

THE PROFILE OF SOCCER INJURIES AND THEIR
MANAGEMENT AMONGST THE PREMIER SOCCER
TEAMS IN LESOTHO

BY

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DECLARATION

I declare that '**The profile of soccer injuries and their management amongst the premier soccer teams in Lesotho**' is my own work and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references. It is submitted in partial fulfillment towards the degree of Master of Science in Physiotherapy in sports physiotherapy and rehabilitation to the University of the Limpopo, Medunsa campus. It has not been submitted before for any degree or examination at this or any other University.

.....

R.D MOKHOCHANE



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Date

THIS THESIS IS DEDICATED TO: MY LATE MOTHER MASEETSI
ALICE MOKHOCHANE AND MY FATHER MATOOANE DONALD
MOKHOCHANE.

TO MY BELOVED AND SUPPORTIVE HUSBAND MODONGWAZE
SAMUEL NKUNA AND ALL OUR CHILDREN.

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ABSTRACT

Introduction: Soccer predisposes its players to a number of injuries which could adversely affect the player's career if relevant management is not instituted. The aim of the study was to develop a profile of soccer injuries amongst the premier soccer teams in Lesotho and determine a need for physiotherapy intervention.

Methodology: A cross sectional descriptive survey was used. Simple random selection was used to select a total of 201 soccer players from 12 premier teams participated in the study. Inferential statistics were performed using ANOVA, ANCOVA and Pearson's correlation coefficient tests to determine the relationship of the players' injuries, contributing factors and their management. Questionnaire's validity and reliability were established by physiotherapist working with athletes.

Results: The lower limb is the commonly affected body part with the ankle sustaining most injuries (36.4%). Common types of injuries were muscle strains (32.4%) and ligament sprains (23.0%). Mechanisms of injury during competitive games and training sessions include being tackled (25.2%); landing, tackling and overuse. Injuries sustained are treated sometimes by medical personnel (43.7%), traditional or home remedies (41.7%) and physiotherapist (29.6%). Ankle injuries are associated with self- treat ($p= 0.020$). There is a strong significant relationship between the mode of treatment (not physiotherapy) and common injuries that occurred amongst the players ($p<0.05$). The common mechanism of injury is also association with the common injuries that occurred ($p<0.05$).

Conclusion and implications: Injuries occurring amongst soccer players in the Lesotho Premier Soccer League are sprains and strains and no consistent management is available for the injured players. The type and severity of common injuries indicate their impact on the soccer sporting activity. The injured player ceases activity immediately after injury. Soccer

fraternity need to pay attention to provision of physiotherapy services and players have to be educated regarding appropriate injury prevention and management strategies.

LIST OF ABBREVIATIONS

- MREC : Medunsa Research Ethics Committee
- LeFA : Lesotho Football Association
- PSL : Premier Soccer League
- RICE : Rest, Ice, Compression, Elevation
- MCL : Medial Collateral Ligament
- ACL : Anterior Cruciate Ligament
- FIFA : Fédération Internationale de Football Association
- ATFL : Anterior talofibular ligament
- CFL : Calcaneofibular ligament

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CHAPTER 1

1.1 INTRODUCTION

Soccer is known to be a vigorous, high intensity, intermittent ball and contact sport which have been played for centuries by both males and females. Currently, it has become one of the most popular sports in the world in terms of leisure and competition. The increase in popularity of soccer and expectations has resulted in a significant number of injuries conceivable. It is also perceived to be a relatively safe sport, despite being a common cause of sports injuries among youth (Schiff, Mack, Pollissar, Levy, Dow and Okane 2010). Due to high demands of modern soccer, players are expected to keep up with the high demands mentally and physically subsequently exposing themselves to injuries (Azubuike and Okojie 2009). Soccer is associated with relatively high injury rate compared to other contact/collision sports (Koutures and Gregory 2010). A tremendous increase in soccer injuries amongst professionals has been reported proposing a need for profound preventative measures (Hawkins, Hulse, Wilkinson, Hodson and Gibson 2001).

Soccer injuries are commonly classified under two headings: cumulative (overuse) or acute (traumatic). Overuse injuries are said to occur over a period of time, and are caused by stress on the muscle, joints and soft tissues. When these injuries are ignored at onset because they are usually small, they tend to become debilitating (Bailey, Erasmus, Lultich, Theron and Joubert 2009). On the other hand, acute injuries are acquired when a sudden force or impact is applied and are usually traumatic (Bailey et al., 2009).

The lower extremities are predominantly injured in soccer. The most commonly affected anatomical sites are the groin, thigh, knee, lower leg, foot and ankle (Rapoo; 2009 and Wong and Hong 2004) with knee and ankle being the top of the list (Twizere 2004; Hamzat, Adeniyi,

Awolola and Olaleye 2004; Lyon 2001); Morgan and Oberlander 2001) The ankle and shin injuries are the most common amongst the female soccer players (Lilley, Gass and Locke 2002). In some instances, ankle injuries do surpass the knee injuries in soccer (Azubuike and Okojie 2009). Sprain and strain injuries are common, followed by recurrent injuries, which are dominate on training sessions than in competitive matches (Azubuike and Okojie 2009). The defenders and strikers have high injury occurrence because of their position and the mechanism of injury involved (Azubuike and Okojie 2009).

Soccer is associated with vast number of injuries which need to be prevented, diagnosed early with proper treatment and rehabilitated accordingly (McLeod, Decoster, Loud, Micheli, Parker, Michelle, Sandrey, Christopher and White 2011). All sporting fraternities need medical care to avoid adverse injuries that can terminate the career of athletes. The sports medicine team is a group of health professionals whose major responsibility is the health and safety of the player. The size and the scope of the team depend on its locality, availability of other facilities and personnel, funding and the number of players to be taken care of. The primary care entails health promotion and disease prevention, in sports medicine team this task is taken care of by the physician, physiotherapist, and the coaching staff (Madden, Putukian, Young and McCarty 2010). In most African countries there are a small number of medical practitioners involved with sports due to the fact that some team leaders are not familiar with the importance of having a medical practitioner as part of the team (Twizere 2004). In developed countries the soccer teams have the 'team behind the team' that is the medical team because it is imperative to maintain the health and welfare of each athlete (Madden at al., 2010). Soccer clubs appreciates the services provided by the medical team but most importantly the physiotherapy services as it provides assessment and management of injuries (Nuhu 2008).

1.2 PROBLEM STATEMENT

Soccer in Lesotho is played at a professional level which is not as advanced in many areas of the game due to lack of financial resources. The Premier Soccer League (PSL) is the professional level in this country and offers teams many competitions. It is usually the base for recruitment and selection of a national squad. There are also players in this division who participate on the national as well as the international competitions and this predisposes them to more injuries compared to other players. It is said that there are more injuries from this division than from the first and second division teams (Twizere 2004). The researcher has observed that in Lesotho it is only the players selected for the national team who, when injured, get to see the medical team. The medical team comprises only of a medical doctor and a physiotherapist. Given the scarcity of a multidisciplinary medical team approach amongst the Lesotho based soccer teams the effective management of injuries amongst soccer players is suspect and the types of soccer injuries incurred are also unknown. There is also paucity of research in the field of physiotherapy and sports injuries amongst professional teams in Lesotho.

1.3 RESEARCH QUESTION

What are common injuries among soccer players in the Lesotho premier league teams and how are these injuries managed?

1.4 AIM OF STUDY

To establish a profile of soccer injuries amongst the premier soccer teams in Lesotho and determine a need for physiotherapy intervention.

1.5 OBJECTIVES OF THE STUDY

1. To identify the socio-demographic status of Lesotho premier league soccer players.
2. To identify the anatomical sites, nature and severity of injuries in Lesotho's soccer players in the premier league.
3. To identify how the injuries are managed amongst Lesotho premier soccer league players.
4. To identify factors contributing towards soccer injuries in Lesotho soccer league.
5. To identify the nutritional advice and the practices amongst the Lesotho premier soccer players.
6. To determine the relationship between injuries sustained and contributing factors, management and treatment.
7. To determine the accessibility of physiotherapy services to soccer players in Lesotho.
8. To establish the need for physiotherapy intervention in soccer injury prevention in Lesotho.

1.6 SIGNIFICANCE OF THE STUDY

The study will inform different stakeholders such as physiotherapists, coaches, sports administrators and the soccer players themselves about the probable soccer injuries in the premier league their management and subsequent rehabilitation undertaken to the return a soccer player to sport. The physiotherapists will know the common soccer injuries and provide the probable preventative measures to those injuries. The soccer players will be informed about how to prevent, manage and rehabilitate the common occurring injuries. The coaches will get a basic understanding of common injuries to ensure safe participation of the players. The information obtained from this study will serve as good reference for the teams, physiotherapists and officials who currently do not have baseline data for profiling player's injuries within the Premier Soccer League (PSL).

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents a review of literature around soccer injuries, causative factors, preventative measurements as well as related management. The literature is presented in four themes. The first theme includes common anatomical sites (location), nature, severity and mechanism of soccer injuries; preventative measures in soccer; factors contributing towards soccer injuries; lastly the management of soccer injuries.

2.2 COMMON SITES, NATURE, SEVERITY AND MECHANISM OF SOCCER INJURIES

2.2.1 Sites or location for injuries

Soccer is a contact sport which predisposes its participants to a vast number of injuries, 80% of which occurs in the lower limbs (Papacostas, Pafis, Bikos, and Porfiriadon 2009). The demand and the nature of the sport are found to be disproportionate with resultant exposure of the lower extremity to injuries (Papacostas *et al.*, 2009). Consequently, the hip/groin, thigh, knee, leg and ankle are the most common injury prone areas (Rapoo 2009; Wong and Hong 2005).

There are however reported variations on the incidence of commonly affected areas. In one epidemiological study conducted in Japan, the thigh, ankle and the knee were found to be the most common sites or locations for injuries (Aoki, Ottata, Kohono, Morikwa and Seki 2012). A female soccer player study conducted in South Africa found the knees and ankles to have the highest frequencies of injury (Mtshali, Mbambo-Kekena, Stewart and Musenge 2009). In contrast to previously done studies Gallo, Argemi, Batista, Garcia and Liotta (2006) found the

knee and ankle were to be amongst the lowest frequencies of occurring injuries. This study was prospective and the injuries were recorded as they happen by the medical team of the club.

Hassabi, Mortazavi, Giti, Hassabi, Mansournia and Shapouran (2010) conducted a study in Iran and illustrated that soccer injuries in both sexes affect the same locations; furthermore, they revealed that thigh, knee and ankle were commonly affected. Polzer, Kanz, Prall, Haasters, Ockert, Mustchler and Grote (2012) found the ankle to be amongst most common site of injury. Other authors further stated that the ankle injuries were most frequent for boys and girls even though girls had a higher frequency in comparison to the boys (Nelson, Collins, Yard, Field and Comstock 2007; Glannotti, Al-Sahab, Mc Faulls and Tamin 2011). Injuries amongst the goalkeepers seem to occur in the head and upper body (Hassabi *et al.*, 2010). Some author looked into positional roles and injuries sustained and found that mid-defenders seem to sustain injuries in the head and faces: line defenders the ankles; mid fielders the calves and lastly goalkeepers and strikers the trunk (Zarei, Rahnama, and Rajabi 2009).

2.2.2 Nature of injuries

Sprains occur when there is a stretching or tearing of the ligaments and are dominant in the ankle (Cloke, Ansell, Avery and Deehan 2010). The authors further found that players with ankle sprains rapidly return to play however the consequences can be chronic in nature. Ekstrand, Hagglund and Walden (2009) reported the muscle strain, ligament sprain and contusion as the most common types of injuries in Sweden. In Argentina, strains in the hamstrings, quadriceps, adductors and gastrocnemius are frequently occurring injuries (Gallo *et al.*, 2006). The epidemiological study of collegiate men's soccer injuries conducted during 1988-1989 through 2002-2003 period, found ankle ligament sprains and knee internal derangement to have high frequencies in soccer (Agel, Evans, Dick, Putikian, and Marshall 2007). The cluster randomise trial done in Netherlands reported that the most soccer injuries

sustained in the lower extremities are sprains and strains (van Beijsterveldt, Krist, Schmikieli, Stubbe, Ardine de wit, Inklaar, van de Port and Backx 2010).

An anterior cruciate ligament (ACL) appears to be one of the most serious knee injuries especially in females, from puberty (14 years) to early adulthood (25 years). Female soccer players tend to sustain tear of the ACL two to three times more than their male counterparts who were reported to have had only one incidence during the 2006 FIFA world cup held in Germany (Kirkendall 2009).

Elkstrand *et al.*, (2011) focused on the muscular injuries sustained in soccer. Authors reported almost all muscle injuries were non-contact, furthermore, overuse injuries with gradual onset were common for hip/groin injuries than hamstrings, quadriceps and calf muscle. The majority of these injuries were sustained on the dominant leg (preferred kicking leg). Bailey *et al.* (2009) found soccer injuries to be either acute (traumatic) or due to overuse caused by stress on the joints and muscles working overtime.

In a study conducted in Nigeria sprains were the commonest injuries followed by strains. The authors further mentioned that bruises and lacerations were also amongst the highest frequencies (Azubuike and Okojie 2009).

2.2.3 Severity of injuries

Severity of injury is defined in literature by to the number of days missed from the play (Aoki *et al.* 2012). The authors classified injuries as minor, moderate and severe where minor or slight means an injury that prevents the player from full participation for 1-7days. Moderate injuries were described as injuries that prevent the player from full participation for 1-4weeks and major is considered to be the injury that prevents the player's full participation for more than 4 weeks (Aoki *et al.*, 2012; Papacostas *et al.*, 2009). Fuller and Walker (2006) reported that some injuries can be so severe that they could be career ending to the player. These injuries

can cause the player to retire early. Authors further stated that occasionally some injury may present multiple diagnoses which are imperative to differentiate from the overall severity of the event and severity of the individual diagnosis.

Ekstrand *et al.*, (2009) stated that hamstrings strains, medial collateral ligament (MCL), quadriceps strains and adductor pain/strain were the cause of severe injuries which kept a player more than 38 days out of play. There are also different approaches used to define the severity of injury besides the previously alluded to methods. According to the editorial study that was done on Brazilian professional soccer players, severity was classified in five categories: mild (1-3 days), minor (4-7 days), moderate (8- 28 days), major (more than 28 days) and severe is greater than eight (8) weeks absence. The authors' classification entails grouping the injuries which exhibit common similarities in severity and prognosis. The three step classification groups together benign injuries like muscle injury, where their recovery time is 4-6 weeks. Other injuries can have longer recovery time of 6-8 months with this case of ACL injury (Arliani, Belangero, Runco and Cohen 2011).

2.2.4 Mechanism of injury

Soccer predisposes its players to injuries and this is depicted in the mechanisms of injury in the field of play. The injuries mostly occur when there is a tackle /block between the two players. The mechanism of injury can differ but there are most common ones that occur on the pitch. The inside of the foot/block-tackle mechanism involves a valgus stress at the knee because the foot and the hip are externally rotated when knee is flexed, hence the foot is locked in dorsiflexion ready to kick the ball or tackle the opponent. The other mechanism is the outside of foot pass/shoot. This involves internal rotation of the leg; foot in inversion and plantar flexion. The position can put the player at the risk of injuring the anterior talofibular (ATFL) and calcaneofibular (CFL) ligaments if the movement is forceful (Madden *at al.*, 2010). The

other pass is in step, or inside of the foot: this a soccer pass considered to be safe and precise, also has a large contact area between the foot and the ball. This pass can produce extreme planter flexion in locked foot. With approach and ball strike phase of instep kick, varus torque of more than 200 Newton meters (Nm) is generated on the tibia during approach and ball strike. During the kick around 200Nm is generated, of that amount only 15% is transferred to the ball the remainder is absorbed by eccentric contraction of hamstrings (Rapoo 2009).

Mechanism of injury refers to circumstances in which an injury occurs, in a form of damage to the skin, muscles, organs and bones (Brouhard 2012). The healthcare providers usually use mechanism of injury as a measurement of severity of the injury (Brouhard 2012). The mechanism of injury found to be common in the Nigerian study was tackling (Azubuiké and Okojie 2009). The authors further illustrated that the positional role goes hand in hand with the type of injury that a player can sustain. The defenders are notorious for hard tackling; strikers find injury in their shooting skills whilst the wingers are marked by overlapping running. The South African study on female soccer players concluded that tackling and running for midfielders are the major causatives of injuries in those players (Mtshali *et al.* 2009). Furthermore the defenders and midfielders were reported to be more injured compared to other positions. Excessive inversion causes ankle sprains and this occurs when the ankle rolls inwards at a high speed, which can result in stretching or tearing of the lateral ligament complex. Running on uneven terrains, repetitive jumping or sudden changes of direction predisposes players to ankle sprains (Dubin, Comeau, McClelland, Dubin and Farrel 2011).

Most injuries also occur due to contact with another player (Glannotti *et al.*, 2011). The authors conducted a study and found that highest mechanism of injury to be contact with another player (40.3%) and contact by structures/playing surfaces (33.9%). Increase in age was proportionally related to an increase in the number of injuries caused by contact with another player, hence

the aggression increases, subsequently there a substantial decrease proportion of injuries caused by contact with balls and structures/playing surfaces.

2.3 SOCCER INJURY PREVENTATIVE STRATEGIES

A sports medicine practitioner is faced with a challenge of minimising activities that are related to injuries with the aim of improving the benefit of the sport. Sports prevention can be categorised into primary, secondary and tertiary preventative measures. Primary prevention promotes health by usage of ankle braces being worn by the entire team even those without the ankle sprain. Secondary prevention includes early diagnoses and intervention to reduce the re-injury risk. Tertiary prevention looks into rehabilitation to minimise and/or correct existing disability attributed to underlying disease. Warm-up, stretching, taping and bracing, protective equipment, suitable equipment, appropriate surfaces, appropriate training, adequate recovery, psychology and nutrition are strategies used to prevent injuries. Warm-up is mandatory for every strenuous activity to prepare the body to react accordingly. The warm-up program depends on the type of exercise performed, even though there is no data which prescribes the intensity and duration of warm-ups (Brukner and Khan 2012).

In the Rwandan study by Nuhu (2008) analysed warm-up program where players performed warm-up activities prior to competition or match, such as light aerobics, sprinting, dribbling, jumping, short or long passes, shooting and stretching. The study further looked into warm-up time which indicated that majority warmed their bodies for 20 minutes in competitions. Twizere (2004) also mentioned that the Rwandan soccer players are predisposed to competition and training injuries due to short duration and low intensity warm-ups. Stretching is recommended before and after a sporting activity. There are three types of stretching commonly done by athletes; static, ballistic and proprioceptive neuromuscular facilitation (PNF). In static position is assumed slowly and held for 30-60 seconds. Ballistic the muscle is

stretched to near its tension or limit, stretched more with a bouncing movement. PNF done by contract-relax of both agonist and antagonist muscles (Bruckner and Khan 2012). Players do stretch more before competitions than trainings (Twizere 2004).

Cooling down has to be done after an intense activity to allow the muscles not to cool abruptly. The players were found to be doing cooling down exercises and stretches after training sessions not after competitions (Nuhu 2008) Cooling down incorporated slow jogs moments and some muscle stretching. The time for cooling down was said to be 15 minutes (Nuhu 2008).

Taping or bracing are techniques used to restrict the movements that are excessive or undesired in a particular joint. Taping can be used for preventing high-risk activities on some joints for a particular sport as well as a protective measure in rehabilitation phase. The authors further stated that bracing have more advantages over taping: it is easy to apply and cost effective over time (Bruckner and Khan 2012).

Protective equipment has been made to protect different parts of the body against injury subsequently not interfering with the sporting activity. Shin pads (guards) in soccer and ice hockey are mandatory. The protective equipment such as shin pads can give the player a psychological benefit hence increases their confidence (Bruckner and Khan 2012).

Each sporting code has its own suitable equipment that is meant to prevent injuries. Soccer boots should have features of a good running shoe that will allow kicking and allow rapid change of direction, particularly soft surfaces (Bruckner and Khan 2012).

Surface on which a sport is played should be suitable to such sport to prevent unnecessary injuries. The grass that soccer is played on has to limit ACL injuries though shoe-surface traction and the literature supports blue or bermuda grass as those types create less thatch. The

hard surface can cause over-use injuries such as shin pain, stress fractures and tendinopathy (Brukner and Khan 2012)

Inappropriate trainings can predispose a player to injuries; hence the clinicians should get proper history of players training. (Brukner and Khan 2012) divided training in four categories; periodization, specificity, overload and individuality. In periodization there is conditioning phase where aerobic and anaerobic fitness are developed inclusive of strength and power. McNoe and Chalmers (2011) most players undertook physical conditioning at least once in the off-season. The sport skills have to be improved so as strength, endurance and power. The trainings have to be tailor made for different individual's needs (Bruckner and Khan 2012). According to Webborn (2012) there are factors such as change in volume of training which can be associated with over-use injuries, which can more than the total volume of training in certain activities and this may be sports specific. He further said in order for the players to become technically proficient, they need to acquire skills of their sport through repeated practices and that can predispose them injuries.

A study done in Netherlands used the FIFA 11 exercises and warm-up program had proved that the incidence of injuries was reduced through The FIFA11 exercise and warm-up program (van Beijsterveldt *et al.*, 2012). McNoe and Chalmers (2011) used a different program entitled Soccer-Smart, to measure injury rate and prevention behaviour amongst community-level soccer players. The authors concluded that the study yielded positive results and the study was recommended to be used as baseline measurement of injury prevention behaviour in community level soccer players.

2.4 FACTORS CONTRIBUTING TOWARDS SOCCER INJURIES

Brukner and khan (2012) emphasised that there are factors that can contribute to sport injuries which are uncontrollable to the individual player. The authors considered the multifactorial

nature of injuries but also the time sequence of events leading to injuries. The factors are classified into internal and external risk factors. The intrinsic risk factors are athlete-related risk factors such as; age, sex, weight, strength and flexibility of an athlete. The extrinsic risk factors are as follows; training methods, the surface played upon, use of protective equipment and environmental factors such as weather.

2.4.1 INTRINSIC FACTORS

2.4.1.1 Age

Age can pre-determine types of injuries that can be common amongst the youth or adult players. Age is strongly associated with injury amongst SA soccer players, indicating older players have a higher tendency of being injured than the younger players (Mtshali et al., 2009). Ekstrand *et al.* (2011) further showed that the incidence of muscle injury increased with age. It showed that players more than 30 years had significantly high incidence of muscle as compared to younger players less than 22 years. Immature skeletons do produce different pathologies from matured adult skeletons (Webborn 2012). Young players are more predisposed to over-use injuries as a result of bone growth that precedes muscle, tendon and neural lengthening, however young players become neuromuscular tight during peak growth. The author further stated that mature sports men have different patterns of injury. For instance, in mature players Achilles tendon ruptures are common from 30 -39 years. Mostly at this age performance or participations is reduced. (Cloke *et al.*, 2010). The authors also found in United Kingdom (UK), the ankle incidence of injuries occurring in youth players is high compared to senior players with reasonable years of experience (Cloke *et al.*, 2010).

2.4.1.2 Sex

In the study done by Ristolaine, Heinonen, Waller, Kujala and Ketteunen (2009) investigating the gender differences in sport injuries, found that males are more prone to acute injuries and

over-use injuries than female counterparts. The study reports further that females have more knee injuries especially ACL injuries and more prone to stress fractures than males. Many explanations have been suggested for the reason why female athletes have more serious knee injuries than the male athletes, which are due to joint laxity and age over 25 (Ristolaine *et al.*, 2009). Estrogen was found to alter the tissue elasticity, may also constitute one of pathological factors in ACL rupture in female athletes (Hattori, Sano, Komatsuda, Saijo, Sugita and Itoi 2010). Another reason was the difference in the lower extremity positioning during landing as the females tend to land in more extension than males (Ristolaine *et al.*, 2009). And again these differences can be attributed to the intensity and type of training in different sexes (Twizere 2004)

The study done by Ingram, Fields, Yard and Comstock (2008) found that girls were 2.5 times more likely to sustain major knee injury than the boys. The study is also consistent with the previous studies which support the fact that boys have fewer noncontact knee injuries compared to girls (Powell and Barber-Foss (2000); White, Lee, Cutuk, Hargens and Pedowitz 2003).

2.4.1.3 Body mass

The body mass increases from prepubescent to adolescent. The body mass increases from prepubescent to adolescent. The body mass can predispose players to injuries, in the manner that, in high school the players are on the growth spurt increasing the body mass and the strength. The study found however there is a low incidence of ankle injuries amongst the younger players compared to mature players. The study could not find any significant variation of height, weight and body mass index amongst the younger players and older ones (Nelson, Collins, Yard, Field and Comstock 2007).

According to Nikolaidis and Karydis (2011) there is strong interrelationship between body composition and physical activity as high physical activity resulted in lower body fat and body mass index.

Nikolaidis (2012) concluded that prevalence of overweightness among participants was no different from general population. The study findings confirmed general overweightness of the population which has an effect on physical fitness.

The study had a weaker negative association between physical fitness and body fat, therefore sport performance and good health practices should be encouraged in youth.

Some sporting codes demand certain weight requirements for athletes, which put athletes under pressure if the weight is not acceptable. The athletes sometimes opt for different methods to rapidly lose weight or body mass in a short time; even though those methods can be extremely dangerous or harmful to the body. The athletes tend to use the non- recommended methods such as usage of diuretics, saunas and plastic clothing (Brito, Roas, Brito, Marins, Cordova and Franchini 2012). It is imperative to teach coaches safer methods for losing body mass by the athletes.

2.4.1.4 Strength and flexibility training

Muscular strength is the amount of force that may be exerted by an individual in a single maximum muscular contraction. The strength training can be improved through three methods being; isotonic strength training, isokinetic and isometric training and plyometric training. The isotonic training is commonly used either concentrically or eccentrically. The isokinetic need some specialised equipment so it not frequently used by athletes mostly confined to the rehabilitation. The ploymetrics only uses the elastics which stretches and recoils (Brukner and khan 2012).

Flexibility training uses one or more stretching techniques and it considered to be important in training. Flexibility helps to acquire an increased range of motion across a joint, it also helps in developing muscle strength and power through this newly acquired range of motion (Bruckner and Khan 2012). Flexibility training has to be done at least once a week to enhance the players' performance and prevent injuries. These activities have to be specific and progressive to improve mechanical and structural properties of the tissue by increasing their mass and tensile strength (Nuhu 2008).

2.4.2 EXTRINSIC FACTORS

2.4.2.1 Training methods

Soccer requires both skill and fitness and players with good fitness level are not prone to injuries. Changing the training program can harm the player as much as poor training techniques.

A well trained player has to have the following: good endurance; flexibility/mobility; strength; skill and mental fitness. Good endurance reduces fatigue; as tired players make more mistakes. When playing soccer muscles are over stretched beyond the tension and good flexibility minimises occurrence of injury. Good strength and flexibility protects the player from injuries. Soccer skill has to be improved; having good ball control and tackling skilfully can reduce the injuries. (www.soccerperformance.org 2013).

Strength training has a positive effect on reducing the severity and amount injuries that the player can sustain. Players who had strength training programme are found to sustain fewer injuries than those without training (Nuhu 2008).

2.4.2.2 Protective equipment and playing surface

Shin guards are mandatory to soccer players to protect the shin bone from injuries and fractures. The shin guards should be absorbent and anatomically shaped to protect a large area of the lower limb (Nuhu 2008). Mtshali *et al.* (2009) associated reduced risk of having injuries with shin guards. Agel *et al.* (2007) in a study done over a 12-year period where there was the rule change for shin guards by FIFA found no significant difference in injury rate and shin guard usage. Hassabi *et al.* (2010) found higher incidence of injury to be associated with improper usage of protective equipment especially during training.

The soccer boots need to have similar features with the running shoes, above that they should allow kicking and rapid changes of direction. They should provide stability to the foot and be of appropriate depth in the upper with rigid heel and reasonable fore foot flexibility (Brukner and Khan 2012).

Footwear has to be appropriate for the condition of the pitch as well as the weather. For hard surface it is advisable to wear moulded studs that are short and for softer or wet ground the cleats are longer, screw in studs or blades that go deeper in the ground to provide good stability (www.soccerperformance.org 2013).

The playing surface should minimise the injuries for the sports players. Most studies did their research on comparing artificial and natural turf. Ekstrand *et al.*, (2011) found muscle injuries to be lower for the artificial turf. Fuller, Junge and Dvorak (2012) looked at risk factors that could contribute to soccer injuries on natural and artificial turf, found that, there was no significant difference in incidence for male and female playing on artificial and natural turf.

According to William, Hume and Kara (2011) there is an increase in risk of ankle injuries playing on artificial turf than the natural turf, however the knee injuries gave an inconsistent result. The study concluded that the ankle injury prevention strategies must be a priority for players playing on the artificial turf.

One study compared the injuries between artificial floors and wooden floor. The study proved that traumatic injuries for female floor ball players were twice as higher on artificial than wooden floors (Olsen, Myklebust, Engebretsen, Holme and Bahr 2003).

An epidemiological study done in Benin (Nigeria) found that extrinsic factors have an adverse influence on injuries. Most of the recorded injuries occurred on dry and hard surfaces (Azubuike and Okojie 2008). It is also believed that uneven surface or pitch can lead to ankle sprains (www.soccerperformance.org 2013).

2.4.2.3 Environmental factors

Environmental factors can contribute negatively to sports injuries. Players from low altitude must initially acclimatise for 1-2 weeks before competing on high altitudes to avoid adverse effect on performance as it tends to lower aerobic capacity and increase muscle lactic acid levels (Fuller *et al.*, 2011). The authors further looked at the temperature effects and found that high temperatures especially with high humidity can have unfavourable results on performance.

Azubuike and Okojie (2008) reported that the weather has an influence on injury occurrence. Most injuries recorded had occurred under sunny or hot weather. This is also supported by Ozgunen, Kurdak, Maughan, Zeren, Korkmarz, Yazici, Ersoz, Shirreffs, Binnet and Dvorak (2010) who added that physical performance of players decreases due to high thermal stress.

Players get more challenged when playing on a wet pitch. When the pitch is water logged it affects performance as players tires faster. When the soccer ball is wet it becomes heavier which increases risk of head injury to younger players (www.soccerperformance.org 2013).

2.5 REHABILITATION AND MANAGEMENT OF SOCCER INJURIES

Physiotherapy is crucial in rehabilitation of sports injuries; it plays an integral part in the multi-disciplinary approach to the management of sports injuries. The aim of physiotherapy is to treat and fully rehabilitate the athlete's post-injury, post-operatively, to prevent further injury and to return the athlete to play in the shortest possible time. The other role of physiotherapy is to prevent injuries by giving advice on activities that cause recurrent injuries particularly on that sport or in sports in general. The physiotherapist also provides an exercise programme to ensure adequate rehabilitation. If proper rehabilitation is not undertaken, the athlete may be competing too soon, with residual instability, proprioceptive disturbance and muscle weakness and imbalance. Individual progress must be planned and implemented for each athlete. This would include sports specific exercises, adaptation to the new postures, correcting muscle imbalance, taping and strapping together with a home exercise program (Twizere 2004).

Clinicians such as physiotherapists are always under pressure to warrant the return of an athlete to competition as fast as possible, often times at the expense of completing a comprehensive rehabilitation program (Heiderscheit, Sherry, Silder, Chumanov and Thelen 2010). Early return to sport put the athlete at the risk of recurrent injuries and also reduces athlete's performance. In most cases when the re-injury occurs due to short or incomplete rehabilitation process, the injury becomes more severe than the first one. The medical team is responsible for implementation of risk management strategies that will lessen the incidence and consequences of re-injury (Fuller and Walker 2006). The authors divide footballer's rehabilitation into two phases - pre-functional and functional. The pre-functional phase entails treatment and recovery, whereas the functional phase is about full weight-bearing and sport specific exercises.

The authors furthermore stated that rehabilitation is also crucial to improve the performance of players. Rehabilitation has important components such as muscle conditioning and flexibility. In muscle conditioning the muscle strength is improved during rehabilitation and strength can be regained rapidly and before hypertrophy occurs, it appears that initial strength improvement in response to exercise is related to increase neuromuscular facilitation. Rehabilitation can be arranged in stages and each stage has a specific goals and tasks. There is a standard protocol with three phases that is used to mobilize and rehabilitate joint injuries. The athletes have to be familiar with the different phases of rehabilitation so as to take responsibility in their management of injuries (Beam 2002). The author further agreed that rehabilitation has to follow a pre-determined protocol utilizing clinic-based therapy techniques for restoration of range of motion, flexibility, muscular strength, and endurance. He also emphasized that the clinic-based and sports specific functional exercises with activities to provide the athlete with individualized, sports-specific rehabilitation protocol to speed up return to competitive activity and further state the phases of rehabilitation in the following manner (Beam (2002).

Phase 1

This commences with swelling reduction, protection of injured ligaments and beginning of weight bearing activities. Ice, compression and elevation can be used to control swelling. The ankle can also be protected in a figure eight brace, tape, ankle corset or cast boot depending on the severity of the injury. The protection level should allow the patient to begin weight bearing as soon as possible. Crutches can be used if necessary for pain-free ambulation.

Phase 2

This begins when swelling has been controlled and subsided and the patient is ambulating without discomfort. The goals to this phase are to restore ankle range of motion and build strength in the surrounding muscles – particularly the peroneals. Active ranges of motion

exercises include alphabets with toes. Restoration of full dorsiflexion is critical for regaining speed, explosiveness and jumping ability. Dorsiflexion can be tested by having the patient do a one legged squat with heel touching the ground, Dorsiflexion of the uninjured ankle can be used for comparison.

Strengthening can be done with isometric exercises, manual resistance or elastic tubing exercises. The patient will begin with bilateral heel raises, progressing to unilateral exercises as Small knee bends help increase lower extremity strength, proprioception and dorsiflexion range of motion, Peroneal strengthening can be done by actively elevating the heel and lateral side of the foot while rolling weight on the first metatarsal head. Pain and swelling associated with exercise indicates that the patient is not ready for this phase of rehabilitation. Progression to the next phase is done when resistance and number of repetitions performed with the injured ankle is equal to the uninjured side.

Phase 3

The focus of phase 3 rehabilitation is a functional return to pre-injury activities. These activities include running, jumping and agility drills. The goal of the early part of phase 3 is to restore the proprioception that is predictable lost with ankle sprains. Proprioception deficits may be increased by prolonged non-weight bearing or immobilization and may lead to further injury if not corrected. Strengthening, flexibility and proprioception exercises are continued if deficits remain. The proprioception can be restored by use of a balance board or exercise such as playing catch or brushing teeth while balancing on one foot.

Late Phase 3

This can be called the functional rehabilitation, because this prepares the patient to return to the field. This period consists of functional progression from rehabilitation exercise to sport

specific skills. The demands of the sport dictate functional requirements. If the sport involves endurance, then a program for endurance training should take place. When all of the earlier phases have been completed, the patient may begin to return to running program that starts with jogging and progresses to running, sprinting, circles, figure eights, cutting, pivoting and jumping. When all these activities can be done without pain or limitation, the patient may be cleared to return to practice and, eventually, full participation. Protection with taping or bracing during activity is recommended until strength returns to normal. When the patient is ready to start the functional progression, protective devices are recommended only during exercise and sport participation

Maintenance therapy: When rehabilitation had progresses to the point where the athlete is ready to return to play, a plan should be formulated for maintenance therapy, monitoring and follow-up care. Maintenance therapy may include a selected number of therapeutic exercises that should be continued over time. This may include regular stretching or strengthening, modalities or protective equipment.

2.6 SUMMARY

The literature review highlights that lower limb commonly sustains injuries on the ankle and knee. These injuries are commonly muscle strains and ligament sprains. The common mechanism of injury is contact with another player when tackling/tackled, blocking the foot. Mechanism of injury is regarded as a measurement of severity of injury. Preventative measures have to be implemented to minimize the activities that that are related to injuries. Players are encouraged to wear protective equipment, do warm-ups, cool-down and flexibility exercise. Age, gender, body mass, playing surface and environmental factors are amongst the major contributing determinants of injuries.

Healing process takes three stages being; inflammation, regeneration and remodeling. The inflammation stage there is associated with pain, bruising and function limitation, the aim of the physiotherapist is to protect the area or joint. The remodeling stage has limitation of movements due to adhesions hence the physiotherapist prevents tissue scar. The physiotherapist educates players on recurrent injury prevention and also provides an adequate exercise programme for good rehabilitation process.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

This chapter describes the research settings, the study design and the rationale of the study as well as the implementation of sampling techniques to the targeted group. These are followed by the description and explanation of the data collection and analysis methods as well as the pilot study. This chapter ends with the ethical considerations of the study.

3.2 RESEARCH SETTINGS

The setting for this study was the Lesotho premier soccer league (PSL). The PSL is the top football division and is made up of 12 teams. Out of the 12 teams, 6 are based in Maseru and the remaining 6 are from different districts, 4 from Leribe, 1 Teya-teyaneng which are situated north of Maseru. The other team is from the South district Mafeteng.

3.3 STUDY DESIGN

In this study a cross sectional descriptive, quantitative survey method was used. Data was collected at one point at the single time. This method allowed the researcher to observe and describe the factors that contribute towards common soccer injuries but not the causal factors.

3.4 STUDY POPULATION

All soccer players within the 12 PSL male teams registered with Lesotho Football Association (LeFA) for the season 2012-2013 constituted the population for this study. Each team has 35 registered players, so 420 players the base for the study.

3.5 SAMPLING TECHNIQUE AND SAMPLE SIZE

The participants were selected through simple random sampling clusters. Each team was used as a cluster of 35 members and 17 players were randomly selected by lottery method from each team. A total of 201 players constituted the sample size for the study (Raosoft: 5% margin of error at 95% confidence level) from a total of 420 players.

3.6 INCLUSION AND EXCLUSION CRITERIA

Inclusion

All soccer players that were in 2012/2013 season participating in Lesotho premier league.

Exclusion

All soccer players who did not participate in 2012/2013 season.

3.7 PILOT STUDY

The pilot study was conducted amongst players from the Liphakoe team which was relegated from the premier league during the last season. The pilot study was done on 12 players who were conveniently selected based on their availability. The aim of the pilot was to test the reliability of the questionnaire and whether the participants would understand the questions. Furthermore, the researcher wanted to assess the amount of time it would take to answer the questions. The responses from the pilot study did not identify difficulties in completing the questionnaire except for the date of injury and the return to play date since most players could not remember such dates. The moderation therefore was the exclusion of this component from the questionnaire which was then regarded as unreliable.

The problems encountered were the questionnaires were not returned on time as per agreement with the coaches. 20 of questionnaires were not returned whilst 14 were not properly filled

where some of the information was not filled. Questionnaires with missing information were excluded from the study.

3.8 INSTRUMENT

A 30 item questionnaire developed by Twizere (2004) and Fuller et al (2006) was adapted and used to collect data. The structure of the questionnaire consisted of section A: Demographics, section B: history of injury, section C: preventative measures and section D: nutritional advice. The questionnaire includes the employment status and educational level which were not part of Twizere (2004) and were taken from Fuller et al (2006). The number of injuries sustained during training or competition was covered as date of injury and the date of full return to participation. How long has the participant been out of training or matches, where three options were given as injury 1, 2 and 3 for both training and competition? (appendix 1).

3.9 DATA COLLECTION PROCEDURE

Data was collected after getting the clearance certificate from the Medunsa Research and Ethical Committee (MREC) (MREC/H/163/2012: PG) (Appendix 6).

Permission was also granted by the relevant stakeholders in Lesotho.

The researcher obtained the contact details of the selected team managers from the office of LeFA. The LeFA's office provided the researcher with a letter of introduction to the team managers and coaches (Appendix 6). The appointments with the team managers were made telephonically to find suitable time and the venue to issue questionnaires. The purpose of making appointments with managers and coaches was to ensure the research does not interfere with their training or the activities done on the field. A brief introduction of the study was presented to the managers who later then introduced the researcher to the players. The researcher explained the tool to the participants, informed them about the research their

participation and its importance. The participants were assured of anonymity and confidentiality with information that they will provide, hence signed the consent form (Appendix 5). The questionnaires were then issued to the players present. The researcher had to leave the questionnaires with the participants, due to time constraints and arranged the date for collection. The researcher had a challenge not collecting all the questionnaires as agreed; the arrangement was made that the questionnaires be collected at one place so as to be posted to the researcher all at once. The data was collected from 19th October to December 1st 2012.

3.10 RELIABILITY AND VALIDITY

The questionnaire was tested on 12 Liphakoe players for reliability.

VALIDITY

The questionnaire was given to an experienced Physiotherapist working with the soccer players to check the relevance and appropriateness of the content.

3.11 DATA ANALYSIS

The returned questionnaire was evaluated for completeness before capturing the data on a Microsoft excel spread sheet. No questionnaire was excluded from the analysis. The data was transferred to the Statistical Package for Social Science (SPSS) version 20 for analysis. The descriptive analysis was done to determine the frequencies, means and variances. Inferential statistics was done using ANOVA, ANCOVA, and the Pearson's correlation coefficient tests to determine the relationship of the players' injuries, contributing factors and their management. The results are presented in the form of tables, charts and histograms.

3.12 ETHICAL CONSIDERATION

The research protocol was first submitted to the School of Care Health Sciences for technical input and approval.

It was then submitted to Medunsa Campus Research Ethics Committee of the University of Limpopo (MREC) for ethical approval. The project number allocated to researcher being MREC/H/163/2012: PG (Appendix 6).

Letters for permission fully explained the purpose of the study accompanied with questionnaire was sent to Lesotho football Association and management of the participating teams (Appendix 3 and Appendix 1).

Every participant was given consent form to fill up and sign (Appendix 5).

Statement of confidentiality was given to the players.

Identity of each participant remained anonymous and the information generated was only used for the purpose of this study.

Players were informed that they had the right to refuse to participate and may withdraw from the study at any stage. They were also assured that their participation was voluntary.

CHAPTER 4

RESULTS

4.1 INTRODUCTION

In this chapter the results of the study are presented in four sections under the following headings: 1) The demographics of soccer players, 2) The history of the injury, 3) Preventative measures taken by the players and 4) Nutritional advice.

4.2 Results

A total of 240 questionnaires were distributed to 12 football clubs in the Lesotho Premier Soccer League (PSL) and 206 questionnaires were returned yielding a response rate of 85.8%.

4.3 Demographic characteristics

The demographic characteristics of soccer players in Lesotho PSL are reflected in table 1. The respondents' age ranges from 17yrs to 40⁺yrs. Most of the players (68.4%) are young adults between the ages of 21-29 years and a few (1%) older adults.

The players experience in the league ranges from 1 year to more than 8 years. Most of the players have 2-3 years of experience (26.7%) while a lesser number (20.9%) has 4-5 years experience and the least about a year of league experience (15.0%).

Most of the participants in this study are defenders (37.9%) followed by strikers (28.2%), midfielders (22.8%) and a few goalkeepers (11.2%). Many of these players are employed (48.1%) whilst a few (25.7%) are still at school whilst others are unemployed (26.2%).

Many players attended high school (56.3%), those who reached tertiary are not many (35.3%) and very few reached secondary (4.9%) and primary (3.4%) level.

Table 1: Demographics of Lesotho Premier soccer League players

Age	Responses	Percentages (%)
17-20	27	13.1
21-24	73	35.4
25-29	68	33.0
30-34	27	13.1
35-39	9	4.4
40+	2	1.0
Number of years in premier league		
0-1	31	15.0
2-3	55	26.7
4-5	43	20.9
6-7	38	18.4
8+	39	18.9
Playing position in premier league		
Goalkeeper	23	11.2
Defender	78	37.9
Midfielder	47	22.8
Forward	58	28.2
Employment Status		
Employed	99	48.1
Unemployed	54	26.2
Scholar	53	25.7
Educational status		
Primary	7	3.4
Secondary	10	4.9
High	116	56.3
Tertiary	73	35.4

4.4 Body part injured and type of injury

The participants were asked to report on the body parts injured and the type of injury sustained during the past ten months following competitive games and training sessions (Table 2 and 3).

The lower limb showed more injuries as compared to the upper limb. The most affected area of the lower limb is the ankle (36.4%) followed by the knee (31.1%) whilst the commonly affected sites in the upper limb are the hand, finger or thumb (4.6%) (Table 2).

Muscle rupture/strain/tears/cramps are the most common injuries (32.4%) followed by sprain/ligament injury (23%). Fracture/other bone injury occurred commonly in 15.8% of the participants (Table 3).

Table 2: Commonly injured body part amongst Lesotho Premier soccer League players

BODY PART INJURED	LEFT SIDE	RIGHT SIDE	TOTAL	%
Ankle	21	54	75	36.4
Knee	18	46	64	31.1
Hip/groin	7	16	23	11.2
Thigh	3	13	16	7.8
Hand/fingers/thumb	4	6	10	4.6
Head/face	4	4	8	3.9
Elbow	5	8	8	3.9
Shoulder/clavicle	2	5	7	3.4
Upper arm	3	3	6	2.9
Wrist	2	3	5	2.4
Foot/toes	2	3	5	2.4
Lower leg	2	2	4	1.9
Forearm	1	1	2	0.9
Abdomen	2	0	2	0.9
Sternum/ribs/upper back	0	0	0	0.0
Neck/cervical	0	0	0	0.0
Other	0	0	0	0.0

Table 2 illustrates the summary of the body part that was mostly affected.

Table 3: Type of injuries sustained amongst Lesotho Premier soccer League players

TYPE	RESPONSES	%
Muscle rapture/strain/tears/cramps	45	32.4
Sprain/ ligament injury	32	23.0
Fracture/other bone injury	22	15.8
Abrasion	12	8.6
Haematoma/contusion/bruise	10	7.2
Tendon injury/rapture/tendinitis/bursitis	5	3.6
Dislocation/subluxation	4	2.9
Lesion of meniscus & cartilage	3	2.2
Laceration	2	1.4
Concussion with or without loss of consciousness	1	0.7
Nerve injury	1	0.7
Other	1	0.7
Dental injury	0	0.0

The table 3 illustrates the common types of injuries that have been sustained participants.

4.5 Recurrence of injury.

The participants were asked to state injuries that re-occurred and the cause thereof.

The majority of players (81%) experience recurring injuries whilst a few (19%) had not experienced recurrent injuries.

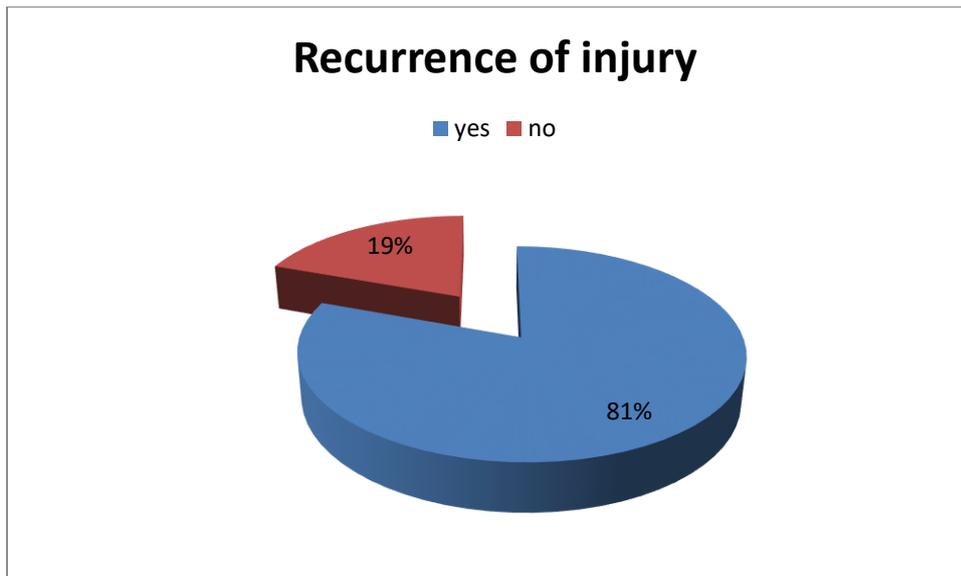


Figure 1: Injury recurrences amongst Lesotho Premier soccer League players

4.6 Cause and mechanism of injury

The cause of the injury is illustrated in table 4 and the mechanism of injury in table 5. Most players incur their injuries due to too much exposure or playing too often (overuse) (56.8%). These injuries mostly occurred either during competitive games (64%) or during training sessions (35.4%). The table further displays if the injury was caused by contact or collision and 54.4% participants had injuries due to contact with another player.

During matches, tackles caused most injuries (25.2%) followed by striking the ball (18.4%). Tackling (16.5%) and landing (12.1%) are amongst the most common mechanisms of injury.

Table 4: The causes of injuries amongst Lesotho Premier soccer League players

WHAT WAS THE CAUSE OF INJURY	RESPONSES	%
Overuse	117	56.8
Trauma	89	43.2
WHEN DID THE INJURY OCCUR?		
Training	73	35.4
Match	133	64.6
WAS INJURY CAUSED BY CONTACT OR COLLISION		
No contact	83	40.3
Yes contact with another player	112	54.4
Yes with the ball	10	4.8
Yes with the pole	1	0.4

Table 5: Mechanism of injuries sustained by Lesotho Premier soccer League players

ACTIVITY	TRAINING SESSIONS	COMPETITIVE SESSIONS	TOTAL	%
Tackled	9	43	52	25.2
shooting	7	31	38	18.4
tackling	13	21	34	16.5
Landing	10	15	25	12.1
Turning	6	16	22	10.7
Collision	6	13	19	9.2
Running	8	7	15	7.2
Heading	4	6	10	4.9
Jumping	5	3	8	3.9
Other	2	2	4	1.9

4.7 Severity of soccer injuries

Table 6 shows the severity of injuries occurring in both competitive and training sessions. The injuries are divided into three categories depending on the time taken to return to the sporting activity using a simple arithmetic sum as follows: minor 0-6 days, moderate is 7-12 days and severe is more than 12 days. The competitive sessions have higher figures in a minor category (57.2%) whilst training sessions have more or less the same frequency in minor (37.3%) and moderate (30.4%) categories.

Table 6: The extent of injuries sustained during training sessions and competitive games

EXTEND	TRAINING	%	COMPETITION	%
0-6 (minor)	77	37.4	118	57.2
7-12 (moderate)	75	36.4	58	28.1
> 12 (severe)	54	28.1	40	19.4

4.8 Treatment following injury

Figure 2 illustrates the given treatments following the injuries. The study had provided five options of treatment: medical, physiotherapy, traditional, self –treatment and none. Of the 206 players injured, 43.7% seek medical assistance, 41.7% treat their ailments at home (self-treat) and 29.6% consult a physiotherapist.

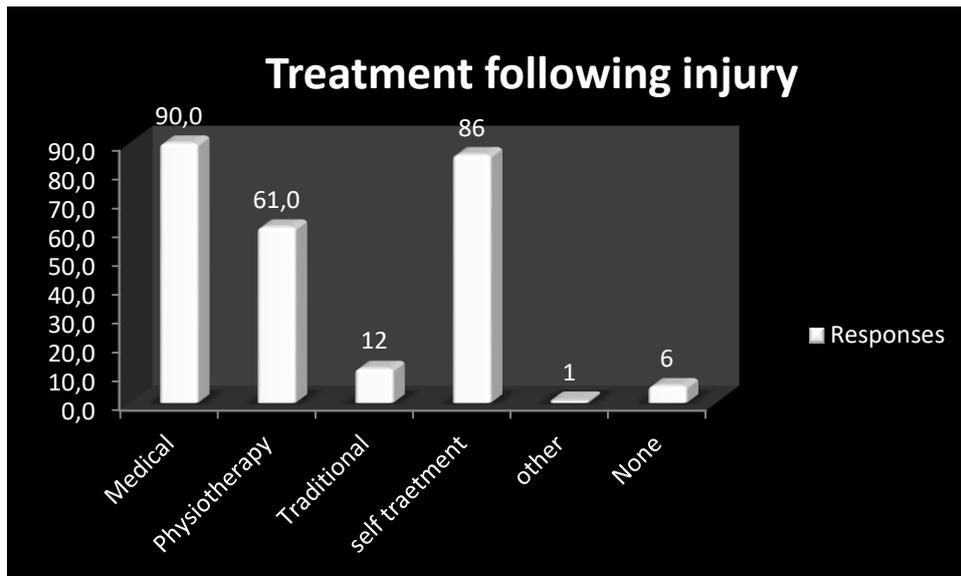


Figure 2: Treatment patterns amongst Lesotho Premier soccer League players

4.9 Medical treatment

Medical treatment and physiotherapy were further broken down to obtain further clarity from the participants. Figure 3 illustrates the different types of medication used by players. Most of them (52.9%) prefer to use rubbing stuff (methyl salicylate ointment). Tablets are the commonly prescribed treatment (23.3%) than injections (4.8%) for treatment of injury sustained amongst players. Less than half (48.0%) of the participants took medication to relieve their symptoms whilst about a fifth (20.3%) used bandages to support the injured area.

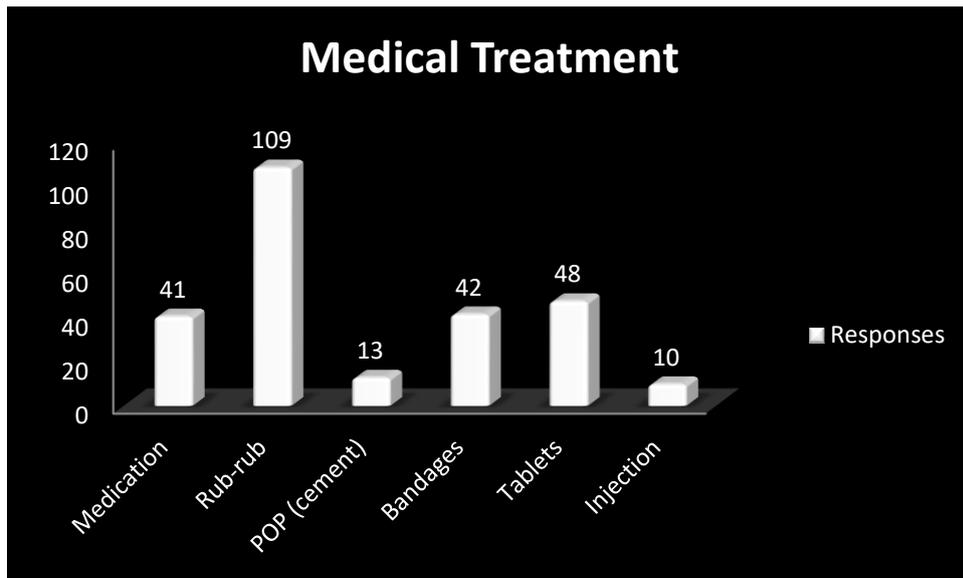


Figure 3: Symptom relieving measures amongst Lesotho Premier soccer League players

4.10 Physiotherapy treatment following injury

Different physiotherapy modalities are used to treat the injured players (table 7) however ice therapy seems to be the commonly used modality (20.4%) especially during the competitive games followed by massage (16.5%). Exercise therapy (11.1%) is not a popular mode of treatment.

Table 7: Physiotherapy Treatment

MODALITY	TRAINING SESSIONS	COMPETITIVE SESSIONS	TOTAL	%
Ice/cold	20	22	42	20.4
Massage	12	22	34	16.5
Exercise therapy	17	6	23	11.1
Stretching	6	10	16	7.8
Muscle stimulation	6	4	10	4.9
Crutch walking	6	1	7	3.4
Ultrasound	3	4	7	3.4
Heat	3	3	6	2.9
Deep friction	1	2	3	1.5
Joint mobilization	2	1	3	1.5
Other (cold spray)	0	3	3	1.5
Elevation	1	0	1	0.5
TENS	1	0	1	0.5
Strapping	1	0	1	0.5
Compressions	0	0	0	0
Interferential	0	0	0	0
Splinting	0	0	0	0

4.11 Traditional and self-treatment

Open questions were used to obtain information on the use of traditional medicine and self-treatment. The answers were coded and classified according to similarities self-rubbing and self-massaging was coded as one. About a third of players use massage [that is self-rubbed (22.2%) and self-massaged (11.1%)] as their basic treatment (33%). Massage is sometimes combined with other techniques such as exercises and/or bandaging (30.6%). Traditional methods were only used by 11.1% of players.

Table 8: Traditional and self-treatment patterns amongst Lesotho Premier League soccer players

COMMENT	RESPONSES	%
Self-rubbed	8	22.2
Massage and exercises	6	16.7
Rubbing and bandaging	5	13.9
Self-massage	4	11.1
Rubbing and not participating	4	11.1
Traditional	4	11.1
Massage and knee support	2	5.5
Infrared and rub-rub	2	5.5
Warm-up and rub-rub	1	2.8

4.12 Advice given to the injured patient

The advice given was divided into three categories: rest (no sport activity), limited sport activity and full sport activity (Figure 4). Players were commonly advised to rest (48%) whilst limited sport activity (44%) was also recommended to players.

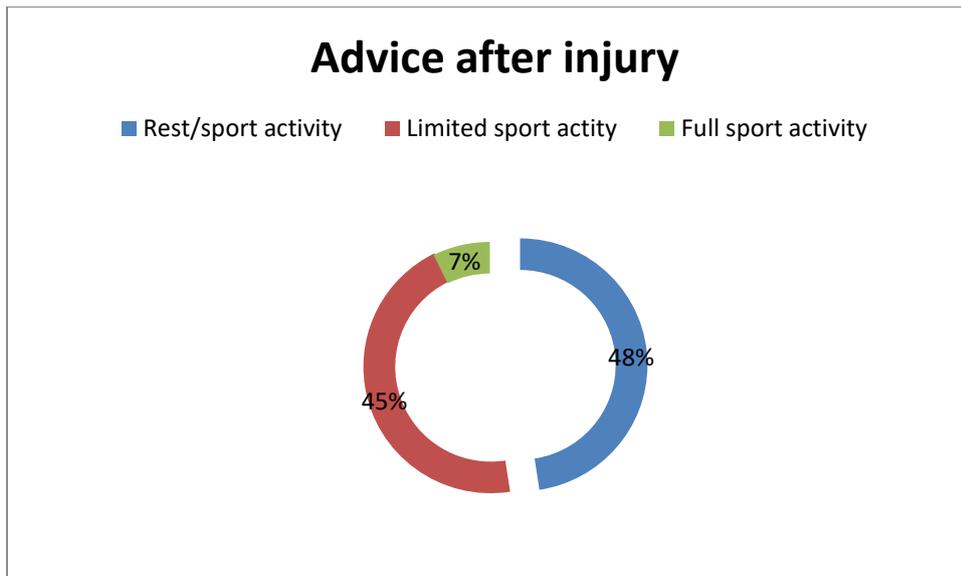


Figure 4: Advice given to Lesotho Premier soccer League players following injury

4.13 Availability and the need for physiotherapy services

The figures 5 and 4 represent the availability and need of physiotherapy services. Physiotherapy services are normally used by players following the injury provided such a service is available. Most of the players indicated that they never had the physiotherapy services when they needed them (27.1%) and a few players could sometimes receive the needed physiotherapy services (23.7%). The services were however available and accessible to a fifth of the players (21.5%). The majority of players feel physiotherapy services (91.7%) are needed for management of sustained injuries.

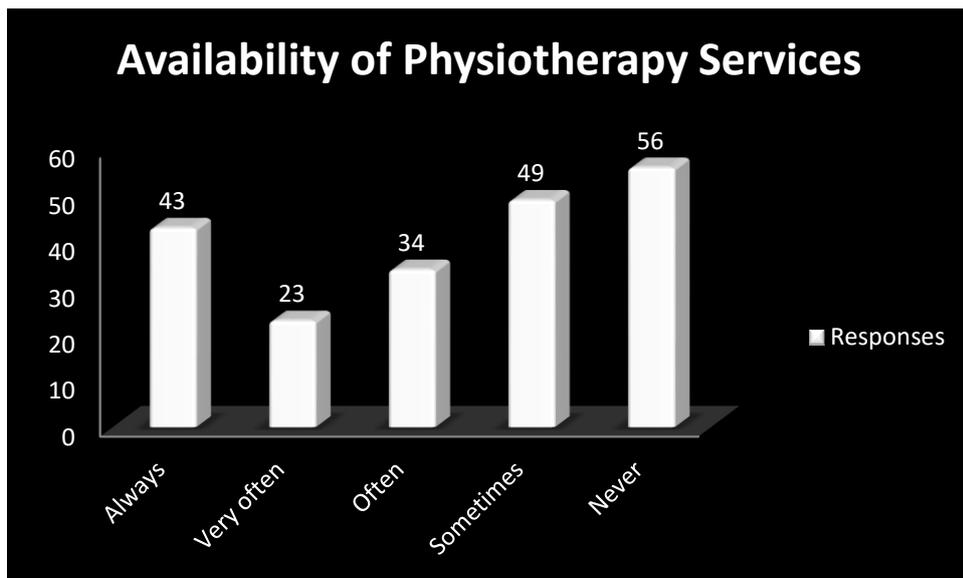


Figure 5: Availability of physiotherapy services to Premier soccer League players

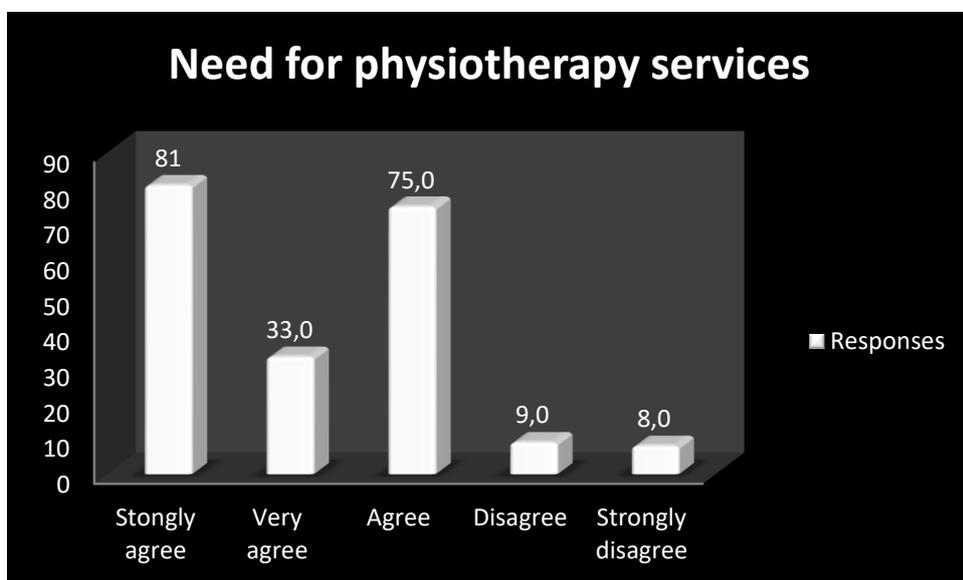


Figure 6: Need for Physiotherapy services for Premier soccer League soccer players

4.14 Preventative measures

Shin guards, ankle protection and footwear are used by the players however shin guards was are worn almost all the time during competitive games (92.2%), than training session (65.0%) (table 9). Ankle protection is used mostly in competitive games (65.5 %), and during training sessions (64.0%). Almost all players (81.1%) wear appropriate footwear during competitive games and during training sessions (91.2%).

Table 9: The use of protective gear amongst Lesotho Premier soccer League players

PROGRAMMES	TRAINING	%	COMPETITION	%
No to sometimes wearing shin guards	72	35.0	16	7.7
Often to always wearing shin guards	134	65.0	190	92.2
No to sometimes wearing ankle protection	75	36.4	71	34.4
Often to always wearing ankle protection	131	64.0	135	65.5
No to sometimes wearing good footwear	18	8.7	9	4.3
Often to always wearing good footwear	188	91.2	197	81.1

The table 10 below summarizes the injury prevention strategies used by participants. Almost all participants do warm-ups (97.1%) during competitive games and the majority during training sessions (89.3%). Majority of respondents reported that they do their cool down activities after the competitive games (87.4 %). During training sessions the picture is somehow different as 45.6% of the players reported to do their cool down.

Majority of the players (92.2%) do warm-up stretches during competitive games and most players (87.4%) during training sessions. Stretching is performed by more than half of the players to cool-down after competitive games (53.8%) and as training sessions (55.3%).

Not many players' warm-up for 20 minutes before competitive games (42.7%), and training sessions (43.6%). A third of players do warm-up for over 25 minutes before competitive games (39.3%) and warm-up for over 25 minutes during training sessions (31.6%). As the warm-up time reduces, so as the number of participants also get smaller on those categories.

Table 10: Preventative measures amongst Lesotho Premier soccer League players

PROGRAMMES	TRAINING	%	COMPETITION	%
Doing warm-ups	203	98.5	204	79.2
Not doing warm-ups	3	1.5	2	0.8
Doing warm-up ≥ 15 minutes	193	93.7	8	3.9
Doing warm-up ≥ 10 minutes	13	6.3	8	3.9
Doing stretch warm-up	203	98.5	199	96.6
Not doing stretch warm-up	3	1.5	7	3.4
Doing cool-down	142	68.9	203	98.5
Not doing cool-down	62	30.1	3	1.5
Doing stretch cool-down	168	81.6	149	72.3
Not doing stretch cool-down	38	18.4	57	27.7
Flexibility training (team) ≤ 2x per week	154	74.8	16.9	82.0
Not doing flexibility training (team) > 2x per week	38	25.2	37	18.0

In the table below (table 11) the consumption of carbohydrates is illustrated and of note is number of players who consume carbohydrates before competitive games (79.7%) and after (52.4%). Consumption of carbohydrates before (66.0%) and after (68.9%) training sessions was almost similar amongst the players. Water intake is common during both competitive (85.4%) and training sessions (82.4%). The nutritional advice was given to more than just half of the participants (52.9%) whilst less than half (44.6%) did not receive nutritional advice

Table 11: Pattern of carbohydrates consumption and water intake amongst Lesotho Premier soccer League players

Responses	Training	Competition	Any time
‘No to sometimes’ intake of carbohydrates before:	136	142	
‘Often to Always’ intake of carbohydrates before:	70	64	
‘No to Sometimes’ intake of carbohydrates after:	42	98	
‘Often to Always’ intake of carbohydrate after:	164	108	
‘Poor to fair’ water intake during:	36	30	
‘Good to Excellent’ water intake during:	170	176	
No nutritional advice			109
‘Little to a lot’ of nutritional advice			92

4.15 Association between the common injuries and other variables

Ankle injuries are associated with self- treat ($p = 0.020$). There is a strong significant relationship between the mode of treatment (not physiotherapy) and common injuries that occurred amongst the Lesotho PSL ($p < 0.05$). The common mechanism of injury is also association with the common injuries that occurred ($p < 0.05$). There is a significant relationship between the carbohydrates intake and the injuries sustained ($p = 0.017$). The players taking

carbohydrates are likely to sustain injuries as well ($p=0.001$). The other significant relationship is between common injuries and preventative measures (warm-up) ($p=0.019$).

CHAPTER 5

DISCUSSION

5.1 Introduction

The aim of this study was to develop a profile of soccer injuries that occur amongst the Lesotho premier league players. This chapter discusses the results of the study under the following headings: the site and the nature of the injury; recurrence of injuries; mechanisms of injury; severity of the injury and the type of management. The response was 85.8% which is slightly low compared to Azubuike and Okojie (2008) who obtained a response of 95.2% and only 87.6% were valid in study done in Nigeria. The response rate in Twizere (2004) amongst soccer players in Rwanda was 91% which is lower than the current study. The response rate implies that the soccer players voluntarily showed interest in finding out the matters concerning their injuries.

Most of the players within the Lesotho PSL are youngsters under the age of 30yrs, have a few years playing as professionals, are not highly educated and most are employed. They do sustain injuries which most commonly occur in the lower limbs, do also sought physiotherapy services when injured and at times consult traditional healers. They use protective equipment and gear, sometimes engage in self-treatment and do not experience a high rate of recurring injuries.

Soccer has no age limit as it is played from tender age until early 40's. The most common age amongst the premier league players in Lesotho is about 29yrs. There are only a few players over the age of 40 years. The study done in Rwanda had the youngest player of 17 and the oldest being 32 years (Nuhu 2008).

Most teams are new in the Premier soccer league contributing to the low years of experience at a professional level amongst the participants of the study. The game of soccer is played from

a young age at high school clubs in Lesotho and therefore much experience would have been gained at that level despite low years of professional experience. The selection for participation in the premier league starts from the school clubs from which the soccer skill and experience is improved.

Player's position is dominated by the defenders and the goalkeepers are the least represented because of their lower numbers in a team structure. A team of around 35 players can have only 3 or 2 goalkeepers. (Zarei *et al.*, 2009; Nuhu 2008)

In Lesotho most players do not play soccer only but do have other occupations hence employment status constituted part of the demographics in this study. As a result of this current status most players in the premier league are employed in institutions with teams in the league such as the Lesotho defence force, Lesotho Correctional services and Lesotho Mounted Police Services.

The recruitment of soccer players for the premier league in Lesotho starts at high school level hence most players are still at or have completed high school. Soccer is also played commonly at tertiary level, with some graduates being recruited into professional teams after schooling.

5.2 Body part injured and type of injury

Soccer is a moderate contact sport, which can lead to rough play and increased exposure to injury (Freddie, Stone and David, 2001). The game of soccer entails a variety of manoeuvres to control and pass the ball. The ball may be advanced by heading or tackling and may also be controlled with the chest or thighs. Tackling is an activity that mostly causes soccer injuries as it involves running while controlling the ball with the feet. The injuries may be sustained in various parts of the body, the most common being the lower limbs. The study found that the Lesotho PSL players commonly sustain injuries in the ankle, knee, hip/groin and the thigh.

This pattern is similar to that found by Azubuike and Okojie (2008) and van Beijsterveldt *et al.*, 2010), who reported that the ankle, knee and thigh, were commonly injured in Nigeria. Women however seem to sustain injuries around ankle and knee ligaments and at times concussions (Dick, Putikian, Agel, Evans and Marshall 2007). Different from the study findings that was conducted in Argentina which recorded the thigh and the leg as most commonly affected. However, the common types of injuries to these parts were the same as those found amongst Lesotho PSL players and were muscle rapture, strain, tears and cramps. (Gallo *et al.*, 2006) Contrary to these findings ligament sprains were found to be common followed by contusion and muscle strains (Ekstrand, Timpka and Hagglund 2006).

5.3 Causes of injury and Recurrence

Sports injuries are the result of both intrinsic and extrinsic factors. Intrinsic factors include age, sex, weight, strength and flexibility of the player whilst extrinsic factors include training methods, the surface upon which the game is played, equipment such as footwear and padding and environmental factors such as weather (Brukner and Khan 2012).

Soccer injuries can be caused by overuse of muscles or direct trauma and may occur during training or competition. In Agel *et al.* (2007) study, injuries were caused by contact with another player most of the time, a pattern also found amongst the participants of this study. Ekstrand *et al.* (2011) found traumatic injuries to be less common than overuse type and occur mostly during the competitive games.

Recurrent injuries exist among soccer players and if left unattended may lead to undesirable consequences. Inadequate rehabilitation and incomplete healing have been suggested as the key reasons for the high levels of recurrent injuries in soccer (Drawer and Fuller 2002). The Lesotho PSL players did not sustain recurring injuries even during competitive games or training sessions. In contrast to these findings re- injury rates were found to be higher during

competitions than trainings (Stovitz and Shrier 2011; Haghghi, Zamania and Zameni 2012). Furthermore, re-injuries constitute the majority of all the injuries (Ekstrand *et al.*, 2011).

5.4 Mechanism of injury

Studies have shown that there are a variety of injury mechanisms. Hawkins *et al.* (2001) in his study to determine the audit of injuries in professional football found that a few injuries resulted from contact injuries and many from a non-contact mechanism. The contact injuries were related to tackling, being tackled, collisions, landing, turning and heading. Scase, Cook, Makdissis, Gabbe and Shuck (2006) found falls to contribute towards the mechanisms of injury as well. The difference in comparison to Twizer (2004) is tackling and collisions were reported in addition to landing as mechanisms of injury. Similarly, Woods *et al.* (2003) illustrated that landing and twisting or turnings were mechanisms that had high frequencies. However, tackling, collision and shooting were found to be only most common mechanism of injury amongst the Lesotho PSL players. On the other hand, Hassabi *et al.* (2010) reported tackling and being charged as leading mechanisms of injury in the English Premier league.

5.5 Severity of soccer injuries

The severity of injury is measured by the number of days that the players' misses either competition games or trainings (Azubuike and Okojie 2008). The severity is classified as minor, moderate and severe (Gallo *et al.*, 2006). In the current study minor injuries were recorded during competitive games and severe injuries mostly occur during training sessions. The current study classified injury is severe if a player misses more than 12 days (1 week and five days) of action compared to Ruedl, Schobersberger, Pocecco, Blank, Engebretsen, Soligard, Kopp and Burtscher (2012), who regard time loss of more than just a week (7days) as severe based on the findings that fractures constituted the majority of injuries

in their study. Clarsen, Myklebust and Bahr (2012), had severity measured differently. Their measure uses the severity scores which also include the athlete's self- assessment of pain felt.

5.6 Treatment following injury

In South Africa majority of premier soccer league (PSL) teams have medical personals including physiotherapist and a medical doctor some privileged teams have the dietician and a biokineticist (Motha 2009). According to Bruckner and Khan (2012) the standard medical team comprises of the following: physician, physiotherapist, podiatrist, massage therapist and a dietician. Some Lesotho PSL players do not have the privilege of having the medical team as part of the team that is why the treatment was categorised in that manner. The treatment was categorised into five options; medical, physiotherapy, traditional self-treatment and none. Most of the players prefer to treat themselves; this is supported by McNoe and Chalmers (2011) in their study done in New Zealand in community-level soccer players, whilst others sought medical treatment. The third category consulted a physiotherapist because had access to physiotherapy services at their institutions or knew about the physiotherapy services.

Physiotherapy treatment forms an integral part of rehabilitation of an injured soccer player. Motha (2008) reported that massage, ice, medication and education are physiotherapy modalities used for treatment amongst players in the South African PSL. In this study, ice was found to be the common physiotherapy modality used for treatment. Massage and exercise therapy were also used but not as commonly. Ice has been found to be the best modality to reduce tissue temperature, blood flow, pain and metabolism (Hubbard and Denegar 2004). Most players are treated with ice, water, rest and anti-inflammatory medications at the pitch side during competitive games (McNoe and Chalmers 2011) a different combination from Motha (2008). Another combination frequently used on the field, in Nigeria (Lagos) is ice, bandaging and massage (Owoeye (2010).

5.7 Availability and the need for physiotherapy services

No literature on availability of, and the need for physiotherapy services could be found. This limited the discussion to the findings of the study only. Lesotho PSL players prefer medical treatment or self-treatment or physiotherapy. This pattern is not unusual as players in other countries have same preferences (Twizere 2004). He further reported that the soccer players are however willing to use any services if available and accessible.

5.8 Traditional and self –treatment

The approaches to injury management differ from player to player and some may seek the assistance of traditional medicine or treat themselves with other remedies. Some of the Lesotho PSL players use self-massaged similarly to players in other studies (Chen, Chen, Lin, Hong, Huang and Chou 2005). These authors further reported that players do attempt to treat themselves prior to medical consultation whilst a few ignored the injury. It has also been found that a large number of patients visiting traditional healers are ignorant of physiotherapy services. Furthermore when physiotherapy treatment was given to them they did not mention treatment received at the hospital as well (Puckree, Mkize, Mgobhozi and Lin 2002). The African players prefer traditional treatment even though there is no scientific evidence to support the effectiveness of that treatment. This practice is done because it seems to be the cheapest method for the players as most of African are financially challenged (Twizere 2004). Lesotho PSL players stated that they used different traditional methods such as using the razor blades to minimise swelling, whilst others use the tennis balls to suck out the clots in an injured part. Apart from this they use exercises after soaking their injured part in warm water with traditional herbs. Some reframed from trainings while healing the injury sustained.

5.9 Advice given to the injured patient

The basic and immediate care for most athletic musculoskeletal injuries within 72 hours of injury is Rest, Ice, Compression and Elevation (R.I.C.E.). Rest means avoiding activities that can cause pain or ache, activities such as running, jumping or playing. But this does not mean an athlete can be out of activity until he/she is completely healed but can have some gradual activity till safe to return to full play (Whitman, Childs and Walker 2005; Bruckner and Khan 2012). Players in the Lesotho PSL do receive advice depending on severity of the injury and if the injury is minor return to full activity is endorsed whilst limited activity is imposed on those with moderate injury. Players with severe injuries are restricted to rest or no sporting activity till recovery is achieved.

5.10 Use of protective equipment

The purpose of protective equipment is to reduce impact that could cause serious injuries. Shin guards are believed to protect shinbone by reducing the force to the tibia that could cause a fracture. It is encouraging to note that most players in the Lesotho PSL wear shin guards and ankle protection during competitive games. Shin guards are compulsory according to FIFA laws and should be worn during competitive games. This rule has been followed by many professional soccer players (McNoe and Chalmers 2010). According to Arnold and Docherty (2004) ankle bracing and taping provides efficient protection to the ankle, since inversion is limited. Ankle support has also been found to provide good impact on balance for people who have had ankle injuries. Unfortunately, there is however players who do not always comply and wear protective gear during competitive games and sustain feet and shin injuries as a result (Haghighi *et al.*, 2012). Agel *et al.* (2007) studied the rule of using shin guards from 1988-1989 through 2002-2003 football seasons. Their findings demonstrated no significant difference in ankle injury rates between compliant and non-compliant players. Boys have also been found

not to be compliant to wearing ankle protection compared to girls yet both groups still sustained ankle injuries (Nelson *et al.*, 2007). Footwear is part of protective measures, finding the right shoe is imperative for a complete soccer equipment package. Shoe selection should be based on proper fit, performance enhancement and injury prevention not the brand or sponsorship. The said to be right if they comply with the type of the surface they are used for. There are multi studded and six studded shoes for dry and hard fields; dump or wet fields respectively (Muller, Sterzing and Millani 2008). The majority of Lesotho PSL players found to be wearing proper shoes for different types of conditions yet a high number of ankle and knee injuries were reported. Twizer (2004) study found that some of the players were using appropriate shoes only in competitive games and not in training. He stated further that the injuries could have resulted from the combination of playing surfaces and inferior footwear. Woods *et al.* (2003) concluded that ankle sprain prevention include proper maintenance of pitches and training surface. The authors further stated that uneven surface is one of risk factors for ankle injuries. Ankle injuries in Lesotho might be caused by poorly maintained pitches as they play on hard surfaces without any grass; however, there is only one stadium that has artificial turf on it. The footwear could be of poor quality as the majority of players are paid to play soccer and there are no sponsors to provide for the players. Another thing could be that the player claims to have proper footwear however the researcher did not physically check the shoes.

5.11 Preventative measures and nutritional advice

Warm-ups are mandatory prior to all sporting activities approximately 30 minutes as they prepare the body for strenuous activities (Bruckner and Khan 2012). Warm-up, cool down and stretch routines should be undertaken religiously to prevent injuries. Warm-up should include aerobic activity, dynamic stretching and soccer specific skills. On the other hand cool down should include aerobic activity, dynamic and static stretching (McNoe and Chalmers 2011).

This study found that almost all players were doing their warm-ups, were cooling down, stretched to warm-up and stretched to cool down prior matches. A similar finding was reported by McNoe and Chalmers (2011), who stated that the males and females do warm-up prior to and cooling down after competitive games as well as training sessions. The female players are more likely to cool down after the game than the males. According to Reinking, Austin and Hayes (2007) warm-up done before a sporting activity is believed to reduce the risks of injury. Anderson (2005) conducted a study to determine stretching effects; the results proved undoubtedly that stretching prevents injuries in sports. However, there are limitations because the methods of stretching were not specified.

5.12 Nutritional Advice and water intake

According to Brukner and Khan (2012) inadequate nutrition may increase the risk of injury. Furthermore, inadequate glycogen repletion causes a reliance on fat and protein stores which may result in increased protein break-down subsequently soft tissue injury. Looking at the findings of the current study, more nutrition was consumed prior to competitions than trainings. The players had meals prior to competitive games and training. According to Nuhu (2008) carbohydrates and water were given more attention in competitions than in trainings. He further showed that carbohydrates and water intake were related to the financial status of the soccer team henceforth the soccer players are given advice regarding the benefit of the two in sport. Water intake is sufficient prior to and during both competitive games and training sessions. McNoe and Chalmers (2011) concur with this practice by stating that players have an opportunity to drink water for games and training. Only nutritional advice was received by most players in the Lesotho PSL. According to Twizere (2004) nutrition plays a major role in injury prevention. The player without advice explains the high injury prevalence in soccer players found in this study could be related to the group that did not receive nutritional advice.

5.13 Type of injury versus the use of protective measures

The use of protective equipment is done in such a way that it does not interfere with the sporting activity itself. Protective equipment can also be used on return to activity after injury in situations where direct contact may be aggressive (Bruckner and Khan 2012) and most of the Lesotho PSL players reported that they were wearing protective equipment during the competitive games.

Taping and bracing of the joint limit some movement of that particular joint, which helps reduce the risk of severe injury (Hubbard and Cordova 2010). Taping needs sound knowledge to be applied effectively, and is expensive hence might be used mainly during games. However, application of semi rigid orthosis is cheaper and players can wear it without assistance (Twizere 2004). The high incidence of ankle injuries amongst Lesotho PSL players suggest that players may not have been wearing ankle protection as required at all times.

5.14 Factors associated with injury profile

The most common injuries (ankle) are significantly related to self-treatment ($p=0.020$). The common self-treatment used is self-massage Twizere (2004) also found that many soccer players prefer to treat themselves at home and consider the method to be economical. Some opted for this method due to ignorance and lack of information concerning physiotherapy services. The self-treatment method was commonly used because the players did not have access to medical and Physiotherapy facilities. These injuries are also significant due to the type management used, some injuries may not have healed properly as they were not given enough time and proper rehabilitation hence recurred.

Contact with another person or tackled is the mechanism of injury common during competitive session with P-value 0.017. This association could translate into a possibility of extrinsic

factors involved like the training surface. Brukner and Khan (2012) showed that playing surface can be a major contributor to injury. Azubuikie and Okojie (2008) also confirm that most injuries recorded had occurred on dry or hard surface, being the case for most African pitches Lesotho being no exception.

Nutritional intake is strongly associated to common injuries (p -value 0.001). Players that were not taking carbohydrates were easily injured as they fatigued due to carbohydrates depletion (Coyle 2004). Some injuries could be brought by the fact that they had their meals a few minutes before the competitions which could cause discomfort in the stomach hence affect performance of players, however it is recommended that carbohydrates meal should be consumed 2-3 hours before exercise, to avoid risk of gastric discomfort and the meal should have too high fibre content (Coyle 2004). Some players had no meal at all after the match to replenish the fuel that had been utilised in competition and that could affect the performance of the following training session.

Preventative measures (warm-ups) have a significant association with common injuries ($p=0.019$). All the players claim to do warm-up though there is still high rate of injuries. The challenge could be the amount of time taken in activities of warm-up, if intensity is low and the duration is short that can predispose the players to incur injuries (Twizere 2004). Poor methods of warm-up can put the player under the danger of strains and worse muscle tears. Most players do warm-up for more 20 minutes only during the competitions, however for trainings the time is shorter and the activities are not sport specific only run around the field for a few minutes and start training (McNoe and Chalmers 2011).

CHAPTER 6

SUMMARY, CONCLUSION, LIMITATIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter covers the summary of the main findings. Thereafter implications and conclusion are drawn from those findings. Suggestions and recommendations are made at the end of this chapter as contributions towards prevention, early intervention and rehabilitation of injuries.

6.2 SUMMARY

The aim of the study was to develop a profile of soccer injuries amongst the premier soccer teams in Lesotho and determine a need for physiotherapy intervention. The types of injury and the mechanisms of thereof have been identified and described. The current preventative measures were established. The management of injuries including an identified need for physiotherapy services noted.

Indeed, soccer players within the Lesotho PSL do sustain injuries and most commonly in the lower limb in particular the ankle and the knee. These injuries included muscle strains/ cramps, ligament sprains and fractures. Competitive games and training sessions equally accounts for the majority of injuries sustained by the players. The main culprit cause of injuries is contact with another player during a tackle and shooting. The players do take precautions to prevent injuries some of which include protective equipment, nutritional intake and advice.

Physiotherapy services are not available to most players and most players preferred to treat their injuries at home. Some players use traditional methods for their injuries.

6.3 CONCLUSION AND IMPLICATIONS

Most injuries amongst the Lesotho PSL players are sustained predominantly in and around the ankle during both competitive games and training sessions. Most players self-treat their injuries.

The management of soccer injuries amongst professional players in Lesotho should receive appropriate medical care including rehabilitation if their injuries are to be given due consideration with the aim to return them to full participation in the game. The coaches and team managers must motivate for establishment of a medical team for their team which should include a physiotherapist to afford all players the needed injury management protocol of this level of the soccer game.

6.4 LIMITATIONS

- ❖ This study could have given more valuable information if the study was done prospectively.
- ❖ The questionnaire did not inquire about the time of exposure and the number of hours the players had in sporting activities which limits the study to express prevalence and incidence of the study.
- ❖ The follow-up question on why players consult the traditional healers not the medical team was not included.
- ❖ The exclusion of follow-up question on why players were not using the physiotherapy services was an oversight which could have given the clear reasons on their responses.
- ❖ The study does not provide the prevalence and incidence of injuries.

6.5 RECOMMENDATIONS

The results of the study regarding the common soccer injuries, the body parts commonly prone to injuries, the mechanisms and all possible causative factors need to be brought to the attention of soccer stakeholders in Lesotho. Soccer players need to be educated about preventative measures and protective measures that help in injury reduction and the nutritional and fluid intake incorporated.

Lesotho soccer players need to be educated about the importance and the role of protective equipment, the good sporting practices such as warming –up, stretching and cool-down methods. This could be for the team or on an individual basis. The practices should include good nutritional and water intake advices before and after trainings and competitions.

Educate the coaches and the players about early intervention in occurrence of the injury which. The injured player should cease activity once injury has occurred. The coaches should be familiar with application of ice immediately after injury. The soccer stakeholders should be made aware of the need of health professionals especially physiotherapist as part of the medical team. All players should be made aware of the benefits of taking their injuries to qualified medical personnel who would refer the player for appropriate medical facility.

A prospective study has to be done to record the injuries as they occur to be precise about the date and the mechanism of the injury. The present study got the injuries retrospectively and some could have forgotten when precisely the injury occurred. There has to be a medical professional to keep all the medical records of all players. The health professionals working with the teams have to create a data base of injuries which could be made available to future researchers.

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APPENDIX 1

QUESTIONNAIRE FOR SOCCER PLAYERS

All questions are strictly confidential. Please be as truthful as possible and tick with X APPROPRIATELY

PART A. DEMOGRAPHICS

1. Team name:.....

2. Age.

[17-20]	(1)	
[21-24]	(2)	
[25-29]	(3)	
[(30-34]	(4)	
[35-39]	(5)	
40+	(6)	

3. Number of years as player in premier league:

0-1	(1)	
(2-3)	(2)	
(4-5)	(3)	
(5-6)	(4)	
7+	(5)	

4. Playing position: Goalkeeper (1) Defender (2): Midfielder (3): Forward (4):

5. Employment status: employed (1) Unemployed (2) Scholar (3)

6. Level of education: No schooling (1) Primary (2) Secondary (3) High (4)

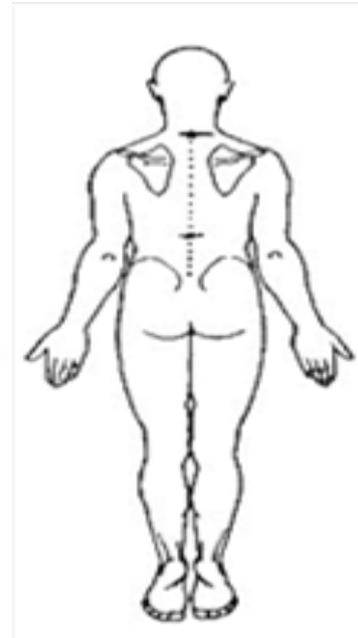
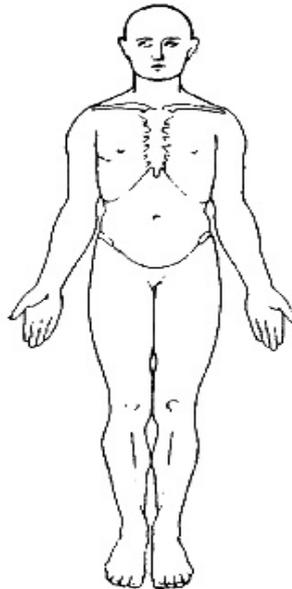
Tertiary(5)

PART B. HISTORY OF INJURY

In the answers you give below, consider only the information over the last 10 months (last season).

1. Tick applicable Injured body part with an X

Area	Left	Right
Head/ Face		
Neck/ Cervical		
Shoulder/clavicle		
Sternum/ribs/upper back		
Upper arm		
Elbow		
Forearm		
Wrist		
Hand/fingers/thumb		
Abdomen		
Hip/groin		
Thigh		
Knee		
Lower leg		
Ankle		
Foot/ Toes		
other		



2. Type of injury

Concussions with or without loss of consciousness	(1)	
Lesion of meniscus and cartilage	(2)	
Haematoma/contusion/bruise	(3)	
Fracture/other bone injury	(4)	
Dislocation/subluxation	(5)	
Abrasion	(6)	
Laceration	(7)	
Muscle rupture/strain/tears/cramps	(8)	
Tendon injury/rupture/tendinosis/bursitis	(9)	
Nerve injury	(10)	
Sprain/ ligament injury	(11)	
Dental Injury	(12)	
Other	(13)	

3. Has the player had the previous injury of the same type at the same site (i.e. this injury is a recurrence).

No (1) Yes (2)

If yes, Specify date of the player's return to full participation from the previous injury:

4. What was the cause of injury?

Overuse (1) Trauma (2)

5. When did the injury occur?

Training (1) Match (2)

6. Was injury caused by contact or collision?

No (1) (2) Yes, with another player

(3) Yes, with the ball (4) Yes with the pole

7. How did you sustain this injury? (One or more mechanisms are possible depending on the number of injuries).

Activity	Training sessions	Competitive sessions
Tackling		
Tackled		
Running		
Shooting		
Jumping		
Landing		
Heading		
Turning		
Collision		
Other (Specify)		

8. How many days of training sessions and competitive matches did you miss last season as result of an injury?

Training sessions:

0 days: (1) 1-3 days: (2) 4-6days: (3) 7-9days: (4)

10-12days- (5) other (specify) (6) _____

Competitive matches:

0 days: (1) 1-3 days: (2) 4-6days: (3) 7-9days: (4)
 10-12days- (5) other (specify) (6) _____

9. What kind of treatment did you receive following injuries? (One or more answers are possible).

Medical(1): Physiotherapy (2): Traditional (3): (Self-treatment(4)
 Other (5):(specify) _____ None(6)

Medical Treatment

Medication (1) rub-rub (2) POP (cement) (3)
 Bandages(4) Tablets (5) Injection(6)

Traditional medication explain further:

Self- treatment explain further: _____

10. If physiotherapy, what kind of treatment or advice did you receive following injury? (One or more answers are possible).

10.1. Physiotherapy treatment

Modality	Training Sessions	Competitive Sessions
Ice/Cold		
Compression		
Elevation		
Heat		
Ultrasound		
TENS		
Interferential		
Muscle Stimulation		
Joint Mobilizations		
Massage		
Deep Friction		
Stretching		
Exercise Therapy		
Strapping		
Splinting		
Crutch walking		
Other (Specify)		

10.2 Advice

Rest/No sport activity: (1) Limited sport activity: (2) Full sport activity: (3)

11. Did you get physiotherapy services when required?

(5)Always: (4)Very often: (3)Often: (2)Sometimes

(1)Never:

12. Do you think physiotherapy treatment was needed/helpful for your injuries?

(5)Strongly agree: (4) Very agree: (3)Agree: (2)Disagree: (1)Strongly disagree:

PART C: PREVENTATIVE MEASURES

	Training sessions					Competitive session				
	Always	Very Often	Often	Sometimes	Never	Always	Very Often	Often	Sometimes	Never
Do you wear shin guards										
Do you wear ankle protection										
Do you wear appropriate footwear/shoes										
Do you have a warm – up period before starting sessions										
Do you have a cool down period at completion of session										
Do you stretch major leg muscles during Warm up										
Do you stretch major leg muscles during cool down										

2. How long is your warm- up programme?

Prior to training

(5)5min: (4)10min: (3)15min: (2)20min: (1) >25min:

Prior to matches

(5)5min: (4)10min: (3)15min: (2)20min: (1) >25min:

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

Times per week as part of a team session

(1)0: (2)1: (3)2: (4)3: (5)>3:

Times per week as extra individual work

(1)0: (2)1: (3)2: (4)3: (5)>3:

4. Do you perform/undertake strength training in the gym?

Times per week as part of a team session

(1)0: (2)1: (3)2: (4)3: (5)>3:

Times per week as extra individual work

(1)0: (2)1: (3)2: (4)3: (5)>3:

PART D.NUTRITIONAL ADVICE

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

Pre-training

(5)Always: (4)Very often: (3)Often: (2)Sometimes: (1)Never:

Post-training

((5)Always: (4)Very often: (3)Often: (2)Sometimes: (1)Never:

Pre-match

((5)Always: (4)Very often: (3)Often: (2)Sometimes: (1)Never:

Post-match

((5)Always: (4)Very often: (3)Often: (2)Sometimes: (1)Never:

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

Training

(5)Excellent: (4) Very good: (3)Good: (2) Fair: (1)Poor:

Match

5)Excellent: (4) Very good: (3)Good: (2) Fair: (1)Poor:

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

(1)A lot: (2)A little: (3)None:

APPENDIX 2

LETTER TO LESOTHO FOOTBALL ASSOCIATION

The president

Lesotho Football Association

P.O. Box 1879

Maseru

Lesotho

Excellence,

Re: Permission to conduct a research study

I am a Mosotho Postgraduate student enrolled in masters in sports physiotherapy and rehabilitation at University of Limpopo (Medunsa campus) in South Africa. I am expected to conduct a research project as part of the requirement for the Master of Science in Physiotherapy. The title of the study is: **The profile of soccer injuries and their management amongst the premier soccer teams in Lesotho,**

I hereby request permission to carry out the above mentioned study in all premier league male soccer teams in Lesotho.

It is hoped that the results of this study in Lesotho will contribute to information needed to design an effective physiotherapy management and sound preventative programmes to soccer teams.

I would be grateful if I could be allowed to carry out the study during April until June 2012, participation in the will be anonymous and voluntarily and the information gathered will be treated with respect and confidentiality.

Hoping for a positive response

Yours sincerely

Rethabile Mokhochane-Nkuna

APPENDIX 3

PERMISSION LETTER TO CLUB MANAGERS

P.O Box 641

Medunsa

0204

20 February 2012

The Team Manager.

Dear Sir/Madam

RE: Permission to conduct a study

I am student in Master of Science in Physiotherapy at the University of Limpopo (Medunsa campus).

I am undertaking the postgraduate research project. The title of the research: **The profile of soccer injuries and their management amongst the premier soccer teams in Lesotho.**

I would like to request permission, to include your soccer players in this study.

The results of the study will be send to you in due course.

Yours Faithfully

Rethabile Mokhochane-Nkuna

APPENDIX 4

INFORMATION LEAFLET

Dear participant

I hereby humbly request you to participate in the study conducted by RD Mokhochane-Nkuna from the Physiotherapy department, University of Limpopo-Medunsa Campus.

Study title: the profile of soccer injuries and their management amongst the premier soccer teams in Lesotho.

The purpose of the study: This study will identify the common soccer injuries amongst the premier soccer players in Lesotho and the Physiotherapy interventions involved.

The objectives of the study are:

- To identify the socio-demographic status of Lesotho premier league soccer players.
- To identify the anatomical sites, nature and severity of injuries in Lesotho's soccer players in the premier league
- To identify how the injuries are managed amongst Lesotho premier league soccer players
- To identify factors contributing towards soccer injuries in Lesotho premier league.
- To identify the nutritional advice and the practices amongst the Lesotho premier soccer players
- To determine the relationship between injuries sustained and contributing factors, management and treatment
- To determine the accessibility of physiotherapy services to soccer players in Lesotho.
- To establish the need for physiotherapy intervention in soccer injury prevention in Lesotho.

The information on this leaflet aims at assisting you to decide to be included in the study or not. Before you agree to participate in this study you should fully understand what it entails. If you have any questions or need clarification please call Rethabile Mokhochane-Nkuna at 0720255481 or 012 521 5943.

Your participation in the study will remain voluntary with the right to terminate at any point. Your identity will remain strictly confidential.

Thanking you

RD Mokhochane-Nkuna.

APPENDIX 5

CONSENT FORM

ENGLISH CONSENT FORM

Statement concerning participation in a Research Project.

Name of Study: **the profile of soccer injuries and their management amongst the premier soccer teams in Lesotho.**

I have read the information on the aims and objectives of the proposed study and was provided the opportunity to ask questions and given adequate time to rethink the issue. The aim and objectives of the study are sufficiently clear to me. I have not been pressurized to participate in any way.

I am aware that this material may be used in scientific publications which will be electronically available throughout the world. I consent to this provided that my name is not revealed.

I understand that participation in this study is completely voluntary and that I may withdraw from it at any time and without supplying reasons.

I know that this study has been approved by the Medunsa Research Ethics Committee (MREC), University of Limpopo (Medunsa Campus). I am fully aware that the results of this study will be used for scientific purposes and may be published. I agree to this, provided my privacy is guaranteed.

I hereby give consent to participate in this Study.

.....

Name of participant

.....
Signature of participant

.....

.....

Place.

Date.

Witness

Statement by the Researcher

I provided verbal and written information regarding this Study
I agree to answer any future questions concerning the Study as best as I am able.
I will adhere to the approved protocol.

.....

.....

.....

Name of Researcher



Lesotho Football Association

(Affiliated to FIFA, CAF, and COSAFA)

P.O. BOX 1879
MASERU 100
TEL: 22311879
FAX: 22310586
E-MAIL: fal@leo.co.ls

19th October 2012

To: All Premier League Chairmen

Dear Sirs,

RE: INTRODUCTION OF MS RETHABILE MOKHOCHANE-NKUNA

The above caption bears reference.

This letter serves to introduce Ms. Rethabile Mokhochane-Nkuna to your club. Ms. Mokhochane-Nkuna is a student of the University of Limpopo. She is currently conducting research as part of her requirement for her Master of Science in Physiotherapy. She would like to meet your players and interview some of them as well as your coaches in her pursuit of collecting vital information that will benefit your team and the Kingdom of Lesotho.

Kindly assist her by way of allowing her to interact with your players and your officials within the ambit of her studies.

Mokhosi MOHAPI (Mr.)

Chief Executive Officer
Lesotho Football Association

Cc: Premier League Management Committee

President
Adv. Salemane Phafane KC

1st Vice - President
Mr. Tiholo Letete

2nd Vice - President
Mr. Khiba Mohoanyane

P.R.O.
Mr. Baba Malephane