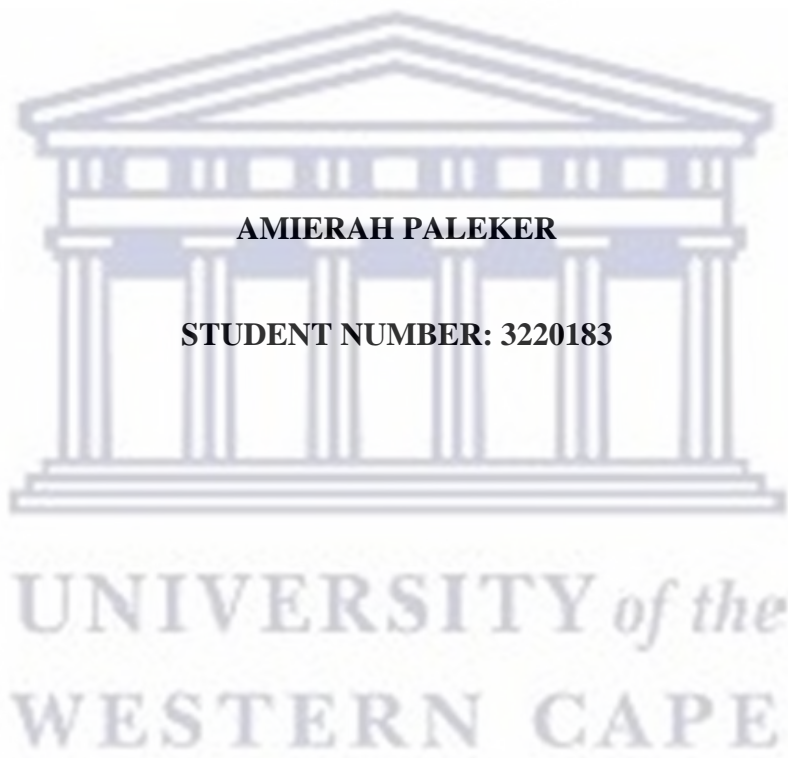


**PERCEPTIONS OF THE PHYSICAL ACTIVITY AND EXERCISE PROMOTION
AND PRESCRIPTION CONTENT OF THE UNDERGRADUATE PHYSIOTHERAPY
CURRICULUM AT A SELECTED UNIVERSITY IN THE WESTERN CAPE, SOUTH
AFRICA**



ABSTRACT:

The World Health Organization (WHO) reports that non-communicable diseases are increasing at an alarming rate, leading to an increase in mortality and disability. A lack of physical activity is a global problem, but if more people changed their unhealthy habits and participated in physical activity, it would reduce the risk of premature deaths due to non-communicable diseases. The role of physiotherapists in promoting physical activity cannot be overstated. The role of this professional has been recognized by world professional bodies. It is unclear whether the entry-level physiotherapy curriculum produces graduates who can promote physical activity significantly in the lives of individuals. Thus, the overall goal of this study was to examine how undergraduate physiotherapy curriculums at the University of the Western Cape promote and prescribe physical activity and exercise. The study population consisted of all fourth-year physiotherapy students enrolled at the University of the Western Cape during the 2019 academic year. An exploratory, qualitative approach was employed in the study, and data was collected through structured feedback sessions and individual interviews. Data was analyzed, enhancing trustworthiness, through the four strategies by Lincoln and Guba (1985). A content analysis and coding of the participants' opinions was done by extracting meaningful ideas. A total of six emerging themes were identified from the results. Ethical clearance was obtained to conduct the study. The students felt their clinical experiences and exposures were distinct from each other. The students felt that although they were taught the theoretical knowledge, they were not able to apply it in the clinical setting. Finally, the students made several recommendations that need to be considered when developing the future physiotherapists at the University of the Western Cape.

KEYWORDS:

PHYSIOTHERAPY CURRICULUM, PHYSICAL ACTIVITY, TEACHING AND LEARNING METHODS, HEALTHCARE PROFESSIONALS, PHYSIOTHERAPY STUDENTS, STRUCTURED GROUP FEEDBACK SESSIONS, INDIVIDUAL INTERVIEWS.



DECLARATION:

I hereby declare that “Perceptions of The Physical Activity and Exercise Promotion and Prescription Content of the Undergraduate Physiotherapy Curriculum at s Selected University In The Western Cape, South Africa” is my own work, that it has not been submitted for any degree or examination at any other university, and that all the sources used or quotes have been indicated and acknowledged by complete references.

Amierah Paleker

Date:05 October 2022

Signature:



Witnesses:

UNIVERSITY of the
WESTERN CAPE



Prof Julie Phillips



Ms Shamila Gamiet

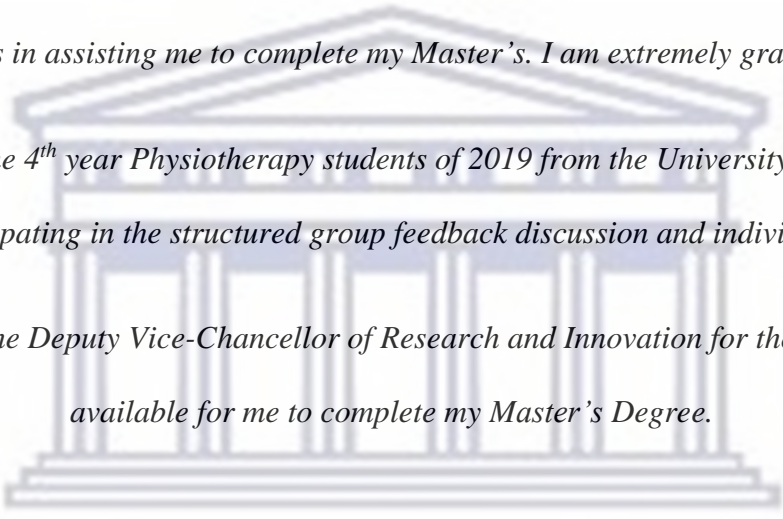
ACKNOWLEDGEMENTS:

I would like to thank the Almighty for granting me the opportunity to complete a Master's Degree. My parents, friends and family for their continuous support, encouragement, and motivation to submit.

Thank you to my supervisors, Professor Julie Phillips & Mrs Shamila Gamiet., for providing me with guidance, assistance, feedback, support and most importantly, patience over the last four years in assisting me to complete my Master's. I am extremely grateful.

Thank you to the 4th year Physiotherapy students of 2019 from the University of the Western Cape for participating in the structured group feedback discussion and individual interviews.

Thank you to the Deputy Vice-Chancellor of Research and Innovation for the funding made available for me to complete my Master's Degree.



“CLEAR EYES, FULL HEARTS, CAN'T LOSE...”
FRIDAY NIGHT LIGHTS

UNIVERSITY of the
WESTERN CAPE

TABLE OF CONTENTS:

INTRODUCTION.....	10
1.1 Introduction to the Chapter	10
1.2 Background to the Study	10
1.3 Problem Statement.....	12
1.4 Research Question.....	13
1.5 Overall Aim.....	13
1.6 Objectives.....	13
1.7 Significance of the Study	13
1.8 Abbreviations used in the thesis.....	14
1.9 Definition of terms.....	14
1.10 Outline of the Thesis	17
LITERATURE REVIEW:.....	19
2.1. Introduction	19
2.2. Benefits of physical activity:.....	19
2.3 The role of healthcare professionals in the promotion of physical activity	22
2.3.1 The role of physiotherapy in the promotion of physical activity:.....	23

2.4 The physiotherapy curriculum:	25
2.5 Theoretical framework	27
2.5.1 Conscious Competence Model (Howell, 1982).	27
2.5.2 Four-dimensional framework for curriculum development	28
2.5.3 The Clinical Reasoning model (Elven et al., 2014)	29
2.6 Summary of the chapter	31
3.1 Introduction	33
3.2 Research design:	33
3.3 Research setting:	33
3.4. Study population and sampling:	34
3.5 Method of data collection:	34
3.5.1 Structured group feedback session.	34
3.5.2 Individual interviews:	36
3.6 Data analysis:	36
3.8 Summary of the chapter	39
RESULTS:	40
4.1 Introduction	40

4.2 Description of study sample:	40
4.3 Emerging themes	40
4.3.1 Theoretical Knowledge	41
4.3.2 Physiotherapy Management	48
4.3.3 Personal Experience	51
4.3.4 Clinical Exposure/Experience	52
4.3.5 Clinical reasoning:	55
4.3.6 Gaps in curriculum	59
4.4 Summary of the chapter	61
DISCUSSION	62
5.1 Introduction:	62
5.2: Healthcare professionals' role in behavioural change:	62
5.3 Theoretical knowledge	66
5.4 Clinical exposure	70
5.5 Curriculum (methods of teaching of learning)	72
5.6 Summary of chapter 5	76
CONCLUSION AND RECOMMENDATIONS	77

6.1 Introduction:	77
REFERENCES	79
APPENDIX A:	94
APPENDIX B	96
APPENDIX C:	101
APPENDIX D:	103
APPENDIX E:	104
APPENDIX F:	107



CHAPTER ONE

INTRODUCTION

1.1 Introduction to the Chapter

The first chapter of the study provides an overview of the study, which indicates that physical inactivity is one of the leading causes of non-communicable diseases worldwide. The purpose of this chapter is to present an overview of the role that physical activity plays in combating non-communicable diseases and the importance of promoting physical activity by health professionals. The chapter outlines the study's general purpose, objectives, and significance. A list of abbreviations and definitions is also included.

1.2 Background to the Study

A sufficient amount of evidence exists supporting the inclusion of physical activity into the daily lives of individuals as a means of primary and secondary prevention of non-communicable diseases (NCDs) such as hypertension and diabetes (Bukhman, et al., 2007; WHO, 2004). In addition, physical inactivity is one of the leading risk factors resulting in mortality worldwide (WHO, 2004). Several NCDs are attributed to physical inactivity, unhealthy eating habits, excessive consumption of alcohol and smoking, according to Reiner et al. (2013). Therefore, these researchers concluded that physical activity is a very important factor in preventing NCDs. Among poorer countries, non-communicable diseases have caused a global burden (Beaglehole & Yach, 2003). According to the Lancet NCDI Poverty Commission, created in 2015, NCDs are poorly understood as a contributor to the mortality and morbidity of poorer countries (Bukhman, et al., 2021).

Non-communicable diseases are expected to account for 80% of deaths by 2020, up from 40% in 2005 (Boutayeb & Boutayeb, 2005). Physical inactivity is a global problem but changing unhealthy habits and becoming more active would decrease the risk of NCD-related premature deaths (Lee et al., 2012). Individuals who participate in physical activity would experience a ten to twenty-five percent reduction in NCDs. WHO (2017) reported that NCDs are increasing at an alarming rate, increasing mortality rates, disabilities, and obesity rates. Several studies have shown that physical activity reduces the risk of NCDs and premature death by improving body composition, glucose homeostasis, insulin sensitivity, blood pressure, coronary blood flow, and balancing LDL (low-density lipoprotein) levels with HDL (high-density lipoprotein) (WHO, 2017).

According to Dai and Menhas (2020), the United Nations has established a set of Sustainable Development Goals (SDGs), which aims to assure healthy lives and promote well-being by 2030. Physical activity can be promoted globally through sport, which is seen as a cost-effective and important way to do so. In addition to improving overall health and well-being, physical activity and sports can help prevent and treat non-communicable diseases (NCDs). Similarly, Dai and Menhas (2020) found that regular physical activity impacts people's mental, physical, and social well-being.

As part of its efforts to combat the worldwide burden of disease caused by physical inactivity, the World Health Organization has recommended guidelines for physical activity levels for both adults and children (World Health Organization, 2010). The WHO also recommends that health professionals encourage patients to be more physically active (World Health Organisation, 2009). Similarly, the World Confederation of Physical Therapy (WCPT) recognises the importance of physiotherapists' role in promoting physical activity alongside treatment. According

to Yona et al. (2019), physiotherapists have the unique ability to both encourage and persuade patients to participate in regular physical activity following WHO recommendations.

According to the WCPT, physical activity must be integrated into physiotherapy curricula (Johnson, 2010). However, Johnson (2010) reported that entry-level educational curricula generally lack disease prevention programmes. In order to meet the changing needs of the population, health profession education must be transformed. Rather than focusing solely on diseases, primary healthcare must be geared towards health and well-being (Department of Health, Western Cape, 2015). According to Frank et al. (2010), academics have set the requirements for health professions education as a baseline for obtaining completion of the course, and the curriculum is therefore rarely revised unless new changes are considered to incorporate new information. Additionally, these researchers noted that the curriculum must evolve over time in order to meet the needs of the healthcare system as it evolves and the needs for change arise.

1.3 Problem Statement

More than a decade ago, Wilson et al. (2010) argued that health professionals need more skills and knowledge related to health promotion and disease prevention. According to these authors, health professionals entering the workplace will require more academic preparation in the areas of health promotion and disease prevention (Wilson et al., 2000). A professional physiotherapy body has recognised the role that physiotherapists play in promoting physical activity and agreed that physical activity is a part of our professional practice (WCPT, 2009). Physiotherapists and physiotherapy students have had to change their roles to meet the demands of the population as rates of death and disability have grown. Physiotherapy training is not clearly geared towards producing graduates who can make a significant difference in the lives of individuals as change agents (WHO, 2012). To meet the needs of the population, physiotherapists need to expand their

role from what they are as clinical practitioners to become members of healthcare teams involved in disease prevention, health promotion and community development (Flutter, 2003).

1.4 Research Question

How do undergraduate physiotherapy students at the University of Western Cape perceive the training curriculum's content on physical activity and exercise promotion and prescription?

1.5 Overall Aim

The overall aim of the study was to examine students' perceptions of the physiotherapy curriculum content at the University of the Western Cape regarding physical activity and exercise promotion and prescription.

1.6 Objectives


- 1.6.1 To explore the perceptions of the positive aspects of the curriculum with respect to exercise prescription and physical activity.
- 1.6.2 To explore the perceptions of the negative aspects of the curriculum with respect to exercise prescription and physical activity.
- 1.6.3 To explore how students perceive improvements in the curriculum with respect to exercise prescription and physical activity.

1.7 Significance of the Study

Health professionals are trained and educated to become competent change agents (WHO, 2011). Physiotherapists are increasingly involved in health promotion and disease prevention, so undergraduate students should be equipped with the necessary knowledge and skills. Therefore, it is imperative to examine whether the undergraduate curriculum provides sufficient content, especially in physical activity and exercise prescription. As a result, NCDs will be less

burdensome. As gaps are identified, findings are shared with stakeholders for possible curriculum changes. It is the objective of this study to understand perspectives in order to bring about changes in the curriculum in order to make sure newly qualified graduates are capable of being change agents, decreasing death and disability by promoting physical activity and exercise prescription and the impact of death and disability.

1.8 Abbreviations used in the Thesis



CHS:	Community and Health Sciences
DOHWC:	Department of Health, Western Cape
HDL:	High-density lipoprotein
HSSREC:	Humanities and Social Sciences Research Ethics Committee
LDL:	Low-density lipoprotein
NCDs:	Non-Communicable Diseases
SDG's:	Sustainable Development Goals
UN:	United Nations
UWC:	University of the Western Cape
WCPT:	World Confederation of Physical Therapy
WHO:	World Health Organisation

1.9 Definition of Terms

Barrier: Anything that causes you to slip up in your goal or anything that makes it difficult or not possible to make progress (Tank, 2008).

Curriculum: The curriculum is all of the experiences that individual learners have in a programme of education whose purpose is to achieve broad goals and

related specific objectives, which is planned in terms of a framework of theory and research or past and present professional practice (Hass, 1980).

Disability: An umbrella term for impairment, activity limitation and participation restriction and it denotes the negative aspects of interaction between an individual who has a health condition and the individual's contextual factors, which are environmental and personal factors (WHO, 2001).

Disease: Illness or sickness characterised by specific signs and symptoms (Davis, 2021).

Exercise Prescription: An exercise prescription is a basic plan or programme of activity designed by professionals to enhance the well-being of a patient (Hamilton, 2003).

Facilitators: is a person or organisation that helps another person or organisation to do or to achieve a particular thing (Collins, 2005).

Healthcare professionals: Primarily concerned with diagnosing and treating health problems in human and with providing related services such as pharmacy, nutrition, speech therapy, physiotherapy and occupational therapy, in addition to specialist physicians and general practitioners (Galarneau, 2004).

Health promotion: It is a process of enabling people to increase control over and improve their health in order to reach a state of complete physical, mental, and social well-being (Coulson, Goldstein and Ntuli, 2002).

Non-communicable disease: Diseases or conditions that occur in or are known to affect individual over an extensive period of time and for which there are no known causative agents they are transmitted from one affected individual to another. NCD includes diseases as hypertension, diabetes mellitus, and cardiovascular diseases (Daar, et al., 2007).

Perceptions: A particular way of understanding or thinking about something (MacMillian, 2009).

Prevention: Intervening before health effects occur, through measures such as vaccinations, altering risky behaviours (Wallace, 2006).

Physical activity: Any bodily movements that produced by skeletal muscle that result in energy expenditure (Khan, et al., 2012).

Physiotherapy: Is a healthcare profession concerned with identifying and maximising quality of life and movement potential within the spheres of health promotion, prevention, treatment interventions, habilitation, and rehabilitation to facilitate physical, psychological, emotional, and social well-being of an individual or population (World Confederation of Physical Therapy, 2013).

Physiotherapy students: Students who study undergraduate studies in the physiotherapy programme.

Sustainable Development Goals: The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty,

inequality, climate change, environmental degradation, peace, and justice (UN, 2020).

1.10 Outline of the Thesis

Chapter One provides the background of the study. The importance of physical activity and its promotion in the physiotherapy curriculum is discussed. This background information highlights the importance of physical activity and the translation of curriculum into clinical practice. Several important aspects of the study are explained, including its significance, aim, and objectives. Abbreviations used in the thesis and key terms defined are also provided.

Chapter Two provides a review of relevant literature. A literature review covers the main aspects explored in this study, namely the benefits of physical activity, the role of healthcare professionals in promoting physical activity, and physiotherapy curriculum. Finally, the theoretical framework of the study is presented.

Chapter Three provides the methodology of the study. This section describes the research design, the setting, the methods of data collection, and the study population and sampling. Also included is an explanation of how the data will be analysed. Issues related to trustworthiness and credibility are outlined. The chapter ends with a discussion of the study's ethics.

Chapter Four presents the results from the structured group feedback session as well as individual interviews conducted. The themes and sub-themes are outlined and supported with relevant quotes.

Chapter Five presents a discussion of the results with reference to the relevant literature available.

Chapter Six provides a summary and conclusion of the study. In addition, recommendations based on the study findings are provided. The limitations of the study are also outlined.



CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter presents a review of the literature on physical activity benefits, the role of healthcare professionals, including physiotherapists in physical activity promotion. The content of physical activity in the physiotherapy curriculum is also reviewed. This study's theoretical framework is described.

2.2. Benefits of Physical Activity

Globally, 3.2 million deaths are attributed to physical inactivity every year (Aliyu et al. 2015). Aliyu, et al. (2015) attribute physical inactivity to sedentary lifestyles at work and at home. The goal of physical activity is to improve and maintain health and well-being through movement (Warburton, 2006). According to the World Health Organization (WHO), physical activity includes “any bodily movement involving skeletal muscles that increases energy expenditure above resting requirements and includes household tasks, leisure time activity, and structured physical activity” (World Health Organization, 2019). Physical activity has numerous health benefits, and researchers have coined the term “wonder drug” for its positive impacts on physical and mental well-being as well as its ability to prevent disability and several other chronic diseases (McNally, 2020; Lowe, et al. 2016; Pahor, et al. 2014; Haskell et al., 2007).

Physical activity can help control weight, improve well-being, reduce the risk of chronic diseases such as diabetes, heart disease, strokes, and cholesterol, control blood pressure, reduce systemic inflammation, and reduce stress (WHO, 2018; Bauman et al., 2016). In addition to improving sleep patterns, regular physical activity can address factors that cause sleeplessness in patients (Cohan,

et al., 2010). Consequently, mental health can also be improved when stress is reduced (Campbell et al. 2009). A study by Oliveira et al. (2018) also found that individuals who suffer from musculoskeletal pain can benefit from physical activity and exercise therapy, which includes weight training and aerobic exercise. Aside from improving physical health, physical activity has been shown to improve mental health and well-being (Geneen, et al., 2017; Cooney, et al., 2013). Furthermore, Bize et al. (2007) have demonstrated that physical activity is beneficial to health-related quality of life.

The lack of physical activity contributes to non-communicable diseases such as heart disease, strokes, diabetes, and cancer (Rutter et al. 2018). If more people changed their unhealthy habits and engaged in physical activity, the rate of premature deaths from non-communicable diseases (NCD) would decrease (Lee, et al., 2012). According to Dean et al. (2013), inactivity contributes greatly to non-communicable diseases, which are associated with increased mortality. A recent study by Yona, et al. (2019) indicated that lifestyle modifications such as getting more exercise, can reduce the risk of most NCDs such as cardiovascular and respiratory diseases and some types of cancer and diabetes. However, despite evidence of benefits from physical activity and consequences from inactivity, Yona, et al. (2019) concluded that at least 31% of adults and 80% of teenagers are physically inactive.

Global health development was guided by a set of goals introduced by the UN General Assembly in September 2015 (General Assembly, United Nations, 2015). In contrast to the Millennium Development Goals, sustainable development goals include health promotion as one of their components. As Dai and Menhas (2020) noted, the UN has recognised sport and physical activity as essential to promoting the Sustainable Development Goals.

According to Spencer et al. (2018), physical activity and sports assist in achieving healthier societies in accordance with the SDGs. Specifically, SDG 3 promotes overall mental health and well-being and focuses primarily on preventing and treating non-communicable diseases (Dai & Menhas, 2020). Furthermore, the authors suggest that policymakers should ensure that opportunities for physical activity are available to the population, which will result in a reduction of non-communicable diseases.

In order to reduce the global burden of disease, the World Health Organization (WHO) recommends levels of physical activity for adults and children (World Health Organization, 2010). The WHO recommends that aerobic physical activity be performed at a moderate intensity at least 150 minutes per week or vigorous intensity aerobic activity at least 75 minutes per week. For adults, resistance training is recommended at least twice a week for the major muscle groups. Thirty-minute exercise sessions five days a week is also recommended by the World Confederation of Physical Therapy (WCPT) (2012) in order to prevent the onset of non-communicable diseases. A combination of strengthening exercises, balance exercises, and cardiovascular exercises should be performed at a moderate to vigorous intensity (WCPT, 2012).

According to a recent systematic review, 150 minutes of physical activity should be performed each week (Warburton & Bredin, 2017). As a result of their review, these authors challenged these guidelines as not being evidence-based, and that it might even create a barrier to people who might benefit from becoming more physically active. Studies based on large cohorts of epidemiological studies have demonstrated a dose-response relationship between physical activity and premature mortality. Physical activity appears to be curvilinear based on the evidence, which implies that even small amounts of physical activity can result in significant health benefits (Warburton & Bredin, 2017).

2.3 The Role of Healthcare Professionals in the Promotion of Physical Activity

Since the 1990s, physical activity promotion programmes have been used in various settings (Lobelo et al. 2014; Blair et al. 2012). According to Albert et al. (2020), these types of programmes often include physical activity counselling, advice on how to change behaviour and referrals to specialists for individualised physical activity programmes. A number of public health policies have been developed to encourage healthcare professionals to incorporate physical activity into their treatment plans (Albert et al., 2020). Among these policies are Healthy People 2020 (Healthy People, 2020) and Exercise is Medicine (Cowan, 2016). In addition, researchers have shown that physical activity promotion is an effective intervention that can be used in various healthcare settings (Webb et al. 2016).

Physical activity promotion should be a priority for healthcare professionals, including those who deal with non-communicable diseases such as hypertension, cardiovascular disease, and diabetes (Barrett et al. 2013). Healthcare professionals should use appropriate counselling techniques regarding health promotion in their management of clients to promote healthier lifestyles, according to Healey et al. (2012). As part of the World Health Organization's global strategy on diet, physical activity and health (WHO, 2002), the organisation stressed the importance of promoting a healthier diet and increasing physical activity to prevent NCDs. Professionals such as physiotherapists can encourage their patients to engage in physical activity, reduce stress, and eat better. Exercise prescription by physiotherapists is well-suited to their experience and reputation as experts in the field (WCPT Briefing Paper, 2012). However, Hébert et al. (2012) noted that personal and organisational considerations might limit promotion of physical activity in primary care by healthcare professionals. It has also been reported that lack of expertise and limited time are barriers to physical activity promotion among healthcare professionals (Din et al. 2015). It was

reported in a systematic review by Albert et al. (2020) that healthcare professionals' knowledge of physical activity and its promotion was very diverse, which suggests that training in this area and/or increased awareness are needed. According to Cantwell, et al. (2018), healthcare professionals may not be fully versed in specific physical activity guidelines.

2.3.1 The Role of Physiotherapy in the Promotion of Physical Activity

The role of healthcare professionals is to educate patients on the benefits of physical activity, manage diseases, and limit rising death and disability rates. A physiotherapist is responsible for educating patients about the benefits of physical activity and empowering them to lead healthier lives (Shirley, et al., 2010). Physical therapists are skilled at encouraging individuals to take responsibility for their own health and participate in physical activity (WHO, 2009). Physical therapists also believe they possess the skills necessary for implementing physical activity interventions, according to Shirley, et al. (2010). As a result of their training, physiotherapists are well suited to provide physical activity guidance to a wide range of clinical groups (Kunstler et al., 2018). For physiotherapists to effectively treat patients, they must provide information about a specific exercise programme, its progression, and its implementation (Hovanec, 2015). In addition to offering advice and guidance on how to avoid the root causes of disability (Metz et al. 2012), physiotherapists also play a role in the prevention and treatment of NCDs (Van Rooijen & Van der Spuy, 2000). The Chartered Society of Physiotherapy (2015) highlights how physiotherapists can potentially assist in the reduction of NCD burdens. In addition, McPhail (2015) noted that physiotherapists are working with individuals who are inactive and have multiple co-morbidities. It is believed that physiotherapists may be able to help with NCD risk factors in a much wider manner than just physical activity, according to O'Donoghue et al. (2014). However, education requirements and practice standards should address the competencies and time constraints

common among clinicians. A study conducted by Dean et al. (2014) and the World Congress for Physical Therapy (Dean et al., 2013) concluded that physiotherapists are ideally suited to encourage their patients to be physically active and follow WHO guidelines. The results of several studies have indicated physiotherapists have the necessary expertise and training in both prescribing physical activity and educating consumers about NCDs such as heart disease and diabetes (You et al. 2012; Shirley et al. 2010). By working with individuals over time, physiotherapists could follow-up on behaviour change strategies with them, according to Freene et al. (2017). However, Lowe, et al. (2016) reported that very little evidence exists demonstrating physiotherapists' promotion of physical activity.

Although most physiotherapists globally do not have sufficient knowledge of the WHO recommendations for physical activity, Abaraogue et al. (2016) and Lowem et al. (2017) contend that most physiotherapists promote physical activity in some way to their patients. Among the participants in the study by Abaraogue et al. (2016), most agreed that they regularly advise their patients about physical activity, but rarely provide them with written prescriptions. Further, these participants cite resource constraints and time constraints as barriers to implementing physical activity interventions in their patient populations. According to Barton et al. (2021), physiotherapists need to address perceived and actual competency barriers to prescribe physical activity, so their practice aligns with existing guidelines. As a result, the authors advocate for the consideration of professional development for physiotherapists in order to improve knowledge about physical activity guidelines.

According to Dean (2009), physiotherapists have an ethical as well as a professional responsibility to promote health. In Aweto et al. (2013) study, physical activity is questioned if the primary focus of the physiotherapist's contact session is the promotion of physical activity, referred to as "non-

treatment" physical activity. Nevertheless, these authors acknowledge that such a contact session offers opportunities to change physical activity behaviour. According to Lowe et al. (2018), there has been a significant increase in the number of publications related to physical activity promotion and physiotherapy, but the volume of literature remains small, which indicates that this is an immature field of research with a low representation of large areas of the global physiotherapy community. In order to learn how to best integrate physical activity promotion into practice that is effective and acceptable, these authors concluded that more interventional studies are needed.

2.4 The Physiotherapy Curriculum

In their study, Lee et al. (2013) described curriculum as "the overall policies that regulate the content and assessment practices of education programmes". According to Yates (2009), curriculums must be more than effective; they must be expansive, have voices, and involve everyone. As stated by Barnett and Coate (2005), curriculum refers to the dynamic interplay of knowing, doing, being, and becoming. Further, Lee et al. (2013) stated that health curriculum should address the broader political, social, and economic issues that are relevant to the specific profession, while also considering cultural and historical influences. McMahon et al. (2016) also believed that physiotherapy curricula should be responsive to changing needs in health services, governments and society.

In 2011, the World Confederation of Physical Therapy (WCPT) created guidelines for maintaining standards in the physiotherapy profession. According to the WCPT (2009), the guidelines provide a framework for the sections of the degree that must be covered in terms of content and practical skills. As the years progress, the framework strengthens the foundation with additional theoretical and practical knowledge (Ramklass, 2009). According to the curriculum guideline, psychology,

ethics, management, clinical reasoning, and evidence-based practice courses should incorporate practical skills and help students improve their understanding (Ramklass, 2009).

The WCPT (2009) encourages health professionals to include physical activity as a means of treatment in physiotherapy curricula. Physical activity and exercise have become increasingly important in physiotherapy clinical practice for prevention and treatment of chronic diseases and injuries (Astel, 2019). Therefore, the author argued that undergraduate physiotherapy students should be prepared to cope with the global shift from treatment to health promotion and disease prevention by teaching them skills related to physical activity and exercise promotion. Additionally, Astel (2019) suggests integrating guidelines for exercise for public health into the undergraduate curriculum, as well as focusing on disability, injury, and impairment.

Cunningham et al. (2021) believe that undergraduate healthcare education programmes need to incorporate physical activity and exercise theory and practice. Additionally, the authors argue that continuing curriculum revision is essential to meet contemporary societal health needs. In the area of exercise prescription, Mohammed, et al. (2018) report that a huge gap exists in physiotherapists' knowledge and skill set. In 2018, the WCPT held a panel discussion on the preparation of physiotherapists to become exercise specialists (Olutende et al. 2018). One of the key findings of the WCPT discussions was the lack of extensive exercise prescription courses in undergraduate curricula to prepare students for careers as exercise specialists. Mohammed et al. (2018) found that physiotherapists lack knowledge about the science behind exercise prescription when they tested their theory of exercise expertise. They concluded that module in exercise prescription for physiotherapists is needed in the curriculum.

2.5 Theoretical Framework

The theoretical frameworks underpinnings of curriculum in health professional education have received little attention (Lee et al., 2013). The researchers also pointed out that very little guidance exists for educators in the healthcare profession when it comes to conceptualising curricula based on the healthcare needs of society. This does not come as a surprise to these authors, as curriculum in higher education has only recently emerged as a field of study.

Three models are summarised below: the Conscious Competence Model, the Four-dimensional Framework for Curriculum Development, and the Clinical Reasoning Model.

2.5.1 Conscious Competence Model (Howell, 1982).

In this model, learners progress through four stages: unconscious incompetence, conscious incompetence, conscious competence, and unconscious competence (Howell, 1982). When learners are in the first stage, i.e., unconscious incompetence, they do not know what they know, but they are eager to learn. As learners move from this stage to the next, i.e., conscious incompetence, they need information and insight, thus becoming aware of their inadequate knowledge. It is crucial to provide good instruction and encouragement during this stage. In the third stage, conscious competence, the learner has expanded his/her skills, but still requires carefully considered action and thought. During the final stage, a learner can function more intuitively and only use analytical skills when needed, i.e., unconscious competence.

Incompetence	<p>Student seeks to solve problems intuitively with little or no insight into the principles driving their solutions</p> <p>Stage 1</p>	<p>Students seek to solve problems logically; recognising problems with their intuitive analysis but not yet knowing how to fix them</p> <p>Stage 2</p>
Competence	<p>Students solve problems logically, but they understand the analyses on an intuitive level and can adapt them creatively and spontaneously to fit new situations</p> <p>Stage 4</p>	<p>Students learn to solve problems logically, but mechanically still having difficulty adapting their analyses creatively and spontaneously to new situations</p> <p>Stage 3</p>

Figure 2.1 Conscious Competence Model (Howell, 1982) as cited by Cannon, Feinstein & Friesen, 2010).

2.5.2 Four-dimensional Framework for Curriculum Development (Lee, Steketee, Rogers & Moran, 2013).

In this framework, there are four dimensions that are interconnected and dependent on each other (Lee et al., 2013).

Dimension 1: Identifying future practice needs in healthcare. Curriculums are "shaped by social, historical, political, economic, professional, and educational forces" and therefore take global health and educational reforms into account (Lee et al., 2013). This dimension is actively shaping and driving curriculum development.

Dimension 2: In this dimension, healthcare professionals define and understand their competencies and attributes. In Barnett's and Coates' (2005) view, this dimension articulates the dynamic relationship between knowledge, action, and being.

Dimension 3: Includes the core activities suitable for teaching, learning, and assessment. As a result, all of these are guided by the messages inbuilt in dimensions 1 and 2.

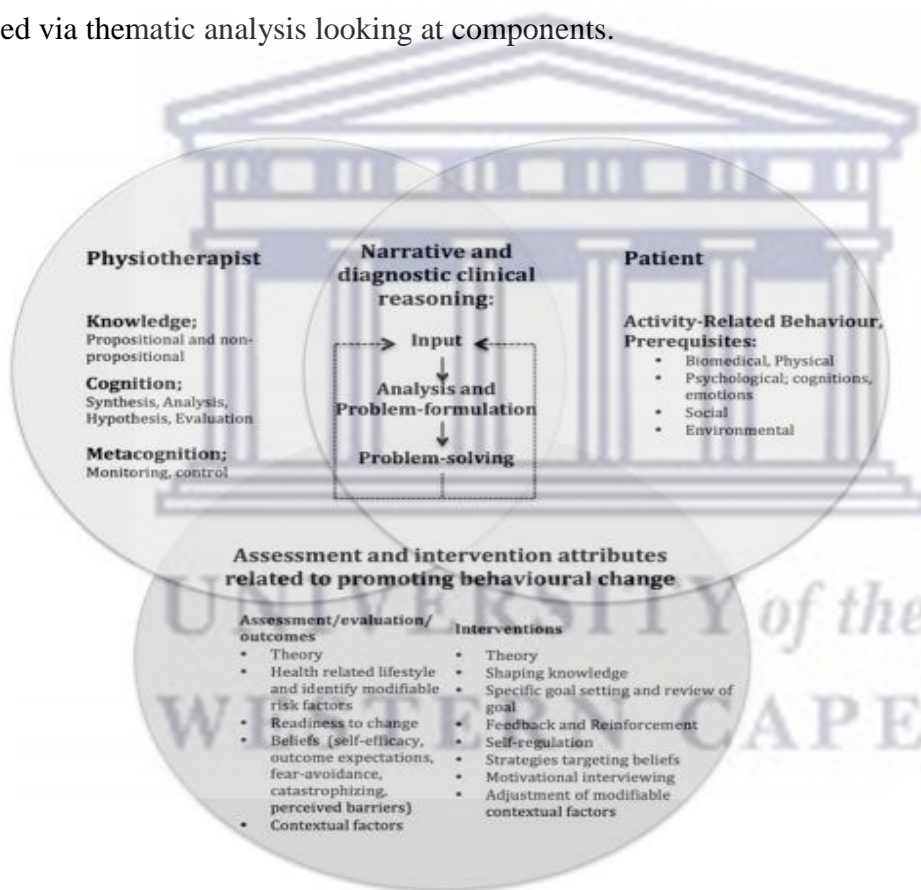
In dimension 4, the context of the curriculum is examined in terms of its organisational and administrative structure. Also included in this dimension are cultural norms and protocols, which speak to the complex cultural challenges and accommodations required to make curriculum ideas work.

2.5.3 The Clinical Reasoning Model (Elven, et al., 2014)

The Clinical Reasoning Model was developed by Elven et al. (2014) to assist physiotherapists in the process of behaviour change with clients. In the initial model, physiotherapists focused on patients' behaviour change in response to their input. In contrast, the final model described clinical reasoning centred on clients' behaviour change as a cognitive, insightful, collaborative process involving multiple levels, including input from both client and physiotherapist, functional

behaviour analysis of activity-related target behaviours, and behavioural change strategies selection.

A certain component of the Clinical Reasoning Model will be used in this study in order to understand undergraduate physiotherapy students' perceptions of physical activity and exercise promotion and prescription topics: the perceptions of the physiotherapy clinical educators about behavioural medicine and implementation of exercise in clinical education. The opinions will be analysed via thematic analysis looking at components.



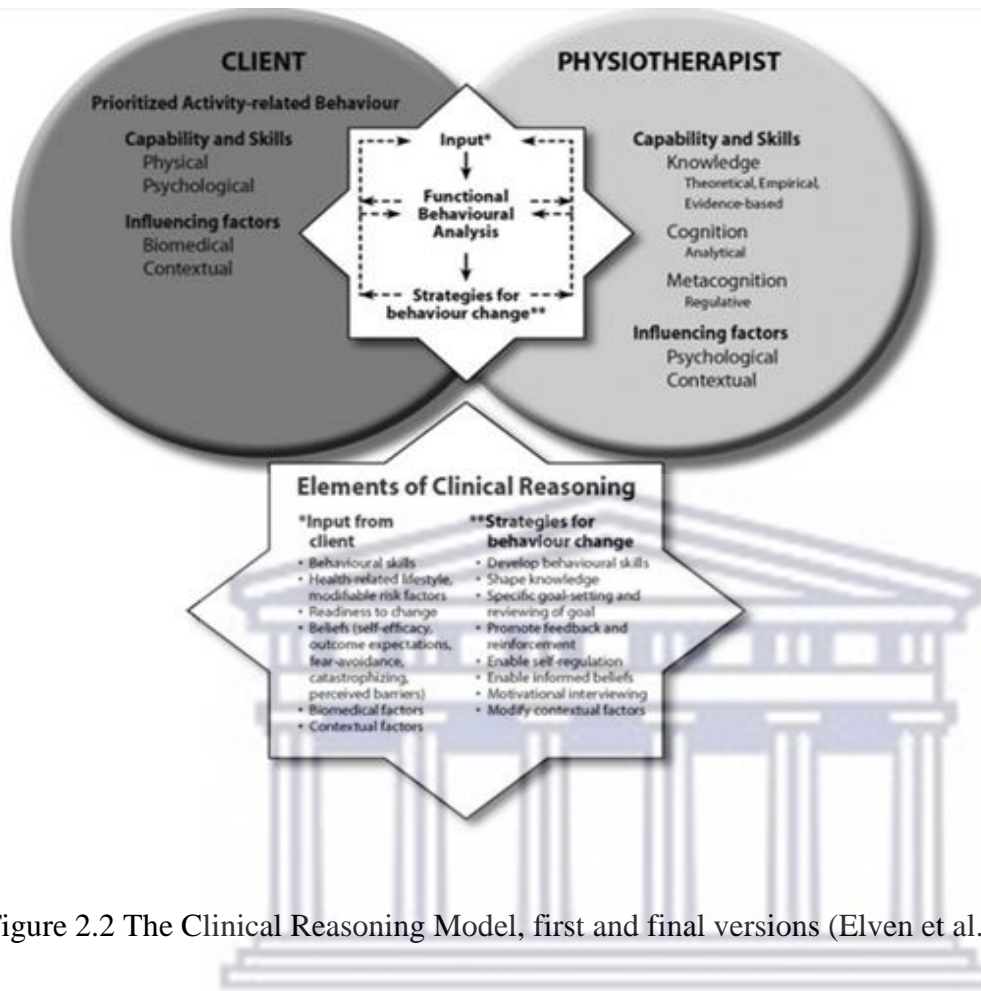


Figure 2.2 The Clinical Reasoning Model, first and final versions (Elven et al. 2014))

2.6 Summary of the Chapter

Healthcare professionals are responsible for educating patients on the benefits of physical activity and managing diseases while limiting rising mortality and disability rates. In addition, physiotherapists have the potential to assist with a much larger scope of NCD risk factors than just physical activity. Although competencies and time constraints have been frequently identified in literature, education requirements and practice standards need to address them. It is evident from the literature review that integrating physical activity promotion into practice in an acceptable and effective manner is essential. Moreover, undergraduate healthcare education programmes should embed physical activity and exercise prescription and promotion as a matter of importance. In view of this, this study seeks to understand undergraduate physiotherapy students' perceptions of

curriculum content related to physical activity and exercise promotion and prescription at a selected university in the Western Cape.



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes the methods used in achieving the study's objectives. The design, setting, and data collection methods of the study are described. Moreover, the data analysis and ethics guiding the study are explained.

3.2 Research approach and design

This was a descriptive and exploratory study that utilised a qualitative approach. The purpose of this study was to explore the perceptions of undergraduate physiotherapy students about the content of physical activity and exercise promotion and prescription at The University of the Western Cape. Qualitative research allows the researcher to understand the opinions of the participants and provides depth to their viewpoints. Researchers can gain insights into participants' viewpoints, opinions, and attitudes towards a particular topic (Rubin, 1995). Thus, the descriptive-qualitative approach was considered ideal for this study in order to present students' perceptions of the undergraduate physiotherapy curriculum regarding physical activity and exercise promotion.

3.3 Research setting

This study was conducted at the University of the Western Cape. The University of the Western Cape is situated in Bellville in Cape Town, South Africa. It was founded in 1960 as a public university for people from disadvantaged backgrounds. Its mission is to empower vulnerable communities and to promote equality through community engagement. The University of the Western Cape currently has seven faculties, with the Department of Physiotherapy as part of the

Faculty of Community and Health Sciences. The Department of Physiotherapy offers four-year undergraduate degrees to 60 to 70 students per year group. During the third and fourth years of study, students spend a substantial amount of time on clinical rotations, working alongside clinicians in different settings.

3.4. Study Population and Sampling

The study population consisted of 49 students enrolled in fourth year physiotherapy programmes at the University of the Western Cape in 2019. As a result, a total population sampling was employed for the study. The concept of total population sampling refers to the decision to examine the entire population as a type of purposive sampling technique. Since the first, second, and third students have not been exposed to the clinical setting and have not treated patients at this stage of their academic careers, they have been excluded from the study. The third year students were excluded from the study as they had not had sufficient clinical experience and exposure whereas the fourth year students had covered a larger portion of their compulsory clinical hours and were heading into their final clinical rotations.

3.5 Method of Data Collection

An individual interview as well as a structured group feedback session were conducted to collect data. The researcher decided to follow up on structured feedback sessions with individual interviews with a small number of students in order to gain a better understanding of the issue. These two methods are described below:

3.5.1 Structured Group Feedback Session

A study invitation was sent via email to all fourth-year physiotherapy students. Participants in the feedback sessions discussed the content of the undergraduate curriculum at the University of the

Western Cape in relation to physical activity, exercise promotion, and prescription. 28 final year students participated in the structured group feedback session.

The structured group feedback session was conducted at a time that was convenient for both the participants (the fourth-year students) and the researcher. Two hours were allotted for the structured group feedback session. The participants who consented to participate received information sheets, consent forms, confidentiality binding forms, and socio-demographic questionnaires. A structured group feedback session was facilitated by two facilitators. While one moderated the session, the other took notes. In addition to an introduction and an evaluation of the curriculum divided into three stages, there was also a closing discussion. During the session, the facilitators introduced themselves, welcomed all participants, outlined the session's purpose, and explained the procedure.

Stage 1: In this section, we discussed the introductory component. Participants were asked to work independently and record their opinions about the positives and negatives of the curriculum regarding physical activity and exercise promotion. Participants were asked to suggest improvements to the health promotion curriculum. Participants were given sufficient time to complete stage 1 of the programme.

Stage 2: Participants were divided into small groups. Each group had a scribe who recorded the ideas of each member. The scribe recorded each participant's views and opinions under the headings: positives, negatives, and suggestions or changes, which the participants completed individually in stage 1.

Stage 3: Discussion was opened to all participants by the facilitator. Audio recordings of the open discussion were made. All participants discussed the points written by the scribe. Participants were

asked to write their ideas on flip charts if most of them agreed. A research assistant took notes and recorded any additional ideas raised during the session. The flip chart information was reviewed by the participants, and final changes and additions were made to make sure their opinions were correctly recorded.

In the closing session, facilitators thanked participants for their feedback and contributions. To verify the accuracy of the transcription, participants were provided with the transcribed version of the discussion.

3.5.2 Individual interviews

The interviewer drafted questions about physical activity, exercise prescriptions, and non-communicable diseases for the participants to answer in individual interviews (Appendix E). Individual interviews were conducted online using Google Meets, lasting 20 minutes each. The interviewer used an interview guide to structure the interviews. There were seven female participants and three male participants. 10 students were available for the session. Those who agreed to participate received information sheets, consent forms, and confidentiality agreements before the interview. A brief introduction, a welcome, and the purpose and procedure of the interview were outlined by the interviewer. The sessions were recorded for data collection purposes. In the end, the interviewer thanked all participants for their contributions.

3.6 Data Analysis

There is a wide range of literature available explaining the assumptions and procedures related to qualitative data analysis (Thomas, 2003). Many of these assumptions and procedures are related to grounded theory (Strauss & Corbin, 1990) and phenomenology (e.g., van Manen, 1990), among others. However, Silverman (2000) pointed out that some approaches to analysis are generic and

unlabeled. Onwuegbuzie, Dickinson et al. (2009) judged transcript-based analysis as the most rigorous.

An independent transcriber transcribed verbatim the audio tapes of both the structured feedback session and the individual interviews to produce manuscripts. To verify accuracy, the manuscript was compared to the flipcharts used in the structured feedback session and the notes taken during individual interviews.

The following steps with the analysis of the data were followed (Terre Blanche & Kelly, 1999):

- familiarisation and immersion (the transcriptions of the information from the audio tape recordings of the structured feedback sessions and individual interviews were read several times to gain a sense of the whole database)
- introducing themes (this was an inductive process whereby the transcripts were read through by the researcher several times with the aim on the emergence of ideas and themes); coding (data was marked as it relates to one or more of the themes)
- evaluation (broad categories were created, examination of the data for a few times)
- interpreting the themes (during this stage, the categories created were compared and examined for meanings and connections)

In this study trustworthiness was enhanced through the following strategies:

Trustworthiness: According to Lincoln and Guba (1985), quantitative data is trustworthy if the researcher matches the assembled realisms of participants with the data, he draws from them.

Following are the strategies that were used in this study to enhance trustworthiness:

1. Credibility (internal validity): A comparison was made between the field notes taken and the flipcharts recorded during the structured feedback sessions. Participants were provided with a summary of the main findings after the session to verify accuracy. The participants were given the opportunity to comment on whether their own experiences were reflected in the interpretation of the data.
2. Transferability (external validity): Detailed information was provided about the target population and the setting. Moreover, the data analysis documents were available so that other researchers could apply the conclusions to other research projects.
3. Dependability (reliability): In order to achieve this, we ensured that the audit trail included the methodology, original transcripts, and data analysis documents. Members' notes and comments were transparent, allowing any researcher to modify the process according to their own needs.
4. Confirmability: This is a measure of how well information collected supports the findings (Lincoln & Guba, 1985). Transcripts, analysis and process notes, and summaries of the results were provided to a colleague for review.

3.7 Ethics Statement

A Humanities and Social Sciences Research Ethics Committee clearance was obtained (HSSREC HS18/8/11) at the University of the Western Cape. In addition, the Registrar and chairperson of the Physiotherapy Department of the University of the Western Cape gave their permission to conduct the study. The study was conducted according to ethical practices pertaining to the study of human subjects as specified by the Faculty of Community and Health Sciences Research Ethics Committee of the UWC. Research guidelines were followed: information sheets (Appendix B) explaining the purpose of the study were provided to all participants in the various phases. All

participants signed informed consent forms (Appendix C). Participants were informed that participation in this study was voluntary and that they could withdraw at any time without repercussions. There was no assessment or performance task in the study, so refusing to participate had no negative impact on the student. Participants were treated with dignity and respect. Confidentiality and anonymity were assured by using pseudonyms at the structured feedback sessions. Participants were not required to put their names on any socio-demographic surveys used to collect data. Participants in structured feedback sessions signed a confidentiality binding form (Appendix D). In order to maintain participant confidentiality, pseudonyms were used when publishing results. The researcher was responsible for storing all data in a secure, password-protected computer file. Information will be retained for at least five years after the study is complete, and then it will be disposed of. Transcripts of audio tapes were destroyed after they had been transcribed. There were minimal risks associated with this study. Any participants who were affected by the study or experienced traumatic questions were referred to a counsellor. Study findings were made available to all stakeholders.

3.8 Summary of the Chapter

This chapter describes how the data were collected and analysed in the study. The next chapter will examine the data analysis results.

CHAPTER 4

RESULTS

4.1 Introduction

In this chapter, the results of the study are presented based on the main themes identified in structured feedback sessions and individual interviews that attempted to answer the study's overall objective, namely, to examine undergraduate physiotherapy students' perceptions of the content of the University of the Western Cape's physical activity and exercise promotion and prescription curriculum. Three objectives were examined: the positive aspects, the negative aspects, and recommendations for improving the curriculum.

4.2 Description of Study Sample

Students in the fourth year of the physiotherapy programme at the University of the Western Cape participated in the study. Positives, negatives, and suggestions regarding students' perceptions were requested by researchers. The structured feedback session was attended by only 28 fourth year students, so individual interviews were conducted to gain a deeper understanding. Fourth-year students were chosen because they had more clinical experience, exposure, and knowledge. Twenty-one of the students were females and seven were males. The average age of the participants was 22.21.

4.3 Emerging Themes

A variety of issues related to physical activity, exercise, and prescription content in the undergraduate curriculum were discussed both in the structured feedback sessions and in the individual interviews. Based on the thematic analysis, six themes were identified. The following themes will be explored to highlight positive and negative aspects of the curriculum, and

improvements which would improve the physiotherapy curriculum based on suggestions from the students:

- Theoretical Knowledge
- Physiotherapy Management
- Personal Experiences
- Clinical Exposure/Experience
- Clinical Reasoning
- Gaps in the Curriculum

Verbatim quotes are used to illustrate the themes outlined above.

4.3.1 Theoretical Knowledge

From the structured feedback sessions as well as the individual interviews, it was clear that the students felt that the theoretical knowledge they were taught was appropriate.

Individual Interviewee 1: "...But I do think that our curriculum was strong enough, in that sense, that it gave us the basis of it. So, we at least knew what to do in all three different sections. And then it was just about bringing it together..."

Although students reported learning theoretical knowledge relevant to the curriculum, there were more negatives than positives. The quote illustrated below indicates that the individual interviewee felt that they were taught the theoretical knowledge but the main problem is the burden of the healthcare system in South Africa.

Individual Interviewee 1:" ...So, I think it's very important for physio to be involved in this battle, or this challenge, let's say, is that... as you say, the

literature does say that exercise prescription can help with these... with the outcome of these diseases. I do believe that we need to do more outreach programmes, we have them, they are running, where we go to communities and we provide them with, you know, these exercise programmes and education around these things. But I think again, it comes down to time and how overwhelmed our healthcare system is, in the sense that, patients who do come to physio in clinics, they only get one session once a month and that's a very, very long time and even for them to, once they leave hospital, for them to get an appointment at the clinic, it can take up to three, four, five months before they see their physio again. So, we need to ensure that at our primary health care facilities, or like in the hospital, where they... where the patients were first seen, that they get physio and that the physio gets the time to educate them..."

According to a student who spoke in the individual interviews, she learned how to find reliable and trustworthy sources of articles and readings. This helped her when she was looking up various evidence-based learning practices, finding reliable sources for exercises, or advancing her learning process.

Individual Interviewee 1: "...We went through articles, so the nice thing was that you begin with evidence-based practice..."

Individual Interviewee 1: "...So yes, it may not be in my notes or in my books, but the learning through the curriculum taught me how to further my knowledge. So how to find good articles, how to find good, like, look for good, substantial

research so that I know whatever it is I'm googling or reading up on, it's a good enough piece of evidence to back up what I'm going to prescribe to my patients..."

Although students learned theoretical knowledge about various conditions, they found it relatively difficult to adapt some exercises for treatments. Examination questions and theoretical knowledge focused predominantly on healthy individuals, which did not match what they saw in a clinical setting.

Individual Interviewee 3: "...I think we've only really covered that on a healthy individual and I think even our exam questions are, someone who is wanting to become fitter, how would you prescribe exercise to this person instead of being a real-life clinical setting..."

A consensus emerged from the individual interviews that participants were provided with the foundation for understanding NCD but had challenges implementing them into clinical practice.

SFS Participant 3: "...We have good academic understanding of non-communicable diseases, and their conditions, the causes and the management, both medical and physiotherapy-based. And therefore, we also have an understanding of where physiotherapist comes in, in terms of the management..."

SFS Participant 1: "...with the Exercise and Health Promotion module, we are being taught the basic knowledge of some exercises and some progressions of the exercises, and we are being taught the basic knowledge of some health promotion aspects regarding drinking habits, smoking habits, if a patient has an increased

BMI, something about diets, about diabetic conditions, heart conditions, and so forth...”

The negative comments mainly focused on how they were able to explain a process in a practical manner, but that it did not translate to a clinical setting.

Individual Interviewee 2: “...we do get taught everything about these diseases and all the information around that. But I feel that we don't really get taught how to simplify it and teach it to the patients in the most simple way that they will fully understand...”

According to them, they were able to provide exercises to individuals in the acute setting and on the sports field, but they were unable to modify exercises at different stages of rehabilitation. According to one participant, the theory was taught in isolation, and it was difficult to apply it to the South African context as well as the low socio-economic communities.

SFS Participant 1: “...we're not being taught specific exercises and specific progressions. I think the only exercise progressions we were taught were core activities and, I think, hip activities, but it's not linking to an actual patient condition...”

SFS Participant 2: “...I just want to add that it feels like we are prepared to treat acute patients, like in a hospital setting, but if you get a sports person, that's a bit more advanced... or a bit of more advanced patient, then you're, like, lost. Then you're not sure how to progress further, or what to do after therapy, and what then...”

SFS Participant 5: "...I don't know if anyone else agrees, but the first year and the second year Primary Healthcare modules, they don't help us to convey certain information to our patients. It's more base for us, like if you want to go do research, maybe..."

Students suggested that student resources be provided for finding information regarding progressions of exercises prior to going into the clinical setting because they are unable to locate credible information. Participants in the individual interviews believed exercise prescriptions were mostly for people on the "healthier" spectrum of life.

SFS Participant 8: "...we did, like, half of that module, is done already in first year, but then we do it again at the start of second year, whereas the start of second year is not that hectic. Then the second half of the year we're, like, struggling to fit Bio-Mechanics in, then we don't even finish it completely, but it should be done first, at the start of the year, and then maybe that can come at the end of the year..."

SFS Participant 3: "...I found, when it comes to looking for exercises from another source, as in going onto the internet and looking for articles and stuff, I found you find a lot of high functioning exercises. So, there's a lot of information there to assist sports players, so people who are already fit enough, who are already strong enough, whose balance is normal, and they want to improve it..."

During the individual interview, suggestions focused on holistic approaches to patient care, which could create a comparison and reflection of Physiotherapy's overall curriculum. According to the students, the guidelines or theoretical knowledge they are taught in the classroom must cover a

broad range of topics rather than just the “healthy” individuals or athletic sportsmen since most of the patients they treat on their blocks are acute patients.

Individual Interviewee 2: “...So, like you said, for example, if you tell me this patient wants to lose weight, I will generally know. I think where I will hit a bit of a challenge is when it needs to be a bit more specific, maybe he... maybe the general programme is not working for him. But then I am equipped enough, in the sense of the university curriculum did equip me to know how to go and find these new... these specific exercises...”

For example, a student stated that a supervisor asked them their treatment plan, and they said they would improve range of motion, but no one asked how to improve the range of motion.

Individual Interviewee 7: “...But I think what would be good for fourth year, is maybe have something similar to what we had first year, like the non-communicable diseases and health promotion in fourth year, maybe, because then you actually have that experience of clinical practice as well, behind you. And then you can also understand the importance of health promotion...”

By the end of their final year, students felt confident treating patients and knowing where to start based on the theoretical knowledge they were taught in isolation. However, they were not confident about implementing health promotion and prevention modules, open discussions, or behavioural outcomes measures to change healthcare within the clinical setting or act as change agents within it. There was no consideration of socio-economic factors, educational levels, health care access, financial constraints, and language barriers that South African healthcare workers face.

Individual Interviewee 1: "...I don't believe that there is enough time at the clinic for people to be like, for them to be educated around it. So, if you look at the clinics, they are, the lines are so long, the nurses just screen you and you go to the next thing, they give you your medication, and you go on your merry way. And a lot of the times if you've got undiagnosed non-communicable diseases, even when you get diagnosed with that, there's no time that the doctor sits down with you and explains to you, this is what will happen if you don't take your medication, this is how the disease progresses. There isn't the time, and that is where I think the problem lies. So yes, being far away and not getting the education from the government or from things like that, plays a big role in it..."

In terms of consolidating their learning before they enter the world as young graduates, the students suggested a variety of approaches. In this way, they suggested that case-based learning could be used to generate discussions about relevant patients they are seeing and how they treat them while also developing their theoretical knowledge in a clinical sense.

Individual Interviewee 1: "...But I feel that maybe if we do like a revisit to the Sports Rehab module, and then have a discussion panel. Okay, so if this was the case, these are the basic exercises we have, but what would you have added to it so that everybody can learn from it and bring in their new experienced knowledge..."

Individual Interviewee 1: "...We'll speak about that and so, almost to revisit those second year and third year modules in fourth year, I think that would just be a good way to consolidate..."

The students suggested using a primary healthcare module in fourth year to "connect the dots" of all the modules and create a greater impact in the workplace as graduates. It was very likely that they wouldn't have the machines and equipment their theoretical knowledge had exposed them to during their community service blocks. In their final year, creating a community block or outreach program would allow students to develop that aspect of translating theoretical knowledge to clinical settings while still achieving patient outcomes.

4.3.2 Physiotherapy Management

Students believed their physiotherapy management was limited to acute and athletic patients. As a result, they were unable to adapt certain exercises and explain to their patients why smoking should be avoided. Additional information to help the patient understand the impact of limiting smoking on their outcome.

SFS Participant 3: "...we've forgotten all the theoretical knowledge which was a positive, because there's no practical element to match the... basically, our clinical reasoning is half-heartedly done, because we've learnt the academic, but the practical's not done, so it's, like, lop-sided..."

SFS Participant 3: "...we've learnt in other modules that our role as a physio, how much impact are we going to make, and is our role actually to stop them from smoking or is it... is it more beneficial for us to be there to prevent... to maintain range and do all the physiotherapy management things. So, then we tend to focus on the things we know we can achieve..."

Individual Interviewee 1: "...there's sometimes the Department of Health – it's not set up in a way to follow up on patients. You see a patient now, the next

appointment they're going to get is in three months' time. How am I going to follow up on someone, I told you today to stop smoking and I'm only going to see them in three months again..."

SFS Participant 1: "...in our last campus we didn't have this big gym with this fancy equipment, now there is a big gym with all this, which is amazing, but can you tell me one patient that's got a stationary bicycle and a treadmill at home? Or like, the equipment that we're being taught about in class, which some patients might do, and some patients won't, and I know you can maybe do a walking programme that doesn't have to be on the treadmill, but if we're going to help promote, we also need to learn to help promote that's realistic, so replace equipment, like instead of using..."

A participant in the individual interview tried to assist her patients by using their activities of daily living as she could see that either the patients would not have time, would not comprehend or would not be compliant with the exercises since either they would have forgotten by the time they arrived home or even with all their personal constraints, they would not be able to find time to do exercises.

Individual Interviewee 1: "...You don't have the time to really sit with your patient and go over it for days or weeks after that. You, kind of, maybe only have one day. So, what I try and focus on a lot is finding out exactly what it is my patients do in their daily life. So, what kind of work they do, or what activities they do during the day so that I can incorporate therapy into their daily activity. So, it's like... if I know my patient enjoys doing housework, then instead of just letting them sweep

and kind of do it in the way that they think works, I will mimic the movement and see where it is, I can add therapy into that..."

During the interview, a participant stated that physiotherapy management focuses on learning outcomes and physical measures, but not on behavioural measures, such as smoking habits.

Individual Interviewee 3: "...We talk a lot about education, because if, realistically, if we think about the time that we spend with patients versus the time they need to go home and do rehab, orthopaedic, neuro, whatever condition they have, and, you know, realistically the time that we spend with them versus the time they need to put in to be able to see the effects of the rehab. I think the education is important, but I don't feel we're equipped to, like, support them in behaviour change..."

The patient is taught not to smoke, as it delays healing, but these behaviours are not used as outcome measures. "Why does the patient smoke? Is it stress related? Is it just a bad habit?" There is no outcome measure for behaviour, only a check box that says smoking is bad.

Individual Interviewee 4: "...I think that we also taught like, how can we get this patient out of hospital as quick as possible, like, they can walk or they don't have stairs at home, we can send them home, kind of a thing. But what are we measuring behavioural change on? So, there aren't really, like we get taught on outcome measures that are functional, but how are you measuring behavioural change? Like I don't think that we taught that on an outcome measure basis..."

There is no explanation in layman's terms of why smoking is bad, just the reasoning behind it.

4.3.3 Personal Experience

The students felt that their personal experience and exposure to exercises and physical activity impacted their ability to modify and use appropriate exercises for specific patients. In the students' opinion, participation in specific sports or extra-curricular activities gave them an edge over those who weren't pre-disposed to physical activity.

SFS Participant: "...So I think the gap in what we know previously from your own personal capacity, and your own experience in waterpolo, or whatever it may be, compared to someone who didn't have any of that, and then that's always difficult to then..."

SFS Participant 1: "...where the lecturer has personal experience, where there's someone standing up there that doesn't have experience. They can't implement what they know over to us. They're standing there speaking from a textbook. A textbook doesn't help. A textbook is not... especially in our country, which is a developing... it doesn't work. Maybe if you're in Europe or something, where everything's modern technology, you have those parks where they've got the gyms and everything. We don't have that in South Africa, it's not going to work. And that's what the textbook says. So, if the lecturer doesn't have personal experience, they can't give it to us..."

One student believed that individuals who are involved in sports or are exposed to sports might better understand how to develop exercise programmes and how to adapt exercises to certain individuals. According to another participant, students are responsible for developing their own

knowledge and exposure, and for researching things they do not know. Also, the student felt that the curriculum could not cover everything, and students should not be "spoon-fed".

Individual Interviewee 4: "...I don't think with evidence that's changing and our degree is evidence-based. I mean, you have to go research and look up, you know, what exercises are actually, like, beneficial. And I think the university has given us the theoretical baseline, or we've got the theoretical knowledge. I think it's about like, how the onus on how you can apply it, I think, to be fair..."

4.3.4 Clinical Exposure/Experience

During the course of their study, the students felt that their clinicians and clinical blocks both assisted and hindered their learning.

Individual Interviewee 5: "...To look at a patient and kind of prescribe a generic, so to say, exercise programme is not going to work for every single patient, but going through my clinical rotations and seeing all of these different conditions and how each person presents, I feel like I am a lot more competent now in being able to prescribe exercise or even just health promotion in general to certain patients, because I can see how they present and I can see what they need the most and I can see what's going to be effective as well..."

The learning process depended on the experience and specialty of their clinicians and supervisors. Their exposure was based on how long clinicians and supervisors spent explaining and demonstrating various aspects, as well as the additional readings and tasks they were expected to accomplish.

SFS Participant 2: "...I have an injury here, and you're trying to get into it, you also need to know how to position your scapula into certain positions. I also feel there needs to be a little bit more in-depth, like, reasoning, to why we're doing this, and this is going to locate this and it's going to do that for that muscle, which is also going to help this muscle..."

SFS Participant 1: "...We feel like there's a lack of communication with our patient. We don't know how to talk to our patient, literally. We're not being taught... I can't say we're not being taught which words to use, but we are being taught in such, literally, medical terms, so, this is smoking, it's bad for you, because physiologically, it does this to your body. And that's where we stop. So, how do you take that information when you talk to somebody with a lower degree education, like layman's terms. I know we are getting hammered on we're not talking to our patients in that lower class, but then again, we were never taught layman's terms words to use..."

SFS Participant 1: "...I also think we speak about, like, students having experience, sometimes we're being lectured with lecturers that aren't experienced in the field that they are teaching..."

SFS Participant 1: "...at a third and fourth year where you are actually in a clinical setting already, you can't then be wasting time in a lecture setting where the lecturer's just reading off slides because they don't have personal experience to speak off hand about..."

Starting early in his second year greatly assisted the fourth-year student to gain confidence when treating patients and to be able to know "where to start."

Individual Interviewee 5: "...I'm really grateful that we started clinical practice in second year already. I feel like that it prepped us really well, even though it was only for what like three hours of the day and it was once a week, just looking in the long run, and just looking where I am now, and how competent I feel at the moment. And also, the vast array of different patients that I saw, I think that I am really grateful for starting clinical so early as well, because I think that how I look at myself now compared to when I was in first year. I feel like I've made major steps in the right direction and having the lecturer support us as well, and the clinical, the... what's it called? Our supervisors and our clinical coordinators and everybody, I feel like, it really did help quite a bit building us as physios, so to say, and building us from these students who are... who know basically next to nothing about physio to a point where we are very, very competent in treating and going into a clinical setting and helping those that need help..."

A student felt that is where her "real" learning took place.

Individual Interviewee 3: "...We taught how to do exercise or reps like three times ten, but what does that mean? And also, I don't know, like at block, through experience, you learn to adapt your sets and reps and your treatment to the patient. But also, what does that mean? What does three times ten mean to a healthy individual compared to someone with a non-communicable disease? So yeah, that's what you've kind of learned along the way and also, we haven't like,

for example, what does fatigue mean? I think, we also, kind of, learned that along the way. We aren't really taught that in our curriculum, like to look out for things like that and I think you learn that along the way..."

Since almost graduates spend their community service year on their own, with no senior physiotherapists to help them, this variety of blocks also boosts their confidence

Individual Interviewee 8: "...in under-grad level I never got to a patient not knowing what to do. Whether it be treating the patient and just developing exercises for them. I may not know the condition but when I, like when I step into the room or if a clinician tells me, okay, here is your patient, go see them. I might be nervous going in but once I see the patient, I will know what to do. I know how to identify what is wrong and then how to improve it and maybe prescribe it. I may not know their condition towards 100%, like perfect anatomy about this condition, but at least I'll have the basics behind me to do anything to help that patient as well..."

Occasionally, participants felt facilitators and supervisors applied a "blanket" approach, but each patient's situation, circumstances and accessibility were different.

4.3.5 Clinical reasoning:

Despite being taught the theoretical knowledge, students were not able to apply their clinical reasoning to modify exercises to fit various functional levels.

SFS Participant 1: "...we are being taught facts, like bullet points. This is the exercises, this is what you do, this is what you say to your patient, but we don't know how to link that exercises to an actual condition..."

SFS Participant 1: "...linking clinical reasoning, your Supervisor, and your Clinician is asking you but why are you doing this? Why did you choose a squat to do with this patient? Why are you doing a bridge with this patient? So again, getting that clinical reasoning, finding the missing components, thinking about: okay, but a squat is focussing on this muscles, it's doing that, it's activating this. You're not being specifically taught to think like, this exercise is focussing on these components. And yes, we know the exercises, but we don't know why we're doing it..."

SFS Participant 2: "...there's not enough linkages between our NMS knowledge and the anatomy to link to the actual exercises that we want to give to our patients, because I'll be honest, if somebody comes to me now and says: I have major rhomboids tear right now, give me an exercise to rehab it, I'm going to have to go home, look on the internet, what exercises..."

SFS Participant 3: "...we're taught in little boxes. Like, each module is a box, and by the time you get to third year, you have no idea how to go back and get that information and link it to actual conditions and actual clinical practice. So, by the time you get to third year, you have no idea how to put all of the things that you've learnt together into a holistic picture of your patient..."

SFS Participant?: "...You don't know how to link your theory to your clinical reasoning..."

SFS Participant 2: "...in everything we learnt, there's always a video attached so that you can see, like, what is happening, and then, because you can see what is happening, you grasp it way quicker. And it makes you think, it makes you think because you can see..."

In students' opinion, subjective assessments are perceived as "I need to ask this question, for the mark," rather than being taught to understand why they are important.

Individual Interviewee 3: "...when we start in our subjective, you're asking questions for a reason. So, you want to understand, you know, what the patient's daily life is like, what matters to them, you know, what are they doing in the day and things like that, and that obviously guides our treatment, and we're health professionals, and the health in itself, so you know, we're there not only to just physically treat, you know, the issue or the injury or the condition itself, we do have to, and we've been encouraged throughout the four years to look at a holistic approach..."

And to enable holistic treatment, better outcome measurements, and identification of the reasons behind facilitators and barriers, as well as provide the most appropriate treatment, education, and assistance for each patient.

Individual Interviewee 1: "...So, I feel like if we could be taught together, so this is how you assess it and for this condition, after you've assessed then you find out

this is what it is. This is exactly how you, not exactly, but this is how you would treat it instead of separating the two. And then you have to try and find this link and remember, this is the connection between how you would do these things...”

Individual Interviewee 4: “... I don't know, in first and second year, we ask the subjective to like tick off the rubric, but the subjective is actually to getting to know your patient. It's filling in those gaps, being like, okay, like from the subjective I noticed certain behavioural traits of my patient, how are we going to battle these or come across these or set certain goals based on like the subjective of my patient, to be able to treat effectively. I think, through experience, you can also very quickly see if your patient is going to be motivated or not. And it's maybe asking specific follow-up questions, or teaching people how to connect the dots, like why are you asking certain things in your subjective? What is the purpose of it? And I think that linking subjective questions...”

Students also brought up the valid point that they are taught smoking is bad, but they are not taught how to explain it to patients who are unable to comprehend because of language barriers, education gaps or social backgrounds.

Individual Interviewee 4: “...For example, if your patient's bone isn't healing without surgery, like why, why is this happening? And at the end of the day, you can prevent someone, for example, if their bone can heal with them... without, or if their bone heals, because they're not smoking, the effects of that are way greater if you are able to prevent that from happening. And yeah, I think that if you are

educating your patients on a holistic approach, you're able to tick many things at once..."

4.3.6 Gaps in Curriculum

There was a sense among the students that they were clueless about where to find various progression exercises or modifications for the functional levels of their patients. Throughout their academic careers, students felt that course work was taught in isolation, and they had difficulty assembling the puzzle pieces.

Individual Interviewee 1: "...What I do think we can maybe incorporate in our final year is to, maybe, do a little bit more specific applied things to bring those things together. Do case studies or do case sit-downs and discuss this as a class or as a group to see where we can tie things together from all of our modules from first year and so on..."

SFS Participant 1: "...So we're not being taught how to look at a patient holistically, especially with neuro cases. And then again, like, basic level exercises, how to progress on that, how to combine exercises together..."

SFS Participant 3: "...we don't do case studies, whereas, if you're taught this information in a practical sense, saying: this is how you would apply it to an actual patient, to an actual person, it would be a lot easier for us to then relate it when we actually see a person with that problem, say: oh well, we've got this and this and this that we were taught in first and second year that can be applied..."

SFS Participant 2: "...so the main point here was on how the lectures was given to us, like, how did we receive the information, but I also think that, rather than just reading off the slide, making it more interactive to get that clinical reasoning, but doing it sooner as well, starting it in second year, maybe even. And not only in third year or fourth year, but actually getting that reasoning going sooner..."

SFS Participant 3: "...they'll explain what a CVA is, and they'll tell you the physio management, and the physio management is just a bunch of bullet points that say strengthening. But they don't say what strengthening you're supposed to do. They say balancing exercises, but they don't say what balancing exercises. Where do you start your balancing exercises, and how you progress them. Those kind of things. So, when we're given physio management, we're given bullet points..."

SFS Participant 1: "...you can learn certain exercises, or you can learn how to do something, and your patient will not cope on the day. Or won't be able to do that exercise, or... So, it's very difficult for us then to change our thinking because we've learnt in this, like, straight line and... medical practice is not a straight line, you know, it's... you need to know everything. You're not taught to adapt..."

Students in the fourth year felt that there was no adaptation, progression, or stage of exercises taught for the acute setting, but only sport-specific modifications.

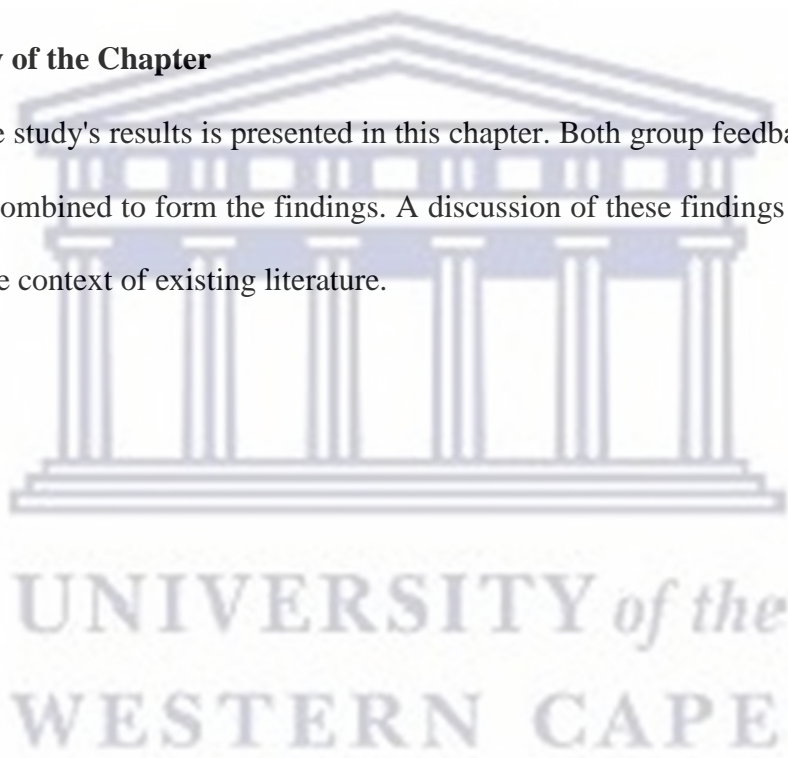
Individual Interviewee 1: "...What I do think we can maybe incorporate in our final year is to, maybe, do a little bit more specific applied things to bring those things together. Do case studies or do case sit-downs and discuss this as a class

or as a group to see where we can tie things together from all of our modules from first year and so on...”

In notes, facilitators and lectures, range of motion is referred to, but no one seems to understand which exercises increase range of motion. It was suggested by a participant that guidelines be developed on how to manage NCD's and interventions in different settings and for different types of patients.

4.4 Summary of the Chapter

A summary of the study's results is presented in this chapter. Both group feedback and individual interviews were combined to form the findings. A discussion of these findings is provided in the next chapter in the context of existing literature.



CHAPTER FIVE

DISCUSSION

5.1 Introduction:

This study explored the perceptions of undergraduate physiotherapy students regarding physical activity and exercise promotion and prescription content at the University of the Western Cape. Various aspects of the curriculum concerning exercise prescription and physical activity were examined, as well as possible improvements. In this chapter, the results of the study are discussed in relation to relevant literature regarding physical activity, health promotion, exercise prescription, the curriculum and teaching styles. The data from both the structured group feedback sessions and individual interviews, as well as pertinent literature, will be combined in this discussion.

5.2 Healthcare Professionals' Role in Behavioural Change

The role of healthcare professionals in supporting behavioural changes in individuals is crucial. Clinicians are increasingly empowered to promote physical activity and health in the workplace. The medical education journey, however, still falls short on a broader scale. Despite their best efforts, healthcare professionals have trouble promoting healthy lifestyles and physical activity (Brannan et al., 2019). In spite of the evidence that physiotherapists are ideally suited to promote and prescribe physical activity to their clients (Dean et al., 2013; You et al., 2012), there is little evidence that physiotherapists in other countries promote physical activity (Lowe et al., 2016). As demonstrated by the results of this study, students were unclear as to what exactly is expected of them in terms of their role in promoting healthy behaviours:

“we’ve learnt in other modules that our role as physio, how much impact are we going to make... and is our role actually to stop them from smoking or is it? ...is it more beneficial for us to be there to prevent...”

As noted by one of the participants, physiotherapy students also sometimes have difficulty replacing equipment for their clients' home environments when they want to promote exercise at home:

“...and I know you can maybe do a walking programme that doesn’t have to be on the treadmill, but if we’re going to help promote, we also need to learn to help promote that’s realistic, so replace equipment, like instead of using...”

Others, on the other hand, seemed to know precisely what is expected of them regarding health promotion:

“...so if you can encourage patients to bring about the behaviour change to avoid things like amputation, or avoid the heart attack, avoid the stroke, then that’s where we have a big role to play in preventing diseases from developing and progressing further...” and *“...I think that in stopping certain secondary complications to set in, or non-communicable diseases to set in. I think we do play a very, very big part and a role in this factor, or this certain sector of the hospital. And I think it is very important for us to promote this and to kind of push the responsibility onto the patient a little bit more as well, because we can prescribe exercise, yes, but it’s also on them to do the exercise or to do what we are prescribing. So, I think we do play quite a big role in that factor...”*

A key role for health professionals is to promote physical activity to clients, including those with non-communicable diseases (Barrett et al. 2013). In addition to physical activity, physiotherapists may be able to assist with other NCD risk factors (O'Donoghue et al. 2014).

Brannan et al. (2019) report that patients have vague discussions about physical activity with their doctors. There are several issues that affect patients and health professionals, such as reimbursement, time, patient load, skills, and appropriate screening tools in healthcare settings (Brannan et al., 2019). Time constraints, a lack of skill sets, and poor screening tools prevent an integrated approach to physical activity promotion in the primary healthcare setting (Brannan, et al., 2019).

The individual interview participants mentioned that clinics are often overwhelmed with patients, and they are screened by nurses, but because of time constraints, they are often missed or are not assessed by doctors, which impacts the healthcare system in South Africa:

Individual Interviewee 3: “So, if you look at the clinics, they are, the lines are so long, the nurses just screen you and you go to the next thing, they give you your medication, and you go on your merry way. And a lot of the times if you've got undiagnosed non-communicable diseases, even when you get diagnosed with that, there's no time that the doctor sits down with you and explains to you, this is what will happen if you don't take your medication, this is how the disease progresses. There isn't the time, and that is where I think the problem lies. So yes, being far away and not getting the education from the government or from things like that, plays a big role in it. But I also think that down to the point of even being in the clinic, you don't have the time for the medical staff to be educating you....”.

In addition to contributing to an already overburdened healthcare system in South Africa, this has also led to an increase in healthcare costs, since the South African healthcare system faces the burden of diseases, poverty, social equality, and poor healthcare services that do not meet WHO definitions of health equity (de Villiers, 2021). This suggestion is for developing countries in order to reduce disease burdens and reach the population, as in African countries like Kenya and Uganda. Providing adequate healthcare to these areas and assisting the population lowered the burden on primary healthcare settings (de Villiers, 2021). Mobile clinics were utilised in these areas to provide adequate healthcare to these areas and assist the population. One student in the individual interview suggested using outreach programmes within various communities in order to provide outreach programmes to people from lower socio-economic backgrounds in order to educate them about exercise, non-communicable diseases, and preventative measures for individuals at risk. Healthcare professionals play a crucial role in this regard. To achieve a better outcome, all relevant stakeholders must be brought together, including the government, the healthcare professionals, and those that can drive changes (de Villiers, 2021). Starting such programmes with university students at entry level would have a positive impact, since they would be molded into improving healthcare as they progressed.

Individual Interviewee 2: "...I do believe that we need to do more outreach programmes, we have them, they are running, where we go to communities and we provide them with, you know, these exercise programmes and education around these things. But I think again, it comes down to time and how overwhelmed our healthcare system is, in the sense that, patients who do come to physio in clinics, they only get one session once a month and that's a very, very long time and even for them to, once they leave hospital, for them to get an

appointment at the clinic, it can take up to three, four, five months before they see their physio again...”

Individual Interviewee 4: “...I think we need to also be thinking around, you know, the bigger picture in terms of South Africa and where the need is and what the needs are, and how do we try and get into those communities? And it seems like it's a bigger problem. It's not a small facilitative problem. It looks like a national, higher government needs to do something about these kinds of things. It's not something that I feel, you know, it has to happen at a higher level...””

5.3 Theoretical Knowledge

According to Mohammed et al. (2018), physiotherapists are lacking in knowledge and understanding of exercise prescription in the study in which physiotherapists were evaluated in their expertise around exercise prescription. A huge gap exists in physiotherapists' knowledge and skill set when it comes to exercise prescription (Mohammed et al.,2018). A participant at the structured group feedback session felt that they did not obtain the theoretical knowledge needed to assist in the promotion and prescription of exercise.

SFS Participant 1:” ... That theory of, like your bio-mechanics and anatomy and all that, but I don't think, specifically, to exercise prescription or exercise promotion, I know that comes with experience. I'm not saying you're always going to be taught everything, but I think that theoretical knowledge is not always there...””

According to the participants of this study, theoretical knowledge formed the basis for their learning, but it was rigid in its application. O'Donoghue et al. (2011) also argued that students wanted more time spent on the teachings of exercise progression for various conditions based on the clinical settings because they do not know how to proceed.

SFS Participant 2: "...I just want to add that it feels like we are prepared to treat acute patients, like in a hospital setting, but if you get a sports person, that's a bit more advanced... or a bit of more advanced patient, then you're, like, lost. Then you're not sure how to progress further, or what to do after therapy, and what then?..."

Participants found it challenging to adapt exercises in acute settings since they did not have access to a gym or equipment. It was suggested to include guidelines in the curriculum not just for sports-related conditions, but also for a variety of conditions that affect children, youth, adults, and the elderly.

SFS Participant 1: "...in our last campus we didn't have this big gym with this fancy equipment, now there is a big gym with all this, which is amazing, but can you tell me one patient that's got a stationary bicycle and a treadmill at home? Or like, the equipment that we're being taught about in class, which some patients might do, and some patients won't, and I know you can maybe do a walking programme that doesn't have to be on the treadmill, but if we're going to help promote, we also need to learn to help promote that's realistic, so replace equipment, like instead of using..."

SFS Participant 3: "...I found, when it comes to looking for exercises from another source, as in going onto the internet and looking for articles and stuff, I

found you find a lot of high functioning exercises. So there's a lot of information there to assist sports players, so people who are already fit enough, who are already strong enough, whose balance is normal, and they want to improve it..."

The transition from lectures to clinical settings was challenging for students, according to Talberg, & Scott (2014). Many of the participants in individual interviews felt that their most valuable learning and experience came from their clinical exposure and experiences. Talberg and Scott (2014) noted that clinical educators played a crucial role in preparing students for clinical practice.

Individual Interviewee 5: "...I found that it was really helpful, all the modules in first, second- and third-year regarding health promotion really, it formed a good foundation for us to go into clinical practice. Because a lot of what we learned in those modules, I found that I applied quite a bit of it into my clinical practice when we started in third year, as well..."

However, they felt that clinical case studies needed to be based on what they were seeing in the clinic. As a result of their undergraduate programme, students felt that the basis of theory was covered. They felt, however, that there was no integration between the modules in the first year, such as health promotion and movement science, when they could use tools, they had learned in both modules in the clinical rotations.

Individual Interviewee 2: "... we do get taught everything about these diseases and all the information around that. But I feel that we don't really get taught how to simplify it and teach it to the patients in the most simple way that they will fully understand..."

According to Nelson (2010), problem-solving and case-based learning are used in the development of clinical reasoning. The students who were taught using case-based learning were better prepared for the clinical setting than those who were taught using traditional and problem-based methods (Nelson, 2010).

Individual Interviewee 6: "...I found with health promotion, I could really apply it and my patients like when they came to see me, I used it quite a lot, not even just on rotations and clinical blocks. But even in everyday life, how you can promote health outside of physio, even if you see someone else struggling..."

There was a feeling that students were taught in isolation or not taught how to develop clinical reasoning and "connect the dots". The theoretical aspects of physiotherapy are taught, but the practical aspects of adapting, modifying, and progressing exercises in a limited resource setting are not taught. Through discussions focused on clinical applications, students are not only exposed to new ideas and develop their clinical reasoning abilities, but also collaborate with their peers.

Individual Interviewee 2: "...What I do think that we can maybe implement a bit more is that, because yes, in fourth year we have clinical days, like on a Friday, let's say, where we can discuss things that happened in the clinical setting. But I feel that maybe if we do like a revisit to the sports rehab module, and then have a discussion panel. Okay, so if this was the case, these are the basic exercises we have, but what would you have added to it so that everybody can learn from it and bring in their new experienced knowledge..."

5.4 Clinical Exposure

According to O'Donoghue et al. (2011), students requested that they be taught exercise promotion and health strategies throughout their degree so that all aspects of their qualification are put into practice, and that exercises can be adapted from theory to practice. A structured feedback session revealed that students were also unsure of how exercises should be progressed within the clinical setting. They felt they could tell someone not to smoke, but they were unable to convey the risks associated with smoking in a way that was understandable and comprehensible to the patient.

Individual Interviewee 6: "...I've gone through my clinical rotations, I've seen quite a vast amount of different conditions and like also said, it's very... it has to be patient specific, what you are prescribing. So, to look at a patient and kind of prescribe a generic, so to say, exercise programme is not going to work for every single patient, but going through my clinical rotations and seeing all of these different conditions and how each person presents, I feel like I am a lot more competent now in being able to prescribe exercise or even just health promotion in general to certain patients, because I can see how they present and I can see what they need the most and I can see what's going to be effective as well. Because, it's better to prescribe something that's 10 minutes, that's going to work a lot better, as opposed to prescribing something that's going to be 30 minutes, and it's not going to benefit the patient at all. So, I feel a lot more competent as well, and going into comm-serv as well, I feel like I'll be able to handle my own, so to say, and deal with each person or patient as they present themselves to me..."

The exposure to clinical practice is essential for preparing undergraduate physiotherapy students to work independently once they graduate (Lewthwaite et al., 2022). In addition to facilitators and

supervisors, students receive most of their learning experience from clinical settings (Lewthwaite et al., 2022; Nelson, 2010). Participants in this study indicated that they were sufficiently prepared for clinical practice and various clinical rotations, so that they felt confident in treating patients and working independently in the clinical setting.

Individual Interviewee 6: "...I think it was really... you prepared us quite well, to sending us out and into clinical rotation, in comm-serv. Like, I feel very confident in that aspect..."

It was reported by Brenner, et al. (2008) that clinical practice sessions provided an opportunity for healthcare professionals to collaborate and learn from each other, thereby adding value to their knowledge and their approach to patient care.

SFS Participant 3: "...in first year, all that they really wanted us to do, was work in groups and present a presentation about the different modules. And again, it was theoretical. It was learning about the bio-medical model, the social model, what are the different approaches to health promotion, where we should have, at that stage, we were in a group of a Dietician, a Social Worker, an OT... we could have done something more practical in first year already, that would have then at least started the foundation of a practical clinical reasoning setting..."

As a result of the individual interview, a student suggested consolidating all the health promotion models into the fourth-year module and implementing a community outreach programme in areas where resources are limited to facilitate students' ability to develop treatment plans without access to equipment, as this is what is taught to them. This is consistent with Brenner et al. (2008), which suggested that healthcare professionals should collaborate in sessions.

Individual Interviewee 7: “... But I think what would be good for fourth year, is maybe have something similar to what we had first year, like the non-communicable diseases and health promotion in fourth year, maybe, because then you actually have that experience of clinical practice as well, behind you. And then you can also understand the importance of health promotion...”, “...But yeah, I think in fourth year that would be, instead of having it in first year, having it in fourth year, it feels like it'd be more impactful in fourth year...”

5.5 Curriculum (Methods of Teaching of Learning)

Physiotherapy undergraduate programmes provide students with the opportunity to gain the clinical experience they need to manage patients with various conditions in a variety of clinical settings, as well as improve the quality of their services. Frenk et al. (2010) stated that academics have established requirements to fulfill in order to obtain a course completion. In most cases, the curriculum is not re-evaluated unless new information is considered to accommodate the changes. A curriculum is rarely re-examined over time but is slowly modified in response to new information over time. Curriculum drives learning objectives rather than learning objectives guiding curriculum. Competencies must be an integral aspect of health care professionals' education. In a competency-based approach, the curriculum is tailored to the needs of the healthcare professionals and system, allowing for individual learning (Frenk, et al. 2010). Competency-based education provides transparency and identifies education gaps.

Individual Interviewee 4: “... So, I don't think we've been taught, like, that or we've been shown how to support the patient through a behaviour change, or through education, like through trying to promote like health and exercise, for

example, prescription. I don't think we taught further than just telling them or educating them. We're not taught further than that...”

In the undergraduate programme, Taukobong et al. (2014) recommended that the physiotherapy educational curriculum emphasises physical activity promotion and prevention.

Individual Interviewee 2: “...we learned about communicable diseases, we learned about exercise prescription, and we learned about how to apply it as well. But we learned those in three different separate modules. So, I understand what she's saying in the sense of it, sometimes it's difficult to link the three...””

According to Walankar et al. (2019), students' and lecturers' discussions around clinical findings and teaching facilitate collaboration, discussions, and clinical learning. They also believe that the way in which the clinical aspects of the curriculum are taught impacts the development of physiotherapy students and their ability to learn. Based on the results of this study, this opinion has been reaffirmed:

“Nothing can replace clinical. You know, we can try with simulations and case studies and yes, you can get an understanding...””

Olivier, et al. (2021) reported that physiotherapy students preferred collaborative and participant learning styles in small groups for developing clinical skills and knowledge. Working collaboratively within teams and with participants, assuming responsibility for their learning and learning from their peers (Olivier, et al., 2021). A similar suggestion was made by the student suggesting case study discussions based on clinical examples they are exposed to.

Individual Interviewee 1: "...What I do think we can maybe incorporate in our final year is to, maybe, do a little bit more specific applied things to bring those things together. Do case studies or do case sit-downs and discuss this as a class or as a group to see where we can tie things together from all of our modules from first year and so on..."

According to Lee et al. (2005), language barriers negatively affect the rehabilitation outcomes of patients. Most South Africans in the communities where students are placed for community service do not speak English as their first language. According to Van der Berg (2016) the language barrier has an impact on the healthcare system in South Africa, and it is imperative that the healthcare system includes a multilingual population, so that all South African citizens can receive equal healthcare under the constitution.

Adding another South African language to the curriculum would allow them to speak with their patients instead of over them, which in turn would lead to better outcomes. Students reported that patients weren't complying with exercises because they didn't understand them.

Individual Interviewee 6: "...One thing I can say about our curriculum, though, is that, I feel like we also need to have an additional language maybe, because I look at certain students coming from other universities, and quite a few of them have, like a basic knowledge of Xhosa, for example, or for those who don't speak Afrikaans, they have quite a good knowledge of Afrikaans as well. And for us going into clinical practice, or going into comm-serv even next year, where we are going to be placed all around the country, I feel like we do we need an additional language maybe..."

Even though South Africa has eleven official languages, English is the primary language of communication. Approximately 80% of healthcare consultations are in English, which creates a language barrier and cultural barrier that often compromises patient care and services (Hunter-Adams & Rother, 2017). Physiotherapy students have suggested adding a native South African language to the undergraduate programme to allow patients and healthcare professionals to communicate effectively. The students found that patients had barriers to compliance with physiotherapy outcomes because they did not understand, had limited time, did not have equipment, or did not realise how important the exercise prescription was and what effect it might have on their non-communicable diseases.

Individual Interviewee 2: "...So, it's one thing to just give a programme, but if your patient doesn't actually understand why it is they need to do the exercise, it's not going to work. So that goes hand in hand with the physical exercise, but you have to have the education or the understanding behind it as well..."

Individual Interviewee 2: "...So yes, being far away and not getting the education from the government or from things like that, plays a big role in it. But I also think that down to the point of even being in the clinic, you don't have the time for the medical staff to be educating you. And that's also where the problem comes in. So, a lot of the times, you'll find your patients will say "no, I didn't know this", or sometimes it's because they just forgot, but also a lot of the times is that there really isn't the time to sit down and do proper training and make sure that these people understand the risks behind these things..."

According to Maphumulo and Bheng (2019), the South African healthcare system is facing many challenges, primarily lack of resources, disease burden, poor goal setting, poor leadership, and poor management. As a result, the development and implementation of necessary changes to provide adequate access to healthcare to the South African population are delayed (Maphumulo & Bheng, 2019). It was challenging for the students to adapt exercises to the patients since they are not familiar with the resources available to them, and those resources are usually not taught in undergraduate courses.

Individual Interviewee 6: "...How I'm going to give these people like exercises, maybe they have to strengthen but you know, bodyweight exercise is not going to cut it, maybe they need weights, or maybe put in a little bit, like ideas for the students like how they can substitute something else with like, a theraband, for instance, like filling up a water bottle with water or, you know, creating weights with, I don't know, empty painting cans or something like that. I think that would be quite nice to add that in for what you're doing in a rural place, because I mean, a lot of the places that do have all these equipment, like, you know, they have things and have ultrasounds and all these nice stuff, but what do you do when you go in a rural community? There's nothing, we have a plinth, you have a desk, and that's it...

5.6 Summary of Chapter 5

This chapter discusses the study's findings and relevant literature, taking both into account. The next chapter will present a conclusion and recommendations based on the findings.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

In Chapter Six, the study's important points are summarised, and its conclusions are provided. This study provided interesting findings since it incorporated structured feedback and individual interviews with students. The challenges faced by the University of the Western Cape third and fourth year students of 2019 were like those found in literature. In conclusion, the students felt that most of their learning took place within the clinical setting. They were provided the adequate theoretical knowledge but found it challenging to apply exercises to various settings and various patients. They found it challenging to progress and adapt exercises when the patient was not the “textbook” patient. To address the suggestions made by the students, the teaching methods must evolve in order to bring about real change and to improve the curriculum, since what worked previously might not be applicable to the newer generations. It is essential for the curriculum to make exercise prescription and promoting health a priority, as physiotherapists are viewed as change agents. Health professionals do play a role in health promotion, the students made reference to this, however, in order for them to be change agents, the physiotherapy students need to be adequately prepared and equip to educate their patients as change begins from the bottom up. If we equip the students, we will have better outcomes and it will enable the newer health professionals to play a role in the changes which we need to see among the population to achieve the SDG by the year 2030. As part of the curriculum, a key element is how students are taught, how they comprehend course content, theoretical knowledge, and a huge aspect relates to clinical exposure and experience. Additionally, how clinicians and facilitators connect theoretical knowledge to real-life situations by teaching the students, the students suggested that there are

some integrations of health promotion causes in their final year and case-based discussions around real life patients they are exposed to in the clinical setting to enlighten and create a learning platform collaborating with other healthcare professionals but also among themselves. There was discussion of the South African healthcare system, including limited resources, limited time with medical professionals, limited access to healthcare, and a vast number of patients. It will be possible to achieve the SDGs for overall health and wellbeing only if we all work together, including all stakeholders, in order to achieve the ultimate goal, overall health and well-being for all. However, this all begins with the students, who are the world's newest change agents.

RECOMMENDATIONS

The way students are taught their role as change agents needs to be re-evaluated and reiterated from their first year of university. Students need to be exposed to environments where they do not have equipment and must create sustainable exercise programmes. An additional South African official language needs to be added to the curriculum. Future studies could look at the effect of physiotherapists as change agents and their understanding of being a change agent.

LIMITATIONS

The two main limitations to this study were the Covid-19 pandemic, which limited the face-to-face interaction for the individual interviews which could have changed the understanding and comprehension of the students answering the questions. The study did not look into the students' understanding of what a change agent is or their perceptions of various aspects of health promotion.

REFERENCES

Abaraogu, U.O., Edeonuh, J.C., Frantz, J., (2016). Promoting Physical Activity and Exercise in Daily Practice: Current Practices, Barriers, and Training Needs of Physiotherapists in Eastern Nigeria. *Physiotherapy Canada*. <https://doi.org/10.3138/ptc.2014-74>.

Aliyu, S.U., Chiroma, A.C., Jajere, A.M. and Gujba, F.U. (2015) Prevalence of Physical Inactivity, Hypertension, Obesity and Tobacco Smoking: A Case of NCDs Prevention among Adults in Maiduguri, Nigeria. *American Journal of Medical Sciences and Medicine*, 3, 39-47.

Aweto, H.A., Oligbo, C.N., Fapojuwo, O.A et al. Knowledge, Attitude and Practice of Physiotherapists Towards Promotion of Physically Active Lifestyles in Patient Management. *BMC Health Serv Res* 2013;13-21

Barrett, E. M., Darker, C. D., & Hussey, J. (2013). Promotion of Physical Activity in Primary Care: Knowledge and Practice of General Practitioners and Physiotherapists. *Journal of Public Health*, 21(1), 63-69.

Bauman, A., Merom, D., Bull, F. C et al. (2016). Updating the Evidence for Physical Activity: Summative Reviews of the Epidemiological Evidence, Prevalence, and Interventions to Promote "Active Aging." *The Gerontologist*, 56(Suppl 2), S268eS280.

<https://doi.org/10.1093/geront/gnw031>

Beaglehole, R. & Yach, D. (2003). Globalisation and the Prevention and Control of Non-Communicable Disease: The Neglected Chronic Diseases of Adults. *The Lancet*, [online] 362(9387), pp.903-908. Available at:

<https://www.sciencedirect.com/science/article/pii/S0140673603143358> [Accessed 1 Mar. 2020].

Bize, R., Johnson, J.A., & Plotnikoff, R. C. (2007). Physical Activity Level and Health Related Quality of Life in the General Adult Population: A Systematic Review. *Preventive Medicine*, 45(6), 401e415. <https://doi.org/10.1016/j.jpmed.2007.07.017> [published Online First: 2007/07/21].

Blair, S.; Sallis, R.; Hutber, A.; Archer, E. Exercise Therapy – The Public Health Message. *Scand. J. Med. Sci. Sports* 2012, 22, e24–e28.

Boutayeb, A., Boutayeb, S. The Burden of Non-Communicable Diseases in Developing Countries. *Int J Equity Health* 4, 2 (2005). <https://doi.org/10.1186/1475-9276-4-2>

Brannan, M., Bernardotto, M., Clarke, N., & Varney, J. (2019). Moving Healthcare Professionals – A Whole System Approach to Embed Physical Activity in Clinical Practice. *BMC Medical Education*, 19(1). <https://doi.org/10.1186/s12909-019-1517-y>

Brenner, P., Hughes, R.G., Sutphen, M. (2008) Clinical Reasoning, Decision-making, and Action: Thinking Critically and Clinically. In: Hughes, R.G., editor. *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Rockville (MD): Agency for Healthcare Research and Quality (US); 2008 Apr. Chapter 6.

Bukhman, G., Mocumbi, A., Gupta, N., Amuyunzu-Nyamongo, M., Echodu, M., Gomanju, A., Jain, Y., Karmacharya, B., Kapambwe, S., Lulebo, A., Makani, J., Masiye, J., Mategeko, P. and Owino, E., 2021. From a Lancet Commission to the NCDI Poverty Network: reaching the poorest billion through integration science. *The Lancet*.

Campbell, A. & Hausenblas, H. (2009). Effects of Exercise Interventions on Body Image. *Journal of Health Psychology*, 14(6), 780-793. doi: 10.1177/1359105309338977

Cantwell, M.; Walsh, D.; Furlong, B.; Moyna, N.; McCaffrey, N.; Boran, L.; Smyth, S.; Woods, C. Healthcare Professionals' Knowledge and Practice of Physical Activity Promotion in Cancer Care: Challenges and Solutions. *Eur. J. Cancer Care* 2018, 27

Colins, (2005). Most material © 2005, 1997, 1991 by Penguin Random House LLC. Modified entries © 2019 by Penguin Random House LLC and HarperCollins Publishers Ltd.

Cohen, D., Marsh, T., Williamson, S., Derose, K., Martinez, H., Setodji, C., & McKenzie, T. (2010). Parks and Physical Activity: Why are Some Parks Used More Than Others? *Preventive Medicine*, 50, S9-S12. doi: 10.1016/j.ypmed.2009.08.020

Cooney, G.M., Dwan, K., Greig, C.A., et al. (2013). Exercise for Depression. *Cochrane Database of Systematic Reviews*, 9, CD004366. <https://doi.org/10.1002/14651858.CD004366.pub6> [published Online First: 2013/09/12].

Coulson, N., Goldstein, S. and Ntuli A. (2002). "Promoting Health in South Africa: An Action Manual". Heinemann. Santon-Johannesburg .

Cunningham, et al. *BMC Medical Education* (2021) 21:76 <https://doi.org/10.1186/s12909-021-02503-3>. Development of Real World Learning Opportunities in Community Exercise Prescription for Healthcare Professional Programs - 'Physio Hub' Caitriona Cunningham* , Catherine Blake, Grainne O Donoghue, Ciaran Purcell, Ulrik Mc Carthy Persson, Karen Cradock and Sinead Mc Mahon

Daar, A.S., Singer, P.A., Persad, D.L., Pramming, S.K., Matthews, D.R., Beaglehole, R., Bernstein, A., Borysiewicz, L.K., Colagiuri, S., Ganguly, N., Glass, R.I., Finegood, D.T., Koplan, J., Nabel, E.G., Sarna, G., Sarrafzadegan, N., Smith, R., Yach, D. and Bell, J. (2007). Grand

Challenges in Chronic Non-Communicable Diseases: The Top 20 Policy and Research Priorities for Conditions such as Diabetes, Stroke and Heart Disease. *Nature*, 450, 494-496.

Dai, J. & Menhas, R. (2020). R E V I E W Sustainable Development Goals, Sports and Physical Activity: The Localization of Health-Related Sustainable Development Goals Through Sports in China: A Narrative Review. *Risk Management and Healthcare Policy*. Volume 13. 10.2147/RMHP.S257844.

Davis, C. (2021). *Medicinenet.com*. Retrieved 28 October 2020, from <https://www.medicinenet.com/disease/definition.htm>.

Dean, E., Dornelas de Andrade, A., O'Donoghue, G., Skinner, M., Umereh, G., Beenan, P., Cleaver, S., Afzalzada D: The Second Physical Therapy Summit on Global Health: Developing an Action Plan to Promote Health in Daily Practice and Reduce the Burden of Non-Communicable Diseases. *Physiother Theory Prac* 2013, Early Online:1–15

Department of Health, Western Cape. 2015. Primary Health Care Position Paper. Circular 38 of 2015. Western Cape.

Din, N.U., Moore, G.F., Murphy, S., Wilkinson, C., Williams, N.H. Health Professionals' Perspectives on Exercise Referral and Physical Activity Promotion in Primary Care: Findings from a Process Evaluation of the National Exercise Referral Scheme in Wales. *Health Educ. J.* 2015, 74, 743–757

De Villiers, K. (2021). Bridging the Health Inequality Gap: An Examination of South Africa's Social Innovation in Health Landscape. *Infectious Diseases of Poverty*, 10(1). <https://doi.org/10.1186/s40249-021-00804-9>

Flutter, M.J. (2003). Developing a Curriculum Module to Prepare Students for Community-Based Physiotherapy Rehabilitation in South Africa. *Physiotherapy*, 89 (1): 13-24

Frenk, J., Chen, L., Bhutta, Z. A., Cohen, J., Crisp, N., Evans, T., Fineberg, H., Garcia, P., Ke, Y., Kelley, P., Kistnasamy, B., Meleis, A., Naylor, D., Pablos-Mendez, A., Reddy, S., Scrimshaw, S., Sepulveda, J., Serwadda, D. & Zurayk, H. (2010). Health Professionals for a New Century: Transforming Education to Strengthen Health Systems in an Interdependent World. *Lancet* (London, England), 376(9756), 1923–1958. [https://doi.org/10.1016/S0140-6736\(10\)61854-5](https://doi.org/10.1016/S0140-6736(10)61854-5)

Galarneau, D. (2004). Health Care Professional. *Perspectives on Labour and Income*. 16(1), 16-29.

Geneen, L.J., Moore, R.A., Clarke, C., et al. (2017). Physical Activity and Exercise for Chronic Pain in Adults: An Overview of Cochrane Reviews. *Cochrane Database of Systematic Reviews*, 4, CD011279. <https://doi.org/10.1002/14651858.CD011279.pub3> [published Online First: 2017/04/24]

General Assembly UN. Transforming our World: the 2030 Agenda for Sustainable Development. United Nations Population Fund, 2015. Available from: <https://www.unfpa.org/resources/transforming-ourworld-2030-agenda-sustainable-development>. Accessed June 18,2020.

Haas, E. (1980). Why Collaborate? Issue-Linkage and International Regimes. *World Politics*, 32(3), 357-405. doi:10.2307/2010109

Hamilton, J. (2021). Study.com. Retrieved 28 October 2020, from <https://study.com/academy/lesson/exercise-prescription-definition-process-overview.html>.

Haskell, W.L., Lee, I.M., Pate, R.R., Powell, K.E., Blair, S.N., Franklin, B.A., Macera, C.A., Heath, G.W., Thompson, P.D., Bauman, A. Physical Activity and Public Health: Updated Recommendation for Adults from the American College of Sports Medicine and the American Heart Association. *Med. Sci. Sports Exerc.* 2007, 39, 1423–1434.

Healey, W.E., Broers, K.B., Nelson, J., & Huber, G. (2012). Physical Therapists' Health Promotion Activities for Older Adults. *Journal of Geriatric Physical Therapy*, 35(1), 35-48.

Hébert, E.T.; Caughy, M.O.; Shuval, K. Primary Care Providers' Perceptions of Physical Activity Counselling in a Clinical Setting: A Systematic Review. *Br. J. Sports Med.* 2012, 46, 625–631.

Hovanec, N. 2015. "Exercise Prescription for Chronic Disease Management". *Electronic Thesis and Dissertation Repository*. 3209. <https://ir.lib.uwo.ca/etd/3209>

Hunter-Adams, J. & Rother, H. (2017). A Qualitative study of Language Barriers Between South African Health Care Providers and Cross-Border Migrants. *BMC Health Services Research*, 17(1). <https://doi.org/10.1186/s12913-017-2042-5>

Johnson, K. (2010). Meeting Healthy People 2010 Objective 1.7 in ASAHP Programs. *Journal of Allied Health*, 39, 150–155.

Kruk, J. (2007). Physical Activity in the Prevention of the Most Frequent Chronic Diseases: An Analysis of the Recent Evidence. *Asian Pacific Journal of Cancer Prevention*, 8(3), 325.

Lee, T., Lansbury, G. and Sullivan, G., 2005. Health Care Interpreters: A Physiotherapy Perspective. *Australian Journal of Physiotherapy*, 51(3), pp.161-165.

Lee, I., Shiroma, E., Lobelo, F., Puska, P., Blair, S. and Katzmarzyk, P. (2012). Effect of Physical Inactivity on Major Non-Communicable Diseases Worldwide: An Analysis of Burden of Disease and Life Expectancy. *The Lancet*, 380(9838), pp.219-229.

Lewthwaite, N.A.B., Gray, E.A. & Skinner, M.A. (2022) Exploring Clinical Learning Experiences of Novice Physiotherapy Students in a Hospital Setting, *Physiotherapy Theory and Practice*, DOI: 10.1080/09593985.2022.2069617

Lincoln, Y.S. & Guba, E.G. (1985). Establishing Trustworthiness. *Naturalistic Inquiry*, 289, 331.

Lobelo, F., Stoutenberg, M., Hutber, A. The Exercise is Medicine Global Health Initiative: A 2014 Update. *Br. J. Sports Med.* 2014, 48, 1627–1633.

Lowe, A., Gee, M., McLean, S., Littlewood, C., Lindsay, C. & Everett, S. (2018). Physical Activity Promotion in Physiotherapy Practice: A systematic scoping review of a decade of literature. *British Journal of Sports Medicine*, 52:122–127. doi:10.1136/bjsports-2016-096735.

Lowe A, Gee M, McLean S, Littlewood C, Lindsay C, Everett S. Physical activity promotion in physiotherapy practice: a systematic scoping review of a decade of literature. *Br J Sports Med.* 2016; Epub 21 December 2016

Lowe, A., Littlewood, C., Mclean, S., Kilner, K., 2017. Physiotherapy and Physical Activity: A Cross-Sectional Survey Exploring Physical Activity Promotion, Knowledge of Physical Activity

Guidelines and the Physical Activity Habits of UK Physiotherapists. *BMJ Open Sport. Exerc. Med.* 3 (e00029), 1–7. <https://doi.org/10.1136/bmjsem2017-000290>

Macmillan English Dictionary Online, viewed 16 November 2020, from <http://www.macmillandictionary.com/dictionary/british/perception>

McNally, S. Exercise: The Miracle Cure for Surgeons to Fix the NHS and Social Care. *Bull. R. Coll. Surg. Engl.* 2020, 102, 28–33

McPhail, S. (2015). Multi-Morbidity, Obesity and Quality of Life Among Physically Inactive Australians Accessing Physiotherapy Clinics for Musculoskeletal Disorders. *Physiotherapy*, 101 (2015), pp. e986-e987, 10.1016/j.physio.2015.03.1846

Metz, D., Pilmer, B., Han, C. & Perez, C. (2012). Response to Waldum, et al. *American Journal of Gastroenterology*, 107(2), 326. <https://doi.org/10.1038/ajg.2011.392>

Micky Olutende, O., Wisiuba Bukhala, P. & Wesonga, B. (2018). Exercise Prescription: Practices of Healthcare Professionals in Hospital Setting, Kenya. *Journal Of Physical Activity Research*, 3(1), 47-54. <https://doi.org/10.12691/jpar-3-1-8>

Narain, S. & Mathye, D. (2019). Do physiotherapists have a role to play in the Sustainable Development Goals? A Qualitative Exploration. *South African Journal of Physiotherapy*, 75(1). <https://doi.org/10.4102/sajp.v75i1.466>

Nelson, T.K. (2010). "Case-Based Learning (CBL) in Selected Physical Therapy Curricula and Its Perceived Effectiveness by Students, Faculty, and Administrators". University of New Orleans Theses and Dissertations. 1160. <https://scholarworks.uno.edu/td/1160>

Non-Communicable Diseases. Who.int. (2017). Retrieved 28 October 2020, from <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>.

O'Donoghue, G., Doody, C. & Cusack, T. (2011). Physical Activity and Exercise Promotion and Prescription in Undergraduate Physiotherapy Education: Content Analysis of Irish Curricula. *Physiotherapy* doi:10.1016/j.physio.2010.06.006.

Olivier, B., Jacobs, L., Naidoo, V., Pautz, ., Smith, R., Barnard-Ashton, ., Ajidahun, A.T. & Myezwa, H. (2021). Learning Styles in Physiotherapy and Occupational Therapy Students: An Exploratory study. *South African Journal of Occupational Therapy*, 51(2), 39-48. <https://dx.doi.org/10.17159/2310-3833/2021/vol51n2a6>

Oliveira, C. B., Maher, C. G., Pinto, R. Z., et al. (2018). Clinical practice guidelines for the management of non-specific low back pain in primary care: An updated overview. *European Spine Journal*, 27(11), 2791e2803. <https://doi.org/10.1007/s00586-018-5673-2> [published Online First: 2018/07/03].

Onwuegbuzie, A. J., Dickinson, WB., Leech, N. L. & Zoran, A.G. (2009). A Qualitative Framework for Collecting and Analyzing Data in Focus Group Research. *International Journal of Qualitative Methods*, 8(3), 1–21.

Pahor, M., Guralnik, J.M., Ambrosius, W.T.,; Blair, S.; Bonds, D.E.; Church, T.S.; Espeland, M.A.; Fielding, R.A.; Gill, T.M.; Groessl, E.J. Effect of structured physical activity on prevention of major Mobility Disability in Older Adults: The LIFE Study Randomized Clinical Trial. *JAMA* 2014, 311, 2387–2396.

Pender, N. (2011). Health Promotion Model Manual. Lecture, Nursing School.

Ramklass, S. (2009). Physiotherapists in Under-resourced South African Communities Reflect on Practice. *Health & Social Care in the Community*, 17(5), pp.522-529.

Ramklass, S.S., 2009, 'An Investigation into the Alignment of a South African Physiotherapy Curriculum and the Expectations of the Healthcare System', *Physiotherapy*. 95, 215–222.

Reiner, M., Niermann, C., Jekauc, D. and Woll, A. (2013). Long-Term Health Benefits Of Physical Activity - A Systematic Review of Longitudinal Studies. *BMC Public Health*, 13(1), 813.

Rubin, H.J. & Rubin, I.S., 1995. *Qualitative Interviewing: The Art of Hearing Ddata*. pp 3.-14. Thousand Oaks. California: Sage Publications, Inc.

Rutter, H., Cavill, N., Bauman, A., & Bull, F. (2018). Systems approaches to global and national physical activity plans. *Bulletin Of The World Health Organization*, 97(2), 162-165. <https://doi.org/10.2471/blt.18.220533>

Shirley, D., Van der Ploeg, H. P., & Bauman, A. E. (2010). Physical Activity Promotion in the Physical Therapy Setting: Perspectives from Practitioners and Students. *Physical Therapy*, 90(9), 1311-1322.

Silverman, D. (2000). *Doing qualitative research: A practical handbook*. London: Sage.

Spencer G, Corbin JH, Miedema E. Sustainable development goals for health promotion: a critical frame analysis. *Health Promot Int*. 2018;34(4):847–858. doi:10.1093/heapro/day036.

Srof, B., & Velsor-Friedrich, B. (2006). Health Promotion in Adolescents: A Review of Pender's Health Promotion Model. *Nursing Science Quarterly*, 19(4), 366-373.

Strauss, A. & Corbin, J. (1990). *Basics of Qualitative Research*. Newbury Park: Sage.

Talberg, H., & Scott, D. (2014). Do physiotherapy students perceive that they are adequately prepared to enter clinical practice? An empirical study. *African Journal Of Health Professions Education*, 6(1), 17-22. Retrieved 7 September 2022.

Tank, C. (2008). *Health Eating: Overcoming Barriers to Change*. Retrieved October 14, 2008. From [Http://Www.webmd.com/policies /additional-info](http://www.webmd.com/policies/additional-info)

Taukobong, N. P., Myezwa, H., Pengpid, S., & Van Geertruyden, J. P. (2014). The degree to which physiotherapy literature includes physical activity as a component of health promotion in practice and entry level education: A scoping systematic review. *Physiotherapy Theory and Practice*, 30(1), 12-19. <https://doi.org/10.3109/09593985.2013.783896>

Terre Blanche, M. & Kelly, K. (1999). Interpretive methods. In Terre Blanche, M. & Durrheim, K. (eds.) *Research in practice. Applied methods for Social Sciences* Cape Town, SA: University of Cape Town Press. 123-146.

Thomas, D.R (2003). *A general nductive Approach for Qualitative Data Analysis*. School of Population Health, University of Auckland, August 2003.

Van Manen, M. (1990). *Researching Lived Experience: Human Science for An Action Sensitive Pedagogy*.

Van den Berg, V.L. (2016). Still Lost in Translation: Language Barriers in South African Healthcare Remain, *South African Family Practice*, 58:6, 229-231, DOI:10.1080/20786190.2016.1223795

Van Rooijen A. & van der Spuy A. (2000). The Role of Physiotherapists in a Changing Healthcare System. South African Journal of Physiotherapy 56: 3-8.

Walankar P, Panhale V, Situt S. (2019). Evaluation of Learning Approaches in Physiotherapy Students: A Valuable Insight. J Edu Health Promot; 8:25.

Wallace R. Primary Prevention. In: Breslow L., Cengage G., editors. Encyclopedia of Public Health. Springer; New York, NY, USA: 2006

Warburton, E.R. & Bredin, S.D. (2017). Health Benefits of Physical Activity: A Systematic Review of Current Systematic Review. Current Opinion in Cardiology, 32 (5): 541-556.

Warburton, D. (2006). Health Benefits of Physical Activity: The Evidence. Canadian Medical Association Journal, [online] 174(6), pp.801-809. Available at: <https://www.cmaj.ca/content/174/6/801.full> [Accessed 1 Mar. 2020].

WCPT, 2009. Interventions on Diet and Physical Activity: What Works: Summary Report. <http://www.who.int/dietphysicalactivity/summary-report-09.pdf> [Assessed 26 April 2018].

WCPT,2011. WCPT Guideline for Physical Therapist Professional Entry Level Education. https://www.wcpt.org/sites/wcpt.org/files/files/Guideline_PTEducation_complete.pdf. [Assessed 26 April 2018].

WCPT 2012 Physical Therapy, Physical Activity and Health. <http://www.wcpt.org/node/33329#facts>. [Assessed 26 April 2018].

Webb, J.; Hall, J.; Hall, K.; Fabunmi-Alade, R. Increasing the Frequency of Physical Activity, Very Brief Advice by Nurses to Cancer Patients. A Mixed Methods Feasibility Study of a Training Intervention. *Public Health* 2016, 139, 121–133

Wilson, B, Milligan, D, Donald & Hernandez, R. (2000). Faculty Perspectives of Health Promotion in Allied Health Curricula: Results of a National Survey. *Journal of Allied Health*. 29. 138-42. [Assessed 26 April 2018].

World Confederation for Physical Therapy.2017. New UN Agenda Provides an Opportunity for Physical Therapists. 2017. Available from: <http://www.wcpt.org/node/125232>. [Assessed 26 April 2018].

World Confederation for Physical Therapy (2013). World Confederation for Physical Therapy Position Statement Regarding Description of Physical Therapy. Retrieved November 2nd, 2014, from http://www.wcpt.org/sites/wcpt.org/files/files/PS_Description_PT_Sept2011_FORMATTED_ed_it2013.pdf.

World Health Organization. (2019). Global Action Plan on Physical Activity 2018-2030: More Active People for a Healthier World; World Health Organization: Geneva, Switzerland, 2019.

World Health Organization. Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks. Geneva: WHO, 2009.

World Health Organization. (2001). International Classification of Functioning, Disability and Health (ICF). Geneva, Switzerland: WHO.

World Health Organization (2004). Global Strategy on Diet, Nutrition and Physical Activity. World Health Organization; Geneva: 2004.

WHO 2018. Physical Activity. <http://www.who.int/mediacentre/factsheets/fs385/en/>. [Assessed 26 April 2018].

World Health Organization (2002). Diet, Physical Activity and Health. Retrieved March 16, 2011, from <http://www.who.int/dietphysicalactivity/strategy/eb11344/en/index.html>.

World Health Organization (2012). Global Status Report on Non-communicable Diseases 2010: World Health Organization; 2012. Available from <http://www.who.int.proxy.kb.ki.se/mediacentre/factsheetc/fs3S5/en/>

World Health Organization. (2010). Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks. World Economic Forum: Switzerland.

Yona, T., Ben Ami, N., Azmon, M., Weisman, A. & Keshet, N. (2019). Physiotherapists Lack Knowledge of the WHO Physical Activity Guidelines. A Local or a Global Problem? *Musculoskeletal Science and Practice*, 43, 70-75. <https://doi.org/10.1016/j.msksp.2019.07.007>

You, L., Sadler, G., Majumdar, S., Burnett, D. & Evans, C. (2012). Physiotherapists' Perceptions of their Role in the Rehabilitation Management of Individuals with Obesity. *Physiotherapy Canada*. *Physiotherapie Canada*, 64(2), 168–175. <https://doi.org/10.3138/ptc.2011-01>



UNIVERSITY *of the*
WESTERN CAPE

APPENDIX A:





OFFICE OF THE DIRECTOR: RESEARCH
RESEARCH AND INNOVATION DIVISION

Private Bag X 17, Bellville 7535
South Africa
T: +27 21 959 4111 /2948
F: +27 21 959 3170
E: research_ethics@uwc.ac.za
www.uwc.ac.za

22 October 2019

Ms A Paleker
Physiotherapy
Faculty of Community and Health Sciences

Ethics Reference Number: HS18/8/11

Project Title: Perceptions of the physical activity and exercise promotion and prescription content of the undergraduate physiotherapy curriculum, at a selected university in the Western Cape, South Africa

Approval Period: 17 October 2019 – 17 October 2020

I hereby certify that the Humanities and Social Science Research Ethics Committee of the University of the Western Cape approved the methodology and ethics of the above mentioned research project.

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

Please remember to submit a progress report in good time for annual renewal.

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

A handwritten signature in black ink, appearing to read 'Josias', on a white rectangular background.

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

APPENDIX B



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 2542 Fax: 27 21-959 1217

E-mail: 3220183@myuwc.ac.za

INFORMATION SHEET FOR STUDENTS:

Project Title: Perceptions of the physical activity and exercise promotion and prescription content of the undergraduate physiotherapy curriculum at a selected university in the Western Cape, South Africa.

What is this study about?

This is a research project being conducted by Amierah Paleker at the University of the Western Cape. We are inviting you to participate in this research project as you have been identified as a suitable candidate for this research project. The purpose of this research project is to explore your

perceptions of the physiotherapy undergraduate curriculum with regards to physical activity and exercise promotion and prescription content. We would like to ensure that newly qualified graduates are capable of being change agents decreasing death and disability and promoting physical activity, exercise promotion and prescription.

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

You will be asked to participate in a structured group feedback session to discuss the positives, negatives and possible suggestions with regards to the incorporation of physical activity and exercise promotion and prescription into the undergraduate curriculum. A date and time suitable for the researcher and participants at The University of the Western Cape Physiotherapy Department. The structured group feedback session will be held for 1-2 hours.

Would my participation in this study be kept confidential?

The researchers undertake to protect your identity and the nature of your contribution. To ensure your anonymity, Confidentiality and anonymity will be assured by using pseudonyms at the structured feedback sessions. Participants will not be required to put their names on the any socio demographic surveys used to collect data. To ensure your confidentiality, Pseudonyms will be used to protect participants' identities when results are published. The researcher will be responsible of ensuring storage of all data in a secure, password protected computer file. All information will be kept for a minimum of five years after the study has been completed and then it will be destroyed. Audio tapes will be destroyed after they have been transcribed.

This study will use structured group feedback sessions therefore the extent to which your identity will remain confidential is dependent on participants' in structured feedback session confidentiality.



What are the risks of this research?

All human interactions and talking about self or others carry some amount of risks. We will nevertheless minimise such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about the physiotherapy curriculum. We hope that, the physiotherapy department might gain some insights into what is needed from the student perspectives regarding content of physical activity and exercise prescription and promotion to enable them to use these techniques in their management of their clients.

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.

What if I have questions?

This research is being conducted by *Amierah Paleker*, a student at the University of the Western Cape. If you have any questions about the research study itself, please contact Amierah Paleker: University of the Western Cape, Physiotherapy department on telephone: 0714816098 or email: amierah93@gmail.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:

Dr Nondwe Mlenzana

Head of Department: Physiotherapy

University of the Western Cape

Private Bag X17

Bellville 7535

nmlenzana@uwc.ac.za

Prof Anthea Rhoda

Dean of the Faculty of Community and Health Sciences

University of the Western Cape

Private Bag X17

Bellville 7535

chs-deansoffice@uwc.ac.za

HSSREC, Research Development, UWC, Tel: 021 959 2988, Email: research-ethics@uwc.ac.za

APPENDIX C:



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 2542 Fax: 27 21-959 1217

E-mail: 3220183@myuwc.ac.za

CONSENT FORM FOR STUDENTS:

Title of Research Project: Perceptions of the physical activity and exercise promotion and prescription content of the undergraduate physiotherapy curriculum at a selected university in the Western Cape, South Africa.

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve, and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

I agree that the structured group feedback session that I will be participating in will be audio-taped and I hereby give permission for that.

Participant's name.....

Participant's signature.....

Date.....



**UNIVERSITY *of the*
WESTERN CAPE**

APPENDIX D:



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 2542 Fax: 27 21-959 1217

E-mail: 3220183@myuwc.ac.za

INDIVIDUAL INTERVIEWS CONFIDENTIALITY BINDING FORM

Title of Research Project: Perceptions of the physical activity and exercise promotion and prescription content of the undergraduate physiotherapy curriculum at a selected university in the Western Cape, South Africa.

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve, and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone by the researchers. I understand that I may withdraw from the study at any time without giving a reason

and without fear of negative consequences or loss of benefits. I understand that confidentiality is dependent on participants in the individual interview session maintaining confidentiality.

I hereby agree to uphold the confidentiality of the discussions in the individual interview sessions by not disclosing the identity of other participants or any aspects of their contributions to members outside of the group.

Participant's name.....

Participant's signature.....

Date.....



UNIVERSITY *of the*
WESTERN CAPE

APPENDIX E:



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 2542 Fax: 27 21-959 1217

E-mail: 3220183@myuwc.ac.za

STRUCTURED GROUP FEEDBACK SESSION CONFIDENTIALITY BINDING FORM

Title of Research Project: **Perceptions of the physical activity and exercise promotion and prescription content of the undergraduate physiotherapy curriculum at a selected university in the Western Cape, South Africa.**

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve, and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone by the researchers. I understand that I may withdraw from the study at any time without giving a reason

and without fear of negative consequences or loss of benefits. I understand that confidentiality is dependent on participants in the structured group feedback session maintaining confidentiality.

I hereby agree to uphold the confidentiality of the discussions in the structured group feedback session by not disclosing the identity of other participants or any aspects of their contributions to members outside of the group.

Participant's name.....

Participant's signature.....

Date.....



UNIVERSITY *of the*
WESTERN CAPE

APPENDIX F:

Questions for Individual interviews:

1. Please provide me with your opinion and perspective of our curriculum specifically around exercise prescription and health promotion models and prescribing the exercises to different patients in different settings. What is your opinion on the curriculum what are the good and the bad points?
2. Do you have any suggestions, or do you feel there are things the lecturers can do differently to improve the skillset of the graduates to be more equip and improve the quality of life of the patients? Do you have any suggestions as to how we can make changes to the curriculum?

The logo of the University of the Western Cape, featuring a stylized classical building with a pediment and columns.

UNIVERSITY *of the*
WESTERN CAPE