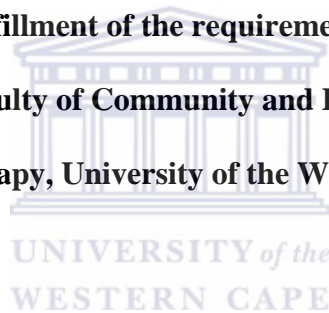


**FACTORS ASSOCIATED WITH FOOTBALL INJURIES IN MALAWI:  
IMPLICATIONS FOR PHYSIOTHERAPY INTERVENTION**

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**Thesis submitted in partial fulfillment of the requirements for the degree of Masters of  
Science in Physiotherapy, Faculty of Community and Health Sciences, Department of  
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## KEYWORDS

Football (soccer)

Injuries

Physiotherapy

Intervention

Knowledge

Attitude

Prevalence

Incidence

Malawi



## ABSTRACT

**Background:** Physiotherapists are part of the medical team involved in prevention and management of football injuries in Malawi. However, in Malawi no physiotherapist is currently involved in prevention and management of football injuries in the Malawi Super League. **Aim:** The aim of the study was to determine the need for physiotherapy intervention in prevention and management of football injuries. **Methodology:** A concurrent mixed method study design was used to collect data. A self administered questionnaire was used to collect quantitative data from football players. Qualitative data was collected through in-depth interviews from team doctors and coaches respectively. Quantitative data was analysed using the SPSS version 20.0. Descriptive data was presented in the form of percentages, means, ranges, standard deviations, and frequencies using tables, figures and graphs. A chi-square test of association and Fischer's exact test were used to study the factors associated with football injuries against prevalence of injury. Audiotaped interviews were transcribed verbatim and expressed ideas were read several times, coded and reduced into categories and themes. Ethical clearance was granted by the University of the Western Cape and relevant authorities in Malawi. **Results:** A response rate of 67.5% was obtained. The mean age of football players was 21.73 (SD=3.295) years. The injury prevalence was 68.9% with 64% of injuries occurring during matches and 37% during training. The majority (84%) of the injuries were sustained in the lower limbs and 52.7% of the players who reported to have incurred an injury had recurring injuries with the ankle joint (33.3%) being the most affected part. Ligament sprain was the most common type of injury (36%) and most of the injuries (36.5%) reported were severe. No medical professional is available to manage injuries during training while team doctors are always available during matches. Recurrent injury was significantly associated injury prevalence ( $P=0.000$ ). Use of protective gear was also significantly associated with injury prevalence both at training ( $P<0.01$ ) and matches

( $P < 0.05$ ). Both coaches and team doctors reported that recurrent injury, psychological, player fitness, and lack of equipment were factors contributing to injury prevalence. Regarding injury management, coaches and team doctors reported sprains and strains as the most common injuries seen in the league. Furthermore, their views regarding injury prevention were sought. Team doctors perceived use of protective equipment as the main strategy of injury prevention while coaches regarded warm up as the main injury preventative strategy.

**Conclusion:** There is need for physiotherapy intervention in prevention and management of football injuries in Malawi.





## DECLARATION

I hereby declare that **“The factors associated with football injuries in Malawi: Implications for physiotherapy intervention”** is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources used or quoted have been indicated and acknowledged by complete references.

Signature.....

Anderson Mughogho



November 2012

Witness: .....

Prof. Julie Phillips

November 2012

## DEDICATION

This thesis is dedicated to my late little sister HARRIET MUGHOGHO who died while 3 years old. The 3 years you shared with us will always be celebrated. May your soul keep on resting in peace, we will forever remember.



## ACKNOWLEDGEMENTS

First of all I am grateful to the almighty God for the gift of life, without which this work could not have been possible.

I would like to express my deepest appreciation to my friend Kristin Fiskaa, her parents, and her husband Anders for their support towards my studies.

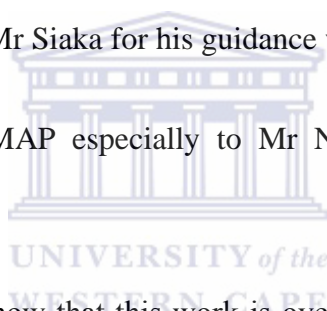
I would like to place on record my sincere gratitude to my supervisor, Professor Julie Phillips for her guidance and encouragement through the process of this study.

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In addition, I am thankful to MAP especially to Mr Ndembe the general manager for accepting my study leave request.

To my friends and classmates...now that this work is over we can celebrate, we conquered the crocodiles!



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## ABBREVIATIONS

<b>ACL:</b>	Anterior Cruciate Ligament
<b>BMI:</b>	Body Mass Index
<b>APTA:</b>	American Physical Therapist Association
<b>CAF:</b>	Confederation of African Football Association
<b>CECAFA:</b>	Confederation of Central and East African Football Associations
<b>COMREC:</b>	College of Medicine Research and Ethics Committee
<b>COSAFA:</b>	Confederation of Southern Africa football Associations
<b>FAM:</b>	Football Association of Malawi
<b>FIFA:</b>	Federation of Football Associations
<b>RICE:</b>	Rest Ice Compression Elevation
<b>SSC:</b>	Stretch Shortening Cycle
<b>SPSS:</b>	Statistical Package for Social Science
<b>SULOM:</b>	Super League Association of Malawi
<b>TRIPP:</b>	Training, Equipment and Regulatory

# **CHAPTER ONE**

## **1 INTRODUCTION**

### **1.1 Introduction to the chapter**

This chapter provides a rationale for the study. It highlights the popularity of football worldwide and the high number of injuries associated with the sport. It presents the problem statement, aim and the objectives of undertaking this study. The significance of the study and the definitions of terms are also outlined.

### **1.2 Background information**

The game of Football, also known as soccer to distinguish it from American football is very popular. Federation of Football Associations (FIFA) estimates that there are about 270 million people participating in football worldwide and 46 million in Africa alone. Football is the number one sport played in every corner of the planet and it is played by men, women, children, and adults at different levels of skill (FIFA, 2010; Bangsabo, 1994). Football as a sport and physical activity is associated with many health benefits that include primary and secondary disease prevention and lower mortality rate (Warburton, Nicol & Bredin, 2006). However, participation in football increases the risk of injury which may cause long term disability for the injured player (Myklebust & Barl, 2005). Further more it increases the risk of long term chronic conditions like osteoarthritis (Linderberg, Roos & Gardsell, 1993). Therefore “participation in sport is a double-edged sword: the profound health benefits gained versus the risk of injury and the associated morbidity and costs” (Klügl et al. 2010 p 407).

Football injuries are high compared to other sports (Schmikli, de Vries, Inklaar, & Backx, 2010). According Schmikli et al. (2010) the incidences of injuries are different according to

the level of exposure. Schmikli and colleagues reported that the incidence of senior football players to be twice than that of the juniors (17.5% vs. 8.1%). In addition it is reported that the incidence of injuries among adult male elite football players is estimated to be in the range between 25 and 35 per 1000 game hours in the Netherlands (Hägglund, Walden, Bahr, & Ekstrand, 2005). Similarly, in female Norwegian football players an incidence of 23.6 injuries per 1000 hours was shown (Tegnander, Olsen, Moholdt, Engebretsen & Bahr, 2008). Furthermore in a South American study done by Gallo, Argemi, Batista, Garcia, and Liotta (2006) it was reported that in one professional team alone up to 10% of the players are unable to play due to injuries.

However, in Africa, there is paucity of published studies related to prevalence and incidence of football injuries. Among the available published data, studies have shown high incidence and prevalence rates. In a recent study conducted in Nigeria, an injury prevalence of 81.6% was reported from premiership, professional, national, and amateur clubs (Azubuike & Okojie, 2009). In another epidemiological study on football players in Rwanda, Twizere (2004) reported a prevalence of 68.1% among first division and second division teams. In South Africa, Bailey, Erasmus, Luttich, Theron, and Joubert (2009) noted an incidence of 39.5 injuries per 1000 game hours during the University of the Free State football team's participation in the Coca Cola League. From the literature review it is evident that a large number of injuries are associated with football worldwide and specifically in Africa. However, comparison between the studies done in Europe and those done in Africa would be difficult as most European studies calculated incidence as opposed to prevalence by African studies. Furthermore, Junge and Dvorak (2000) reported that comparing prospective and retrospective data on the same population of soccer players, found significant differences in the incidence of injuries.

According to Dvorak, Junge, Graf-Baumann et al., (2000) an increased amount of training and games is a risk factor for injury. Furthermore, according to a study conducted by Killowe and Mkandawire (2005) which is the only study done in Malawi, football is the only source of earning a living for most of the players and players who play many games also earn more money. This can thus contribute to players hiding injuries so that they make themselves available for selection and play many games. Consequently, this predisposes players to injury since history of previous injury is considered a big risk factor for injury (Dvorak et al., 2000). The increase in football injuries has prompted FIFA, the governing body to call for the implementation of injury prevention strategies and many studies have been done to prove their effectiveness. Furthermore, Van Mechelen, Hlobil and Kemper (1992), Van Mechelen (1997) and Hawkins, Hulse, Wilkinson, et al. (2001) are of the opinion that injury prevention starts by identifying the extent of injuries. Secondly, it is by identifying the factors and mechanisms that contribute to the occurrence of the identified injuries. These authors clearly highlighted the importance of injury surveillance data which show the extent of injuries. In Malawi, little is known about the incidence or prevalence of football injuries. According to the investigator's knowledge, there are no epidemiological studies done in Malawi and there are no injury prevention strategies being implemented which are based on factors and mechanisms that are specific to Malawi. Since according to Football association of Malawi (FAM), (2011), football is considered Malawi's most popular sport, with increased participation, it could be implied that the prevalence of these injuries in the Malawian league is just as high as in other African countries such as Nigeria, Rwanda and South Africa (Azubuike & Okojie, 2009; Bailey et al. 2009; Twizere 2004).

The high rate of injuries in football needs experts in sports medicine to diagnose and treat the injuries (Babwah & Rogers, 2008). Furthermore, Babwah and Rogers highlighted the need for sports medicine staff that are competent to diagnose and treat various soft tissue injuries,

manage unconscious patients, versed with airway management and be competent to inform the coach of the estimated time an injured player will return to play. Physiotherapists are part of the medical team that manage football injuries. According to Tippet (1990), the therapist's role not only include treatment, prevention and rehabilitation of injuries, it also involves provision of education to athletes and coaches, and management of the risk and precautions needed to prevent injuries. The therapist is supposed to always be available during training and matches. This helps the therapist to identify the common mechanisms of injuries which can help to plan and develop injury prevention strategies. Brukner and Khan (2003) highlights that the primary role of the medical team is injury prevention which include; the use of protective equipment (Brukner & Khan, 2003), improvement in nutrition and diet (Deakin & Brotherhood, 1992), good psychological preparation and adequate rehabilitation (Oakes, 2003). Included also is; proprioception and coordination (Tropp, Alaranta & Renstrom, 1993), flexibility (Cabbie, Brunnell, Finch, Wajswelner & Orchard, 2006), strengthening, pre-season screening and testing, (Chandler & Kibler, 1993) warm-up and cool-down (Best & Garret, 1993). Donaldson and Hill (2002) reported that it is the responsibility of football clubs to implement programmes developed by a governing body like FIFA. Therefore, the medical team is responsible for implementation of sport safety rules, and preventative measures based on local and international policies.

However, according to Killowe and Mkandawire (2005) and indeed the knowledge of the investigator, most Malawian Super League football teams do not have qualified personnel in Sports Medicine. This has resulted to teams employing clinical officers and nurses who have little knowledge relating to sports medicine, and as such their clinical judgement could be over ruled by the club management to allow players to return to play before adequate rehabilitation. This could contribute to the high prevalence of injuries as many players could be prone to recurrent injuries and not receive adequate rehabilitation before returning to play.

Currently, the day to day management of injuries is administered by people with inadequate knowledge of sports injuries, as raised by Waddington, Roderick, and Naik (2001).

Killowe and Mkandawire (2005) reported that about 65% of Malawian football players in the league are not employed and depend entirely on football as means of earning their living. Therefore, an injury to a player not only has a physical impact but also could have economic consequences (Azubuike & Okojie, 2009). It is therefore important that teams employ medical personnel with adequate knowledge in identifying injuries and rehabilitation of players, since previous injury has been found to be the biggest risk factor for new injuries (Hägglund et al., 2005). Hawkins and Fuller (1998) also observed that many people involved in football are not aware of measures for reducing the risk of injury which consequently affect the players.

It is in line with the discussion above that the need for physiotherapy intervention in the management of football injuries in the Super League of Malawi should be highlighted. The author is of the opinion that the involvement of a physiotherapist would improve injury management through provision of hands on treatment, implementation of injury prevention strategies, injury surveillance, rehabilitation, and return to play thereby reducing the prevalence and injury effects on players and the team.

### **1.3 Problem statement**

According to the knowledge of the researcher, physiotherapists are part of the medical team managing sports injuries. Though physiotherapists are available in Malawi, according to the researcher's knowledge there are no physiotherapists involved in prevention, treatment, and rehabilitation of football injuries in Malawian football teams. The consequences of injuries cannot be over emphasized. Injuries put players at risk of developing permanent disabilities



which could have a life long impact. Economically, injured players incur losses in allowances and bonuses through loss of time of play since football is the players' only source of income (Killowe & Mkandawire, 2005). Football injuries are a health concern for football players and also expensive for football teams since the teams spend a lot of money on medical bills for injured players (Gallo, Argemi, Batista, Garcia & Liotta, 2006). This study will attempt to highlight the need for physiotherapists to be involved in alleviating these problems.

#### **1.4 Research question**

Is there a need for physiotherapy intervention in the prevention and management of football injuries in the super league of Malawi?

#### **1.5 Aim of the study**

The aim of the study is to determine the need for physiotherapy intervention in the prevention and management of football injuries in the super league of Malawi.

#### **1.6 Objectives of the study**

- i. To determine the prevalence and factors associated with football injuries in the Super League of Malawi.
- ii. To determine awareness of injury prevention measures among football players in the Super League of Malawi.
- iii. To explore the perception of coaches and team doctors regarding the role of physiotherapy, risks, prevention and management of football injuries in the Super League of Malawi.

## 1.7 Significance of the study

There is evidence that prevention strategies can reduce the incidence of injuries (Mandelbaum, Silvers, Watanabe et al. 2005; Heidt, Sweeterman, Carlonas, Traub & Tekulve, 2000). According to the investigators knowledge there are no prevention strategies being implemented in Malawian teams and physiotherapists are not part of the medical team that is involved in management of injuries. Therefore, this study will highlight the need for involving physiotherapists in the management of injuries. This study may help to highlight the need for better services for the players from their respective clubs. The findings of the study may also help all the stakeholders in sports: the Ministry of Sports and culture, the National Council of Sports, Football Association of Malawi and the Super League of Malawi with information for planning and implementation of programmes targeting injury prevention and rehabilitation.

## 1.8 Definition of terms

**Football injury:** Any physical complaint sustained by a player that result from a football match or football training, irrespective of the need for medical attention or time loss from football activities (Fuller et al, 2006)

**Injury prevention:** The implementation of interventions to reduce the occurrence and the severity of bodily injuries caused by external or internal mechanisms before they occur (Lawrence, 2008).

**Physiotherapy:** also called physical therapy, is a dynamic profession with an established theoretical and scientific base and widespread clinical application in the prevention of injury, restoration, maintenance, and promotion of optimal physical function (APTA, 2001).

**Team doctor:** Currently in Malawi, any person who provides first aid during matches is referred to as a team doctor. Most of the Super League teams use clinical officers or nurses and these are the ones referred to as team doctors throughout the study.

**Mixed methods:** Mixed methods investigations involve integrating qualitative and quantitative data collection and analysis in a single study (Creswell, Fetters, Ivankova, 2004).

**Premier league:** The second tier football league in Malawi lower than the Super League.

**Sequential exploratory design:** This design is characterized by the collection and analysis of quantitative data followed by collection and analysis of qualitative data, and the two methods are integrated during the interpretation phase of the study (Creswell, 2003).

## **1.9 Outline of thesis**

Chapter one outlines the background of the study. It describes the problem statement and the research question. The aim of the study and the objectives are explained. The chapter also includes the significance of the study followed by definitions of the terms used in the study.

Chapter two reviews literature regarding factors associated with football injuries, prevalence of injuries and injury management and knowledge of football players' regarding injury prevention strategies.

Chapter three considers the methodological aspects of the study by describing the research setting, the population sample, and the design. It outlines in detail the procedure of data collection and analysis. Issues of ethical consideration are noted.

Chapter four reports the quantitative results of the study while chapter five considers the qualitative qualitative results of the study.

Chapter six presents the discussion of both quantitative and qualitative results of the study. Furthermore, the limitations of the study are also highlighted.

Chapter seven summarizes the findings of the study. It concludes the study and suggests recommendations to various stakeholders.



## **CHAPTER TWO**

### **2 LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter reviews the literature and describes the current understanding of factors associated with football injuries. While focusing on factors associated with football injuries, it also establishes the prevalence and incidence of football injuries world wide and in Africa in particular. The literature on injury profile is also reviewed. This chapter also reviews the literature on factors influencing football injuries. It also covers roles of several stakeholders in injury prevention and management. Lastly, the injury prevention strategies are reviewed.

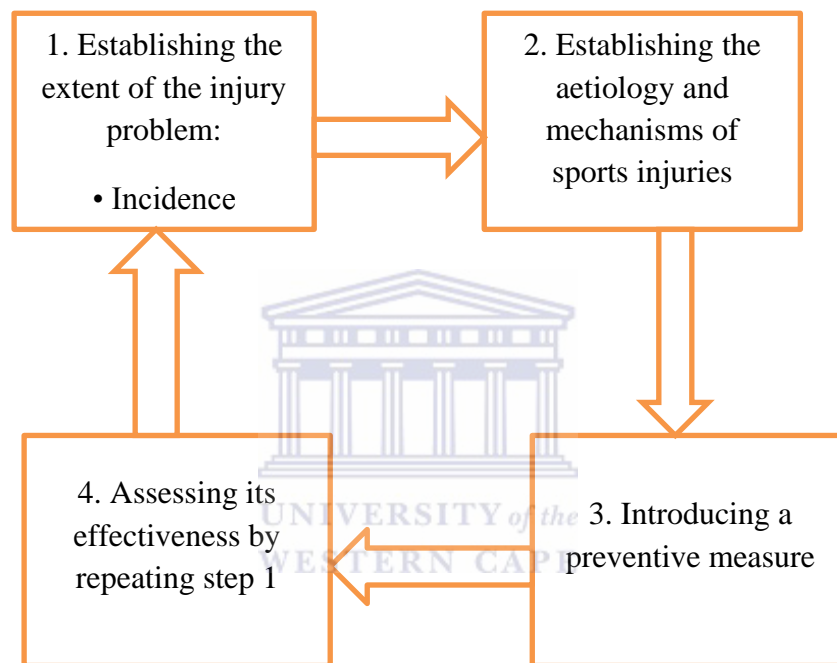
Literature was sourced from journal articles, published and unpublished studies and these were sourced from the University of the Western Cape Library, general internet searches, and the following search engines PubMed, SPORTDiscuss, and Google Scholar, using the following key words: Football (soccer), Injuries, Physiotherapy, Intervention, Knowledge, Attitude, Prevalence, Incidence and Malawi.

#### **2.2 Theoretical frame work**

The aim of this study is to highlight the need for physiotherapy intervention in the prevention and management of football injuries in Malawi. In line with the objectives of this study, a theoretical framework based on Van Mechelen et al. (1992) will be used to guide the study. Van Mechelen et al. (1992) described injury prevention research in four steps.

- Firstly, the extent of injuries must be known and reported according to the incidence and severity of injuries.
- Secondly, the risk factors must be identified and how the injuries occur must be established.

- Thirdly, introduce intervention to reduce the future risk and/or severity of injuries.  
The intervention should be based on information gathered about the aetiological factors and injury mechanisms identified in step two.
- Finally, the effect of the intervention must be evaluated by repeating the first step, which can be achieved by analysing the time trend of injury patterns or, by conducting a randomised clinical trial.



*Figure 2:1 Four step sequence of injury prevention research*

For the purpose of this study, the first two steps of the framework will be used as currently there is no data available regarding sports injuries in Malawi. This study will attempt to determine the prevalence of injury in the Malawi Super League. Secondly, it will attempt to determine the factors associated with football injuries in Malawi.

### **2.3 Football**

Football is a game of contact (McGraw & Ozanne-Smith, 1997). It requires physical strength and different skills at different levels (Steffen, Bakka, Myklebust, & Bahr, 2008). It involves

running, explosive sprints, duels, jumps and kicks which require maximum strength and anaerobic power of the neuromuscular system ( Hoff & Helgerud, 2004)

It is estimated that more than 26 billion television viewers worldwide watched the FIFA 2010 world cup (FIFA 2010). FIFA further estimates that there are 270 million people participating in football worldwide with 46 million in Africa alone. Participation in football has health benefits but also injury risk (Klugl, et al., 2010). Its popularity has also increased the number of people playing soccer thereby increasing the number of injuries (Dvorak & Junge, 2000)

#### **2.4 Prevalence and incidence of football injuries**

The high prevalence and incidence of football injuries has been recorded in studies done worldwide. The incidence of these injuries among adult male elite football players is estimated to be ranging between 25 and 35 per 1000 game hours (Hägglund et al., 2005; Junge, Dvorak, Graf-Baumann & Peterson, 2004). In another study conducted by Hägglund, Walden, and Ekestrand (2009), which looked at injuries among male and female elite football players, a total of 11 female and 14 male football clubs from the Swedish premier league were followed prospectively. The results showed that the incidence was higher among male players (78%) than females 66%. However, comparing the volume of soccer injuries, the incidence and the need for medical attention per level of exposure and age category in the Netherlands, Schmikli, et al. (2010) observed that the incidence was lower (8.1%) in junior players as compared to senior players (17.5%). Furthermore in another study done retrospectively on the epidemiology of injuries in amateur Greek soccer players Tsiganos, Sotiropoulos, and Baltopoulos (2007) followed 301 players who participated in the study. A total of 1745 injuries were recorded translating to 5.8 injuries per player. On the other hand,

studies done on female elite and non elite players have shown ranges between 12 to 25 injuries per 1000 game hours (Tegnander et al., 2008; Jacobson & Tegnär, 2007) which is on the lower side compared to their male counterparts.

Although there is a paucity of studies on football injuries in Africa, the available studies have shown a high incidence and prevalence. For instance Azubuike and Okojie (2009) in a study on 196 players from the Nigerian Premiership, national and amateur clubs recorded an injury prevalence of 81.6%. Furthermore Twizere (2004) reported a prevalence of 68.1% in Rwanda in an epidemiological study conducted amongst two leagues. In another epidemiological study of 103 first team high school female football players in nine schools in Johannesburg, a prevalence of 46% (Mtshali, Mbambo-Kekana & Stewart, 2009). Furthermore, in a study in South Africa, Bailey et al. (2009) recorded an injury incidence of 39.5 injuries per 1000 hours during matches in the Coca Cola league. The incidence of the study conducted in South Africa by Bailey et al, showed 39.5 injuries per 1000 game hours which is among the highest comparing with studies in Europe.

In most studies it has been observed that most injuries occur during games than during training (Azubuike & Okojie 2009; Yard, Schroeder, Fields, Collins & Comstock, 2008). Hägglund et al. (2009) in a study on injuries among male and female elite football players in the Swedish premier league recorded an incidence of 28.1% during matches and 4.7% at training. However, Gallo et al. (2006) found contradicting results finding that the majority of injuries occurred during training rather than matches. Furthermore Azubuike and Okojie (2009) recorded recurrent injuries at 1.5% and the most common injuries being ligament sprain (18%), ankle (10%) and knee (7%).

From the reviewed literature above, results of these studies cannot be compared neither generalised since most studies investigated players at different age groups and level of



competition. In addition most studies conducted in Africa have not looked at injury incidence per 1000 hours but prevalence in different levels of competition and different age groups. This makes it difficult to compare studies done in Europe and Africa. Therefore, there is need for African studies to start investigating the specific age groups and level of play.

## **2.5 Area, nature, mechanism and severity of football injuries**

The common sites of injuries in football have been previously established and recorded. Several studies have reported that most football injuries occur in the lower extremities (Hootman, Randall & Agel, 2007; Gallo et al., 2006; Twizere, 2004). Gallo et al. (2006) studying the epidemiology of injuries in a professional soccer team in Argentina, observed that 83% of injuries occur in the lower extremities. This author further observed that most of these injuries occurred in the hamstring muscles (28%), quadriceps (14%) abductors (13%), and the knee (8%). Hootman et al. (2007) also found that most injuries occurred in the lower extremities. Bailey et al. (2010) concurred with these studies that most injuries occurred in the lower extremities but also observed that the ankle joint incurred more injuries (47%) than other parts of the lower extremities.

Regarding the nature of injuries, Gallo et al. (2006) reported that most injuries in football were muscle related (45%), followed by tendonitis (15%) and sprains (15%). However, Bailey et al. (2010) observed that most injuries in football are sprains (60%) and most of them were considered as minor. Furthermore, Tsiganos et al. (2007) while studying the epidemiology of injuries in amateur Greek soccer players reported that most injuries were strains (33%), overuse (27%), and sprains (25%). These authors further observed that the most common injured body part was the thigh (38%), followed by the ankle (27%) and the knee (13%). Overuse injuries were also recorded in the Achilles tendon and compartment syndrome.

While reviewing literature on soccer injuries in the lower extremities, Wong and Hong (2005) reported that most literature reported that the most common injury mechanisms in soccer were tackling, being tackled, shooting, twisting and turning and jumping and running. Tackling was observed to occur when players fight for possession of the ball as players do not respond quickly enough to the unpredicted movements of the other player (Wong et al 2005). Furthermore it was observed that uneven surfaces contribute to injury cause since more loading occurs on the ligaments and muscles (Wong et al 2005). It is further reported that incorrect footwear predisposes players to injury as it does not provide enough frictional force to prevent the player from slipping and falling (Wong et al 2005). The other injury mechanism reported is too much frictional force on the ground which limits twisting and turning thereby increasing loading and causing injury, incorrect landing and shooting (Wong et al 2005). Non body contact is also said to be a primary injury mechanism. Hawkins and Fuller (1999) observed that non contact injuries (59%) were a very common injury mechanism than body contact (41%). In addition, these authors observed that 39% of the injuries were caused by running, shooting, turning, and jumping.

Severity of injury has been described differently by different authors. According to Gallo et al. (2006) severity was described according to number of days a player misses during training and matches. The injuries causing a player to be absent from 0-6 days was categorized as minor, 7-29 days was categorized as moderate and severe for more than 30 days. In their review of literature of lower extremity injuries in soccer, Wong and Hong (2005) also reported the difference in severity categorization by authors. According to Morgan and Oberlander (2001), Ekstrand and Guillquist (1983), minor injuries were those that caused players to be absent for less than one week (0-6 days). In addition those who were absent for more than one week but less than one month, their injuries were considered moderate while those who were absent for more than 30 days, their injuries were considered major. However

other authors further divided the minor group into slight (one to 3 days absence) and minor (four to seven days absence) (Kakavelakis, Vlazakis, Vlahakis et al., 2003; Soderman, Adolphson, Lorentzon et al., 2001). However, this study was based on the description of severity by Goga and Gongal (2003) who classified injuries into three categories: mild, moderate and severe. Injuries which caused a player to be out of play for one week or less was considered mild while those out of play for two to three weeks were considered moderate and those taking four and more than four weeks were considered as severe.

## **2.6 Factors influencing football injuries**

Factors influencing injuries in football have been categorized into extrinsic and intrinsic factors. Intrinsic factors are related to the individual biological and psychological characteristics of a person. Extrinsic factors are related to the environmental variables (van Mechelen, et al., 1992; Taimela, Kujala & Osterman, 1990).

Intrinsic factors include age, joint instability, muscle strength, muscle tightness, muscle strength asymmetry, previous injury, inadequate rehabilitation, and psychosocial stress. Extrinsic factors include, but not exhaustively, level of play, exercise load (amount of competition and practice), equipment, playing field condition, and position played, rules, and foul play.

### **2.6.1 Intrinsic factors**

#### **a. Age**

Several studies have reported that the incidence of injury increases with age (McGregor & Rae, 1995; Inklaar, 1994; Schmidt-Olsen, Jorgensen, Kaalund et al., 1991). Similarly, Chomiak, Junge, Peterson and Dvorak (2000) and Ostenberg and Roos (2000), reported an increased incidence of injury with increasing age of players in their studies. In addition,

Orchard and Seward (2000) while studying risk factors for lower limb muscle strains among Australian football players reported that older players of more than 23 years were prone to sustaining hamstring and calf muscle strains. Furthermore, it has been observed that increased risk of injury among players aged between 26 and 30 and those younger than 26 and older than 30 years is 55% (Stevenson, Hamer, Finch, Eliot & Kresnow, 2000). On the other hand other studies have not found any relationship associating age with injury (Chomiak et al., 2000; Sodderman et al., 2000).

#### **b. Previous injury and inadequate rehabilitation**

Studies have shown enough evidence that previous injury especially when followed by inadequate rehabilitation places players at increased risk of suffering an injury (Chomiak et al., 2000). It has been observed that previous injury not only places athletes at increased risk of ankle injury (Mckay, Goldie, Payne & Oaks, 2001), but also knee (Messina, Farney & DeLee, 1999) and all other injuries (Chomiak et al., 2000).

Injury in the lower extremities reduces the ability of static and dynamic stabilizers, and may also reduce the afferent innervation of the joints (Murphy, Connolly & Beynnon, 2003). For instance, injury to the anterior cruciate ligament increases anterior knee laxity which leads to increased episodes of giving way, but it also affects neuroreceptors that innervate the joint (Dhillon, Bali & Prabhakar, 2011).

In a study investigating the association of injury history and muscle strains in the lower extremities among Australian football players, Orchard (2001) observed that an injury sustained within the last eight month increased the risk of sustaining a muscle strain at the same location for the hamstring, quadriceps, and calf muscles. Furthermore, another study which compared the incidence of ankle sprains in players using braces and those not using braces, the control group with previous injury (IR=0.86/1000hours) had a significant increase

of ankle injuries compared with the control group with no injury history (IR=0.46/1000hrs) (Surve, Schwellnus, Noakes & Lombard, 1994).

However, several other studies have indicated a lack of relationship between previous injury and recurrent injury incidence. Baumhauer, Alosa, Renstrom, Trevin, and Beynnon (1995) observed that collegiate athletes sustaining a mild grade one sprain had no increased risk of ankle sprain. In another study on the relationship between balance and ankle injury, it was observed that previous injury did not make athletes prone to sustaining ankle sprain among 127 soccer players (Tropp, Ekstrand & Gillquist, 1984).

Some of the reasons reported for the increased risk of a recurring injury in athletes with previous injury are, poor proprioception, lack of muscle strength and muscle imbalance, ligamentous laxity, and muscle stiffness (Engstrom & Renstrom, 1998).

Other studies have identified inadequate rehabilitation as an injury risk factor. Chomiak et al. (2000) found that 24% of the 97 players who sustained injury had injured the same body part previously, and seven of them had been injured in past three months. Furthermore, Orchard, Seward, McGiven, and Hood (2001) reported an increased risk for injury after anterior cruciate ligament reconstruction in the same knee within the last twelve months among Australian football players. These results show that the players were not ready to return to play. Furthermore, looking at the reviewed literature, there is strong evidence relating previous injury and inadequate rehabilitation as risk for re-injury of the same type and location. The reasons may be reduction in muscle strength and muscle imbalance, and fear of re-injury which alters muscle recruitment (Murphy et al, 2003)

### **c. Gender differences**

Studies have well established that female athletes are more at risk of sustaining a knee injury than male athletes (Hewitt, 2000; Powell & Barber-Foss, 2000). In a study of anterior cruciate ligaments among Norwegian handball players Myklebust, Haehlum, Holm and Bahr (1998) reported a five fold increased risk of sustaining an anterior cruciate ligament injury in women than men. Similarly Gwinn, Wilckens, McDevitt, Ross and Kao (2000) studying the relative incidence of anterior cruciate ligament injury in men and women at the United States Naval Academy found that within intercollegiate sports female soccer players were nine times more likely to sustain an anterior cruciate ligament tear than male soccer players.

However, in contrast several studies have found no significant differences in injury rates between female and male athletes. Baumhauer et al. (1995) reported no difference in incidence of ankle sprains between men and women. Furthermore, Beynnon et al. (2001) in their study among 118 collegiate field hockey, soccer, and Lacrosse athletes found that the relative risk of ankle sprains was the same between men and women. On the other hand, Stevenson, et al. (2000) found that there is an increased incidence of injuries in males than females.

### **d. Body size**

Studies have been done on body size as an injury risk factor in different ways including height and weight (Beynnon et al., 2001). Others have looked at Body Mass Index (BMI), lean muscle mass and body fat content (Knapik, Sharp, Canham-Chervak, Hauret, Patton & Jones, 2001; Osternberg & Roos, 2000). These factors have been considered as injury risk factors, as an increase in one puts extra stress on joint structures.

According to Jones, Bovee, Harris, and Cowan (1993) high body fat content and low and high BMI for men while in women it is shorter height. Similarly, Backous, Friedl, Smith, Parr, and Carpine (1988) studying soccer injuries and their relation to physical maturity reported an increased incidence of injury in heights of more than 165cm among boys; however they observed that body size was not a risk factor for girls.

Contrary, Baumhauer et al. (1995) observed no effect of height or weight on incidence of ankle injury among collegiate athletes participating in hockey, soccer, and Lacrosse. Similarly, there was no significant difference in height or weight among elite recreational basketball players who incurred ankle injuries and those who did not (McKay et al., 2001).

Studies regarding body size are difficult to compare because of the many different techniques used to represent body size (Murphy et al., 2003).

#### **e. Aerobic Fitness**

Murphy et al. (2003) in their review of the literature of risk factors for lower extremities reported that the level of aerobic fitness would be a risk factor because once athletes are fatigued there is alteration in muscle recruitment which also alters the forces acting on the articular, ligamentous, and muscular structures.

In an injury risk factor study of female soccer players, Ostenberg and Roos (2000) reported no significant difference in fitness measures between the injured and uninjured. However, Chomiak et al. (2000) in their study of factors for severe injury in male soccer players observed that poor physical condition is a risk factor for all injuries.

In contrast, Hopper, Hopper and Elliot (1995) observed that female netball players who sustained injuries had increased vertical jump height, and an increased work and peak power during a modified Wingate test compared with those who did not sustain an injury.

Diminished aerobic fitness may cause fatigue leading to reduction in muscle power to protect structures (Murphy et al. 2003). However, it is difficult to compare studies as they use different methods to characterise aerobic fitness.

#### **f. Limb dominance**

Several studies in the risk factors for football injuries have reported that limb dominance has an effect on injury (Murphy et al. 2003). Baumhauer et al. (1995) reported there was an increased risk for injury in the dominant left leg among collegiate athletes participating in field hockey, soccer, and Lacrosse. Furthermore, Ekstrand and Gillquist (1983) reported a significantly higher number (92.3%) of ankle injuries of the dominant leg more than the non-dominant side in male soccer players, but there was no effect of limb dominance in those who sustained muscle strains.

However, Beynnon et al. (2001) found no influence of limb dominance on ankle sprains of collegiate field hockey, soccer, and Lacrosse athletes. Similarly, Seil, Rupp, Tempelhof, and Kohn (1998) also reported no association between limb dominance and lower extremity injury.

The relationship between limb dominance and injury is still unclear as several studies report contradictory results.

#### **g. Psychological**

Handling stress in sports need a high level of physical and psychological skills (Maddison & Prapavessis, 2007).

The influence of psychological factors on injuries in football is poorly documented (Steffen, Pensgaard, & Bahr, 2008). However, Junge (2000) categorized psychological factors into three categories: psychological stressors, coping resources, and emotional state. Other studies



have reported an existing relationship between high trait anxiety and injury risk and competitive anxiety (Lazarus, 1999; Lavallo & Flint, 1996). According to Andersen and William (1999) and William and Andersen (1998) decreased perceptual ability and low self esteem also increases injury risk. In addition, Rogers and Landers (2005) and Johnson and Ivarsson (2010) have reported that negative life event stress increases injury risk.

## **2.6.2 Extrinsic factors**

### **a. Level of skill**

While analysing the incidence of injuries and complaints in different age groups and skill level groups, Peterson, Junge, Chomiak, Graf-Baumann and Dvorak (2000), reported that young players with low skill level had a two fold increased incidence of all injuries compared to skilled players. In another study Junge and Dvorak (2000) also reported similar results where it was found that the incidence of injury was high in less skilled players than in more skilled players of 14-16 years and 16-18 years than in more skilled players of the same age groups. Furthermore, Chomiak et al. (2000) reported increased incidence in low skilled athletes than in more skilled athletes. However, Hoper, et al. (1995) reported that athletes with high skill level were more likely to sustain injury (54%) than less skilled athletes (19%).

It is however difficult to compare the results of these studies as they investigated different sports disciplines which may mean a different choice of criteria used to select levels of skill. Since incidence rate is based on exposure time, less skilled athletes may have the same number of injuries like more skilled athletes but because of less exposure time in less skilled athletes the incidence will be high. Furthermore, it may be that the intensity of play at high skilled levels is higher than at less skilled levels placing skilled athletes at an increased risk of injury.

## **b. Level of competition**

Several studies have analysed the relationship between level of competition and injury. There is general consensus that the incidence of injury is high during competition than during training. According to Tegnander et al. (2008) in the study of female elite soccer players in the Norwegian league, it was observed that injury incidence is high during matches than during training sessions. The incidence in this study was 23.6 per 1000 game hours and 3.1 per 1000 training hours. In another epidemiological study of injuries in the Greek amateur soccer players a high frequency injury rate during matches than during training was revealed (Tsiganos et al., 2007). Furthermore, another epidemiological study of Collegiate injuries for 15 sports with a purpose of summarizing 16 years of National Collegiate Athletic Association (NCAA) injury surveillance data reported that after combining data for all sports, injuries were statistically significantly higher in games (13.8 injuries per 1000 Athlete Exposure) than in training (4.0 injuries per 1000 Athlete Exposure) and most injuries occurred in the lower extremities (Hootman, et al. 2007). Contrary to the consensus of many studies in Europe, Gallo et al. (2006) in an epidemiological study of injuries in a professional soccer team in Argentina reported an increased incidence of injuries during training than during matches. It is postulated that during competition players are prone to aggressive and risk taking behaviours which may in turn increase the potential for injury (Murphy et al., 2003).

## **c. Shoe type**

The significance of proper footwear in football has been studied as far way back as 1982. Ekstrand (1982) studied 180 male football players and ascribed 13.3% of injuries to be the result of inferior footwear. However, Monto (1993) and Inklaar (1994) reported that the modern soccer shoe provides little protection, very little support, and no cushioning. Consequently, football players are exposed to greater forces and stresses. According to

Ryder, Johnson, Beynnon, and Ettlinger (1997) incorrect footwear put athletes at risk of anterior cruciate ligament (ACL) tears, since it controls foot fixation during the game. Furthermore, literature has shown that the number, length, and cleat placement is associated with the chance of ACL injuries. Lambson, Barnhill, Higgins (1996) in a prospective study of ACL incidence in American football found that shoes with long irregular cleats placed at the peripheral margin of the lateral sole with a number of smaller pointed cleats positioned medially caused an increased higher torsional resistance putting athletes at risk of ACL tears. Another study by McKay et al. (2001) showed that there was variation of sports ankle injuries associated with shoe types. These authors reported that injuries were four times higher in players wearing shoes with air cells in the heels compared with those wearing basket ball shoes without air cells in the heels. It was suggested that an increase in ankle injury rate could be associated with rear foot instability.

Several studies have investigated the role of sport shoes in the prevention of ankle injuries. However, Baret and Bilisko (1995) report that less attention has been paid to investigate the effects that shoe types play on sports and ankle injury. Furthermore, the role of the shoes in offering external ankle support has been acknowledged, but factors other than support including traction, limiting of joint mobility and effect on proprioceptive input need to be evaluated in future studies.

#### **d. Playing surface**

Studies have shown that artificial turf is an injury risk factor. In a study among 84 elite male soccer players, Arnason, Gudmundsson, Dahl, and Johannson (1996) reported a two times higher incidence of injuries on artificial turf compared with grass or gravel. Increased stiffness and frictional force at the shoe surface interface with the playing surface has been implicated as the cause of injuries (Inklaar, 1994). Stiffness of the surface affects forces

resulting in overload to structures such as bone, muscle cartilage, tendon, and ligament. As much as friction is necessary for rapid starting, stopping, cutting and pivoting in sports like soccer, Inklaar (1994) reports that increased frictional force may contribute to increased injury rate among athletes playing on the artificial turf.

In a recent review of the literature on the effect of playing surface on injury rate, Dragoo and Braun (2010) reported that despite differences in injury type, the rate of injury on third generation and natural grass surfaces appears to be comparable. These authors suggest that there is a need for overall injury trends as well as sport specific data to draw more definitive conclusions regarding the effects of artificial playing surfaces on injury rates.

Similarly, another recent review of the literature by Williams, Hume, and Kara (2011) reported that studies have provided strong evidence for comparable rates of injuries between new generation artificial turfs and natural turfs. These authors further reported an increased risk of ankle injury on third and fourth generation artificial turfs and therefore suggested ankle injury strategies to be the priority for athletes playing on artificial turf regularly. Furthermore, it is suggested that clarification of the effects of artificial surfaces on muscle and knee injuries are required given the inconsistencies in incidence ratios depending on the football code, athlete, gender or match versus training.

### **2.6.3 Injury prevention strategies**

It has been postulated that 75% of all football injuries can be prevented by first identifying the injury mechanism and strict adherence to game rules, pre-season screening, and conditioning, proper training, warm up, and cool down, stretching, strengthening exercises use of protective equipment, controlled rehabilitation, strict correction and supervision of

doctors, and physiotherapists (Cross, 1993 & Ekstrand et al., 1983). However, Junge and Dvorak (2004) have also reported that no single injury prevention programme can reduce soccer injuries.

#### **a. Warm-up and cool down**

It is believed that time spent on warming up and cooling down before and after training or matches improves the athletes' level of performance and accelerates recovery process (Mackenzie, 2000). Warm up has been defined as a period of preparatory exercise in order to enhance subsequent competition or training performance. It aims to aid injury prevention by preparing the muscles, heart, and mind for safe physical activity (Herbert & Gabriel, 2002).

In their review of the literature of whether warm up prevent injury in sport, Fradkin, Gabbe and Cameron (2006) found that by performing warm up, the number of traumatic and overuse injuries in the intervention group was significantly lower than in the control group. This study showed that players in the control group were 5.9 times prone to sustain an injury than players in the warm up group. In another study on the effectiveness of warm ups for preventing knee and ankle injuries, it was observed that the intervention group incurred a significantly lower rate of 0.5 injuries per 1000 player/hour than the control group (0.9 injuries per 1000 player/hour). It was concluded that structured warm ups reduce the incidence of injury by at least 50%.

Other studies have shown that dynamic stretches are the most appropriate for the warm ups and static stretches for cool down (Knudson, Bennet, Corn, Leick & Smith, 2001; McNair, Dombroski, Hewson & Stanley, 2001). According to Mackenzie, (2000) stiffness is thought to be directly related to muscle injury and therefore warm ups should be directed at reducing

muscle stiffness. Mackenzie therefore, suggested that warm ups should at least consist of the following:

5-10 minutes of jogging to increase body temperature.

10-15 minutes of dynamic stretches to reduce muscle stiffness

10-15 minutes of general and event specific drills to prepare the body for session or competition

4-6 minutes of easy run outs over 30 -60 metres

Furthermore, Mackenzie reported that cool down should at least consist of:

5-10 minutes of jogging or walking to decrease body temperature and remove waste products from working muscles.

5-10 minutes of static stretching exercises

Even though the benefits of warm ups and cool down have been highlighted other studies have found contradicting results. In a study by Van Mechelen, Hlobil, Kemper, Voorn and de Jong, (1993) warm ups and cool down did not reduce the incidence of injury in the intervention group. In this study 167 control and 159 intervention subjects participated in a 16 weeks study where both groups kept a daily diary on their running distance and time and reported all injuries. At the end of the study it was revealed that there were 23 injuries in the control group and 26 injuries in the intervention group. The injury incidence was low in the control group (4.9/1000hrs) and high in the intervention group (5.5/1000hrs).

In conclusion, there is still controversy regarding the effects of warm up and cool down and more research need to be done to conclude its effects.

### **c. Stretching**

Stretching before participation in sports is standard practice for all levels of sports. It is generally accepted that increasing the flexibility of muscles promotes better performance and lower injury incidence (Witvrouw, Mahieu, Daneels & McNair, 2004). Although increased flexibility is advocated to reducing injury, other studies have shown otherwise. In their study, Magnusson, Aagaard, Larsson and Kjaer (2000) measured hamstring intramuscular temperature and muscle-tendon unit viscoelastic properties in healthy young men before and after 10 and 30 min of running with or without stretch. It was observed that warm-up and continuous running elevated intramuscular temperature but did not affect the passive energy absorption. Repeated passive stretching reduced the energy absorption immediately; however, the effect did not remain after 30 min of running. This data suggest that passive energy absorption of the human skeletal muscle is insensitive to physiological increases in intramuscular temperature. However, it is suggested that stretching can improve performance in sports where range of motion is a key factor such as gymnastics (Bruker & Khan, 2011).

The controversy on the relationship between stretching and injuries lies in the type of sport and individual involved (Witvrouw et al. 2004). These authors report that sports which need high intensity of stretch shortening cycle (SSC) such as jumping activities like football need a muscle tendon unit that is compliant enough to store and release energy that benefits performance in such sports. Consequently, if a footballer does not have sufficient compliant tendon unit, the load may exceed the capacity of the tendon unit leading to an increased risk for injury. Therefore increasing tendon unit compliance is the rationale for injury prevention in football.

Despite all the controversy on stretching, 95% of football coaches feel it is beneficial and it prevents many injuries (Shebab, Mirabeli, Gorenflo & Fетters, 2006).

#### **d. Use of protective equipment**

Soccer players have a high risk for injuries to the lower extremities and most studies have reported that most soccer injuries occur in the lower extremities (Gallo et al., 2006; Hootman, et al., 2007; Twizere, 2004).

A shin guard is one of the most protective equipment used by players worldwide to prevent injuries and its effectiveness has been reported. In a study of analysis and comparison of soccer shin guards, Bir, Cassatta and Janda (1995) utilised a 5<sup>th</sup> percentile hybrid III female dummy to evaluate the effectiveness of shin guards in attenuating forces which can lead to injury to the tibia. It was observed that forces to the tibia were reduced with shin guard utilization. The study indicated that a shin guard reduces the impact of forces to the tibia and reduce the risk for injury.

Ankle bracing is associated with a reduction of injury incidence to the ankle. In a prospective and randomised study of ankle brace use, Sitler, Ryan, Wheeler et al. (1994) found that the unbraced control group sustained more than three times the number of injuries than the group with ankle braces. Furthermore, Surve et al. (1994) also reported a reduction of ankle sprains in 504 soccer players with a history of injury and the unbraced control group.

The reduction in injury incidence with ankle bracing is attributed to increased kinaesthetic awareness of ankle position and increased ankle support to the ankle by limiting inversion and hind foot motion (Murphy et al., 2003).

#### **2.6.4 Nutrition and water intake**

According to Brukner and Khan (2011), inadequate nutrition may increase the risk for injury due to its effect on recovery. It is postulated that inadequate glycogen supply causes the body



to rely on fat and protein reserves leading to increased protein breakdown which may lead to soft tissue injury.

According to the American Dietetic Association, Dieticians of Canada, American College of Sports Medicine, Rodriguez, Di Marco and Langley (2009) in a joint statement recommended that energy and macronutrient needs especially carbohydrate and protein, must be met during times of high physical activity to maintain body weight, replenish glycogen stores, and provide adequate protein to build and repair tissue. It was also reported that fat intake should be sufficient to provide the needed fatty acids and fat-soluble vitamins and to contribute energy for weight maintenance. Furthermore, athletes should be well hydrated before exercise and drink enough fluid during and after exercise to balance fluid losses. These authors further recommend that sports beverages containing carbohydrates and electrolytes may be consumed before, during, and after exercise to help maintain blood glucose concentration, provide fuel for muscles, and decrease risk of dehydration and hyponatremia. In addition it is recommended that a qualified sports dietitian should provide individualized nutrition direction and advice after a comprehensive nutrition assessment of athletes.

## **2.7 Awareness of football players regarding injury prevention**

It is well known that player factor (intrinsic) is an injury risk factor and can be prevented through corrections in training and conditioning (Larson, Pearl, Jaffet, & Rudawsky, 1996). As early as 1983, it was known that 42% of injuries were due to player factors such as joint instability, muscle tightness, inadequate rehabilitation, or lack of training (Ekstrand, Gillquist, & Liljedahl, 1983). In a recent study Kaut, DePompei, Kerr, and Congen (2003) reported that football players had insufficient knowledge about head injury consequences which raises concern regarding athletes' recognition of problematic symptoms. They suggested this as an important area of education intervention for players.

Players' involvement in injury prevention has been advocated as far back as 1989. In their study, Bergeron and Green (1989) reported that prevention measures are only effective if athletes themselves realize that injury prevention is part of the sport and it requires their involvement. Players play an essential role together with other stakeholders to maximize injury prevention. It is their responsibility to minimize the risk for injuries through maintenance of high level fitness, playing within the rules of the sport, wearing of safety equipment and seeking medical care and following medical advice after injury. In addition Bergeron and Green (1989) concluded that if players understand and practice safety measures, the incidence of injuries would reduce.

## **2.8 Sports injury management**

Hackney, (1994) reported that sports injury management involves first aid treatment, involving rest, ice, compression and elevation (RICE), where the injured body part is rested while ice is applied to relieve pain, prevent bleeding through compression and limb elevation to prevent swelling. In addition it is reported that principles of injury management involve early treatment of injuries while maintaining cardiovascular and respiratory fitness as healing takes place. Furthermore, stretching and sport specific exercises with attention to technique and return to play are advocated, and rehabilitation.

### **Role of the physiotherapist**

Physiotherapists play a major role in the management of sports injuries. They are involved in treating acute injuries where they aim to reduce swelling, reduce pain, and facilitate oxygen and nutrition of the injury site, restoring normal movement pattern, while minimizing further deterioration and avoiding re-inflaming the lesion (Oakes, 2003). Physiotherapists will use massage, low dose ultrasound, electrical muscle stimulation, exercise, and instructions to

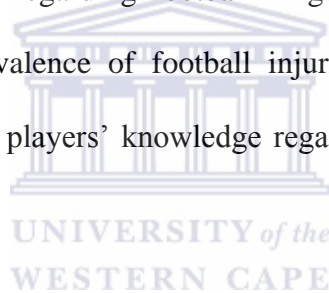
players regarding limitation of activity (Zuluaga, Briggs, Carlisle, McDonald, Nickson, Oddy & Wilson, 1995).

In addition Jowett (2005) reports that physiotherapy treatment in sports involves manual therapy, exercise therapy, electrotherapy and education, but also massage is widely used as a treatment modality for muscle injuries. Furthermore, physiotherapists are responsible for sports athletes' rehabilitation which includes conditioning, flexibility, functional exercises, sports skills correction of abnormal biomechanics, maintenance of cardiovascular fitness and psychology (Bruker & Khan, (2001)

## **2.9 Summary of Chapter**

This chapter reviewed literature regarding football in general, the theoretical framework guiding the study, and the prevalence of football injuries. It also reviewed the factors associated with football injuries, players' knowledge regarding injury prevention strategies, and sport injury management.

The next chapter highlights the methodology undertaken to collect data and the ethical consideration.



## **CHAPTER THREE**

### **3 METHODOLOGY**

#### **3.1 Introduction**

This chapter explores the methods and procedures used to determine if there is need for physiotherapy intervention in the management of football injuries in Malawi. The chapter further describes the research setting, population and sampling, study design and data collection procedure. It also outlines data analysis methods used and ends by addressing the issue of ethical consideration in relation to this study.

#### **3.2 Research setting**

The study was conducted in Malawi, a country in the southern part of Africa bordered by Zambia to the west, Tanzania to the north and Mozambique to the south and east. Its latitude and longitude coordinates are 13,30S and 34.00E. Malawi has 118,480 square km and its capital city is Lilongwe. The country is divided into three regions with each region having its own city, and from these cities are also most of the super league teams. Blantyre is in the southern part of Malawi. It is the biggest commercial city.

Malawi has a long history of football dating back to the 6<sup>th</sup> of July 1964 when they had a first international match playing against Ghana, losing 0-12 in a match organised as part of festivities to celebrate independence. The national football association was formed and affiliated to FIFA in 1967 and CAF (Confederation of African football) in 1968. Malawi national football team has ever since enjoyed some success, winning the CECAFA (Confederation of Central and East African Football Associations) Cup on three occasions (1978, 1979, and 1988). In 1984 and in 2010 Malawi reached the semi-finals of the African Games, and in 2002, reached the Final of the COSAFA (Confederation of Southern African football Associations) Cup (FAM, 2011). There are two competitive club leagues in Malawi,

the Super League, and the Premier League. The Super League is the most prestigious of the two and more competitive. It is from this league where many players are chosen to play for the national team but also can be identified by other foreign professional clubs especially from South Africa and Europe. Teams from the Premier League also compete to gain promotion to the main league. The players in the league play many league games, cup games and fulfil national duty by playing for the national team in a year.

The Super League of Malawi (SULOM) is the association of all teams which play in the highest league in Malawi; there are two main football leagues; the Super League of Malawi which is the top flight league and the Premier League of Malawi which is the second tier league. The Super League has a log table of 15 teams every year three teams are promoted from the Premier League into the super league and three are relegated.

There are six teams from Blantyre which participated in the league in the 2010-2011 season, namely Blantyre United, Big Bullets, Mighty Wanderers, Escom United, Azam Tigers and Blackpool. Zomba town, the old capital city is just an hour drive from Blantyre and three teams were in the league from there, Zomba United, Red Lions, and Cobbe Barracks. Lilongwe is the capital city of Malawi and is about four hours drive from Blantyre. It is located in the central part of Malawi. Silver Strikers, Civo United, Blue Eagles and Epac United were the teams from Lilongwe. Mzuzu is the smallest city and is in the northern part of Malawi and about 8 hours drive from Blantyre. The teams which participated from Mzuzu were Moyale Barracks, Juke Box, and Eagle Strikers.

### **3.3 Population and sampling**

Each team registers about 25 to 30 players each season. Three newly promoted teams for the 2010-2011 season were not considered for inclusion as the study investigated injuries sustained during the previous season. All 12 teams excluding the 3 newly promoted teams

were invited to participate in the study. Four of these teams are under the auspices of the Malawi Army and Police and needed permission for the participants to take part in the study which was not available at the time of data collection. Therefore the final sampling frame consisted of approximately 200 football players, 8 coaches, and 8 team doctors.

### **3.4 Study design**

The study employed a mixed method design, specifically the concurrent procedure. According to Borkan (2004) mixed methods research “refers to studies or lines of enquiry that integrate one or more qualitative and quantitative techniques for data collection and or analysis”. The mixed method design aims to identify, to look at the relationship, and to examine the links between the phenomena under investigation (Dure, Rumsey, Morris & Gleeson, 2011). The concurrent procedure involves collection of both forms of data (quantitative and qualitative) at the same time during the study. The investigator converged quantitative and qualitative data in order to give a comprehensive analysis of the phenomena under investigation (Creswell, 2003). Furthermore the importance of concurrent design is that it allows the investigator to triangulate the results from both studies, thus allowing them to corroborate, cross validate, and confirm findings within a single study.

### **3.5 Data collection methods**

#### **3.5.1 Quantitative data**

##### **Research instruments**

Quantitative data was collected using a self administered questionnaire distributed among football players to obtain data regarding the prevalence of injuries, their knowledge regarding injury preventative measures and the support they get after incurring an injury. The self

administered questionnaire was preferred as it has the advantage of providing a standardized, cost-efficient (Goldstein, 2003).

### **Self administered questionnaire.**

The self administered questionnaire consisted of five parts: part “A” captured demographic data of the players, which included the players’ team name, age, height, weight, body mass index, playing position and the number of years playing in the league. Part “B” consisted of specific details about injuries of the previous season. The instrument requested history of any injury sustained during the previous season and whether the injury occurred during training or competitive match. The instrument further requested the players to indicate the body part injured, the type of injury and history of recurrent injury and duration it took to return to full participation after injury. Furthermore, the instrument requested the cause of the injury and the time the injury had occurred. In addition, information regarding the number of training sessions and matches missed after sustaining an injury, provider of first aid during training or matches was requested. Part B of the instrument finishes by requesting the type of treatment received after injury. Part A and B of the instrument were adapted from Jelsma, Dawson, Smith, Masaya & Madzivire, (1997). Part “C” of the instrument requested information regarding the use of protective equipment, the use of shin guards, ankle guards, and football boots during training and competitive matches was requested. Part “D” of the instrument looked at the awareness of injury prevention strategies. Information regarding warm up sessions, cool down, stretching of major leg muscles, undertaking flexibility training and undertaking of strength training was collected. Furthermore, the instrument requested the players’ opinion on a wide range of issues regarding injury prevention. In addition part D of the instrument requested information regarding consumption of carbohydrates, quantity of water intake and about any nutritional advice. Parts C and D were adapted from the instrument used by Hawkins & Fuller (1998). Part “E” of the instrument looked at the support

players receive after injury which was adapted from the instrument used by Finch, Donohue & Garnham (2002).

### **Reliability and validity of questionnaire**

Parts of the questionnaire were adapted from validated questionnaires of Jelsma et al. (1997), Hawkins and Fuller (1998) and Finch et al. (2002). Questions that were relevant to the objectives of the current study were included and questions from the source questionnaire that were not relevant to the objectives were excluded. The questionnaire was translated by two independent translators from English to Chichewa and from Chichewa back to English. Harkness and Schova-Glusberg (1998) suggests that to compare accuracy of the two versions, the translated text can be assessed through back translation of the target text back into the source language. The instrument was then sent for expert opinion that consisted of coaches and physiotherapists for face and content validity.

To further ensure the questionnaire's reliability in the Malawian context, 15 soccer players from the Premier League were invited to take part in a test re-test pilot study. Both the English and translated questionnaire were re-administered to the same players after two weeks to check for consistency. This test consisted of the administration of the questionnaire to the same subjects, under a similar condition (Polit and Hungler, 1995 cited in de Barros and Alexandre, 2003). The time interval between the two measurements was taken as two weeks (Rubin & Rubin, 2004). The test-retest reliability was analyzed using Statistical Package for the Social Sciences (SPSS) version 20. The Cronbach's alpha was used to test for reliability. A Cronbach's alpha of 0.78 was achieved during the first test which according to Gliem and Gliem (2003) is acceptable. During the second test a Cronbach's  $\alpha$  for the questionnaire was 0.819 which means the consistency of the questionnaire is good.



The Spearman's correlation coefficient of between .834 and 1.0 was achieved. The correlation was strong enough to ensure the instruments reliability and validity.

## **Procedure**

In order to collect data from the players, team doctors and coaches from the Super League of Malawi, this study sought ethical clearance from the Senate Research Grants and Study Leave Committee at the University of the Western Cape and from College of Medicine Research Committee (COMREC) from Malawi. Permission was requested from the Super League of Malawi (SULOM). Permission from the football teams was requested telephonically from the teams' administration. Coaches and team doctors were phoned and the aim of the study was explained to them. Place of interview was selected by the participants themselves. The telephone calls before the actual day of interview helped to build good rapport between the investigator and participants (Speziale & Carpenter, 2007).

## **Pilot study**

The pilot study was conducted on 15 players from the lower league division. The pilot study aimed at testing for face, content and constructs validity (Hunt and Bhopal, 2004), but it also helped the investigator establish the effectiveness of the questionnaire (De Vos, Strydom, Fouche & Delport, 2002). This team had just been relegated from the Super League; this meant that the players had the experience of the conditions of play of the Super League. The investigator and two research assistants were available during the pilot study to note questions that needed clarity from the players. The players were also asked to verify if they understood the true meaning of questions. At the end players were asked for their opinion regarding the questions and layout of the questionnaire. The results showed that it took 15-40 minutes to complete the questionnaire. The variability was due to the fact that players who had not sustained injuries in the previous season skipped the part "B" of the questionnaire

about injury history. Most players who used the translated questionnaire sought clarity on the meaning of words like “nkolokolo” and “kakolo”. These were clarified and changes were made. Players also suggested that words like “training”, “game”, “warm-up”, and “cool-down” should not be translated as the translated part was difficult to understand and players use them as they are even when speaking in Chichewa the local language. Some players raised the concern that the questionnaire was too long but the majority felt that all the questions should be included because they tackled issues that affected them.

Two research assistants with experience of data collection were employed and were familiarised with the questionnaire on a one day workshop before they were involved in the pilot study and actual data collection.

Self administered questionnaires were used to collect data from football players by two trained research assistants and the investigator at the training venues of the teams. Research assistants together with the investigator visited each team on two consecutive days, so that football players who were absent on the first day had a chance to do so on the next day. All participants were asked to sign informed consent forms before answering questionnaires. Football players filled in the questionnaires without any assistance or influence from neither the researcher nor the assistants. All the completed questionnaires were put in sealed envelopes and locked in a cabinet at the researcher’s place of work for confidentiality. All participants were assured of anonymity and confidentiality of their identity and information divulged. This was further ensured by questionnaires not bearing names of the respondents. Participants who were discovered needing medical attention during the study were referred to relevant medical personnel for attention.

### **3.5.2 Qualitative data**

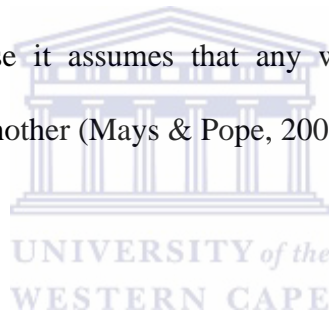
Qualitative data was collected using in depth interviews with coaches and team doctors. The researcher decided to use in depth interviews to collect data from coaches and team doctors because according to Skinner (2007) in depth interviews extract detailed information from interviewees. Interviews also permitted the interviewer to clarify questions to help the participant to be provided with more information about the study (Dumholt, 2000). A list of probes (Appendix G) were used by the researcher to give direction but not inhibit the interviewer from discussing other points that seemed important and no sequence was imposed (Skinner, 2007). All interviews were audio- taped and notes taken to avoid missing out some details of the interview (Mays & Pope, 1995).

#### **Interview procedure**

The researcher conducted interviews with both coaches and team doctors. Through phone calls the venue of choice was arranged by the participants. On the day of the interview, the investigator took time to explain the objectives of the study and gave the information sheet for the participants to read. Consent forms were signed before the interview started while issues of confidentiality and anonymity were assured to the participants. Two digital recorders were used to record the interviews beside the notes taken by the investigator. Notes were important in case there was malfunctioning of the recorders (Opdenakker, 2006). Transcription was done by an independent person. The investigator spot checked all the transcripts for inaccuracy, misinterpretation, and language specific errors. Interviews and transcripts were stored in an external hard disk with only the investigator having password and access to it.

## **Trustworthiness**

In qualitative research, reliability and validity is referred to as establishing trustworthiness. Trustworthiness of qualitative data is measured by its credibility, which is determined by the match between the constructed realities of the participants and the reality represented by the researcher (Lincoln and Guba, 1995). Several techniques were used to build credibility; interviews of coaches and team doctors were audio-taped and notes made by the interviewer. Member checking was done to verify content with interviewees. All the quotes used in the study are verbatim. Methodological triangulation was done through use of mixed method approach which, according to Olsen (2004), means mixing approaches to get two or three view points upon the phenomena being studied. Triangulation is therefore regarded as a genuine test for validity because it assumes that any weakness in one method will be compensated by the strength in another (Mays & Pope, 2000).



## **3.6 Data analysis**

### **3.6.1 Quantitative**

Quantitative data were captured on a spreadsheet using MS Excel programme in preparation for analysis. The Statistical Package for the Social Sciences (SPSS) version 20.0 was used to analyse the data. Descriptive statistics were used to describe the demographic data and prevalence of injuries. These were expressed as frequencies, percentages, means, and standard deviations and illustrated by means of figures, tables, and charts. Inferential statistics were used to determine associations between categorical variables (injury prevalence and injury prevention strategies). To use inferential statistics, O'Neil (2009) reports that the optimal is to use parametric statistics, and to use parametric statistics data should meet specific assumptions one of which is that data should be normally distributed, if

data does not meet the assumptions non parametric statistics are used, otherwise the results will be inaccurate. Therefore, to test normality of the data, a Kolmogorov-Smirnov test was used. All the data with  $p\text{-value} > 0.05$  was considered normally distributed and data with  $p\text{-value} < 0.05$  was considered not normally distributed (O'Neil, 2009). Chi-square test and Fishers exact test were used to study inferential statistics to determine associations between categorical variables (injury history and injury prevention strategies). The chi-square test was used when categorical data that had 20% of cells had an expected count of less than 5 and Fishers exact test was used if more than 20% of cells had an expected count of less than 5 (Pallant, 2011 pg 217).

### **3.6.2 Qualitative**

Thematic content analysis of data was done. Thematic content analysis allows the findings to emerge from the raw data without the constraints of structured methods (Thomas, 2006). The analysis was inductive in nature using detailed reading of raw data to derive themes from interpretations made from data by the researcher (Thomas, 2006). Analysis started with transcription of data from the audio tapes. The transcript produced was compared with the notes made during interviews to verify accuracy. Analysis involved reading both transcripts from team doctors and coaches several times by the investigator. Notes were made during the reading of the transcripts. Coded data were put in themes, followed by the creation of broad categories of emerging themes which fit together. As many headings as necessary were made to describe all aspects of the content. In addition, grouping of the themes into broader categories was done in order to reduce the number of themes or small categories; for instance, very similar headings were merged to come up with one. However, the researcher emphasized searching for categories that have internal convergence and external divergence, which means that the categories must be internally consistent but distinct from one another

(Marshall & Rossman, 1995). The analysis was guided by objective number four which highlights the main topics to be investigated which are risk factors, injury management, injury prevention and role of physiotherapists in injury management. Although the findings are influenced by the objective, the findings come directly from the analysis of raw data. The objective only provided focus for conducting analysis and not a set of specific findings (Thomas, 2006).

An independent researcher was involved by reading through the transcripts and generated themes, thus increasing the validity and reliability of the categorizing. Lists of the two were compared. Themes identified by the independent researcher that were not noted by the researcher were included.

### **3.7 Ethical considerations**

Ethical approval from the Senate Research Grants and Study Leave Committee at the University of the Western Cape was granted to conduct the study. In Malawi, approval was granted by the College of Medicine Research Committee (COMREC). Permission was sought from the Super League of Malawi (SULOM) and the respective clubs. To ensure anonymity of the players, no names were used during data collection. All participants were provided with written informed consent forms which were signed before partaking in the study. Participants who took part in interviews were assured of confidentiality of all the information divulged. All the information was kept in a place only accessible to the investigator. The researcher made commitment to provide copies of the results to the Football Association of Malawi, the Super League of Malawi and to respective clubs through presentations.

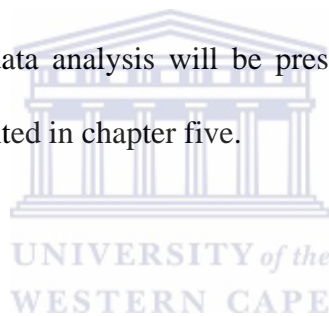
Participants were assured of the feedback of the results of the study via the teams. Football players who were discovered to have sustained injuries during data collection were all

referred for treatment to relevant practitioners. Participants were notified of their right to withdraw from the study at anytime.

### **3.8 Summary of chapter**

In this chapter, the research setting of the study is outlined. Furthermore, the population and sampling methods, data collection methods, both quantitative and qualitative were outlined followed by a detailed procedure of the data collection process, including seeking of ethical clearance from the Senate Research and Study Leave Committee at the University of the Western Cape and from the College of Medicine Research Committee in Malawi. Issues of validity, reliability, and trustworthiness are also addressed. Both quantitative and qualitative data analysis methods are outlined.

The results of the quantitative data analysis will be presented in chapter four and that of qualitative analysis will be presented in chapter five.



## CHAPTER FOUR

### 4 QUANTITATIVE RESULTS

#### 4.1 Introduction

This chapter presents the results of the quantitative data analysis of the study. The statistical analyses of the first two objectives of the study are presented. The results are presented by means of graphs, figures, and tables.

#### 4.2 Description of the study sample

A total of 12 football teams from the Malawi Super League were invited to take part in the study. A total of eight teams agreed to participate in the study. Each football team registers about 25 players each season bringing the number of players to 200. A total of 135 football players out of 200 from eight teams voluntarily agreed to participate in the study representing a 67.5% response rate.

The sociodemographic characteristic of the study sample is summarised in Table 4.1. The mean age of the study sample was 21.73 (SD = 3.295) and the biggest percentage of players (34.1%) was midfielders. The mean number of years of playing experience of the sample was 4.04 (SD = 2.984).



**Table 4:1 Socio-demographic characteristics of the study sample (N=135)**

<b>Characteristic</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
<b>Age</b> (mean=21.73; SD=3.295)		
18	23	17
19-24	84	62.4
25-29	25	18.5
>30	3	2.1
<b>Years of experience</b> (mean=4.04; SD=2.984)		
1-5	99	73.3
6-10	32	23.7
11-15	4	2.9
<b>Playing position</b>		
Goalkeeper	15	11.1
Defender	37	27.4
Midfielder	46	34.1
Striker	37	27.4

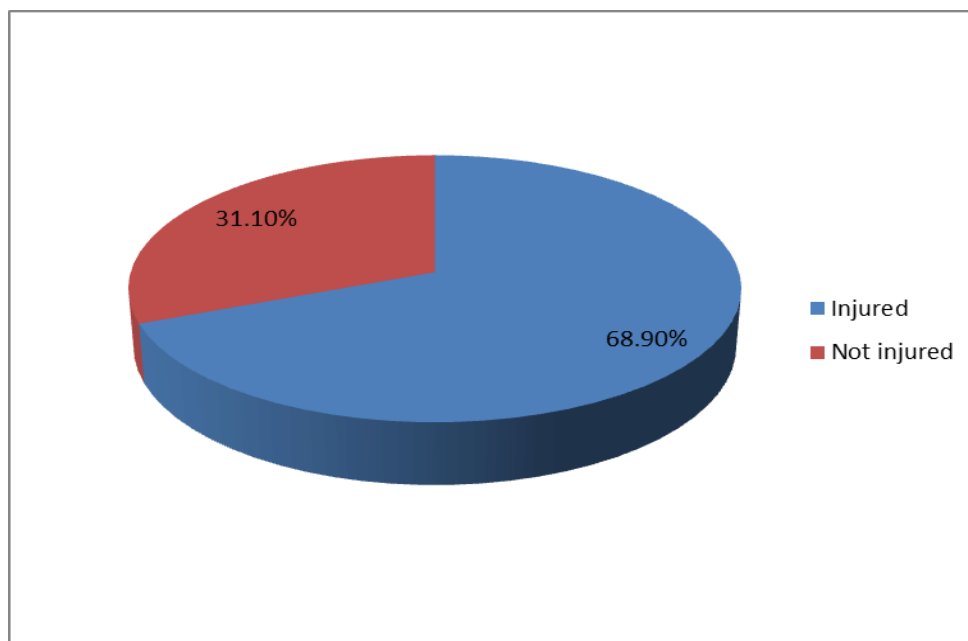
The anthropometric measurements of the study sample are summarised in table 4.2. The mean height and weight was 1.69 and 67.4 respectively.

**Table 4:2 Anthropometric measurements of the study sample (N =135)**

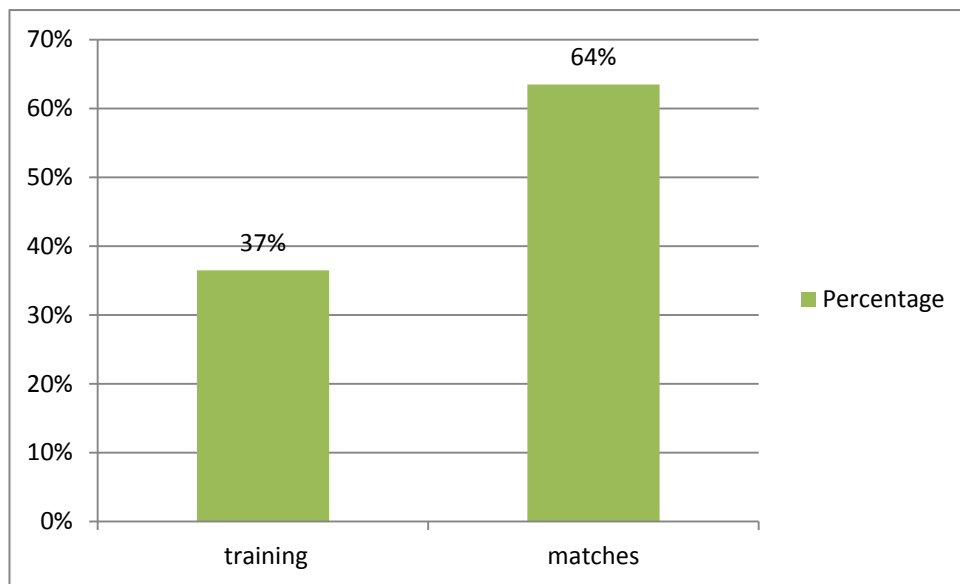
<b>Variance</b>	<b>mean</b>	<b>Standard deviation</b>
<b>Height</b>	<b>1.69</b>	<b>0.4695</b>
<b>Weight</b>	<b>67.4</b>	<b>6.19</b>
<b>Body Mass Index</b>	<b>23.53</b>	<b>1.90</b>

### **4.3 Prevalence of injuries**

The prevalence of injuries was calculated from the total study sample who had sustained at least one injury or more in the previous season. More than two thirds (68.9%) (n=93) of the study sample reported sustaining at least one injury in the previous season (Figure 4.1). It was further observed that a total of 167 injuries had occurred during training and matches with more injuries occurring during matches 64% (n=106) and 37% (n=61) occurring during training as illustrated in Figure 4.2.



**Figure 4:1 Prevalence of injuries in study sample (N=135)**



**Figure 4:2 Percentage of injuries during training and matches (n=167)**

#### **4.3.1 Location of injured body part**

Of the total of 167 injuries, the majority (84%) was sustained to the lower limbs. In total, the ankle was the most affected (25.7%), followed by the knee (23.4%) and thigh (10.2%) as outlined in table 4.3. However, the knee (26.6%) was more affected during training than during matches (21.7%).

**Table 4:3 Distribution of injured body parts during training and matches (n=167)**

	<b>Training</b>	<b>Matches</b>	<b>Total</b>
<b>Body part</b>	<b>Injuries (%)</b>	<b>Injuries (%)</b>	<b>injuries %</b>
Ankle	15 (24.6)	28 (26.4)	43 (25.7)
Knee	16 (26.2)	23 (21.7)	39 (23.4)
Thigh	2 (3.3)	15 (14.1)	17 (10.2)
Hip/Groin	5 (8.2)	9 (8.5)	14 (8.4)
Shoulder/Clavicle	3 (4.9)	10 (9.4)	13 (7.9)
Lowerleg/Achilles	4 (6.6)	3 (2.8)	7 (4.2)
Foot	3 (4.9)	4 (3.8)	7 (4.2)
Lower back	2 (3.3)	5 (4.7)	7 (4.2)
Head	4 (6.6)	2 (1.9)	6 (3.6)
Wrist	2 (3.3)	2 (1.9)	4 (2.4)
Sternum	1 (1.6)	2 (1.9)	3 (1.8)
Hand/thumb/finger	2 (3.3)	1 (0.9)	3 (1.8)
Upper arm	2 (3.3)	0 (0.0)	2 (1.2)
Fore arm	0 (0.0)	1 (0.9)	1 (0.6)
Elbow	0 (0.0)	1 (0.9)	1 (0.6)

### 4.3.2 Type of injury

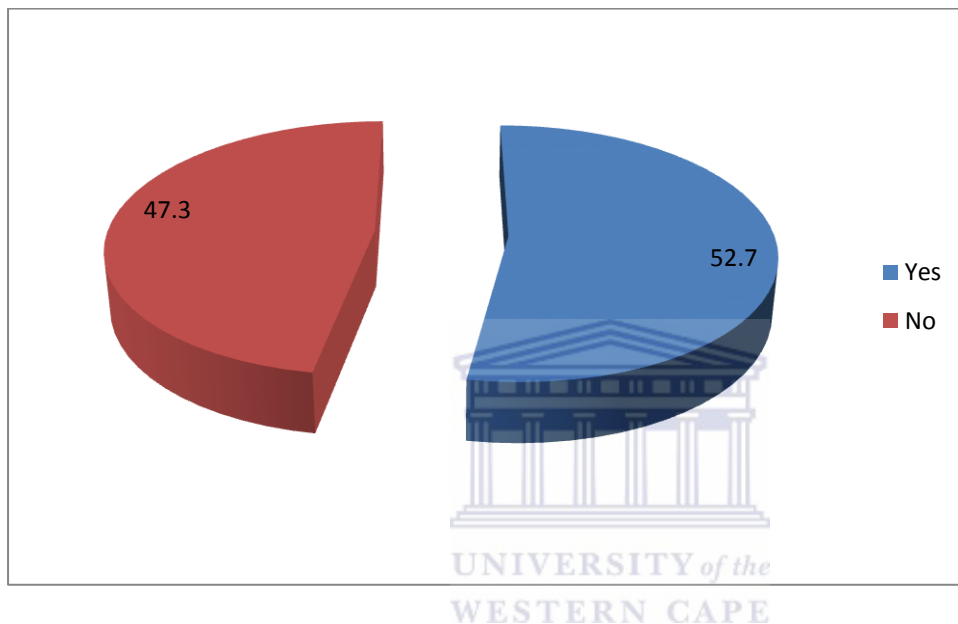
Presented in table 4.4 are types and percentages of injuries which occurred in the league. The type of injury was based on the players' perception of it, which is self diagnosis. Of the 167 injuries, ligament sprain recorded the highest with 36% (n=60) followed by muscle strain 14.4% (n=24), haematoma 11.4% (n=19), and dislocations 9% (n=15). Fractures were 7.8% (n=13), abrasions 6% (n=10), and the least type of injuries was dental 1.2% (n=2).

**Table 4:4 Frequency and percentage of type of injuries (n=167)**

Type of injury	Frequency (n)	Percentage (%)
Sprain/Ligament	60	36.0
Muscle/strain/rupture	24	14.4
Haematoma	19	11.4
Dislocation	15	9.0
Fracture	13	7.8
Abrasion/laceration	10	6.0
Meniscus lesion	7	4.2
Tendon injury	6	3.6
Concussion	4	2.4
Other bone injuries	4	2.4
Other	3	1.8
Dental	2	1.2

#### 4.3.2.1 Recurrent injury (n = 49)

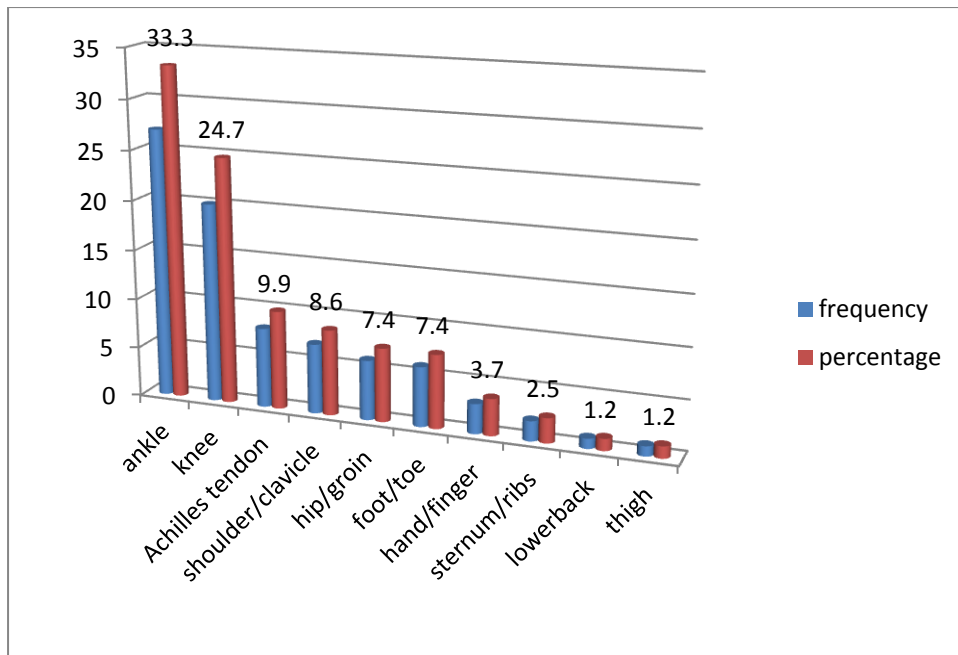
Football players were asked to record recurrent injuries that occurred in the previous season. Of the 93 football players who sustained injuries 49 (52.7%) players reported to have experienced recurrent injury while 44 (47.3%) did not incur recurrent injuries.



*Figure 4:3 Percentage of players with recurrent injuries (n=93)*

#### 4.3.3 Location of recurrent injury (n=81)

Of the total of 81 recurrent injuries, the majority (83.9%) was sustained to the lower limbs. The ankle joint was the most affected (33.3%) followed by the knee (24.7%) and the Achilles tendon (9.9%) as outlined in figure 4.4.



*Figure 4:4 Frequency and location of recurrent injuries (n=81)*

#### 4.3.4 Severity of Injuries

Severity of injuries was determined by the time players were out of play after sustaining each injury. Goga and Gongal (2003) classified injuries into three categories: mild, moderate and severe. Injuries which caused a player to be out of play for one week or less was considered mild while those taking two to three weeks were considered moderate and those taking four and more than four weeks were considered as severe. Football players were asked to indicate for each injury they sustained the duration it took for them to return to play. The table 4.5 below illustrates the results showing that 36.5% of the injuries were severe and 27.6% were moderate while 26.3% were mild.

Sixteen percent of the missing data could possibly be due to failure in recalling the duration of injury by players from the previous season.

**Table 4:5 Severity of injuries (n=167)**

<b>Description</b>	<b>Total (n)</b>	<b>Percentage (%)</b>
Mild	44	26.3
Moderate	46	27.6
Severe	61	36.5
Missing data	16	9.6

#### **4.3.5 Causes of injuries**

Players were asked to record the cause of their injuries into three categories: tackle, trauma, and unknown. Tackle included a player tackling another player or being tackled by another player. Trauma included collisions, falls from jumps or hit by ball or other player. Unknown cause included pain or injuries with no history of trauma or tackle. Players were asked to record the cause of each injury they had incurred. A total of 97 (58%) injuries were recorded caused by tackle which was followed by trauma (n=55; 33%) and unknown (n=15; 9%) cause respectively as illustrated in table 4.6

**Table 4:6 Cause of injury (n=167)**

<b>Cause of injury</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Tackle	97	58
Trauma	55	33
Unknown	15	9



#### 4.3.6 Period of injury occurrence

Football players with an injury history were asked to record the period of occurrence for each injury they had sustained. The first 45 minutes of either training or match were considered the first half and any time after 45 minutes was considered second half. Table 4.7 shows that most injuries occurred in the second half (61%).

**Table 4:7 Period of injury (n=167)**

Period of injury	No of injuries(n)	Percentage (%)
First half	61	36.5
Second half	102	61
Missing data	4	2.4



#### 4.4 Provision of first aid during training and matches

All football players participating in the study were asked to indicate the person who provided first aid during training and matches. Most football players reported that team officials (70.4%) were providing first aid during training and team doctors (100%) were providing first aid during matches. Table 4.8 shows the distribution of first aid providers during training and matches.

**Table 4:8 First aid provider during training and matches (N=135)**

	<b>First aid provider</b>	<b>Frequency(n)</b>	<b>Percentage (%)</b>
<b>Training</b>	Team doctor	12	8.9
	Team coach	28	20.7
	Team official	95	70.4
	St John Ambulance	0	0
<b>Matches</b>	Team doctor	135	100.0
	Team coach	0	0
	Team official	0	0
	St John Ambulance	0	0

#### **4.5 Treatment received after injury**

All participating football players were requested to indicate the type of treatment they normally receive when injured. Medical treatment was referred to as any treatment received at a clinic or hospital other than physiotherapy. As indicated in the table 4.9, most players received medical treatment after injury (89%) with very few attending physiotherapy sessions.

**Table 4:9 Type of treatment players received after injury**

Type of treatment	Frequency(n)	Percentage (%)
Medical	121	89.6
Physiotherapy	5	3.7
Self treatment	1	0.7
None	2	1.5
Missing data	6	4.4

#### **4.6 Use of protective gear**

Participants were requested to indicate whether they use protective gear such as shin guards, ankle guards and appropriate footwear during training and matches. Table 4.10 shows that 90.4%, 30.1%, and 100% always wear shin guards, ankle guards, and appropriate footwear respectively during matches. However, 24.4% always wore shin guards and ankle guards during training sessions.

**Table 4:10 Distribution of use of protective equipment during training and matches**

<b>Characteristic</b>	<b>Use</b>	<b>Training (n) (%)</b>	<b>Matches (n) (%)</b>
<b>Shin guards</b>	Always	33 (24.4)	122 (90.4)
	Very often	6 ( 4.4)	3 (3.2)
	Often	14 (10.4)	5 (3.7)
	Sometimes	59 (43.7)	4 (3.0)
	Never	23 (17.0)	1 (0.7)
<b>Ankle guards</b>	Always	33(24.4)	42(30.1)
	Very often	7( 5.2)	7( 5.2)
	Often	15(11.1)	7( 5.2)
	Sometimes	28(20.7)	28(20.7)
	Never	52(38.5)	51(37.8)
<b>Football boots</b>	Always	135(100)	135(100)
	Very often	0(0)	0(0)
	Often	0(0)	0(0)
	Sometimes	0(0)	0(0)
	Never	0(0)	0(0)

#### **4.7 Injury prevention strategies**

Players were asked to report on injury prevention strategies that they engaged in prior to training and matches. These included warm-up, cool-down, stretching, flexibility, and strength training.

Most participants reported to always taking part in warm up prior to training (93.3%) and matches (90.4%). However, on cool down after training and matches, 77% of participants reported to always take part in cool down after training while only 14.1% took part after matches. Stretching prior to training and matches was also highly patronised with 80.7%

reporting to always participate during training and 72.6% always participated during matches. However, it was different for stretching after cool down after training and stretching after cool down after matches. 68.9% of the participants reported to have taken part in stretching after cool down after training while 54.1% reported to never participate in stretching after cool down after matches. On performing flexibility training as part of warm up or cool down or as part of an individual programme, 88.9% reported to never perform it as part of cool down and 56.3% never take it as part of extra work of an individual programme. Performing strength training as part of team programme and performing strength training as extra individual work was also reported, 88.9% reported to never take part in a team program and 79% also reported to never take it as extra individual work.

**Table 4:11 Distribution of injury prevention strategies (N=135)**

<b>Injury prevention strategy</b>		<b>Training (n) (%)</b>	<b>Matches (n) (%)</b>
<b>Warm up prior</b>	Always	126 (93.3)	122 (90.4)
	Very often	8 (5.9)	7 (5.2)
	Often	1 (0.7)	4 (3.0)
	Sometimes	0 (0.0)	2 (1.5)
	Never	0 (0.0)	0 (0.0)
<b>Cool down after</b>	Always	104 (77)	19 (14.1)
	Very often	6 (4.4)	10 (7.4)
	Often	4 (3.0)	25 (18.5)
	Sometimes	21(15.6)	59 (43.7)
	Never	0 (0.0)	22 (16.3)
<b>Stretching prior</b>	Always	109 (80.7)	98 (72.6)
	Very often	9 (6.7)	16 (9.6)
	Often	10 (7.4)	9 (6.7)
	Sometimes	6 (4.4)	14 (10.4)
	Never	1 (0.7)	1 (0.7)
<b>Stretching after cool down</b>	Always	93 (68.9)	39 (28.9)
	Very often	14 (10.4)	4 (3.0)
	Often	11 (8.1)	2 (1.5)
	Sometimes	14 (10.4)	17 (12.6)
	Never	3 (2.2)	73 (54.1)

**Table 4:12 Continuation of injury prevention strategies (Flexibility and strength training) (N=135)**

<b>Injury prevention strategy</b>		<b>As part of warm up and cool down</b>	<b>As extra individual work</b>
<b>Flexibility</b>	Never	120 (88.9)	76 (56.3)
	Once a week	10 (7.4)	9 (6.7)
	Twice a week	2 (1.5)	1 (0.7)
	Three times a week	3 (2.2)	12 (8.9)
	>three times a week	0 (0.0)	37 (27.4)
<b>Strength</b>	Never	120 (88.9)	107 (79.0)
	Once a week	10 (7.4)	17 (12.6)
	Twice a week	2 (1.5)	3 (2.2)
	Three times a week	3 (2.2)	7 (5.7)
	>three times a week	0 (0.0)	1 (0.7)

#### **4.8 Players awareness about injury prevention practices**

Players were asked to respond to a list of 13 items related to sports injury prevention practices. Awareness of use of shin pads, undertaking warm up and cool down, stretching, flexibility and strength were all investigated. Table 4.13 outline the player's responses to the 13 items.

**Table 4:13 Players awareness regarding injury prevention practices (N=135)**

<b>Item</b>	<b>Agree (n) (%)</b>	<b>Neutral (n) (%)</b>	<b>Disagree (n) (%)</b>
The chance of sustaining injury during training preventing you to be selected is likely.	123 (91.1)	9 (6.7)	3 (2.2)
The chance of sustaining injury during match preventing you to be selected is likely.	123 (91.1)	6 (4.4)	6 (4.4)
There is greater chance of sustaining an injury during matches than training	109 (80.7)	16 (11.9)	10 (7.4)
Injuries are consequences of other players	93 (68.9)	30 (22.2)	12 (8.9)
The risk of lower leg injuries in training is reduced by wearing shin pads	126 (93.3)	5 (3.7)	4 (3.0)
Injury is more likely towards the end of the match	63 (46.7)	34 (25.2)	38 (28.2)
The risk of injury is reduced by thorough warm up prior training	129 (95.6)	4 (3.0)	2 (1.5)
The risk of injury is reduced by thorough warm up prior matches	129 (95.6)	2 (1.5)	4 (3.0)
The risk of injury is reduced by thorough cool down and stretching after training	125 (92.6)	4 (3.0)	6 (4.4)
The risk of injury is reduced by thorough cool down and stretching after matches	125 (92.6)	2 (1.5)	8 (5.9)
Players with poor flexibility are likely to get injured than those with good flexibility	119 (88.1)	9 (6.7)	7 (5.2)
Strong muscles are important in protection against injury	116 (85.9)	13 (9.6)	6 (4.4)
The majority of players wear shin guards during training	39 (28.9)	21 (15.6)	75 (55.5)

## 4.9 Factors associated with football injuries

Associations between injury prevalence and various factors were investigated. These factors were divided into intrinsic and extrinsic factors. A chi-square test of independence and Fischer exact test were used to study the factors associated with football injuries.

### 4.9.1 Intrinsic factors

The association between injury prevalence and intrinsic factors were determined. No distinction between training and match injury prevalence was made. Intrinsic factors examined included age, BMI, recurrent injury and number of years of experience as a football player in the league. To determine if there was a relationship between injury prevalence and intrinsic factors, a chi-square test and Fishers exact test were used. Recurrent injury showed a significant relationship ( $P < 0.001$ ) with injury prevalence. However, age, BMI and experience did not show a significant relationship as shown in table 4.14.

**Table 4:14 Prevalence of injuries vs intrinsic factors**

	Injured (n) (%)	Non -injured (n) (%)	Statistical value	p-value
<b>Intrinsic factor</b>				
<b>Experience(yrs)</b>				
1-5	63(46.7)	35(26.0)	F=3.993	0.119
6-10	26(19.2)	7(5.2)		
11-15	5(3.7)	0(0.0)		
<b>Age</b>			$\chi^2=7.532$	0.057
<18	16(11.9)	7(5.2)		
19-24	52(38.5)	32(23.7)		
25-29	22(16.3)	3(2.2)		
>30	3(2.2)	0(0.0)		
<b>BMI</b>				
18.50-24.99	72(53.3)	33(24.4)	$\chi^2=0.22$	1.00
25.99-29.99	21(15.6)	9(6.7)		
<b>Recurrent injury</b>			F=43.910	0.000*
Yes	49 (52.7)			
No	44 (47.3)			

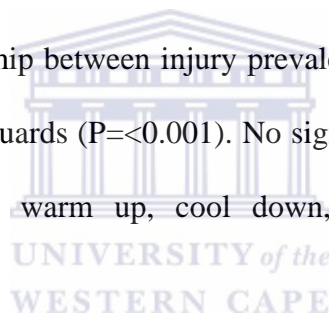
**Significant at 0.01\***



#### **4.9.2 Extrinsic factors**

When determining the association between extrinsic factors and injury prevalence, separate analyses were run for training (Table 4.15) and matches (Table 4.16) as these factors would impact differently during training and matches. The extrinsic factors included, use of protective gear (shin and ankle guards), warm up, stretching, and cool down during training and matches. A Chi-square test of independence was used for variables with 20% or less of cells having expected count of less than 5 and Fischer's exact test was used for variables with greater than 20% of cells having expected count of less than 5. All the variables had greater than 20% cells having expected count of less than 5 except cool down during matches and training.

There was a significant relationship between injury prevalence and use of equipment during training on both shin and ankle guards ( $P < 0.001$ ). No significant relationship was observed between injury prevalence and warm up, cool down, and stretching during training ( $P > 0.005$ ).



**Table 4:15 Prevalence of injuries vs extrinsic factors (N=135) during training**

	Injured (n) (%)	Non -injured (n) (%)	df	Statistical value	p-value
<b>Injury prevention strategy</b>					
<b>Shin guard</b>				19.043	0.000*
Yes	33(24.4)	32(23.7)			
No	60(44.4)	10(7.4)			
<b>Ankle guard</b>				25.678	0.000*
Yes	26(19.3)	29(21.5)			
No	67(49.6)	13(9.6)			
<b>Warm up prior</b>					
<u>Training</u>				1.608	0.610
Yes	93(68.9)	42(31.1)			
No	0(0.0)	0(0.0)			
<b>Cool down after</b>					
<u>Training</u>				3.509	0.320
Yes	78(57.8)	37(27.4)			
No	16(11.9)	5(3.7)			
<b>Stretching prior</b>					
<u>Training</u>				6.017	0.157
Yes	88(65.1)	40(29.6)			
No	5(3.7)	2(1.5)			
<b>Stretching after cool down</b>					
<u>Training</u>				3.938	0.384
Yes	90(66.7)	38(28.1)			
No	13(9.6)	4(3.0)			

**Significant at 0.001\***

On extrinsic factors during matches (Table 4.17) the results were similar to the ones during training. There was a significant relationship between injury prevalence and use of protective equipment for both ankle and shin guards ( $P=<0.001$ ). However there was no significant relation with cool down and stretching ( $P=>0.005$ ).

**Table 4:16 Relationship between injury prevalence and extrinsic factors during matches (N=135)**

	Injured (n) (%)	Non -injured (n) (%)	df	Statistical value	p-value
<b>Injury prevention strategy</b>					
<b>Shin guard</b>					
Matches					
Yes	60(44.4)	42(31.1)		11.865	0.005*
No	33(24.4)	0(0.0)			
<b>Ankle guard</b>					
Matches					
Yes	27(20.0)	29(21.5)		23.290	0.000*
No	66(48.9)	13(9.6)			
<b>Warm up prior</b>					
<u>Matches</u>				5.365	0.101
Yes	92(68.1)	41(30.4)			
No	1(0.7)	1(0.7)			
<b>Cool down after</b>					
<u>Matches</u>				1.650	0.800
Yes	36(26.7)	38(28.1)			
No	57(42.2)	4(3.0)			
<b>Stretching prior</b>					
<u>Matches</u>				6.307	0.147
Yes	82(60.7)	38(28.1)			
No	11(8.1)	4(3.0)			
<b>Stretching after cool down</b>					
<u>Matches</u>				109.306	0.000*
Yes	7(5.2)	38(28.1)			
No	86(63.7)	4(3.0)			
<b>Significant at 0.005*</b>					

#### 4.10 Summary of chapter

This chapter outlined the results of the quantitative analysis of the thesis. An injury prevalence of 68.9% was found. In addition, this chapter presented the distribution of injury according to, location, type, severity, cause, and period of injury. Furthermore the association between injury prevalence and intrinsic and extrinsic factors is presented.

The next chapter outlines the results of qualitative analysis.

## CHAPTER FIVE

### 5 QUALITATIVE RESULTS

#### 5.1 Introduction

This chapter contains the results of the thematic analysis of the interviews with team doctors and coaches which attempted to answer the objective *“To explore the perception of coaches and team doctors regarding the role of physiotherapy, risks, prevention, and management of football injuries in the Malawi Super League”*. Coaches and team doctors were asked to generally discuss;

1. The role of physiotherapists in injury management
2. Injury risk factors among Super League players
3. Management of injuries in the Malawi Super League
4. Injury prevention in the Malawi Super League

The quotations have been taken from the transcripts and are presented in inverted commas and in italics to distinguish them from the narration. Unnecessary materials have been omitted from the quotes by use of three ellipsis points (...). In the presentation of the findings, verbatim quotations from interviews will be used to illustrate response themes and categories. For purposes of anonymity and confidentiality, the transcribed quotations of data from the interviews will be cited in the cryptogram PC representing coaches and PD representing team doctors.

#### 5.2 Characteristics of the sample

All 16 possible participants were approached, (8 team doctors and 8 coaches) and eleven of them voluntarily took part in the study. The researcher made the decision to interview eleven participants. However if saturation of information was not reached after completion of the

eleven interviews, additional coaches would have been approached. Six were football coaches and five were team doctors. Of the six coaches, two had attended there coaching courses in Europe, two had attended coaching courses locally organized by FIFA, and the other two have not attended any coaching courses.

Five team doctors participated in the study. None of them were employed full time by the teams. Two of the team doctors were clinical officers who had diplomas in clinical medicine and one was specialised in ophthalmology and the other in dermatology. The other two were medical assistants who had certificates in clinical medicine. Two of the participants had attended courses on injury management in Zambia and Zimbabwe respectively. One medical team member was just a volunteer and had no medical background but has knowledge of first aid.

### **5.3 Themes**

The four pre-determined themes for the study were;

1. Perceptions regarding risk factors for injury in the Malawi Super League
2. Perceptions regarding management of injuries in the Malawi Super League
3. Perceptions regarding injury prevention in the Super League of Malawi
4. Perceptions regarding the role of physiotherapists in the management of injuries

Under each theme, emerging themes arose from the discussions. These will be highlighted under each section.

### 5.3.1 Perceptions regarding risk factors for injury in the Super League

The interviews with both team doctors and coaches produced a wealth of information regarding risk factors for injury in the Super League. The emerging themes under this theme were;

1. Recurrent injury
2. Psychological factors
3. Players fitness levels
4. Lack of equipment and poor infrastructure

#### 5.3.1.1 Recurrent injury

One of the intrinsic injury factors which team doctors felt was a contributing factor to injury was recurrent injury. Team doctors reported that recurrent injury was exacerbated by players themselves hiding injuries but also the management featuring players with injuries.

Team doctor had this to say;

*“But you know most of the executive members are results oriented....so sometimes they can try to manipulate things and then say maybe feature that one and would be featured maybe basing on some other painkillers, things of that nature. Maybe giving him a jab of diclofenac sodium and then he doesn't feel pain in the period of playing, afterwards he is really in trouble and injury doesn't go away.”(PD1)*

*“A player could be injured today you take the player to hospital you give him treatment but the player will see himself that no I don’t have what I don’t have food .If I don’t play I don’t eat. I only rely on that money which is at the club. The club is not supporting the player who is injured. So the player even force himself that he is ok because he wants to go back again in the pitch whereby the injury is not what ...is not healed.”(PD3)*

*“They will even risk. They force themselves to play a game with an injury.so that they get money for food because its their only source not knowing they are risking a big injury.” (PD4)*

Similarly, coaches raised their concern regarding the occurrence of recurrent injuries.

Coaches expressed concern that they are sometimes put under pressure from the management to feature injured players, especially key players and during crucial matches. On the other hand, it was revealed that players are also to blame because they sometimes hide injuries and feature in matches so that they get game bonuses.

The coaches had shared these sentiments...

*“There is that tendency of featuring injured players in Malawi, with me no, I don’t condone that practice because I know how risky it is and ruin players’ future.” (PC1)*

*“Players are cheaters they can cheat just to have money, play the game and have money. But that injury will be a prolonged one, in the long run it will affect his career. You find his playing time has shortened because of those injuries” (PC2)*

*“Yea it happens,(featuring injured players) there could be some pressure from above but it depends on the injury that he can manage or he cannot .....or he gets injected..... Because everybody has a feeling that this one is a key player we want his services.... It also depends on how he is performing during training.”*

### **5.3.1.2 Player psychological factors**

Team doctors reported that most players’ only source of income is football. So if they have financial constraints it becomes difficult for them to concentrate while playing which puts them at risk of injury. They also reported that players’ attitude because of other frustrations can put them at risk of injury.

Team doctors had this to say:



*“sometimes let’s say for us ... we have been playing this is the 7<sup>th</sup> season without sponsorship, those things affect players normally somebody comes, you don’t have money to pay rent to cover some expenses something like that so forth. So you come to the game of football with something in mind, when he plays he can’t concentrate to what he is doing and can risk injury”(PD3)*

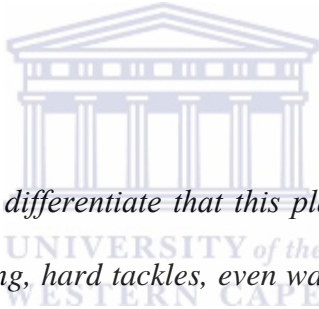
*“There are many things which put players at risk here in Malawi even things like money, players earn peanuts. They have wives and kids and they come to the field with too much thought from home about social problems. This affects their concentration and plays while absent minded which is bad and risk them injury.”(PD6)*



*“Let me just explain that some of the injuries occur probably due to the attitude of the players. At times the player may have a bad intention towards ah their counterparts because of other frustrations. They may not think of going for the ball ... so maybe due to that bad attitude or negative attitude towards their friends they end up injuring themselves.”(PD3)*

On the other hand, coaches regarded player attitude as a risk factor for injury. Players' attitude towards opponents without a sense of fair play was mentioned to be putting players at risk.

Coaches narrated:



*“What makes us know or differentiate that this player can easily get injured, is the way he approaches marking, hard tackles, even watching the way the ball is moving, it's like he doesn't know what he is doing, even when he is heading the ball you find that his friends have headed already, its like he is taken by surprise.”(PC7)*

*“Here in Malawi most injuries occur during training because players have an attitude during training like warm up, they do it reluctantly so by the time we start running you find that muscles are not flexible, therefore injuries occur.”(PC5)*

*“But also some players are just used to crude tackle and this put other players at risk of injury”. (PC1)*

### 5.2.1.3 Fitness levels

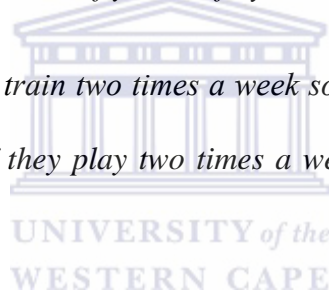
Only coaches were concerned about the level of fitness of their players.

Coaches reported the following:

*“Yea other things can be laziness, during training others are lazy, like good example ... got a fracture and he is still recovering, he collided with someone he did not use his strength yet his friend used strength and injured him. So it is because of that lack of fitness.”(PC6)*

*“A player who is not fit, is a player who easily gets injured, because if you are not fit even any tackle, you are out, but if you are fit you can’t” (PC7)*

*“I always draw a plan to train two times a week so that they should keep fit so as to avoid injuries, because if they play two times a week they will have enough time to rest. (PC1)*



### 5.2.1.4 Lack of equipment and poor infrastructure

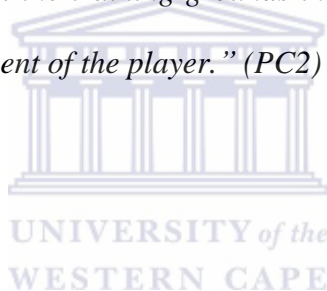
Coaches and team doctors observed that lack of injury preventive equipment and poor playing pitches put players at risk of incurring injuries.

*“In Malawi it’s difficult to do that, we don’t have those facilities (ankle guards) so ankles are really giving us headaches so if there is a recurrent sort of I mean ankle injury maybe you can put that on at risk.” (PD1)*

*“Generally they are supposed to and we stress on that one shin pads and shin guards but because of the poverty sometimes they are not readily available but the rules of the super league nobody should if a referee finds someone who is not putting on*

*protective wear is sent off. So people try to improvise whether cartons whatsoever they do it". (PD2)*

*"Those are some of the factors as well because you can play on the bumpy pitch. The bumpy pitch somebody can twist his ankle , somebody can fall down, aah somebody I mean it does hinder everything to the lifespan of the player to the performance of the team as well....but he will say because the pitch is not good, I am afraid I might be injured. So the football pitches here in Malawi, they do play a role to the risk of injuries to our players, All the pitches in Malawi, I mean, maybe it's only the main stadium which we use but the training grounds in particular are not good, are not conducive to the environment of the player." (PC2)*



### **5.3.2 Perceptions regarding management of injuries**

Team doctors expressed their views on how injuries are managed in the Malawi Super League. Much as there was a wide range of views on this topic, team doctors narrated the following emerging themes:

1. Types of injuries
2. Challenges in managing injuries in Malawi

Team doctors narrated regarding the types of injuries they encounter and how they are handled. However, it was observed that team doctors and coaches had non-conforming views on the challenges regarding management of injuries in the Malawi Super League. Team

doctors regarded lack of resources and their work not being recognized as the main challenges while coaches regarded lack of well qualified team doctors as a challenge.

### 5.3.2.1 Types of injuries

Team doctors and coaches reported on the common injuries prevalent among players. Common injuries mentioned were, ankle sprains, hamstrings strain, and cuts to the head and soft tissue injuries in general.

Team doctors reported:

*“Obviously injuries are there and during the matches of super league. And there are some which are rare, some which are very common. So we can say maybe the common one from the experience is what ankle injuries are very common...Yea ankle injuries and sometimes also you have the hamstring...very common also. But ah fractures are not really so common from my experience. I don’t even hear a lot of about fractures.”(PD1)*

*“So far the commonest are soft tissue injuries ...at times deep cuts ... Specifically to the head.... it’s the most affected part of the body” (PD4)*

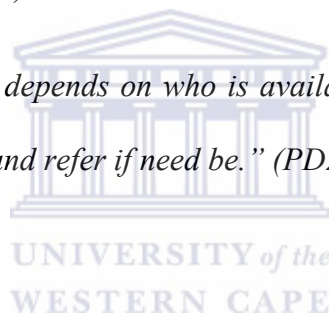
*“So far since I started I can say a lot of them it’s like ankle sprains and sometimes muscle clumps. Other things like groin those things are what they experience and some of the times when the game is ended, when you are playing the game you have like cuts and so forth. Those are the things that we normally experience”. (PD3)*

In addition team doctors expressed their views on how they handle injuries:

*“Management depends on the person who is attending to that particular individual and type of injury. Because mostly we, mostly most of the injuries we talk of, if we are not suspecting fracture. If there is no fracture obviously they end up in the hands of the physiotherapist. Of course we can have our own basics like putting ice cubes whatever which we feel it’s a very important management especially to the fresh injury.”(PD1)*

*“Alright it depends on the nature of the injuries, there are some injuries which normally occur during training and there are some which can occur both during training ah during the game. It depends on the nature of the injury anyway, and who is available to treat.” (PD4)*

*“Management of injuries depends on who is available at time of injury...usually we treat with cold compress and refer if need be.” (PD2)*



Furthermore, team doctors also reported their role in injury management, that most of the times injuries were not treated at the playing field. They took the patients and treated them at their work place as most of them were part time employs. They also reported referral of injured players to other professionals for further management.

*“For us maybe we just initiate the treatment and make assessment coming up with a diagnosis if we see for sure that there should be an issue relating to soft tissue injuries or whatsoever then we are always in come in what, we are always working hand in hand with the physiotherapist, yes, because if he has hamstring, we know for sure that that will be properly managed by the physiotherapist. Of course we can have our own basics like putting ice cubes whatever which we feel it’s a very important*

*management especially to the fresh injury.... Then afterwards we refer that person to the physiotherapist.” (PD1)*

*“Basically it is you who can assess and say this one is needs immediate treatment from the main hospital, yea it’s up to the team doctor to assess that condition. But basically what we have in the pitch are people who are first aiders and they need all they also rely on your guidance yea to tell them what to do yes. But as a maybe we can say at that particular moment it’s you who is really a team doctor to make a decision say this one needs this that one needs that. This one it’s not a serious injury we just handle it right away here, he should just rest. It’s you who make the decision.” (PD5)*

*“Usually what I was doing is or what I am doing is when a player gets injured I assess the injury from the ground then because you know we don’t have so much facilities for the clubs and we just ask that player to come maybe to a place where I work. If they need physio I will send them over to the physiotherapy that’s what I do” (PD2)*

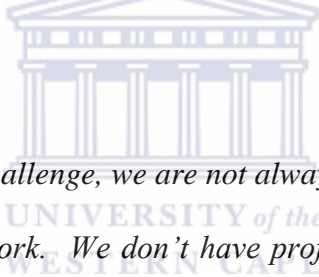
### **5.3.1.2 Challenges**

On the challenges encountered, team doctors reported:

*“I will be very frank (F: Yea) sports management sports injuries management in Malawi we are very backwards because one the club don’t invest much in their team doctors as a result the team doctors will only be required maybe during the games or sometimes with during the training but otherwise outside there it’s quite like nonexistent..... they don’t understand the value of team doctors ..... because they*

*are just taken as even the team managers even the management of these clubs the only people who they think about is the coaches.”(PD2)*

*“So it’s difficult for us who are the doctors when we talk to them the language which we use you know as in terms of medicine. It’s difficult for them to understand what I have instructed. What I have instructed in terms of assisting the players. When they get sick or when they are injured to get the resources to buy medicine. You see some of the teams; they don’t even have even a first aid box. A doctor when he is there on voluntary basis we know we work as a volunteer a lot of most of our job we need to work as volunteers but when it comes to football it’s a bit difficult to work.”(PD3)*



*“So that is also another challenge, we are not always there because we are also doing our work like part time work. We don’t have professional doctors, I mean who are really doing sports medicine, and they are employed by the clubs. They just bring somebody who is working somewhere he goes there may be at his own ah free time. Yes, sure. Unlike maybe in other countries where they have got professional football they can employ people doing just that work, full time yea, sure.” (PD7)*

However, team coaches’ perception regarding the challenges of managing injuries was the unavailability of qualified team doctors to manage injuries.

Coaches had these sentiments on lack of qualified team doctors:

*“Yea, but you know what, I have to be frank with you (F: Yes). The team doctors we have are not physiotherapists. They just pick someone who does maybe give aspirin whatever. But that’s just a problem in Malawi, (F: Yea). We don’t have specialists, someone who knows football injuries. But we just hand pick we take someone, may be skin doctor, we just take him maybe as a team doctor, it’s not on.”(PC4)*

*“We need to have full time team docs, team doctors should be there, doctors who know their job, because I can be a team doctor but I don’t know anything about sports injury. I am a dentist so those doctors should be in the line of duty. Because I am a dentist I don’t know a sprain ankle I don’t know how I can fix it. I just come eh then I further hurt player... “*

*“....because here in Malawi we’ve got a problem of team doctors who know more about football injuries. So it affects our team very much and that is on one hand, on the other hand we don’t have good hospitals good facilities here in Malawi and ah good medicine and all in all we are having more problems just because we don’t have money that’s the main factor, sure so currently there are no doctors that are well conversant with the sports injuries.” (PC1)*

### **5.3.3 Perceptions regarding injury prevention**

In exploring team doctors’ and coaches’ perceptions regarding injury prevention, it became evident that team doctors and coaches had very different views regarding injury prevention. Doctors’ views of prevention included mostly the use protective equipment.

*“...we encourage them to use these shin pads when they are doing their training so that when they have serious tackle they don’t damage their bones and also we encourage them to use*



*ankle guards and also if they don't have ankle guards they can also use something bandages at least just to make the ankles much stable.”(PD1)*

*“Ah many were talking at first which we started the conditions, like conditions of the pitch then you are looking at protective wear. Those are some of preventive measures that we had done.” (PD2)*

*“There are quite a good number of ah things that we use or equipment depending on the most common injuries that occur during the football match. For instance, for the injuries that occur mostly or affecting mostly the knees and ankles, we use knee guards, and shin guards. ” (PD4)*

Coaches however felt that warm up and cool down were main injury preventive measures:

*“First and foremost when you are preparing for a training session, as a coach you need to include a warm up. A good warm up prevents injuries, and after the training sessions you must have a good warm down. Because when you are warming up you are trying to prepare the body to be ready for the training sessions. And when you are when you have finished the training session you warm down in order to cool down the body. You know the heart, the blood even the body joints were busy, but now you have stopped training you need to warm down to give them rest”. (PC6)*

*“You know, the importance of warm up, because good warm up avoid many injuries because if a player doesn't get properly warmed up it's very easy to get injured. So I encourage my players to get warmed almost 20, 25 or 30 minutes.....” (PC1)*

*“Warm up is basically the best ideal thing to tame those injuries. If the player is fully warmed up the muscles everything, warm up gentle, the whole body, you warm it up*

*nicely for 20, 30 minutes, some short splints, some stretches, ball work those things they do prepare the player to meet the task ahead of him but if the player is not fully warmed up, those injuries will still come back. We insist on warm up which we as coaches will supervise.” (PC2)*

*“Yea, we do that during warm up. During warm up, usually warm up consists of three things, one we start with jogging then splinting, then stretches. So the jogging, splinting and stretching, so on stretching usually I do tell them that they should stretch so well because they must stretch the muscles, the joints the ligaments whatsoever so that they prevent injuries because if they don’t stretch then they will break their legs. And then I also tell them that before they kick the ball, before they have warmed up. So they should not kick the ball before warm ups and after training they are supposed to cool down so that muscles calm, tone down the muscle. They should do that everyday when they came back from training.” (PC4)*

In addition fair play was also considered important by team coaches:

*“Apart from warm up during training sessions we also tell our boys that they should avoid hard contacts to avoid injuries.” (PC1)*

*“We always tell them to avoid the rough tackles, coming hard on each other very unnecessarily is very bad to them because when you come hard on your friend you may I mean injure him on the leg or anywhere in the part of his body and that will make you fail to participate in the forth coming game.” (PC3)*

*“So that we prevent them from injuries and they should not go hard on their friends, it must be 50/50. Because when they are so hard to their opponent, when they do that then they can break their friend’s leg so this is what I tell them to do that please when playing a game or training it must be fair, fair play.” (PC4)*

#### **5.3.4 Perceptions regarding role of Physiotherapists in injury management**

Team doctors expressed their perceptions on the role of physiotherapists. Team doctors felt physiotherapists need to be involved in injury management as they have more knowledge in injury management. However, most team doctors report that physiotherapists are only involved after injury has taken place where injured players are referred for second opinion.

Presented are some of their sentiments on physiotherapists as part of management team:

*“...of the physiotherapist so that he can advise our players the importance of maybe muscle strengthening and also the importance of warming up because those are issues which can be handled properly by a physiotherapist.” (PD1)*

*“Physiotherapy are very important people in terms of somebody when he is injured to see how fit is he you are supposed to meet the physiotherapist to do some exercise and before he comes to the pitch, before he plays” (PD4)*

*“On our part yes we are treating giving medicine but physiotherapist will be able to least know how to manage the muscles and even some tendons or whatsoever.”(PD1)*

Furthermore, team doctors indicated that they take physiotherapists as second in line of management of injuries as expressed in below:

*“Yes... we know for sure that that will be properly managed by the physiotherapist. Of course we can have our own basics like putting ice cubes whatever which we feel*

*it's a very important management especially to the fresh injury. Then afterwards we refer that person to the physiotherapist yes.” (PC1)*

*“We always involve them (physiotherapists) when the injury has already taken place. So then it's like our second opinion to say can you have a look at this. How do you manage it, that's how we are, it is working.” (PC4)*

*“If they (injured players) need physio I will send them over to the physiotherapy that's what I do.” (PD2)*

Team coaches felt that physiotherapists are needed in injury management since they are trained in injury management.

This is how some of the coaches felt:



*“....they are the only people who can know how to handle these situations, injury situations because they are trained and some of our guys....have been going to the physiotherapist, they have now resumed their training. Had it been that there was no that attendance ah there could have been eh absent from training” (PC1)*

*“We need those guys I mean, I mean to, to motivate our players, to treat our players on immediate injury you know so we can manage I mean physiotherapist can manager those injuries better than us coaches because they know their job. So maybe even those physiotherapists can change maybe injuries in general in Malawi, in my team or super league, injuries would be minimized because there a lot of injuries because we don't have physiotherapists in each and every club.”(PC2)*

*“Physiotherapists deal with people who have had injuries so they want to get back to their usual normal body yes so they come for I mean exercises” (PC3)*

#### **5.4 Summary of chapter**

This chapter presented the results of qualitative analysis of the study. It presented the perceptions of team doctors and coaches regarding injury risk factors, injury management, injury prevention, and the role physiotherapists can play in injury prevention and management.

The next chapter outlines the discussion of the quantitative and qualitative analysis of the study.



## **CHAPTER SIX**

### **6 DISCUSSION**

#### **6.1 Introduction**

This chapter presents a discussion of the results of the preceding two chapters. Each aspect, i.e. the prevalence of injury, the factors associated with injuries and the perceptions of team doctors and coaches regarding the prevention and management of these injuries, amongst others, are discussed and compared with the relevant literature.

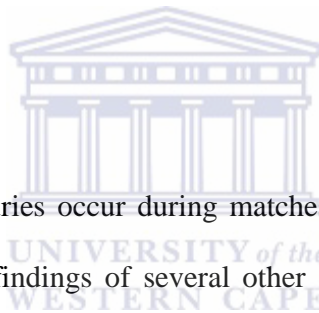
#### **6.2 Prevalence of injuries**

Several epidemiological studies done in Africa have all recorded a high prevalence of injuries in football (Azubuike & Okojie, 2009; Mtshali, et al. 2009; Twizere, 2004). Several studies in Europe have also reported high prevalence rates of injuries in football (Hagglund, Walden & Ekstrand, 2009; Hagglund, et al. 2005). The current study concurs with these studies about the high prevalence rate and highlights the high prevalence rate of injuries in the Malawi super league in particular. When compared to other African studies, the prevalence rate is similar to that of Twizere (2004) in Rwanda. It is, however, much lower than the prevalence rate of 81% found in Nigeria by Azubuike and Okojie (2009).

One has to, however, be cautious when comparing the prevalence of injuries with other studies for several reasons. Firstly, the definitions of injury used by all researchers are not the same. Some studies use a definition that includes the issue of seeking medical attention (Woods, Hawkins, Hulse & Hodson, 2002). A consensus statement by Fuller et al. (2006) regarding the definition of injuries somehow makes it easier for comparison when that

definition is used. This definition states that “an injury is any physical complaint sustained by a player that results from a football match or football training, irrespective of the need for medical attention or time loss from football activities” and was used in the current study.

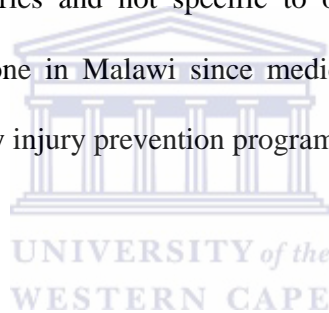
Secondly, some studies report on prevalence rates where others report on incidence rates. The study design will thus be different when determining prevalence rates and incidence rates in a study sample. It is recognized that a prospective study design is better in determining the prevalence and incidence of injuries and the use of a retrospective study design for the current study should be highlighted as one of the limitations of this study as recall bias could have influenced the study results.



This study revealed that most injuries occur during matches (64%) compared to (37%) during training. This is in line with the findings of several other studies (Azubuike & Okojie, 2009; Mtshali et al., 2009; Yard et al., 2008), who also reported that most injuries occur during matches than during training. The higher prevalence rate during matches than during training could be attributed to the fact that there is a higher level competitiveness during matches than during training since level of competition is a well known contributing factor for injury (Murphy et al. 2003). Murphy et al (2003) further reported that athletes may be prone to aggressive, risk taking behaviours during competition, which in turn increase the potential for injury.

The majority of injuries (84%) of this study were in the lower extremities with the ankle being the most affected (25.7%) followed by the knee (23.4%) and thigh (10.2%). These findings concur with other studies such as Gallo et al (2006) who recorded 83% of injuries occurring in the lower extremities. Furthermore, Azubuike and Okojie (2009); Hootman et al. (2007), and Anarson et al

(2004) also reported similar findings. In addition, Hagglund et al (2009) also recorded that the ankle and knee were the most affected body parts, 57% and 38% respectively. Bailey et al (2010) also recorded 47% of ankle injuries which was higher compared to this study. The increased number of injuries in the lower extremities is said to be due to the fact that players compete to get possession of the ball and injure each other in the process. In addition, inappropriate footwear, poor playing surfaces, twisting and turning are all said to contribute to the propensity of injuries in the lower extremities (Wong & Hong, 2005). This could also be true for injuries in the Malawi Super league where most playing surfaces are hard and do not meet FIFA playing surface standards. Since most injuries occur in the lower extremities, it justifies the fact that athlete training and injury prevention is targeted to the lower extremities especially with programmes applicable to all lower limb injuries and not specific to one injury (Hootman et al. 2007). However, this is not currently done in Malawi since medical team members are temporarily recruited and do not implement any injury prevention programmes.



This study revealed that the most common injury type was ligament sprain (36%), followed by muscle strains (14.4%) and haematoma (11.4%). The other injuries were dislocations (9%) and fractures 7.8%). These findings are in line with the findings of other authors (Hagglund et al 2009; Tsiganos et al. 2007; & Bailey et al. 2010). Tsiganos et al., (2007), while studying the epidemiology of injuries in amateur Greek soccer players, reported that most injuries were strains (33%), overuse (27%), and sprains (25%). These authors further observed that the most commonly injured body part was the thigh (38%), followed by the ankle (27%) and the knee (13%).

Tackling is said to be main injury mechanism for injuries in the lower extremities. Wong and Hong, (2005) reported that the propensity of tackling injuries could be due to the fact that players



fail to react quickly to an unsuspected tackle from an opponent player. Similarly, the findings of this study report that tackling or being tackled was the main cause of injury (58%), while falls, collisions and jumps accounted for 33% and over use injuries accounted for 9%. This therefore calls for coaches and the team managements to sensitize football players about fairplay to avoid dangerous tackles but also referees to punish players flouting rules of fair play.

The results of this study indicate that most injuries were severe (36.5%) while 27.6% were moderate and 26.3% of the injuries were mild. These findings are in line with the results of a study by Goga and Gongal, (2003) of soccer injuries in amateur soccer players at a South African hospital where they reported that most of the injuries reported were severe. However, it would be difficult to compare with this study since they were recorded at a hospital which could explain that only severe injuries were referred to hospital and all other injuries were managed by the medical teams at the teams. This study also differs in the findings with other studies, for instance in a review of literature, Wong and Hong (2005) reported that most studies reported that most injuries were minor followed by moderate. Twizere (2004) found that most injuries were moderate. These differences could be explained by the fact that the definition of injury severity was different, for instance Twizere, (2004) classified injuries into minor, moderate, major and severe. Brooks and Fuller (2006), opines that it is meaningless to compare studies if definitions are different.

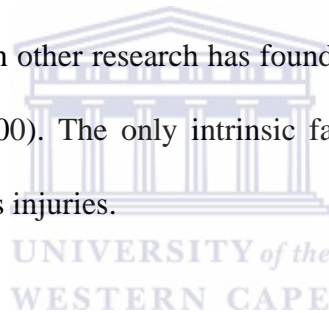
The findings of this study concur with other studies that most injuries occur during competition as opposed to training. In addition, like other studies, most injuries occurred in the lower extremities with the knee and ankle being the most affected. However, this study differed with most studies on severity of injuries as it reported that most injuries were severe as opposed to most studies which reported that most injuries were moderate to minor.

### **6.3 Factors associated with injury**

Factors influencing injuries in football have been categorized into extrinsic and intrinsic factors. Intrinsic factors investigated in this study were age, BMI, previous injury and players' experience. Extrinsic factors that were investigated were injury prevention strategies such as equipment use, warm up, cool down, stretching and strength training. Only the factors that were significantly associated with injuries will be discussed below.

#### **6.3.1 Intrinsic factors**

Several intrinsic factors outlined above were investigated in the current study. Previous research has shown that age is significantly associated with injuries, i.e. the older the player, the more likely the occurrence of injuries (Osternberg & Roos, 2000; Peterson et al. 2000; McGregor & Rae, 1995) although other research has found contradicting results (Sodderman et al., 2001; Chomiak et al., 2000). The only intrinsic factor significantly associated with injuries in this study was previous injuries.

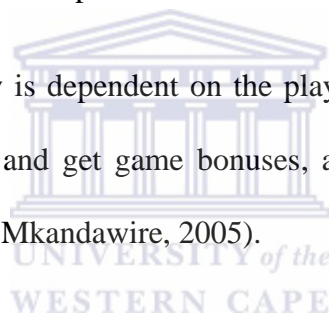


The findings of the study revealed a very significant relationship between injury prevalence and history of previous injury ( $P=0.000$ ). The results of this study are in line with several studies which have shown an association between injury and previous injury (Anarsson et al., 2004; Murphy et al., 2003; Chomiak et al. 2000). Murphy et al. (2003) reported that 53% of injuries were recurring from previous injuries. Anarsson et al. (2004) are of the opinion that players with previous injuries had a four- to sevenfold increased risk for the four most frequent injury types—knee sprains, ankle sprains, groin strains, and hamstring strains. Furthermore, previous injury and inadequate rehabilitation is reported to likely occur at the same location (Chomiak et al. 2000).

Inadequate rehabilitation could be a possible cause for the occurrence of recurrent injuries. As early as 1993, Ekstrand and Gillquist reported that 32 out of the 124 players under investigation in their study with minor injuries were followed with a major injury within two months.

This could also be true for players in Malawi where recurrent injuries could be attributed to lack of well a qualified medical team. During interviews with coaches and current team doctors, they all reported having inadequate knowledge about injury rehabilitation and that no procedures were in place in many teams for assessing players before they returned to active participation. As highlighted by the interviews in this study, returning to play was solely dependent on how the player felt about pain.

Secondly, since returning to play is dependent on the player, it is easy for the player to lie about recovery in order to play and get game bonuses, as most players' income is solely dependent on football (Kilowe & Mkandawire, 2005).



The findings above therefore emphasize several important factors that should be taken into consideration when addressing injuries in Malawi. Firstly, injuries should be addressed and managed effectively the first time it occurs. The availability of a suitably qualified medical team for the teams is of utmost importance as the current teams have highlighted their lack of knowledge with regards to the prevention and management of injuries.

### **6.3.2 Extrinsic factors**

Extrinsic factors investigated in this study were the use of protective equipment, warm up and cool down prior to and after training/matches and muscle stretching before training/matches.

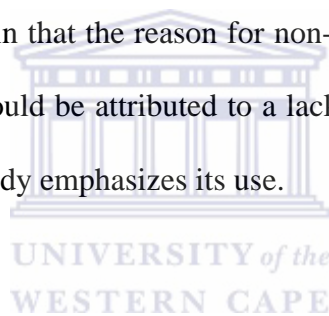
Research has suggested that warm-up, stretching, and cool-down might minimize the rate of injury among soccer players (Ekstrand et al., 1993). Almost all of the participants in the current study performed warm-up prior to and after training, 93.3% and 90.4% respectively. 77% reported to always perform warm-up exercises prior to matches while only 14.1% participated in cool-down exercises after matches. About 42.2% of injured players however did not perform cool-down activities after matches. Although there was no significant association between this and injury occurrence, it is something that should be highlighted to players, team coaches and team doctors as an important strategy to be incorporated in the training regime of soccer players in Malawi. A limitation of this study was the absence of enquiry into the reasons for not participating in cool-down after the matches.

Muscle stretching has also been shown to be an effective way of preventing injury (Mjølsnes, Arnason, Ostagen, Raastad & Bahr, 2004). Again, the majority of the participants (80%) in this study included stretching in their warm-up or cool-down regime during training. And as was the case with cool-down and warm-up as discussed above, stretching was not done after matches.

Use of protective equipment plays a major role in injury prevention in football. Use of shin guards is reported to lower incidence of injury in the lower extremities. In their study, Olsen, Scanlan, MacKay et al. (2004) reported that compulsory leg guards and shoes for players reduce the incidence of injuries during training and matches.

The results of this study revealed that the use of protective equipment was significantly associated with injury prevalence. Use of shin guards and ankle braces both at training and matches was significantly associated with injury prevalence ( $P < 0.001$ ). It was, however, observed that most players do not use protective equipment during training. The results show

that, of the 93 players who reported to have sustained at least one injury, 60 were not frequent users of shin pads during training, while only 10 of the 42 players who did not sustain any injury reported not using. However, it was observed that during matches, almost the opposite was true; the majority (60) of the injured players and all non injured (42) were using shin guards. These findings are in line with the findings of Hawkins and Fuller, (1998) which showed that most football players wore protective equipment only during matches and not during training. Their players cited a lack of motivation from their coaches as the reason for not using protective wear during training. In the current study, the players's knowledge regarding injury prevention measures however showed that 93% of the study sample was in agreement with the question that the use of shin pads reduces the risk of injury. These findings therefore possibly explain that the reason for non-use of shin guards during training is not a lack of awareness, but could be attributed to a lack of the shin guards themselves or players' negligence and that nobody emphasizes its use.



The limitation of this study in part is that there was no question to further explore the non use of protective equipment during training. The FIFA rules states that every player should use protective wear during matches and could be the reason why many players use shin pads during matches, and not necessarily for training. It is therefore of importance for team coaches and the medical team to highlight the importance of the use of shin pads for both matches and training.

It is generally accepted that the use of ankle guards reduces the incidence of ankle injuries. In a study by Surve et al. (1994), investigating the effect of semi-rigid ankle orthoses, it was observed that the incidence of ankle injuries was reduced in players who used the orthosis

compared to those not using the orthosis. In his study, the incidence was significantly higher in players which did not use the orthosis and had previous ankle injury history than in a group which did not use and had no previous ankle injury history. The current study revealed that 67 out of the 93 players with at least one injury did not use ankle guards during training and likewise 66 of the 93 did not use ankle guards during matches. This study has also revealed that the ankle is the most injured body part, therefore it could be postulated that the non use of the ankle guards contributed to the incidence of ankle injuries.

In summary, it calls for team coaches to motivate the players to use protective equipment during training and matches. It is the responsibility of team management to provide players with protective equipment. A further investigation should try to ascertain why players do not use protective equipment during training.



#### **6.4 Support football players receive after injury**

Social support to players undergoing rehabilitation after injury assists them psychologically and physically. In a study by Finch et al. (2002) in Australia, football players reported to have received good social support from coaches. Furthermore, Bianco and Ekstrand, (2001) reported that players perceive consistent social support and assistance provided to meet their needs is very effective and provides players with reassurance of recovering.

In this study, players also reported satisfaction with the support they received after injury from their coach, administration, doctor, fellow players and families. 95 % of the players reported receiving good support from their families. Furthermore, 86% reported of team doctors' support, while 84.5% received good social support from the team administration.

However, only 70% received support from their fellow players. Niyonsenga (2011) reported that fellow players' support after injury play a big role in helping injured players eradicate negative thoughts, alienation, and isolation which can affect injured players' well being and confidence.

Therefore, the players who reported to not having received support from their fellow players could be at risk for injury influences. Therefore, it is the role of management and coaches to make sure there is cordial relationship among players.

## **6.5 Coaches and team doctors' perceptions regarding the role of physiotherapy, risks and management of football injuries in the Malawi Super League.**

### **6.5.1 Perceptions regarding Risks**

One of the most important risk factors identified by both team coaches and doctors during the interviews was recurrent injuries. This was supported by the quantitative findings of this study too, where 81 of the 167 injuries reported were recurrent. Several studies have indeed highlighted that previous injuries are a major risk factor for injuries (McKay et al., 2001; Chomiak et al.2000; Messina et al., 1999). The occurrence of recurrent injuries is raising questions about proper medical care and rehabilitation of the injured players.

Several factors were unearthed during the interviews with team doctors and coaches with regard to some of the factors that could contribute to recurring injuries. The absence of adequately trained medical personel such as physiotherapists to assess or manage injuries was one of the concerns highlighted by coaches and doctors. Decisions regarding return to play after sustaining an injury were also highlighted as a cause for concern. As highlighted in the interviews, team doctors were under pressure from team managers and players to return the

player to play prematurely when results are their main priority. Podlog and Eklund (2007) stressed that the decision about players returning to play should be made by a rehabilitation specialist, physiotherapist or qualified medical doctor. Finch et al. (2002) further reported that players will take a risk to play with an injury, if they know that they will benefit. In addition, the team doctors and coaches also highlighted that players are under pressure to return to sport earlier because of financial problems in their families that might arise if they are out of play for an extended period of time. These findings highlight the need for qualified staff that can assess players before they return to play to eradicate the behaviour of faking injuries. Furthermore, it highlights the need for proper financial support to injured players so that they are not tempted to have negative thoughts and experience behaviour which predisposes them to further injury (William & Andersen, 1998).

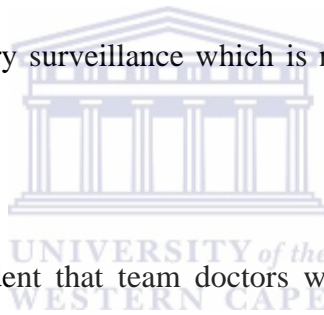
Another concern of coaches was the fitness levels and poor physical condition of players. Coaches and teams should therefore make the levels of fitness of their players a key concern. Researchers have reported that the level of aerobic fitness would be a risk factor because once the athlete is fatigued: there is a change in muscle recruitment which also alters the force acting on the articular, ligaments and muscular structures. The lack of protective equipment and poor infrastructure was also highlighted as contributing factors to injuries. A great cause of concern was the fact that some coaches reported that players inserted cardboard boxes in place of shin guards to avoid being spotted by referees, as FIFA roles stipulate that no player should be allowed to play without shin guards. Coaches and team doctors highlighted that lack of shin pads and ankle guards contributed to increased risk for injury of players. Use of protective equipment is believed to contribute to injury incidence in athletes (Bir et al., 1995), however, with the current situation as observed by coaches and team doctors, lack of protective equipment put footballers at risk for injury. Poor playing



surfaces are a major concern which was raised. Most Malawian playing grounds are bare without grass and are not watered. Playing on hard surface predisposes players to over-use injuries such as stress structures, shin pain, and tendinopathy (Brukner & Khan, 2011).

### **6.5.2 Perception regarding management of injuries**

Van Mechelen (1997), reports that the sequence of injury prevention cannot be applied without proper sport injury surveillance. However, it was generally observed that team doctors in this study do not have an injury surveillance system of recording injuries in place; therefore the extent of the problem was not known. This highlights the lack of information on injuries in Malawi and it is the aim of this study to highlight these issues and sensitize teams on the importance of injury surveillance which is necessary if any injury prevention strategy will be implemented.



From the interviews it was evident that team doctors were aware of principles of injury management, such as first aid and the RICE-principle. However, they also highlighted the fact that injury management depended on who was available (doctors are employed on a part-time basis by teams), when the injury occurred and the severity of injury. In the absence of the team doctors during training or matches, serious injuries could easily be neglected which could put players at risk. They also reported that since they work part time, they usually advise players to come to their place of work, which is usually a government hospital for treatment. However, team doctors also reported referrals of injuries to other professionals. This is in line with the observation of Brukner and Khan (2011), who reports that clinicians cannot be experts in all, areas therefore it is advisable to seek assistance.

Some of the challenges experienced by the team doctors in the management of the injuries were unearthed during the interviews. One of these were the fact that their services are perceived to be not appreciated by teams management, as they do not provide doctors with necessary equipment such as first aid kits. To this end, Donaldson et al. (2002) reported that club leaders' role is to be involved in development, implementation, and monitoring of comprehensive sport safety programmes. They should ensure that playing surfaces, facilities, and equipment are safe for use at both training and matches. Team leaders put players at risk by not providing necessary equipment for team doctors.

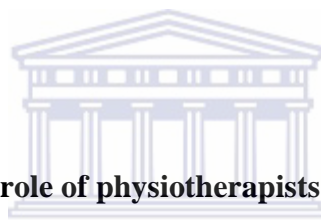
On the other hand, coaches reported that the biggest challenge is the lack of qualified doctors to manage injuries. This could possibly be because the doctors are employed on a part-time basis. Waddington et al (2001) raised a similar concern regarding the experience, qualifications and appointment of doctors in the premier league. Unqualified team doctors are at risk of having their clinical autonomy undermined, as it was clearly stated that they are pressured by team management.

### **6.5.3 Perceptions regarding injury prevention**

It became very clear that team doctors' and coaches' views on injury prevention were very different. Team doctors perceived the use of protective equipment as the main injury prevention strategy. Team doctors reported that they encouraged players to use shin guards and ankle guards to prevent injuries. On the other hand, coaches felt warm- up was the main injury prevention strategy. In addition, both team doctors and coaches were not aware of the many injury prevention strategies used currently in the area of sports injuries. They were not aware of pre season training, plyometrics strengthening as part of injury prevention strategies.

Finch and McGrath (1997) clearly stated that it is the coaches' role to teach players safety measures. Donaldson and Hill (2002) also reported that coaches should make injury prevention crucial and important part of their training programme. It is the role of the management to facilitate coaches' access or attend first aid training in injury prevention. If coaches and team doctors have little knowledge regarding injury prevention strategies, it is the players who are put at risk for injury and risk their career.

It is thus clear that if the Malawian Super League wants to prevent injuries and offer the best management for their players, they should invest in improving the knowledge of both team doctors and coaches regarding the essential injury prevention strategies currently available in the sports medicine area.



#### **6.5.4 Perceptions regarding the role of physiotherapists**

There was a consensus among team doctors and coaches that physiotherapists were needed to be part of the injury management team. However, team doctors believed that physiotherapist should only be involved in injury rehabilitation while coaches reported that physiotherapist should also be involved in acute injuries. Oakes (2003) clearly stated that physiotherapists play a major role in the management of sports injuries in that they are involved in treating acute injuries where they aim to reduce swelling, reduce pain, and facilitate oxygen and nutrition of the injury site, restoring normal movement pattern, while minimizing further deterioration and avoiding re-inflaming the lesion.

It is thus clear that some uncertainty might exist among both coaches and doctors regarding the exact role that a physiotherapist can fill. This again points to a lack of awareness and knowledge among them regarding the management and prevention of injuries. It is therefore

the role of physiotherapists to sensitise coaches, team doctors and management on their role regarding injury management.

## **6.6 Limitations**

The results of the present study should be interpreted in the light of the following limitations:

- The questionnaire was administered at a single training session at each participating team. This could have influenced the response rate as all the players did not attend every training session. A higher response rate may thus have been achieved if data collection was spread over several days for each team.
- Being a retrospective study, there is a possibility of recall bias in reporting the prevalence of injuries and the duration taken out of play (severity).
- Injury diagnoses was based on the players' knowledge which means some injuries might have been misdiagnosed.
- Statements on perceptions need to be validated before they can be considered to represent the whole situation.

## **6.7 Summary of chapter**

This chapter provided a discussion of the findings of the study. It also highlighted the limitations of the study that should be taken into consideration when interpreting these findings. The next chapter will provide a short summary of the thesis and provide some recommendations based on the study.

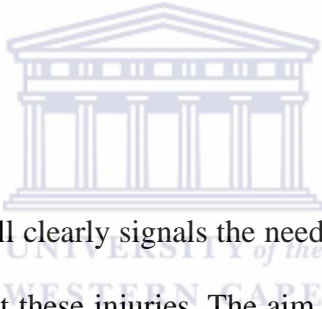
## **CHAPTER SEVEN**

### **7 SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **7.1 Introduction**

The main aim of this study was to determine the prevalence of injuries among the players in the Super League of Malawi and hence the need for physiotherapy intervention in the prevention and management of football injuries. The results of the study were presented in detail in Chapter Four and Five and discussed in Chapter Six. This concluding chapter will provide a summary of the study and is followed by recommendations for injury prevention and management as well as for future research.

#### **7.2 Summary**



The high rate of injuries in football clearly signals the need for adequately trained health care professionals to diagnose and treat these injuries. The aim of this study was to determine the need for physiotherapy intervention in the prevention and management of football injuries in the Super League of Malawi. In order to achieve the aim of the study, a questionnaire was administered to football players which sought to determine the prevalence of injuries among Super League players, and to determine their knowledge regarding injury preventative strategies. In addition, it sought to determine the support players receive after injury. Furthermore, coaches and team doctors were interviewed to explore their views regarding the role of physiotherapy, risks, prevention, and management of football injuries in the Malawi Super League.

The results of this study have shown that the prevalence of injury in the Malawi Super League is high (68.9%). The results showed that most injuries occur during matches (64%)

compared to training (37%). Most injuries were sustained in the lower extremities (84%) and the ankle (25.7%) and knee (23.4%) were the most affected parts. Ligament sprains, muscle strains followed by haematoma and dislocations were the most prevalent type of injuries occurring among players. Of the 93 football players who reported to have sustained at least one injury, 42 (52.7%) reported recurring injuries with 33% of recurring injuries occurring at the ankle joint. Most injuries (36.5%) were reported to be severe followed by moderate (27.6%) and mild (26.3%), however 16% of the data was missing possibly due to recall bias. Tackling was the main cause of injury and the most injuries occurred in the second half of the match. The results revealed that first aid was usually provided by team officials (70.4%) during training and team doctors (100%) during matches. Most players (89%) had received medical treatment after injuries compared to physiotherapy (3.7%). On provision of carbohydrates, water intake, and nutritional advice, most players (94.8%) reported to be provided with carbohydrates before matches, while 63.7% reported not receiving any carbohydrates after training and matches respectively. Water intake was generally good both during training (82.2%) and matches (94.8%) respectively. On nutrition, 66% of the players reported to have received nutritional advice during training and 82% during matches. It was further reported that players were satisfied with the support they received after injury.

Analysis of data was done to determine if there was association between injury prevalence and intrinsic factors, age, BMI, experience, and recurrent injury. No significant ( $P>0.005$ ) association was observed between injury prevalence and age, BMI, and experience. However, recurrent injury showed a very strong significant ( $P<0.001$ ) relationship with injury prevalence. No relationship was observed between injury prevalence and warm-up, and cool-down after training and matches. However, stretching after cooldown after matches showed a very strong significant ( $P<0.001$ ) relationship with injury prevalence.

The interviews with coaches and team doctors sought their views regarding risk factors for injury. Team doctors, and coaches reported that recurrent injury, psychological, player fitness, lack of equipment and poor infrastructure were the most prevalent risk factors for injury. Regarding injury management, coaches and team doctors reported sprains and strains as the most common injuries seen in the league. Furthermore, their views regarding injury prevention were sought. Team doctors perceived use of protective equipment as the main strategy of injury prevention while coaches regarded warm up as the main injury preventative strategy. In addition, both coaches and team doctors agreed there was need for physiotherapists to be involved in injury prevention and management. However, they differed on what their role was.

### **7.3 Conclusion**

The high prevalence of injuries has been highlighted. The severity of injuries highlights how players and teams are affected by the injuries. The high prevalence of recurrent injuries suggests a lack of adequate rehabilitation and proper procedure of return to play after injury. As much as players are aware of some of injury prevention strategies, lack of equipment and inconsistency in using protective equipment and injury prevention strategies has been reported. Unavailability of qualified personnel during training to provide first aid is also a concern. There is lack of awareness of the role physiotherapists can play in injury prevention and management among sports stakeholders. The findings of the study clearly highlight the need for physiotherapy intervention in prevention and management of football injuries in Malawi.

## 7.4 Recommendations

The results of the study have suggested several recommendations for future work:

- It is the players' responsibility to consistently use protective equipment to prevent injuries.
- Players should be educated with regard to the implication of returning to sporting activities before they are fully recovered from injuries.
- Players should adhere to the rules outlined in fair play.
- Team coaches and doctors should supervise prevention strategies such as warm-up, cool-down, stretching and strengthening.
- In addition team coaches should enforce the use of protective gear at both training and matches.
- Players that have sustained injuries should be cleared by the medical team, including a physiotherapist, before return to play.
- Team management should facilitate team coaches and doctors to attend refresher courses regarding sports injury prevention and management.
- Team management should ensure the availability of proper equipment, such as protective gear, first aid kits, and safe playing surfaces.
- The Physiotherapy Association in Malawi should increase awareness of sports teams regarding the role of physiotherapy in the prevention and management of sports injuries.
- Additional research is needed to evaluate injury prevention programmes in Malawi.



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## **APPENDICES**



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## **Appendix A: ENGLISH INFORMATION SHEET**



### **UNIVERSITY OF THE WESTERN CAPE**

Private Bag X 17, Bellville 7535, South Africa

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

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### **INFORMATION SHEET**

#### **Project Title: FACTORS ASSOCIATED WITH FOOTBALL INJURIES IN MALAWI: IMPLICATIONS FOR PHYSIOTHERAPY INTERVENTION**

##### **What is this study about?**

This is a research project being conducted by Anderson Mughogho at the University of the Western Cape. We are inviting you to participate in this research project because you are one of the football players who played in the Malawi super league last season. The purpose of this research project is to determine what factors are associated with football injuries in Malawi and if there is need for Physiotherapy intervention.

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

You will be asked to sign a form agreeing to participate in the study. You will be asked to answer questions on a questionnaire. In the questionnaire you will be asked your personal information, e.g. age, height, weight, etc., you will also be asked to give information about your experience in the super league last season regarding injuries you may have encountered, your use of protective equipment, if you used any injury prevention measures and the support you got after being injured. Participation in the will take you about 10 to 20 min and feeling of the questionnaire will take place at your training pitch.

##### **Would my participation in this study be kept confidential?**

We will do our best to keep your personal information confidential. To help protect your confidentiality, no names will be used on the questionnaires; instead identification codes will be used on all the questionnaires. Through the use of identification key the researcher will be able to link your questionnaire to your identity and only the researcher will have access to the identification key. The information will be kept safe in a locked cabinet all the time. All the computers where the information will be entered will be password protected

If we write a report or article about this research project, your identity will be protected to the maximum extent possible.

In accordance with legal requirements and/or professional standards, we will disclose to the appropriate individuals and/or authorities information that comes to our attention concerning child abuse or neglect or potential harm to you or others.

**What are the risks of this research?**

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

**What are the benefits of this research?**

This research is not designed to help you personally, but the results may help the investigator learn more about foot ball injuries and the need for physiotherapy services. We hope that, in the future, other people might benefit from this study through improved understanding of football injuries and the implications of Physiotherapy in Malawi.

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

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

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

All football players who will be injured or discovered to be injured during the period of data collection will be referred for proper attention

### **What if I have questions?**

This research is being conducted by Anderson Mughogho, from the Physiotherapy Department *at* the University of the Western Cape. If you have any questions about the research study itself, please contact Anderson Mughogho at: University of the Western Cape, Private Bag X17, Bellville 7535. Tel: 0027786355672 e-mail: [amughogho@hotmail.com](mailto:amughogho@hotmail.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:

- 1. Head of Physiotherapy Department:** Professor. Jullie Phillips
- 2. Dean of the Faculty of Community and Health Sciences:**

University of the Western Cape

Private Bag X17

Bellville 7535.

- 3. The Ethics Committee**

College of Medicine Research and Ethics Committee (COMREC)

University of Malawi College of Medicine,

P/BAG 360

Blantyre-3

Malawi,

PHONE: 01874 377

E-mail: [comrec@medcol.mw](mailto:comrec@medcol.mw)



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



## Appendix B. CHICHEWA INFORMATION SHEET



# UNIVERSITY OF THE WESTERN CAPE

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### **CHIKALATA CHOFOTOKOZA CHOLINGA CHA KAFUKUFUKU .**

**Mutu wa kafukufuku:** ZINTHU ZIMENE ZIMATHANDIZIRA KUVULALA KWA OSEWERA MPIRA WA MIYENDO MMALAWI: KODI MAFIZO ANGATHANDIZE?

#### **Kodi kafukufuka ameneyu akufotokoza zotani?**

Kafukufuku ameneyu akuchita ndi Anderson Mughogho amene akupanga maphunzilo ake pa sukulu ya zaukachenjede ya ku Western Cape. Tikukuitanani inuyo kuti mutenge nawo mbali mukafukufukuyu chifukwa ndinu mmodzi mwa osewera mpira wa miyendo wa ma timu anali mu supa ligi yapitayi. Cholinga cha kafukufuku ameneyu ndikufuna kuziwa zinthu zomwe zimathandizira kuti osewera mpira wa miyendo azivulala komanso kuona ngati pangakhale kufunika kwa chithandizo cha mafizo.

#### **Kodi mbali yanga ndi chani ndikavomera kutenga nawo mbali?**

Mupemphedwa kuti musaine chikalata kuvomereza kuti mukutenga nawo gawo mukafukufuku ameneyu. . Mupemphedwaso kuti muyankhe mafuso mwakuya amene mufunsidwe. Nthawi yamafunso imeneyi, mufunsidwa za kuziwa ndikumvetsetsa kwanu pakufunikila kwa chithandizo cha mafizo kwa osewera, zinthu zimene zingaike osewera pa chiswe kuti avulale, katetezedwe kake komanso chithandizo chimene osewera mpira mu supa

ligi ya Malawi amalandira aka vulala. Kufusidwa mafuso kumeneku, kuchitika munthawi yosaposa ola imozi ndipo tipangila kumalo omwe musankhe nokha

**Kodi kutenga nawo mbali kwanga mu kafukufuku ameneyu pakhala kusungirana chinsisi?**

Tiyesesa kwambiri kusunga chinsinsi pachina chilichose chokhuzana ndi inuyo. Pokutsimikizilani kuti pakhala chinsinsi, sitigwiritsa ntchito dzina lanu, mmalo mwake muziziwika ndi nambala chabe pachina chilichose chomwe mutiuze. Ndikupyolera mu nambalayi ndimmene wochita kafukufukuyu angakuziwireni ndipo ndiyekhayu yemwe azikhala ndi kuthekera koziwa nambalayi. Pa nthawi ya kafukufuku ameneyu, tikhozanso kugwirisa ntchito zintapa mawu ndicholinga choti tisaphoyese uthenga uliwise omwe mutiuze. Makaseti a mawu otapidwawo azisekeredwa mubokosi nthawi zose. Makonpyuta amene musungidwe mauthenga, azisegulidwa ndi malemba achinsinsisi kuti wina aliyese asatsegule.

Ngati tingalembe lipoti kapena kutulusa nkhani yokhuzana ndi kafukufuku ameneyu, tizayesesa kwambiri kuti inuyo musazazindikilike kuti munatenga nawo mbali.

Monga mwa malamulo komanso mwa ukadaulo wake, tizayenera kuziwise anthu akuluakulu apawudindo wawo zankhani zomwe zingabwere kwaife zokhuzana ndi nkhanza kwa ana kapena kuwanyalanyaza, kapenanso chisonyezo choti inuyo kapena anthu ena ali pa chiopsezo chifukwa chotenga nao mbali mkafukufuku ameneyu.

**Kodi zoipa zomwe tingaziyembekeze pakafukufuku ameneyu ndi chani?**

Palibe zoipa zoziwika zokhuzana ndi kafukufukuyu mukatenga nawo mbali.

**Kodi phindu lake la Kafukufuku ameneyu ndi chani?**

Kafukufuku amaneyu sanapangidwe ndicholinga chopindulila inuyo panokha, koma zotsatila zake zidzathandiza ochitisa kafukufukuyu kuti aphunzire zambiri za kuvulala kwa osewera mpira wa miyendo ndi kufunikira kwa chithandizo cha mafizo.

Tikukhulupila kuti, mtsogolo muno anthu ambiri azapindula kupyolera mu kafukufuku ameneyu chifukwa cha masinthidwe akamvesesedwe ka kuvulala pa mpira wa miyendo ndi kumvetsetsaso kwa chithandizo cha mafizo mu Malawi.

**Kodi ndikakhala nawo mu kafukufuku ameneyu ndili oloedwa kusiya nthawi iliyose?**

Kutenga nawo mbali kwanu mu kafukufuku ameneyu, zikutengera kuzipereka kwanu basi. Mutha kusankha kusatenga nawo mbali ndipang'onopomwe. Ngati mungasankhe kutenga nawo mbali, muli ndiufulu kusiya nthawi ina iliyose..Ngati mungasankhe kusatenga nawo mbali mukafukufuku ameneyu kapena mwasiila panjira nthawi iliyose, simulangidwa kapena kulephela kupeza mwai umene mukanatha kupeza mukanakhala kuti simunatenge nao mbali.

**Kodi palichithandizo nditati ndavulala panthawi yotenga nawo mabali mukafukufuku ameneyu?**

Ngati mungapezeke kuti mwavulala kapena kukhuzidwa mwanjira ina iliyonse pa nthawi ya mafunso, muzatumizidwa koyenelera kuti mukalandire chithandizo.

**Nanga ngati ndili ndi mafunso?**

Kafukufukuyu akupangitsa ndi Anderson Mughogho kuchokera ku sukulu ya ukachenjede ya Western Cape. Ngati mungakhale ndimafunso okhuzana ndi kafukufukuyu, chonde, funsani Anderson Mughogho Ku: University of the Western Cape, Private Bag X17, Bellville 7535. Tel: 0027786355672 e-mail: [amughogho@hotmail.com](mailto:amughogho@hotmail.com).

**Koma ngati mungakhale ndi funso pakafukufuku ameneyu lokhuza ufulu wanu ngati mwa mmodzi wotenga nawo mbali, kapenanso ngati mukufuna kufotokoza zavuto lililonse lomwe mwakumananalo lokhuzana ndi kafukufukuyu, chonde apezeni kapena lankhulani ndi anthu awa:.....**

1. **Head of Physiotherapy Department:** Professor. Julie Phillips
2. **Dean of the Faculty of Community and Health Sciences:** Professor R. Mpofu.

University of the Western Cape

Private Bag X17

Bellville 7535.

### **3. The Ethics Committee**

College of Medicine Research and Ethics Committee (COMREC)

University of Malawi College of Medicine,

P/BAG 360

Blantyre-3

Malawi,

PHONE: 01874 377

E-mail: comrec@medcol.mw

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



## Appendix C: CONSENT FORM: ENGLISH



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## CONSENT FORM

**Title of Research Project: Factors associated with football injuries in Malawi: Implications for Physiotherapy intervention.**

The study has been described to me in a language that I understand and I freely and voluntarily agree to participate. My questions about the study have been answered. I understand that my identity will not be disclosed and that I may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way.

**Participant's name.....**

**Participant's signature.....**

**Witness.....**

**Date.....**

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

**Study Coordinator's Name: Professor Julie Phillips**

**University of the Western Cape**

**Private Bag X17, Belville 7535**

**Telephone: (021)959-2542**

**Fax: (021)959-1217**

**Email: [jphillips@uwc.ac.za](mailto:jphillips@uwc.ac.za)**



## Appendix D: CONSENT FORM CHICHEWA



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#### CHIKALATA CHOVOMELEZA KUTENGA NAWO MBALI

**Mutu wa kafukufuku:** Zinthu zimene zimathandizira kuvulala kwa osewera mpira wa miyendo: Kodi Mafizo angathandize?

Chilankhulidwe chomwe chagwiritsidwa ntchito mu kafukufuku ameneyu ndichomveka bwino kwaine ndipo ndikuvomeleza kutenga nawo mbali.

Mafuso anga onse okhuzana ndi kafukufuku ameneyu ayankhidwa. Ndikukhulupilira kuti andisungila chisinsi choti ndatenga nao mbali mukafukufuku ameneyu komanso, ndili ndi ufulu osiila panjira kutenga nawo mbali nthawi inailiyonse yomwe ndingafune popanda chovuta chilichonse.

**Dzina la otenga nawo mbali.....**

**Kusaina kwa otenga nawo mbali.....**

**Mboni.....**

**Siku.....**

Ngati mungakhale ndi mafuso kapena kukumana ndi mavuto ena aliwonse okhuzana ndi kafukufuku ameneyu, chonde aziwitseni akulu omwe akuyang'anila kayendesedwe ka kafukufuku ameneyi:

Dzina la wankulu woyang'anila za kayendesedwe ka kafukufuku: **Professor Julie Phillips**

**University of the Western Cape**

**Private Bag X17, Belville 7535**



**Telephone: (021)959-2542**

**Fax: (021)959-1217**

**Email: [jphillips@uwc.ac.za](mailto:jphillips@uwc.ac.za)**



## Appendix E: QUESTIONNAIRE: ENGLISH

### QUESTIONNAIRE FOR SUPER LEAGUE FOOTBALL PLAYERS

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

ALL THE INFORMATION TO BE GIVEN IS FOR 2010-2011 SEASON (LAST SEASON).

#### PART A. IDENTIFICATION

1. Team name:
2. Age:  (last season)
3. Number of years as player in Super league.
4. Playing position: Goalkeeper: ☐ Defender: ☐ Midfielder: ☐ Striker: ☐

#### PART B. INJURY HISTORY

In the answers you give below, give information for last season.

##### 1. Did you sustain any injury last season?

YES ☐

NO ☐

If yes how many during a) Training sessions:  Injuries

b) Competitive matches:  Injuries

If your answer is no, proceed to part.....C...

##### 2. Tick the body part(s) and number of injury (ies) you sustained during training and competitive matches.

INJURED BODY PART	TRAINING					MATCHES				
	Number of injuries					Number of injuries				
	1	2	3	4	5+	1	2	3	4	5+
Head/face										
neck										
Sternum/ribs										
abdomen										
Lower back/sacrum/pelvis										
Shoulder/clavicle										
Upper arm										
Elbow										
Fore arm										

Wrist										
Hand/finger/thumb										
INJURED BODY PART	TRAINING					MATCHES				
	Number of injuries					Number of injuries				
	1	2	3	4	5+	1	2	3	4	5+
Hip/groin										
Thigh										
Knee										
Lower/leg/Achilles tendon										
Ankle										
Foot/toe										

### 3. TYPE OF INJURY

		Training					Matches				
Injury number		1	2	3	4	5	1	2	3	4	5
TYPE OF INJURY											
Concussion with or without loss of consciousness											
Fracture											
Other bone injuries											
Sprain/ligament injury											
Dislocation/subluxation											
Lesion of meniscus or cartilage											
Muscle rupture/tear/strain/cramp											
Tendon injury/rupture											
Haematoma/contusion											
Abrasion/laceration											
Nerve injury											
Dental injury											
Other injuries (specify)											

### 4. Did you have an injury that occurred (at the same body part) several times last season?

Yes: ☐

No: ☐

If yes:

How many injuries:

Injury number	Specify body part injured	How long did it take to return to full participation					
		>1 week	1 week	2 weeks	3 weeks	4 weeks	other
1							
2							
3							
4							

5							
---	--	--	--	--	--	--	--

a) Was the injury caused by trauma or unknown cause or tackle from another player?

Injury number	Caused by				
	Unknown cause	trauma	tackle	Training	match
1					
2					
3					
4					
5					

b) During which time of the game did the injury occur?

Injury number	Specify time in minutes						
	First half			Second half			Extra time
1	0-15	16-30	31-45	46-60	61-75	76-90	90 +
2							
3							
4							
5							
6							

c) How many training sessions and matches did you miss last season as a result of an injury?

Injury number	training					matches				
	1	2	3	4	5	1	2	3	4	5
Number of training sessions missed: 1 <sup>st</sup> injury										
2 <sup>nd</sup> injury										
3 <sup>rd</sup> injury										
4 <sup>th</sup> injury										
5 <sup>th</sup> injury										

5. Who provides first aid during training or match? Tick against the right answer.

	training	match
Team doctor		
Team coach		
Team official		
St John ambulance		
Other/specify		

**6. What kind of treatment did you receive after injury ( one or more answers are possible)**

	training					matches				
Injury number	1	2	3	4	5	1	2	3	4	5
Medical treatment										
Traditional treatment										
Physiotherapy										
Self treatment										
none										

**PART C: PROTECTIVE EQUIPMENT**

	TRAINING					MATCHES				
	1	2	3	4	5	1	2	3	4	5
Do you wear shin guards										
Do you wear ankle guards										
Do you wear football boots during training										

**KEY:** 1 = always (100%). 2 = very often (75%). 3= often (50%). 4= sometimes (25%). 5= never (0%).

**PART D: INJURY PREVENTION PROGRAMMES.**

Tick the right answer:

**1. Do you have a warm-up period prior to:**

	Always(100%):	Veryoften(75%)	Often(50%):	Sometimes(25%):	Never(0%):
<b>Training</b>					
<b>Matches</b>					

**2. Do you have cool down at the completion of?**

	Always(100%):	Veryoften(75%)	Often(50%):	Sometimes(25%):	Never(0%):
<b>training</b>					
<b>matches</b>					

**3. Do you stretch the major leg muscles in the following situations?**

	Always	Very often	Often	Sometimes	Never
Warming-up prior to training					
Warming-up prior to matches					
Cooling-down after training					
Cooling-down after matches					

**4. Do you undertake flexibility training (not included as part of a warm-up or cool-down)?**

	never	Once a week	Twice a week	Three times a week	More than 3 times a week
Times per week as part of a team session					
Times per week as extra individual work					

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**5. Do you perform/undertake strength training in the gymnasium?**

	never	Once a week	Twice a week	Three times a week	More than 3 times a week
Times per week as part of a team session					
Times per week as extra individual work					

**6) In the following questions tick the description which most closely matches your opinion of the statement.**

	Strongly agree	agree	Neither disagree nor disagree	disagree	Strongly disagree
The chance of sustaining an injury during training that prevents you from being available for selection is likely.					
The chance of sustaining and injury during competitive match that prevents you from being available for selection is likely					
There is a greater chance of sustaining an injury during a competitive match than during training					
Injuries are consequences of the actions of other players					
The risk of lower leg injuries in training is reduced by wearing shin pads					
Injury is more likely towards the end of a match					
The risk of injury is reduced by thoroughly warming up and stretching prior to: 1. Training 2. matches					
The risk of injury is reduced by thoroughly cooling down and stretching after: 1. training 2. matches					
Players with poor flexibility are more likely to get injured than those with good flexibility.					
Strong muscles are important in the protection against injury					
The majority of other players wear shin pads during training					

**7. Do you consciously consume carbohydrate (e.g.: nsima, bread, pasta, rice, potatoes, chocolate, sugar) in the following situations? (Provided by your team)**

	Always	Very often	Often:	Sometimes	Never
<b>Pre training</b>					
<b>Post training</b>					
<b>Pre match</b>					
<b>Post match</b>					

**8. What is the quantity of water intake during the following sessions?**

	Excellent	Very good	Good	Fair	Poor
During training					
During Match					

**9. Are you given any nutritional advice on what to eat or drink?**

	None	A little	A lot
Before training			
After training			
Before matches			
After matches			

#### **PART E: SUPPORT AFTER INJURY**

	always	often	sometimes	rarely	never
The coach supports me when injured					
The administration supports me when injured					
The team doctor supports me when injured					
My fellow players support me when injured					
My family supports me when injured					

**THANK YOU VERY MUCH**



## Appendix F: QUESTIONNAIRE: CHICHEWA

### MAFUNSO A OSEWERA MPIRA WA MIYENDO

Mutu wa kafukufuku: ZINTHU ZIMENE ZIMATHANDIZIRA KUVULALA KWA OSEWERA MPIRA WA MIYENDO MMALAWI: KODI MAFIZO ANGATHANDIZE?

Mafunso ndi mayankho onse operekedwa ndi achinsinsi ndipo sakaperekedwa kwa ena. Kotero mukupemphedwa kuti mupereke mayankho olondola mumipata yaperekedwa motsatidzana ndi mafunso. Muyankhe mafunso pochonga mumipata yaperekedwayi.

Mayankho onse operekedwa akhale okhudzana ndi sizoni ya mchaka cha 2010 kufikira 2011.

#### GAWO LOYAMBA.

1. Dzina la kalabu yanu:
2. Munali ndi zaka zingati mchigawo chimenechi cha 2010 - 2011:
3. Kulemera Kwanu:
4. Kutalika kwanu:
5. Kufikira season yatha munali mutasewera zaka zingati mu supaligi.
6. Mumaseweramaloati: pagolo:  kumbuyo:  pakati:  kutsogolo:



#### GAWO LA CHIWIRI: Mbiri yam'mene munavulalira sizoni yatha.

##### 1. Kodi munavulalapo sizoni yatha? (2010-2011 season)

Eya

Ayi

##### Ngati munasankha eya, munavulala kangati

a) popanga Training:

b) posewera masewero opikisana (game):

Ngati yankho lanu pa funsolili pamwambali ndi **Ayi** dumphani mpaka chigawo "C" chamafunso.

**2. chongani mbali yathupi yomwe munavulala komanso munavulala kangati popanga training ndipo sewera masewera opikisana.**

Chiwalo munavulala	TRAINING					MATCHES				
	Munavulala kangati					Munavulala kangati				
	kamozi	kawiri	katatu	kanayi	Kuposaka sanu	kamoz i	kawiri	katatu	kanayi	Kuposa kasanu
mutu/nkhope										
khosi										
chidale/nthiti										
Pa mimba										
mchiuno/nkolokolo/mata ko										
phewa/fupa lolumikiza chidale ndi khosi										
Mbali yamkono yimene yimalumikizana ndi phewa										
kasukusuku										
Mbali yamkono yomwe imalumikizana ndi dzanja										
Pamene dzanja limalumikizana ndi mkono										
dzanja/zala/chidole										
bondo										
ntchafu										
Mwendo/msempha wa chitendene										
Ankle										
phazi										

### 3. Munavulalamotani

Munavulala kangati	Popanga Training					Posewera masewera opikisana (game)				
	kamozi	kawiri	katatu	kanayi	Koposa kasanu	kamozi	kawiri	katatu	kanayi	Koposa kasanu
<b>MUNAVULALA MOTANI</b>										
Kuvulala m'mutu osakomoka kapena ndi kukomoka										
Kuthyoka fupa										
Kuvulala kwina kokhudzana ndi mafupa										
Kubinya kapena kuvulala misempha										
Kusemphana mafupa										
Kuvulala mkati mwabondo										
Kuvulala minofu										
Kuvulala minyewa										
Kuwundana magari mu ubongo										
Kuvulala mokandika kapena kusupuka pa khungu										
Kuvulala misempha yoyendetsa mauthenga mthupi										
Kuvulala mano										
Kuvulala kwina (longosolani)										

### 4. Munavulalapo koposa kamodzi kapena kochuluka malo (mthupi) amodzi

Eya: ☐

Ayi: ☐

Ngatimunayankha “eya”, Munavulalakangati:

Munavulala kangati	Tchulani mwachindunji malo kapena malo omwe munavulala	Panadutsa nthawi yayitali bwanji kuti Muyambirensa kusewera mpira	
		Osakwana sabata imodzi	Panatha sabata imodzi
kamozi			
kawiri			
katatu			
kanayi			
Koposakasanu			

--	--	--	--

**c) Ndi chiyani chinachititsa kuti muvulale?**

Munavula lakangati	Chomwe chinachitisa				
	Sindikudziwa chomwe chinachitika	kuwombana	Ndimalanda mpira	Popanga Training	Posewera masewera opikisana
1					
2					
3					
4					
5					

**d) Munavulala patadutsa nthawi yayitali bwanji mutayamba kusewera mpira?**

Munavulala kangati	Sankhani nthawi yolondola (mphindi)						
	Chigawo choyamba			Chigawo chachiwiri			Nthawi yowonjezera
1	0-15	16-30	31-45	46-60	61-75	76-90	90 +
2							
3							
4							
5							
6							

**D) Ndikangati kamene simunasewere chifukwa chovulala?**

	Popanga training					Posewera masewera opikisana				
	kamozi	kawiri	katatu	kanayi	kasanu	kamozi	kawiri	katatu	kanayi	Koposa kasanu
Kuvulala kopangitsa kuti musasewere										
Kuvulala koyamba										
Kuvulala kachiwiri										
Kuvulala kachitatu										
Kuvulala kachinayi										
Kuvulala kachisanu										

**5.Amapereka chithandizo choyamba mukavulala ndani?**

Wopeleka chithandizo	training	mpikisano
Dokotala wa kalabu yanu		
M'phunzitsi wa kalabu yanu		
M'modzi mwa akuluakulu a kalabu yanu		
A chipatala cha St John		
Ena/tchulani		

**7. Munalandira thandizo lotan mutavulala ( muthakupereka mayankho opyola limodzi)**

kuvulala	Popangatraining					Posewera masewera opikisana				
	Ko yamba	Ka chiwiri	Ka chitatu	Ka chinayi	Ka chisanu	Ko yamba	Ka chiwiri	Ka chitatu	Ka chinayi	Ka chisanu
Mankhwala achizungu										
Mankhwala achikuda										
Dokotala wa mafizo										
Ndinazithandiza ndekha										
palibe										

**GAWO LACHITATU: ZIDA ZOZITETEZERA**

	POPANGA TRAINING					POSEWERA MASEWERO OPIKISANA				
	1	2	3	4	5	1	2	3	4	5
Kodi mumavala ma padi?										
Kodi mumavala ma ankle gadi?										
Kodi mumavala nsapato zosewerera mpira popanga training										

**KEY: 1** = nthawi zonse(100%). **2** = pafupipafupi(75%). **3**= nthawi zina (50%). **4**= mwaapondiapo(25%). **5**= sindimavala (0%).

## GAWO LA CHINAYI: ZOCHITA POFUNA KUPEWA KUVULALA

Chongani mayankho olondola:

### 3. Kodi mumapanga mafizo musanayambe zotsatirazi (warm up)

	Nthawi zonse (100%)	pafupipafupi(75%)	Nthawi zina (50%)	Mwaapondipo(25%):	Sindi mapanga (0%)
<b>Popanga Training</b>					
<b>Masewera opikisana</b>					

### 4. Kodi mumapuma mukatha kupanga zotsatirazi(cool down)

	Nthawi zonse(100%):	pafupipafupi(75%)	Nthawi zina(50%)	Mwaapondipo (25%)	Sindimapanga(0%)
<b>Popanga training</b>					
<b>Masewera opikisana</b>					

### 3. Kodi mumaongola minofu yamumiyendo musanapange zinthu zotsatirasi

	Nthawi zonse	Pafupi pafupi	Nthawi zina	Mwaapondipo	sindimapanga
Kupanga mafizo musanayambe training					
Kupanga mafizo musanayambe masewera opikisana					
Nthawi yopuma mukatha kupanga training					
Nthawi yopuma mukatha kusewera masewera opikisana					

**4. Mumapanga mafizo ena aliwonse ongofewetsa thupi kupatula okonzekera training kapena kusewera masewera opikisana?**

	sindimapanga	Kamodzi pa sabata	Kawiri pa sabata	Katatu pa sabata	Kuposakatatu pa sabata
Kangati pa sabata musana kumane monga kalabu					
Kangati pa sabata panokha					

**5. Kodi mumapita kujimu (gym) kukapanga mafizo olimbitsa thupi**

	sindimapanga	Kamodzi pa sabata	Kawiri pa sabata	Katatu pa sabata	Kuposakatatu pa sabata
Kangati pa sabata musanakumane monga kalabu					
Kangati pa sabata pa nokha					

**6)Yankhani mafunso otsatirawa molingana ndim'mene mukuganizira**

	Ndizoonadi	ndizoona	sindikudziwa	sizoona	Sizoonaolopa n'gono
Kuvulala popanga training ndikomwe kungakulepheretse kusankhidwa kusewera masewera opikisana.					
Kuvulala nthawi ya mpikisano ndikomwe kunga kulepheretse kusankhidwa kusewera nao masewera ena ampikisano					
Mwai ovulala nthawi yampikisano ndiwochuluka kusiyana ndimwai ovulala nthawi ya training					
Kuti osewera avulale vuto limakhala lili lake					
Kuvulala kwamiyendo popanga training kuthakupewedwa povala ma padi.					
Nthawi zambiri Kuvulala kumachitika kumapeto kwa masewera opikisana.					
Kuvulala kutha kuchepetsedwa popanga mafizo(warm up)ndikudziwongola musanayambe:					
1. KupangaTraining					

2. Kusewera masewera opikisana					
Kuvulala kutha kuchepetsedwa popuma (cooldown)ndikudziwongola1. popanga Training					
2.kusewera masewera opikisana					
Osewera ouma thupi atha kuvulala msanga kuyerekeza ndiofe wathupi.					
Minofu yamphamvu ndiyofunikira popewa kuvulala.					
Osewera ambiri amavala ma padi popanga training					

**7. kodi mumadya zakudya zolimbitsa thupi (carbohydrates)ngati izi:nsima, bread, pasta, mpunga, mbatata, chocolate, chinangwa, sugarmunthawizotsatirazi? (zoperedwandikalabuyan)**

	Nthawi zonse	Pafupi pafupi	Nthawi zina:	Mwa apo ndi apo	sindimapanga
<b>Musanayam be kupanga training</b>					
<b>Mukatha kupanga training</b>					
<b>Musanayam be masewera opikisana</b>					
<b>Mukathakus ewera masewera opikisana</b>					

**8.mumamwa madzi ochuluka bwanji?**

	ochuluka	ochulukirapo	Ochuluka Pan'ono	Pang'ono	sindimwa
Popanga training					
Posewera masewera opikisana					

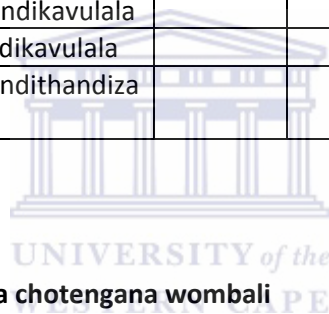


**9. mumapatsidwa malangizo ena aliwonse okhudzana ndi zakudya komanso zakumwa zoyenera kuti muzimwa?**

	ayi	Pang'ono	kwambiri
Musanayambe kupanga training			
Mukatha kupanga training			
Musanayambe kusewera masewera opikisana			
Mukatha kusewera masewera opikisana			

**GAWO LA CHISANU: CHITHANDI ZO CHIMENE MUMALANDIRA MUKAVULALA**

M'mphunzitsi wakalabu amandithandiza	Nthwizo nse	pafupi pafupi	Nthawizina	Mwaa pondia po	saman dithandiza
Kalabu imandithandiza ndikavulala					
Dokotala wakalabu amandithandiza ndikavulala					
Osewera anzanga amandithandiza ndikavulala					
Banjala kwathu / langa limandithandiza ndikavulala					



**Tikukuthokozani kwambiri chifukwa chotengana wombali**

## Appendix G: INTERVIEW GUIDE

### INTERVIEW GUIDE

<b>Introduction Key</b>  <b>Components:</b> <ul style="list-style-type: none"><li>• Thank you</li><li>• My name</li><li>• Purpose</li><li>• Confidentiality</li><li>• Duration</li><li>• How interview will be conducted</li><li>• Opportunity for questions</li><li>• Signature of consent</li></ul>	<p>I want to thank you for taking the time to meet with me today.</p> <p>My name is <u>Anderson Mughogho</u> and I would like to talk to you about your experiences as a coach regarding football injuries in your team and the super league in general. Specifically on your perception regarding the role of physiotherapy, risks, prevention and management of football injuries in Malawi super league.</p> <p>The interview should take less than an hour. I will be recording the session because I don't want to miss any of your comments. Although I will be taking some notes during the session, I can't possibly write fast enough to get it all down. Because we're on tape, please be sure to speak up so that we don't miss your comments. All responses will be kept confidential. This means that your interview responses will only be shared with research team members and we will ensure that any information we include in our report does not identify you as the respondent. Remember, you don't have to talk about anything you don't want to and you may end the interview at any time.</p> <p>Are there any questions about what I have just explained?</p> <p>Are you willing to participate in this interview?</p>
---	---

## Questions

- How do football injuries affect your team? (please explain)
- How do you deal with injuries occurring at training or matches?
- Which mechanism or intervention strategies do you use to prevent injuries in your team?

List

Which one have worked

- How do you deal with injured players? (explain)

Recurring injuries?

Any special training for them?

- Which players are at risk of being injured?
- Is there any extra support that you give to injured players?
- What is your role in injury prevention and management
- Which strategy or procedure do you follow for injured players to return to play?

Who decides

- Which equipment do your players use to prevent injuries?

Use both at training or matches

- What role do you think would a physiotherapist play in your team

Would it make a difference

- What advice do you give to your players regarding nutrition/ water intake?
- Who else is involved in injury prevention and management
- Do you have anything that you would recommend should happen?

**THANK YOU**

## Appendix H: INTERVIEW GUIDE CHICHEWA

### NDONDOMEKO YA MAFUNSO KWA DOKOTALA WA TIMU YA MPIRA.

<b>Introduction Key</b>  <b>Components:</b> <ul style="list-style-type: none"><li>• Kuthokoza otenga nao mbali.</li><li>• zina langa</li><li>• cholinga cha kafukufuku</li><li>• kusunga chinsinsi</li><li>• Mmene mafunso afunsiridwe</li><li>• mpata ofunsa mafunso</li><li>• Kusayina kwa otenga nao mbali.</li></ul>	<p>Ndikukuthokozani chifukwa cho lora kutenga nao mbali mukafukufuku ameneyu.</p> <p>Ine zina langa ndi <u>Anderson Mughogho</u>, ndiyankhula nanu pa za malingaliro ano okhuzana ndi kuvulala kwa osewera mpira mu timu yanu ndi supa ligi. Makamaka pa malingaliro anu pa mbali imene madokotala a mafizo angatengepo mbali po teteza kuti osewera asavulale ndi kuthandizapo ma player ovulala mma timu a mu supa ligi.</p> <p>Mafunso atitengera nthawi yosapyola ola limozi. Kukambilana kwathu kujambulidwa ndi cholinga choti ndisaphonya china chilichonse chimene mwanena. Ngakhale ndizilemba zimene mukuyankhula koma sindingathe kulemba zonse. Mukupemphedwa kuyankhula mokweza kuti zoyankhula zanu zikamveke bwino.</p> <p>Zokambilana zathu zonse zizasungidwa mwa chinsinsi, izi zikutanthauza kuti mayankhu anu onse azagwiritsidwa ntchito ndi anthu okhao otenga nao mbali mu kafukufuku ameneyu, ndipo inu simuzandikilidwa kuti munatenga nao mbali.</p> <p>Kumbukilani, muli ndi ufulu osayankhula zimene musakufuna, komanso muli ndi ufulu oyimisa nthawi in iliyonse imene mungafune.</p> <p>Kodi muli ndi funso pa zimene ndalongosola?</p> <p>Kodi muli okonzeza kutenga nao mbali?</p>
--	---

## Mafunso

- Kodi kuvulala kwa osewera mpira kumakhuza bwanji timu yanu. (Longosolani)
- Inu ngati mphunzisi wa timu ndi mbali yanji imene mumatengapo poteteza osewera kuvulala ndi kupeleka chithandizo akavulala?
- Longosolani mmene mumasamalira osewera uvulala nthawi ya masewera okonzekera kapena opikisana.
- Ndi njira ziti zimene mumagwiritsa ntchito kuteteza osewera kuvulala.
  - Tchulani njirazi
  - Ndi ziti zimene mwazona ndizothandiza kwambiri?
  - Mwapangapo maphunziro a padera?
- Osewera uvulala mumawathandiza bwanji? (longosolani)
  - Nanaga osewera amene amavulalavulala?
  - Amathala ndi mafizo awo awo?
- Kodi ndi osewera ati amene ali pa chiopsezo chovulala?
- Pali chithandizo china choonjezera chimene osewera amalindila a kavulala?
- Ndi mbali yanji imene mumatengapo poteteza osewera kuvulala, nanga akavulala?
- Ndi njira ndondomeko yanji imene mumasatira kuti osewera amene anavulala ayambeso kusewera?
  - Ndi ndani amene amapeleka chilolezo?
- Ndizipangizo ziti zimene osewera amagwiritsa ntchito kuzitetezera?
- Mukuona ngati dotolo wa zamafula angathandize kuchepesa kuvulala kwa osewera mpira?
- Kodi ndi uphungu wanji mumawapatsa osewera pokhuzana ndi chakudya ndi kamwedwe ka madzi?
- Alipo wina amene amakhuzidwa ndikusamala osewera akavulala?

**THANK YOU**

**Appendix I: Permission letter from the Super League of Malawi**

# **SUPER LEAGUE OF MALAWI**



**(SULOM)**

BOX E66,  
POST DOT NET,  
BLANTYRE

**FAX : 01 847 221**  
**TEL : 01 847 223**

**President: Goodwell Innocent Botomani**

**Vice President: Charles Twalibu**  
**General Secretary: Williams Banda**

**Treasurer: Tiya Somba Banda**

**Legal Advisor: Lt. col. Dr. Dan Kuwali**  
**Affiliated to Football Association of Malawi**



**25<sup>th</sup> January, 2012**

Dear Adams,

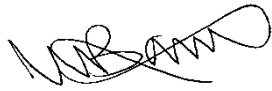
**REQUEST TO CONDUCT A STUDY WITH SUPER LEAGUE TEAMS ON SPORTS INJURIES.**

Your request to do a study (Factors Associated with Football Injuries in Malawi: Implications for Physiotherapy Intervention) with Super League teams has been accepted and all clubs through their General Secretaries have been notified of your impending visit.

You are free to visit any super league team of your choice and team doctors of all clubs are more than willing to help you in any which way possible.

We wish you well in your study.

Yours in Sports,  
On behalf of Super League of Malawi



Williams Banda  
**General Secretary.**

**Cc: President – SULOM**  
**Chief Executive Officer – FAM**  
**Legal Advisor - SULOM**



## Appendix J: Permission letter from the COMREC



### UNIVERSITY OF MALAWI

Principal  
K.M. Maleta, MBBS PhD

Our Ref.:  
Your Ref.: P.11/11/1158

College of Medicine  
Private Bag 390  
Chichiri  
Blantyre 3  
Malawi  
Telephone: 01 877 245  
01 877 291  
Fax: 01 874 700

Email: [comrec@unimed.mw](mailto:comrec@unimed.mw)

26<sup>th</sup> January 2012

Mr. A. Mugheghe  
University of the Western Cape  
P/Bag X17  
Bellville  
7535  
**SOUTH AFRICA**

Dear Mr Mugheghe

**RE: P.11/11/1158 - Factors Associated with Football Injuries: Implications for Physiotherapy**

I write to inform you that COMREC reviewed and approved your proposal which you submitted for expedited review at its meeting of 25<sup>th</sup> January 2012.

As you proceed with the implementation of your study we would like you to adhere the amended protocol ICH- GCP requirements and the College of Medicine Research requirements as indicated on the attached page.

Yours Sincerely,

Dr. W. Mandala  
**For CHAIRMAN - COMREC**

//Ask





## Appendix K: Permission letter from the University of the Western Cape



UNIVERSITY of the  
WESTERN CAPE

### OFFICE OF THE DEAN DEPARTMENT OF RESEARCH DEVELOPMENT


20 September 2011

#### To Whom It May Concern

I hereby certify that the Senate Research Committee of the University of the Western Cape has approved the methodology and ethics of the following research project by:  
Mr A Mughogho (Physiotherapy)

Research Project: Factors associated with football injuries in Malawi:  
Implications for physiotherapy intervention.

Registration no: 11/8/18

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

Private Bag X17, Bellville 7535, South Africa  
Tel: +27 21 959 2844/6  
Fax: +27 21 959 3170

A place of quality,  
a place to grow, from hope  
to action through knowledge