experiences of collaborative working & use this information to identify & implement creative solutions to maintain & develop the effective & efficient performance of teams/networks in Occupational Health.	critically reflect on experiences of collaborative working & use this information to identify & implement innovative solutions to maintain & develop the effective & efficient performance of teams/networks in Occupational Health.

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	Domain 10 Customer focus Keeping customers at the centre of practice	A	B	C	D
10.1	**the behaviour, knowledge & skills required to:** • **provide an professional and equitable service to two clients who may have conflicting needs; the organisation (customer) and the Worker (individual)**	Recognises potential tensions /conflicts between the worker and the organisation and seeks assistance from a senior or peer	Recognises and manages potential tensions /conflicts between the worker and the organisation Seeks assistance in complex, unpredictable situations	Manages potential tensions /conflicts between the worker and the organisation in complex, unpredictable contexts. Work effectively with others to meet the responsibilities of professional practice	Manages potential tensions /conflicts between the worker and the organisation in complex, unpredictable contexts. Work effectively with others to meet the responsibilities of professional practice, & uses innovative collaborative approaches that add value to & develop practice in Occupational Health
10.2	• **demonstrate respect for the individual and organisation**;	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures & best practice.	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, & procedures, & by working to promote best practice in both clinical and occupational health management	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures, & by working to inform & promote legislation, policies, procedures & best practice both clinical and occupational health management	demonstrate respect for the individual and organisation by acknowledging their unique needs, preferences & values, autonomy & independence in accordance with legislation, policies, procedures, & by working to inform, develop & promote legislation, policies, procedures & best practice both clinical and occupational health management

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10.3	• **provide information & support that enables an organisation and /or an individual to make informed choices;**	information & support that empowers an individual to make an informed choice & to exercise their autonomy in accordance with legislation, policies, procedures & best practice.	information & support that empowers an individual to make an informed choice & to exercise their autonomy in accordance with legislation, policies & procedures, & work to promote best practice	provide information & support that empowers an individual to make an informed choice & to exercise their autonomy in accordance with legislation, policies, procedures, & work to inform & promote legislation, policies, procedures & best practice.	provide information & support that empowers an individual to make an informed choice & to exercise their autonomy in accordance with legislation, policies, procedures, & work to inform, develop & promote legislation, policies, procedures & best practice.
10.4	• **involve the organisation and individual in a participative approach to the shaping the design & delivery of their service**	involve customers and clients in shaping the design & delivery of their service by working in accordance with policies & processes that promote a culture of service user involvement.	involve customers and clients in shaping the design & delivery of their service, & work with others to implement & support policies & processes that promote a culture of service user involvement.	involve customers and clients in shaping the design & delivery of their service, & work with others to critically appraise user involvement, & to develop & implement policies, & processes that promote a culture of service user involvement. Participatory approach	actively involve customers and clients in shaping the design & delivery of their service, & work with others to critically appraise user involvement, & to develop policies & processes that promote a culture of service user involvement that contribute to the development of best practice.

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	Domain 11 Respecting & promoting diversity	A	B	C	D
11.1	**the behaviour, knowledge & skills required to:** • **respect & value diversity;**	respect & value diversity by working in accordance with legislation, policies, procedures & best practice.	respect & value diversity by working in accordance with legislation, policies, procedures, & to promote best practice.	respect & value diversity by working to inform & promote legislation, policies, procedures & best practice.	respect & value diversity by working to inform, develop & promote legislation, policies, procedures & best practice.
11.2	• **examine own values & principles to avoid discriminatory behaviour & to minimise the potential negative effects of individual differences**;	identify & articulate their own values & principles, & with guidance, evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, critically evaluate how these may differ from other individuals/groups, & use this understanding to maintain high standards of practice even in situations of personal incompatibility.	identify & articulate their own values & principles, critically evaluate how these may differ from other individuals/groups, & use this understanding to maintain excellent standards of practice even in situations of personal incompatibility.
11.3	• **work constructively with people of all backgrounds & orientations;**	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices.	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & with guidance, support individuals who need assistance in exercising their rights	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & support individuals who need assistance in exercising their rights.	work constructively with people of all backgrounds & orientations by recognising & responding to individuals' expressed beliefs, preferences & choices, & support individuals whose rights have been compromised

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11.4	• **promote a non-discriminatory culture that values diversity, & enables individuals to contribute & realise their full potential.**	identify discriminatory behaviour & take appropriate action to challenge this behaviour.	identify & challenge discriminatory practices & work with others to implement & promote policies & processes that promote a non-discriminatory culture.	identify & challenge discriminatory practices & work with others to critically appraise current practice, & to develop & implement policies & processes that promote a non-discriminatory culture	identify & actively challenge discriminatory practices & work with others to critically appraise current practice, & to develop policies & processes that promote a non-discriminatory culture that contribute to the development of best practice.

	Behaviours, knowledge & skills for PROBLEM-SOLVING & DECISION MAKING				
	Domain 12 Ensuring quality	**A**	**B**	**C**	**D**
12.1	**Ensuring quality** **the behaviour, knowledge & skills required to:** • **fulfil the requirements of the legal policy and professional frameworks governing practice in Occupational Health;**	fulfil the requirements of the legal & policy frameworks governing professional practice in OH .	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to promote best practice.	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to inform & promote legislation, policies, procedures & best practice.	fulfil the requirements of the legal & policy frameworks governing practice in Occupational Health, & work to inform, develop & promote legislation, policies, procedures & best practice.
12.2	• **recognise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action;**	with guidance, recognise situations where the effectiveness, efficiency & quality of a service are compromised, & with support, take	recognise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & with guidance, take	recognise & critically appraise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action to	recognise & critically appraise situations where the effectiveness, efficiency & quality of an Occupational Health service are compromised, & take appropriate action to resolve the situation &

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		appropriate action to challenge the situation	appropriate action to challenge the situation	resolve the situation	contribute
12.3	• **critically reflect on practice in the context of quality**	with guidance, reflect on personal performance & use this evaluation to enhance the effectiveness, efficiency & quality of future practice.	reflect on personal performance & with guidance, use this evaluation to enhance the effectiveness, efficiency & quality of future practice	critically reflect on own & others' performance & use this evaluation to enhance the effectiveness, efficiency & quality of future practice	critically reflect on own & others' performance & use this evaluation to enhance the effectiveness, efficiency & quality of future practice (own & others).

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	Domain 13 Improving and developing services	A	B	C	D
13.1	**Improving & developing services the behaviour, knowledge & skills required to:** • **critically evaluate practice & use this appraisal to inform Occupational Health service improvement, development & redesign;**	with guidance, critically evaluate practice, & share the outcome of this appraisal with relevant personnel .	critically evaluate practice, & with guidance, use this appraisal in combination with knowledge of best practice & political awareness to inform Occupational Health service improvement.	critically evaluate practice & use this appraisal in combination with knowledge of best practice & political awareness to identify opportunities for Occupational Health service improvement & development.	critically evaluate practice & use this appraisal in combination with knowledge of best practice & political awareness to identify opportunities for Occupational Health service improvement, development & redesign.
13.2	• **develop innovative & sustainable recommendations to improve the quality of the service in Occupational Health**	use a problem-solving approach to develop safe & effective recommendations for improving the quality of Occupational Health practice in predictable contexts.	use problem-solving approaches to develop safe, effective & efficient recommendations for improving the quality of Occupational Health practice in increasingly unpredictable contexts.	use problem-solving approaches to develop original, safe, effective & efficient recommendations for improving the quality of Occupational Health practice in unpredictable contexts.	use problem-solving approaches to develop original, effective & efficient recommendations that demonstrate evidence of positive risk taking, for improving the quality of Occupational Health practice in unpredictable & normally specialised contexts.
13.3	• **plan, facilitate & manage change;**	contribute to change & development within the profession or Occupational Health at a local level.	contribute to change & development within Occupational Health at a local level.	make an identifiable contribution to change & development within Occupational Health at a local & regional level.	make an identifiable contribution to change & development within Occupational Health & beyond – at a national or international level.
13.4	• **critically evaluate the process & outcome**		reflect on the change process, & use this information to appraise the outcome	critically reflect on the change process, & use this information to appraise the outcome &	critically reflect on the change process, & use this information to appraise the outcome & inform

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			& inform future practice	inform future practice	future practice

	Domain 14 Lifelong learning (CPD)	**A**	**B**	**C**	**D**
14.1	**Lifelong learning CPD the behaviour, knowledge & skills required to:** • **assess personal learning & development needs & preferences;**	demonstrate self-awareness of learning preferences, & with guidance can identify personal learning & development needs	demonstrate increasing self-awareness of learning preferences, & with guidance can identify personal learning & development needs	demonstrate strong self-awareness of learning preferences, & with minimal guidance can identify personal learning & development needs	demonstrate strong self-awareness of learning preferences, & can independently identify personal learning & development needs
14.2	• **develop & engage in a personalised plan designed to meet those needs;**	independently advance personal knowledge, understanding & skills in line with identified learning needs, & with guidance & support, can use a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs, & with guidance, can use a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs by making appropriate use of a variety of learning & development resources & opportunities.	independently advance personal knowledge, understanding & skills in line with identified learning needs by making appropriate use of a wide variety of learning & development resources & opportunities.
14.3	• **reflect on the learning process;**	reflect on personal learning & development, & with guidance & support, use this information to inform the planning & management of future learning & development experiences.	reflect on personal learning & development, & with guidance, use this information to inform the planning & management of future learning & development experiences.	critically reflect on personal learning & development, & with guidance, use this information to inform the planning & management of future learning & development experiences.	critically reflect on personal learning & development & use this information to inform the planning & management of future learning & development experiences.

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14.4	• **document the process**	with guidance & support, record the outcome of personal learning & development in a format that meets personal preferences & professional requirements.	with guidance, record the outcome of personal learning & development in a format that meets personal preferences & professional requirements.	record the outcome of personal learning & development in a format that meets personal preferences & professional requirements	record the outcome of personal learning & development in a format that meets personal preferences & professional requirements

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	Domain 15 Practice decision making	A	B	C	D
15.1	**Practice decision making** **the behaviour, knowledge & skills required to:** • **collect information from a variety of sources relevant to the decision making situation;**	efficient & effective use of a wide range of routine & some specialised approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a wide range of routine & advanced approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a range of advanced & specialised approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a broad range of advanced & specialised approaches & techniques to systematically collect information from a wide variety of sources relevant to the situation
15.2	• **process & analyse the information collected;**	process & critically analyse information in complex & predictable situations where data/information comes from a range of sources or is incomplete.	process & critically analyse information in complex & unpredictable situations where data/information comes from a range of sources or is incomplete.	process & critically analyse information in complex & unpredictable situations where data/information is incomplete or consistent.	process & critically analyse information in complex, unpredictable & normally specialised situations where data/information is incomplete or inconsistent.
15.3	• **draw reasoned conclusions & make informed judgements to address issues/resolve problems in Occupational Health practice;** .	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health settings.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health settings.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health where situations are at the limits of current professional codes & practices.	draw reasoned conclusions, supported by current policy & evidence-based thinking, & make informed judgements to address ethical & professional issues in Occupational Health where situations are not addressed by current professional codes & practice.

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15.4	• **critically evaluate the decision making process**	with guidance, reflect on their decision making process & use this evaluation to appraise the outcome & to inform future practice.	reflect on their decision making process & use this evaluation to appraise the outcome & to inform future practice.	critically reflect on their decision making process & use this evaluation to appraise the outcome & to inform future practice.	critically reflect on their decision making process & use this evaluation to appraise the outcome & to inform future practice.

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	Domain 16 Researching & evaluating practice (audit)	A	B	C	D
16.1	**Researching & evaluating practice audit the behaviour, knowledge & skills required to:** • **design, plan, conduct & manage the research/evaluation process;**	with guidance, plan, conduct & manage evaluation & research projects to address a specific issue arising from Occupational Health practice.	plan, conduct & manage evaluation & research projects to address specific issues arising from Occupational Health practice	design, plan, conduct & manage evaluation & research projects to address problems & issues arising from Occupational Health practice.	design, plan, conduct & manage evaluation & research projects to address new problems & issues arising from Occupational Health practice.
16.2	• **use methods of enquiry to collect & interpret data in order to address problems or issues arising from Occupational Health practice;**	with guidance, apply a range of standard research methods/tools of enquiry showing an appreciation of related ethical considerations.	becoming increasingly confident to apply a range of standard research methods/tools of enquiry showing an appreciation of related ethical considerations.	apply a range of standard & specialised research methods/tools of enquiry showing a detailed understanding of related ethical considerations	apply a range of standard & specialised research methods/tools of enquiry, contributing to the development of new techniques or approaches, & showing a detailed understanding of related ethical considerations
16.3	• **critically evaluate the research/evaluation process;**	with guidance, reflect on the research process, & use this information to appraise the project & inform future practice	reflect on the research process, & use this information to appraise the project & inform future practice	critically reflect on the research process, & use this information to appraise the project & inform future practice.	critically reflect on the research process, & use this information to appraise the project & inform future practice
16.4	• **communicate the outcome of the research/evaluation process.**	identify, & with support, promote the practical & professional applications of completed work, & seek opportunities to	identify & promote the practical & professional applications of completed work, & seek opportunities to share & disseminate	identify & promote the practical & professional applications of completed work, & actively seek opportunities to share & disseminate findings to a	identify & promote the practical & professional applications of completed work, & actively create opportunities to share & disseminate findings to a wide range of audiences

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		share & disseminate findings to both specialist & non-specialist audiences	findings to both specialist & non-specialist audiences.	range of audiences with different levels of knowledge & expertise	with different levels of knowledge & expertise

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	Domain 17 Using evidence to lead practice	A	B	C	D
17.1	**Using evidence to lead practice evidence based practice** **the behaviour, knowledge & skills required to:** • **systematically search for evidence;**	with guidance, use a range of approaches & techniques to systematically search for evidence from a variety of sources relevant to the situation.	use a range of approaches & techniques to systematically search for evidence from a variety of sources relevant to the situation	efficient & effective use of a range of approaches & techniques to systematically collect information from a variety of sources relevant to the situation.	efficient & effective use of a broad range of approaches & techniques to systematically search for information from a wide variety of sources relevant to the situation
17.2	• **critically appraise evidence & use the information to address problems & issues arising in Occupational Health practice.**	critically evaluate current research & scholarship & with guidance, use the appraisal to address specific issues arising in Occupational Health	critically evaluate current research & scholarship & use the appraisal to address specific issues arising in Occupational Health.	critically evaluate current research & scholarship & use the appraisal to address issues which are at the forefront or informed by developments at the forefront of Occupational Health.	critically evaluate current research & scholarship & use the appraisal to address new problems & issues arising in Occupational Health.

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APPENDIX 1: BEHAVIOURS, KNOWLEDGE & SKILLS REQUIRED FOR PRACTICE IN OCCUPATIONAL HEALTH MAPPED TO OTHER STANDARDS & FRAMEWORKS

		SEQOHS (2010)	CMSUK(2009)	HPC (2008) SCPE	CSP (2010) Framework	COT PGQF	HPC (2007) SoP: Psych	DoH (2004) KSF	PHRU/SfH (2008)
1	**Values**	Stds A - F	Stds 1-15	Stds 1 - 14	✓	✓	✓		
2	**Knowledge & understanding of Occupational Health [OH]**	Stds A - F	Stds 1- 15	Stds 1 - 14	✓	Knowledge & skills	✓		Areas 1-9
3	**Self-awareness**	Stds A,C, E, F	Stds 1-5;7-15	Stds 3-6, 12,13	✓	✓	✓		Area 5
4	**Political awareness**	Stds A,E, F	Stds 3,4,7,10, 15	Std 1	✓	Critical thinking; Communication	✓	Core4,5; HWB3	Areas 3 – 4
5	**Psycho-motor skills**		Stds 3, 4		✓	✓	✓	Core 3; HWB1-2, HWB4-10; EF1	
6	**Communicating**	Stds E F	Stds 1-7; 9-15	Stds 2,4, 6-10,14	✓	Communication	✓	Core 1; IK1; G8	Areas 1,2,4-9
7	**Helping others learn & develop**		Stds 4,7-9,12	Std 8	✓	Involvement in education of others	✓	Core 2; HWB4; G1, G7	Area 8
8	**Managing self & others**	Stds A- F	Stds 1,3-15	Stds 3-6,8, 11-13	✓	Leadership/management	✓	Core 2, 3, 5; IF1-3; G3-7	Areas 4,6,9
9	**Promoting integration & teamwork**		Stds 4,9,11,15	Stds 6,8	✓	Teamworking; Leadership/management	✓	Core 1; G6	Area 4
10	**Putting the service user at the centre of practice**	Stds E,F	Stds 2-14	Std 1	✓	Service user involvement	✓	Core 1, 3; HWB1-6	Area 5
11	**Respecting & promoting diversity**	Stds E, F	Stds 2-5, 7, 9-15		✓	Service user involvement	✓	Core 5,6; HWB4	Areas 5,9
12	**Ensuring quality**	Stds A - F	Stds 1-15	Stds 1 – 14	✓	Critical thinking; Risk management; Ethical	✓	Core 3,5,6; HWB3; EF1-	Areas 1-3,9

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						practice		3; IK1, IK3	
13	**Improving & developing services**		Stds 7-9		✓	Evidence based practice; Leadership/management	✓	Core 3,4; IK1-3; G2, G5	Area 9
14	**Lifelong learning**	Std C	Stds 7-9	Std 5	✓	CPD/LLL	✓	Core 1,2,5	Area 9
15	**Practice decision-making**		Stds 3,4		✓	Critical thinking	✓	Core 5; HWB2,6,7; IK1-3	Areas 1,2,6,7
16	**Researching & evaluating**		Stds 4,7,11		✓	Research	✓	Core 1; IK1-3;G5	Areas 2,3,7-9
17	**Using evidence to lead practice**		Stds 3,4,7,11, 15		✓	Evidence based practice	✓	Core 4; IK2	Areas 2-5

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APPENDIX 2: EXAMPLES OF HOW FRAMEWORK DOMAINS WORK TOGETHER IN PRACTICE

EXAMPLE 1 - CONDUCTING A WORKPLACE ASSESSMENT

Conducting a workplace assessment requires a blend of the following domains from the framework:
Values
Knowledge & understanding of Occupational Health (OH): structure & function of the human body; health, disease, disorder & dysfunction; pathology & epidemiology; principles & applications of scientific enquiry; the role of other professions & organisations involved in OH; physical sciences, movement & ergonomics; Clinical sciences & their application to OH; Behavioural science & its application to OH; the ethical principles underpinning practice; the legal & policy framework governing OH practice in the UK.
Self-awareness
Political awareness

Practice skills

Communicating
Putting the service user at the centre of practice
Ensuring quality
Using evidence to lead practice
Managing self & others
Respecting & promoting diversity
Practice decision making

EXAMPLE 2 - TEAM LEADERSHIP

Leading a team to develop & evaluate a service requires a blend of the following domains from the framework:
Values

Knowledge & understanding of Occupational Health (OH): principles & applications of scientific enquiry; the role of other professions & organisations involved in OH; behavioural science & its application to OH; the ethical principles underpinning practice; the legal & policy frameworks governing OH practice in the UK
Self-awareness
Political awareness

Communicating
Managing self & others
Respecting & promoting diversity
Improving & developing services
Researching & evaluating practice
Helping others learn & develop
Promoting integration & teamwork
Ensuring quality
Practice decision making
Using evidence to lead practice

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EXAMPLE 3 Providing education and training to workers re 'body mechanics':

Clinicians at level A or B can provide training re bodymechanics. Level A clinicians' should work under the supervision of Level B therapist.
The clinician must be level B in the items in BOLD

1. Values -
Values are not described at a specific level but are expressed through the behavioural elements of other domains within the framework.

2. Knowledge & understanding of Occupational Health (OH): Level C unless specified
2.1 Building on undergraduate knowledge
2.1.1 Structure & function of the human body
2.1.2 Health, disease, disorder & dysfunction
2.1.3 Principles & applications of scientific enquiry
2.1.4 Physical and movement science
2.2 Epidemiological research methods providing the knowledge and skills to evaluate research to establish causal links in the development of work relevant disease
2.3 Clinical sciences relevant to professional practice in OH
2.4 Behavioural sciences relevant to professional practice in OH
2.5 **Ethical principles underpinning practice in occupational health**
2.6 **UK legal and policy frameworks governing OH and including case law**
2.7 Organisational factors and their impact on work and health
2.8 Commercial knowledge including the need for and methods to make a business case for occupational health, rehabilitation and ergonomic services
2.9 Applied workplace ergonomics
2.10 The Bio-psycho-social model and its application to work and to disability
2.11 Disability rehabilitation and reintegration into the workplace
2.12 Graded and paced occupational and vocational rehabilitation
2.13 Assessment of fitness for work
2.14 Health behaviour and health behaviour change

3. **Practice Skills:**
3.1 identify personal values, preferences & ways of working (e.g. likes & dislikes; strengths & weaknesses; emotions & prejudices; personal scope of practice), & understand how these can affect the practitioner's behaviour, judgement, & practice
4. **Political Awareness**:
4.1 identify the political, social, economic & institutional factors influencing the delivery & development of work and health programmes and the development of Occupational Health

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4.2 engage with the implementation & development of policy in Occupational Health

5. **Psychomotor skills**

5.1 Perform structured bio psycho social assessment on individuals with neuro- musculoskeletal disorders in an OH context
5.2 Perform assessment using valid reliable tools where available and where not using standardised testing protocols that are related to the demands of the job
5.3 interpret the results of a cohort of psychosocial and functional assessment tools and use results to inform a treatment or rehabilitation programme and to monitor progress
5.4 design and deliver a programme of treatment or graded and paced occupational & vocational rehabilitation for individuals & groups
5.5 Perform formal and structured workplace assessment using ergonomics tools
5.6 Reflects and evaluates own performance of psychomotor skills required for clinical practice with a view to improving skills and capability

6. **Communicating:**

6.1 Facilitate the sharing of information, advice and ideas with a range of people, using a variety of media
6.2 Modify communication to meet individual's preferences and needs of client or organisation
6.3 Use therapeutic communication skills to be able to tackle psycho social issues around work and health
6.4 Engage with technology
6.5 Build relationships in an organisation to facilitate rehabilitation of individuals and the health and wellbeing of the workforce
6.6 Communicating with the workplace and with other relevant stakeholders on a range of issues eg advice on fitness for work and recommendations for transitional work arrangements or modifications

7. **Helping others to learn and develop**

7.1 assess the learner's needs & preferences; design materials/experiences that facilitate learning & development
7.2 deliver materials/experiences that facilitate learning
7.3 evaluate the effectiveness of the learning & development experience
7.4 reflect on the learning & development process
7.5 Demonstrate recommended work methods to individuals and groups using own body (bodymechanics) and equipment

8. **Managing self & others:**

8.1 Plan, prioritise and organise personal workload and activities
8.2 Adapt personal behaviour & actions in response to the demands of the situation
8.3 Evaluate the effectiveness of performance (own & others)
8.4 Lead & inspire others

9. **Promoting integration & teamwork**

9.1 build, maintain & promote effective interpersonal relationships

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9.2 work collaboratively with others to achieve shared goals
9.3 work with others to maintain & develop the effective performance of teams/networks in Occupational Health

10. **Customer focus:**
10.1 Provide a professional service to clients who may have conflicting needs; the Organisation (customer) and the Worker (individual)
10.2 Demonstrate respect for the individual and organisation
10.3 **Provide information & support that enables an organisation and /or an individual to make informed** choices
10.4 involve the organsiation and individual in a participative approach to the shaping the design & delivery of their service

11. **Respecting & promoting diversity:**
11.1 respect & value diversity
11.2 examine own values & principles to avoid discriminatory behaviour & to minimise the potential negative effects of individual differences
11.3 work constructively with people of all backgrounds & orientations
11.4 promote a non-discriminatory culture that values diversity, & enables individuals to contribute & realise their full potential

12. **Ensuring quality:**
12.1 fulfil the requirements of the legal policy and professional frameworks governing practice in Occupational Health;
12.2 recognise situations where the effectiveness, efficiency & quality of an OH service are compromised, & take appropriate action
12.3 critically reflect on practice in the context of quality

13. **Improving and developing services**
13.1 critically evaluate practice & use this appraisal to inform Occupational Health service improvement, development & redesign;
13.2 develop innovative & sustainable recommendations to improve the quality of the service in Occupational Health
13.3 plan, facilitate & manage change;
13.4 critically evaluate the process & outcome

14. **Lifelong learning (CPD):**
14.1 assess personal learning & development needs & preferences
14.2 develop & engage in a personalised plan designed to meet those needs
14.3 reflect on the learning process
14.4 document the process

15. Practice decision making:
15.1 collect information from a variety of sources relevant to the decision making situation;
15.2 process & analyse the information collected;

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15.3 draw reasoned conclusions & make informed judgements to address issues/resolve problems in Occupational Health practice;
15.4 critically evaluate the decision making process

16. Researching & evaluating practice (audit)
16.1 design, plan, conduct & manage the research/evaluation process
16.2 use methods of enquiry to collect & interpret data in order to address problems or issues arising from Occupational Health practice;
16.3 critically evaluate the research/evaluation process
16.4 communicate the outcome of the research/evaluation process.

17. Using evidence to lead practice:
17.1 systematically search for evidence
17.2 critically appraise evidence & use the information to address problems & issues arising in Occupational Health practice

EXAMPLE 4 Providing Education & Training to Team Leaders/ Supervisors regarding ergonomic principles

Clinicians need to be level B or above to provide training re ergonomics principles.
The clinician must be level C in the items in BOLD

1. Values -
Values are not described at a specific level but are expressed through the behavioural elements of other domains within the framework.

2. Knowledge & understanding of Occupational Health (OH): Level C unless specified
2.15 Building on undergraduate knowledge
2.15.1 Structure & function of the human body
2.15.2 Health, disease, disorder & dysfunction
2.15.3 Principles & applications of scientific enquiry
2.15.4 Physical and movement science
2.16 Epidemiological research methods providing the knowledge and skills to evaluate research to establish causal links in the development of work relevant disease
2.17 Clinical sciences relevant to professional practice in OH
2.18 Behavioural sciences relevant to professional practice in OH
2.19 Ethical principles underpinning practice in occupational health Level B

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2.20 **UK legal and policy frameworks governing OH and including case law**
2.21 Organisational factors and their impact on work and health
2.22 Commercial knowledge including the need for and methods to make a business case for occupational health, rehabilitation and ergonomic services Level B
2.23 Applied workplace ergonomics
2.24 The Bio-psycho-social model and its application to work and to disability Level B
2.25 Disability rehabilitation and reintegration into the workplace Level B
2.26 Graded and paced occupational and vocational rehabilitation Level B
2.27 Assessment of fitness for work Level B
2.28 Health behaviour and health behaviour change Level B

15. **Practice Skills: Level C**
3.1 identify personal values, preferences & ways of working (e.g. likes & dislikes; strengths & weaknesses; emotions & prejudices; personal scope of practice), & understand how these can affect the practitioner's behaviour, judgement, & practice

16. **Political Awareness**: **Level C**
4.3 identify the political, social, economic & institutional factors influencing the delivery & development of work and health programmes and the development of Occupational Health
4.4 engage with the implementation & development of policy in Occupational Health

17. **Psychomotor skills Level C**
5.7 Perform structured bio psycho social assessment on individuals with neuro- musculoskeletal disorders in an OH context
5.8 Perform assessment using valid reliable tools where available and where not using standardised testing protocols that are related to the demands of the job
5.9 interpret the results of a cohort of psychosocial and functional assessment tools and use results to inform a treatment or rehabilitation programme and to monitor progress
5.10 design and deliver a programme of treatment or graded and paced occupational & vocational rehabilitation for individuals & groups
5.11 Perform formal and structured workplace assessment using ergonomics tools
5.12 Reflects and evaluates own performance of psychomotor skills required for clinical practice with a view to improving skills and capability

18. **Communicating: Level C**
6.7 Facilitate the sharing of information, advice and ideas with a range of people, using a variety of media
6.8 Modify communication to meet individual's preferences and needs of client or organisation
6.9 Use therapeutic communication skills to be able to tackle psycho social issues around work and health
6.10 Engage with technology
6.11 Build relationships in an organisation to facilitate rehabilitation of individuals and the health and wellbeing of the workforce

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6.12 Communicating with the workplace and with other relevant stakeholders on a range of issues eg advice on fitness for work and recommendations for transitional work arrangements or modifications

19. **Helping others to learn and develop Level C**
7.6 assess the learner's needs & preferences; design materials/experiences that facilitate learning & development
7.7 deliver materials/experiences that facilitate learning
7.8 evaluate the effectiveness of the learning & development experience
7.9 reflect on the learning & development process
7.10 Demonstrate recommended work methods to individuals and groups using own body (bodymechanics) and equipment

20. **Managing self & others: Level C**
8.5 Plan, prioritise and organise personal workload and activities
8.6 Adapt personal behaviour & actions in response to the demands of the situation
8.7 Evaluate the effectiveness of performance (own & others)
8.8 Lead & inspire others

21. **Promoting integration & teamwork Level B**
9.4 build, maintain & promote effective interpersonal relationships
9.5 work collaboratively with others to achieve shared goals
9.6 work with others to maintain & develop the effective performance of teams/networks in Occupational Health

22. **Customer focus: Level B**
10.5 Provide a professional service to clients who may have conflicting needs; the Organisation (customer) and the Worker (individual)
10.6 Demonstrate respect for the individual and organisation
10.7 Provide information & support that enables an organisation and /or an individual to make informed choices
10.8 involve the organsiation and individual in a participative approach to the shaping the design & delivery of their service

23. **Respecting & promoting diversity: Level B**
11.5 respect & value diversity
11.6 examine own values & principles to avoid discriminatory behaviour & to minimise the potential negative effects of individual differences
11.7 work constructively with people of all backgrounds & orientations
11.8 promote a non-discriminatory culture that values diversity, & enables individuals to contribute & realise their full potential

24. **Ensuring quality: Level B**
12.4 fulfil the requirements of the legal policy and professional frameworks governing practice in Occupational Health;

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12.5 recognise situations where the effectiveness, efficiency & quality of an OH service are compromised, & take appropriate action
12.6 critically reflect on practice in the context of quality

25. **Improving and developing services Level B**
13.5 critically evaluate practice & use this appraisal to inform Occupational Health service improvement, development & redesign;
13.6 develop innovative & sustainable recommendations to improve the quality of the service in Occupational Health
13.7 plan, facilitate & manage change;
13.8 critically evaluate the process & outcome

26. **Lifelong learning (CPD): level B**
14.5 assess personal learning & development needs & preferences
14.6 develop & engage in a personalised plan designed to meet those needs
14.7 reflect on the learning process
14.8 document the process

15. Practice decision making: level B
15.5 collect information from a variety of sources relevant to the decision making situation;
15.6 process & analyse the information collected;
15.7 draw reasoned conclusions & make informed judgements to address issues/resolve problems in Occupational Health practice;
15.8 critically evaluate the decision making process

16. Researching & evaluating practice (audit) Level B
16.5 design, plan, conduct & manage the research/evaluation process
16.6 use methods of enquiry to collect & interpret data in order to address problems or issues arising from Occupational Health practice;
16.7 critically evaluate the research/evaluation process
16.8 communicate the outcome of the research/evaluation process.

17. Using evidence to lead practice: level B
17.3 systematically search for evidence
17.4 critically appraise evidence & use the information to address problems & issues arising in Occupational Health practice

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Example 5 Providing assessment and treatment in an off site clinic

Clinicians can provide assessment and treatment with competency at level A but must be supervised by a clinician competent to level B or above and must be able to refer on if the person requires a step up in the level of care required.
The clinician must be level B in the items in BOLD

1. Values -
Values are not described at a specific level but are expressed through the behavioural elements of other domains within the framework.

2. Knowledge & understanding of Occupational Health (OH): Level B
2.29 Building on undergraduate knowledge
2.29.1 Structure & function of the human body
2.29.2 Health, disease, disorder & dysfunction
2.29.3 Principles & applications of scientific enquiry
2.29.4 Physical and movement science
2.30 Epidemiological research methods providing the knowledge and skills to evaluate research to establish causal links in the development of work relevant disease
2.31 Clinical sciences relevant to professional practice in OH
2.32 Behavioural sciences relevant to professional practice in OH
2.33 Ethical principles underpinning practice in occupational health
2.34 UK legal and policy frameworks governing OH and including case law
2.35 Organisational factors and their impact on work and health
2.36 Commercial knowledge including the need for and methods to make a business case for occupational health, rehabilitation and ergonomic services
2.37 Applied workplace ergonomics
2.38 The Bio-psycho-social model and its application to work and to disability
2.39 Disability rehabilitation and reintegration into the workplace
2.40 Graded and paced occupational and vocational rehabilitation
2.41 Assessment of fitness for work
2.42 Health behaviour and health behaviour change

27. **Practice Skills: Level B**
3.1 identify personal values, preferences & ways of working (e.g. likes & dislikes; strengths & weaknesses; emotions & prejudices; personal scope of practice), & understand how these can affect the practitioner's behaviour, judgement, & practice

28. **Political Awareness:** Level B

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4.5 identify the political, social, economic & institutional factors influencing the delivery & development of work and health programmes and the development of Occupational Health
4.6 engage with the implementation & development of policy in Occupational Health

29. **Psychomotor skills Level B**
5.13 Perform structured bio psycho social assessment on individuals with neuro- musculoskeletal disorders in an OH context
5.14 Perform assessment using valid reliable tools where available and where not using standardised testing protocols that are related to the demands of the job
5.15 interpret the results of a cohort of psychosocial and functional assessment tools and use results to inform a treatment or rehabilitation programme and to monitor progress
5.16 design and deliver a programme of treatment or graded and paced occupational & vocational rehabilitation for individuals & groups
5.17 Perform formal and structured workplace assessment using ergonomics tools
5.18 Reflects and evaluates own performance of psychomotor skills required for clinical practice with a view to improving skills and capability

30. **Communicating: level B**
6.13 Facilitate the sharing of information, advice and ideas with a range of people, using a variety of media
6.14 Modify communication to meet individual's preferences and needs of client or organisation
6.15 Use therapeutic communication skills to be able to tackle psycho social issues around work and health
6.16 Engage with technology
6.17 Build relationships in an organisation to facilitate rehabilitation of individuals and the health and wellbeing of the workforce
6.18 Communicating with the workplace and with other relevant stakeholders on a range of issues eg advice on fitness for work and recommendations for transitional work arrangements or modifications

31. **Helping others to learn and develop**
7.11 assess the learner's needs & preferences; design materials/experiences that facilitate learning & development
7.12 deliver materials/experiences that facilitate learning
7.13 evaluate the effectiveness of the learning & development experience
7.14 reflect on the learning & development process
7.15 Demonstrate recommended work methods to individuals and groups using own body (bodymechanics) and equipment

32. **Managing self & others: level B**
8.9 Plan, prioritise and organise personal workload and activities
8.10 Adapt personal behaviour & actions in response to the demands of the situation
8.11 Evaluate the effectiveness of performance (own & others)
8.12 Lead & inspire others

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33. **Promoting integration & teamwork Level B**
9.7 build, maintain & promote effective interpersonal relationships
9.8 **work collaboratively with others to achieve shared** goals
9.9 work with others to maintain & develop the effective performance of teams/networks in Occupational Health

34. **Customer focus: Level B**
10.9 Provide a professional service to clients who may have conflicting needs; the Organisation (customer) and the Worker (individual)
10.10 Demonstrate respect for the individual and organisation
10.11 Provide information & support that enables an organisation and /or an individual to make informed choices
10.12 involve the organsiation and individual in a participative approach to the shaping the design & delivery of their service

35. **Respecting & promoting diversity:** Level B
11.9 respect & value diversity
11.10 examine own values & principles to avoid discriminatory behaviour & to minimise the potential negative effects of individual differences
11.11 work constructively with people of all backgrounds & orientations
11.12 promote a non-discriminatory culture that values diversity, & enables individuals to contribute & realise their full potential

36. **Ensuring quality: Level B**
12.7 fulfil the requirements of the legal policy and professional frameworks governing practice in Occupational Health;
12.8 recognise situations where the effectiveness, efficiency & quality of an OH service are compromised, & take appropriate action
12.9 critically reflect on practice in the context of quality

37. **Improving and developing services**
13.9 critically evaluate practice & use this appraisal to inform Occupational Health service improvement, development & redesign;
13.10 develop innovative & sustainable recommendations to improve the quality of the service in Occupational Health
13.11 plan, facilitate & manage change;
13.12 critically evaluate the process & outcome

38. **Lifelong learning (CPD): level B**
14.9 assess personal learning & development needs & preferences
14.10 develop & engage in a personalised plan designed to meet those needs
14.11 reflect on the learning process
14.12 document the process

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15. Practice decision making: level B
15.9 collect information from a variety of sources relevant to the decision making situation;
15.10 process & analyse the information collected;
15.11 draw reasoned conclusions & make informed judgements to address issues/resolve problems in Occupational Health practice;
15.12 critically evaluate the decision making process

16. Researching & evaluating practice (audit)
16.9 design, plan, conduct & manage the research/evaluation process
16.10 use methods of enquiry to collect & interpret data in order to address problems or issues arising from Occupational Health practice;
16.11 critically evaluate the research/evaluation process
16.12 communicate the outcome of the research/evaluation process.

17. Using evidence to lead practice: level B
17.5 systematically search for evidence
17.6 critically appraise evidence & use the information to address problems & issues arising in Occupational Health practice

Example 6 Solo Working On-site providing Assessment and Treatment (with little or no support).
Items in bold indicate areas of particular importance to this role.

1. Values -
Values are not described at a specific level but are expressed through the behavioural elements of other domains within the framework.

2. Knowledge & understanding of Occupational Health (OH): Level B
2.1 Building on undergraduate knowledge (heading)
2.1.1 Structure & function of the human body
2.1.2 Health, disease, disorder & dysfunction
2.1.3 Principles & applications of scientific enquiry
2.1.4 Physical and movement science
2.2 Epidemiological research methods providing the knowledge and skills to evaluate research to establish causal links in the development of work relevant disease
2.3 Clinical sciences relevant to professional practice in OH
2.4 Behavioural sciences relevant to professional practice in OH

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2.5 Ethical principles underpinning practice in occupational health
2.6 UK legal and policy frameworks governing OH and including case law
2.7 Organisational factors and their impact on work and health
2.8 Commercial knowledge including the need for and methods to make a business case for occupational health, rehabilitation and ergonomic services
2.9 Applied workplace ergonomics
2.10 The Bio-psycho-social model and its application to work and to disability
2.11 Disability rehabilitation and reintegration into the workplace
2.12 Graded and paced occupational and vocational rehabilitation
2.13 Assessment of fitness for work
2.14 Health behaviour and health behaviour change

3. Practice Skills: Level B
3.1 identify personal values, preferences & ways of working (e.g. likes & dislikes; strengths & weaknesses; emotions & prejudices; personal scope of practice), & understand how these can affect the practitioner's behaviour, judgement, & practice

4. **Political Awareness: Level B**
4.1 identify the political, social, economic & institutional factors influencing the delivery & development of work and health programmes and the development of Occupational Health
4.2 engage with the implementation & development of policy in Occupational Health

5. Psychomotor skills: Level B
5.1 Perform structured bio psycho social assessment on individuals with neuro- musculoskeletal disorders in an OH context
5.2 Perform assessment using valid reliable tools where available and where not using standardised testing protocols that are related to the demands of the job
5.3 interpret the results of a cohort of psychosocial and functional assessment tools and use results to inform a treatment or rehabilitation programme and to monitor progress
5.4 design and deliver a programme of treatment or graded and paced occupational & vocational rehabilitation for individuals & groups
5.5 Perform formal and structured workplace assessment using ergonomics tools
5.6 Reflects and evaluates own performance of psychomotor skills required for clinical practice with a view to improving skills and capability

6. Communicating: level B
6.1 Facilitate the sharing of information, advice and ideas with a range of people, using a variety of media
6.2 Modify communication to meet individual's preferences and needs of client or organisation
6.3 Use therapeutic communication skills to be able to tackle psycho social issues around work and health
6.4 Engage with technology

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6.5 Build relationships in an organisation to facilitate rehabilitation of individuals and the health and wellbeing of the workforce
6.6 Communicating with the workplace and with other relevant stakeholders on a range of issues eg advice on fitness for work and recommendations for transitional work arrangements or modifications

7. Helping others to learn and develop: Level B
7.1 assess the learner's needs & preferences; design materials/experiences that facilitate learning & development
7.2 deliver materials/experiences that facilitate learning
7.3 evaluate the effectiveness of the learning & development experience
7.4 reflect on the learning & development process
7.5 Demonstrate recommended work methods to individuals and groups using own body (bodymechanics) and equipment

8. Managing self & others: level B
8.1 Plan, prioritise and organise personal workload and activities
8.2 Adapt personal behaviour & actions in response to the demands of the situation
8.3 Evaluate the effectiveness of performance (own & others)
8.4 Lead & inspire others

9. Promoting integration & teamwork Level B
9.1 build, maintain & promote effective interpersonal relationships
9.2 work collaboratively with others to achieve shared goals
9.3 work with others to maintain & develop the effective performance of teams/networks in Occupational Health

10. Customer focus: Level B
10.1 Provide a professional service to clients who may have conflicting needs; the Organisation (customer) and the Worker (individual)
10.2 Demonstrate respect for the individual and organisation
10.3 Provide information & support that enables an organisation and /or an individual to make informed choices
10.4 involve the organsiation and individual in a participative approach to the shaping the design & delivery of their service

11. **Respecting & promoting diversity: Level B**
11.1 respect & value diversity
11.2 examine own values & principles to avoid discriminatory behaviour & to minimise the potential negative effects of individual differences
11.3 work constructively with people of all backgrounds & orientations
11.4 promote a non-discriminatory culture that values diversity, & enables individuals to contribute & realise their full potential

12. Ensuring quality: Level B

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Behaviours, knowledge & skills required by Physiotherapists for working in Occupational Health

12.1 fulfil the requirements of the legal policy and professional frameworks governing practice in Occupational Health;
12.2 recognise situations where the effectiveness, efficiency & quality of an OH service are compromised, & take appropriate action
12.3 critically reflect on practice in the context of quality

13. Improving and developing services: Level B
13.1 critically evaluate practice & use this appraisal to inform Occupational Health service improvement, development & redesign;
13.2 develop innovative & sustainable recommendations to improve the quality of the service in Occupational Health
13.3 plan, facilitate & manage change;
13.4 critically evaluate the process & outcome

14. Lifelong learning (CPD): level C
14.1 assess personal learning & development needs & preferences
14.2 develop & engage in a personalised plan designed to meet those needs
14.3 reflect on the learning process
14.4 document the process

15. Practice decision making: level B
15.1 collect information from a variety of sources relevant to the decision making situation;
15.2 process & analyse the information collected;
15.3 draw reasoned conclusions & make informed judgements to address issues/resolve problems in Occupational Health practice;
15.4 critically evaluate the decision making process

16. Researching & evaluating practice (audit): level B
16.1 design, plan, conduct & manage the research/evaluation process
16.2 use methods of enquiry to collect & interpret data in order to address problems or issues arising from Occupational Health practice;
16.3 critically evaluate the research/evaluation process
16.4 communicate the outcome of the research/evaluation process.

17. Using evidence to lead practice: level B
17.1 systematically search for evidence
17.2 critically appraise evidence & use the information to address problems & issues arising in Occupational Health practice

Example 7 Title: Managing the on site service for the individual or team Items in bold indicate areas of particular importance to this role.

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1. Values -
Values are not described at a specific level but are expressed through the behavioural elements of other domains within the framework.

2. Knowledge & understanding of Occupational Health (OH): Level C
2.1 Building on undergraduate knowledge
2.1.1 Structure & function of the human body
2.1.2 Health, disease, disorder & dysfunction
2.1.3 Principles & applications of scientific enquiry
2.1.4 Physical and movement science
2.2 Epidemiological research methods providing the knowledge and skills to evaluate research to establish causal links in the development of work relevant disease
2.3 Clinical sciences relevant to professional practice in OH
2.4 Behavioural sciences relevant to professional practice in OH
2.5 Ethical principles underpinning practice in occupational health
2.6 UK legal and policy frameworks governing OH and including case law
2.7 Organisational factors and their impact on work and health
2.8 Commercial knowledge including the need for and methods to make a business case for occupational health, rehabilitation and ergonomic services
2.9 Applied workplace ergonomics
2.10 The Bio-psycho-social model and its application to work and to disability
2.11 Disability rehabilitation and reintegration into the workplace
2.12 Graded and paced occupational and vocational rehabilitation
2.13 Assessment of fitness for work
2.14 Health behaviour and health behaviour change

3. Practice Skills: Level C
3.1 identify personal values, preferences & ways of working (e.g. likes & dislikes; strengths & weaknesses; emotions & prejudices; personal scope of practice), & understand how these can affect the practitioner's behaviour, judgement, & practice

4. **Political Awareness: Level C**
4.3 identify the political, social, economic & institutional factors influencing the delivery & development of work and health programmes and the development of Occupational Health
4.4 engage with the implementation & development of policy in Occupational Health

5. Psychomotor skills: Level C
5.7 Perform structured bio psycho social assessment on individuals with neuro- musculoskeletal disorders in an OH context

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5.8 Perform assessment using valid reliable tools where available and where not using standardised testing protocols that are related to the demands of the job
5.9 interpret the results of a cohort of psychosocial and functional assessment tools and use results to inform a treatment or rehabilitation programme and to monitor progress
5.10 design and deliver a programme of treatment or graded and paced occupational & vocational rehabilitation for individuals & groups
5.11 Perform formal and structured workplace assessment using ergonomics tools
5.12 Reflects and evaluates own performance of psychomotor skills required for clinical practice with a view to improving skills and capability

6. Communicating: level C
6.1 **Facilitate the sharing of information, advice and ideas with a range of people, using a variety of media**
6.**2 Modify communication to meet individual's preferences and needs of client or organisation**
6.3 Use therapeutic communication skills to be able to tackle psycho social issues around work and health
6.4 Engage with technology
6.5 **Build relationships in an organisation to facilitate rehabilitation of individuals and the health and wellbeing of the workforce**
6.**6 Communicating with the workplace and with other relevant stakeholders on a range of issues eg advice on fitness for work and recommendations for transitional work arrangements or modifications**

7. Helping others to learn and develop: Level C
7.**1 assess the learner's needs & preferences; design materials/experiences that facilitate learning & development**
7.2 **deliver materials/experiences that facilitate learning**
7.**3 evaluate the effectiveness of the learning & development experience**
7.4 reflect on the learning & development process
7.5 Demonstrate recommended work methods to individuals and groups using own body (bodymechanics) and equipment

8. **Managing self & others: level C**
8.1 Plan, prioritise and organise personal workload and activities
8.2 Adapt personal behaviour & actions in response to the demands of the situation
8.3 Evaluate the effectiveness of performance (own & others)
8.4 Lead & inspire others

9. Promoting integration & teamwork: Level C
9.1 build, maintain & promote effective interpersonal relationships
9.2 work collaboratively with others to achieve shared goals
9.3 work with others to maintain & develop the effective performance of teams/networks in Occupational Health

10. Customer focus: Level C

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Behaviours, knowledge & skills required by Physiotherapists for working in Occupational Health

10.1 Provide a professional service to clients who may have conflicting needs; the Organisation (customer) and the Worker (individual)
10.2 Demonstrate respect for the individual and organisation
10.3 Provide information & support that enables an organisation and /or an individual to make informed choices
10.4 involve the organsiation and individual in a participative approach to the shaping the design & delivery of their service

11. Respecting & promoting diversity: Level C
11.1 respect & value diversity
11.2 examine own values & principles to avoid discriminatory behaviour & to minimise the potential negative effects of individual differences
11.3 work constructively with people of all backgrounds & orientations
11.4 promote a non-discriminatory culture that values diversity, & enables individuals to contribute & realise their full potential

12. Ensuring quality: Level C
12.1 fulfil the requirements of the legal policy and professional frameworks governing practice in Occupational Health;
12.2 recognise situations where the effectiveness, efficiency & quality of an OH service are compromised, & take appropriate action
12.3 critically reflect on practice in the context of quality

13. Improving and developing services: Level C
13.1 critically evaluate practice & use this appraisal to inform Occupational Health service improvement, development & redesign;
13.2 develop innovative & sustainable recommendations to improve the quality of the service in Occupational Health
13.3 **plan, facilitate & manage change**
13.4 critically evaluate the process & outcome

14. Lifelong learning (CPD): level C
14.1 assess personal learning & development needs & preferences
14.2 develop & engage in a personalised plan designed to meet those needs
14.3 reflect on the learning process
14.4 document the process

15. Practice decision making: level C
15.1 collect information from a variety of sources relevant to the decision making situation;
15.2 process & analyse the information collected;
15.3 **draw reasoned conclusions & make informed judgements to address issues/resolve problems in Occupational Health practice**;
15.4 critically evaluate the decision making process

16. Researching & evaluating practice (audit) : Level C

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Behaviours, knowledge & skills required by Physiotherapists for working in Occupational Health

16.1 design, plan, conduct & manage the research/evaluation process
16.2 **use methods of enquiry to collect & interpret data in order to address problems or issues arising from Occupational Health practice**;
16.3 critically evaluate the research/evaluation process
16.4 **communicate the outcome of the research/evaluation process**.

17. Using evidence to lead practice: level C
17.1 systematically search for evidence
17.2 critically appraise evidence & use the information to address problems & issues arising in Occupational Health practice

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Behaviours, knowledge & skills required by Physiotherapists for working in Occupational Health

|APPENDIX 3

This appendix explains how the behaviours knowledge and skills framework cross relates to the ACPOHE grading and salary paper that is published annually

Clinical physiotherapist Grade A Knowledge. Skills and behaviours mainly at level A in competency framework

• Working under the management of a more senior physiotherapist, preferably within the same department or building or, if based in a remote location, should have ready access to a line manager by phone at all times.

• Concerned with clinical treatment, but rarely assesses fitness for work.

• Infrequent role in health education and promotion.

Minimum experience – some relevant postgraduate experience recommended.

Clinical physiotherapist Grade B Knowledge. Skills and behaviours mainly at level B in competency framework

• Working independently as the only physiotherapist in the organisation, or not directly managed by another physiotherapist, or managed by a Grade D/E physiotherapist but provides a specialist service in the following areas.

• Concerned with providing a clinical service, including assessment of patient's fitness for particular job.

• Occasional contributions to health education and promotion,as appropriate (rarely involved in workplace ergonomics and job designs).

• Likely to be responsible for maintaining and ordering physiotherapy stocks and equipment.

Significant clinical experience required – significant relevant postgraduate experience recommended.

Occupational health physiotherapist (ESP) Grade C Knowledge. Skills and behaviours at level B and C (50/50) in competency framework

• Works independently to manage and develop the clinical service as Grade B.

• Regularly contributes to health education/promotion programmes

Regularly involved in workplace ergonomics and job design,

likely to affect the expenditure of other departments within the company on a small scale.

• Responsible for return to work (RTW)/sickness absence medicals and planning graduated return to work for employees.

• May also contribute to the content and/or the delivery of health and safety training on manual handling, DSE and associated subjects.

Significant postgraduate clinical experience recommended and suitable OH/Ergonomic qualifications.

Occupational health physiotherapy manager (ESP) Grade D Knowledge. Skills and behaviours mainly at level C in competency framework

• Fulfils all criteria required for Grade C.

• Is either in charge of one or more physiotherapists working within an organisation, or responsible for the administration of physiotherapy units/service throughout an organisation.

• Involved in planning and implementation of Occupational Health programmes, strategies and research protocols in conjunction with other health professionals and

management.

• Gives company-wide advice on selection of suitable ergonomic equipment (seating, workstations, lifting aids, etc),

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therefore having significant effect on company expenditure.
Contributes to related policies across an organisation.
Occupational Health/Ergonomic qualification essential – extensive relevant postgraduate experience.

Consultant occupational health physiotherapist (ESP) Grade E Knowledge. Skills and behaviours mainly at level C and D in competency framework
(The term consultant refers to professional status and not contractual status.)
• Fulfils all criteria for Grade D, although not necessarily a line manager of others.
• Expert in Occupational Health physiotherapy practice and is recognised as making a distinguished contribution to OH physiotherapy, providing expert advice within and external to the organisation.
• Acts as a clinical lead for specialist OH service.
• Dependent on local service requirements, there will be emphasis on one or more of the other supporting functions of a consultant, ie service and practice development, education and professional development, research and evaluation, professional leadership.
Occupational Health/Ergonomic qualification essential –extensive relevant postgraduate experience

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Behaviours, knowledge & skills required by Physiotherapists for working in Occupational Health

Appendix 4 Education

The ACPOHE courses develop knowledge and skills to level B. Details of the content and learning objectives from these can be obtained from the ACPOHE website www.acpohe.org.uk. This information can be used to check the required knowledge and skills to met level B on the competency framework.

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Behaviours, knowledge & skills required by Physiotherapists for working in Occupational Health

Appendix 5 Working Party Members

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