



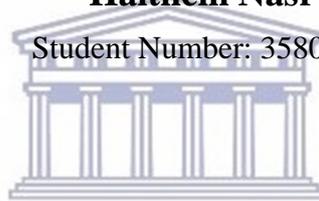
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**Facilitators and Barriers Influencing the Implementation of
Injury Prevention Strategies among Clubs at the University
of the Western Cape**

By

Haithem Nasr

Student Number: 3580684



A thesis submitted in fulfilment of the requirements for the degree:

Magister Scientiae (Physiotherapy)

Department of Physiotherapy
Faculty of Community & Health Sciences
University of the Western Cape

Supervisor: Dr Hamilton Pharaoh

21 January 2019

DECLARATION

I, **Haithem Saad**, declare that the thesis “**Facilitators and Barriers Influencing the Implementation of Injury Prevention Strategies Among Clubs at the University of the Western Cape**” hereby submitted to the University of the Western Cape for the degree of Masters in Physiotherapy has not previously been submitted by me for a degree at this or any other university, that this work is my own in design and execution, and that all the material contained herein have been duly acknowledged by complete references.

Haithem Naad
Student Number: 3580684

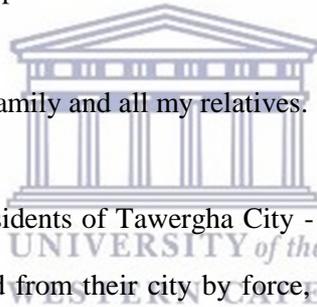


Date Signed

9 November 2017

DEDICATION

- ✎ I dedicate this humble work to the one who did not spare me one day by teaching me success and patience to those who missed him in the face of difficulties. My Father.
- ✎ And to those who race words to come out of the same Mknon who taught me and suffered difficulties to get to what I am in it and when Tksoni concerns I swim in the sea of tenderness to ease my words to warmth, where frosting alien to the bright light in the darkness of days. My Mother.
- ✎ Dedication also to those who were lighting the way for me and support me in the hope of the Almighty to find acceptance and success.
- ✎ My brothers and my all family and all my relatives.
- ✎ Dedication also to all residents of Tawergha City - and children, women and the elders who have been displaced from their city by force, just because of colour racism. And, especially the residents of the Airport Road Camp for the Displaced, I ask Almighty ALLAH to bring them back to their city soon. Also, I hope that love and peace prevails in LIBYA soon, God willing.
- ✎ And to all those who taught me, I dedicate this humble research, I love you.



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- ✎ To my supervisor, who was patient and trusted my abilities and gave me advice and established with me all the steps that we got to the beach end.
- ✎ It was like my father in his keenness to understand and learn until I go ahead by trust to the future. I love him so much and wish him a good and happy life with his beautiful family.



ABSTRACT

Introduction: The majority of University of the Western Cape coaches believe that in most sport codes, many female and male athletes get injured at least once a season. Consequently, occurrence of injuries signifies many set-backs in any team sports. University of the Western Cape sports injury intervention and rehabilitation strategies are relatively under-developed, and have not been systematically implemented, despite their proven effectiveness. However, due to intensive training, local and national league competitions, the number of injured athletes at University of the Western Cape has increased, and so delays of athletes' recovery are caused. Thus, it is assumed that University of the Western Cape efforts may have lack of the necessary injury precautions on prevention and rehabilitation such as proactive injury treatment, paying special attention to the therapeutic process, including other necessary mechanisms. The current study has explored facilitating factors and some of the barriers on the implementation of injury prevention strategies, and determined the effectiveness of rehabilitation within University of the Western Cape sport teams in views of athletes, coaches, and medical staff.

Methods: This study used a sequential exploratory design which entailed an initial phase of quantitative data collection and analysis, followed by a phase of qualitative data collection and analysis. This study used a close-ended survey and semi-structured interviews to identify the barriers and facilitators associated with the implementation of injury prevention strategies among sports clubs at the University of the Western Cape.

Results: Data were collected on the general knowledge of players and team coaches about injury prevention as well as their sources of information regarding injury prevention. Football players were 49.5% while 15.8% were basketball players in this study. Cricket players were 10.9% while rugby players were 9.9%. Sources of players' knowledge of injury prevention included doctor/physiotherapist, coaches and the media. Sources of coaches' knowledge of injury prevention included doctor/physiotherapist, media and seminars. Most players and coaches agreed that there is a greater chance of sustaining an injury during a competitive match than during training. Players and coaches also agree that the risk of injury is reduced by wearing preferred protective clothing and thoroughly warming up and stretching prior to training or competition. Barriers to the implementation of an injury prevention strategy include not having enough time, being too tired after training, no advice given on such techniques, the notion that nobody else does it and lack of proper equipment. Facilitators of an injury prevention strategy include availability of medical staff (doctors and physiotherapists), players' understanding of the coach's instructions, and injury prevention facilities at University of the Western Cape, services accessibility and quality, injury discovery and follow-up, and injury prevention policy at University of the Western Cape.

Conclusion: Based on the findings of this study, the following recommendations were made: (i) Intervention directed at players and coaches in the form of health promotion programmes through education to increase their knowledge and support in implementation of all prevention strategies either in training or in competition; (ii) Governing bodies at University of the Western Cape should develop and

disseminate written sports safety policies and guidelines and supervise clubs in their development programmes.

Keywords: rehabilitation, injury, barriers, implementation, physiotherapy, strategy, facilitator, swelling, fracture, intervention



LIST OF ABBREVIATIONS AND ACRONYMS

AAP	American Academy of Pediatrics
ACL	Anterior Cruciate Ligament
AFL	Australian Football League
CI	confidence interval
EPL	English Premier League
FIFA	Fédération Internationale de Football Association
NFL	National Football League
NGOs	Non-Governmental Organizations
PRICE	Protection, Rest, Ice, Compression, and Elevation
RCTs	Randomized Controlled Trials
RICE	Rest, Ice, Compression, and Elevation
RICER	Rest, Ice, Compression, Elevation and Referral
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
UWC	University of the Western Cape
WHO	World Health Organization

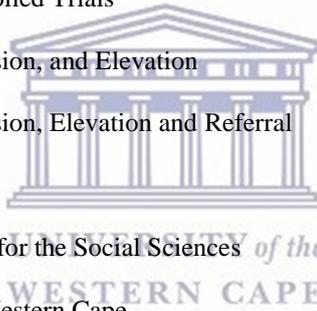


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Key Terms

Table 1.1 summarizes the key terms used in this study.

Table 1.1: Key terms used in this study

Term	Description
Strength training	Strength training denotes the rehabilitation programme on overhead activities that should focus on progression on flexibility, strength exercises, and increasing load and duration. Strength training is the use of resistance to muscular contraction to improve strength, size, and performance of skeletal muscles (Grimby & Thomeé, 2003). Weight training, resistance exercise, and isometric training are common methods for the strength training. Strength training helps in injury prevention, especially in sport. To prevent injuries and improve performance in in a certain sports.
Facilitators	In the context of this study, facilitators are factors related to injuries such as intrinsic factors (player-related) and extrinsic factors (environment-related). Intrinsic factors which are associated to sport injury include age, gender, previous injury, body size, muscle strength and postural stability. Extrinsic factors associated with injuries include the type of sport, exposure time, player position, level of competition, training conditions, training technique, and playing surface.
Situational factors	In the context of this study, it refers to physical and external aspects helps in the success of an injured athlete's rehabilitation programme. These factors range from the environment of the athletic training field to the social support services available to the athletes as they undergo their rehabilitations.
Personal factors	This term refers to the internal qualities that the athlete possesses that can and (usually) will play a role in the success of the injured athlete's rehabilitation. These internal factors range from self-efficacy to self-confidence.
Rehabilitation	For the purpose of this study, rehabilitation is the restoration of function; it is designed to minimize the loss associated with injuries or diseases (Grimby & Thomeé, 2003). Rehabilitation in sport injury increases the functional performance which depends on several factors such as injury characteristics, socio-demographic, biological, psychological, and social factors. Physiotherapy is part of the sport injuries prevention and rehabilitation programme.

CHAPTER 1

GENERAL INTRODUCTION

1.1 Introduction

Sport clubs in tertiary institutions are viewed as an ideal setting to promote wide-range participation in physical activity and recreation on campuses. In addition, a smoke- and alcohol-free environment and healthy life style create a conducive environment for athletes to achieve sport excellence. Furthermore, the creation of sport clubs on a campus is a means of promoting participation in sport, which can be attributed as an innovation in keeping with good health promotion practice. However, lack of resources, professional coaches and medical staff can negatively affect on athletes and the development of sport on campuses.

Sport clubs on a university campus are an ideal setting to promote participation in physical activity. The motivational factors behind setting-up sport and recreational programmes on campus include: promoting a healthy lifestyle and well-being, building social interaction and enjoyment, building relationships, identifying sport talents, and creating a conducive environment to enhance both sporting and academic performance (Asihel, 2009). The occurrence of injuries may lead to modification or interruption of the activity. Generally, any injury alters training plans, which is an important factor in training, including the monitoring of programmes. Within the sports community, the most common intervention focuses on recovering from injuries in order for the athlete to return to previous performance levels, which is normally an expensive process from both an economic and sport perspective.

Currently, sports injury prevention implementation research has highlighted that a key first step to enhancing an intervention's success is developing an understanding of the specific context in which it is to be administered. The design and delivery or implementation of sport injury

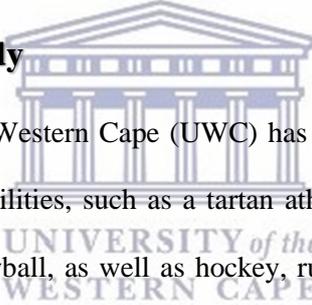
mechanisms require reflecting to the specific target setting, with consideration of factors such as player age, knowledge, beliefs, competitive level and climate (Asihel, 2009).

According to Van Mechelen (1997), the process of injury prevention can be considered in four stages. First, the extent of injury must be identified and described. Second, the factors and mechanisms that lead to injury need to be investigated. Third, the applied management and preventions techniques are depends on stage one and two. Fourth, Strategies are evaluated to see effectiveness.



In addition, physiotherapists in sport teams play a central part in the intervention and rehabilitation processes; their treatments are focused on alleviating athletes injuries, including relieving pain, swelling and promoting recovery of strained muscles. Exercise and mobilizations commonly used by physiotherapists are generally regarded as efficacious to relieve pain and treat injuries (Sarig-Bahat, 2003). In addition, physiotherapy aims to improve mobility, strength, and balance and achieve independence at whether for leisure activities, professional sport or work (Kiss, Damrel, Mackie, Neumann, Wallace, 2001). Physiotherapists play an active role in implementing strategies regarding injury prevention in the management of athletes or sports persons worldwide. The knowledge and skills of physiotherapists dealing with team sports, both on and off campus, is important in helping to design preventive techniques and apply treatment as well (Zuluaga, 1995).

1.2 Background to the Study



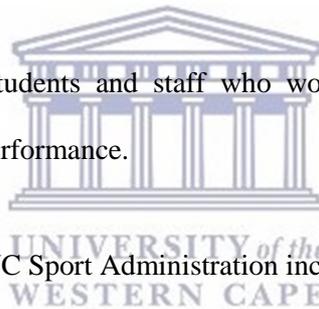
Currently, the University of the Western Cape (UWC) has 20,000 enrolled students. UWC has modern sports and recreation facilities, such as a tartan athletics track, cricket oval, courts for netball, squash, tennis and volleyball, as well as hockey, rugby and soccer fields. It also has a well-equipped gymnasium. The sports stadium is equipped with floodlights and has the capacity to hold 20,000 spectators during major sporting events. UWC has one of the few covered and heated ‘rim-flow’ Olympic-sized indoor and outdoor swimming pools in the Western Cape.

The Sports Administration Office views sport as part of the general education of students and a means of enabling them to engage productively with the wider campus community (Abdelnour, 2008). UWC sports facilities are currently used by university and community clubs, provincial and national federations, provincial government and non-governmental organizations (NGOs). Sport is firmly engaged with the intellectual project and has been identified as a niche area for research development. This means that synergies are sought between the departments with an intellectual interest in sport, to contribute to an ambitious programme. In addition to Sports Administration and the Department of Sports, Recreation and

Exercise Science, students and staff from various departments (Physiotherapy, Dietetics, Occupational Therapy, Medical Biosciences, Nursing, Psychology and Social Development) are involved in sports development and in sports-related research. Sport is administered by the Sports Administration Office located at the stadium. UWC has sports clubs in the following 25 codes: aerobics, aquatics, athletics, basketball, body-building, boxing, chess, cricket, dance sport, gold, handball, hockey, judo, karate, mountaineering, netball, pool, rugby, soccer, softball, squash, table tennis, tennis, triathlon, and volleyball.

UWC Sport Administration engages with its campus community at two levels, namely:

- ❧ **Competitive level**, through its sports clubs which are mainly about high performance and result;
- ❧ **Recreation level**, for students and staff who would like to play for fun, which is different than the high performance.



The main functional areas of UWC Sport Administration include:

- ❧ **Management** of an effective governance system;
- ❧ **Development** and attraction of applicable talent and development of leadership and human resources;
- ❧ **Capabilities** to deliver operational effectiveness; administration and support of both recreation and competitive sport development;
- ❧ **Provision** of support services; support to deliver the achievement of top class sport facilities and management thereof;
- ❧ **Promotion** of the sport brand;

- ❧ **Collaboration** with other departments, institutions, provincial and national sport organizations in the use of facilities, and
- ❧ **Training** of coaches and referees and the presentation of camps and courses.

In an interview in 2016, Mr Mandla Gagayi, the Director of UWC Sport Administration explained that the 2016-2020 UWC main vision focuses on the repositioning of sport on campus.

In his argument, he outlined the following priorities:

- ❧ **Recognition** and attraction of talent of both male and female student and staff athletes;
- ❧ **Creation** of different funding models such as bursaries, facilities, sport equipment;
- ❧ **Collaboration**—the creation of strong links between sport and academics in different faculties with the aim to publish scholarly academic articles in different niches of sport;
- ❧ **Facilitators** and barriers of injuries at UWC sport clubs—in this regard, he encourages that each club must document the incident on the prescribed accident report form, and the form should be submitted to the sports club office immediately after the injury occurred. The injury form may be downloaded from the sports club website. Furthermore, it is mandated that all clubs have first-aid kits during training and competitive games.

At UWC, there are few injury prevention programmes. However, it is believed that the implementation of injury preventative measures and the existing rehabilitation programmes are viewed as not effective or sufficient.

1.2.1 Sport Injuries at UWC Sport Clubs

Sports injury research to date has focused solely on risk identification, counting and describing

the injury problem, identifying injury causes and developing potential injury prevention measures. According to Finch (2006), there is very little guidance to inform decision making or for identifying appropriate implementation strategies in community sport (such as the UWC community). To make sport safe for all participants, sports bodies and other key stakeholder groups need to formulate and implement safety policies jointly to reduce the risks of injury.

Recent studies show that when these prevention interventions are implemented into real-world community sports settings, they are not effective. There is a dire need to appraise the effectiveness of sports safety interventions in the real-world context of sports delivery, even if their efficacy has already been demonstrated in randomized controlled trials (RCTs), to maximize public health impact (Finch, 2006). Coaches play a key role in implementing game development strategies that prevent players being exposed to injury risks (Romiti, Finch, Gabbe, 2008).

Naidoo and Wills (1994) postulate several factors which determine ill-health that can predispose an athlete to sport injuries:



- ❧ **Genetic factors** which determine an individual athlete's predisposition to disease;
- ❧ **Biological factors** in which disease is caused by bacteria or viruses;
- ❧ **Individual behavioural factors** which contribute to disease, such as smoking, drinking, and lack of exercise;
- ❧ **Sociocultural factors** such as traditional or religious beliefs and practices;
- ❧ **Factors around work and living conditions** such as housing, sanitation, transport, access to health services, income, and adequate nutrition and employment opportunities, and

- **Environmental factors** such as pollution, and level of violence.

In addition to the above factors, the broader political, economic and social factors, such as a country's constitution and laws, the kind of economic system prevailing, the available resources and how these are distributed, these factors affect the way in which a society is structured or stratified, e.g., in terms of class, gender, race, and age (Asihel, 2016). Assessing the best prevention strategies for sport or recreational injury requires a full understanding of the factors that contribute to both the occurrence of these injuries and the uptake of, or compliance with, potential prevention strategies.

One of the challenges in current injury prevention is the gap that exists between what is known about these factors and the use of that information in developing and evaluating prevention strategies and/or policies. Prevention strategies can take the form of education and awareness raising activities (e.g., skill-building sessions, public-awareness campaigns), engineering modifications (e.g., new equipment design) or the setting and enforcement of policy (e.g., rules of competition). They can be targeted at participants, parents, coaches or the community at large. Injury theory and common sense suggest that the majority of sports and recreational related injuries can be prevented by:

- **Ensuring** that design, development, and maintenance of sports and recreation equipment and facilities meet safety standards;
- **Promoting** the wearing of protective gear in both informal and organized sports and recreational activities; and
- **Adapting** playing rules to the participants with respect to age (Dowswell, Towner, Simpson & Jarvis, 1996).

1.2.2 Facilitators and Barriers to Sport Participation on the UWC Campus

Successful college athletes report psychosocial benefits of participation in sport such as reduced depression, increased vigour, enhanced mood, and good academic performance (Asihel, 2016, Morgan, 1985). However, the studies on perceived barriers to sport participation among college athletes, the most frequent perceived barrier is related to the time constraint (e.g., school work, lack of resources, fear of being injured, etc.). The study by Booth, Bauman & Owen (2002) on perceived barriers among Australian adult students reported that having no sufficient time due to school work resulted in physically inactive and cited as a barrier on campus.

Many scholars in the fields of physiotherapy and sport science identified the following common facilitating and barriers to sport injuries, namely:

- ❖ **Warm-up:** warm-up in the training competition process, meaning the change of the viscoelastic properties of tissues with increasing temperature or the improvement of metabolic conditions. Content such as joint mobility, jogging, stretching, and proprioceptive technical training prior to the main activity provides an important preventive security (Fradkin, Gabbe & Cameron, 2006).
- ❖ **Strength:** the main goal of working strength as a means of injury prevention is to ensure the correct balance between the different body structures, thus permitting the safe development of the different actions specific to each sport (Árnason, Andersen, Holme, Engebretsen & Bahr, 2008).
- ❖ **Flexibility:** any imbalance in the flexibility in a muscle group, or in the adequate range of movement for the normal actions in the sport, could predispose to injury. The use of flexibility as a prevention method could act as an element of protection and prevention (Askling, Saartok & Thorstensson, 2006).

Buckworth & Nigg (2004) identified barriers to exercise among adolescent students as lack of time, unsuitable weather, school and school work, lack of place and equipment needed to

exercise, lack of interest, girlfriends that kept one from exercising and job responsibility or use of alcohol or other drugs. Also, distance to facilities and cost of supervised programmes were also examples of perceived barriers to physical activity among adolescents, college students and young adults (Buckworth & Nigg, 2004).

Grubbs & Carter (2002) reported that time constraints were the most often mentioned barriers among college undergraduates. Although there has been no specific research to identify what could be the constraints to physical activity among students, some constraints were identified among adolescent college students and young adults, which may not be different from those in paramedical schools. Tappe, Duda & Ehrnwald (1989) identified the following barriers to exercise among adolescent students: a) lack of time, b) unsuitable weather, c) school work, d) lack of place and necessary equipment to exercise, d) lack of interest, e) use of alcohol and drugs, including relationships (having boyfriend or girlfriend). In addition, the lack of transport, and cost of supervised programmes were also an example of perceived barriers to physical activity among adolescents, young adults, and college students (Buckworth & Nigg, 2004).

1.2.3 Injury Prevention Mechanisms and UWC Team Sports

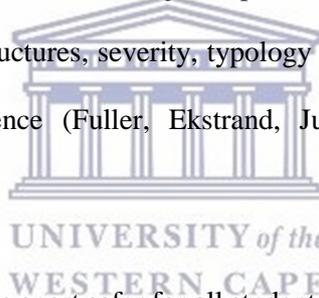
The Director of the Sport Administration Gagayi (2016), in his interview affirms on urgent need to plan, implement and evaluate the effectiveness of sports safety interventions, including the sport injury prevention and rehabilitation programmes at UWC. Recent research on sports injury has focused on risk identification, counting and developing potential injury prevention measures, identifying injury causes as well as describing the injury problem. However, many scholars have largely ignored the issue of how best to translate research evidence into effective interventions, so there is a major gap in the international literature about how to engage sports bodies in sports safety action (Finch 2006). Van Mechelen, Hlobil, and Kemper (1992) propose the following four steps in a sequence when developing sport injury prevention plan namely:

- **Establishing** the extent of the injury;

- ❖ **Identifying** the factors and mechanisms of injury;
- ❖ **Introducing** preventive measures; and
- ❖ **Evaluating** their effectiveness

In the last few decades, there has been significant increase in the epidemical studies contributing information on the first two steps: identifying injury incidence in each sport, along with the factors and mechanism involved in the production of the injuries, as well as establishing the possible factors provoking the injury, upon which to act in a preventive manner.

To understand the importance of the problem it is necessary to know the injury profile for the different sports: injury frequency (number of injuries per 1,000 hours of training or competition), location of the different body structures, severity, typology and the rest of relevant aspects such as internal and external influence (Fuller, Ekstrand, Junge, Andersen, Bahr, Dvorak, & Meeuwisse, 2006).



It is assumed that in order to make sport safer for all students and staff at UWC, the sports bodies such as the Department of Sport, Recreation and Exercise Science, Sport Administration, in collaboration with the Department of Physiotherapy, and other key stakeholder, there is a need to implement safety policies to reduce the risks of injury and formulate sufficient evidence to ensure the uptake of proven measures.

1.2.4 The Department of Physiotherapy and UWC Sport

The UWC physiotherapy department comprises an important member of the health care team who take responsibility for assessing and managing patients' retention to a functional activity, including in its campus community. The UWC physiotherapy students study the human body and how injuries, disease and disability affect all aspects of a person's life, which includes in the area of sport and recreation.

According to the UWC Director of Sport Administration Gagayi in 2016, the development of sport on campus is not just for purely sport, but also for other recreational programmes which can promote a healthy life style on campus. He further explains that in 2016, the UWC Sport Administration has reserved a medical room for physiotherapy students, with necessary resources where students can be accepted as an intern to practice and gain some of their carrier experience for a limited hours stipulated by their department.

Most sport injuries at UWC may not often require hospitalization, they are frequent and have a major economic impact in terms of both indirect medical costs for treatment and rehabilitation (Chalmers & Altman, 1995). Physiotherapists in sporting teams play a pivotal role in the prevention and treatment of musculoskeletal injuries, the implementation of injury prevention strategies, which are an essential part of the tools used among the sports fraternity, including on campus. However, assessing the best prevention mechanisms for sports or recreational sport injuries at UWC campus may require a full understanding of the factors that contribute to both the occurrence of injuries and the uptake of, or compliance with, potential prevention strategies. Furthermore, injury prevention and rehabilitation programmes as important need to be ascertained whether they are part and parcel of the strategies implemented at sports clubs at UWC.

The physiotherapy as one profession of the rehabilitation team can involve in implementation of injury prevention for UWC sport clubs. Therefore, studies will help in identifying barriers and facilitators associated with prevention strategies at UWC.

1.3 Statement of the Problem

Sport can be a critical aspect of student and staff development at higher institutions, if only organized, taught, implemented, managed, and led in a manner consistent with sound developmental principles (Asihel, 2016). Insights into sport skills and development postulate the importance of campus sport and recreation. However, pressuring students to compete in sport at

levels beyond available safety measures, resources, and developmental capacity may result in severe injuries, and negatively influence their academic success (Asihel, 2016).

One of the most important aspects of sport training and competition at UWC may be to control the process and its development. To have control of training sessions, and competitions comprises all aspects that permit the adaptation of the contents and the training and competition load. Modification of training programmes is believed necessary within the UWC sport teams due to sports injuries for the reason that injuries generate a partial or total interruption of the training process.

Many UWC coaches believe that in most sport codes, many female and male athletes get injured at least once a season. Consequently, occurrence of injuries signifies many set-backs in any team sports. However, injuries may not be totally avoided, as the mere practice of sports carries the risk of injury. However, injury impact could be lessened through the monitoring, controlling and analyzing of the factors and their evolution by using adequate means of control. In 2016, Gagayi asserted that UWC sport injury intervention and rehabilitation strategies are relatively under-developed, and have not been systematically implemented, despite their proven effectiveness. He further elaborated that some of the preventive programmes that must be incorporated in training sessions and competition events can minimize the impact of injuries on athletes at UWC.

One of the objectives to have an injury prevention and rehabilitation strategy in place is to ensure athletes' risk of being injured is lessened (prevention) or that its evolution is more favourable, and to ensure the incorporation of the athletes in as little time as possible (functional recovery). However, due to intensive training, local and national league competitions, the number of injured athletes at UWC has increased, and so delays of athletes' recovery are caused. Thus, it is assumed that UWC efforts may have lack of the necessary injury precautions on prevention and rehabilitation such as proactive injury treatment, paying special attention to the therapeutic process, including other necessary mechanisms.

The current study has explored facilitating factors and some of the barriers on the implementation of injury prevention strategies, and determined the effectiveness of the sport medical staff within the UWC sport teams. Many scholars from the medical field have reached mutual consensus on the development of strategies, and multidisciplinary proposals related to the prevention and the recovery of sports injuries in any sport settings. Therefore, sports injury intervention practice should present a model of general control, which includes a global evaluation of the specific sporting context (sport, characteristics of athletes, training conditions and so on) which lead to an adequate prevention in the face of multiple factors of injury predisposition (multifactorial model), as well as a systematic effort which guarantees a full recovery. In addition, the introduction of intervention and rehabilitation strategies in sport as a preventive measure is also necessary for a review to assess their effectiveness on the UWC campus. Thus, this study has explored factors that contribute or hinder the implementation of injury prevention strategies, and determined the effectiveness of the existing sports injury mechanisms at UWC.



1.4 Research Questions

The research questions for this study were:

- What is the prevalence of musculoskeletal injuries amongst athletes belonging to the sports clubs at UWC?
- What are injury prevention strategies implemented by coaches, medical staff and athletes at UWC clubs?
- What are barriers to implementation injury prevention strategies at UWC clubs?
- What are the barriers that can influence the implementation of injury prevention strategies among clubs at the University of the Western Cape (UWC)?

- What are the facilitators that can influence the implementation of injury prevention strategies among clubs at the University of the Western Cape (UWC)?

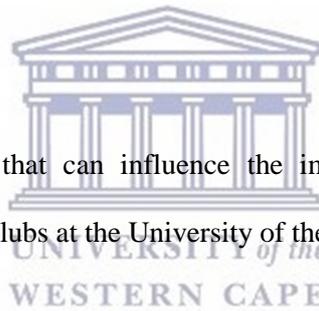
1.5 Aim of the Study

The aim of this study was to identify the barriers and facilitators associated with the implementation of injury prevention strategies among sports clubs at the University of the Western Cape.

1.6 Objectives of the Study

The objectives of this study were to:

- Determine the prevalence of musculoskeletal injuries amongst athletes belonging to the sports clubs at UWC?
- Determine the barriers that can influence the implementation of injury prevention strategies among sports clubs at the University of the Western Cape.
- Determine the facilitators that can influence the implementation of injury prevention strategies among sports clubs at the University of the Western Cape.
- Determine and describe the general knowledge of players, team coaches about injury prevention.
- Determine and describe implementation of injury prevention strategies among sports clubs at the University of the Western Cape.
- Explore the facilitators and barriers to the implementation of injury prevention strategies among sports clubs at the University of the Western Cape.



1.7 Significance of the Study

Little was known regarding the knowledge of players, coaches and medical personnel, in particular information of implementation injury prevention and rehabilitation strategies in place for the UWC team sports. Thus, it was considered relevant to ascertain whether any barriers or facilitating factors existed regarding the implementation of injury prevention mechanisms at UWC. The research findings and recommendation of this study will allow the UWC Sports Administration, athletes, coaches, medical practitioners, and other decision makers to gain a better understanding of the factors that contribute and hinder the implementation of sport injury prevention and rehabilitation strategies, including its use or lack thereof; and the extent to which information obtained from this study can be utilized to maximize the performance of UWC athletes at national level, and that the gaps discovered can be addressed. This study, therefore, is not only an important baseline for UWC as an institution, but also provides a much needed guidepost for other similar institutions in South Africa. Therefore, this research has attempted to explore the facilitators and barriers to the implementation of effective sport injury prevention and rehabilitation mechanisms within UWC sport clubs.



1.9 Overview of the Study

Chapter 1 This chapter introduces the background of the study in relation to UWC sport clubs, the current research problem statement, aim of the study, main research question, objectives of the study, key terms and concludes with an overview of the study.

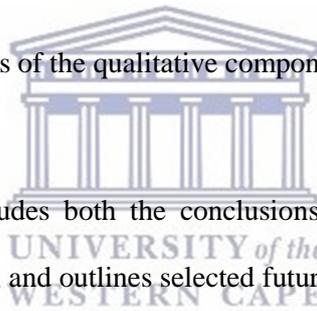
Chapter 2 This chapter provides a broader systematic and extensive literature review on the facilitators and barriers to sport injuries, focusing on student athletes in higher institution sport clubs.

Chapter 3 This chapter describes both the qualitative and quantitative methodologies (mixed methods) used in the current study, the ethical procedures followed as well as the method of data analysis used in the current study.

Chapter 4: This chapter provides presentation of the results before in depth discussion of the main findings and limitations of the thesis, a critical discussion of the results of the quantitative questionnaires distributed among athletes, and the focus group discussions in the context of the systematic literature review presented in Chapter 2, including the description of the practical implications of the study results.

Chapter 5 Presents the results of the qualitative component of the study.

Chapter 6 This chapter includes both the conclusions based on the findings, possible recommendations, and outlines selected future research directions.



CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this chapter, literature review will be presented as well as the keywords and a definition of this study. The literature will be based on different aspects regarding injuries such as incidence and prevalence as well as area and nature. In addition, the mechanism and severity will be discussed in order to know the relationship and effect into the injury severity and incidence. The literature will include facilitators and barriers to implement sport injury preventative and rehabilitation strategies. Finally, a presentation of injury measurement are presented as well as the overview of sport rehabilitation and physiotherapy.

2.2 Delineation and Epidemiology of Sports Injuries

The word epidemiology refers to the rates of the disease or diseases. Injuries and other health problems that affect people in a certain community. Information included in epidemiology helps in identifying preventive techniques and minimizing the prevalence of this health problem (Caine *et al*, 1996). In sport medicine, the occurrence of injuries and the affected population are important to identify. Epidemiology works towards describing and analysing the rating of injuries (Caine *et al*, 1996).

2.3 Prevalence and Frequency of Sport Injuries

Trauma that occurs during training or competition is classified as injury. It requires player to not participating in training or competition for two days or more. Different studies have focused on injury prevalence and other studies on incidence of injuries including soccer injuries.

Incidence is the number of injuries per hours of training incidence. According to Dvorak (2000) there are 4.3 injuries per 1000 training hours in 588 sport players in different countries in Europe. During competition, the rate goes to 20.3 per 1000 match hours. This rate of injuries causes players to attend medical rehabilitation and be away from participation in matches and trainings (Dvorak, 2000). Other study by Hawkins & Fuller (1998) on 808 players in England showed the same issue that players are missing competitive matches in the English league.

The study of Franz (2000), showed that South Africa is quite high. The study conducted among different players showed that 19% are having injuries. Another study done by Abdelnour (2008), showed that injury incident is 1.2 per players during the session in UWC clubs.

The average of injury incidence in soccer is 6030 injuries per session according to Hawkins, Hulse, Wilkinson, Hodson & Gibson (2001) in England. Injuries have a high incidence rate in soccer players that warrants investigation in order to develop a way to reduce the soccer injuries prevalence. Injuries prevention requires information regarding training programs applied by the individual or clubs in relation to time and treatment implemented.

Another study done by Rahnama, Reilly & Lees (2002) showed an injury incidence of 53 per 1000 playing hours for soccer players in England. In Morgan & Oberlander (2001) who did a study in a USA, audio visual aids were used in order to investigate the injury incidence rate. The study reported rate of 6.2 per 1000 hours for 18 participants divided into 2.9 during training and 35.3 injuries during competition. The difference in injury incidence during training and matches was statistically significant.

In Australia, the rates were 25.7 per 1000 hours and prevalence was 16% according to Orchard & Seward (2002). In South Africa, the injuries rates were 19% among 405 players (Frantz, 2000).

The literature found differences in study's findings related to injuries incidences worldwide. Therefore, more investigations are required in order to find the best prevention protocol.

2.4 Areas, Nature, Mechanisms and Severity of Injuries

2.4.1 Areas of Injuries

In investigating injuries, prevalence, incidence, and nature are the main information needed. Different studies included the nature of injuries such as mechanism and characteristics (Rahnama *et al*, 2002).

In the studies conducted by Lyon (2001), Morgan & Oberlander (2001), and Rahnama *et al*. (2002), the rates for lower limbs injuries were between 60-87 percentages in soccer. Regarding knee injuries, it was the most common injury area in the lower limbs followed by the ankle according to Lyon (2001), Morgan & Oberlander (2001), and Rahnama *et al*. (2002). On the other hand, Frantz (2000) and Hawkins & Fuller (1998), studies showed the ankle as the most affected joint followed by knee.

2.4.2 Nature of Injuries

Injuries can be defined as sprains, strains, and contusions. Muscular strain in the thigh area were a common type of injury while ligament sprain were common in the knee joint specifically in the lateral knee ligaments (Hawkins *et al*, 2001). Other types of injuries are known such as dislocations, tendonitis, overuse injuries, and heat-related injuries. It also commonly occurs in soccer.

2.4.3 Mechanisms of Injuries

The most common two injury mechanisms are known as injuries resulting from contact with another players and non-contact mechanisms. Contact injuries are higher in occurrence related to non-contact injuries. On the other hand, fatigue is also one of the common injury causes (Hawkins *et al.*, 2001). Other studies discussed the relationships between injuries and actions during sport. For example, actions such as kicking, heading, and dribbling the ball are associated to some types of injuries (Rahnama *et al.*, 2002). The study found high association between injuries and actions such as receiving the ball, tackling in soccer (Hawkins *et al.*, 2001).

2.4.4 Severity of Injury in Sport

There are different ways to classify the severity of injuries minor, moderate, and major injuries. This is related to the recovery time needed. Minor injuries accounts for a higher prevalence injury severity (Rahnama *et al.*, 2002, Hawkins *et al.*, 2001).

The time in the minor injuries takes two to three days in order to recover while four to seven days are the needed time recovery for moderate injury. More time is needed for major injuries (Hawkins & Fuller, 1999; Hawkins, *et al.*, 2001; Woods *et al.*, 2002). This cut-off is slightly different to some other studies.

Some studies classify severity of injuries by the number of games missed disregarding the time as in the study of Arnason, Gudmundsson & Dahl (1996) and Nielsen & Yde (1989). The previous sections related to injuries, information disregarding the time's regarding the injury severity will help in designing guidance for injury prevention (Van Mechelen *et al.*, 1992; Van Mechelen, 1997; Finch, 1997; Twizere, 2004). In other words, the mentioned information showed what could be used on classifying injuries prevalence and severity.

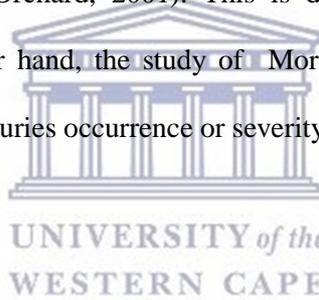
2.5 Factors that Influence Sport Injuries

It is important to understand the risks for injury in each sport to be able to develop and

implement preventive and treatable plans (Arnason *et al*, 2004). Those risks factors are classified into intrinsic and extrinsic factors and are different from sport to another (Hackney, 1994). According to Bahr & Holme (2003). age, sex, weight, strength, and flexibility are considered as intrinsic factors facts. Extrinsic factors are known such as training techniques, surface, weather, and equipment used (Bahr & Holme, 2003).

2.5.1 Age

Studies found that age is a factor related to injuries. This is due to the physical and pathological differences depending on age. For example, in the study of Orchard (2001), young athletics were at more risk of hamstring and calf muscle but not for the quadricep. This is related to the fact that the meaning the nerve supply is affected by age factors. In general, older people at more risk of injuries than younger people (Orchard, 2001). This is due to bone and muscles nature in protecting nerves. One the other hand, the study of Morgan & Oberlander (2001) found no relationships between age and injuries occurrence or severity.



2.5.2 Gender and Weight

Some studies noted increased injury rates among females specifically in ACL sprains and many discussions were done in relation to the reason of this gender differences (Murphy, Connolly & Beynnon, 2003; Childs, 2002; and Morgan, 2003). The anatomical, hormonal, and neuromuscular differences were the factors identified additional to hyper-laxity and body mass index (Harner & Rhin, 2003). This is affecting female participating in sport for example in positioning and landing where females are more likely to be in more extended positions than males (Harner & Rhin, 2003). At the same time, relations between sex and other types of injuries are still unknown (Murphy, *et al.*, 2003).

2.5.3 Muscle Flexibility

Literature showed that muscle flexibility are important intrinsic factors in muscle injuries. For

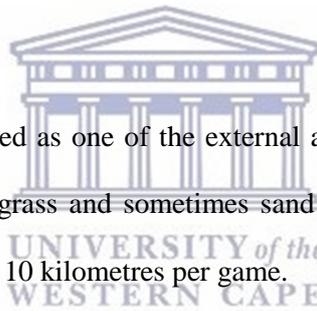
example, muscle tightness is strongly connected to injuries such as hamstring and quadriceps lesions (Witvrouw, Danneels, Asselman, D'Have & Cambier, 2003). The same study found that there are no differences in muscle flexibility between players who sustained an adductor muscle injury. The study concluded that it is important to have pre-testing sessions for the flexibility in order to identify players risk of injuries.

2.5.4 Methods of Training

Quality and quantity of the training are important extrinsic factor. According to the study done by Brukner & Khan (2012), errors on training are leading to injury and it is important to have enough knowledge about the relationship between training and injuries. Therefore, interdisciplinary approach could help to prevention strategy for sport players.

2.5.5 Playing Ssurface

Playing surfaces are also classified as one of the external aspects related to injuries. In soccer, the playground is covered with grass and sometimes sand (McGrath & Ozanne-Smith, 1997). Players can cover distances of up to 10 kilometres per game.



The knee, foot, and ankle are the common injury site in soccer (as previously mentioned). In the other hand, reasons can be due to internal or external mechanisms. For example, friction is related to the surface type for example friction is more likely less on the grass ground, which intervenes in injury occurrence, type, and severity (Arnason *et al*, 1996). Friction occurs while rapid stopping, pivoting, running, and jumping (Murphy *et al.*, 2003).

2.5.6 Footwear and Padding

It is appropriate to wear protection equipment such as shin pads and footwear, which showed significant effects on injury reduction (McGrath & Ozanne-Smith, 1997). The study done by Fransisco, Nightingale, Guilak, Glisson & Garret (2000), showed good protection by using shin pads for prevention of tibia fracture in soccer. It reduces the force impact by 11% to 17%

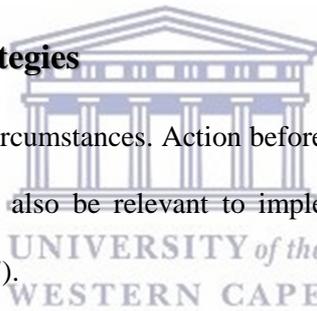
according to the same study and the study done by Murphy *et al*, (2003).

2.5.7 Adequate Warm-Up and Pre-Season Conditioning

Different exercises are classified as warm-up and pre-season conditioning such as stretching and strengthening. It is important for team members to know the relationship between warm-up and pre-season conditioning and injuries (Frantz, 2000). According to McGrath & Ozanne-Smith (1997) and Prentice (1999), warm-up and pre-season conditioning exercises are important in both training and matches and coaches must encourage players to practice it. According to Drawer & Fuller (2002), when players are under pressure of playing they are more likely not giving enough attention to warm-up and pre-season conditioning exercises which is increasing the risk of being injured.

2.6 Injury Prevention Strategies

Injuries occurs due to different circumstances. Action before, during, and after occurrence is very important to measure as it may also be relevant to implementation of prevention strategies. (McGrath & Ozanne-Smith, 1997).



2.6.1 Primary Injury Countermeasures

According to McGrath & Ozanne-Smith (1997), primary injury countermeasures are viewed as measures acting before an event or incident that could potentially lead to injury, to prevent the event from occurring in the first place. The primary injury countermeasures consist of conditioning, protective equipment and environmental conditions. Adequate warm-up and strengthening exercises, good nutrition, correct use and maintenance of equipment and awareness of environmental factors and personal limits all help to prevent sports injuries. In environmental conditions, the surface that is being played on as well as weather conditions are matters of concern in occurrence of injury.

2.6.2 Secondary Injury Countermeasures

According to McGrath & Ozanne-Smith (1997), secondary injury countermeasures are viewed as measures acting during the event to prevent the injury from occurring or to reduce the severity of injury. There are different ways in which authors define the first aid management of soft tissue injuries, namely RICE, PRICE, RICER or PRICER. The common first aid is called RICE, which means Rest, Ice, Compression, and Elevation. Brukner & Khan (2012) state that whenever possible, the injured athlete should cease activity immediately following injury. Continued active movement of the injured part will result in increased bleeding and swelling. For example, with a thigh contusion, bleeding will be increased by contraction of the quadriceps muscle during running. The application of ice immediately after injury results in reduction of pain and causes local vasoconstriction (contraction of blood vessels), thus reducing bleeding and swelling. Ice reduces the metabolic rate of the tissue, thus lowering demands on oxygen and nutrients. Ice may also decrease inflammation and muscle spasm (Brukner & Khan, 2003).

Compression of the injured area with a firm bandage reduces bleeding and, therefore, minimizes swelling too. Elevation of the injured part reduces blood flow to the injured area and encourages return of venous blood and lymph (Brukner & Khan, 2012). Flegel (1997) cited in Comfort (2010) and Kemper, van der Sluis, Brink, Visscher, Frencken & Elferink-Gemser (2015) suggested another additional measure, which is Protection (PRICE). In the study about prevalence and incidence of athletic related sports injuries in primary and high school children in the Cape metropolitan area, Frantz (2000) highlighted another argument as additional to RICE, which is Referral (RICER). By taking into consideration the effects those measures could bring to the wellness of a soccer player, the author supports these arguments and summarizes first aid as PRICER.

2.6.3 Tertiary Injury Countermeasures

Tertiary injury countermeasures refer to how to minimize the consequences of injuries after injury occurred (McGrath & Ozanne-Smith, 1997). It is also known as the rehabilitation stage for occurrence and recurrence. The aim is to restore the full power of muscles as well as flexibility

and range of motion (Prentice, 1999). McGrath & Ozanne-Smith (1997) and Brukner & Khan (2003) divided injury prevention into three main categories. Firstly it deals with health promotion and disease prevention. Secondly, it deals with early diagnosis and treatment to limit disability; and thirdly, it focuses on rehabilitation to reduce and correct existing disability. Brukner & Khan (2003) added that correcting biomechanics, warm-up, stretching, taping and bracing, protective equipment, suitable equipment, appropriate surfaces, adequate recovery, psychology and nutrition are strongly connected to injuries.

2.7 Sport Injuries and the Field of Physiotherapy

2.7.1 Physiotherapy of Sport Injuries

Physiotherapy plays an important role in injuries because it is dealing with the management of musculoskeletal dysfunction. Physiotherapists are one of the rehabilitation team members in sports injury prevention and management (Zuluaga, Briggs, Carlisle, McDonald, McMeeken, Nickson, Oddy & Wilson, 1995). There are several physiotherapy techniques related to the field of sport rehabilitation such as manual therapy, electrotherapy and exercise physiology such as specific soft tissue mobilizations, re-education of proprioception, stretching, rehabilitative specific exercises for flexibility, strength, endurance and power, and taping and bracing.

2.7.2 Pathophysiology of Soft Tissue Injuries

Soft tissues injuries are common reported injuries in sport and used to occur due to direct or indirect mechanisms. In both mechanisms, the process of tissues repair is the same. It contains different phases of healing. First, the inflammatory phase which is concerned with filling the gap of the ruptured tissues by haematoma. Second, remodelling phase, which is the process, includes regeneration of fibres. Third, the repairing phase which is the final process when the formation of dense connective tissues (Mattila *et al.*, 1993).

Physiotherapy techniques are applied during all the three phases of soft tissues injuries. Healing,

namely in the inflammatory phase, fibroblastic phase and remodelling phase. These phases sometimes overlap. According to McGonigle & Matley (1994), those phases are also seen clinically as the acute phase, usually lasting from 24-48 hours to two weeks or more; subacute phase, which can last for approximately two weeks; and the chronic phase, which lasts until the collagen scar is mature.

✦ **Inflammatory phase:** In this phase, most of the treatment is embodied in the acronym RICE, which stands for rest, ice, compression, and elevation to restore swelling/oedema and to reduce pain. Towards the end of this phase (48 to 72 hours), it is recommended to start gentle mobilization in order to prevent cross-linkage / adhesions and to restore the orientation of newly formed fibres. In so doing, the treatment in this phase achieves the aims of minimizing the extent of damaged tissue, of reducing associated pain and inflammation as well as the promotion of healing of damaged tissue.

✦ **Fibroblastic phase:** The main aim in this stage will be to increase tensile strength. The physiotherapist performs the graded specific soft tissue mobilization. Association of RICE and beginning of slight exercises is also recommended in this phase to bring about healing of damaged tissue, maintaining or restoring flexibility, strength, proprioception and overall fitness during the healing process of the athlete. The main objective is to get a functional scar. According to McGonigle and Matley (1994), the functional quality of the scar is determined by the collagen tissue's ability to: (1) form along the same line of stress as the tissue it is replacing, (2) be as long as the tissue it is replacing to allow full range of movement, allow independent movement between itself and the layers of tissue adjacent to it, and be of sufficient quantity and quality to accept the compressive, distracting and sharing stresses to which it will be subjected.

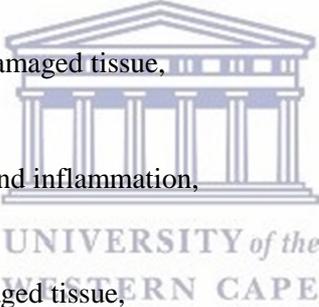
The graded specific soft tissue mobilization must be performed in association with stretching and therapeutic exercises. The stretching will bring about the elasticity of the newly formed scar. To

return to sports activity, the athlete must be given the exercises related to the performed sport. As good rehabilitation must have a preventive aspect, in this phase, any assessed predisposing factor to the injury sustained must be advocated.

2.8 Management Principles in Physiotherapy

2.8.1 Referral

Proper referral plays an important role in injury management and it involves input of different members in the multidisciplinary team. This is depending of the nature and severity of injury. Proper diagnosis leads to proper detection of injury severity. Therefore, it leads to the proper investigations needed. Referral will help in controlled evaluation and monitoring. During referral, rehabilitation team are aiming to the following objectives:

- 
- ❖ **Minimize** the extent of damaged tissue,
 - ❖ **Reduce** associated pain and inflammation,
 - ❖ **Promote** healing of damaged tissue,
 - ❖ **Maintain** or restore flexibility, strength, proprioception and overall fitness during the healing process of the athlete,
 - ❖ **Functionally rehabilitate** the athlete to enable his return to sport activity, and finally
 - ❖ **Assess** or correct any predisposing factor in order to prevent recurrence.

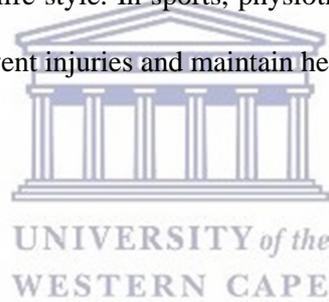
2.8.2 Rehabilitation

All sport injuries requires rehabilitation. The aim of rehabilitation is to enable the athletics to participate in sport after injury (Brukner & Khan, 2012). Full functioning in shortest time is the best rehabilitation result. On the other hand, risk of injury recurrence is highly expected because

the injury area is more exposed to injury and this is associated with un-proper rehabilitation program (Brukner & Khan, 2012). Therefore, recurrence challenge the needs to be discussed within the rehabilitation team during the rehabilitation process. After returning to sport, low level participation is advised in order to reduce recurrence risk.

2.8.3 Health Promotion

According to the WHO (1986), health promotion is the process of enabling people to increase control over, and to improve health. It is aiming to reach the maximum physical and mental functioning and control for an individual and for the community. This includes different life aspects additional to health. For example, external environmental factors are affecting health being. The strategy of health promotion is to direct the resources into positive concepts which improves physical capacity and life style. In sports, physiotherapists can work in clubs towards educating players on how to prevent injuries and maintain healthy lifestyle.



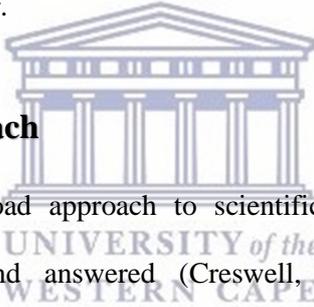
CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter explores the research design and methodology of the study. It discusses the methodological approach to investigate the factors that influence the implementation of injury prevention strategies among athletes affiliated to sports clubs at UWC. Furthermore, it describes the research design, research setting, population sampling, sample, and procedure for data collection. The data analysis and interpretation as well as the ethical considerations will be discussed to conclude this chapter.

3.2 Methodological Approach



Research methodology is a broad approach to scientific inquiry specifying how research questions should be asked and answered (Creswell, 2009). This includes worldview considerations, general preferences for design, sampling logic, data collection and analytical strategies, guidelines for making inferences, and the criteria for assessing and improving quality. Methods include specific scientific strategies and procedures for implementing research design, including sampling, data collection, data analysis, and interpretation of findings (Moghaddam, 2008; Creswell & Plano Clark, 2007).

A methodological paradigm refers to qualitative, quantitative, and mixed methods (Johnson *et al.*, 2007), and is broadly classified into four major domains:

1. Philosophical assumptions and stances are similar to the Lincoln, Guba, and Denzin's paradigm (Lincoln, 1985; Denzin, 2010). It is especially focused on the epistemological aspects of a paradigm;

2. Inquiry, logic is called methodology and structures the inquirer's gazell;
3. Guidelines for practice included the specific procedures and tools, including the how tool part of methodology,;
4. Socio-political commitments involves the political and values component of methodology operating in particular methodological situations.

3.2.1 Mixed Methods Research

Mixed methods research is generally an approach to knowledge (theory and practice) that attempts to consider multiple perspectives, and standpoints, including qualitative and quantitative (Morgan, 2007). These methods are used as one part of a validation process that ensures that the explained variance is the result of the underlying phenomenon or trait and mixed methods research has become the most popular term used (Greene, 2006). The goal of a mixed method is to bring together the qualitative and quantitative data/findings focused on the current research question as a shortcut to the literature. However, it is important to consider that the use of mixed methods is beneficial in this study, because it provided an excellent description of the methodology (Greene, 2006). In this study, qualitative and quantitative methods for data collection been used to have a more in-depth information and knowledge of the problem as well as provide rich datasets and offer more comprehensive approach to find answers to research questions (Greene, 2006). In addition, using mixed method the strengths of one method can be used to overcome the weaknesses of another method. It further allows the inclusion of strategies surrounding methods of data collection (e.g., questionnaires, interviews, observations), methods of research (e.g., experiments, ethnography), and related philosophical issues (e.g., ontology, epistemology, axiology). This study believes that it is essential to consider three major approaches to research methodology, including assumptions, principles, and values as parts of the research methodology paradigm and practice-related issues.

3.2.2 Characteristics of Mixed Methods Research

This study mixes quantitative and qualitative approaches to understand how research components can provide a reasonable opportunity to answer the research question(s). Some characteristics of mixed methods include (Johnson, 2007):

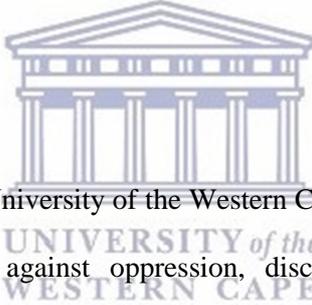
1. **Link** explanatory research to relevant theories through theory generation, theory testing, and ongoing theory modification.
2. **Produce** nomothetic (i.e., general, law-like) knowledge and idiographic (i.e., particularistic, local, and contextual) knowledge, and interconnect these continually to produce meaningful description and practical theory.
3. **Document** multiple types, levels, forms, and degrees of causation (e.g., statistical and experimental, nomothetic and idiographic causation [including intentional causation], descriptive and explanatory causation).
4. **Replicate**, translate, transfer, and document mediating and moderating processes, delineate conditions of generalization, and identify broad generalizations when possible, and identify complex contextual, cultural, and ecological interactions to aid in particular understanding and practical application of education/social theory.
5. **Articulate**, explicate, develop, and test manualized models, practice-based models, middle-level theoretical models, meta-models (i.e., models of models), and trans-theoretical and trans-disciplinary models of educational phenomena, and interconnect these continually for scientific learning (Burns, Veeck & Bush, 2017).

3.3 Research Design

The study used a sequential exploratory design. According to Creswell *et al.* (2003), this design is characterized by an initial phase of quantitative data collection and analysis, followed by a

phase of qualitative data collection and analysis. According to Creswell and Clark (2007), it consists of collecting and analyzing both qualitative and quantitative data in a single study or series of studies. Therefore, the priority is given to the qualitative aspects of the study. Both qualitative and quantitative data collections were collected. The quantitative survey through the use of self-administrated questionnaires informed the structure of the interview guide for the qualitative part of the data collection process. This study used a close-ended survey and semi-structured interviews to identify the barriers and facilitators associated with the implementation of injury prevention strategies among sports clubs at the University of the Western Cape. Furthermore, mixed method results in this study can integrate and interpret the study's findings in order to increase the understanding for exploring the facilitators and barriers to the implementation of injury prevention strategies among sports clubs at the University of the Western Cape.

3.4 Research Setting

The logo of the University of the Western Cape, featuring a classical building facade with columns and a pediment, with the text 'UNIVERSITY of the WESTERN CAPE' below it.

The study was conducted at the University of the Western Cape (UWC). UWC sports clubs have a history of creative struggle against oppression, discrimination and marginalization of disadvantaged students. In 1959, the South African parliament adopted a legislation establishing the University College of the Western Cape as a constituent college of the University of South Africa for people classified as "coloured." The first group of 166 students was enrolled in 1960 and the most active sports included football, volleyball, basketball and cricket.

3.5 Population, Sampling and Sample

The population of this study included all athletes registered within the sports clubs, coaches and medical personnel belonging to the UWC sports clubs in 2016. This study used purposeful and convenience sampling for both quantitative and qualitative data collection. In the quantitative phase of the research, participants comprised 344 students, 21 coaches and 9 medical personnel who were invited to complete questionnaires. In the qualitative phase, participants who were

willing to participate in the study were requested to become part of the focus group discussions. During the focus group discussion, three groups representing the athletes, coaches and medical personnel were selected to participate. The researcher ultimately managed to hand a consent letter to participants for their voluntarily participation (see ethical considerations). Physical contact and follow-up phone calls were made. The focus group discussion was held at a convenient place, namely the Liberty Recreational Hall, which was free from distractions and close to the majority of the participants' residential areas.

3.6 Data Collection Process

Approval to conduct the study had been obtained from the University of the Western Cape Humanities and Social Sciences Research Ethics Committee (Ethics Reference Number: HS 16/5/44) in September 2016 (Appendix 1). The Manager of Student Administration granted permission to include staff and students in the research as long as they agreed to the proviso of voluntary participation (Appendix 2). The researcher met participants at the training sessions in the evening at UWC. During these sessions, the researcher explained to the participants the objectives of study by using an information sheet (Appendix 3) and then the consent forms (Appendix 4) were signed by the participants to indicate their voluntary agreement to participate to the study. Questionnaires (Appendixes 8 and 9) were distributed before the start of training, due to time constraints and the inability of participants to complete the questionnaires initially. It was hard to approach all participants individually. Therefore, the researcher approach the participants at the time of the training at UWC sport department. Furthermore, the researcher visited the teams and redistributed the questionnaires because some participants forgot to complete and some lost the questionnaires. The overall ambiance among the participants was cheerful. The researcher distributed 400 questionnaires but due to the circumstances at the university at the time, only received 110 questionnaire back.

3.6.1 Criteria for Selection of Participants

The criteria for selection of participants were inclusive. The participants included were players, coaches, and therapists participating in the 2016 season for both qualitative and quantitative data collection. This study considered only those participants who voluntarily agreed and were willing to participate. All participants were mostly effective teams in the league, including football, cricket, basketball and volleyball. All participants were aged ranging from 14 to 29 years old. There were no restrictions on gender, or race. English was the language of communication and data collection. The choice of a focus group was randomly selected relating to one or two players from the team's participation, coaches, and therapists.

3.6.2 Methods for Data Collection

This study used two methods for data collection, including questionnaires (Appendixes 8 and 9) and focus group discussions.

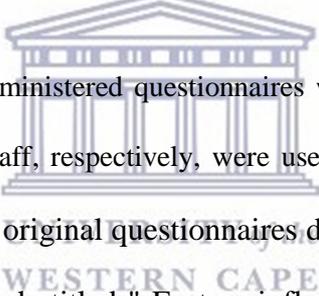
3.6.2.1 Questionnaires

A questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents (Mellenbergh, 2008). The questionnaire is a well-established tool within social science research for acquiring information on participant social characteristics, present and past behaviour, standards of behaviour or attitudes and their beliefs, and reasons for action with respect to the topic under investigation (Bulmer, 2004).

According to Hawkes & Rowe (2008), questionnaires have advantages over some other types of surveys: it is cheap, does not require as much effort from the questioner as verbal or telephone surveys, and it often has standardized answers that make it simple to compile data. However, standardized answers may frustrate the users. Questionnaires are also sharply limited by the fact that participants must be able to read the questions and respond to them. Therefore, for some demographic groups by conducting a survey questionnaire may not be concrete. The questionnaires also produce very low return rates, whether they are mailed or online questionnaires. In this study, this however overcome this by handing the questionnaires out and

gathering it.

According to Parfitt (2005), good questionnaire design is crucial in order to generate data conducive to the goals of the research. The characteristics of a questionnaire including format, sequence and wording, inclusion of classification, behaviour, knowledge and perception questions, and questionnaire length and output need to be considered for ensuring reliability, validity and sustained engagement of the participant (Sarantakos, 2005; Taylor, Dodd, Shields & Bruder, 2007). The questionnaire format principal requires that questions must be sequenced in a logical order, allowing a smooth transition from one topic to the next (Sarantakos, 2005). This ensures that participants understand the purpose of the research and they will carefully answer questions at the end of the survey (McGuirk & O'Neill, 2016). This can be accomplished by grouping related questions under a short heading describing the section's theme.



Three types of structured self-administered questionnaires was standardised questionnaires for athletes, coaches, and medical staff, respectively, were used to collect the quantitative data (Appendixes 8, 9 and 10). The original questionnaires designed by Nuhu, A. (2008), and used for similar study in Rwanda titled " Factors influencing implementation of soccer injury prevention strategies in Rwanda". Moreover, athletes and coaches' questionnaires consisted of questions to assess the socio-demographic characteristics, and implementation of preventive strategies. The reasons why some of the activities were not done the source of information regarding injury prevention, and finally the knowledge on the occurrence, causes, types and predisposing factors of injuries were measured in this questionnaire. The medical practitioners' questionnaires comprised two sections, including demographic characteristics (age, sex, marital status, race, language and grade) and identifying the actual implementation of injury preventative strategies and practices put in place at respective clubs. For example, Part A: Identification (age, what is your favourite sport, how long have you been involved with the UWC team); Part B: Implemetaion of Injury Prevention Strategies; Part C: Factors Influencing Implementation of Injury Prevention Strategies; Part D: Factors Influencing Knowledge of Injury

Prevention; and Part E: Injury Prevention Knowledge.

In this study, the questionnaires were distributed and participants filled it out before the training session at the university courts in order to collect quantitative data. However, the researcher assisted some participants in order to complete it. The total number of questionnaires was 110 questionnaires at the end of the data collection period. For the purpose of this study, 110 athletes / participants were selected to complete the self-administrated questionnaire. In addition nine coaches and one medical staff participated in FGD. Define the amount of coaches and medical staff.

3.6.2.2 Focus Group Discussions

This study used focus group discussions to collect qualitative data. Focus groups are a means of better understanding how people feel or think about an issue, product or service (Stewart & Shamdasani, 2015). They are carefully planned discussions designed to obtain perceptions on a defined area of interest (Krueger & Casey, 2014). Qualitative data were gathered through the use of four (4) focus groups. Each focus group ideally consisted of 8-10 participants (athletes, coaches and medical staff) who were affiliated to the UWC sport clubs at UWC in 2016. Focus group interviews comprised 10 main semi-structured discussion questions, and each session took at least one hour to complete. The discussion was carried out in a noise-free environment to avoid interference and ensure privacy. Participants were arranged in a circle and introduced themselves at the beginning in order to express their point of views. The participants were informed at the beginning of the discussion about the aim of the study. A tape recorder was used with their permission for the purpose of the research. In addition, a journal was kept to record the researcher's own reflections about the perceptions which participants had about their participation in recreational sport.

Three focus group were conducted with participants, including medical staff, coaches, and athletics. This study design followed focus group guidelines (Stewart & Shamdasani, 2015;

Krueger & Casey, 2014). The interview schedule for medical staff consisted of eight questions (Appendix 7). These questions assessed the strategies for injury prevention and the role of medical staff in injury prevention. The interview schedule for team coaches comprised eleven questions (Appendix 5) and focused on prevention strategies and coaches' experience and attitude in implementation of prevention strategies. Different questions were directed at members of the focus group in the same session. Therefore, everybody answer the questions during the session. The interview schedule for athletes encompassed eight questions about their understanding, opinions, and experience of injury prevention strategies (Appendix 6). Regarding the focus group discussions, the researcher explained the aim of the study and consent forms (Appendix 4) were signed by the participants before the discussions.

The time and place of the discussions were organized according to the availability of the participants. These focus group discussions were conducted at the UWC stadium after 17:00 when all participants were available and had no additional working hours or classes. A guide of the questions was used and distributed to all participants. This study used a research assistant as a facilitator who had skill in dealing with the study objectives and conducting focus group discussions.

3.7 Data Analysis and Interpretation

The data analysis and interpretation for mixed methods, including qualitative and quantitative approaches, was performed in phases. The process started by analysing data through self-administered questionnaires followed by data from focus group discussions amongst a selected group of participants. Before data analysis, the researcher should address non-response errors and missing data. Low response rates can be overcome by sending out more questionnaires and using interpreters. This study used the Statistical Package for the Social Sciences (SPSS, version 24), which is a powerful, fast and reliable statistical analysis software for quantitative data analysis. As a result, descriptive statistics (Mean: M, percentage: %, Standard Deviations: SD, Standard Error of the Mean: SEM) and inferential statistics (statistical t-test) were used to

analyze quantitative data such as demographic characteristics of participants.

The statistically significant difference between variables was set at $p \leq 0.05$ and 95% confidence interval (CI).

Qualitative data were analyzed through thematic analysis which allows the determination of themes (and prevalence) in a number of ways. Thematic analysis provides a more detailed and nuanced account of a particular theme, or group of themes, within the data set. Coding of verbatim responses for qualitative data analysis may entail one of many methods, depending on the approach (Sarantakos, 2005). The purpose of coding in qualitative research is to classify and tag text with codes in order to facilitate later retrieval. It is a way of linking data to ideas and from ideas back to supporting data (Bazeley, 2009). This might relate to a specific question or area of interest within the data (a semantic approach), or to a particular latent ‘‘theme, across the whole or majority of the data set’ (Clarke & Kitzinger, 2004).

As the thematic analysis is a flexible method, the researcher needs to be clear and explicit about what to do, what to say, what to match up with what actually do (Braun & Clarke, 2006). This means that the theory and methods need to be applied rigorously, and rigor lies in devising a systematic method whose assumptions are congruent with the way one conceptualizes the subject matter (Reicher & Taylor, 2005:549). In this study, the focus group discussions were recorded and thereafter transcribed verbatim. The interviews were transcribed and coded to identify similarities and differences among the responses as well as themes that cut across participants in team sports. Data coded into themes and sub-themes, and thematic analysis was carried-out to analyze the data. Both results from discussion groups and the survey questionnaire results were cross-examined and analyzed. In this study there were 22 sport codes, i.e., clubs at UWC. Within these clubs, there were 344 athletes, 44 coaches, as well as 9 medical staff. However, all sports clubs were not very active. For this reason, the current active sports teams included rugby, soccer, basketball, including their coaches and medical teams who were

purposefully selected to obtain more information on the implementation of an injury prevention strategy plan.

3.8 Validity and Reliability

Validity and reliability are important criteria with which quantitative instruments adequacy is evaluated (Polit & Beck, 2004; 2008; Rolfe, 2006). However, validity referred to the extent to which an instrument measures what it is supposed to be measuring (Sarantakos, 2000). In this study, the questionnaires were already used in previous study as mentioned earlier and this assures validity. Reliability refers to the ability of the research instrument to produce consistent results. There is reliability when the results are repeated on more than one occasion (Sarantakos, 2005). Moreover, according to a study by Pharaoh & Assuman (2011), test-retest reliability was 91% (range 68–100%). Inter-rater reliability ranged from 40–65% when missing data and answers were included and from 62–75% when only answers were included. A questionnaire is a self-administered tool, therefore, relying on the participants to complete it to the best of their ability and with honesty (Bulmer, 2004; McGuirk & O'Neill, 2016). To increase reliability of the questionnaires test re test been done to the questionnaires in a form of pilot study.

3.9 Pilot study

Pilot study been done with participants within the same criteria. They were players in different sport clubs at UWC who were not included in this study. The researcher approach players in UWC sport administration and explained what going to be done and why. The researcher discussed with each player the confident time and place for doing the pilot study. All participants agreed on the UWC sport administration building. Regarding time, all participants agreed before or after the training. The pilot study been done three months before the data collection took place. The questionnaires distributed to players, analysed, and once again distrusted after two weeks to the same players to see if there are any difficulty or challenge. Each player spent 15 minutes to complete the questionnaires and no difficulty reported.

3.10 Trustworthiness of the Data

In this study, it is relevant to address the trustworthiness of the qualitative data. According to Lincoln & Guba (1985), it aims to support the argument that the inquiry's findings are "worth paying attention to." With regard to trustworthiness of qualitative data, it is important to consider four categories: credibility, transferability, dependability, and confirmability. In respect to credibility, the study involved athletics, coaches, and medical staff. These were engaged because they played an active role in the study setting concerned with injury prevention amongst participants in order to ensure that correct information was obtained from different sources. During the focus group discussions, it ensured that the data that was captured were trustworthy. The data were transcribed verbatim from the recordings, and member checking was done with the group in order to verify whether the recorded responses were true to their viewpoints. As regards dependability and conformability, this study relied on an independent audit of the research methods by the competent peers and supervisors. Furthermore, all information generated from participants was thoroughly examined by the research supervisor and this included the original transcripts, data analysis documents, comments from the member checking process, and text of the dissertation itself. To ensure reflexivity of the FGD, an independent research assistant facilitate the FGD together with the researcher, these is to minimize errors, and influences might occur.

3.11 Ethical Considerations

Permission to conduct this study was obtained from the UWC Research Ethics Committee (Appendix 1). Participants were informed about the aim and objectives of the study (Appendix 3). A written informed consent was sought from all the participants (Appendix 4). Participation was free and voluntary, and participants had the right to withdraw at any given time without any penalty. A non-disclosure statement was signed by participants for confidentiality purposes to make them conscious of the ethical code before they completed questionnaires and started focus group discussions. The researcher ensured the participants that their information obtained would

kept confidentially and pseudonyms could be used to protect their identities when results will be published. The research findings were made available to all the stakeholders, based on their remuneration.

3.12 Summary

This chapter described the research methodology of the study. It discussed the methodological approach, research design, research setting, and population, sampling and sample of the study. It also described the methods used for data collection, which included selection criteria and data collection instruments and procedures. The data analysis and interpretation process were also explained in this chapter. Finally, it concluded with the ethical considerations that were applied in this study. The next chapter will present the results of the study.



CHAPTER 4

RESULTS OF THE QUANTITATIVE DATA ANALYSIS

4.1 Introduction

This chapter explores the data collected on the general knowledge of players and team coaches about injury prevention as well as their sources of information regarding injury prevention. The implementation of injury prevention strategies and the facilitators and barriers that influence it are also discussed. The results were analysed in accordance with the following objectives:

1. The general knowledge of players and team coaches about injury prevention at UWC.
2. Implementation of injury prevention strategies among sports clubs at UWC
3. The facilitators and barriers to the implementation of injury prevention strategies among sports clubs at UWC.



4.2 Demographics of the Participants

4.2.1 Age

The majority of players 58.4% (59/101) were aged between 24-20 years old while 29.7% (30/101) were between 14-19 years old and 11.9% (12/101) were between 25-29 years old as shown in Table 4.1. Table.4.2 shows that 44.4% (4/9) of coaches were aged between 20-29 years old and 22.2% (2/9) were aged between 30-39 or 50-60 years old. Of the total number of coaches, only 11.1% (1/9) was aged between 40-49 years old as shown in Table.4.2. As shown in Table 3, the majority of players (female and male) 49.5% (50/101) were involved in football while 15.8% (16/101) played basketball, 13.9% (14/101) volleyball, 10.9% (11/101) cricket and 9.9% (10/101) rugby.

Table 4.1: Ages of the sports players in the study

Age	N	%
14-19	30	29.70
20-24	59	58.40
25-29	12	11.90
Total	101	100

Table 4.2: Ages of the sports coaches in the study

Age	N	%
20-29	4	44.40
30-39	2	22.20
40-49	1	11.10
50-60	2	22.20
Total	9	100

**Table 4.3:** Types of sports players in the study

Age	N	%
Rugby	10	9.9
Football	50	49.5
Basketball	16	15.8

Cricket	11	10.9
Total	101	100

4.2.2 Gender

In this study, 19 (38%) female participants played for the football team and 62% of the participants who played football were male (Figure 4.1).

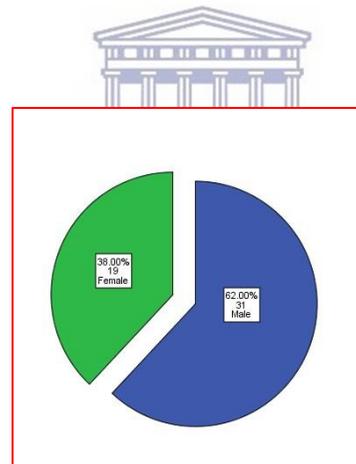


Figure 4.1: Gender of participants playing football

4.2.3 Experience

As shown in Table 4.4, most of the players 65.6% (66/101) participated in sport for 1 to 2 years, 27.7% (28/101) for 3 to 4 years, 5.7% (6/101) for 5 to 6 years and only 1% (1/101) for 7 years or more. The data in Table 4.5 show that 33.3% (3/9) of respondents had coaching experience between 1-4 years, 44.4% (4/9) of coaches had more than 13 years coaching experience while 11.1% (1/9) had coaching experience between 5-8 years and 9-12 years, Table 4.5.

Table 4.4: Experience of the sports players in the study

Years	Frequency	%
1-2	66	65.6
3-4	28	27.7
5-6	6	5.9
≥ 7	1	1
Total	101	100



Table 4.5: Experience of the sports coaches in the study

Years	Frequency	%
1-4	3	33.4
5-8	1	11.1
9-12	1	11.1
13+	4	44.4

Total	9	100
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4.3 Factors Influencing Participants' Knowledge of Injury Prevention

4.3.1 Sources of Players' Knowledge of Injury Prevention

Table 4.6 shows that players regarded the knowledge they got from a doctor / physiotherapist as most important 72.4% (71/101) while 50% (49/101) of players regarded the knowledge obtained from a coach as most important and 44.9% (44/101) as important. However, 65.3% (64/101) of players indicated that the knowledge obtained from the media was least important.



Table 4.6: Sources of players' knowledge of injury prevention

Learned about injury prevention		Frequency	Percentage
Doctor / Physiotherapist	Most important	71	72.4
	Important	24	24.5
	Least important	3	3.1
Media	Most important	8	8.2
	Important	26	26.5
	Least important	64	65.3
Coaches	Most important	49	50.0
	Important	44	44.9

Least important	5	5.1
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4.3.2 Sources of Coaches' Knowledge of Injury Prevention

Table 4.7 summarizes the sources of coaches' knowledge of injury prevention. The study showed that 77.8% (7/9) of coaches said that getting knowledge from a doctor / physiotherapist was the most important source while 66.7% (6/9) of coaches considered knowledge acquired from the media as important. The study showed as well that 55.6% (5/9) of coaches indicated that knowledge gained from seminars was most important, but 33.3% (3/9) thought that such knowledge was least important.



Table 4.7: Sources of coaches' knowledge of injury prevention

Learn about injury prevention		Frequency	Percentage
Doctor/physiotherapist	Most important	7	77.8
	Important	1	11.1
	Least important	1	11.1
Media	Most important	1	11.1
	Important	6	66.7
	Least important	2	22.2
Seminars	Most important	5	55.6
	Important	1	11.1
	Least important	3	33.3
Total		9	100

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4.3.3 Players' Knowledge of Injury Prevention

The players' knowledge of injury prevention was assessed. They were asked 11 questions which were grouped into three categories (Table 4.8). Three questions were grouped under the occurrence of injuries (1-3), two questions under the causes and risk factors (4 and 5) and six under injury prevention strategies (6-11). They were given a set of sentences where they had to choose responses to each one ranging from strongly agree to strongly disagree. Table 4.8 also shows that 48.9% (48/101) of players are agreed that the chances of sustaining an injury during training that prevents you from being available for selection is likely to happen while 53.1% (52/101) of players strongly agreed or agreed that the chances of sustaining an injury during a competitive match that prevents you from being available for selection is likely to happen.

Most of the players 41.8% (41/101) agreed that there is a greater chance of sustaining an injury during a competitive match than during training, while 34.7% (34/101) indicated that they neither agreed nor disagreed that injuries are a consequence of the action of another player, and 28.6% (28/101) are divided (agreed vs neither agreed nor disagreed on the item whether the risk of lower leg injuries in training is reduced by wearing shin guards. Of the players, that 42.9% (42/101) agreed that the risk of injury is reduced by thoroughly warming up and stretching prior to training or competition, and 39.8% (38/101) of players agreed that the risk of injury is reduced by thoroughly cooling down and stretching after training or competition. Otherwise, the study showed about 33.7% (33/101) of players agreed that strong muscles are important in the protection against injuries. Of the players, 42.9% (42/101) strongly disagreed that the majority of other players wear shin guards during training.



Table 4.8: Players' knowledge of injury prevention

Players' Responses/Questionnaire Items	N (%)				
	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
1. The chance of sustaining an injury during training that prevents you from being available for selection is likely to happen.	32 (32.7%)	48 (49%)	16 (16.3%)	2 ((2%)	-
2. The chances for sustaining an injury during a competitive match that prevents you from being available for selection is likely to happen.	52 (53.1%)	52 (53.1%)	16 (16.3%)	5 (5.1%)	1 (1%)
3. There is a greater chance of sustaining an injury during a competitive match than during training.	32 (32.7%)	41 (41.8%)	19 (19.4%)	5 (5.1%)	1 (1%)
4. Injuries are a consequence of the action of another player.	7 (7.1%)	26 (26.5%)	34 (34.7%)	22 (22.4%)	9 (9.2%)
5. The risk of lower leg injuries in training is reduced by wearing shin guards.	14 (14.3%)	28 (28.6%)	28 (28.6%)	14 (14.3%)	14 (14.3%)

6. Injury is more likely towards the end of a match.	13 (13.3%)	25 (25.5%)	26 (26.5%)	15 (15.3%)	19 (19.4%)
7. The risk of injury is reduced by thoroughly warming up and stretching prior to training or competition	39 (39.8%)	42 (42.9%)	13 (13.3%)	4 (4.1%)	-
8. The risk of injury is reduced by thoroughly cooling down and stretching after training or competition	38 (38.8%)	38 (39.8%)	19 (19.4%)	2 (2%)	-
9. Players with poor flexibility are more likely to get injured than those with good flexibility.	20 (20.4%)	19 (19.4%)	28 (28.6%)	27 (27.6%)	4 (4.1%)
10. Strong muscles are important in the protection against injuries.	27 (27.6%)	33 (33.7%)	19 (19.4%)	19 (19.4%)	-
11. The majority of other players wear shin guards during training.	10 (10.2%)	7 (7.1%)	15 (15.3%)	24 (24.5%)	42 (42.9%)
N=101.					

Also, 69.3% (70/101) of the players indicated that they were knowledgeable about injury prevention, whereas 30.7% (31/101) indicated that they were not knowledgeable (Table 4.9).

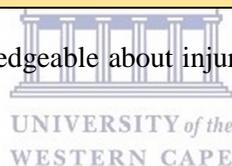
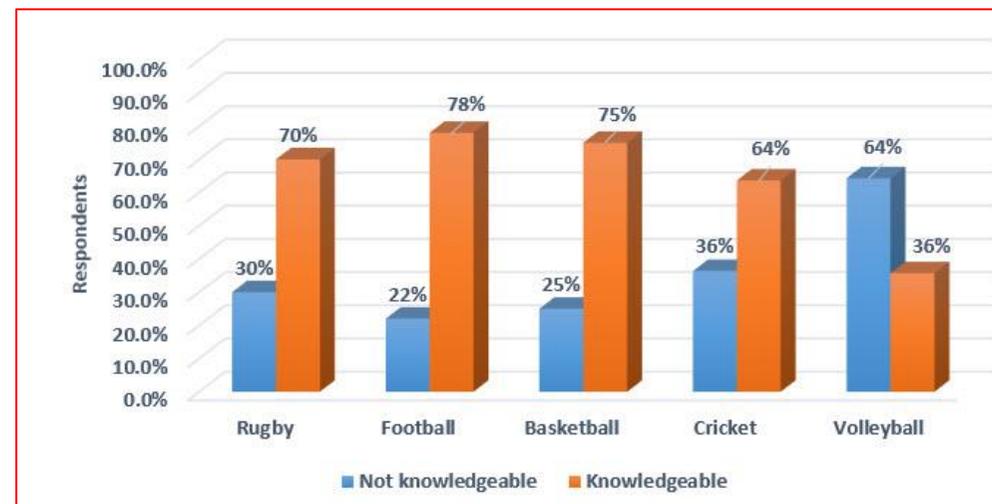


Table 4.9: Players' knowledgeability of injury prevention

Item	N	%
Not knowledgeable	31	30.7
Knowledgeable	70	69.3
Total	101	100

Assessment of players' knowledgeability of injury prevention within the type of sports they played are presented in Figure 4.2. For all the sports types, players' were marginally significantly ($p=0.047$) knowledgeable compared to those who indicated that they were not knowledgeable.



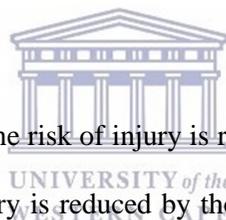
Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.615 ^a	4	0.047
Likelihood Ratio	8.985	4	0.061
Linear-by-Linear Association	6.649	1	0.010
No of Valid Cases	101		

^a4 cells (40%) have expected count less than 5. The minimum expected count is 3.07; df=degrees of freedom

Figure 4.2: Players' knowledgeability of injury prevention within the type of sports

4.3.4 Coaches' Knowledge of Injury Prevention

Table 4.10 shows that 50% (4/9) of coaches are agreed that the chance of sustaining an injury during training that prevents a player/s from being available for selection is likely to happen. In addition, 50% (4/9) of coaches are agreed that the chances for sustaining an injury during a competitive match that prevents a player/s from being available for selection is likely to happen. The majority of coaches strongly agreed 62.5% (5/9) and agreed 25% (2/9) that there is a greater chance sustaining an injury of a player/s during a competitive match than during training, whereas 50% (4/9) agreed that injuries are a consequence of the action of another player and the same number 50% (4/9) indicated that they agree that the risk of lower leg injuries in training is reduced by wearing shin guards.



The study showed that 87.5% (7/9) of coaches strongly agreed that the risk of injury is reduced by thoroughly warming up and stretching prior to training or competition and 87.5% (7/9) of coaches agreed that the risk of injury is reduced by thoroughly cooling down and stretching after training or competition. Exactly 50% (4/9) of coaches agreed that strong muscles are important in the protection against injuries of a player. Most coaches 62% (5/9) are of the opinion that the majority of other players wear shin guards during training.

Table 4.10: Coaches' knowledge of injury prevention

Item	Response	Frequency	%
The chance of sustaining an injury during training that prevents a player/s from being available for selection is likely to happen.	Strongly agree	4	50
	Agree	4	50
The chances for sustaining an injury during a competitive match that prevents a player/s from being available for selection is likely to happen.	Strongly agree	4	50
	Agree	4	50
There is a greater chance sustaining an injury of a player/s during a competitive match than during training.	Strongly agree	5	62.5

	Agree	2	25
	Neither agree nor disagree	1	12.5
	Strongly agree	1	12.5
Injuries are a consequence of the action of another player.	Agree	1	12.5
	Neither agree nor disagree	4	50
	Disagree	2	25
The risk of lower leg injuries in training is reduced by wearing shin guards.	Strongly agree	1	12.5
	Agree	4	50
	Neither agree nor disagree	1	12.5
	Disagree	1	12.5
	Strongly disagree	1	12.5
Injury is more likely towards the end of a match.	Strongly agree	3	37.5
	Neither agree nor disagree	1	12.5
	Disagree	3	37.5
	Strongly disagree	1	12.5
The risk of injury is reduced by thoroughly warming up and stretching prior to training or competition	Strongly agree	7	87.5
	Agree	1	12.5

Continued/...

Table 4.10: Coaches' knowledge of injury prevention (continued)

Item	Response	Frequency	%
The risk of injury is reduced by thoroughly cooling down and stretching after training or competition	Strongly agree	7	87.5
	Agree	1	12.5
Players with poor flexibility are more likely to get injured than those with good flexibility.	Strongly agree	2	25
	Agree	3	37.5
	Neither agree nor disagree	2	25
	Disagree	1	12.5
Strong muscles are important in the protection against injuries of a player/s.	Strongly agree	2	25
	Agree	4	50
	Neither agree nor disagree	2	25
The majority of other players wear shin guards during training.	Strongly agree	1	12.5
	Neither agree nor disagree	1	12.5
	Disagree	5	62.5
	Strongly disagree	1	12.5
Total		9	100

4.4 Implementation of Injury Prevention Strategies by Players

4.4.1 During Training and in Competition

Table 4.11 summarizes the implementation of injury prevention strategies by players during training and in competition. Of the players, 34% (35/101) indicated that they do wear gear shin guards without ankle protection in training, whereas 65.3% (66/101) said they do not. The majority of players (59.4%; 60/101) said that they do not wear gear shin guards without ankle protection in competition. Surprisingly, the majority of players indicated that they do not wear gear shin guards with ankle protection during neither training (76.2%; 77/101) nor competition (73.3%; 74/101). A similar trend was noted in that most players do not wear ankle protection in training (61.4%; 62/101) or in competition (57.4%; 58/101). However, the majority of players indicated that they do wear appropriate footwear/shoes for protection in both training (98%; 99/101) and competition (97%; 98/101), but that they do not wear a mouth guard for protection in either training (80.2%; 81/101) or competition (71.3%; 72/101). Likewise, most players replied that they do not wear protective headgear neither in training (80.2%; 81/101) nor in competition (76.2%; 77/101). Similarly, most goalkeepers do not wear protective gloves in training (84%; 84/101) or competition (71.3%; 72/101).

Table 4.11: Implementation of injury prevention strategies by players during training and in competition

	In Training		In Competition	
	Wear	Don't Wear	Wear	Don't Wear
1. How often do you wear injury protection gear shin guards without ankle protection?	35 (34.7%)	66 (65.3%)	41 (40.6%)	60 (59.4%)
2. How often do you wear injury protection gear shin guards with ankle protection?	24 (23.8)	77 (76.2%)	27 (26.7%)	74 (73.3%)
3. How often do you wear injury protection gear ankle protection?	39 (38.6%)	62 (61.4%)	43 (42.6%)	58 (57.4%)
4. How often do you wear injury protection gear appropriate footwear/shoes?	99 (98%)	2 (2%)	98 (97%)	3 (3%)
5. How often do you wear injury protection gear mouth-guard?	20 (19.8%)	81 (80.2%)	29 (28.7%)	72 (71.3%)
6. How often do you wear injury protection gear headgear?	20 (19.8%)	81 (80.2%)	24 (23.8%)	77 (76.2%)
7. How often do you wear injury protection gear gloves for goal keepers?	16 (16%)	84 (84%)	29 (28.7%)	72 (71.3%)

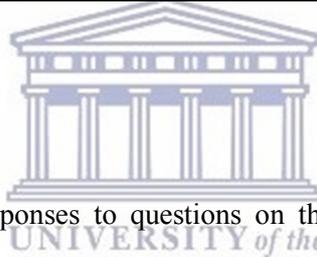


Table 4.12 outlines players' responses to questions on the frequency with which they wear protective sports gear as an injury prevention strategy during training. The majority of respondents indicated that they never wear shin guards without ankle protection (64.6%; 64/101), shin guards with ankle protection (75.8%; 75/101), protective ankle gear (61.6%; 61/101), mouth-guard (79.8%; 79/101), headgear (79.8%; 79/101), protective goalkeepers' gloves (83.8%; 83/101). However, the majority of players (77.8%; 77/101) indicated that they always wear appropriate footwear/shoes for injury protection during training sessions.

Table 4.12: Implementation of injury prevention strategies by players during training

Item	Response	N	%
In training, how often do you wear injury protection gear shin guards without ankle protection?	Always	17	17.2
	Very often	3	3
	Often	6	6.1
	Sometimes	9	9.1
	Never	64	64.6

In training, how often do you wear injury protection gear shin guards with ankle protection?	Always	8	8.1
	Very often	5	5.1
	Often	3	3
	Sometimes	8	8.1
	Never	75	75.8
In training, how often do you wear injury protection gear ankle protection?	Always	9	9.1
	Very often	6	6.1
	Often	11	11.1
	Sometimes	12	12.1
	Never	61	61.6
In training, how often do you wear injury protection gear appropriate footwear/shoes?	Always	77	77.8
	Very often	12	12.1
	Often	5	5.1
	Sometimes	3	3
	Never	2	2
In training, how often do you wear injury protection gear mouth-guard?	Always	4	4
	Very often	7	7.1
	Often	5	5.1
	Sometimes	4	4
	Never	79	79.8
In training, how often do you wear injury protection gear headgear?	Always	9	9.1
	Very often	6	6.1
	Often	1	1
	Sometimes	4	4
	Never	79	79.8
In training, how often do you wear injury protection gear gloves for goal keepers?	Always	14	14.1
	Very often	1	1
	Sometimes	1	1
	Never	83	83.8

Table 4.13 summarizes players' responses to questions on the frequency with which they wear protective sports gear as an injury prevention strategy during competition. The majority of

players replied that in competitions, they never wear shin guards without ankle protection (58.6%; 58/101), shin guards with ankle protection (72.7%; 72/101), protective ankle gear (57.6%; 57/101), mouth-guard (70.7%; 70/101), headgear (75.8%; 75/101), and protective goalkeepers' gloves (70.7%; 70/101). On the other hand, the majority of players (71.7%; 71/101) responded that they always wear appropriate footwear/shoes for injury protection during competition.

Table 4.13: Implementation of injury prevention strategies by players during competition

Item	Response	N	%
In competition, how often do you wear injury protection gear shin guards without ankle protection?	Always	25	25.3
	Very often	7	7.1
	Often	3	3
	Sometimes	6	6.1
	Never	58	58.6
In competition, how often do you wear injury protection gear shin guards with ankle protection?	Always	11	11.1
	Very often	5	5.1
	Often	3	3
	Sometimes	7	7.1
	Never	72	72.7
In competition, how often do you wear injury protection gear ankle protection?	Always	13	13.1
	Very often	5	5.1
	Often	14	14.1
	Sometimes	10	10.1
	Never	57	57.6
In competition, how often do you wear injury protection gear appropriate footwear/shoes?	Always	71	71.7
	Very often	17	17.2
	Often	5	5.1
	Sometimes	3	3
	Never	3	3
In competition, how often do you wear injury protection gear mouth-guard?	Always	6	6.1
	Very often	10	10.1
	Often	3	3
	Sometimes	10	10.1
	Never	70	70.7
In competition, how often do you wear injury protection gear headgear?	Always	4	4
	Very often	6	6.1
	Often	6	6.1

	Sometimes	8	8.1
	Never	75	75.8
In competition, how often do you wear injury protection gear gloves for goal keepers?	Always	16	16.2
	Very often	7	7.1
	Often	2	2
	Sometimes	4	4
	Never	70	70.7



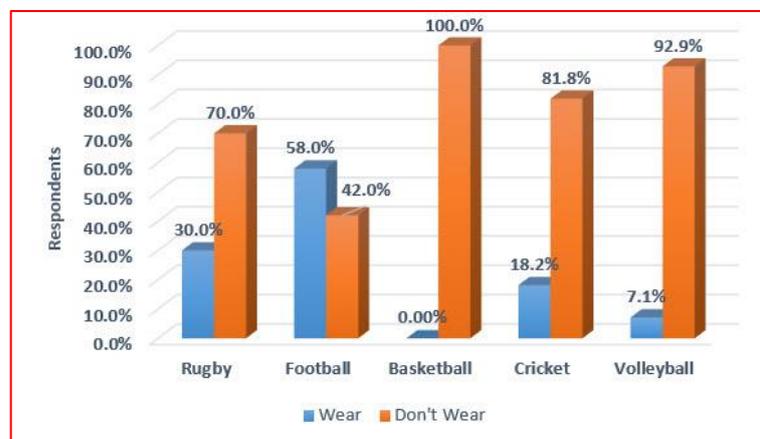
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4.4.2 Players' Injury Prevention Strategies by Type of Sports

4.4.2.1 Cross-Tabulation: Wearing of Shin Guards Without Ankle Protection

Players' responses to the question whether they wear shin guards without ankle protection during training (Figure 4.3A) or competition (Figures 4.3B) within the type of sports are indicated.

Figure 4.3A: Wearing of shin guards without ankle protection during training within the type of



Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	26.612 ^a	4	0.000
Likelihood Ratio	32.463	4	0.000
Linear-by-Linear Association	12.165	1	0.000
No of Valid Cases	101		

^a3 cells (30%) have expected count less than 5. The minimum expected count is 3.47; df=degrees of freedom

sports

Figure 4.3B: Wearing of shin guards without ankle protection during competition within the

type of sports



Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	42.872 ^a	4	0.000
Likelihood Ratio	51.001	4	0.000
Linear-by-Linear Association	19.425	1	0.000
No of Valid Cases	101		

^a2 cells (20%) have expected count less than 5. The minimum expected count is 4.06; df=degrees of freedom

In Figure 4.3A it can be seen that the majority of respondents, regardless of the type of sports they play (except football), do not wear shin guards without ankle protection during training. The figure also summarizes the results of the Pearson Chi-Square cross-tabulation run in the Statistical Package for the Social Sciences (SPSS). The 2-sided Asymptotic Significance, or p value, determines the statistical significance of the relationship between those players who indicated that they Wear vs those who responded that they Don't Wear shin guards without ankle protection during training. In the test of significance, a $p < 0.05$ implies that there is a statistically significant relationship between the two variables, namely Wear and Don't Wear. The p-value in the Chi-Square output is 0.000. This implies that the relationship between Wear and Don't Wear is significant, meaning, that the observed differences in players' responses are not due to chance. Likewise, in Figure 4.3B it is clear that the majority of respondents, whatever the type of sports they play, except football, do not wear shin guards without ankle protection during competition

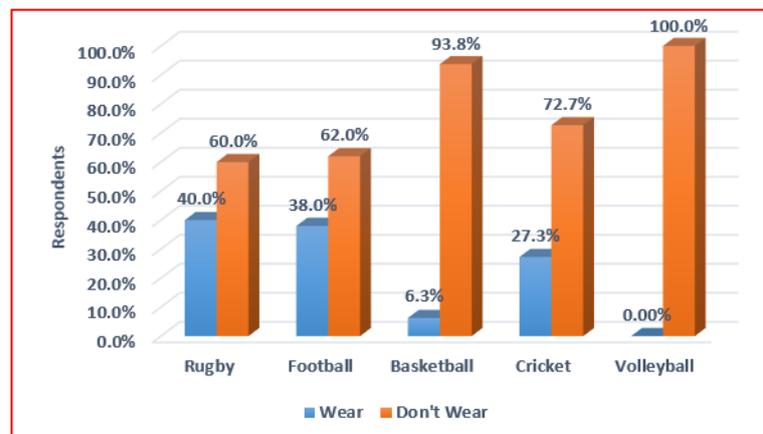
(2-sided Asymptotic Significance, or p value is 0.000). However, for both Figures 4.3A and 4.3B, the variables are not likely to be independent since one of the assumptions of the Chi-Square test is not met, i.e., no more than 20% of the cells should have expected values less than 5.

In competition, how often do you wear injury protection gear appropriate footwear/shoes?	Always	71	71.7
	Very often	17	17.2
	Often	5	5.1
	Sometimes	3	3
	Never	3	3
In competition, how often do you wear injury protection gear mouth-guard?	Always	6	6.1
	Very often	10	10.1
	Often	3	3
	Sometimes	10	10.1
	Never	70	70.7
In competition, how often do you wear injury protection gear headgear?	Always	4	4
	Very often	6	6.1
	Often	6	6.1
	Sometimes	8	8.1
	Never	75	75.8
In competition, how often do you wear injury protection gear gloves for goal keepers?	Always	16	16.2
	Very often	7	7.1
	Often	2	2
	Sometimes	4	4
	Never	70	70.7

Players' responses to the question whether they wear shin guards with ankle protection during training (Figure 4.4A) or in competition (Figure 4.4B) are presented for the various sports types in which they participate. Figures 4.4A and 4.4B show that the majority of players within all sports types indicated that they "Don't Wear" shin guards with ankle protection during training or competition. Although the differences between "Wear" and "Don't Wear" is significant ($p=0.033$ for training and $p=0.013$ for competition), they are not considered independent since

40% of the expected values for training and competition are less than 5.

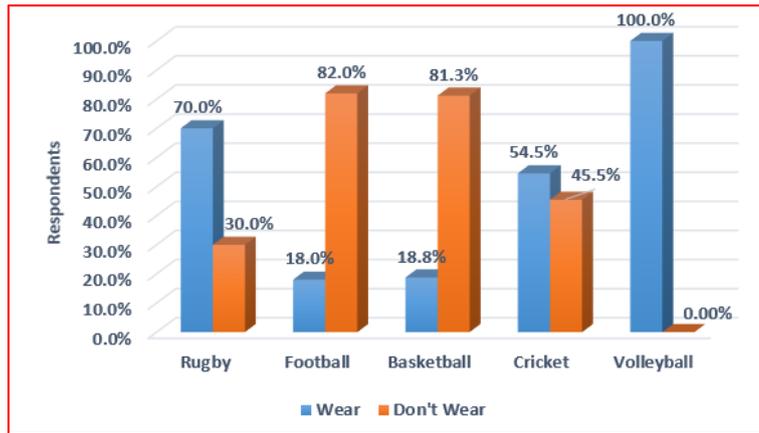
Figure 4.4A: Wearing of shin guards with ankle protection during training within the type of sports



Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.677 ^a	4	0.013
Likelihood Ratio	17.039	4	0.002
Linear-by-Linear Association	8.462	1	0.004
No of Valid Cases	101		

^a4 cells (40%) have expected count less than 5. The minimum expected count is 2.67; df=degrees of freedom

Figure 4.4B: Wearing of shin guards with ankle protection during competition within the type



of sports

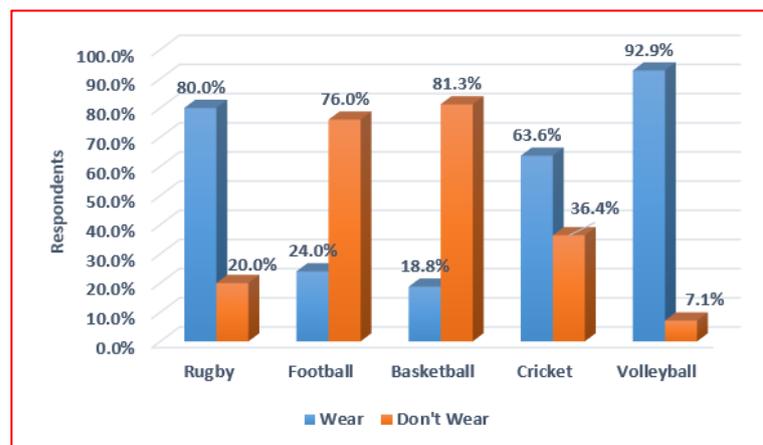
Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	39.217 ^a	4	0.000
Likelihood Ratio	44.775	4	0.000
Linear-by-Linear Association	14.943	1	0.000
No of Valid Cases	101		
^a 2 cells (20%) have expected count less than 5. The minimum expected count is 3.86; df=degrees of freedom			
Linear-by-Linear Association	9.093	1	0.003
No of Valid Cases	101		
^a 2 cells (20%) have expected count less than 5. The minimum expected count is 4.26; df=degrees of freedom			
Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.142 ^a	4	0.387
Likelihood Ratio	3.342	4	0.502
Linear-by-Linear Association	1.969	1	0.161
No of Valid Cases	101		
^a 5 cells (50%) have expected count less than 5. The minimum expected count is 0.2; df=degrees of freedom			

4.4.2.3 Cross-Tabulation: Wearing of Ankle Protection

The majority of football and basketball players indicated that they “Don’t Wear” ankle protection during training (Figure 4.5A) or competition (Figure 4.5B), whereas most rugby,

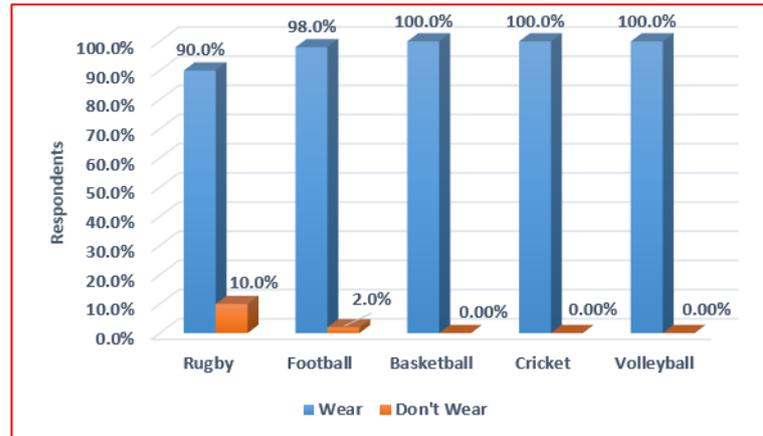
cricket and volleyball players responded that they “Wear” ankle protection during training or competition. The results of the Pearson Chi-Square analysis suggest a 2-sided asymptotic significance or p value of 0.000 for the differences between the “Wear” and “Don’t Wear” responses for both training and competition, and the association between these variables is marginally acceptable judging by the fact that 20% of the cells have expected values less than 5.

Figure 4.5A: Wearing of ankle protection during training within the type of sports



Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	32.973 ^a	4	0.000
Likelihood Ratio	35.596	4	0.000

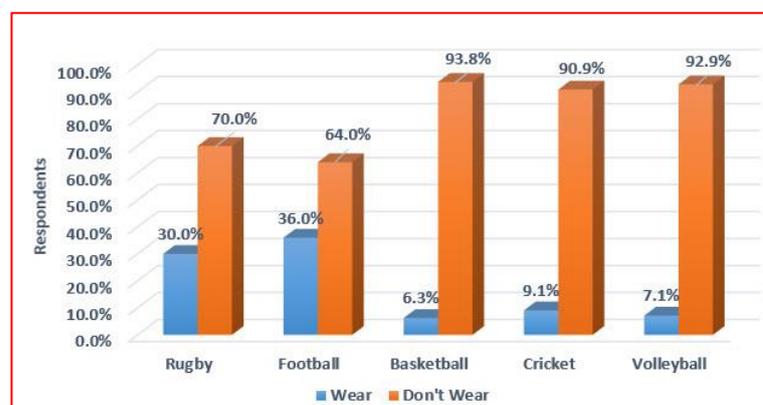
Figure 4.5B: Wearing of ankle protection during competition within the type of sports



4.4.2.4 Cross-Tabulation: Wearing of Appropriate Footwear/Shoes

Regarding the respondents answers to the question whether they wear appropriate footwear/shoes during training (Figure 4.6A) or competition (Figure 4.6B) for all the sports types, it is evident that the majority of players “Wear” such as an injury preventive strategy, but no association exists (i.e., they are not independent) between these variables as the Chi-Square test assumptions that (i) no cell should have expected values less than 0 and that (ii) no more than 20% of cells should have expected values less than 5 (i.e. 50% cells have expected counts less than 5). This inference is also borne out by the fact that the respective 2-sided asymptotic significance or p values were computed to be 0.387 in the case of training and 0.763 for the competition data.

Figure 4.6A: Wearing of appropriate footwear/shoes during training within the type of sports

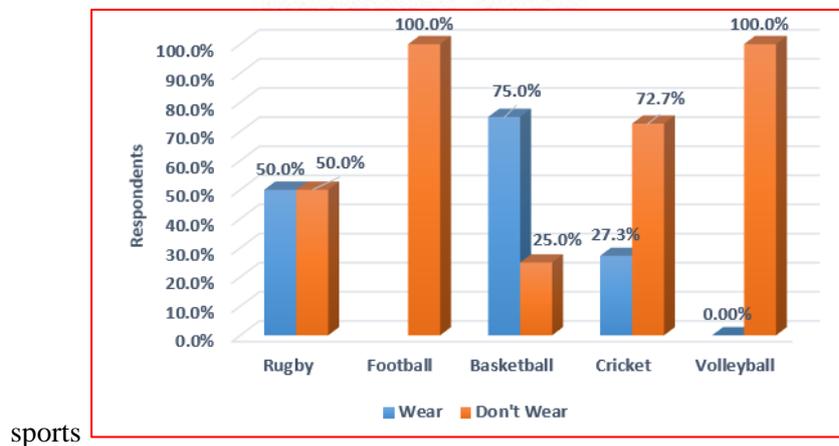


Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.498 ^a	4	0.033
Likelihood Ratio	11.814	4	0.019
Linear-by-Linear Association	6.888	1	0.009
No of Valid Cases	101		

^a4 cells (40%) have expected count less than 5. The minimum expected count is 2.38; df=degrees of freedom



Figure 4.6B: Wearing of appropriate footwear/shoes during competition within the type of

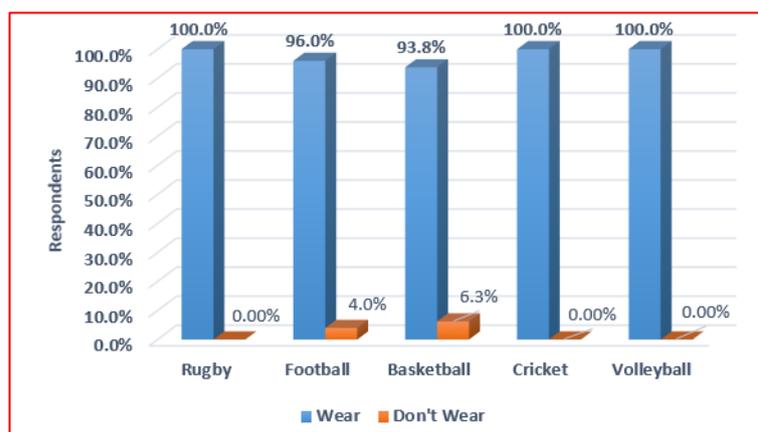
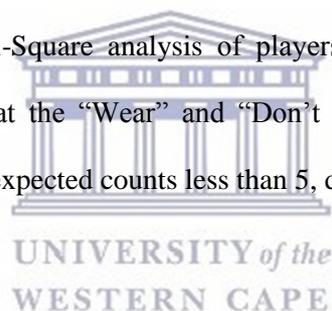


Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	52.628 ^a	4	0.000
Likelihood Ratio	55.776	4	0.000
Linear-by-Linear Association	0.031	1	0.859
No of Valid Cases	101		

^a4 cells (40%) have expected count less than 5. The minimum expected count is 1.98; df=degrees of freedom

4.4.2.5 Cross-Tabulation: Wearing of Mouth-Guard

Players' responses to the question whether they wear a mouth-guard for protection during training (Figure 4.7A) or competition (Figure 4.7B) are varied within the different types of sport in which they participate. In the case of rugby, 50% of respondents indicated that they do wear a mouth-guard during training while an equal number (50%) indicated that they do not wear a mouth-guard. The entire sample of football and volleyball players as well as 72.7% of cricket players stated that they "Don't Wear" a mouth-guard during training whereas 75% of basketball players do "Wear" such injury protection during training. All rugby players (100%) and 75% of basketball players indicated that they "Wear" a mouth-guard during competition, while 92% of football players, 72.7% of cricket players and 100% volleyball players "Don't Wear" such protection. Considering the Chi-Square analysis of players' responses for both training and competition one can deduce that the "Wear" and "Don't Wear" responses are not mutually independent (40% of cells have expected counts less than 5, despite p values of 0.000).



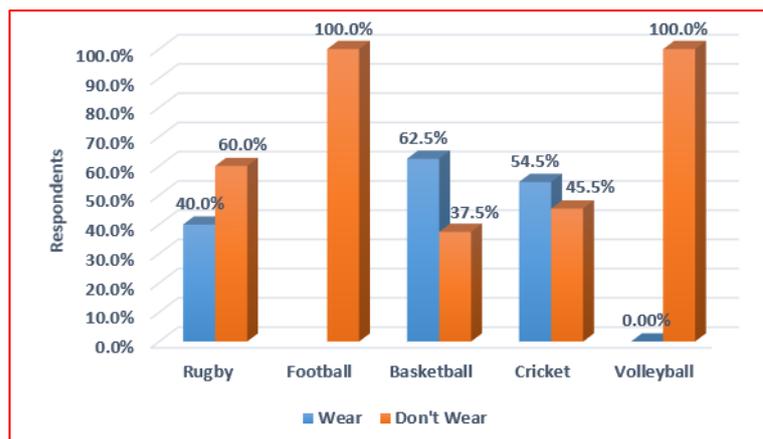
Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.853 ^a	4	0.763
Likelihood Ratio	2.733	4	0.603
Linear-by-Linear Association	0.271	1	0.602

No of Valid Cases	101
^a 5 cells (50%) have expected count less than 5. The minimum expected count is 0.3; df=degrees of freedom	

Figure 4.7A: Wearing of a mouth-guard during training within the type of sports



Figure 4.7B: Wearing of a mouth-guard during competition within the type of sports



Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	45.101 ^a	4	0.000
Likelihood Ratio	50.736	4	0.000
Linear-by-Linear Association	0.724	1	0.395
No of Valid Cases	101		

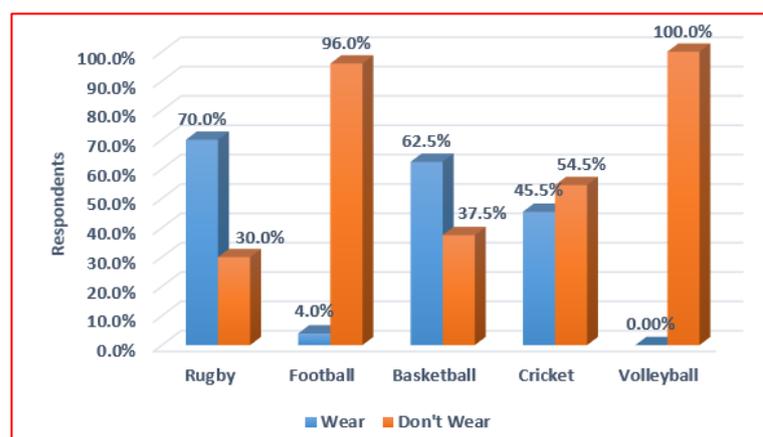
^a4 cells (40%) have expected count less than 5. The minimum expected count is 1.98; df=degrees of freedom

4.4.2.6 Cross-Tabulation: Wearing of Headgear

Analysis of respondents' replies to the question whether they wear headgear as an injury prevention strategy during training (Figure 4.8A) or competition (Figure 4.8B), indicate that 60% of rugby players, 100% of football players and 100% of volleyball players "Don't Wear" headgear during training, whereas 62.5% of basketball players and 54.5% of cricket players "Wear" the protective sports gear during training. In the case of competition, 70% of rugby players, 4% of football players, 62.5% of basketball players and 45% of cricket players "Wear" headgear whereas 30% of rugby players, 96% of football players, 37.5% basketball players, 54.5% cricket players and 100% volleyball players "Don't Wear" such protective sportswear. The Chi-Square parameters indicate that wearing and not wearing of headgear are not independent variables since 40% of cells have expected counts less than 5 in spite of 2-side asymptotic significance values of 0.000 for both the training and competition responses.



Figure 4.8A: Wearing of headgear during training within the type of sports



Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	43.055 ^a	4	0.000
Likelihood Ratio	45.422	4	0.000

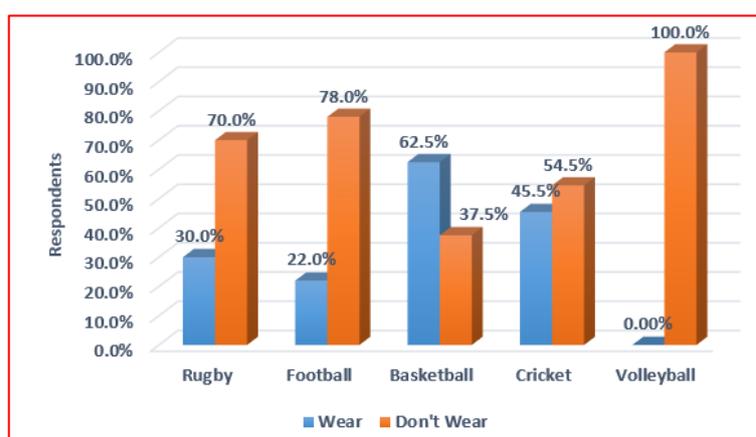
Linear-by-Linear Association	0.489	1	0.484
No of Valid Cases	101		
^a 4 cells (40%) have expected count less than 5. The minimum expected count is 2.38; df=degrees of freedom			

4.4.2.7 Cross-Tabulation: Wearing of Goalkeeper Gloves

Most players (90% of rugby players, 75.5% of football players, 93.3% of basketball players, 81.8% of cricket players and 100% volleyball players) indicated that they do not wear goalkeeper gloves for protection against injury during training (Figure 4.9A), whereas 70% of rugby players, 78% of football players, 54.5% of cricket players and 100% of volleyball players do so during competition (Figure 4.9B). However, according to Chi-Square analysis, for both training and competition events, the players' responses, i.e., "Wear" vs "Don't Wear" are not independent variables since 40% of cells have expected counts less than 5.



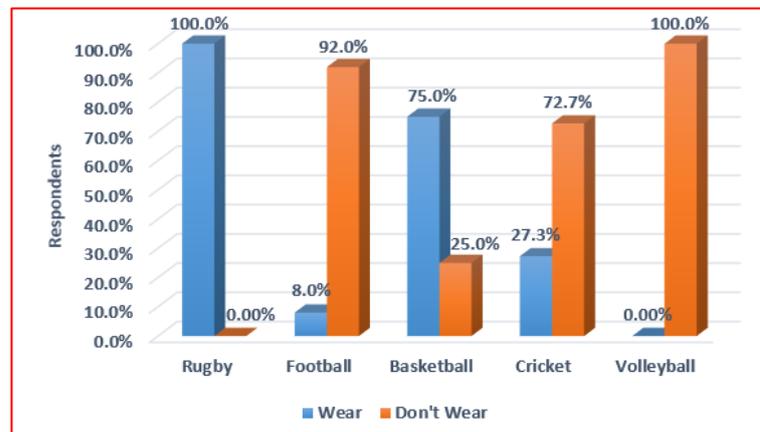
Figure 4.9A: Wearing of goalkeeper gloves during training within the type of sports



Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.178 ^a	4	0.002
Likelihood Ratio	19.875	4	0.001

Linear-by-Linear Association	0.315	1	0.575
No of Valid Cases	101		
^a 4 cells (40%) have expected count less than 5. The minimum expected count is 2.87; df=degrees of freedom			

Figure 4.9B: Wearing of goalkeeper gloves during competition within the type of sports



Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	57.705 ^a	4	0.000
Likelihood Ratio	62.349	4	0.000
Linear-by-Linear Association	4.801	1	0.028
No of Valid Cases	101		
^a 4 cells (40%) have expected count less than 5. The minimum expected count is 2.87; df=degrees of freedom			

4.4.2.2 Cross-Tabulation: Wearing of Shin Guards With Ankle Protection

4.4.3 Warm-Up

Table 4.14 summarizes the players' responses to questions related to warm-up. The study showed that 64.6% (64/101) of players always have a warm-up period prior to training and tournament training. It also showed that 63.6% (63/101) of players always have a warm-up period prior to training and tournament competition. Players always integrate activities like light aerobic activities (47.5%; 47/101), sprinting (52.5%; 52/101), jumping (56.6%; 56/101), short/long passes (47.5%; 47/101), dribbling (37.4%; 37/101), and shooting/stop shooting (32.3%; 23/101) in their warm-up period. Table 4.15 shows data on the length of warm-up periods in training and competition indicated by the players. The study showed that 40%

(40/100) from all the players had warm-up of around 10 min in the training period while 41% (41/100) of all the players had a warm-up period of around 10 min in the competition as well.

Table 4.14: Players' responses to questions related to warm-up

Item	Response	N	%
Do you have a warm-up period prior to training and tournament training	Always	64	64.6
	Very often	26	26.3
	Often	5	5.1
	Sometimes	3	3
	Never	1	1
Do you have a warm-up period prior to training and tournament competition	Always	63	63.6
	Very often	32	32.3
	Often	2	2
	Sometimes	1	1
	Never	1	1
In your warm-up period, do you include activities like light aerobic activities	Always	47	47.5
	Very often	28	28.3
	Often	17	17.2
	Sometimes	3	3
	Never	4	4
In your warm-up period, do you include activities like sprinting	Always	52	52.5
	Very often	29	29.3
	Often	13	13.1
	Sometimes	2	2
	Never	3	3
In your warm-up period, do you include activities like jumping	Always	56	56.6
	Very often	31	31.3
	Often	10	10.1
	Never	2	2
	In your warm-up period, do you include activities like short /long passes	Always	47
Very often		21	21.2
Often		11	11.1
Sometimes		6	6.1
Never		14	14.1
In your warm-up period, do you include activities like dribbling	Always	37	37.4
	Very often	8	8.1
	Often	19	19.2
	Sometimes	11	11.1
	Never	24	24.2
In your warm-up period, do you include activities like shooting /stop shooting	Always	32	32.3
	Very often	6	6.1
	Often	18	18.2

	Sometimes	4	4
	Never	39	39.4
Valid		99	100
Missing		2	-
Total		101	

Table 4.15: Players' responses to length of warm-up period in training and competition

Time (min)	Training		Competition	
	N	%	N	%
5	26	26	13	13
10	40	40	41	41
20	23	23	21	21
25	2	2	8	8
30	9	9	17	17
Total	100	100	100	100



4.4.4 Cool-Down

Table 4.16 shows that 45% (45/101) of players always have warm-up period prior to training and tournament/competition training. It also shows that 35% (35/101) of players always have warm-up period prior to training and tournament/competition and players always include activities like light jogging (45%; 45/101) and stretching (57%; 57/101) in their warm-up period.

Table 4.16: Players' responses to questions related to cool-down

Item	Response	N	%
Do you have a cool-down period during training and competition training	Always	45	45
	Very often	24	24
	Often	14	14

	Sometimes	15	15
	Never	2	2
Do you have a cool-down period during training and tournament/competition	Always	35	35
	Very often	34	34
	Often	14	14
	Sometimes	15	15
	Never	2	2
In your cool down period, do you include activities like activities like light jogging	Always	45	45
	Very often	31	31
	Often	10	10
	Sometimes	7	7
	Never	7	7
In your cool down period, do you include activities like stretching	Always	57	57
	Very often	25	25
	Often	11	11
	Sometimes	6	6
	Never	1	1
Total		100	100

4.4.5 Stretching

Table 4.17 shows that 45% (45/100) of players always make sure their muscles are warm first during stretching, and that 35% (35) of players very often slowly stretched their muscles to the point of tension during stretching. Also, 38% (38) of players sometimes bounce during stretching while 39 (39%) of the players very often undertake strength training and stretching twice per week.

Table 4.17: Players' responses to questions related to stretching

Item	Response	N	%
During stretching, do you: make sure the muscles are warm first	Always	45	45
	Very often	25	25

	Often	25	25
	Sometimes	5	5
During stretching, do you: slowly stretch the muscle to the point of tension	Always	29	29
	Very often	35	35
	Often	22	22
	Sometimes	12	12
	Never	2	2
During stretching, do you: bounce in the stretch	Always	12	12
	Very often	17	17
	Often	25	25
	Sometimes	38	38
	Never	8	8
How many times per week do you undertake strength training twice per week	Always	5	5
	Very often	39	39
	Often	13	13
	Sometimes	28	28
	Never	15	15
Total			100

Of the total number of players, 9% responded that they were too tired after training or a tournament whereas the same number (9%) did not deem strength training as necessary to prevent injuries. Very few (1%) cited lack of proper equipment prevented them from doing strength training as an injury preventive strategy or that nobody else does it.

4.4.6 Conscious Consumption of Carbohydrates

Table 4.18 summarizes players' responses to questions related to their conscious consumption of carbohydrates. The study showed that 29.7% (30/101) of players very often have consciously consumed carbohydrates (e.g., bread, pasta, rice, potatoes, chocolate, sugar) pre-training and showed that 27.7% (28/101) of players sometimes consciously consumed the aforementioned carbohydrates post-training. In addition, 28.7% (29/101) of players indicated that they often have consciously consumed carbohydrates in the pre-match stage whereas players often (29.7%; 30/101) or sometimes (26.7%; 27/101) consciously consumed carbohydrates post-match.

Table 4.18: Players' responses to questions related to conscious consumption of carbohydrates

Response	Training				Match			
	Pre		Post		Pre		Post	
	N	%	N	%	N	%	N	%
Always	18	17.8	22	21.8	23	22.8	23	22.8
Very often	30	29.7	22	21.8	29	28.7	18	17.8
Often	19	18.8	23	22.8	22	21.8	30	29.7
Sometimes	29	28.7	28	27.7	24	23.8	27	26.7
Never	5	5	6	5.9	3	3	3	3
Total	101	100	101	100	101	100	101	100

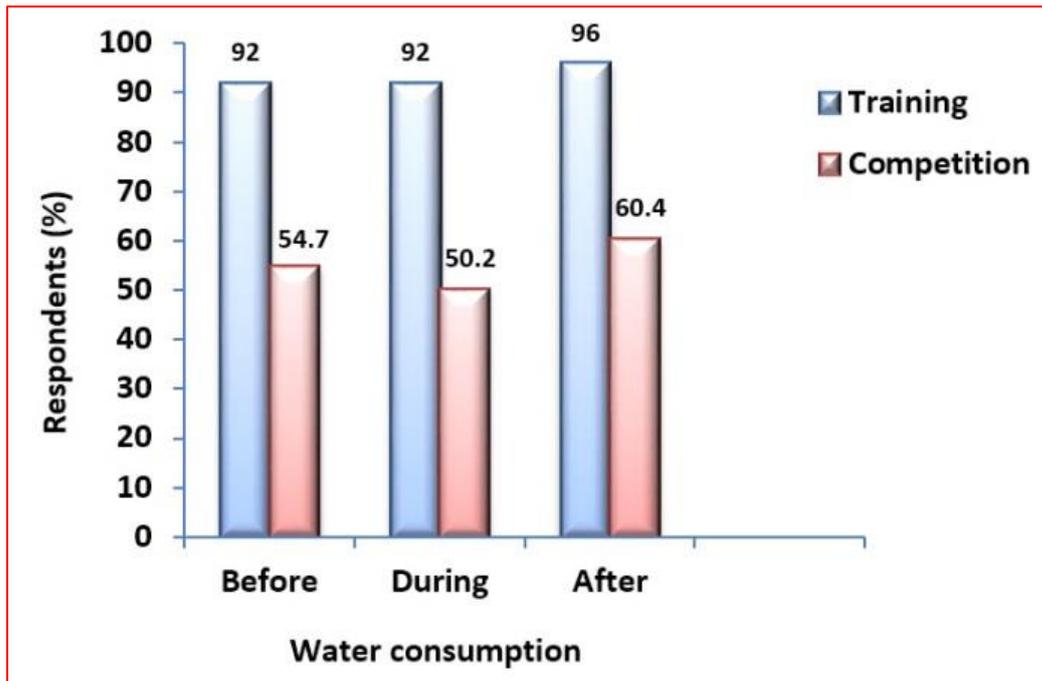
Carbohydrates, e.g., bread, pasta, rice, potatoes, chocolate, sugar.



4.4.7 Consumption of Water

Figure 4.10 shows that players consumed water before (92%), during (92%) and after (96%) training, and before (54.7%), during (50.2%) and after (60.4%) competition.

Figure 4.10: Consumption of water by players



4.5 Factors Influencing Players' Implementation of Injury Prevention Strategies

4.5.1 Strength Training: Players

Figure 4.11 illustrates players' reasons for not doing strength training as an injury prevention strategy. The majority of players (69%) indicated that they did not have sufficient time to do strength training, while 11% responded that no advice is given on such techniques.

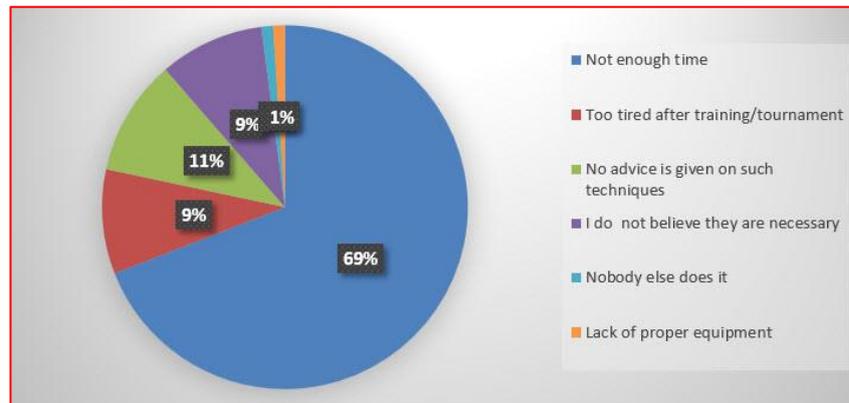


Figure 4.11: Players' reasons for not doing strength training as an injury prevention strategy

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4.5.2 Flexibility Training: Players

Figure 4.12 presents players' reasons for not doing flexibility training as an injury prevention strategy. Most players (38%) pointed out that they did not have enough time, whereas others declared that no advice is given on such techniques (32%), that they were too tired (13%), do not believe it is necessary (7%), nobody else does it (8%) or lack of proper equipment (2%).

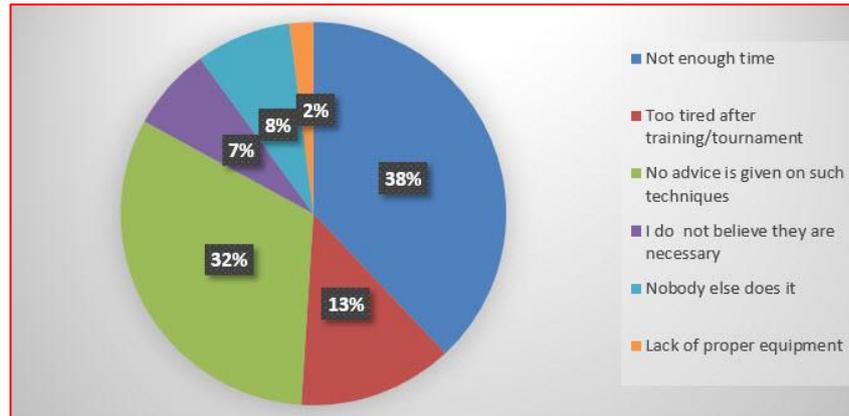


Figure 4.12: Players' reasons for not doing flexibility training as an injury prevention strategy

4.5.3 Warm-Up During Training: Players

Figure 4.13 shows that 59.1% of the players do not have enough time to do warm-up during the training sessions while 17% did not get any advice to do so before training or were too tired. Only 3.2% cited lack of proper equipment and 4% did not do warm-up before training because nobody was doing it.

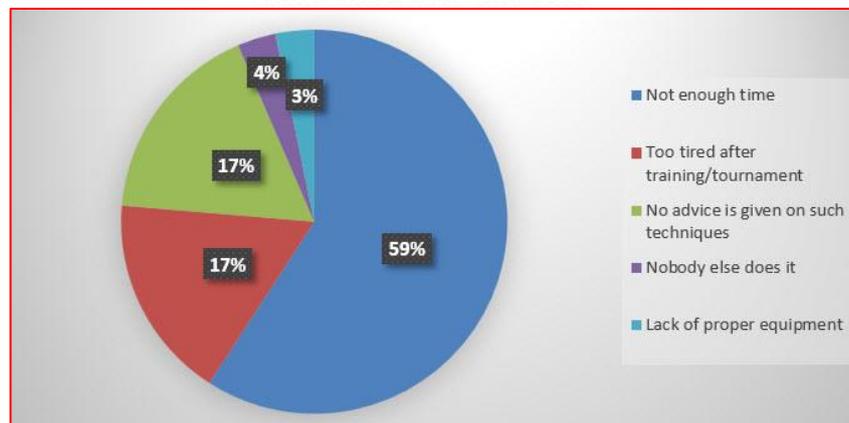
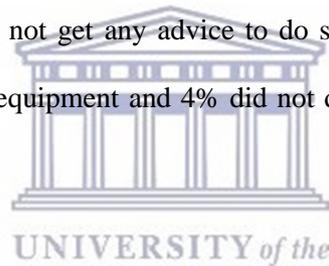


Figure 4.13: Players' reasons for not doing warm-up during training as an injury prevention strategy

4.5.4 Warm-Up During Competition: Players

Figure 4.14 demonstrates that 40% of players do not have enough time to perform warm-up during competition while 29% did not do it because they were too tired. In addition, 16% did not

do it because they believed it was not necessary while 11% did not get advice to do it. Only 4% did not do it due to the lack of proper equipment.

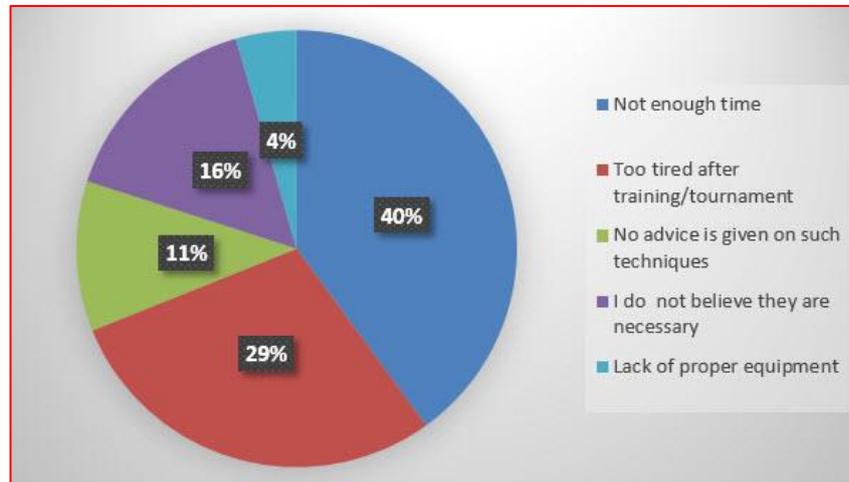


Figure 4.14: Players' reasons for not doing warm-up during competition as an injury prevention strategy

4.5.5 Cool-Down During Training: Players

Figure 4.15 depicts that during training, 31% of the players did not do cool-down due to tiredness after training or competition. Some players indicated lack of enough time (24%), do not believe it is necessary (22%), nobody else does it (18%), lack of proper equipment (4%) and no advice given as a reasons why they did not cool-down during training as an injury prevention strategy.

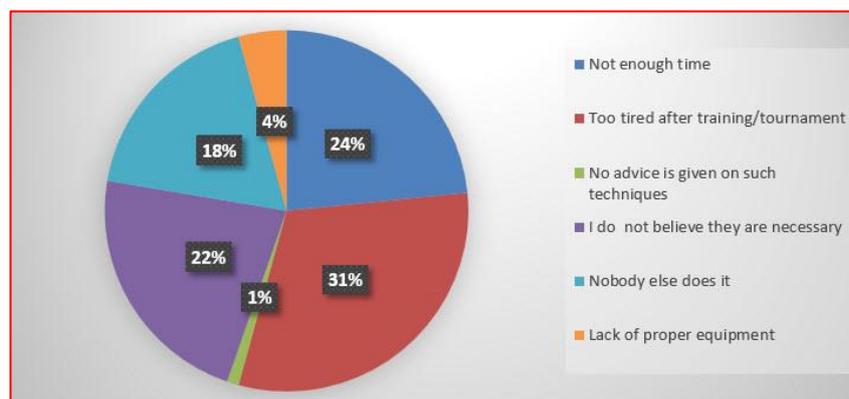


Figure 4.15: Players' reasons for not doing cool-down during training as an injury prevention strategy

4.5.6 Cool-Down During Competition: Players

Figure 4.16 summarizes players' reasons for not doing cool-down during competition as an injury prevention strategy. The majority of players cited being too tired after training/tournament (30%) or that they do not believe cool-down during competition is necessary as an injury prevention strategy (29%). Other responses of the players were that they did not have enough time (15%), nobody else did it (19%) or lack of proper equipment (7%) was an obstacle to cool-down during competition.

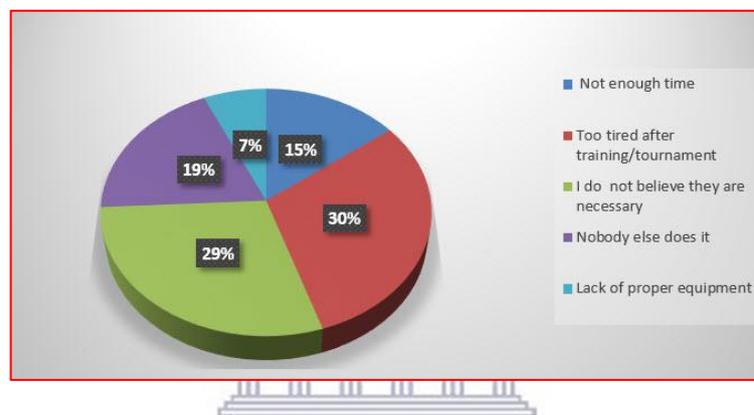


Figure 4.16: Players' reasons for not doing cool-down during competition as an injury prevention strategy

4.6 Factors Influencing Coaches' Implementation of Injury Prevention Strategies

4.6.1 Strength Training: Coaches

Figure 4.17 represents coaches' reasons for not doing strength training as an injury prevention strategy. The majority of coaches indicated that they did not have enough time (67%) while equal proportions of coaches responses (11%) pointed to being too tired after training, lack of proper equipment and lack of advice as impediments to doing strength training for injury prevention.

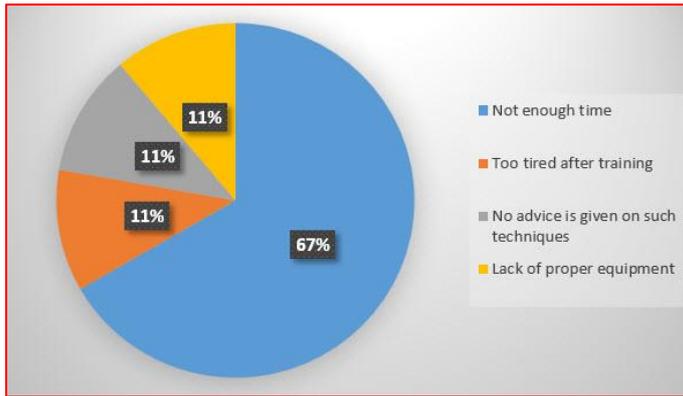
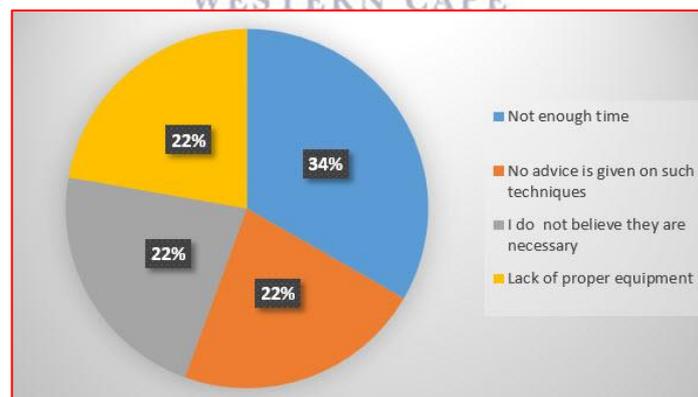


Figure 4.17: Coaches' reasons for not doing strength training as an injury prevention strategy

4.6.2 Flexibility Training: Coaches

Figure 4.18 displays coaches' reasons for not doing flexibility training as an injury prevention strategy. Some of the coaches indicated lack of time (34%) as the main reason for them not doing flexibility drills. Equivalent numbers of coaches (22%) cited the following as hitches that prevent them from performing flexibility exercises: being too tired after training, lack of proper



equipment and lack of advice.

Figure 4.18: Coaches' reasons for not doing flexibility training as an injury prevention strategy

4.6.3 Warm-Up During Training: Coaches

Figure 4.19 summarizes coaches' reasons for not doing warm-up during training as an injury prevention strategy. The majority of coaches specified that they do not have enough time (34%) or warm-up exercises while 22% were of the opinion that nobody else does it. Equal numbers of coaches (11%) thought that insufficiency of advice on such techniques, lack of proper equipment and the fact that nobody else does it were challenging factors.

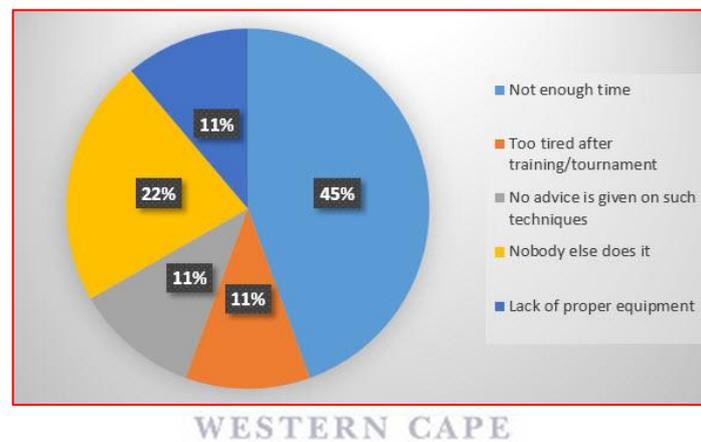


Figure 4.19: Coaches' reasons for not doing warm-up during training as an injury prevention strategy

4.6.4 Warm-Up During Competition: Coaches

Figure 4.20 depicts coaches' responses for not doing warm-up during competition as an injury prevention strategy. The majority of coaches (56%) indicated that not having enough time is a drawback, while 22% of coaches cited lack of equipment and an equal number of coaches (11%) stated paucity of advice on the activity and the impression that nobody else does it as discouraging factors that influence their implementation of such an injury preventive course of action.

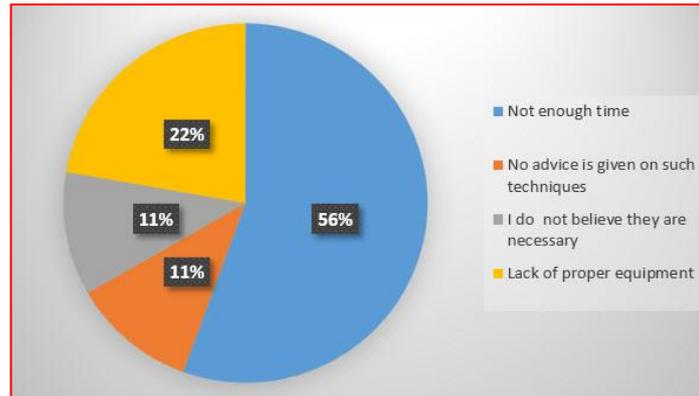


Figure 4.20: Coaches' reasons for not doing warm-up during competition as an injury prevention strategy

4.6.5 Cool-Down During Training: Coaches

Figure 4.21 summarizes coaches' reasons for not doing cool-down during training as an injury prevention strategy. Of the coaches' responses, lack of sufficient time (45%) topped the list of reasons why they could not do cool-down during training, followed by being too tired (22%), do not believe it is necessary (22%), and lack of proper equipment (11%).

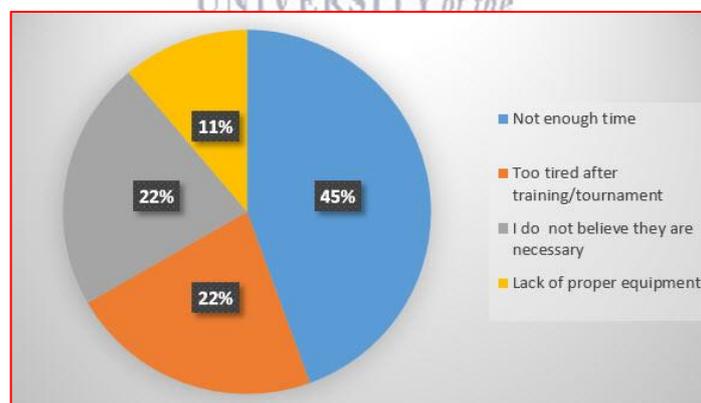


Figure 4.21: Coaches' reasons for not doing cool-down during training as an injury prevention strategy

4.6.6 Cool-Down During Competition: Coaches

Figure 4.22 presents coaches' reasons for not doing cool-down during competition as an injury prevention strategy. The majority of coaches (56%) cited not having enough time as the most important factor that deters them from carrying out cool-down during competition, whereas

coaches were equally (22%) split between being too tired and believing that it is not necessary to perform such injury prevention routines.

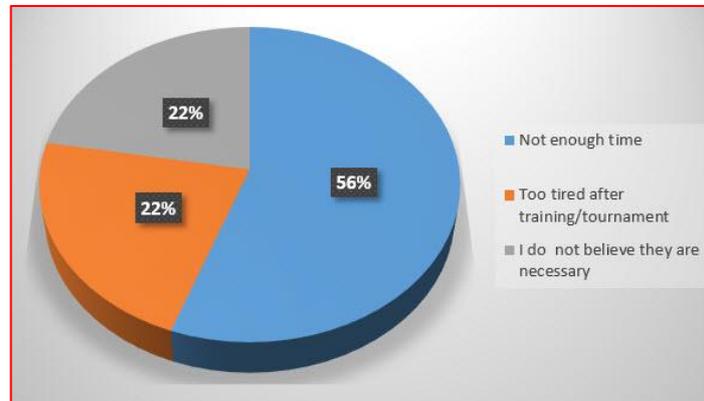


Figure 4.22: Coaches' reasons for not doing cool-down during competition as an injury prevention strategy

4.7 Group Knowledge of Players

4.7.1 Warm-Up Period Prior to Training

Table 4.19 summarizes the group scores of players' knowledge of warm-up period prior to training. Of the respondents in the Knowledgeable Group, 74.3% indicated that they always have a warm-up period prior to training compared to 45.2% in the Not Knowledgeable Group. Both the Knowledgeable Group (12.9%) and Not Knowledgeable Group (12.9%) very often have a warm-up period prior to training.

Table 4.19: Group scores of players' knowledge of warm-up period prior to training

Do you have a warm-up period prior to training?		Group knowledge of players		Total
		Not Knowledgeable	Knowledgeable	
Always	N	14	52	66
	%	45.2	74.3	65.3
Very often	N	13	13	26
	%	12.9	12.9	25.7
Often	N	2	3	5
	%	6.5	4.3	5
Sometimes	N	1	2	3
	%	3.2	2.9	3.0
Never	N	1	0	1
	%	3.2	0	1
Total	N	31	70	101
	%	100	100	100

Pearson Chi-Square=9.816; df=4; Asymptotic Significance (2-sided)=0.044

4.7.2 Warm-Up Period Prior to Competition

Table 4.20 shows the group scores of players' knowledge of warm-up period prior to competition. Of the respondents, 50.5% in the Knowledgeable Group and 13.9% in the Not Knowledgeable Group indicated that they always have a warm-up period prior to competition, whereas 16.8% in the Knowledgeable Group and 14.9% in the Not Knowledgeable Group said that they very often have a warm-up period prior to competition.

Table 4.20: Group scores of players' knowledge of warm-up period prior to competition

Do you have a warm-up period prior to competition?		Group knowledge of players		Total
		Not Knowledgeable	Knowledgeable	
Always	N	14	51	65
	%	13.9	50.5	64.4
Very often	N	15	17	32
	%	14.9	16.8	31.7
Often	N	0	2	2
	%	0.0	2	2
Sometimes	N	1	0	1
	%	1.0	0	1
Never	N	1	0	1
	%	1	0	1
Total	N	31	70	101
	%	30.7	69.3	100

Pearson Chi-Square=11.902; df=4; Asymptotic Significance (2-sided)=0.018

4.7.3 Players' Responses Regarding the Importance of Sources of Knowledge

Table 4.21A illustrates players' responses regarding the importance of coaches as sources of knowledge. Of the respondents, 70% of rugby players considered coaches as most important sources of knowledge whereas 30% of the same group indicated coaches as important sources of knowledge. By comparison, 75.5% of football players, 43.8% of basket ball players, 90.9% of cricket players and 85.7% of volleyball players regarded coaches as most important sources of knowledge. Interestingly, half of the basket ball players (50%) viewed coaches as important while 30% or less of players in the other sports types thought so. Table 4.21B illuminates similarly on players' responses regarding the importance of physiotherapists as sources of knowledge.

Table 4.21A: Players' responses regarding the importance of coaches as sources of knowledge

Type of sports	Source of Knowledge: Coach			Total	
	Most important	Important	Least important		
Rugby	N	7	3	0	10
	%	70	30	0	100
Football	N	7.5	10	2	49
	%	75.5	20.4	4.1	100
Basketball	N	7	8	1	16
	%	43.8	50	6.3	100
Cricket	N	10	1	0	11
	%	90.9	9.1	0	100
Volleyball	N	12	2	0	14
	%	85.7	14.3	0	100
Total	N	7.3	24	3	100
	%	73	24	3	100

Pearson Chi-Square=22.175; df=8; Asymptotic Significance (2-sided)=0.005

Table 4.21B: Players' responses regarding the importance of physiotherapists as sources of knowledge

Type of sports	Source of Knowledge: Physiotherapist			Total	
	Most important	Important	Least important		
Rugby	N	7	3	0	10
	%	70	30	0	100
Football	N	7.5	10	2	49
	%	75.5	20.4	4.1	100
Basketball	N	7	8	1	16
	%	43.8	50	6.3	100
Cricket	N	10	1	0	11
	%	90.9	9.1	0	100
Volleyball	N	12	2	0	14
	%	85.7	14.3	0	100
Total	N	73	24	3	100
	%	73	24	3	100

Pearson Chi-Square=11.017; df=8; Asymptotic Significance (2-sided)=0.201

Table 4.21C elucidates players' responses regarding the importance of media as sources of knowledge. The majority of rugby players (60%) viewed media as the least important sources of knowledge, while 40% thought of the media as an important knowledge base. This inclination by players to view the media as the least important sources of knowledge is also evident for the other sports types, namely for football (49%), basketball (93.8%), cricket (72.7%) and volleyball (92.9%).

Table 4.21C: Players' responses regarding the importance of media as sources of knowledge

Type of sports	Source of Knowledge: Media			Total	
	Most important	Important	Least important		
Rugby	N	0	4	6	10
	%	0	40	60	100
Football	N	8	17	24	49
	%	16.3	34.7	49	100
Basketball	N	0	1	15	16
	%	0	6.3	93.8	100
Cricket	N	0	3	8	11
	%	0	27.3	72.7	100
Volleyball	N	0	1	13	14
	%	0	7.1	92.9	100
Total	N	8	26	66	100
	%	8	26	66	100

Pearson Chi-Square=20.504; df=8; Asymptotic Significance (2-sided)=0.009

4.8 Barriers to the Implementation of Players' Injury Prevention Strategies

4.8.1 Barriers to Strength Training

Table 4.22 shows that 50% of rugby players do not believe strength training is necessary whereas football players (70%), basketball players (83.3%), cricket players (90.9%) and volleyball players (71.4%) said that the barrier they face doing strength training is that they do

not have enough time.

Table 4.22: Players' responses regarding barriers to strength training as an injury prevention strategy

Type of sports	Barriers to Strength Training						Total	
	Not enough time	Too tired after training	No advice is given on such techniques	Do not believe they are necessary	Nobody else does it	Lack of proper equipment		
Rugby	N	2	0	3	5	0	0	10
	%	20	0	30	50	0	0	100
Football	N	35	3	6	4	1	1	50
	%	70	6	12	8	2	2	100
Basketball	N	10	2	0	0	0	0	12
	%	83.3	16.7	0	0	0	0	100
Cricket	N	10	0	1	0	0	0	11
	%	90.9	0	9.1	0	0	0	100
Volleyball	N	10	4	0	0	0	0	14
	%	71.4	28.6	0	0	0	0	100
Total	N	67	9	10	9	1	1	97
	%	69.1	9.3	10.3	9.3	1	1	100

4.8.2 Barriers to Flexibility Training

Table 4.23 shows that a barrier to flexibility training for rugby players is their notion that nobody else does it (60%). Players in all the other sports types (football: 26.5%; basketball: 43.8%; cricket: 36.4%; volleyball: 100.0%) indicated that not having enough time represents a major barrier to the implementation of flexibility training. Interestingly, 45.5% of cricket players said they were often too tired to do flexibility training.

Table 4.23: Players' responses regarding barriers to flexibility training as an injury prevention strategy

Type of sports	Barriers to Flexibility Training						Total
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		Not enough time	Too tired after training	No advice is given on such techniques	Do not believe they are necessary	Nobody else does it	Lack of proper equipment	
Rugby	N	0	0	2	2	6	0	10
	%	0	0	20	20	60	0	100
Football	N	13	4	25	4	2	1	49
	%	26.5	8.2	51	8.2	4.1	2	100
Basketball	N	7	4	4	1	0	0	16
	%	43.8	25	25	6.3	0	0	100
Cricket	N	4	5	1	0	0	1	11
	%	36.4	45.5	9.1	0	0	9.1	100
Volleyball	N	14	0	0	0	0	0	14
	%	100	0	0	0	0	0	100
Total	N	38	13	32	7	8	2	100
	%	38	13	32	7	8	2	100

4.8.3 Barriers to Warm-Up During Training

Table 4.24 shows that rugby players (80%), football players (82%), basketball players (37.5%) all regarded having not enough time as a major barrier to warm-up during training, while 81.8% of cricket players indicated that not getting advice on such techniques creates a barrier.

Table 4.24: Players' responses regarding barriers to warm-up during training as an injury prevention strategy

Type of sports	Barriers to Warm-Up During Training						Total	
	Not enough time	Too tired after training	No advice is given on such techniques	Do not believe they are necessary	Nobody else does it	Lack of proper equipment		
Rugby	N	8	2	0	0	0	0	10
	%	80	20	0	0	0	0	100
Football	N	41	1	4	0	1	3	50
	%	82	2	8	0	2	6	100
Basketball	N	3	0	3	0	2	0	8
	%	37.5	0	37.5	0	25	0	100
Cricket	N	1	1	9	0	0	0	11
	%	9.1	9.1	81.8	0	0	0	100
Volleyball	N	2	12	0	0	0	0	14

	%	14.3	85.7	0	0	0	0	100
Total	N	55	16	16	0	3	3	93
	%	59.1	17.2	17.2	0	3.2	3.2	100



Curiously, 85.7% of volleyball players indicated that they were too tired to do warm-up exercises during training.

4.8.4 Barriers to Warm-Up During Competition

Table 4.25 shows that 60% of rugby players said that the barrier facing them doing warm-up during competition was that they were too tired after training. This sentiment was echoed by 40% of basketball players and 85.7% of volleyball players. The majority of cricket players (90.9%) and to a lesser extent football players (42%) cited not having enough time as a barrier to warm-up during competition, whereas 28% of football players do not believe such an approach is necessary, although 40% of basketball players said that no advice is given on such techniques.

Table 4.25: Players' responses regarding barriers to warm-up during competition as an injury prevention strategy

Type of sports	Barriers to Warm-Up During Competition							Total
	Not enough time	Too tired after training	No advice is given on such techniques	Do not believe they are necessary	Nobody else does it	Lack of proper equipment		
Rugby	N	2	6	2	0	0	0	10
	%	20	60	20	0	0	0	100
Football	N	21	6	6	14	0	3	50
	%	42	12	12	28	0	6	100
Basketball	N	1	2	2	0	0	0	5
	%	20	40	40	0	0	0	100
Cricket	N	10	0	0	0	0	1	11
	%	90.9	0	0	0	0	9.1	100
Volleyball	N	2	12	0	0	0	0	14
	%	14.3	85.7	0	0	0	0	100
Total	N	36	26	10	14	0	4	90
	%	40	28.9	11.1	15.6	0	4.4	100

4.8.5 Barriers to Cool-Down During Training

Table 4.26 summarizes players' responses regarding barriers to cool-down during training as an injury prevention strategy. Not having enough time is considered as a significant barrier to cool-down during training for 71.4% of rugby players, 56.3% of basketball players, but not for volleyball players (0%). The majority of volleyball players (85.7%) and a smaller proportion of basketball players (37.5%) indicated that being too tired after training poses a barrier to cool-down during training. Football players (32.6%), rugby players (28.6%) and volleyball players (14.3%) also said that a barrier for cool-down during training was the believe that such a technique is not necessary, while 63.6% of cricket players considered the notion that nobody else does it as a barrier.

Table 4.26: Players' responses regarding barriers to cool-down during training as an injury prevention strategy

Type of sports	Barriers to Cool-Down During Training						Total	
	Not enough time	Too tired after training	No advice is given on such techniques	Do not believe they are necessary	Nobody else does it	Lack of proper equipment		
Rugby	N	5	0	0	2	0	0	7
	%	71.4	0	0	28.6	0	0	100
Football	N	6	10	1	15	10	4	46
	%	13	21.7	2.2	32.6	21.7	8.7	100
Basketball	N	9	6	0	1	0	0	16
	%	56.3	37.5	0	6.3	0	0	100
Cricket	N	2	1	0	1	7	0	11
	%	18.2	9.1	0	9.1	63.6	0	100
Volleyball	N	0	12	0	2	0	0	14
	%	0	85.7	0	14.3	0	0	100
Total	N	22	29	1	21	17	4	94
	%	23.4	30.9	1.1	22.3	18.1	4.3	100



4.8.6 Barriers to Cool-Down During Competition

Table 4.27 expounds players' responses regarding barriers to cool-down during competition as an injury prevention strategy. Football players (47.9%) said that the barrier facing them in this regard was the belief that such a practice is not necessary. Of the basketball players, 50.0% replied that a barrier facing cool-down during competition is not having enough time, a response shared by 27.3% of cricket players. The study also showed that 45.5% of cricket players indicated that the notion that nobody else does it represents a barrier the cool-down during competition, whereas 85.7% of volleyball players said the barrier to such a practice was being too tired after training.

Table 4.27: Players' responses regarding barriers to cool-down during competition as an injury prevention strategy

Type of sports	Barriers to Cool-Down During Competition						Total	
	Not enough time	Too tired after training	No advice is given on such techniques	Do not believe they are necessary	Nobody else does it	Lack of proper equipment		
Football	N	2	7	0	23	12	4	48
	%	4.2	14.6	0	47.9	25	8.3	100
Basketball	N	8	7	0	1	0	0	16
	%	50	43.8	0	6.3	0	0	100
Cricket	N	3	1	0	0	5	2	11
	%	27.3	9.1	0	0	45.5	18.2	100
Volleyball	N	0	12	0	2	0	0	14
	%	0	85.7	0	14.3	0	0	100
Total	N	13	27	0	26	17	6	89
	%	14.6	30.3	0	29.2	19.1	6.7	100

4.9 Summary

This chapter presented and discussed the results of the quantitative data analysis. The next chapter will consider the findings of the qualitative data analysis.

CHAPTER 5

RESULTS OF THE QUALITATIVE DATA ANALYSIS

5.1 Introduction

In this chapter, results of the qualitative data analysis will be presented according the objectives:

- ❖ The general knowledge of players and team coaches about injury prevention at UWC.
- ❖ Implementation of injury prevention strategies among sports clubs at UWC.
- ❖ The facilitators and barriers to the implementation of injury prevention strategies among sports clubs at UWC.

5.2 Summary of Responses by Players, Coaches and Medical Staff

Table 5.1 summarizes players', coaches' and medical staff's responses to questions related to their respective interview schedules (Appendixes 5-7). Briefly, the questions sought clarifications on their knowledge of injury prevention, medical services at UWC, implementation of injury prevention strategies, and communication thereof. Players, coaches and medical staff all emphasized the importance of knowledge of injury prevention such as warm-up and cool-down strategies before and after competitions. Athletes were of the opinion that the medical staff, student physiotherapists and biokineticists can diagnose an injury wrongly which would impact on the therapy and healing processes and their ability to participate in competitions. Coaches indicated that seeing a private doctor or hospital is better since attention to injuries are given much faster than at medical services at UWC clinics which often involves having to wait for 4-5 hours, depending on the number of consultancies. The medical staff affirmed that special classes on risk prevention strategies and rehabilitation are conducted with athletes.

Table 5.1: Summary of responses by players, coaches and medical staff

No	Item	Players	Coaches	Medical staff
1.	Knowledge of injury prevention	Athletes have knowledge of injury prevention because they take precaution by implementing warm-up and cool-down strategies before and after competitions.	Coaches assert that warm-up and cool-down strategies are essential to maintain muscle tone, strength and resilience before and after play.	Medical staff generally regard knowledge of injury prevention as important in order to provide athletes with insight of how muscles need to recover and to prevent injuries.
2.	Medical services at UWC	Athletes believe that the medical staff, student physiotherapists and biokineticists can diagnose a person wrongly.	Coaches go to a private doctor or hospital where they get attention immediately. They face challenges like resources and finances for students, because if the players go the clinic they wait for 4-5 hours, depending on the number of people.	Medical staff offer special classes in the morning once or twice a week where they do special rehabilitation for the athletes. In addition, these sessions expand the knowledge of athletes' risks and ways to prevent sports injuries.
3.	Strategies for injury prevention	Players regard strategies for injury prevention as important. They need a physiotherapist who has been working with teams and know the players themselves and the type of injury they have.	Coaches said they will bring players to the gym to build up their muscles.	Indicated that injury prevention strategies are very important. It helps athletes to look after their bodies and also to be cautious of different injuries that might occur.
4.	Implementation of injury prevention strategy	Players said they just have to have the physiotherapists in place to assist when injuries do happen.	Coaches do this as a matter of routine.	They deem warm-up, cool-down and stretching as very valuable. These strategies get the blood flowing to the muscles so that the muscles can start being active and start functioning.
5.	Communication of an injury prevention strategy	There should be a link between the medical staff and the coach.	The coaches said they need to correct athletes all the time. Coaches explain strategies to athletes, depending on the levels of understanding.	Medical staff should have good relationships with the coach and athletes.

On the question of strategies for injury prevention, players strongly felt that for such an intervention to be successful, they need a physiotherapist who has experience with teams and know the players themselves and have familiarity with the type of injuries they are treating. Coaches, on the other hand, indicated that they will encourage players to attend the UWC gym where they can build their muscles and perform special training exercises while medical staff reiterated the importance of injury prevention strategies. To the question associated with implementation of an injury prevention strategy, players expressed the need to have physiotherapists on duty to assist them when injuries do happen, but coaches replied that they do this as a matter of routine.

Medical staff deem warm-up, cool-down and stretching as very beneficial to give muscles the strength and resilience to work optimally. Considering the question on communication of injury prevention strategies, players responded that there should be an interconnection between the medical staff and the coach, whereas coaches enunciated a strong, clear point of view that they need to correct athletes all the time by explaining strategies to them, depending on their levels of understanding. Medical staff stated that good relationships with the coach and athletes are critically important for effective communication of an injury prevention strategy.

5.3 Qualitative Themes that Emerged from Responses of the Players Focus Group

Table 5.2 summarizes the themes that emerged from qualitative data analysis of responses of the players focus group during their interview schedule. The following themes were identified: injury prevention strategy, injury prevention strategy experience, facilitators of an injury prevention strategy, and barriers to an injury prevention strategy.

5.3.1 Injury Prevention Strategy

Regarding the theme on an injury prevention strategy, football players highlighted that conditioning of the team is important in its implementation. They also felt that some coaches or

fitness trainers put too much strain on the muscles of the players and they do not give them time to recover. Furthermore, they said that despite the availability of physios after injuries have occurred, the lack of recovery sessions might worsen the condition.

5.3.2 Injury Prevention Experience

With regard to injury prevention experience, players said it is important and it is very beneficial not only for rehabilitating players who have suffered muscle injuries, but also critical as injuries can affect careers in the sport itself. They further indicated that UWC has a number of experienced physiotherapists who have a good understanding of sports injuries and of sport itself and are always willing to help. Players indicated that even though rehabilitation of a hamstring is usually successful, student physiotherapists and biokineticists often diagnose injuries incorrectly. For example, an injured boxer consulted with campus physiotherapists, but they could not tell him what injuries were sustained to his hands.

This, in turn, sent a wrong message to the coach who insisted that the boxer could still take part in competitions. This sentiment was echoed in players' responses outlined under the theme of injury prevention strategy experience in that some players said that they were under pressure to perform and will ignore the injury and push through because they do not want to rest because they want to be in the team. Such scenarios underscored the dire need for a link or proper communication between the medical staff, coach and the players so that all can learn from the errors they made.

5.3.3 Facilitators of an Injury Prevention Strategy

On the issue of facilitators of an injury prevention strategy, players recognized the difficulty in having a personalized physiotherapist.

5.3.4 Barriers to an Injury Prevention Strategy

The theme of barriers to an injury prevention strategy was identified by qualitative analysis of

players' responses, including: that strategies should be implemented for priority sports codes, but not all codes; lack of funding; preference of physiotherapists and biokinetics for football and rugby (as opposed to hockey or boxing) because these sports give them greater exposure, they travel more, and they appear on TV; limited consultation times with physiotherapists and their general unavailability at times when sports injuries occur.

5.3.5 Benefit of Availability of Medical Staff

On the theme of benefit of availability of medical staff with the team, players said that such a provision would: make more players available to play and also allow the coach to pick the best team; players can get immediate attention in the event of injuries which might avert having to go for an operation; some of the issues that they have encountered will be solved more expeditiously.

5.4 Qualitative Themes that Emerged from Responses of the Coaches Focus Group

Table 5.3 outlines the qualitative themes that emerged from responses of the coaches' focus group. The following themes were identified: injury prevention strategy; role of medical staff and coach; common injuries; players' understanding of coach's instructions; injury prevention facilities at UWC; physiotherapy at UWC; injury discovering and follow-up; injury prevention barriers at UWC; services accessibility and quality; injury prevention policy at UWC; and recommendations for injury prevention facilitators and policy.

5.4.1 Injury Prevention Strategy

Coaches indicated that they were more focused on the first team and less focused on the other teams. First team here refers to the team presenting UWC in high levels competitions.

5.4.2 Role of Medical Staff and Coach

Coaches affirmed that they do have a physiotherapists or biokineticists that have been assigned to them. In the event of an injury sustained by a player, they would call an ambulance to take the

injured player to hospital.

5.4.3 Common Injuries

Coaches cited the following common injuries sustained by players: hamstring, fingers and thumbs.

5.4.4 Players' Understanding of Coach's Instructions

Coaches said that the players' understanding of their instructions regarding injury prevention depended largely on the levels of the team. Although the players do seem to understand the technical terms, the coaches always have to explain the terms many times over to acquaint the players with the fundamental concepts and techniques needed to function within the team.

5.4.5 Injury Prevention Facilities at UWC

Coaches mentioned that in spite of having such facilities at UWC, there is a lack of personnel to manage the day-to-day running thereof. Coaches also said that they usually demand a physiotherapist, a biokineticists, a gym, a psychiatrist and specific training times. They indicated that they do have first aid.

5.4.6 Physiotherapy at UWC

Judging by the coaches' responses analysed under this theme, it is clear that they are dissatisfied with the exorbitant costs associated with physiotherapy, the need to log hours and the lack of a plan to manage the facility.

5.4.7 Injury Discovery and Follow-Up

Regarding this theme, some coaches indicated that injuries are given to the first-aid specialists to manage because physiotherapists are not always accessible. They also asserted that continuation of support is non-existent. Other coaches indicated that when injuries occur, physiotherapists and management will be contacted and that someone would be available to take care of the injured.

5.4.8 Injury Prevention Barriers at UWC

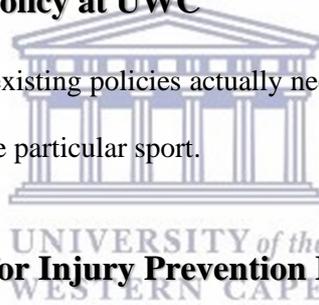
Coaches pointed out that barriers to injury prevention at UWC include the tendency of players not to follow prescribed recovery and rehabilitation processes and programmes.

5.4.9 Services Accessibility and Quality

Considering this theme, coaches were frustrated by the long waiting hours at the tertiary hospitals and indicated that they would rather recommend private doctors or hospitals where injured players can obtain quicker attention and care. According to the coaches, services. Accessibility and quality are also hampered by challenges like resources and financial implications for students.

5.4.10 Injury Prevention Policy at UWC

On this theme, coaches felt that existing policies actually need to be amended for all sports types and not only implemented for one particular sport.



5.4.11 Recommendations for Injury Prevention Facilitators and Policy

Coaches stated that a psychologist has been contracted to support most of the coaches, but that an administrative policy is needed to cater for all coaches.

5.5 Qualitative Themes that Emerged from Responses of the Medical Staff Focus Group

Table 5.4 summarizes the qualitative themes that emerged from responses of the medical staff focus group. The following themes were ascertained: role of medical staff; barriers to the implementation of an injury prevention programme; facilitators of an injury prevention strategy; injury prevention policy at UWC; and background information.

5.5.1 Role of Medical Staff

Respondents in the medical staff focus group recognized the need for coaches to seek medical

help for rehabilitation of athletes and to guide coaches on certain aspects of such sessions as well as providing better insight into how athletes needs to recover from their injuries. The medical staff focus group underscored the principle of RICE (rest, ice, compression and evasion) to induce acute inflammation to progress the players to the rehabilitation stage where they can start functioning optimally. Some medical staff do liaise with the coaches on issues of injury prevention strategies.

5.5.2 Barriers to the Implementation of an Injury Prevention Programme

Medical staff indicated that some athletes hide their injuries because they want to be on the team, and some even do not complete rehabilitation and treatment schedules. These behaviours, they felt, constitute major barriers to the implementation of an injury prevention programme.

5.5.3 Facilitators of an Injury Prevention Strategy

The medical staff said that proper facilitation of an injury prevention strategy in a controlled setting yields lesser injuries and fewer fatalities.



5.5.4 Injury Prevention Policy at UWC

On the issue of an injury prevention policy at UWC, medical staff insinuated that the availability of physiotherapists and fitness and conditioning coaches at UWC can be seen as an implicit statutory policy.

5.5.5 Background Information

Further probing of physiotherapists in the focus group interviews yielded a greater understanding of their educational background, experience, code of practice and overall suitability to their task in sports injury management and at UWC.

5.6 Summary

This chapter discussed the analysis and findings of the qualitative part of this study. Several

themes have been identified from separate similar focus group interviews with players, coaches and medical staff. The next chapter is dedicated to the discussion, summary, conclusions and recommendations of the study.



Table 5.2: Qualitative themes that emerged from responses of the players focus group

Question	Statement	Theme
How do you believe in the medical intervention, do you think it is very helpful?	<ol style="list-style-type: none"> 1. "It is important and it is very helpful." 2. "At UWC there are a lot of experienced physios." 3. "Important in terms of rehabilitating." 4. "It is important to go and check if it is maybe a one degree, two degree or three degree, so obviously you can only get that by going to the physio, if you don't it can impact your career in the sport itself." 5. "In football and rugby as well, some of them think they do not need to go to the physio they can take care of themselves, or put ice on it and it will be OK." 6. "It is quite helpful, you need to go to either bios or physios that has a good understanding of the injury itself and of the sport itself as well." 7. "Medical staff does help." 	Injury prevention experience
So you mean to be assigned with the same physiotherapists because he or she knows better?	<ol style="list-style-type: none"> 1. "It's quite difficult to have a personalized physio for each code." 2. "Have the same physio attending to maybe a five or ten group of student athletes." 	Facilitators of an injury prevention strategy
This is right, yes, especially in physiotherapy - physiotherapy is a long process, if you're used to somebody then maybe your understanding even emotionally and psychologically would be better?	<ol style="list-style-type: none"> 1. "In football it goes down to the conditioning of the team, like for example if." 2. "The coaches or the fitness trainers, they put too much strain on the muscles of the players and they do not give them time to recover their bodies and so forth." 3. "Physios might be there after the injuries occur with lack of recovery sessions." 4. "The fitness trainers would not do anything about it." 	Injury prevention strategy
So do you mean physiotherapists have to be assigned with the team? And you don't have this? Can we talk more about this participant number five?	<ol style="list-style-type: none"> 1. "For the priority codes, but not all codes." 2. "We are a kind of bent department in terms of funding." 3. "Physios and bios they'd prefer working with football and rugby because they get more exposure, they travel more, and they come on TV." 4. "They would not want to come for hockey or boxing." 	Barriers to an injury prevention strategy

Question

Statement

Theme

<p>So do you mean physiotherapists have to be assigned with the team? And you don't have this? Can we talk more about this participant number five?</p>	<ol style="list-style-type: none"> 5. "Physios and bios only operate for certain times, from Monday to Thursday, from 08:30 till 3 o'clock, so not all the students can fit in then and it's not only for sports people, it's for the whole campus community." 6. "You will only get an appointment the next week and you got injured the past Saturday already." 7. "You try and get appointment and they say it's full for the week they can only do it next week Monday." 8. "No one to advise you that you actually should have iced when you had the injury." 	<p>Barriers to an injury prevention strategy</p>
<p>Okay, so is there any change in the injury prevention after medical staff becomes a part of your set up? Within your experience, after you have been under the care of the medical staff, do you feel the same after with you experience of the injury?</p>	<ol style="list-style-type: none"> 1. "You tear your hamstring and you go for rehab, they will focus so much on that hamstring that when you come back that hamstring is stronger than the other. You see, so now you get an injury on the one that is not strong." 2. "The student physios and student bios diagnose a person wrongly." 3. "In boxing if a boxer gets injured, he went to the campus physios and they couldn't help him, the coach said he was going to be able to box until the next year because they telling him they do not know what is wrong exactly with his hands." 4. "There should be a link between the medical staff and the coach." 	<p>Injury prevention experience</p>
<p>How do you deal with injury?</p>	<ol style="list-style-type: none"> 1. "If you are under pressure to perform you will ignore the injury and push through." 2. "Applying ice. Elevation as well, but I think putting any injury above the heart or whatever and compression as well, but most important is resting and consulting the proper person and applying ice within the first 45 minutes of the injury." 3. "Some players don't want to rest because they want to be in the team." 4. "Aggravated the injury just because I wanted to be on the team, and I learnt a lot from the errors that I have made, if you are injured, acknowledge the fact that you are injured." 	<p>Injury prevention strategy experience</p>

Table 5.2: Qualitative themes that emerged from responses of the players focus group (continued)

Table 5.2: Qualitative themes that emerged from responses of the players focus group

Question	Statement	Theme
If the whole medical team will be present with the team, what will be the result?	1. “Make more players available to play and also for the coach to pick the best team.”	Benefit of availability of medical staff with the team
	2. “Getting immediate attention.”	
	3. “Prevent having to go for an operation.”	
	4. “I’m 100% sure that some of the issues that we have encountered will be solved immediately.”	

(continued)

Question	Statement	Theme
Here we want to discuss prevention strategies for injuries that is faced your by players. Are there any strategies for prevention practice with the cricket team?	1. “They are more focused on the first team and less focused on the other teams.”	Injury prevention strategy
What role did the coach play and the medical staff in the prevention strategies of the athletes? What is your role?	1. “You do have a physio or bios that has been assigned to you.”	Role of medical staff and coach
	2. “Call the ambulance to take him to hospital.” <i>Cricket</i>	
What are the common injuries in cricket?	1. “Hamstring injuries.” 2. “Fingers and thumbs.”	Common injuries
How about the players, do they?	1. “Depend on the levels.” 2. “Technical terms they do understand.”	Players’ understanding of coach’s instructions

Table 5.3: Qualitative themes that emerged from responses of the coaches focus group

Table 5.3: Qualitative themes that emerged from responses of the coaches focus group
(continued)

Question	Statement	Theme
How about the players, do they?	<ol style="list-style-type: none"> 1. “Always have to explain whatever again.” <i>Cricket, Swimming, Rugby, Football</i> 2. “I think they do understand, but some needs to get in the rhythm of things.” <i>Cricket</i> 	Players’ understanding of coach’s instructions
Are you satisfied with the possibilities offered by the university to meet the strategy plan for the prevention of injuries required? Are you satisfied with the facilities here at UWC in treating the injuries or preventing the injuries?	<ol style="list-style-type: none"> 1. “The facilities are there, but we don’t have the people to come out here to manage those kinds of things.” <i>Football</i> 2. “I want a physio, I want a bios, I want the gym, I want my training times.” <i>Swimming</i> 3. “I want a psychiatrist.” <i>Swimming</i> 4. “Got first-aid.” <i>Cricket</i> 	Injury prevention facilities at UWC
According to my knowledge there is a physiotherapy clinic. Do you have a relationship with this or your players?	<ol style="list-style-type: none"> 1. “A cost involved, and we say no cost involved.” <i>Rugby</i> 2. “You need to go log hours.” <i>Rugby</i> 3. “The facility is there, everything is there, we don’t have a plan to actually manage it.” <i>Rugby</i> 	Physiotherapy at UWC
You mentioned something earlier about some coaches having the training on how to make a medical aid for something like this. How do you discover injuries by conducting the athletics afterwards, after the players have an injury, how do you follow up on them to know how they are rehabilitating?	<ol style="list-style-type: none"> 1. “Go and visit and see where are you? What is wrong?” <i>Cricket</i> 2. “Given to the first aids and less id given to the players, or even you start off to play a certain sport so there’s no continuation of support right through.” <i>Swimming</i> 3. “The physio and the management will be contacted.” <i>Cricket, Swimming</i> 4. “There is someone available when the injury occurs.” <i>Football</i> 	Injury discovery and follow-up
In summary, what are the barriers or factors that challenge the implementation of the prevention programme?	<ol style="list-style-type: none"> 1. “Players actually not following the recovery programme or process given to them.” <i>Swimming</i> 2. “They are not actually responding to them or actually not doing or going through with the recovery programme.” <i>Cricket</i> 	Injury prevention barriers at UWC

Table 5.3: Qualitative themes that emerged from responses of the coaches' focus group
(continued)

Question	Statement	Theme
Regarding the accessibility of services and quality, is it okay?	<ol style="list-style-type: none"> 1. "Tygerberg, the healing process is so long you sit and wait 24 hours before someone sees you, then you need to go and lay in the corridor for another 6-8 hours." <i>Rugby, Football</i> 2. "Go to a private doctor or hospital where they get attention immediately." <i>Rugby</i> 3. "The clinic you need to go tomorrow and sit for 4-5 hours depending on the number of people." <i>Swimming</i> 4. "Challenges like resources and finances for students." <i>Cricket</i> 5. "Previous challenges I had been getting access to the professionals and obviously finance for the students." <i>Rugby, Football</i> 	Services accessibility and quality
What is your opinion the reason for these challenges within the university? Does the policies of the university need to be revised or the implementation of the prevention programme?	<ol style="list-style-type: none"> 1. "The policies actually do need to be revised." <i>Cricket, Swimming, Rugby, Football</i> 2. "The university itself need to work together in terms of all of the sports and not only that particular sport." <i>Cricket, Swimming, Rugby, Football</i> 	Injury prevention policy at UWC
What facilitators make work possible and useful for the prevention strategy? What is your suggestion for your team or for the policy or advice for the University of the Western Cape?	<ol style="list-style-type: none"> 1. "Brought a psychologist in which actually supported most of the coaches." <i>Rugby, Football</i> 2. We need to have the policy where it provides for each and every one. <i>Swimming, Rugby</i> 	Recommendations for injury prevention facilitators and policy

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Question	Statement	Theme
Is there a role for medical staff with athletes?	<ol style="list-style-type: none"> 1. "Can bring the medical to help or rehab" 2. "Get the athlete back to his full functional level." 3. "Guide the coaches on certain aspects of sessions." 4. "Give them more insight of how the athlete needs to recover." 	Role of medical staff
How do you handle athletes who experience injuries?	<ol style="list-style-type: none"> 1. "R.I.C.E, rest, ice, compression and evasion, try at the 72 hours to get acute inflammation." 2. "Get the patient to rehab stage where they can start functioning optimally." 	Role of medical staff
How can you discover the injury?	<ol style="list-style-type: none"> 1. "Player will report the injury to me and from there we liaise with the coach." 2. "The coach is busy with the athlete on the field and he sees the athlete picked up an injury he will stop the athlete and tell the athlete to come see me." 	Role of medical staff
So what is your role as the person when the injury happens?	<ol style="list-style-type: none"> 1. "I do a quick assessment of the injury." 2. "If it's a game day you'll get a certain amount of time to do the assessment." 3. "If it's practice you can actually take your time to bring the athlete to the medical room." 4. "Assess the athlete and get a diagnosis." 5. "If the athlete needs further referral, we'll refer him." 	Role of medical staff
What are the barriers to the implementation of prevention programmes?	<ol style="list-style-type: none"> 1. "Athletes hide their injuries because they want to be on the team." 2. "Some of them don't complete rehab and some don't complete treatment." 	Barriers to the implementation of an injury prevention programme

Table 5.4: Qualitative themes that emerged from responses of the medical staff focus group

Table 5.4: Qualitative themes that emerged from responses of the medical staff focus group
(continued)

Question	Statement	Theme
What are the facilitators that make it possible of more useful for the prevention strategy?	<ol style="list-style-type: none"> 1. “You have fewer injuries and fewer fatalities and sometimes less injuries.” 2. “In a controlled environment you can facilitate the prevention of that injury.” 	Facilitators of an injury prevention strategy
Could you tell me about the policy of the university, like this policy for the prevention strategy for the whole athletes, especially the rugby team, there’s like staff for the usual?	<ol style="list-style-type: none"> 1. “At rugby, we have a physiotherapist.” 2. “Have fitness and conditioning coaches.” 	Injury prevention policy at UWC
I just want to ask you did you study physiotherapy? Are you still at UWC? What’s your name and what is your position here?	<ol style="list-style-type: none"> 1. “Sports physiotherapist did extra courses to be more involved and my years of experience helped a lot.” 2. “The physiotherapist of the UWC rugby team.” 3. “I also consult with different sports codes at UWC as a physiotherapist.” 	Background information



CHAPTER 6

DISCUSSION, SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter discusses the results obtained in relation to the objectives of the study. The results and objectives are discussed in conjunction with current literature. The objectives are listed below:

- The general knowledge of players, team coaches about injury prevention at UWC.
- Implementation of injury prevention strategies among sports clubs at UWC.
- The facilitators and barriers to the implementation of injury prevention strategies among sports clubs at UWC.



6.2 Quantitative Data

6.2.1 Background Information

Most of the players in this study were between 20-24 years old. This is somehow similar to the study conducted by Abdelnour (2008), which found that the age range among UWC players is between 20 and 25 years old. Most of the coaches in this study were aged between 20-29 years. This age range is more likely to include coaches with less experience. This was corroborated in this study that the experience of the coaches ranged between one and four years. The study conducted by Ianiro *et al.* (2015), showed that coaches aged 24 years old were more likely those newly gaining experience compared to older ones.

Most male (62%) and female (38%) players in this study were involved in football. According to

Kunz (2007), the level of participation among males is also higher in football. Most of the players participated in the sport for one to two years. This is similar to the study conducted in Rwanda by Nuhu (2008).

6.2.2 Knowledge of Injury Prevention Strategies

Most players believe that they get most of their information regarding injury prevention from coaches. Most coaches felt that they acquire their information regarding injury prevention mainly from doctors or physiotherapists. Most players agreed that the chances of sustaining an injury is likely to happen during a competitive match that prevents you from being available for selection. That is due to the fact that the importance of the competition more likely increases the intensity and load that the player produces (Abdelnour, 2008).

The majority of the coaches affirm that the risk of injury is reduced by thoroughly warming up and stretching prior to training or competition. Several studies have shown that warm-up and stretching exercise are very beneficial in injury prevention strategies. For example, one study showed that flexibility training impacted on positive power and performance. Stretching enhances subsequent performance and reduces the risk of injury by improving joint mobility (Witvrouw, 2003; 2004).

The study shows that the cricket team is more knowledgeable than the other teams. Most players think that their source of knowledge is supposed to be coaches and physiotherapists - more so than the media. This finding is consistent with the study conducted by Nuhu (2008), which found that more than half of the soccer players reported that coaches were their most important source of information regarding injury prevention. In addition, Tonino & Bollier (2004), found that coaches are often the only supervising staff member always available at practices. This may indicate that coaches are a very important source of knowledge regarding injury prevention strategies.

6.2.3 Injury Prevention Strategies Implemented

6.2.3.1 Facilitators of Injury Prevention Strategies

Most of the players always wear injury protection gear such as appropriate footwear/shoes, shin guards, mouth guards during training and competition. Lower extremity injuries are very common in most sport types. In most popular sports, cleated footwear is common sports gear used to increase performance during sport-specific tasks, but concerns have recently been raised about performance and safety issues related to running shoes and ground reaction forces (Bridges, 2016). Most of the players in the present study always have warm-up periods prior to training and competition for approximately 10 minutes. According to Olsen *et al.* (2012), warm-up helps in increasing the metabolic processes and the temperature of the active muscles, which increase the flexibility so the muscle will be less likely to be injured.

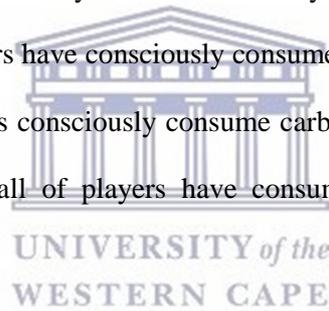
The study recommended a duration of 10 to 20 minutes for warm-up before training or competition. Therefore, increasing the warm-up duration for more than 10 minutes in UWC training programmes will enhance injury prevention strategies. In this study, the warm-up always included shooting/stop shooting which is good for different sports such as basketball when players are using shooting skills when they are playing.

Most players incorporate cool-down after training and competition, which included jogging. Cool-down exercise that activates the leg muscles such as jogging/running induce eccentric tension of the leg extensor muscles (Abdelnour, 2008).

The study showed that most of the players have consumed water before and after the training and matches. Players are consuming more fluid due to the torque that they are producing. Water in fluid form is important for the human body as 2% of the body fluid is used due to heat and

physical activities (Cian *et al.*, 2001). The effect of dehydration results from exercise resulting in different cognitive, visual, psychomotor, and physical performance decreases (Cian *et al.*, 2001). Other studies show that dehydration has negative effects on attention, concentration, short-term memory, and perceptual functions (Ritz & Berrut, 2005).

In addition, Maughan & Lewis (2005) identified the main deficiencies in awareness of injury strategies for players as use of shin pads during training, carbohydrate intake before and after matches, cool-down after training and matches, and flexibility work. According to Hawkins & Fuller (1998), these deficiencies were the indicators of a need for wider education of players in current injury prevention strategies. This study showed that most of players have consciously consumed carbohydrates (e.g., bread, pasta, rice, potatoes, chocolate, and sugar) pre-training and that the majority of players consciously consumed carbohydrates post-training. In addition, the study showed that most of players have consciously consumed carbohydrates in the pre match. as well showed that most of players consciously consume carbohydrates post-match. Furthermore, the study showed that almost all of players have consumed water before the training and matches.



The study found significant relationships between the type of sports and the wearing of injury protection gear such as shin guards without ankle protection. For example, players in football are more likely to wear injury protection shin guards without ankle protection in training and competition while players in rugby, basketball, cricket and volleyball do not do so. It is well known that football is a contact sport, which requires protection against injuries.

Many scholars in the fields of physiotherapy and sport science identified the following common facilitators and barriers to sport injuries, namely; warm-up in the training competition process, referring to the change of the viscoelastic properties of tissues with increasing temperature or the improvement of metabolic conditions; joint mobility, jogging, stretching, and proprioceptive technical training prior to the main activity which provides an important preventive security

(Fradkin *et al.*, 2006). In addition, the study of Fradkin *et al* (2006), showed that most players did warm-up. Hendricks & Lambert (2010), showed the importance of strength training as a technique for getting back safe to sport. Stretching exercises are considered good facilitators for injury prevention. In addition, different studies showed that warm-up and stretching exercise are very beneficial in injury prevention strategies (Witvrouw, 2003; 2004).

6.2.3.2 Barriers to Injury Prevention Strategies

Lack of time was the main barrier for players to do strength training, flexibility exercises, warm-up, and cool-down. Therefore, players do not have much time to do strength training as one of the injury prevention strategies. Students might be running out of time due to other commitments or study load. In other words, university studies is the main focus for the players and spending many hours on lectures and studying might increase the time pressure of the players. The study conducted by Nuhu (2008) found that time was not one of the barriers to injury prevention strategies. The reason for that this study has been conducted at a university college where players most likely are students while the other study recruited professional players who had enough time for training and practice with fewer other commitments.

The study also showed that after training most players feel too tired so they do not do cool-down which poses the same barrier as strength training to the implementation of a prevention strategy. Cool-down should occur immediately after activity as part of the recovery process, and while the athletes still have an elevated body temperature. A number of studies showed the benefit of cool-down and how it should be performed. It helps in the maintenance of joint mobility, the reduction in circulating blood lactate, and preventing blood pooling. Harcourt (1995) stated that static muscle stretching and cardiovascular activities are the most affective types of cool-down activities. It can include jogging and/or fast walking, which can involve the muscles for at least 2-5 minutes.

If tools are available, it is advisable to gradually lower the exercise intensity after the workout to

levels of <60% of maximum heart rate to relieve effects of delayed onset muscle soreness (Harcourt, 1995). In this study, some of the players acknowledge cool-down as an injury prevention strategy after competition, but others players think it is not necessary. The study conducted by Nuhu (2008) found that soccer players did not always perform cool-down after the competition, but more players performed stretching during the cool-down after training than competition. The reasons for not stretching after the competition are similar to those of not cooling down after competition. Therefore, more emphasis needs to be placed on the benefits of cool-down and stretching after competition. This study showed that lack of availability of time was the main barrier that prevented coaches from implementing injury prevention strategies.

6.3 Qualitative Data

6.3.1 Knowledge of Injury Prevention Strategies and Its Implementation at UWC

The medical staff agree that applying injury prevention strategies is very important and helps athletes in being cautious of the different injuries that might occur. This finding is in agreement with that reported by different authors who found that injury prevention strategies help to increase players' awareness about injury prevention and treatment. For example, Fradkin *et al.* (2006) showed how cool-down, warm-up and stretching can help in preventing injuries during games and training sessions. Coaches can see when the player gets injured, it is practical for them to refer the player to the best biokenatics because the player can aggravate his/her injury which would be a sign that an impending withdrawal from the competition is imminent.

This notion is congruent with different injury prevention recommendations focusing on the importance of immediate rehabilitation referral and management. Players' knowledge of injury prevention was directed mainly at what to wear while participating in order to protect them from injury for example, hand wraps and appropriate footwear/shoes. As mentioned earlier by Bridges (2016), footwear facilitates quicker changes in direction and speed due to increased cleat-surface contact, and provides stability to the foot and ankle. Therefore, players have a working

knowledge regarding the injury prevention with regard to wearing preferred footwear in a manner analogous to their knowledge about prevention strategies such as warm-up, stretching, and cool-down.

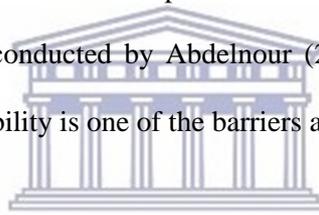
These statements were evaluated from the focus group interviews and support the findings of the quantitative data in this study which confirmed that warm-up and stretching exercise are extremely beneficial in injury prevention strategies and stretching enhances subsequent performance and reduces the risk of injury by improving joint mobility (Witvrouw, 2003; 2004). The theme on the knowledge about the degree of injury has presented in players focus group interview as well as in the quantitative data component of this study. Such knowledge will aid medical staff, coaches as well as players to assess if the injury is mild, moderate, or severe, which is an important basic fact of injury. On the other hand, some players think that they do not need immediate physiotherapy intervention after injury because they already know how to apply PRICE (Protection, Rest, Ice, Compression, and Elevation) techniques after injuries. According to van den Bekerom (2012), PRICE is a very important protocol towards injuries. It reduces the metabolic demands of injured tissues, limits the injury-induced damages, stops haemorrhage, reduces swelling, and limits the bleeding by lowering the blood pressure towards the injured area.

6.3.2 Sports Injury Prevention Strategies Implemented at UWC Sports Clubs

Players deem it very important and helpful to develop and follow injury prevention strategies. They are cognisant of UWC physiotherapists experience, as well how experience in rehabilitation of sports injuries are important. Players are aware that physiotherapists help in deciding which grade a particular injury is. Players are also knowledgeable about how to apply PRICE techniques and why it is important as an injury prevention strategy. Coaches' awareness on injury prevention strategies was not clearly explored in this study due to the fact that coaches are more focused on the incidence of injuries and barriers to injury prevention. According to Romiti *et al.* (2008), coaches play a key role in the development and implementation of training

courses with regard to prevention of injury occurrence.

Medical staff raised various points about injury prevention strategies, how to involve injured players in a rehabilitation class, in order to increase their awareness regarding injury prevention and rehabilitation involving teaching them PRICE techniques. This activity can lead to increasing players' understanding of injuries prevention strategies. Injury prevention strategies at UWC focus on strengthening the relationship between players, coaches, and medical staff. The medical staff starts the injury handling by assessment, referral, and treatment programme. Cool-down, warm-up, and stretching are the common injury preventions techniques followed by the medical staff for the players. The role of injury prevention strategies in this study more likely depends on medical staff. However, shortage of medical staff at UWC clubs has clearly been identified as one of the main barriers to the implementation of an injury prevention programme. This is aligned with the study conducted by Abdelnour (2008), on the UWC volleyball club finding the rehabilitation accessibility is one of the barriers at UWC.



6.3.3 Barriers to and Facilitators of Injury Prevention Strategies at UWC

Players regard the availability of physiotherapists as medical staff as quite a challenge because individual medical staff members have different sports codes to take care of. In addition, not all sport codes get the same attention. For example, rugby and football receive the most attention because physiotherapists and medical staff prefer working in these sport types. Notably also, most of the physiotherapy services are offered by students at UWC. Therefore, recruitment of qualified physiotherapists is needed at UWC, which can reduce the injury prevalence and facilitate the prevention process.

Players are also complaining of the long waiting times when they want to attend the UWC physiotherapy clinic. Considering that the clinic serves both staff and students at the same time, long waiting hours can be ascribed to a high load. Likewise, coaches raise objections to long healing processes and the fact that players spend too much time waiting to be seen by medical

personnel. In addition, coaches are aware of availability of these facilities, but do not see personnel manage the facilities. This lack of human resources is due to the fact that services are offered by students. Cost considerations associated with physiotherapy are another barrier to students obtaining rehabilitation for their injuries. This is because all players at UWC are students who do not have stable, regular jobs or financial income and are expected to perform in academia as well.

Furthermore, coaches recommend that the injury prevention policy at UWC needs to be developed and evaluated. Medical staff observed that athletes frequently hide their injuries because they want to be on the team and some of them do not complete the rehabilitation programme and prescribed treatment. The players themselves have echoed this as they explained that the reason is that they are afraid of not participating in the competitions. The availability of the medical staff with the team during training and competition will help in the immediate identification of injury. According to Orchard (2009), medical staff do not like mobile work and have a preference working in one place. For the sports teams, mobility from one place to another is common, especially during to competitions. This can be the reason why there are no medical staff who can immediately identify players' injuries and start implementing rehabilitation. According to Abdelnour (2008), availability of rehabilitation professionals is important during competition and training in order to prevent injuries incidents.

6.4 Summary

The aim of this study was to identify factors associated with the implementation of injury prevention strategies at UWC. In order to achieve this aim, the general knowledge of players and coaches about injury prevention strategies and their sources of information regarding injury prevention were assessed. The implementation of injury prevention strategies and the factors that influence the implementation of injury prevention strategies were also assessed. The wearing of protection gear, warm-up, water rehydration, and carbohydrate consumption was practiced more in competition than in training while cool-down and stretching were more regularly performed in

training than in competition. The reasons given for not adequately implementing injury prevention strategies included lack of proper equipment and advice on techniques, shortage of time and being exhausted after competition. The results of this study indicate that sports teams at UWC do have safety policies and many of them implemented limited safety policies. The teams addressed safety issues at matches and training. Teams were also interested in receiving information and assistance on safety issues. The important role of medical staff in implementing injury prevention strategies has also been delineated.

6.5 Conclusion

In conclusion, players and coaches at UWC seems to have satisfactory knowledge of injuries. However, players' awareness is deficient as to the causes and risk factors of injuries, the use of cool down after training and competition, stretching and flexibility, and strength and conditioning. Injury prevention strategies and/ or policies were not regularly implemented. Clubs emphasize the implementation of injury prevention strategies more at competitive matches than during training. The most important sources of information regarding injury prevention were found to be the coaches, team medical practitioners and the media. Interventions to improve injury prevention should, therefore, include the coaches, team medical practitioner and media. The teams indicated that they would be willing to accept assistance in injury prevention techniques and equipment. There is a need to provide education to increase the general knowledge about the prevention of injuries in the community and overcome all the identified barriers that render the implementation difficult or impossible. There is also a need to support teams to develop meaningful and relevant policies.

6.6 Recommendations

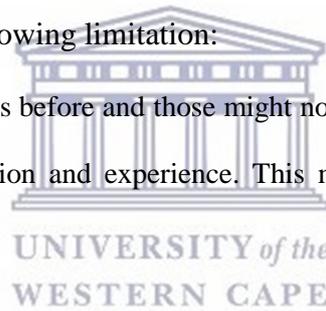
Based on the findings of this study, the following recommendations could be made:

- ❧ Intervention directed at players and coaches in the form of health promotion programmes through education to increase their knowledge and support in implementation of all prevention strategies either in training or in competition should be provided.
- ❧ Governing bodies at UWC should develop and disseminate written sports safety policies and guidelines and supervise clubs in their development programmes.
- ❧ More research to investigate injury preventions strategies are required at clubs, institutions, and community levels.

6.7 Limitation Of The Study

The study experienced the following limitation:

- ❧ Players might got injuries before and those might not experience injuries are more likely have variations on opinion and experience. This might leads to questions within the quantity of the data.
- ❧ Players might be forgetting important injury prevention strategies if they are not exposed regularly to education and knowledge regarding their own injury prevention,
- ❧ Players who have major injuries did not participate in this study, as they were not present at UWC.



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APPENDIX 1

APPROVAL FROM THE HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE



OFFICE OF THE DIRECTOR: RESEARCH
RESEARCH AND INNOVATION DIVISION

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

01 September 2016

Mr H Saad
Physiotherapy
Faculty of Community and Health Sciences

Ethics Reference Number HS 16/5/44

Project Title: Facilitators and barriers influencing the implementation of injury prevention strategies among sports clubs at the University of the Western Cape.

Approval Period: 01 September 2016 – 01 September 2017

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'.

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

PROVISIONAL REC NUMBER - 130416-049

APPENDIX 2

PERMISSION TO CONDUCT THE STUDY



**STUDENT
ADMINISTRATION** 
Administration Building, 1st Floor
ashaijje@uwc.ac.za, nschoeman@uwc.ac.za
021 959 2110

18 October 2016

Dear Haithem Saad

RE: PERMISSION TO CONDUCT RESEARCH AT THE UNIVERSITY OF THE WESTERN CAPE

As per your request, we acknowledge that you have obtained all the necessary permissions and ethics clearances and are welcome to conduct your research as outlined in your proposal and communication with us.

Please note that while we give permission to conduct such research (i.e. interviews and surveys) staff and students at this University are not compelled to participate and may decline to participate should they wish to.

Should you wish to make use of or reference to the University's name, spaces, identity, etc. in any publication/s, you must first furnish the University with a copy of the proposed publication/s so that the University can verify and grant permission for such publication/s to be made publicly available.

Should you require any assistance in conducting your research in regards to access to student contact information please do let us know so that we can facilitate where possible.

Yours sincerely

A handwritten signature in black ink, appearing to read 'A. Shaikjee', with a horizontal line underneath.

DR AHMED SHAIKJEE
MANAGER, STUDENT ADMINISTRATION
OFFICE OF THE REGISTRAR

APPENDIX 3

INFORMATION SHEET



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
 Tel: +27 21 959 3151, Fax: +27 21 959 9359
 E-mail: hpharaoh21@gmail.com

Project Title: Facilitators and barriers influencing the implementation of injury prevention strategies among sports clubs at the University of the Western Cape

INFORMATION SHEET

What is this study about?

This is a research study being conducted by Haithem Saad at the University of the Western Cape. We are inviting you to voluntarily participate in this research study to understand explore the barriers to implementation of injury prevention strategies.

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

You will be asked to complete a questionnaire. This questionnaire will ask you questions about (i) identification, (ii) implementation of injury prevention strategies, (iii) factors influencing implementation of injury prevention strategies, (iv) factors influencing knowledge of injury prevention, (v) injury prevention knowledge. Completion of the questionnaire will be 35 minutes.

Would my participation in this study be kept confidential?

Your personal information will be kept confidential. To help protect your confidentiality, the information you provide will be totally private; no names will be used so there is no way that you can be identified as a participant in this study. The information will be treated with anonymity and confidentiality. Your name will not be reflected on the questionnaire. The information obtained from the survey will not be collated with the information from completed surveys. Therefore there will be no way to connect you to the survey questionnaire.

What are the benefits of this research?

There is a lack of information about the prevention of musculoskeletal injuries among athlete bracs at the sports clubs at UWC. Moreover, little research exists which explores the barriers that coaches, medical staff, and players face in the prevention of musculoskeletal injuries. So, this study may help future researchers to relate other variables to the respondents or different respondents to the same variables used.

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 in the study. If you decide to participate in this research study, 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 penalised or lose any benefits to which you otherwise qualify.

What if I have questions?

This research is being conducted by Haithem Saad a registered Master student in the Faculty of Community and Health Science, Department of Physiotherapy at the University of the Western Cape. If you have any questions about the research study itself, please contact Haithem Saad at: 0842191156 or email: tomy444.hsm@gmail.com or contact the research study supervisor: Dr. Hamilton Grant Pharaoh at: +27 21 959 3151 or email: hpharaoh21@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:

Professor Jose Frantz – Dean of the Faculty of Community and Health Sciences
Tel No: 021 959 2631/2746
Email address: jfrantz@uwc.ac.za

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

APPENDIX 4

INFORMED CONSENT SHEET



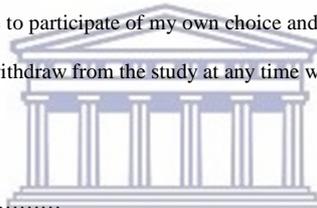
UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21 959 3151, Fax: +27 21 959 9359
E-mail: hpharaoh21@gmail.com

Project Title: Facilitators and barriers influencing the implementation of injury prevention strategies among sports clubs at the University of the Western Cape

INFORMED CONSENT SHEET

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.



Participant's name:

Participant's signature:

Date:

Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study coordinator:

Study Coordinator's Name: Dr. Hamilton Grant Pharaoh

**University of the Western Cape
Private Bag X17
Bellville 7535**

**Telephone: +27 21 959 3151
Email: hpharaoh21@gmail.com**

APPENDIX 5

INTERVIEW SCHEDULE FOR TEAM COACHES



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21 959 3151, Fax: +27 21 959 9359

E-mail: hpharaoh21@gmail.com

INTERVIEW SCHEDULE FOR TEAM COACHES

General information for all participants about the study

Date of the interview

___ / ___ / ___ Date / Month / Year

Location:

Participant code: _____

Interview questions

1. Please tell me, Are there strategies for prevention practice with sports teams?
2. What is the role played by the coach and medical staff in implementing prevention strategies for the athletes?
3. Please talk to me about your relationship with the athletes, do they understand your instructions on prevention strategies?
4. How do you handle the injury during the playing season and after?
5. Are you satisfied with the possibilities offered by the university to meet the strategic plans for the prevention requirements?
6. How do you discover injuries of note, or by contacting the injured athlete?
7. What are the barriers or factors for impediments to the Implementation Prevention Programs?
8. What challenges do you face in this a subject. Is it a lack of time and lack of equipment is among the obstacles to prevention strategies Implementation?
9. What in your opinion are the reason for these obstacles within the university, does the lack of policies for implementation of perevention strategies play a role
10. What are the facilitators that make work possible and useful for prevention strategies?
11. Do you have any other information that you would like to share that was not mentioned during this interview?

Thank you for taking time to participate in this interview

APPENDIX 6

INTERVIEW SCHEDULE FOR ATHLETES



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21 959 3151, Fax: +27 21 959 9359

E-mail: hpharaoh21@gmail.com

INTERVIEW SCHEDULE FOR ATHLETES

General information for all participants about the study

Date of the interview

___ / ___ / ___ Date / Month / Year

Location:

Participant code: _____

Interview questions

1. What is your understanding of implementation strategies for prevention?
2. Do you have trust in the medical staff in dealing with your injury?
3. Do you think strategies for prevention is important for you? Why?
4. Is there any barriers or facilitators to the implementation of injury prevention strategies.
5. Is there any change in injury prevention and treatment after medical staff became part of your set up?
6. How do you see the role of the coaches and medical staff?
7. How do you deal with your injury?
8. Do you have any other information that you would like to share that was not mentioned during this interview?

Thank you for taking time to participate in this interview

APPENDIX 7

INTERVIEW SCHEDULE FOR MEDICAL STAFF



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21 959 3151, Fax: +27 21 959 9359

E-mail: hpharaoh21@gmail.com

INTERVIEW SCHEDULE FOR MEDICAL STAFF

General information for all participants about the study

Date of the interview

___ / ___ / ___ Date / Month / Year

Location:

Participant code: _____

Interview questions

1. Do you think that the Implementation strategies for prevention are important for the athletes?
2. Is there a role for a medical staff for the athletes?
3. Do you offer programs in your job for improving the any implementing prevention strategies?
And how?
4. How do you handle athletes experience injury problems?
5. What is your role as the principal of when the injury happens?
6. What are the barriers for impediments to the Implementation Prevention Programs?
7. What are the facilitators that make work possible and useful for prevention strategies?
8. Do you have any other information that you would like to share that was not mentioned during this interview?

Thank you for taking time to participate in this interview

APPENDIX 8

QUESTIONNAIRE FOR TEAM COACHES



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
 Tel: +27 21 959 3151, Fax: +27 21 959 9359
 E-mail: hpharaoh21@gmail.com

Project Title: Facilitators and barriers influencing the implementation of injury prevention strategies among sports clubs at the University of the Western Cape

QUESTIONNAIRE FOR TEAM COACHES

All questions are strictly confidential. Please be as truthful as possible and tick one box per question unless otherwise indicated.

Part A: IDENTIFICATION

1. Age: _____
2. Number of years in coaching: _____ years

Part B: FACTORS INFLUENCING KNOWLEDGE OF INJURY PREVENTION

1. Where did you learn about injury prevention?
2. Please rank these sources of information in order of importance - from most important to least important.

Source of athletes' knowledge	Most important	Important	Least important
Doctor/ physiotherapist			
Media			
Seminars			

Part C: IMPLEMENTATION OF INJURY PREVENTION STRATEGIES

Tick one box per question

1. Do you supervise warm-up sessions prior to:	Always	Very often	Often	Sometimes	Never
Training					
Competition					
2. In your warm-up programme, do you include activities like:					
Light aerobic activities					
Sprinting					
Jumping					
Short/long passes					
Dribbling					
Shooting/stop shooting					

3. How long is your warm-up programme prior to:	5 min	10 min	20 min	25 min	30 min
Training					
Competition					
4. How often do you supervise a cool-down period at the completion of:	Always	Very often	Often	Sometimes	Never
Training					
Competition					
5. In your cool-down programme, do you include activities like:					
Light jogging					
Light calisthenics					
Stretching					
6. How long is your cool down programme prior to:	5 min	10 min	20 min	25 min	30 min
Training					
Competition					
7. The pre-season training starts:	2 weeks	3 weeks	4 weeks	5 weeks	6 weeks
Time					
8. In your training plan, do you:	Always	Very often	Often	Sometimes	Never
Balance fitness and skill development					
Gradually increase in intensity					
Teach players to be aware of their training					
Note players' changes in skill levels and					
Techniques					
Modify training according to the playing field					
9. Do you supervise stretching sessions prior to:					
Training					
Matches					
10. During the stretching sessions, do you:	Always	Very often	Often	Sometimes	Never
Demonstrate the skill to the player					
Explain the skill to the player					
Pay attention to the player practicing the skill					
11. Do you ensure that equipment is:	Always	Very often	Often	Sometimes	Never
Available and used by players					

Appropriate					
High quality					
In good condition					
Sized properly					
Fitted correctly					
Maintained					
Repaired or replaced when damaged					

Part D: FACTORS INFLUENCING IMPLEMENTATION OF INJURY PREVENTION STRATEGIES

As the coach please indicate all the reasons why the athletes might not be doing the following activities listed below.

- Strength training at least once per week
- Flexibility training at least once per week
- Warm-up always before training and matches
- Cool down always after training and matches

	Strength Training	Flexibility Training	Warm-up		Cool-down	
			Training	Competition	Training	Competition
1. Not enough time						
2. Too tired after training/match						
3. Are not given advice on techniques						
4. Do not believe it is necessary						
5. Nobody else does it						
6. Lack of proper equipment						

Part E: INJURY PREVENTION KNOWLEDGE

In the following questions, tick the description which most closely matches your opinion of the Statement

Statement	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
1. The chance of sustaining an injury during training that prevents a player from being available for selection is likely to happen.					
2. The chances for sustaining an injury during a competitive match that prevents a player from being available for selection is likely to happen.					
3. There is a greater chance sustaining an injury a player during a competitive match than during training.					
4. Injuries are a consequence of the action of another player.					

5. The risk of lower leg injuries in training is reduced by wearing shin guards.					
6. Injury is more likely towards the end of a match.					
7. The risk of injury is reduced by thoroughly warming up and stretching prior to training or competition.					
8. The risk of injury is reduced by thoroughly cooling down and stretching after training or competition.					
9. Players with poor flexibility are more likely to get injured than those with good flexibility.					
10. Strong muscles are important in the protection against injuries a player.					
11. The majority of other players wear shin guards during training.					

THANK YOU FOR HELPING US



UNIVERSITY *of the*
WESTERN CAPE

APPENDIX 9

QUESTIONNAIRE FOR ATHLETES



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
 Tel: +27 21 959 3151, Fax: +27 21 959 9359
 E-mail: hpharaoh21@gmail.com

Project Title: Facilitators and barriers influencing the implementation of injury prevention strategies among sports clubs at the University of the Western Cape

QUESTIONNAIRE FOR ATHLETES

All questions are strictly confidential. Please be as truthful as possible and tick one box per question unless otherwise indicated.

Part A: IDENTIFICATION

1. Age: _____
2. What is your favorite sport (example; Football, Rugby, Basketball and so on): _____
3. What position do you play in your team (example; guard, forward, the center, fullback and so on): _____
4. How long have you been involved with the UWC team: _____

Part B: IMPLEMENTATION OF INJURY PREVENTION STRATEGIES

1. In training, how often do you wear injury protection gear?	Always	Very often	Often	Sometimes	Never
Shin guards without ankle protection					
Shin guards with ankle protection					
Ankle protection					
Appropriate footwear/shoe					
Mouth-guard					
Headgear					
Gloves for goal keepers					
Other, please indicate below: _____					
2. In competition, how often do you wear injury protection gear?					
Shin guards without ankle protection					
Shin guards with ankle protection					
Ankle protection					

Appropriate footwear/shoe					
Mouth-guard					
Headgear					
Gloves					
Other, please indicate below _____					
3. Do you have a warm-up period prior to training and tournament?					
Training					
Competition					
4. In your warm-up period, do you include activities like?					
Light aerobic					
Sprinting					
Jumping					
Short/long passes					
Dribbling					
Shooting/stop shooting					
5. How long is your warm-up programme prior training and competition?	5 min	10 min	20 min	25 min	30 min
Training					
Competition					
Other, please indicate by write down					
6. Do you have a cool-down period during training and competition?	Always	Very Often	Often	Sometimes	Never
Training					
Competition					
7. In your cool-down period, do you include activities like?					
Light jogging					
Stretching					
8. How long is your cool-down period following training or competition?	5 min	10 min	20 min	25 min	30 min
Training					
Competition					
9. Do you stretch the major leg muscles in the following situations?	Always	Very Often	Often	Sometimes	Never
Warm-up prior to training					
Warm-up prior to matches					
Cool-down after training					
Cool-down down after matches					
10. During stretching, do you?					

Make sure the muscles are warm first					
Slowly stretch the muscle to the point of tension					
Bounce in the stretch					
11. For how long do you stretch your muscles?	5 sec	10 sec	15 sec	20 sec	25 sec
12. How many times per week do you undertake strength training?	0	1	2	3	4
As part of team training session					
As extra individual work					
Other, please indicate by write down					
13. Do you consciously consume carbohydrates (e.g., bread, pasta, rice, potatoes, chocolate, sugar) in the following situations?	Always	Very Often	Often	Sometimes	Never
Pre-training					
Post-training					
Pre-match					
Post-match					
14. Prior or after training / competition do you consume water?	Yes	No			
Before					
During					
After					
15. Prior or after training / competition do you use supplements to assist in recovery?	Yes	No			
Before competition/training					
During competition/training					
After competition/training					

Part C: FACTORS INFLUENCING IMPLEMENTATION OF INJURY PREVENTION STRATEGIES

If you do not undertake the following activities indicate all the reasons why not.

- Strength training at least once per week
- Flexibility training at least once per week
- Warm-up always before training and matches
- Cool down always after training and matches

	Strength Training	Flexibility Training	Warm-up		Cool-down	
			Training	Competition	Training	Competition
1. Not enough time						
2. Too tired after training/tournament						
3. No advice is given on such techniques						
4. I do not believe they are necessary						

5. Nobody else does it						
6. Lack of proper equipment						

Part D: FACTORS INFLUENCING KNOWLEDGE OF INJURY PREVENTION

- Where did you learn about injury prevention?
- Please rank these sources of information in terms of their relevance - from most important to least important.

Source of knowledge	Most important	Important	Least important
Coach			
Doctor/ physiotherapist			
Media			
Other			

Part E: INJURY PREVENTION KNOWLEDGE

In the following question tick the description which most closely matches your opinion of the Statement

Statement	Strongly Agree	Agree	Neither agree Nor disagree	Disagree	Strongly Disagree
1. The chance of sustaining an injury during training that prevents you from being available for selection is likely to happen.					
2. The chances for sustaining an injury during a competitive match that prevents you from being available for selection is likely to happen.					
3. There is a greater chance of sustaining an injury during a competitive match than during training.					
4. Injuries are a consequence of the action of another player.					
5. The risk of lower leg injuries in training is reduced by wearing shin guards.					
6. Injury is more likely towards the end of a match.					
7. The risk of injury is reduced by thoroughly warming up and stretching prior to training or competition.					
8. The risk of injury is reduced by thoroughly cooling down and stretching after training or competition.					
9. Players with poor flexibility are more likely to get injured than those with good flexibility.					
10. Strong muscles are important in the protection against injuries.					
11. The majority of other players wear shin guards during training.					

I THANK YOU FOR YOUR TIME

APPENDIX 10

QUESTIONNAIRE FOR MEDICAL STAFF



UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
 Tel: +27 21 959 3151, Fax: +27 21 959 9359
 E-mail: hpharaoh21@gmail.com

Project Title: Facilitators and barriers influencing the implementation of injury prevention strategies among sports clubs at the University of the Western Cape

QUESTIONNAIRE FOR THE MEDICAL STAFF

When completing the questionnaire, please tick the box that represents the situation at your club, unless the instructions indicate to tick all appropriate boxes.

Part A: IDENTIFICATION

1. Are you a:

Medical doctor	
Nurse	
Physiotherapist	
First aider	
Redcross agent	
Other (specify)	

- Number of year in your club: _____ years
- Years of experience in your qualification: _____ years
- Years of experience in soccer: _____ years.

Part B: SPORT SAFETY PRACTICE

The following questions seek to identify the actual safety practices currently in place at your Club during competition and training

How Frequent	Always	Very Often	Often	Sometimes	Never
1. Is your attendance required during training?					
2. Is your attendance required during competition?					
3. Is appropriate First Aid equipment readily available at training?					
4. Is appropriate First Aid equipment readily available at competition?					
5. Is a telephone available in case of emergency at training?					
6. Is a telephone available in case of					

emergency at competition?					
7. Does your Club ensure access for ambulance and emergency service vehicles to the facilities during training?					
8. Does your Club ensure access for ambulance and emergency service vehicles to the facilities during competition?					
9. Are your playing grounds generally in safe playing condition?					
10. Are fixtures and fittings within playing fields made safe for players (e.g. goalpost padding, collapsible corner posts/flags) at training?					
11. Are fixtures and fittings within playing fields made safe for players (e.g. goalpost padding, collapsible corner posts/flags) at competition?					
12. Do your players' personal equipment items get checked by someone in authority prior to training?					
13. Do players' personal equipment items get checked by someone in authority prior to competition?					
14. Does your Club ensure that drinking water/fluid is available at training?					
15. Does your Club ensure that drinking water/fluid is available at competition?					
16. Do you encourage players to drink water or supplements more frequently during training?					
17. Do you encourage players to drink water or supplements more frequently during competition?					
18. Is injury prevention one of the targets of training or coaching? (e.g., safe tackling, safe landing techniques)?					
					Yes No
19. Do you encourage players to warm-up prior to training?					
20. Do you encourage players to warm-up prior to competition?					
21. Do you encourage players to cool down at the completion of training?					
22. Do you encourage players to cool down at the completion of competition?					
23. Do you encourage players to stretch their muscles during training?					
24. Do you encourage players to stretch their muscles during competition?					
25. Do you encourage players to seek treatment when injured?					

THANK YOU FOR HELPING US

APPENDIX 11

INTERVIEW WITH MIXED ATHLETE GROUP

- ✎ What we want to discuss is injury and methods how to prevent injury, how medical staff deal with you as we are all involved in sport here.
- ✎ So we don't want to say names, just refer to each of you as participants 1, 2, 3, 4, 5, 6, 7.
- ✎ So what we wanted to start is, give a direction or a cue of what sport you are engaged in without mentioning names, okay? OK!

I am an athlete, track and field
 UWC boxer
 Rugby and gym
 Netball and dance, I also coach netball
 Used to be a netball player



- **Netball?**

Netball, yes.

Football, UWC football player.

- **So, because you are all engaged in sport, maybe some of you have injuries. Before we go deep into details we want to ask about your understanding about preventing injuries. You know, what we mean prevention is something to stop injury from happening. What's your common understanding for injury prevention? Anyone come, it's just a discussion, not an exam.**

I think it's basically taking precaution, like for example you stretch and drink more water, workout, yeah stuff like that.

In boxing you prevent injuries by wearing hand wraps, so that you can prevent injury.

- **So the pressure of the kicking would be less.**

I also think strength and conditioning training helps a lot with injuries during a game. In season you don't go through with these processes, it's much easier to get injured, because you are not used to what's happening in the game, because your muscles is not developed enough to prevent injuries, that's where injury prevention comes in.

- **So it's a way of preparing the muscles?**

I think for netball and men who are gymming is more about learning the form itself, example squat you need to know how to squat, weight lifting, you need to know how to pick up your weights and pay attention to our back, and in netball, wear the proper shoes because wearing shoes that are not okay for netball itself, it's easier to sprain your ankle and warming up as well. I think it's one factor that a lot of people just oversee, especially with athletes and gym freaks, if I can say that. They just go and take the heaviest weight instead of starting with or building up maybe a light weight and go stretch like our participant 3 said. So ya.

In football it is more or less the same thing, through warm-up and stretching after each and every session you have, more or less covers the basis of having injuries.

Athletes, I think what we do is, we always arrive warmed up, we need to warm-up very long, stretch long and after the exercise or training you need to...they call it cool down, which is again cool down where you after training where you get to stretch the

muscles. (interference) In Athletics you are prone to injuries such as hamstring injuries through over straightening or over striding, so you try to do a certain amount of strands not to over stride your muscles.

- **How do you believe in the medical intervention, do you think it is very helpful? From your experience, if you have been treated for an injury, do you find it useful, do you find facilities and medical staff helpful in curing an injury?**

I think it is important and it is very helpful. For me, I had a hamstring injury, depending on the type of person that you go to, for example at UWC there is a lot of experienced physios, so you will go to a physio who is a fourth year student, and that person maybe still has to conduct the consultation under supervision, but sometimes they don't, so I think it is important in terms of rehabilitating, because sometimes you'll either experience doms or you will experience an injury. If you don't take care of that injury it will obviously come back later on. So, I think it is important to go and check if it is maybe a one degree, two degree or three degree, so obviously you can only get that by going to the physio, if you don't it can impact your career in the sport itself. So I think it ya. A lot of athletes unfortunately, especially in football and rugby as well, some of them think they do not need to go to the physio they can take care of themselves, or put ice on it and it will be OK, but they forgetting if you put more strain on it, it can hinder you from having a longer career in sport itself. I think it is quite helpful, you need to go to either bios or physios that has a good understanding of the injury itself and of the sport itself as well.

Medical staff does help, because if you take a voltaren shot, it will deceive you and make you think you don't have an injury, you take a shot and go play or run and then afterwards it's worse, you've moved from grade one to two or three because now it's straining that muscle, thinking it's healed, but it is not healed. Other than that, some stuff really help, like Transact pads helps the muscle to recover.

- **Tell an opinion about the medical care you find here at UWC. Do you go to the medical staff inside the UWC or do some of you go outside and how is it in you opinion about the medical care?**

In my experience, the ones here, they are OK, but inexperienced because they are still studying, so they don't have all the expertise as if you were to go for example, I was going to Melomed, the service is very good and the people that help you are qualified.

What I have seen in working with student interns, which is good because we have someone to assist us, however we need more professional people in the business who really understand the sport, because we have been working with some of the sporting, fitness and conditioning, however the players do not reach the potential we want them, because they did not get the right training to do their best. Most of the time they are more in pain, they can't really go the next day to practice because their muscles could not recover. So it goes down to having the right people to do it and people who has a lot of experience. A lot of players has injuries, but for specific coaching you need..and then we had somebody that specialised in netball dealing with a team with a high intense tournament, and at the same place it lasted for a whole week, going through the religions, going through the recovery period, having looked at injuries like that, which one would not normally find in a big tournament with only eight players.

- **So I think we all agree that it's about more experienced people are more wanted.**

I think it's an experience, yes. But as you said about the biokinetics' and physios, they are all students, they are still very much learning. You go to someone and you don't even know eill they pass in being a physiotherapist or biokinetics? Because they are just learning, it's like you go to a student lawyer and you expect them to represent you, it's the same thing, that person is not really a lawyer and you don't even know if the person will become a lawyer or not, so now rust ourselves to those people.

- **Do you think strategies for prevention is important for you and why?**

Well obviously for you to last the whole season and come back the next season as well, if we don't have any strategies in place, and obviously you need a physio who has been working with the team though out, it's one thing going to this physio and then to another physio, so having strategies in place and knowing your players themselves, the type of injury they have and the individual itself and their goal, 'cause I know participant 1 with the hamstring injury, and because there were not many, I stand corrected, medical strategies in place to prevent or assist them to last longer then he would have qualified for Rio, because certain things or certain programmes were put into his plan or goal to qualifying for Rio, he couldn't because his hamstring hindered him from qualifying.

- **So you mean to be assigned with the same physiotherapists because he or she knows better.**

It would be more advisable, but obviously with our set up or lack of resources on campus, it's quite difficult to have a personalised physio for each code. So we share the same physio so ya it would be advisable to have the same physio attending to maybe five or ten group of student athletes, at least you know better of the injury than just having to go to different people who have different ways of thinking or managing that injury.

- **This is right, yes, especially in physiotherapy, physiotherapy is a long process, if you used to somebody then maybe your understanding even emotionally and psychologically would be better.**

In Football it goes down to the conditioning of the team, like for example if the coaches or the fitness trainers, they put too much strain on the muscles of the players and they do not give them time to recover their bodies and so forth. Physios might be there after the injuries occur with lack of recovery sessions. The fitnees trainers would not do anything about it.

- **So do you mean physiotherapists have to be assigned with the team? And you don't have this?**

We do, but not all codes, for the priority codes but not all codes.

- **Can we talk more about this participant number five?**

Well, because we are a kind of bent department in terms of funding. So as a department we try to put perspective students and UWC sports on the map, we have to look at codes that will bring in more attention or more money for the department itself and even for the university, it will be your football, rugby, athletics and swimming as well. So we pump in more money there, so by

bringing in more retailers or sponsors we try and deploy different people, but even if your physios and bios they'd prefer working with football and rugby because they get more exposure, they travel more, they come on TV. They would not want to come for hockey or boxing.

And also, the physios and bios only operate for certain times, from Monday to Thursday, from 08:30 till 3 o' clock, so not all the students can fit in then and it's not only for sports people, it's for the whole campus community. It is about availability and sometimes you will only get an appointment the next week and you got injured the past Saturday already. You try and get appointment and they say it's full for the week they can only do it next week Monday. You already take that long period, there is no one to advise you that you actually should have iced when you had the injury or should have used this product or you should have seen the doctor 'cause it is swollen, now you sitting with the injury 'cause you don't have the necessary attention, where with some of the codes they are fortunate to have the physio by the field that can advise them. That also makes the injury worse because you don't get the necessary attention.

And the coach wants you on the field and practice (laughs)

Just to add on to participant 3, as players there is only so much you can do to prevent injuries and I say that because you can look at rugby here for example, they play on Monday and I think Thursday, so the turnaround is very short, so as a player you cannot recover in that space of time and you can take all the prevention you can do, but still, it's just too much work.

- **OK, there seems to be barriers or challenges you face. What do you think is the solution? If there were any barriers or facilitators to the implementation of injury prevention strategies, what do you think, how can we remove these barriers to come with injury prevention strategies?**

I think we obviously need more resources and the one resource we need more money, which is always gonna be..financial barriers are always gonna be a problem. More student assistant physios is not gonna be the necessary professional help that we referred to earlier. They will be doing the basics and then we still need to go to the physio clinic where the professional people is or you need to go to the doctor.

We have one departmental physio, but he works on a consultative basis and he does not come in all the time and he has students working, so the service is there, but the professionalism of the service is not there, the quality of the service is not there, might not be up to standard. There will always be a barrier. A barrier to recovery maybe just to add to that, I know they say prevention is cure, I think, but sometimes you have to understand that this is a physical sport, injuries are bound to happen. We just have to have the physios in place to assist when injuries do happen. But I think one challenge may be information, some people do not have all the information, like participant 3 said, "there is only so much a player can do", they also need to inform themselves of a platform where we educate them of this. This is the type of thing you can do when you are alone, you don't have to hold their hand all the time. They might not have the resources and they might not have the funding, but for a person information is key, money as well. So I think information as well, maybe we need to explore, inviting someone, physio or bio and also understand the different professions because someone will think a physio and bio is the same person, but they are not. You first go to the physio and then to the bio for rehabilitation to maybe get you back to where you were before the injury. So I think information and probably awareness as well.

As participant number 5 said, that mostly we focus on priority codes, so I think it is important to look at the non priority codes so we can learn more about preventing injuries because that is also a barrier.

- **Okay, so is there any change in the injury prevention after medical staff become a part of your set up? Within your experience, after you have been under the care of the medical staff, do you feel the same after with you experience of the injury?**

I will say yes, there is a change because once you..say you tear your hamstring and you go for rehab, they will focus so much on that hamstring that when you come back that hamstring is stronger than the other. You see, so now you get an injury on the one that is not strong, so when conditioning and exercising you only focus on the one, so you come back next season and you find you find you've got a hamstring injury, another hamstring injury for the one that was weak before, because they focus on the one.

So maybe from our environment, the environment that we have, sometimes you'll find that the student physios and student bios diagnose a person wrongly, they'll say you have this, but actually you have something else, so sometimes it is good and sometimes it is not, most of the student athletes are diagnosed wrong. So I also think it goes back to a lack of experience, because even lawyers can read a lot of articles or whatever they read, but there will be certain things that you might not know of through your theory and prescribed books, but you need to learn through experience and checking out people or whatever. I think the same applies for physios or a doctor. Through experience and seeing a lot of people, sometimes you might find something that you did not find in theory, and sometimes, yes it does work, but sometimes they diagnose us wrong and you'll find that you are not out for a longer period than you were supposed to be. You were not treated the correct way or the way you were supposed to.

So, in addition, in boxing if a boxer gets injured, he went to the campus physios and what what. They couldn't help him, the coach said he was going to be able to box until the next year because they telling him they do not know what is wrong exactly with his hands.

I say for players in general they have a role to play in the wellbeing of the players and also the prevention of injuries, and also the coach can come up with more conducive training and tools so that the players are in better condition and more skilled in dealing with different situations and their respective fields. In soccer if your training is not conditioned in a way to deal with the demands of football, you are more than likely to get injured. The medical staff have to be available to us at all times and their expertise, they are able to diagnose each and every problem.

From my side as a coach, I feel there should be a link between the medical staff and the coach because we as the coach wants the best out of the athletes when we want them on the field. However if you are injured you cannot. If there's a link between medical staff and coaching staff and the conditioning of players and informing the coaches of how long a player will be out and we can do planning around the team as well.

- **How do you deal with injury?**

In my playing days for example, we went for trials. If you are under pressure to perform you will ignore the injury and push through. Different situations that you are in will make you to treat the injury differently. If it counts and your future depends on it, you tend to hide the injury.

From my side it will be resting the injury, obviously applying ice. (I'm not sure if I am answering your question). Elevation as well, but I think putting any injury above the heart or whatever and compression as well, but most important is resting and consulting the proper person and applying ice within the first 45 minutes of the injury. Resting is very important. Some players don't want to rest because they want to be in the team.

How I dealt with my injury, I aggravated the injury just because I wanted to be on the team, and I learnt a lot from the errors that I have made, if you are injured, acknowledge the fact that you are injured.

- **If the whole medical team will be present with the team, what will be the result?**

Obviously with more medical staff around, the prevention, taking care of the injuries and recovering of injuries would be much better, it would make more players available to play and also for the coach to pick the best team.

Obviously getting immediate attention than having to get the injury get called. Sometimes you need to get surgery. If you have someone attending to the injury immediately you can prevent having to go for an operation.

In boxing, honestly, the medical staff that UWC sends are never there. I don't know if it's because of lack of communication between the coach and the medical staff, or maybe because boxing is mostly played outside of town. If the medical staff can be available there, I'm 100% sure that some of the issues that we have encountered will be solved immediately.



APPENDIX 12

INTERVIEW WITH COACHES

- **Please introduce yourself.**

My name is Elvin Opperman, I'm the cricket coach at the University of the Western Cape.

- **Here we want to discuss prevention strategies for injuries that is faced your by players. Are there any strategies for prevention practice with the cricket team?**

In general we do have four cricket teams and you..i guess priority shifts medically from the first to the fourth team. For the university I would say, they do come into contact with the facilities that's on the university, for instance the physiotherapy facility or something like that. I think prevention of injury there is little. If you talk about prevention, what do you actually mean?

- **How to avoid the injury from happening.**

Like I said ya..it depends on the teams. First team they would most likely to have that engagement, but lesser engagement say from second, third and fourth team. They are more focussed on the first team and less focussed on the other teams.

- **What role did the coach play and the medical staff in the prevention strategies of the athletes? What is your role?**

As a coach, like I said, sometimes you do have a physio or bio that has been assigned to you. The management will get in touch from the university side. If they are available you can call on them, but if they are not there, there is nothing you can do. Depending on the seriousness of the injury. I have had people that fractured their thumbs and fingers, somebody broke their leg on the field and they had to call the ambulance to take him to hospital.

- **What are the common injuries in cricket?**

There is different injuries, but the common injury, for athletes will be hamstring injuries, there's probably also prevention..they could have stretched. There is other injuries as well because it is a contact sport and the ball is very hard and it goes at a certain velocity, so you do get injured, your fingers and thumbs and stuff like that. Also shoulder for the bowlers, you do try to warm-up, you do try to do certain exercises, but also comes into play.

- **Can you tell me more about the warm-up, is it important for your players to focus on the warm-up before getting into competition?**

The warm-up is important because for all the sport it is important to warm-up for your muscles. You have to stretch. It is important for players to warm-up before they play, but cricket is a sport that runs through the day, you will warm-up maybe the morning, but only plays in the afternoon.

- **After the match or game, do you do something like cool down? Or that is not important for cricket?**

It's important, like I said..many players will do the cool down and many players won't. Sometimes they will sit down and try to do some stretching, but you know players and youngsters..if it's not enforced on them, they will not do it.

- **What is your role as coach for injury prevention strategies?**

I am gonna use some of the swimmers I have now in actual fact, we have four different types of swimmers, w have the swimmers that has not trained a lot during the year, they have not been very active, now it comes to competition time, and we are at a certain stage of our training programme, now these guys cannot cope with the training and this is where they have muscle fatigue and they have lots of excuses for not performing and this is where injuries start to pick up. Because now I sat that guys we are 80% of our training calendar, but because you have not trained for the past four months, you coming in a new guy and it hurts a lot. The worse part is, we have one month left before competitions, you are not performing at your normal Western Province competitions because now you have not trained, you are injury prone. The first leg is so fast and the second leg, you get cramps. The recovery time for these students are so long. We don't have the facilities of physios and bios being readily available. We have sprinters and distance swimmers, the sprinters normally use muscle strength and we bring them to the gym to build up the muscles and those kind of things. There is actually guys who say they don't want to do this and they don't want to do that. When it comes to sprinting, continues sprinting, it's hard. You give 90-100%. This is where the guys normally get hurt a lot you see. And then there's guys who just say but they are tired today and they don't want to. He gets a cramp, he is out of training for the next two and a half hours. The injury problem is something that we really need to look at. We have different types of injuries, when it comes to shoulder injuries, it's different than just being the muscle. You get thighs and the calves and all of that. For each one it's different and what we have is some of the guys got muscles that recover quick and others don't have muscles that recover quick. They freeze up, they stay out of the water. Tomorrow he comes back and he does not stretch for half an hour, he will o sit on his phone. You need to have that communication with the swimmers, because you have first and second years, the guys actually start to know, but younger ones are on their phones. He does not come to do stretching, he stretches with his mouth. After half an hour I would say put all the phones away. You have to stand down on certain guys, it's not nice, but they need to get into routine and when they get into routine the injury part will become less and that's what we need to look at.

- **What is your relationship with your players, do they understand what you are saying? Do they understand the instruction that is given? For both cricket and swimming.**

For the senior guys, they actually know the programme. Because you have been with me for 2-3 years, the programme actually extends, you are doing more but less. What happens now, if you are over 14 years you go to the gym, and that's it, you start to use the gym. For the younger ones, no gym. We use the track and those kind of things. For some of them, yes, the younger ones do go with the programme, it's actually when someone get tired that they do not want to do things, they fall back on the old system. You need to correct them all the time. If I teach you something, I'm not going to give special time to you as an individual to check when we do training, I tell all of you to do swimming, when I say do free style, I expect you to do it. I taught you the basics, arms straight and breathing to the side. I'm not going to sit with one person. It delays everything so yes, there is instructions that you need to make clear to them. The only thing I'll probably do is, I'll shout a name saying you doing that wrong. Yes, most of them understand what we are doing.

- **How about the players for cricket, do they understand?**

Yes, but it also depend on the levels. You get different levels when players started to play. Some have been playing longer than others. So technical terms they do understand, but there will always be a difference in the players, so you will always have to explain whatever again. And with the university, they have been playing for three to four years. I think they do understand, but some needs to get in the rhythm of things.

- **How do you handle injury during playing season?**

We do have our warm-ups, but specifically when the player gets injured, it's best practice you refer him to the best bio because you can injure him more and you don't want to withdraw him from the competition. In some cases if we are not playing here or whatever, depending on the injury, we phone the ambulance or medical care. In our case there is also a problem with students because we don't know how the medical aid works..(laughs). At UWC, you understand, if they cover the medical fees or not. You refer him or you get medical help. If you do not have a physio or a bio at that time.

With regards to swimming is that that if you are coaching on pool deck, I want you to have a level one first aid certificate. If you are coaching you need to know a little about injuries and if you don't have it, I'll make sure that you get it. Little injuries like muscle fatigue and and those kind of things, it got some people and they refer to some tablets you have to use for your muscles, you need magnesium, you need bananas. Why don't you eat this and that you come here and you want to look muscle man, why don't you stretch? These are the little things that these guys don't realise. Some guys I put hand paddles on, which you need more upper body strength, and there's lots of guys that does not have upper body strength and with regard to swimming I don't need a muscle guy, your muscles need to be leaner and longer, I don't need bulk because bulk is not gonna work for you. Then we have different types of injuries that we have. Like these guys with no muscles, you put them in cold water, 10 minutes he is there, he is out. He is shivering like mad and they ask, "do you have a blanket?" These are the things we need to have at hand and these are the things I will say with severe injuries. I normally send out the van.

- **Are you satisfied with the possibilities offered by the university to meet the strategy plan for the prevention of injuries required? Are you satisfied with the facilities here at UWC in treating the injuries or preventing the injuries?**

At the moment now, yes we have the opportunities. The facilities are there, but we don't have the people to come out here to manage those kinds of things, and that is actually where our big concern is. I have been talking to the manager and I said to him, I want a physio, I want a bio, I want the gym, I want my training times, I want to close it, I don't want anybody, if it's my senior team, my S.A team, I only want those people.. if anything else happens and the last thing, I want a psychiatrist because some of the guys minds are not right or what they are thinking, because when it comes to Friday, they don't train, it's party, it's party until Monday. Monday he can't come because he is too tired and this is why I am saying we have everything, we have not put it all together. At some of the sports, probably the cricket or the rugby, I don't know how they work, but they got people. Does the athlete get the benefit out of that? Do we promote the athlete to be part of that and not of when it comes to Fridays, he's already in party mode. Because he's not going to go to physio on a Friday night. We don't mind people doing that, but we are limited especially now, when it comes to championships. I expect, I spoke to them to be here on time, I expect you to give me 90 -100% on training. If you have an injury come tell me 'cause I want to see, I want to do something about it and I'm trying to prevent..you don't give me 120% because I know if you give me 120% you will not get out of the water and I won't see you for the next week because of an injury and now I try to nurture them, but I don't have someone to support me. Am I doing the right thing? I'm just the coach..i've got first aid, that's what I can do. But when it comes to injuries, I can't treat injuries and I don't tell them recovery periods. I don't have all of that. I have certain skills, like I said, the university has it all. We need to start to manage it in such a way that it is on a rotation basis. When I say rotation base I mean whatever happens in rugby, must happen in swimming, cricket. We must treat everybody the same. It's little things but it's a system that works for everybody.

- **How regarding physiotherapy, according to my knowledge there is a physiotherapy clinic, do you have a relationship with this or your players?**

Our manager has a relationship, mainly with these guys. What is actually happening is, it came out as..the second and third years want to come out, but here is a cost involved, and we say no cost involved. You need to go log hours, what I'm saying is, if you can spend hours in Pinelands or in Cape Town, why can't you just log it here where I am training? I will log it, I will sign it. This is the kind of thing that we need, the support. But yes, I can tell you now, if it goes to national, if we have the nationals here then I will say the same thing to the physio. You see to the players first and everybody else that wants a rub you charge him R50 or R100. But your players and your athletes that are here, you see to them first. When we have a break, you can do whatever. But I'm saying between that time and that time you must be available for the players. The facility is there, everything is there, we don't have a plan to actually manage it.

- **You mentioned something earlier about some coaches having the training on how to make a medical aid for something like this. How do you discover injuries by conducting the athletics afterwards, after the players have an injury, how do you follow up on him to know how he is rehabilitating?**

What I normally do is..the parents, the parents is my number one because I know that most of the parents have medical aid for the child and its always trying to be in contact. If the child does not come back in to action within two, three days, I make it my mission to go and visit and see where are you? What is wrong?

- **And how is it for you?**

My problem with the sports and clubs is that it varies everywhere, it varies with treatment. I'm gonna stress that from the first side to the lesser sides. More importance is given to the first side and less id given to the players, or even you start off to play a

certain sport so there's no continuation of support right through. From my side you can say the first team they will be contacted, obviously the physio and the management will be contacted because those players bring a certain value to the team and to the club in itself and you don't want to lose those players so there might be more effort. Your second and third team does not get the same treatment.

- **How do you discover injuries?**

When the injuries occur most of the time a physio or bio is available. Whether it is the main varsity side or the club side or the second or third side, there is someone available when the injury occurs. So from there it is basically a two way thing where the players makes it their mission to follow up on the coach and say this is where I am with my injury and the coach say look here this is how far you are in the league. Where are you with your injury and what do you need? So that we can get you back into the playing field. Because now with one down..yes, we may replace him with other guys in the squad, but he may have been of value at the time we lost him.. so then we need to find out exactly when he may come back and if he will be or may be at the same level he was before the injury.

- **In summary, what are the barriers or factors that challenge the implementation of the prevention programme?**

Players actually not following the recovery programme or process given to them. You know you tend to give these guys everything, this is what they need to do.

- **What you mean by giving them everything? The accessibility to the rehabilitation?**

Everything!! In fact you give him that accessibility to the rehab program and make him understand in terms of recovery, but they are not actually responding to them or actually not doing or going through with the recovery programme and in turn they do come back but they actually recover properly or perform as they would or as they were before.

Most of the athletes, in actual fact, they need to be spoon fed or they need to have you with them. We don't have that professionalism, some of the kids, some of the athletes they just say, 'I'm injured, I'm over' I need to be in the final. They don't have that determination. Their recovery period must happen so they do something with regard to that. Then you get the others that say, okay, I'm injured now I don't think I will make it. That negative thoughts in actual fact, that's why you need someone to always be with them, to promote them and give them positive ideas. You can't go negative. The other athletes, you need their support to support him as he said if he's a vital player that in your middle he creates a lot and you put someone else there, it becomes the mindset that every player is..we need to get them up. You need to get someone exciting their game, part of their job will also be, hey come you guys, help him do this and that. We can't play as a unit if the rope is broken.

The challenges, I think maybe is how the athletes assess themselves. You give them the information like for instance they have to have a certain amount of balls during training because they gonna have a long Saturday on the field. The challenges, they will probably know where is their correct optimum of performance before they go into a game and not burn out on the day of play.

- **Regarding the accessibility of services and quality, is it okay?**

Yes, the accessibility and services at UWC is fine.

What is the attitude of the athletes themselves? If I have a top athlete, I'm not going to send him to Tygerberg, because Tygerberg the healing process is so long, you sit and wait 24 hours before someone sees you, then you need to go and lay in the corridor for another 6-8 hours, then you must wait until a doctor is available. I won't send any of my people to Tygerberg. You go to a private doctor or hospital where they get attention immediately. I won't also send my athletes to a clinic, at the clinic you need to go tomorrow and sit for 4-5 hours depending on the number of people. The recovery period depends a lot on where you send them for treatment.

I can't generalise, I can speak from experience. I coach the sevens team at the rugby club over here. Previously I had challenges from when you wanted them to see specialists. Obviously there is challenges like resources and finances for students, but then I thought afterwards I need to revisit my strategy. Being a student, a staff member here, iv'e had access to different departments and we have quality people here. So I have good relationships with the sports department and the physio department and I started to engage and established relationships with the HOD's of the departments. It's not necessary to pay all that amounts of money when we have all the services here. So after a year or so of building good relationships in terms of injuries my players go to the biokinicist . they will see the physio there, so everything is here. Previous challenges I had was getting access to the professionals and obviously finance for the students.

- **What is your opinion the reason for this challenges within the university? Does the policies of the university need to be revised or the implantation of the prevention programme?**

I think the policies actually do need to be revised because if you want to better the university on an academic level, but sporting level as well, the university itself need to work together in terms of all of the sports and not only that particular sport, they need to work hand in hand with each other to see where they can help each other in order to help each other. The university itself need to buy into the idea not only this specific sport can shine or that specific sport can shine, all the sport can shine if we do put effort in it.

- **What facilitators make work possible and useful for the prevention strategy? What your suggestion for your team or for the policy or advise for the university of the Western Cape?**

I think what they've done last year, part of the thing that they did, all of the coaches, we went for this..what was it? They brought a psychologist in which actually supported most of the coaches. Their thinking, which was quite nice. Yes, they brought in the one, but what about the other six? This is where I'm saying the policy needs to start to change because somebody mentioned to the psychologist about their player. You get the coach right first and then the coach can talk to the player. We need to have the policy where it provides for each and every one. We need a system, that sport, that sport and that sport we will be there. If you are training that day or that day, we will be there.

- **Lastly, I want you to introduce yourselves.**

My name is Clement Trout, UWC sevens rugby coach.

Gerald Wessou, currently UWC head coach swimming.

- **Thank you so much.**



APPENDIX 13

INTERVIEW WITH PHYSIOTHERAPISTS

- **Okay, what's your name?**

Brent

- **Brent I'm sorry, I'm hyped up. Mr Brent, do you think that implementation for the prevention of injury strategy is important for athletes?**

Yes, injury prevention strategies are very important because this will help the athlete to look after his body and also to be cautious of different injuries that you might occur.

- **Is there a role for medical staff with athletes?**

Yes, there is a role for medical staff, the role of the medical staff is, if there is a athlete that is injured, you can bring the medical to help or rehab the this athlete and get the athlete back to his full functional level and also the role for medical staff would be to guide the coaches on certain aspects of sessions of their sessions and give them more insight of how the athlete need to recover.

- **So, do you have like good relationships between coaches and athletes?**

Yes, we as the medical staff have to have good relationships with the coach and also the athlete, kind of in between, but also somebody that will see, look after the athlete's body for the athlete to perform optimally and for the coach to get most out of the athlete.

- **Do you have a programme in your job for improving the implementation prevention strategy and how can you do it?**

Mostly, we have, as physiotherapists, a rehab class for injured players and for injured players who have knickles, and we have a certain class in the morning or once a week or twice a week where we do special rehab for the athletes.

- **How do you handle athletes who experience injuries?**

If a athlete is injured, he comes to me, if the injury's acute, then we go through a certain process. They call it R.I.C.E, rest, ice, compression and evasion, try at the 72 hours to get acute inflammation, get that the body working it and start to repairing itself. Me as a physiotherapist is helping to fasten the healing the process and also get the patient to rehab stage where they can start functioning optimally.

- **How can you discover the injury?**

If I'm with the team, mostly and the player will report the injury to me and from there we liase with the coach, or if the coach is busy with the athlete on the field and he sees the athlete picked up an injury he will stop the athlete and tell the athlete to come see me.

- **So what is your role as the person when the injury happens?**

My role, when the injury happens, I do a quick assessment of the injury.

- **It's immediate?**

Immediately you have to do assessment of the injury, if it's a game day you'll get a certain amount of time to do the assessment, if it's practice you can actually take your time to bring the athlete to the medical room, assess the athlete and get a diagnosis and if the athlete needs further referral, we'll refer him.

- **What are the barriers to the implementation prevention programmes?**

There are some barriers where athletes hide their injuries because they want to be on the team and also the athlete's commitment to the rehab, some of them don't complete rehab and some don't complete treatment, so they will have injury or still stay injured for longer, so that's also a barrier where you have to work with an athlete, they have to tae responsibility for some stuff.

- **So the time is not barriers for your job?**

You specifically give a time to the coach, how long a athlete is out and you give them the time frame of when the athlete will be back.

- **Is that dependant on you to tell the athlete you must get rest? If the injury happens you say to coach the athlete can't practice?**

Some coaches are a bit difficult, but the coaches at times has to understand when athletes can't train.

- **Do you think warm-up is important for the athlete to avoid injury?**

Yes, the warm-up is very important, so it gets the blood flowing, it gets blood to the muscles, so the muscles can start being active and start functioning. It's the time where as the athlete slowly gets into activity and make the body used to the activity.

- **Otherwise the cool-down.**

There are cool down strategies that we have, we have cool down stretches, or we have cool down pool sessions or we do have ice baths where we can..

- **What are the facilitators that make it possible of more useful for the prevention strategy?**

Firstly, taking the benefits of it, if you have a strategy for prevention, you have less injuries and less fatalities and sometimes less injuries, but that's in a controlled environment, where you can control stuff so you can prevent, but if you can't control it, say it's a contact session, you won't be able to control it. Say rugby players will pick up injuries because it's an uncontrolled environment. If it's in a controlled environment you can facilitate the prevention of that injury.

- **Could you tell me about the policy of the university, like these policy for the prevention strategy for the whole athletes, especially the rugby team, there's like staff for the usual/**

Yes, we at rugby, we have a physiotherapist, which I am the head of, then we have fitness and conditioning coaches that falls under me and those fitness and conditioning coaches help to facilitate also by strengthening he muscles and conditioning the player to prevent certain injuries.

- **Do you have any other information that you would like to share that was not part of this interview? Maybe something I forgot to ask you about.**

Mostly..like players do use strapping for practices also to facilitate the prevention of that injury.. so they use protective gear and they use strapping of the ankles for stability of the ankles or it could be they strap ankles because the field is not okay and certain stuff like that. They strap knees because they just came from a injury. We strapping them to facilitate the process to prevent a injury from occurring. I can't think of stuff that you missed at the moment now..my role at training here and especially at university. I work out the intensity of the training. If the intensity of the training was high in the morning, it should be a bit tampered down in the afternoon, or one day is high intensity and some days are low intensity., so that's just for recovery purposes, because we busy with the pre season at the moment , so pre season is much more tougher than in season. In season it's more game related and there we will pick up more some injuries because they have more games and contact and stuff, but during training to prevent certain injuries we work out intensity and time frames and that's where I come in or they ask me what do I do here and especially for strengthening and conditioning guys, how they put out there gym programme.

- **I just want to ask you..did you study physiotherapy? Are you still at UWC?**

I studied physiotherapy, I am busy with my masters degree, I'm still waiting for my results. Me as a sports physiotherapist did extra courses to be more involved and my years of experience helped a lot.

- **What's your name and what is your position here?**

My name is Brent Martin and I'm the physiotherapist of the UWC rugby team, I also consult with different sports codes at UWC as a physiotherapist.

- **So you work with the other teams?**

If they have injured players they can consult me.

- **Like which team?**

Volleyball, cricket. If they have their own physio they wil go to them, but if they don't they will consult me.

- **Thank you so much for time.**

No problem.