

**MANAGEMENT OF RECURRENT SOCCER INJURIES AMONG THE PREMIER
SOCCER LEAGUE (PSL) PLAYERS**

by

Violet Matshake Rapoo

RESEARCH DISSERTATION

Submitted in fulfillment of the requirements for the degree of

MASTERS OF SCIENCE

in

SPORTS MEDICINE AND REHABILITATION

in the

DEPARTMENT OF PHYSIOTHERAPY

at the

UNIVERSITY OF LIMPOPO (MEDUNSA CAMPUS).

Supervisor: Professor NP Taukobong

2009

DECLARATION:

I declare that “**Management of recurrent soccer injuries among the premier soccer league (PSL) teams**” hereby submitted to the University of Limpopo, for the degree of Masters of physiotherapy in sports medicine and rehabilitation has not previously been submitted by me for a degree at this or any other university; that it is my work in design and execution, and that all material contained herein has been duly acknowledged.

.....
V.M RAPOO (MISS)

Student Number: 19642706

.....
Date

**THIS THESIS IS DEDICATED TO: MY MOTHER ELIZABETH RAPOO,
MY LATE FATHER CHARLES RAPOO, LASTLY MY ONLY
DAUGHTER OLESEDI MEMORY RAPOO**

ACKNOWLEDGEMENTS

I highly recognize and appreciate the contribution extended to me by the following:

My sincere gratitude to my supervisor, Prof NP. Taukobong for her contribution on the formatting of this study, her guidance and pertinent research advices.

To my beloved mother Elizabeth Rapoo and my daughter Olesedi Rapoo. I highly recognize your encouragement and patience during my absence.

My sincere gratitude to Ms Managa for helping with statistical analysis.

Special thanks to a friend Lebogang Katata who assisted with the figures

My sincere gratitude goes to the medunsa librarians (Denies and Abram) who went extra miles to assist with literature and referencing.

Lastly but not least to all participants for their appreciated contribution to this study.

ABSTRACT

Aim: The aim of the study was to review the current management of soccer injuries sustained by professional players and how injury recurrence is prevented among Premier Soccer League (PSL) players in RSA.

Study design: Cross sectional study, descriptive survey was followed, as it allowed the researcher to observe and describe the factors that had contributed towards recurrent injuries, as well as a qualitative approach with open ended questions where participant's expressions encountered during the study, were analyzed.

Population: The population of the study included all the medical team members in the PSL teams. PSL has 16 teams. The medical team comprised of any combination of the following members: the team doctor, physiotherapist, masseur, biokineticists, physical trainer, chiropractors and podiatrist. Not all teams have the same combination nor all disciplines mentioned.

Sample: Purposive sampling method was used, as the researcher selected main participants with a specific purpose. Each of the PSL teams has 7 members from different disciplines therefore, all available members of the medical team of each PSL teams participated in the study.

Data Analysis: Data was analyzed using SPPSS version 13.0. Data collected was loaded onto the statistica program for processing. Frequency tables for all variables are given to demonstrate the distribution of variables. Cross tabulation was also done to establish the relationship between the predictor variables and the response. The Test Statistic CHI-Squared (χ^2) was calculated and p-value of less than 0.05 was determined for the significance. Frequency distribution tables, graphs, and charts were used to analyze the data collected. Content analysis was used for qualitative data.

Results: Main findings of the study reflected that the ankle was the most commonly affected body part (69.2%) while the quadriceps and tendon achillies were both less commonly affected

(15.4%). The groin was found to incur most recurring injuries (69.2%). The results revealed that injured players are adequately managed by the medical team (61.5%). Attainment of pain free and full range of movement is the consideration for return to sport however less consideration was given to the persistent biomechanical abnormality.

Conclusion: The study confirms that soccer injuries amongst Premier Soccer League (PSL) teams are managed by qualified professionals. The attainment of a free, full range of movement and adequate strength are used as criteria for return to sport and as a measure of preventing injury recurrence. Factors such as players missing out on rich rewards, recognition and regaining position in the team seem to have a great influence as well.

Recommendation: The primary recommendation for the player who has had multiple recurrences is to address any underlying reversible risk factors such as poor strength and poor flexibility. A session needs to be held with soccer administrators to advocate the avoidance of factors contributing to recurrent injuries.

TABLE OF CONTENTS

| | |
|------------------------|---------|
| DECLARATION..... | i |
| DEDICATION..... | ii |
| ACKNOWLEDGEMENTS..... | iii |
| ABSTRACT..... | iv-v |
| TABLE OF CONTENTS..... | vi-viii |
| LIST OF TABLES..... | ix |
| LIST OF FIGURES..... | x-xi |

CHAPTER 1: INTRODUCTION

| | |
|--|------|
| 1.1 INTRODUCTION..... | 1-5 |
| 1.2 STATEMENT OF THE PROBLEM..... | 5-6 |
| 1.3 RESEARCH QUESTION..... | 6 |
| 1.4 AIM OF THE STUDY..... | 6 |
| 1.5 OBJECTIVES OF THE STUDY..... | 7 |
| 1.6 SIGNIFICANCE OF THE STUDY..... | 7-9 |
| 1.7 OPERATIONAL DEFINITION OF TERMS..... | 9 |
| 1.8 LIST OF ABBREVIATIONS..... | 9-10 |

CHAPTER 2: LITERATURE REVIEW

| | |
|---------------------------------|-------|
| 2.1 INTRODUCTION..... | 11 |
| 2.2 TYPES OF INJURIES..... | 11-12 |
| 2.3 CAUSES OF INJURIES..... | 12-13 |
| 2.4 MECHANISM OF INJURIES..... | 13-16 |
| 2.5 MANAGEMENT OF INJURIES..... | 16-23 |

CHAPTER 3: METHODOLOGY

| | |
|---------------------------|----|
| 3.1 INTRODUCTION..... | 24 |
| 3.2 RESEARCH DESIGN..... | 24 |
| 3.3 STUDY POPULATION..... | 24 |
| 3.4 STUDY SAMPLE..... | 24 |

| | |
|--|-------|
| 3.5 INSTRUMENTS..... | 25 |
| 3.6 PILOT STUDY..... | 25 |
| 3.7 RELIABILITY AND VALIDITY..... | 25 |
| 3.8 PROCEDURE OF DATA COLLECTION..... | 25 |
| 3.9 ANALYSIS OF DATA..... | 26 |
| 4.0 ETHICAL CONSIDERATIONS..... | 26 |
| | |
| CHAPTER 4: RESULTS | |
| 4.1 INTRODUCTION..... | 27 |
| 4.2 SECTION A: DEMOGRAPHIC CHARACTERISTICS OF MEDICAL TEAM..... | 27-30 |
| 4.3 SECTION B: SOCCER INJURIES..... | 31-35 |
| 4.4 SECTION C: PATTERN OF RECURRENT INJURIES..... | 36-42 |
| 4.5 SECTION D: MANAGEMENT OF RECURRENT INJURIES..... | 43-51 |
| | |
| CHAPTER 5: DISCUSSION | |
| 5.1 INTRODUCTION..... | 52 |
| 5.2 DEMOGRAPHIC CHARACTERISTICS OF MEDICAL TEAM..... | 52-54 |
| 5.3 SOCCER INJURIES..... | 54 |
| 5.4 PATTERN OF RECURRENT INJURIES..... | 57-58 |
| 5.5 MANAGEMENT OF RECURRENT INJURIES..... | 58-63 |
| | |
| CHAPTER 6: SUMMARY, CONCLUSION RECOMMENDATIONS | |
| 6.1 INTRODUCTION..... | 64 |
| 6.2 SUMMARY..... | 64 |
| 6.3 CONCLUSION..... | 65 |
| 6.4 LIMITATIONS OF THE STUDY..... | 65-66 |
| 6.5 RECOMMENDATIONS..... | 66 |
| | |
| REFERENCES..... | 67-73 |

APPENDICES

1. QUESTIONNAIRE
2. LETTER TO SAFA REQUESTING PERMISSION TO CONDUCT THE STUDY AND TO ALL PSL TEAMS.
3. LETTER TO THE PARTICIPANTS (MEDICAL TEAM) FULLY EXPLAINING THE PURPOSE OF THE STUDY.
4. INFORMED CONSENT LETTER TO PARTICIPANTS
5. PERMISSION LETTER FROM UNIVERSITY OF LIMPOPO RESEARCH ETHICS AND PUBLICATION COMMITTEE (REPC).

LIST OF TABLES

| | | |
|-------------|---|----|
| TABLE 4.4.6 | FACTORS CONTRIBUTING TO RECURRENCE..... | 42 |
| TABLE 4.5.7 | FACTORS CONSIDERED BEFORE RETURNING THE INJURED PLAYER TO SPORT..... | 50 |

LIST OF FIGURES

| | |
|---|----|
| FIGURE 4.2.1: DEMOGRAPHIC CHARACTERISTICS OF MEDICAL TEAM..... | 29 |
| FIGURE 4.2.2: DISTRIBUTION OF PERIOD WORKED..... | 30 |
| FIGURE 4.3.1: INDIVIDUAL LOWER LIMB SOFT TISSUE BODY PARTS COMMONLY AFFECTED IN SOCCER..... | 32 |
| FIGURE 4.3.2: INDIVIDUAL LOWER LIMB JOINTS AND TENDONS COMMONLY AFFECTED IN SOCCER..... | 33 |
| FIGURE 4.3.3: INDIVIDUAL UPPER LIMB JOINTS COMMONLY AFFECTED IN SOCCER..... | 34 |
| FIGURE 4.3.4: COMPARISON OF BODY PARTS COMMONLY AFFECTED..... | 35 |
| FIGURE 4.4.1: INDIVIDUAL LOWER SOFTTISSUE BODY PARTS AFFECTED IN RELATION TO RECURRENCE..... | 37 |
| FIGURE 4.4.2: INDIVIDUAL LOWER LIMB TENDON AND JOINTS IN RELATION TO RECURRENCE..... | 38 |
| FIGURE 4.4.3: INDIVIDUAL UPPERLIMB JOINTS BODY PARTS IN RELATION TO RECURRENCE..... | 39 |
| FIGURE 4.4.4: COMPARISON OF BODY PARTS AFFECTED IN RELATIONS TO RECURRENCE..... | 40 |

| | |
|---|----|
| FIGURE 4.4.5: PATTERN OF BODYPARTS COMMONLY INJURED AND BODY PARTS WITH MOST RECURRING INJURIES..... | 41 |
| FIGURE 4.5.1: ACTIVITIES UNDERTOOK BY PLAYERS DURING MANAGEMENT..... | 44 |
| FIGURE 4.5.2: NUMBER OF PLAYERS CONSULTING OUTSIDE THE CLUB MEDICAL TEAM..... | 45 |
| FIGURE 4.5.3: CONSULTATION OUTSIDE THE CLUB MEDICAL TEAM.... | 46 |
| FIGURE 4.5.4: PROTOCOL TO REFER INJURED PLAYERS TO ORTHOPAEDIC SURGEON..... | 47 |
| FIGURE 4.5.5: ADEQUACY OF INJURY MANAGEMENT..... | 48 |
| FIGURE 4.5.6: DECISION TO RETURN PLAYERS BACK TO SPORT..... | 49 |

CHAPTER 1

1.1 INTRODUCTION

Soccer is a moderate contact sport, which can lead to rough play and increased exposure to injury (Freddie, Stone and David, 2001). Soccer players are subjected to direct contact trauma and overuse of muscles injuries whilst participating in the sport. These injuries may occur during training and competition. The game of soccer entails a variety of maneuvers 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. Hamzat et al.(2004), in their study to determine the injury pattern of Federation of International Football Association (FIFA), Confederation of African Football (CAF) and Union of European Football Association (UEFA) soccer tournaments, found that tackling was the leading cause of soccer injuries observed in the three tournaments followed by accidental contact.

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).

According to Crossman (2001) players, when injured want a speedy recovery in order to return back to the sport. Once a soccer player recovers from initial shock of being injured, they realize that their daily schedules are disrupted as they no longer spend hours on the training field but instead spends hours in the medical room going through rehabilitation.

The author further mentioned that after a soccer player has sustained an injury that has kept him away from playing soccer; he tends to experience external sources of pressures. These pressures may include pressure from the coach and team manager, worry of losing his career, worry of losing his position in the team and about limited chances of gaining international exposure.

Following an injury a player may feel like been shelved or forgotten by their coaches and teammates once they are no longer contributing in the soccer team. When the player goes out with an injury, coaches still have responsibilities to the remainder of their team and may have limited time to devote to the injured player.

A survey conducted by Klenk (2006) to determine the psychological response to injury and recovery of athletes, found that frustration and anger were the most strongly experienced emotions. Out of the 180 injured athletes, 35. 0% had fears about returning to sport. Some of the fears listed were fear of re- injury, fear of making the injury worse, fear of falling behind and fear of not returning at the same strength, skill or level. Disparities were seen in the fear question response among different severity groups. The percent of injured athletes that had fears about returning to sport increased gradually as the severity of the injury increased.

Therefore a player's emotional response to injury is thought to influence behavioral responses to injury and rehabilitation outcomes. As a result of these external sources of pressures mentioned above, an injured soccer player ends up returning to the game prematurely, which subsequently leads to recurrent injury problems (Crossman 2001).

Management of soccer injuries ranges from simple cryotherapy to a more complex rehabilitation or even reconstruction surgery.

Brukner and Khan (2007) mentioned the following important components of rehabilitation:

Muscle conditioning: To improve muscle strength is an important aspect that needs to be considered during rehabilitation. As strength can be regained rapidly and before hypertrophy occurs, it appears that initial strength improvement in response to exercise is related to increased neuromuscular facilitation.

Flexibility: Regaining full flexibility of joints and soft tissues is essential component of the rehabilitation process. Joint range of motion is frequently decreased in association with painful injury and /or inflammation. Wherever possible, early restoration of range of motion is an important component of the rehabilitation process. A number of techniques of joint mobilization may be used at different stages of the rehabilitation process. With regard to musculotendinous

flexibility, tight or shortened muscles are commonly associated with sporting injury. This shortening may be present at the site of the injury or proximally. Traditionally, stretching has been the primary method of restoring normal flexibility. However, if the muscle tightness is secondary to neural restriction or trigger points, these must be corrected first if stretching is to be fully effective.

Neuromuscular control (balance and proprioception): Neuromuscular retraining following injury is another important component of the rehabilitation process. Proprioceptive and balance exercises should begin as early as possible in the rehabilitation program. They act to restore the athlete's kinesthetic awareness.

Functional exercises: Once a reasonable level of strength, power, endurance, flexibility and neuromuscular control has been achieved, the athlete should be gradually reintroduced to the functional activities that form the basis of his or her sport. These activities prepare the athlete physically and mentally for the demands of the sport. Depending on the nature of the activity, functional exercises will enhance all the other components of the rehabilitation.

Sport skills: Once adequate strength, flexibility and proprioception have been regained, these components must be combined to perform the relevant sport skills. With graduated training, the athlete relearns the various motor patterns necessary for his or her sport.

Correction of abnormal biomechanics: If abnormal biomechanics is contributing to an injury, its correction is a vital part of treatment and rehabilitation. The athlete should not be allowed to return to the same activity that produced the overuse injury without the cause of the injury being removed.

Maintenance of cardiovascular fitness: No matter what type of injury the athlete has sustained, it should always be possible to design an exercise program to enable cardiovascular fitness to be maintained. In injuries to the lower limb that require a period of restricted weight bearing activity, cardiovascular fitness may be maintained by performing activities such as cycling, swimming or water exercises. These activities can be used in a training program that follows the

same principles as the athlete's normal training. Depending on the athlete's particular sport, this may include a combination of endurance, interval, anaerobic and power work.

According to Brukner and Khan (2002), the traditional medical model has the doctor as the primary contact practitioner with subsequent referral to other medical practitioners such as team physician, sports physiotherapist, podiatrist, masseur, sport psychologist, dietician and trainer. Today's sports medicine model is different. The player's primary medical contact may be with a doctor however it is just as likely to be a physiotherapist, biokineticists etc.

Anderson, Hall and Martin (2000) in their book mentioned that in the absence of any medical team professional coaches are also expected to evaluate the daily status of sport participants prior to any activity, properly fit and use of quality safety equipment, teach proper skill development and technique and constantly reinforce the importance of safety and injury prevention throughout the year.

Thus, as the coach is directly responsible for the players training and performance, it is essential to involve the coach in any medical decision-making. Some coaches have a misconception regarding medical team that their role is to prevent the players from training or competing. While one of the medical team's role is to maximize the performance and monitor the health of the player, the main role of the medical teams is to return an injured player to the same or higher level of competition as before the injury. Professionals from different disciplines such as among the medical team provide the specialized skills to facilitate optimal care of the player (Brukner and Khan, 2000).

Physiotherapy treatments for an example are begun as quickly as possible after the injury. The methods of treatment usually involve techniques learned as part of the general physiotherapy practice including manual therapy (massage and manipulation) electrotherapy, cryotherapy and exercise therapy. The sports physiotherapist has to deal with patient and liaise with medical specialist as well as other paramedical practitioners. Treatment and fitness training advice must be continued until the player is able to fulfill all the requirements of sports participation and that the physiotherapist is satisfied that the player is safe to return back to the sport. It is the

responsibility of the sports physiotherapist to decide together with members of the medical team when the player is ready to compete again without running the risk of encountering recurrent soccer injuries.

1.2 STATEMENT OF THE PROBLEM

Most professional soccer players sustain injuries during training and competitions. Effective management of these injuries is minimized by those injured players who play the game in the presence of an injury. This leads to injury recurrence and subsequent poor performance of players. Some of the recurrent injuries may eventually require major surgery leading to players being out of action for a long period of time. Therefore, frustrations become high because there is no guarantee that the player will return to his former level of performance. During that stage much is expected from the entire medical team such as physiotherapist and doctor. Pressure is upon the physiotherapist to rehabilitate the injured player and return him to his normal state within a short period of time.

In South Africa the sports injury management is part of the physiotherapy undergraduate program which qualifies any physiotherapist to manage soccer injuries. Although according to the researchers observations some of the physiotherapist managing these injuries have not done sports injury management at a post graduate level, which requires an intense understanding of the mechanics of injury and sport-specific rehabilitation at an advanced level.

Inadequate knowledge may lead to the overall management outcome of the player being affected. Thus the athlete may be prone to re-injury of the affected area, incapable of performing at pre-injury level and predisposed to injuring another part of the body. Therefore the future of the player becomes negatively influenced.

In the researchers experience as a physiotherapist some players are given a short period of rest and returned to the field too soon. In some instances they are put on the reserve list despite the fact that they are carrying an injury. This happens even if the physiotherapist had reported to the coach about the injury of the player.

During the period that the researcher worked for South African women's team under 19 (Basetsana) she observed that most soccer injuries managed during the training camp were recurring. The researcher also noticed through discussions with colleagues that most physiotherapists are not permanently employed by SAFA but instead different physiotherapist work on contract basis for a specific game. Thus a physiotherapist is only employed for that particular game and is unable to neither follow up nor give a hand –over of a comprehensive physiotherapy report on those injuries managed during the training camp or the game, for further consultation management. All soccer players who encountered injuries during the training camp or the game are therefore sent to different physiotherapist without appropriate hand over for further management.

In summary the main problem that prompted the researcher to conduct this study is, fielding of an injured player despite continuing physiotherapy management by, at times, non-sport trained physiotherapists which in turn encourage recurring injury and affects the future participation of the player. In this way many talented players may be forced to quit sport at an early stage whilst injury recurrence could have been prevented.

1.3 RESEARCH QUESTION

How is soccer injuries among the premier soccer league (PSL) players managed in order to prevent recurrence?

1.4 AIM OF THE STUDY

The aim of the study is to review the current management of injuries sustained by professional players and how recurrence is prevented among Premier soccer league (PSL) players in RSA.

1.5 OBJECTIVES OF THE STUDY

1. To determine the demographic characteristics of the medical team including qualifications obtained, experience in treating soccer injuries, period worked with the team and status of appointment
2. To identify the most occurring injuries sustained by soccer players.
3. To determine the possible factors contributing to recurrence such as playing surface, player co-operation and pressure from the team
4. To determine the management that the players receive following recurrent such as consultation outside the club medical team and referral to orthopedic surgeon.
- 5 To determine the decisions taken by the medical team members regarding the future of the player following recurrence.

1.6 SIGNIFICANCE OF THE STUDY

The findings from the study will provide beneficial information to the soccer players, coach, soccer team administrators and physiotherapist.

- **SOCCER PLAYERS**

The findings of this study give recommendations to the medical team about educating the players on their injuries, how they are managed, and the duration it will take for healing/recovery to take place. This will make them aware of rehabilitation program and the healing process. Important aspects such as the players reporting injuries early will be highlighted to players.

Crossman (2001) mentioned that a pattern of negative emotions in response to sport injury, with depression and frustration emerging as consistent themes throughout the rehabilitation process, affected (injured) soccer players. This author also indicated that the way players react

emotionally to injury has important implications not only for their subjective well-being, but also for their rehabilitation behavior and clinical outcome.

- COACH

Recommendations based on the findings of the study will be made to the coach with the hope of providing better understanding of the management of soccer injuries to prevent recurrence. The coach will then follow the advice of a medical team whilst determining when an injured player is ready to recommence training or competition.

- SOCCER TEAM ADMINISTRATORS

Through information from the study the administrators will keep up with the maintenance of health and injury records for each player, the requisition and inventory of necessary equipments. Thus recurrent soccer injuries will be properly managed. The results from the study hopefully will make the soccer team administrators to apply specific selection criteria of members of the medical team.

- PHYSIOTHERAPIST

Primary significance: Information from the study will conscientize the physiotherapist to put more emphasis on restoring the player to his pre-injury level of sport, through a well-scheduled functional rehabilitation programme.

Secondary significance: Determining the possible factors contributing to recurrence will enable the physiotherapist to come up with preventative measures regarding recurrent injuries. Information will also make the physiotherapist to be compact on the decision to be taken regarding returning the injured player back to sport, by following a specific protocol that can be well known by the soccer players themselves, coach and entire medical team.

Physiotherapy as a profession will gain more recognition as soccer administrators from the development to Premier Soccer League level will know the importance of including a physiotherapist as part of injury prevention and injury management.

1.7 OPERATIONAL DEFINITIONS

1. RECURRENT INJURIES

An injury of the same type and at the same site as an index injury and which occurs after a players return to full participation from the index injury (Fuller et.al, 2006)

2. MANAGEMENT

Technique, practice or science of managing or controlling, the skillful use of resources and time, the specific treatment of a disease or disorder (medical-dictionary, 2009).

3. REHABILITATION

Process intended to enable people with disability to reach and maintain optimal physical, sensory, intellectual, psychology and or social function. Rehabilitation encompasses a wide range of activities including rehabilitative medical care, physical, psychological, speech, occupational therapy and support services (WHO, 2007).

4. PHYSICAL THERAPY

Provides services to individual and populations to develop maintain and restore maximum and function ability throughout the lifespan. Includes providing services in circumstances where movement and function are threatened by injury or environmental factors. (WCPT, 1995)

1.8 LIST OF ABBREVIATIONS

- FIFA: Federation of International Football Association
- CAF: Confederation of African Football
- UEFA: Union of European Football Association
- SAFA: South African Football Association

- PSL: Premier Soccer League
- ACL: Anterior Cruciate Ligament
- ATFL: Anterior Talofibular Ligament
- CFL: Calcaneofibular Ligament
- PTFL: Posterior Talofibular Ligament
- ROM: Range Of Movement
- REPC: Research Ethics Publication and Committee
- RSA: Republic of Southern Africa

Literature of all the studies conducted on soccer injuries and the management, types, causes, mechanism involved will be reviewed in the next chapter.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents a review of literature regarding soccer injury studies. The literature is discussed under five themes. The first theme includes types, common sites of soccer injuries and the second being the causes of soccer injuries. The third and the fourth being the nature of soccer injuries and mechanism involved respectively. The last theme being management of soccer injuries.

2.2 TYPES OF INJURIES

Soccer is a sport in which about(80%) of all injuries occur in the lower extremities (Olsen et al., 1985).The main categories of injury location are groin, thigh, knee, lower leg and ankle.

According to Rupp and Purcell (2004) groin injuries are commonly encountered by physician and clinicians who treat athletes of all ages at all levels. Orchard and Seward (2002) also stated that the most common and prevalent injury was hamstring strain followed (in prevalence) by anterior cruciate ligament and groin injuries.

In a study conducted by Woods et al., (2004) it was found that after a detailed analysis of hamstring injuries sustained in English professional football over two competitive seasons the hamstring recurrence rate was (12%) of the total injuries over the two seasons with nearly half (53%) involving the biceps femoris.

Twizere (2004) justified this fact when his findings revealing that knee injuries were common with the first division players (23.5%), amongst Rwanda's soccer players.

Similarly, Hamzat et al., (2004) conducted a study to detail the injuries sustained by players in the 2002 events FIFA male senior world cup, CAF male nation's cup and UEFA clubs

championship competitions. They found that the knee was the most commonly injured part of the body in each of the three competitions (FIFA 23.5%, CAF 14.9% and UEFA 20.0%)

Conversely Porat, Roos and Roos (2005) in their study to determine the prevalence of osteoarthritis 14 years after an anterior cruciate ligament tear in male soccer players. Found that a high prevalence of radiographic knee osteoarthritis was seen in male soccer players 14 years after an ACL disruption. Thus the injury and osteoarthritis, irrespective of the treatment provided to these patients often result in knee related symptoms that severely affect the knee related quality of life by middle age. The ankle joint remained the most commonly affected body part, with the highest prevalence being in the first division (41.6%) than in the second division (35.3%) (Twizere 2004).

This was supported by Lilley, Gass and Locke (2002) who mentioned that ankle and shin injuries were the most common injuries in a group of high performance female soccer players.

Hawkins et al., (2001) conducted a study to determine the epidemiology of the injuries sustained in English professional soccer over two competitive seasons. It was found that strains (37%) and sprains (19%) were the major injury types with the lower extremity being the major site of injury (87%).

Contrary to Mahlangu (2006), who described the types of injuries and the mechanism sustained by teenage girls playing soccer, it was found that ligament sprains accounted for the highest number (57%) of the total injuries sustained.

2.3 CAUSES OF INJURIES

Sports injuries are the result of both intrinsic and extrinsic factors. Intrinsic factors also called internal athlete-related risk factors include age, sex, weight, strength and flexibility of the player. Extrinsic factors also called external environmental risk factors which include training methods, the surface upon which the game is played, equipment such as footwear and padding and environmental factors such as weather.

Soccer injuries can be caused by overuse of muscles or direct trauma. The medial and lateral sides of the foot are generally used for making short and accurate passes. The typical instep soccer kick consists of three main phases: approach, ball struck and follow through. The maximum kinetic energy generated by a soccer kick has been estimated at 200Nm. This force is of sufficient magnitude to fracture a femur, because only 15% of energy is transferred to the ball, the kicking leg must absorb the remaining amount. The majority of this force is dissipated by the hamstrings as they fire eccentrically to decelerate the kicking leg during follow – through it is due to this that the leg is quite vulnerable to injury during this stage of the kick.

Hagglung, Walden and Ekstrand (2006) in a study conducted to determine whether prospectively recorded injuries during one season are associated with injuries sustained during the following season, found that previous injury is an important risk factor for football injury.

In contrast, Ibrahim, Murrell and Knapman (2007) found that reduction of hip range of movement may be considered on an etiological factor in the occurrence of adductor strain in professional soccer players.

Many predisposing factors for hamstrings strain include insufficient warm up, poor flexibility muscle imbalances, muscle weakness, neural tension, fatigue, dysenteric contraction and previous injury (Woods et al., 2004)

This was supported by Crosier et al., (2002) who found that persistence of muscle weakness and imbalance may give rise to recurrence hamstring muscle injuries and pain.

2.4 MECHANISM OF INJURIES

According to Brukner and Khan (2007) the ankle contains three joints, the talocrural or ankle joint which is a hinge joint formed between the inferior surface of the tibia and the superior surface of the talus. The medial and lateral malleoli provide additional articulations and stability to the ankle joint.

Furthermore it was enlightened that movements at the ankle joint are plantarflexion and dorsiflexion, the joint is least stable in plantarflexion. This leads to an increased number of injuries with the foot in the position of plantarflexion. The inferior tibiofibular joint is the articulation of the distal parts of the fibula and tibia. The inferior tibiofibular joint is supported by the inferior tibiofibular ligament. A small amount of movement is present at this joint and the rotational movement, even though minimal, is extremely important for instance, for barefoot walking and running. The subtalar joint between the talus and calcaneus, is divided into an anterior and posterior articulation separated by the sinus tarsi. The main roles of the subtalar joint are to provide shock absorption, to permit the foot to adjust to uneven ground and to allow the foot to remain flat on the ground when the leg is at an angle to the surface. Inversion and eversion occur at the subtalar joint.

The authors further explained that lateral ligament consists of three parts: anterior talofibular ligament (ATFL), which passes as a flat and rather thin band from the tip of the fibula anteriorly to the lateral talar neck, calcaneofibular ligament (CFL), which is a cord-like structure directed inferiorly and posteriorly, and the short posterior talofibular ligament (PTFL), which runs posteriorly from the fibula to the talus. The medial or deltoid ligament of the ankle is a strong, fan-shaped ligament extending from the medial malleolus anteriorly to the navicular and talus, inferiorly to the calcaneus and posteriorly to the talus. This ligament is strong and composed of two layers one deep and the other more superficial. Accordingly, the deltoid ligament is infrequently injured.

According to Puffer (2001) lateral ankle sprains accounts for the overwhelming majority of ankle injuries. These sprains usually occur as a result of landing on a plantar flexed and inverted foot. When the ankle is under-weighted, it rests in a position of plantar flexion and inversion. If a ground or an object is met unexpectedly when the foot is under-weighted, the lateral ankle ligamentous complex may be injured. This may occur when running on uneven terrain, stepping in a hole or landing on another athlete's foot after jumping.

On the other hand Noronha et al, (2006) in their systemic review that was carried out to investigate the possibilities of voluntary strength, proprioception, postural sway, and range of movement whether they predict the occurrence of lateral ankle sprain. They found that

dorsiflexion range of movement (ROM) strongly predict risk of ankle sprain. In a sense that people with inflexible ankles (34degrees dorsiflexion range ROM) have nearly five times the risk of ankle sprain of people with an average flexibility (45degrees ROM). Postural sway and possibly proprioception were also predictors

Contrary, Chamari et al., (2007) in their study they conducted to measure the plantar pressure in four soccer-related movements in male soccer players. Found that in all four soccer –related movements, a higher pressure was found on the medial side of the plantar surface as compared with the lateral side.

Hawkins et al., (2001) in his study to determine the audit of injuries in professional football revealed that 38% of injuries were classified as resulting from contact with another player or the ball and 58% of a non-contact mechanism. The author further specified that about half of the injuries arose from player to player contact, including tackling, being tackled, collisions and the remainder (non-contact) arise from actions such as running, shooting, turning and heading.

In the same way Walker (2003) listed groin injury as the most common in the soccer player because the sport required a lot of running or rapid change in direction. Activities like kicking, jumping and rapid acceleration or deceleration also placed a lot of strain on the groin muscles. Another activity that puts a lot of strain on the groin is any movement that results in a sudden pressure being applied such as a fall, landing awkwardly, twisting or bending while stress is applied to the groin muscles.

Correspondingly Wilson and Myers (2008) mentioned that hamstrings function primarily by eccentric contraction to decelerate forward progression of the tibia during the swing phase of gait. Eccentric contractions are more efficient than concentric contraction. It requires less oxygen but the tension generated during eccentric contraction is much higher than with concentric, generating higher intrinsic forces within the muscle and hence in loss of normal eccentric control. The authors further explained that hamstring tears do not result from direct trauma but rather are stretch induced injuries caused by a sudden injuries occurring during a powerful

contraction. The most common mechanism is ballistic hip flexion during eccentric knee extension.

Menisci tears and ligament injuries on the other hand, occur as a result of a sudden deceleration stresses rather than from direct contact as in American football (Freddie, Stone and David 2001).

2.5 MANAGEMENT OF INJURIES

Bruckner and Khan (2007) mentioned that understanding the pathophysiology, phases and time frames of soft tissue healing following injury improves the therapist's ability to construct a successful rehabilitation program.

The phases are as follows:

Acute inflammatory phase (0-72hours): Damaged tissue is filled immediately with erythrocytes and inflammatory cells. Phagocytosis of necrotic cells occurs within 24hours. Fibroblasts slowly lay down collagen scar.

Proliferation/repair phase (2days-6weeks): Fibroblasts are the predominant cells, initially resulting in large amounts of scar collagen with excessive cross-links. As stress is applied to the healing tissue, the amount of cross-links is reduced and the tensile strength on the tissue is increased.

Remodeling/maturation phase (4weeks-12months): Total collagen content within the tissue is slowly reduced; the scar tends towards assuming the structure of the pre-injured tissue. The initial severity of the injury will largely influence the time taken for complete remodeling to occur.

The author further explained that after injury, there is rapid muscle atrophy due to a cellular response to pain, inflammation and immobility. Muscle strength decreases after relatively short periods of immobilization. Muscles also show increased fatigability and, therefore, less endurance after immobilization. Persistent pain alone will cause muscle weakness due to decreased neural input. However, there does not appear to be a direct relationship between the intensity of pain and the amount of muscle inhibition. A joint effusion, however small, may also lead to reflex inhibition of surrounding muscles. Muscle atrophy patterns appear to depend on

the relative length of immobilized muscle and therefore, the type and amount of impulses from the stretch receptors. Adequate rehabilitation requires careful assessment, strengthening of the weak muscles groups, stretching of the tight structures and gradual motor re-education to facilitate correct timing of muscle activity.

Carlson (2008) in his review to determine the natural history and management of hamstring injuries mentioned that Corticosteroids can be administered orally or intramuscularly for acute injuries.

According to Anderson (2005) effective treatment depends on an accurate diagnosis, an appreciation of the causes of injury, and the functional requirements for returning to the activity that caused the injury. Treatment must work to decrease pain, promote healing, and restore normal function. Treatment and rehabilitation can be organized in sequential stages with each stage composed of specific goals and tasks.

Furthermore he mentioned the following rehabilitation phases:

Initial care: Initial care commences after a working diagnosis has been established. The goal of initial care may be to provide first aid or to address the effects of injury. Controlling swelling and pain is also part of initial care. This can be done with ice, compressive wraps and elevation.

Intermediate care: During the intermediate care phase, the injured player begins therapeutic exercises that are designed to restore full motion and strength in the injured area as well as maintain flexibility, strength and fitness in uninjured areas. Normal motion involves both joints and musculotendinous structures.

Functional rehabilitation: once flexibility joint motion and strength have been restored the injured player needs to regain higher level functions that are necessary to successfully return to sports activity. The demands of the sport dictate functional requirements. If sports involve endurance a program for endurance training should take place. Injured players in sports that require speed and power should train for speed and power. Most sports require balance and agility. Deficits of balance, position awareness, and co-ordination are common after injury.

Training to carry out more complex patterns of movement involves the integration and coordination of the more basic exercises done in the intermediate phase of rehabilitation. Proprioception can be restored with appropriate proprioceptive exercises. Functional stage of rehabilitation is the time to resume sport-specific skills. All sports have requirements that will benefit from a similar level of intergraded functional restoration.

Protective equipment: equipment such as braces, shoe inserts may have a role in protecting an injury or mitigating the cause of the injury.

Maintenance therapy: when the rehabilitation has progressed to the point where the player 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 overtime. This may include regular stretching or strengthening, modalities or protective equipments.

Return to play criteria: determining when it is safe for a player to return to play following injury is a challenging but necessary component of injury treatment. Inaccurate estimates of readiness to return to play have negative consequences for the patient and the physician. The physician may be aware of pressure to get the player back to play as soon as possible but know that premature clearance to return to play carries the risk of further injury or delayed healing. Players who are not fully recovered will not perform to their full capacity and face the risk of even more time loss. It seems logical that return to play is safe once the patient has healed. The standard of healing may vary for different injuries and, in some cases, complete healing may not be necessary for a safe return. Time frames for recovery have been linked with particular injuries and are used to estimate return to play.

Similarly Puffer (2001) revealed that, rehabilitation started early in the acute phase and is primarily targeted at reducing swelling and pain. Limiting soft tissue effusion significantly improves healing and limits time from activity. After pain and swelling are controlled, the sub acute phase of rehabilitation concentrates on increasing pain-free motion while beginning isometric exercises to prevent loss of strength. Once full pain-free motion has been established, strength is increased with isotonic and isokinetic exercises and proprioceptive training is

initiated. The final phase of rehabilitation focuses on sport specific exercises directed at returning to full sports participation. The author also stated that if the patient's primary complaint is that of ankle instability, it is important to ensure that the ankle has been adequately rehabilitated. If rehabilitation has been adequate and the patient complains of the ankle giving way or the inability to cut or pivot, consideration for reconstruction of the ankle should be undertaken.

Conversely Fuller and Walker (2006) affirmed that a structured quantified rehabilitation program based on routine fitness and skills exercises and a graded subjective assessment of performance provides an auditable record of a player's functional recovery, from a range of lower limb injuries and a transparent exit point from rehabilitation

Andersen (2000) in his book where he talked about doing sports psychology with injured athletes mentioned that rehabilitation of injured athletes is increasingly becoming a multifaceted process. Injured athletes are seeking rehabilitation input from physicians and physiotherapist but also from other health care providers (e.g. podiatrist, dieticians, sports psychologists, masseurs and other athletic trainers.). This was supported by Carlson (2008) who mentioned that anti-inflammatory drugs also reduce tissue soreness and probably allow progression from total rest to early rehabilitation.

Furthermore Andersen (2000) talked about physiotherapist perceptions where he stated that the physiotherapist distinguishes players who were coping well with their injuries from those who were coping less successfully by the following characteristics:

Willingness to listen to the physiotherapist,

Positive attitude,

Intrinsic motivation and

Willingness to learn about injury mechanism and rehabilitation techniques.

The author also mentioned in his book that the physiotherapist indicated that the most effective tools for helping players cope psychologically with injury were good interpersonal and communication skills, a realistic timeline to full recovery, an understanding of rehabilitation strategies on the player's part and coach support.

Herrington (2004) conducted a case study and found that with appropriate rehabilitation, patients with functional unstable anterior cruciate ligament who wish to return to high stress sports can be successfully rehabilitated.

On the other hand Carlson (2008) suggested that through uncontrolled case studies intramuscular steroid injections speed return to play in professional football players.

Wimmer (2004) stated that treatments using only western protocol are inadequate in the prevention of recurrent sprains. He emphasized that understanding and appreciating the pathomechanics, anatomy and mechanics of the ankle complex, would lead to integration of ankle sprains management and effective rehabilitation/outcomes.

Similarly, Garnick and Schelkun (1997) support the fact that an injury should get immediate attendance to prevent recurrence. They mentioned that preventative measures should be applied early. The authors further explained that as far as western medical treatment is involved a need has been showed to concurrently alternate health care, faith healers, reflexologies and other interventions to manage soccer injuries.

Danchick (2006) reported in the chiropractor magazine that a 38 year old male soccer player complained of recurring episodes of pain and swelling along the lateral aspect of the ankle for the past several years. He presented for treatment of his lower extremity biomechanical faults and wants to prevent future problems and improve his athletic performance with chiropractic care. Chiropractic treatment included:

Adjustments- Specific, corrective adjustments for SI joints and lumbar region were provided as needed. The right navicular bone was adjusted superiorly.

Stabilization-Custom-made, flexible stabilizing orthotics was provided to support the arches and decrease calcaneal eversion, and to reduce the asymmetrical biomechanical forces being transmitted to the spine and pelvis. Two stabilizing orthotics were provided, one designed for his soccer shoes and the other for everyday shoe wear.

Rehabilitation-He was initially instructed in daily self-mobilization and strengthening procedures, which included marble pick up and towel-scrunching exercises. Then daily strengthening eversion and external rotation was introduced, using elastic exercise tubing.

Within two weeks of receiving his orthotics, he completed several strenuous soccer practices without symptoms in the ankle. He described a noticeable improvement overall in his athletic performance by feeling more stable.

Crosier et al., (2002) expressed the view that an individual rehabilitation program emphasizing eccentric training based on a specific deficit is likely to contribute to a decrease in symptoms and a successful return to sports.

Reed (2002) on the other hand gives the view that pressure to return the player to play is glamorized by the sports media to the detriment of logical decision- making by stakeholders. He stressed that there are however early return possibilities that may involve participation with protective bracing, taping or equipment modification which may lead to successful recovery. Alternative training can be carried out while healing is occurring. This will enable strength gains in the unaffected areas. Aerobic fitness can be well designed following specific protocols although outcomes studies of such endeavors are essentially non-existent.

Orchard, Best and Verrall (2005) in their study to assess the return to play strategies following muscle strains with the desired outcomes of decreased competition play lost and minimized risk for recurrent injury. Found that there are no consensus guidelines or agreed upon criteria for safe return to sport following muscle strains that completely eliminate the risk for recurrence and maximize performance.

Contrary to Sherry and Best (2004) who mentioned that a rehabilitation program consisting of progressive agility and trunk stabilization exercises is effective in promoting return to sports and in preventing injury recurrence in athletes who have sustained an acute hamstring strain. He further explained that the program allows athletes to return to sports at less risk for acute re-injury than those who complete a more traditional isolated stretching and strengthening exercise program.

Arnason et al., (2006) mentioned that the purpose of his study was to test the effect of eccentric strength training and flexibility training on the incidence of hamstring strains in soccer. Found

that eccentric strength training with Nordic hamstring lowers combined with warm up stretching appears to reduce the risk of hamstring strains, while no effect was detected from flexibility training alone.

Hoskins and Pollard (2005) reported two case studies to determine successful management of hamstring injuries in Australian rules footballers , after following chiropractor care found that spinal manipulation and correction of lumbar-pelvic biomechanics lead to no recurrence through preventative treatment over a twelve and six week period.

Carpenter et al., (2004) believe that the treatment of muscle injuries by local administration of antologous conditioned serum along with the utilization of an adequate post injury muscle strengthening program may be a promising way of returning athletes to full activity and full muscular function in a shorter period of time than with conventional treatment

Zoch, Fialka-Moser and Quittan (2003) stated that improvement in proprioception is important in ankle rehabilitation and this should be taken into consideration when setting up a rehabilitation programme. The most efficient method of restoring range of motion and proprioception seems to be ankle disk training together with taping. In addition; isokinetic training increases the strength of the injured leg as well as that of the uninjured leg by crossover training effect.

Correspondingly Willens et al., (2005) mentioned that findings from his study suggest that affective prevention and rehabilitation of inversion sprains should include attention to gait patterns and adjustment of foot biomechanics. However, clinical assessment after an ankle sprain does not normally include a gait pattern analysis.

Contrary Frigg et al., (2007) mentioned that biomechanical model explain the clinical observation and demonstrated how the stability of the ankle joint is influenced by osseous configuration. Surgical ankle ligament stabilization might be more recommended in patients with an unstable osseous configuration as such patients have a disposition for recurrent sprains. People who have an unstable configuration and who nevertheless engage in activities with high risk of ankle sprains could be asked to wear protective sports equipment.

Wilkeson (2002) found that taping may provide superior benefits with regard to deceleration of inversion velocity and facilitation of dynamic neuromuscular protective mechanisms. He furthermore explained that taping offers a means to address the complex interrelated biomechanical factors that are responsible for subtalar joint injury and rotary instability of the talocrural joint.

The reviewed literature justifies that a great deal of research has been done concerning the management of recurrent soccer injuries. The benefits of other medical professionals management in recurrent soccer injuries is highlighted even though physiotherapy in relation to rehabilitation is more noticeably.

Literature showed that more research was done on the initial management of soccer injuries and mostly on common injuries. There is however dearth of literature on prevention and management of recurrent injuries. Hence the researcher feels that there is a need to pursue that avenue.

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 implementations of sampling techniques to the targeted group. The methods of data collection and data analysis are explained as well as the description of the pilot study. This chapter ends with the ethical consideration for the study.

3.2 RESEARCH DESIGN

The design followed in this study was a cross-sectional descriptive survey. By using cross-sectional, the study was conducted in a short period of time. The descriptive survey method allowed the researcher to observe and describe the factors that had contributed towards recurrent injuries, as well as qualitative approach with open ended questions where participant's expressions encountered during the study, were analyzed.

3.3 STUDY POPULATION

The population of the study included all the medical team members in the PSL teams. PSL has 16 teams. The medical team comprises of any combination of the following members: the team doctor, physiotherapist, masseur, biokineticists, physical trainer, chiropractors and podiatrist. Not all teams have the same combination nor all disciplines mentioned.

3.4 STUDY SAMPLE

All available members of the medical team of each PSL teams participated in the study. Purposive sampling method was used, as the researcher selected main participants with a specific purpose so non-medical members of the team were excluded from the study. Each of the PSL teams has 7 medical team members from different disciplines.

3.5 INSTRUMENTS

A questionnaire used was constructed and validated with literature (Twizere 2004). It contained both open and close ended questions. The structure of the questionnaire consisted of section A: Demographic characteristics. Section B: Soccer injuries. Section C: Recurrence pattern and management.

3.6 PILOT STUDY

Pilot study was carried out to validate the content of the questionnaire as an instrument for collecting data and achieving the objectives of the study. The pilot study was conducted on the medical team members from two teams namely Mamelodi Sundowns and Supersport United. The questionnaire raised no problems in terms of clarity and understanding. Therefore the results of the two teams were included in the main study.

3.7 RELIABILITY AND VALIDITY

Cronbach's alpha was used to test the reliability of the study. Validity, on the other hand, involves the degree to which one is measuring what you are supposed to, more simply, the accuracy of your study. Validity is the strength of our conclusions, inferences or propositions. More formally, Hammersley (1991) define it as the "best available approximation to the truth or falsity of a given inference, proposition or validity is the extent to which you actually measure what you say you are measuring. The reliability measures should be above 0.7 (Struwig and Stead, 2001). The overall Cronbach's alpha coefficient for all the items in the instrument was 0.72, which made this study reliable.

3.8 PROCEDURE FOR DATA COLLECTION

Towards the end of January 2007 the team managers of each PSL teams were contacted telephonically to get the contact details of the medical team. This was done after obtaining the permission from the PSL. The members of the medical team were then contacted telephonically

to obtain their postal addresses. The data was then collected from April -September 2007. The questionnaires (16) with returned postage were posted to the participating members of the medical team. Out of all the 16 questionnaires that were sent 13 were returned, although some of the questionnaires were returned after follow up was done.

3.9 ANALYSIS OF DATA

Data was analyzed using SPSS 13.0. Data collected was loaded onto the statistical program for processing. Frequency distribution tables, graphs, and charts were used to analyze the demographic characteristics of the sample. Frequency tables for all variables are given to demonstrate the distribution of variables. Cross tabulation is also done to establish the relationship between the predictor variables and the response. The Test Statistic CHI-Squared (χ^2) was calculated and p-value of less than 0.05 was determined for the significance.

Content analysis was used for qualitative data. The content refers to words, themes or any messages that were communicated. The text can refer to that which is written, spoken or visualized (Strewing and Stead, 2001). A statistician assisted the researcher with the analyses of themes formulated from content.

4.0 ETHICAL CONSIDERATIONS

In the year 2006, a letter requesting permission to conduct the study was sent to SAFA and to all PSL teams. Permission was obtained from University of Limpopo Research ethics and publication committee (REPC) with the project number allocated to the researcher being MP36/2006. A letter fully explaining the purpose of the study accompanied the questionnaire to the participants (medical team). Consent was obtained from the participants with the assurance that information will remain confidential.

CHAPTER 4

RESULTS

4.1 INTRODUCTION

In this chapter the results of the study are presented in four sections. In section A the results are presented under various headings, which reflect the objectives of the present study. Qualifications obtained, experience in treating soccer injuries and period worked with the team, status of appointment are presented as demographic characteristics of the medical team.

Section B and C reflect a general picture of the PSL soccer injuries in South Africa by giving most affected body parts, factors contributing towards recurrence such as playing surface, player co-operation, pressure from the team. Section D present the management of recurrent injuries including, consultation outside the club medical team. The decision taken regarding the future of the player following recurrence is also reflected.

Frequency tables for all variables are given to demonstrate the distribution of variables. Cross tabulation is also done to establish the relationship between the predictor variables and the response. The Test Statistic CHI-Squared (χ^2) was calculated and p-value of less than 0.005 was determined for the significance.

Out of 16 questionnaires provided to the medical team, 13 questionnaires were returned. This gives an overall response rate of 81 % (13 medical teams). It is speculated that the un-responded questionnaires were due to the team travelling during the data collection period hence no time available to fill in and return the questionnaire.

SECTION A

This section was mainly focusing on determining the type of profession obtained by the participants. Furthermore the researcher wanted to determine all qualifications obtained by the medical team. The period the participants has worked with the team and whether the medical team members worked on a part time or full time basis was also taken into consideration.

4.2 DEMOGRAPHIC CHARACTERISTICS OF THE MEDICAL TEAM

The most common profession (46.2%) with the mean of 1.77 and standard deviation of 0.725 amongst the medical teams was physiotherapy. (Figure 4.1.1)The highest qualification obtained by some members of the medical team is the masters degree (61.5%) with the mean 2.23 and standard deviation of 0.599 and the least being a diploma (7.7%)

Most members of the medical team (76.9%) with the mean of 1.23 and the standard deviation of 0.439 also had previous experience in treating soccer injuries outside the team while 15.4% did not have any previous experience in treating soccer injuries.

Most of the medical team members (76.9%) with the mean of 1.17 and standard deviation of 0.389 worked on a part time basis and only 23.1% on a full time basis.

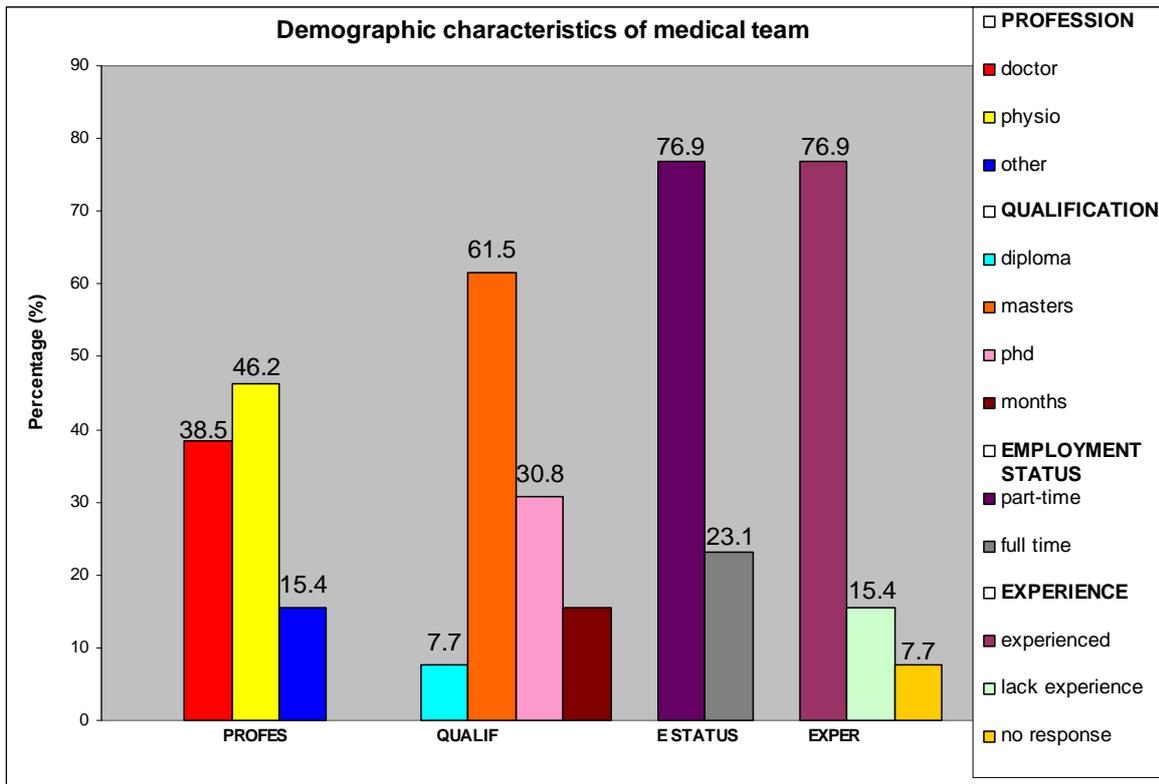


Figure 4.2.1: Demographic characteristics of medical team

The most common profession (46.2%) with the mean of 1.77 and standard deviation of 0.725 amongst the medical teams was physiotherapy. (Figure 4.2.1)The highest qualification obtained by some members of the medical team is the masters degree (61.5%) with the mean 2.23 and standard deviation of 0.599 and the least being a diploma (7.7%).

Most members of the medical team (76.9%) with the mean of 1.23 and the standard deviation of 0.439 also had previous experience in treating soccer injuries outside the team while 15.4% did not have any previous experience in treating soccer injuries.

Most of the medical team members (76.9%) with the mean of 1.17 and standard deviation of 0.389 worked on a part time basis and only 23.1% on a full time basis.

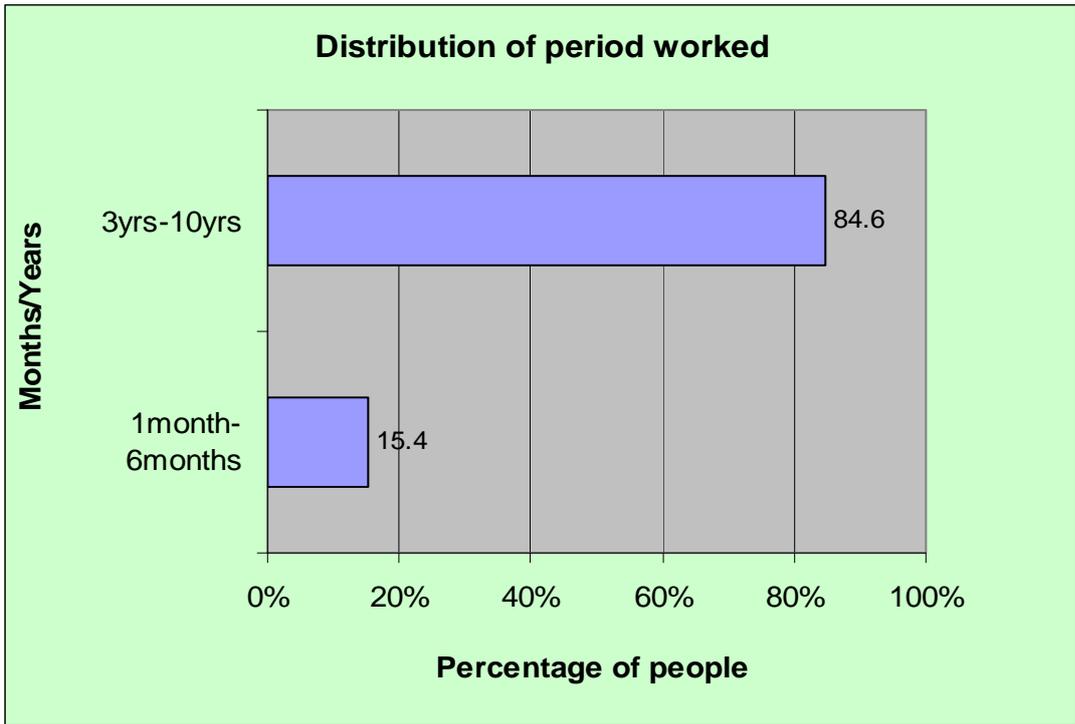


Figure 4.2.2 Distribution of period worked

Regarding work experience a large number of medical team members (84.6%) with the mean of 3.85 and standard deviation of 0.376 had more than three years experience with the team whilst 15.4% had been only a few months with the team.

- *Summary of the main findings of the demographic characteristics.*

In summary the medical teams amongst PSL medical teams comprises of a medical doctor, physiotherapist and other members of the health a profession. There is also an effort from the medical team members to upgrade their knowledge by obtaining degrees and most of the members of the medical team have been with the same team for a while.

SECTION B

This section required the participants to comment on the common injuries sustained by the soccer players. The researcher has subdivided the injuries into lower limb joints (hip, knee, and ankle) and tendons (tendon of achilles). Regarding the upper limb shoulder, elbow and hand was also considered among the joints subdivision. Furthermore the injuries were divided into soft tissue body parts (groin, quadriceps, hamstrings, shin and calf). The participants were also required to comment on either the injuries that were very common, common or less common on a scale of 1-3 respectively.

4.3 SOCCER INJURIES

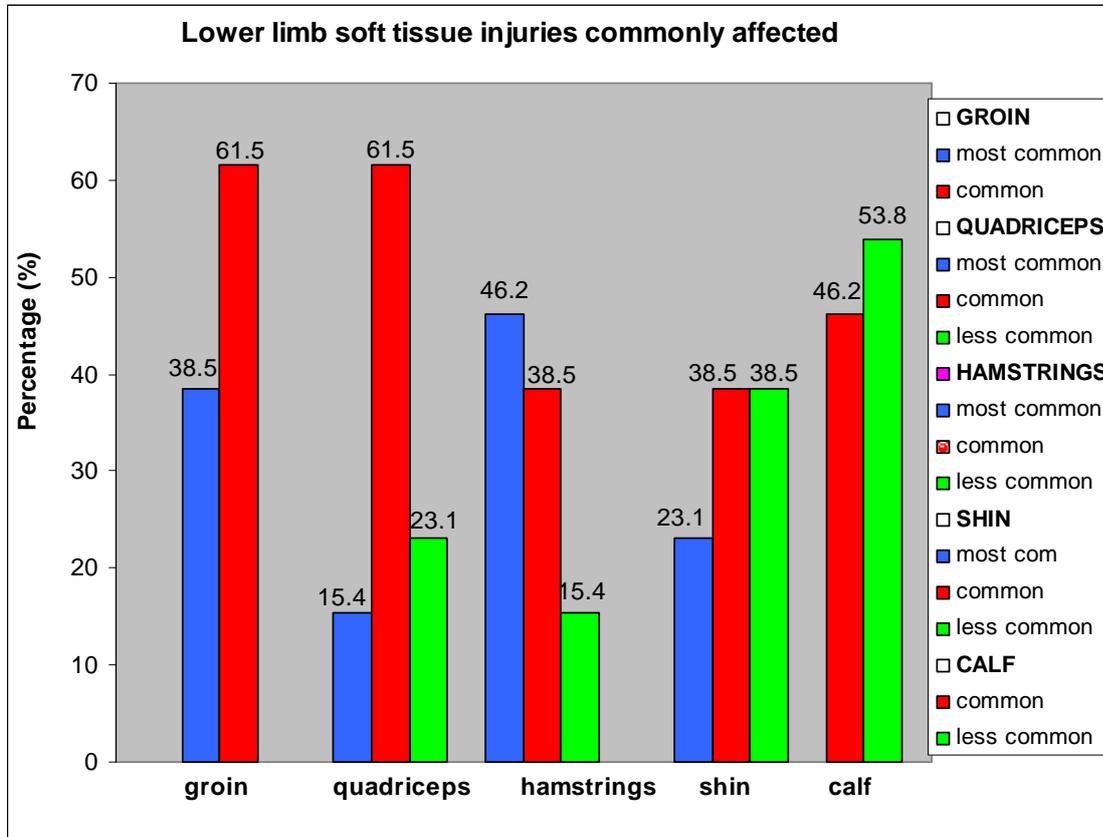


Figure 4.3.1: Individual lower limb soft tissue body parts commonly affected in soccer

Figure 4.3.1 also depicts the individual body parts in relation to soft tissue to the extent which they are affected. They were evaluated according to the most common, less common and common. The soft tissues in the lower limb that were mostly affected were the hamstrings 46.2% with a CHI-squared (χ^2) value of 8.000^b and p-value of 0.0368 followed by groin injuries 38.5% with a CHI-squared (χ^2) value of 9.692^a and p-value of 0.00105 and calf muscles 53.8% being less commonly affected with a CHI-squared (χ^2) value of 9.077^a and a p-value of 0.0582. (Figure 4.2.1)

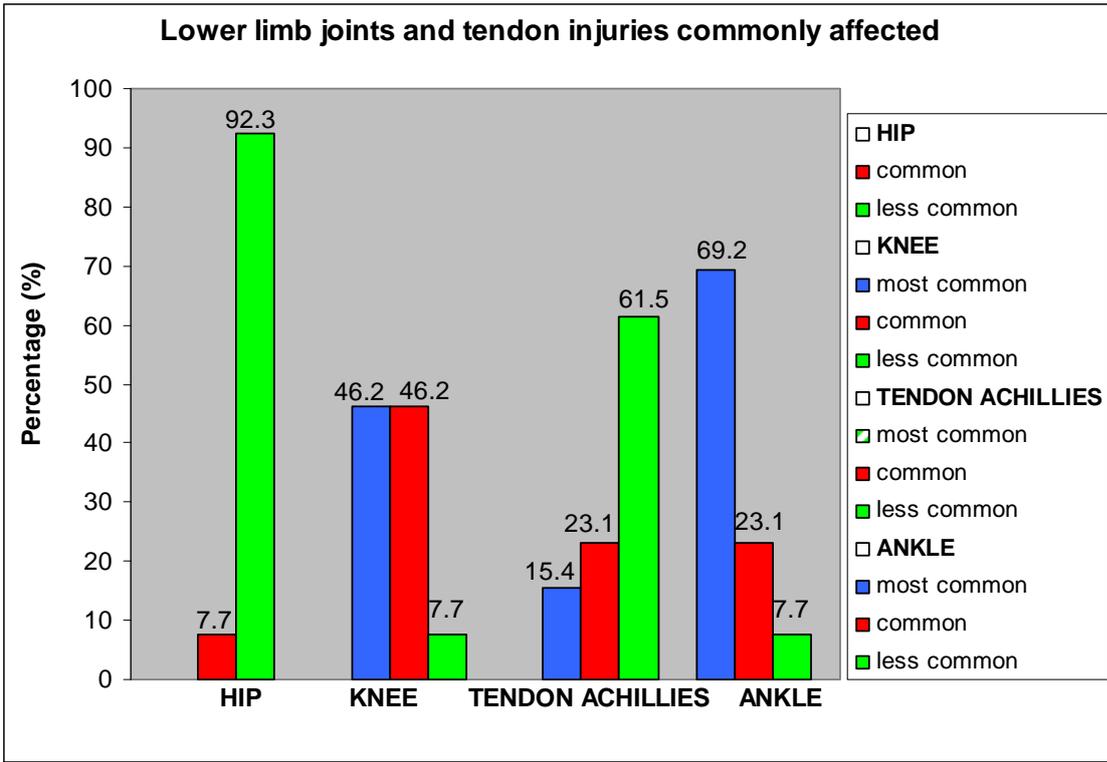


Figure 4.3.2: Individual lower limb joints and tendon commonly affected in soccer

Figure 4.3.2 shows the individual lower limb to joints and tendon and the extend to which they are affected. They were evaluated according to most common, less common and common. The most commonly affected joint in the lower limb was the ankle (69.25%) with CHI-squared (χ^2) value of 8.000^b and p-value of 0.018 and the least common was the hip (92.3%) with a CHI-square (χ^2) value of 9.308^a and p-value of 0.002.

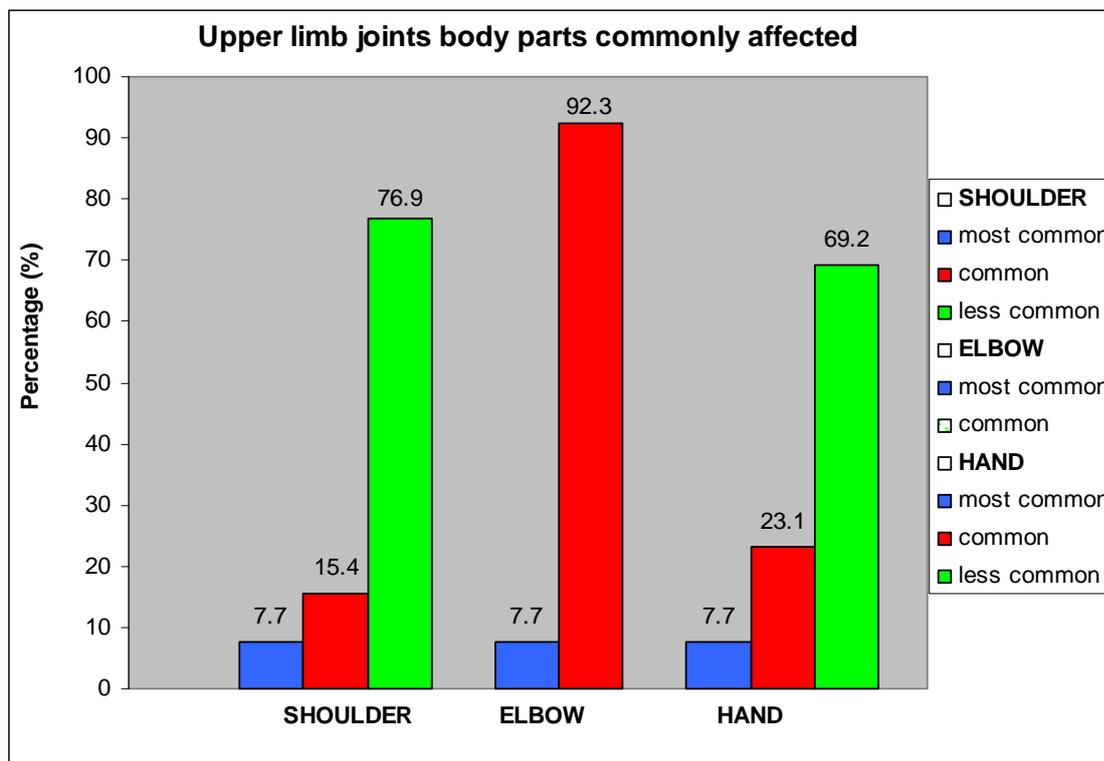


Figure 4.3.3: Individual upper limb joints commonly affected in soccer

Figure 4.3.3 demonstrates the individual joints of the upper limb and the extent to which they are affected. They were evaluated according to most common, common and less common. In the upper limb the shoulder, elbow and hand joints are equally affected (7.7%) each. Shoulder has the CHI-squared (χ^2) value of 11.231^b with the p-value of 0.004. Elbow has a CHI-squared (χ^2) value of 9.308^a with a p-value of 0.002. The hand with a CHI- square (χ^2) value of 8.000^b and a p-value of 0.018.

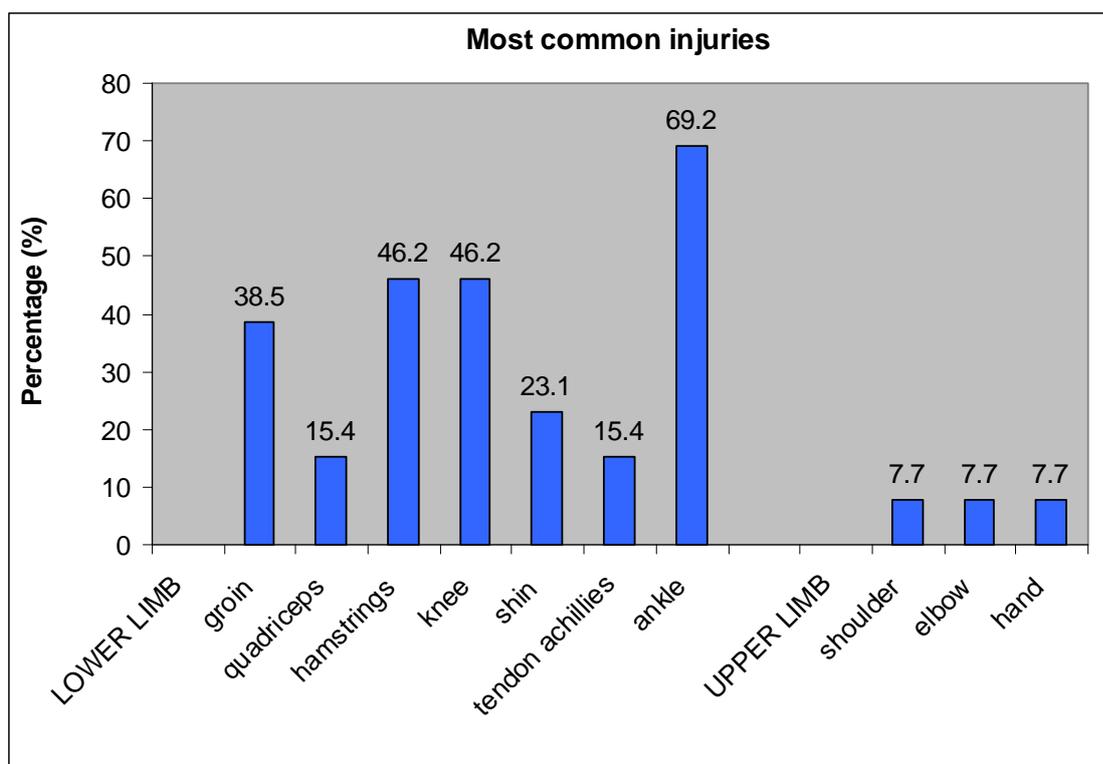


Figure: 4.3.4 Comparison of body parts commonly affected

Figure 4.3.4 represents the comparison of body parts including both the lower and upper limbs. The ankle was reported as the most commonly affected body part 69.2% with a CHI-square (χ^2) value of 8.000^b and the p-value of 0.018 while the quadriceps with a CHI-squared (χ^2) value of 9.769^b and the p-value of 0.0092 and tendon achillies with a CHI-square value of 8.0769^b and a p-value of 0.012 were both equally affected by 15.4% as the least common.

- ***Summary of main findings of soccer injuries***

In the lower limb the soft tissue that is most commonly affected is the hamstrings the least being the calf, whereas the ankle continues to be the most commonly affected joint and the least being the hip. The Test Statistic CHI-Squared ($\chi^2=9.308$) calculated within the injuries reported in this study showed that injuries sustained in the hip (p=0.002) and calf (p=0.0582) However, there was a higher significance (p< 0.005) that more injuries occurred in the hamstrings and ankle joint.

SECTION C

This section required the medical team to comment on which areas were mostly recurring injuries. The recurring injuries were subdivided into lower limb joints (hip, knee, ankle) and tendons (tendon of achillies).Recurring injuries in terms of joints were also subdivided in the upper limb as shoulder, elbow and hand. The participants were also required to comment on either the injury was most recurring, recurring and less recurring in a scale of 1-3 respectively. Possible factors such as playing surface, player co-operation, pressure from the team management and other factors were also looked at under this section.

4.4 PATTERN OF RECURRENT INJURIES

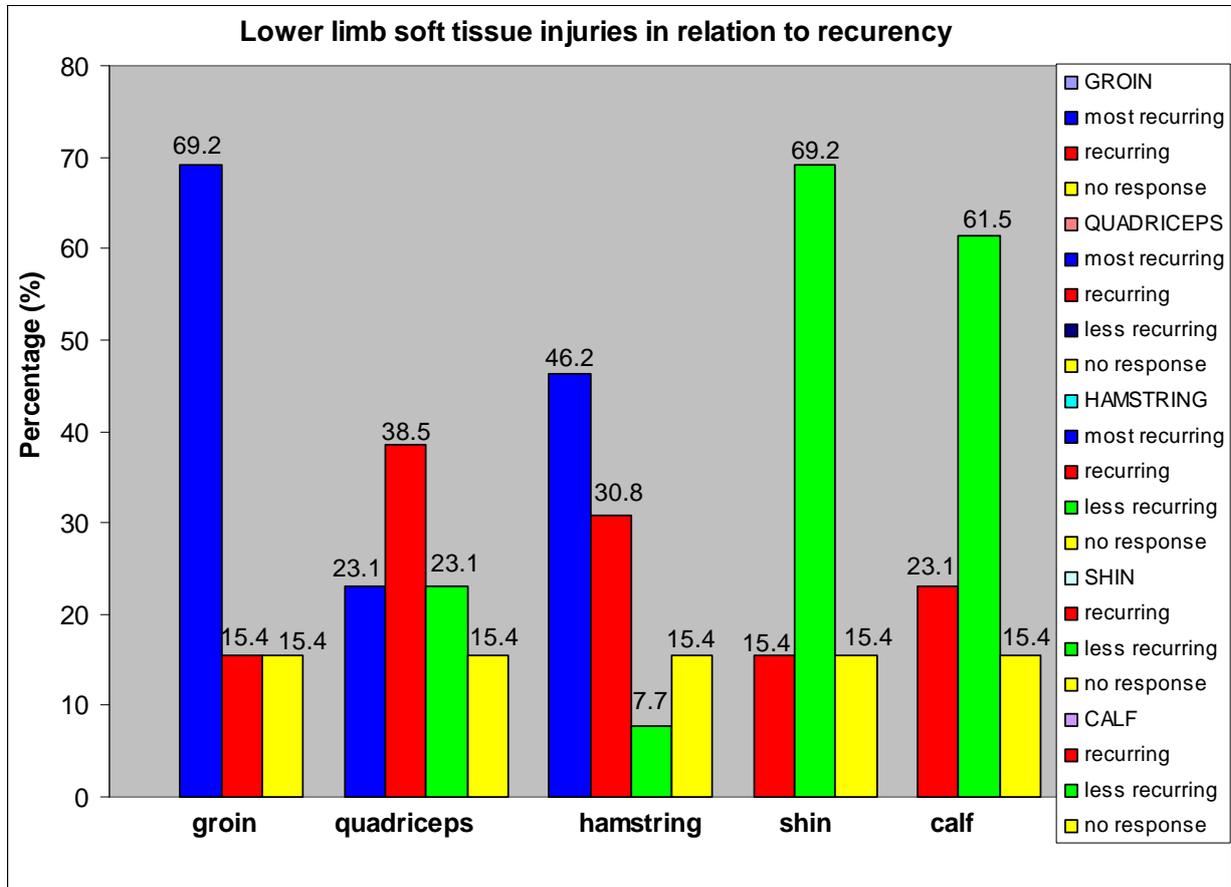


Figure 4.4.1: Individual lower limb soft tissue body parts affected in relation to recurrence

Figure 4.4.1 illustrate the individual body parts in the lower limb in relation to soft tissue injuries and the extent to which they are affected .They are evaluated according to the most recurring, less recurring and recurring. In the lower limb the soft tissue injury that is most recurring is the groin (69.2%) with a CHI-square value of 4.455^c and the p-value of 0 .035 and the least recurring being the shin (69.2%) with a CHI-square(χ^2) value of 4.455^c and the p-value of .035.

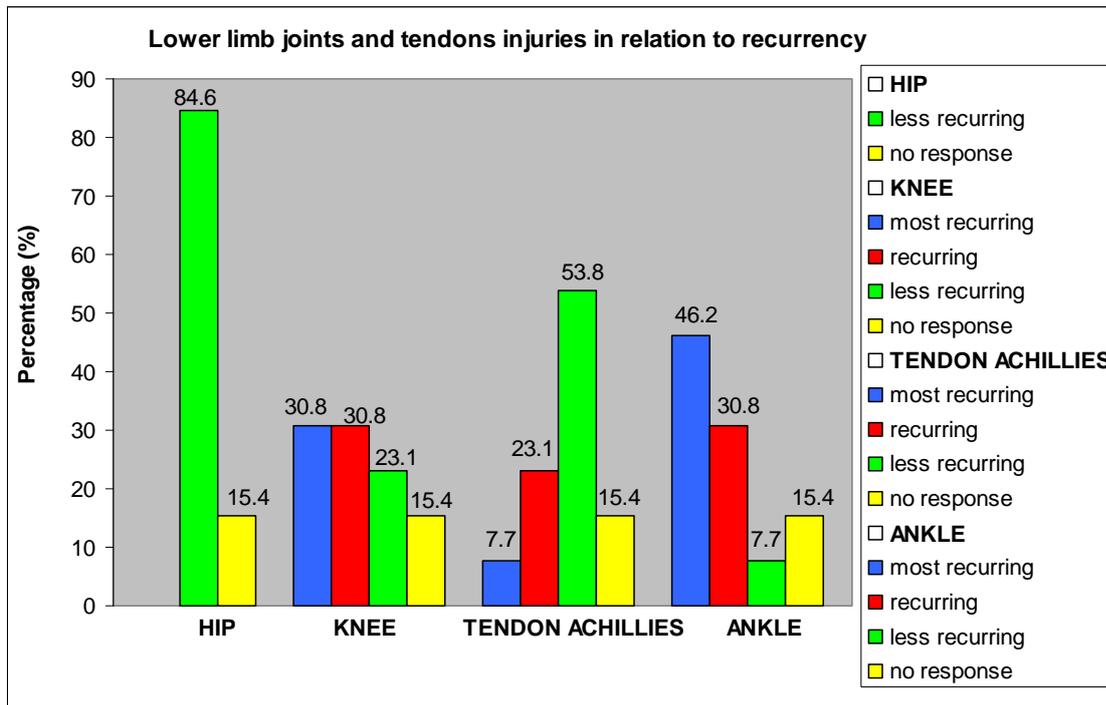


Figure 4.4.2: Individual lower limb tendon and joints affected in relation to recurrence

Figure 4.4.2 depicts the individual body parts in relation to tendon and joints of the lower limb and the extent to which they are affected. They are evaluated them according to the most recurring, less recurring and recurring. In the lower limb injuries the joint that is most recurring is the ankle (46.2%) with a CHI-squared (χ^2) value of 9.455^d and the p-value of 0.0178 and the least being the hip (84.6%).

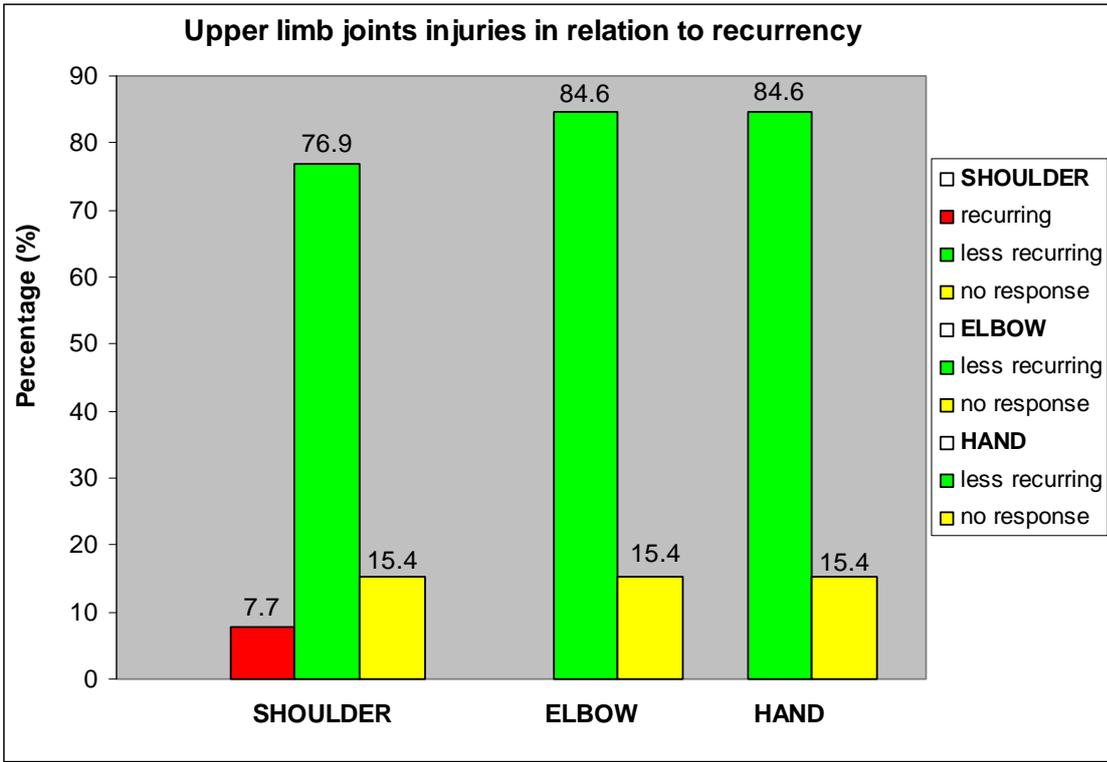


Figure 4.4.3: Individual upper limb joints body parts in relation to recurrence

Figure 4.4.3 represents of the upper limb injuries in relation to joints and the extent to which they are affected. They are evaluated according to the most common, less common and less common. In the upper limb the joint that is most recurring is the shoulder (7.75%) with a CHI-square (χ^2) value of 7.364^c and the p-value of 0.007 and the least being both the elbow and hand equally affected (84.6%).

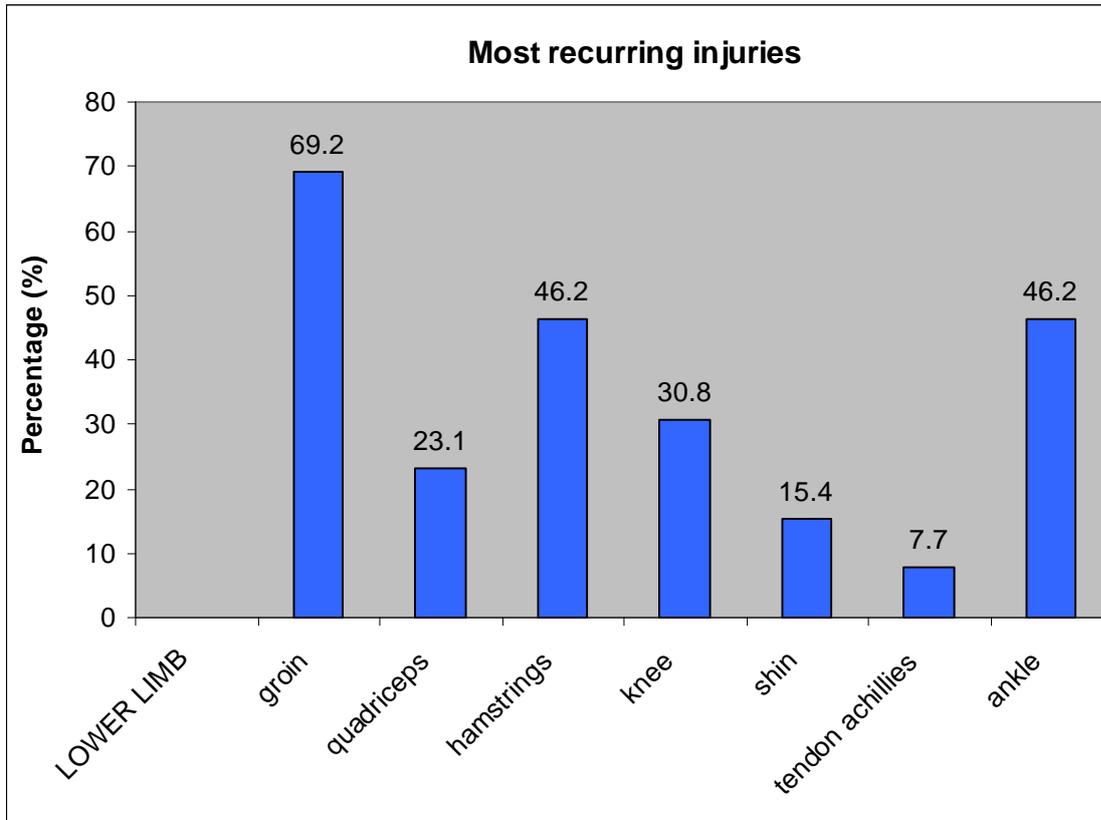


Figure 4.4.4: Comparison of body parts affected in relation to recurrence

Figure 4.4.4 represents the comparison of body parts in relation to recurrence. The groin (69.2%) with the CHI-square (χ^2) value of 4.455^c and the p-value of 0.035 was found to be the most recurring injury while the body part with least recurring injuries was tendon achillies with a CHI-square (χ^2) value of 8.0769^b and the p-value of 0.012 (7.7%).

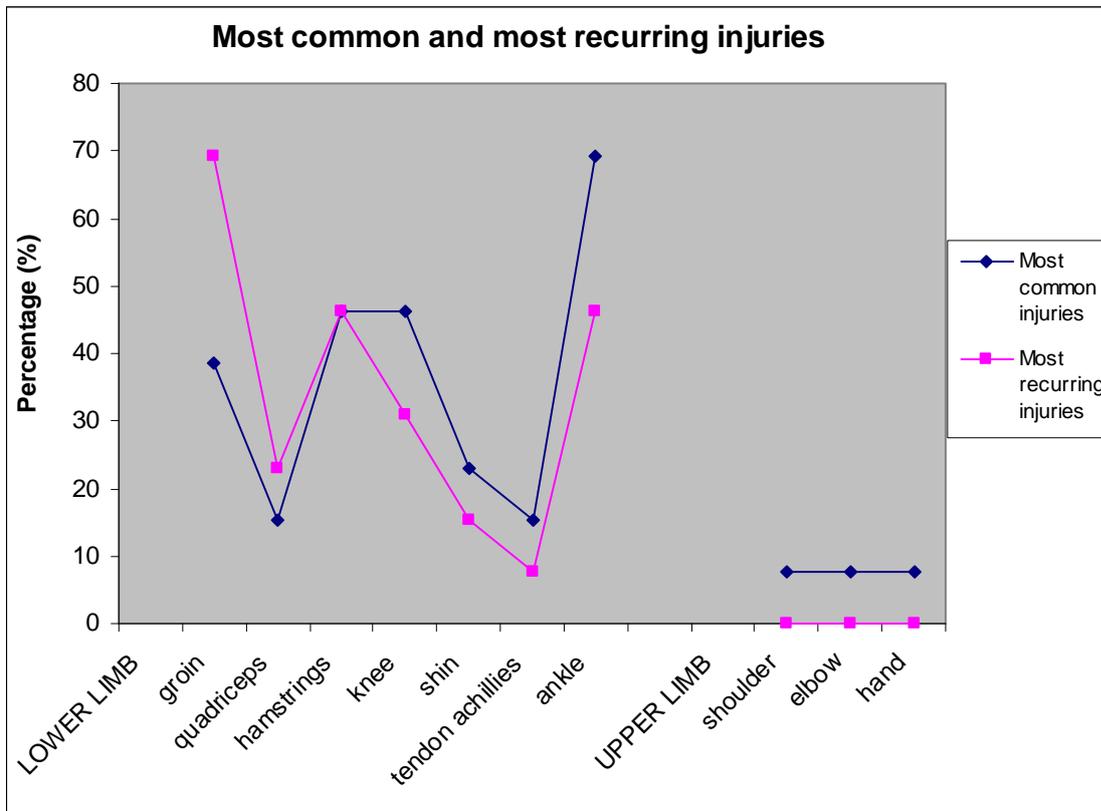


Figure 4.4.5: Pattern of body parts commonly injured and body parts with most recurring injuries

Figure 4.4.5 shows that in the lower limb the body part that was most commonly affected was the ankle (69.2%) and the injury that most recurred was the groin (69.2%). Tendon achillies and quadriceps were equally the least commonly affected body part (15.4%) and only the tendon achillies was found to be the least recurring body part. In the upper limb the shoulder, elbow, and hand were commonly affected (7.7%) and none of them recurred.

Table 4.4.6: Factors contributing to recurrence

| | Frequency | Percent |
|-------------------------------|-----------|---------|
| Playing surface | 7 | 53.8 |
| No response | 6 | 46.2 |
| Total | 13 | 100.0 |
| Player co-operation | 7 | 53.8 |
| No response | 6 | 46.2 |
| Total | 13 | 100.0 |
| Pressure from team management | 7 | 53.8 |
| No response | 6 | 46.2 |
| Total | 13 | 100.0 |
| Other | 5 | 38.5 |
| No response | 8 | 61.5 |
| Total | 13 | 100.0 |

Data contained in table 4.4.6 reflects factors contributing to recurrence. They are playing surface, player co-operation and pressure from the team management respectively (53.8%). However other factors contributing to recurrence mentioned in the study were poor rehabilitation, the fitness level of the player, overtraining, not understanding the importance of rest including wrong training methods and poor understanding of biomechanics and physiology by staff.

- ***Summary of main findings for the pattern of recurrent injuries***

In the lower limb the most recurring soft tissue body part was the groin and the least being the shin, whereas the joint that recurred the most was the ankle while the least was the hip. Therefore, a high significance value of $p < 0.005$ in the groin and the ankle joint.

Regardless of the ankle being the most commonly affected joint was the most likely to re injure. Playing surface, player cooperation and pressure from the team management remain the major factors contributing to recurrence.

SECTION D

This section required the participants to comment on activities (treatment only, treatment and training, treatment, training and competition) that the players were subjected to during management of recurrent soccer injuries.

Comment based on experience whether players consult outside the club medical team for management of their injuries was also required. Following the above question the participants were also required to comment on who the soccer players consult.

Whether it is a protocol that players be referred to orthopaedic surgeon was among the asked questions. The medical team was also required to state in their opinion whether the injured players are adequately managed prior to return to sport.

Among the questions asked in this section was that who decide that the player was ready to return back to the sport among the following professions physiotherapist, biokinetics, doctor, physical trainer soccer player coach medical team and other profession. The section was concluded by determining what factors are being considered by participants before returning the injured player to sport.

4.5 MANAGEMENT OF RECURRENT INJURIES.

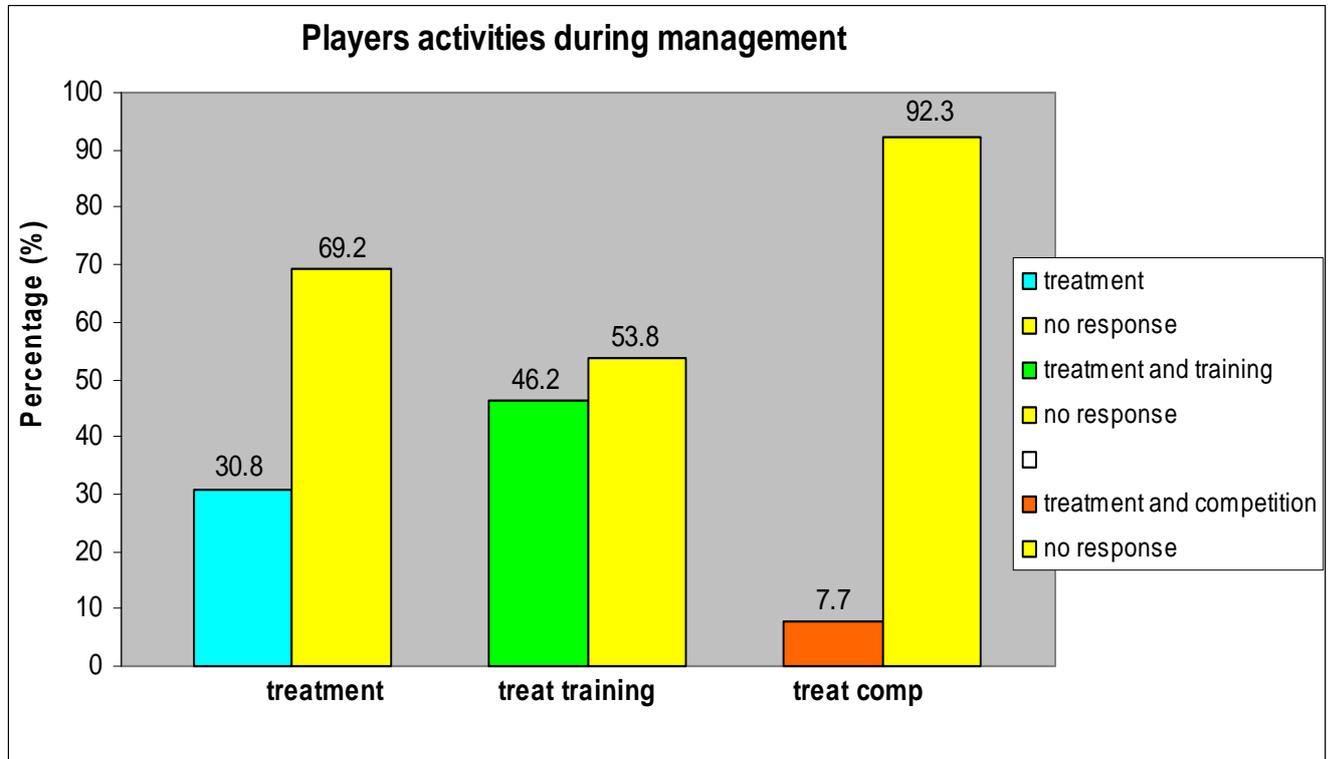


Figure 4.5.1: Activities undertook by players during management

Figure 4.5.1 illustrates the activities of an injured player. Injured players who received treatment while undertaking training scored at 46.2% with and the lowest being treatment and competition at 7.7%.

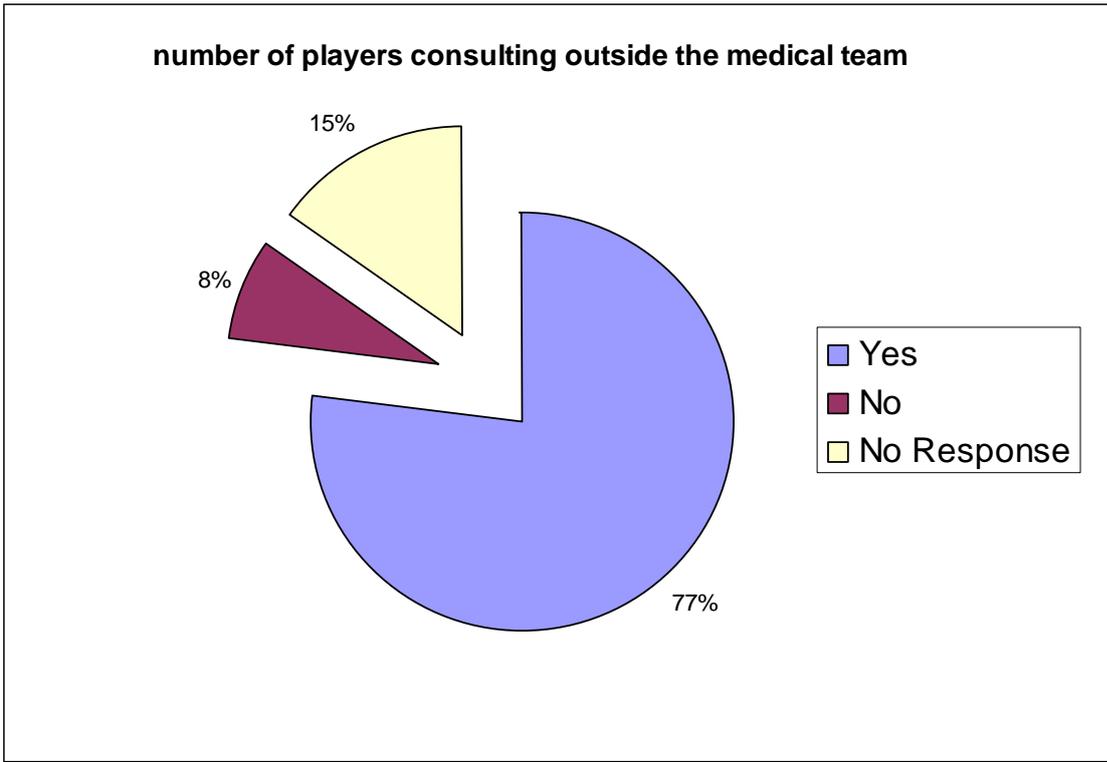


Figure 4.5.2: Number of players consulting outside the club medical team

Figure 4.5.2 shows the number of injured players that consulted outside the medical team. Most players 77% with the CHI-square (χ^2) value of 7.364^c and the p-value of 0.007 do not consult the club medical team for management of their injury whereas 8% did not engage in outside consultations. (Figure 4.5.2)

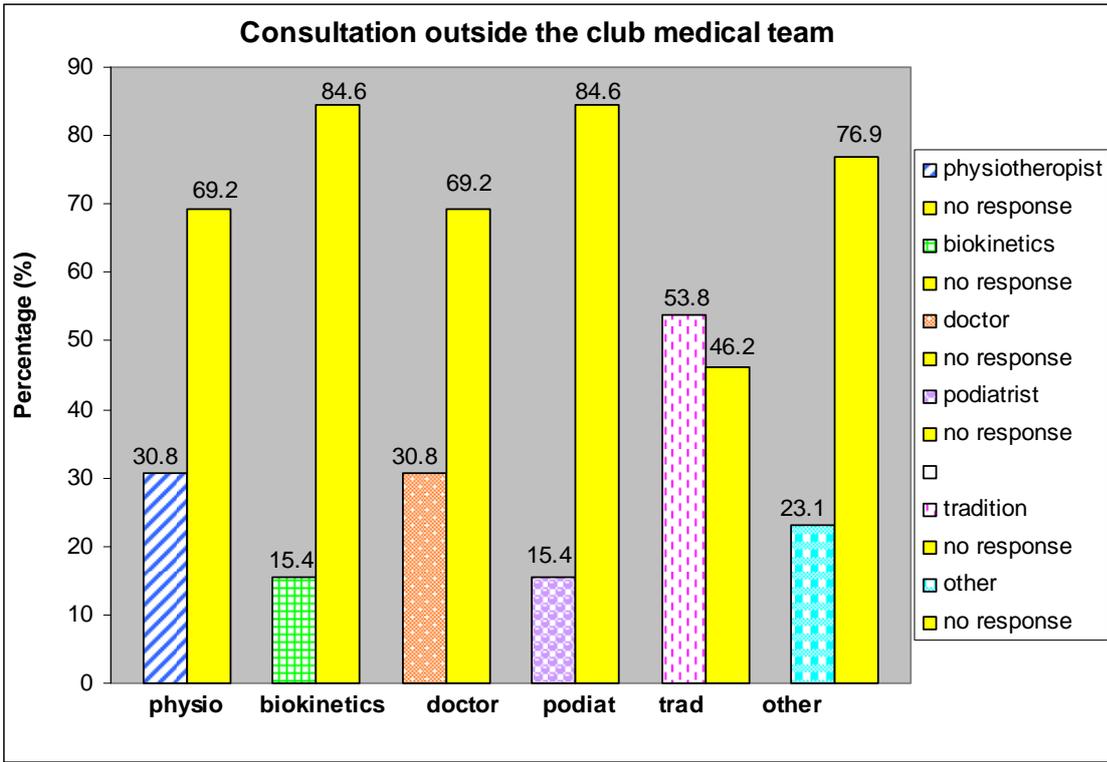


Figure 4.5.3: Consultation outside the club medical team

Figure 4.5.3 illustrates that most of the players consulted traditional healers (53.8%) and rarely the biokineticist (15.4%) and podiatrist (15.4%) respectively. Consequently the main goal of the injured player was to receive treatment and be healed.

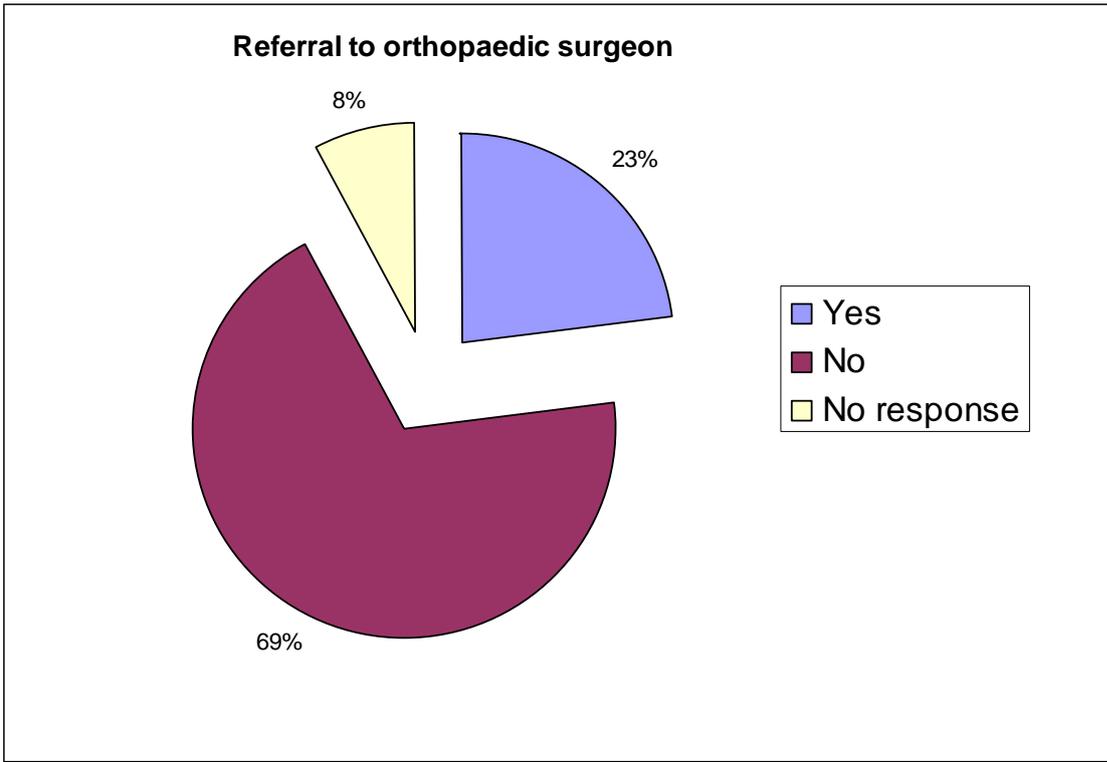


Figure 4.5.4: Protocol to refer injured players to orthopaedic surgeon

Figure 4.5.4 shows that 69.2% with the CHI-square (χ^2) value of 9.000^e and the P-value of 0.003 do not routinely refer players to an orthopaedic surgeon, whereas 23.1% do consider referring players to an orthopaedic surgeon for further management.

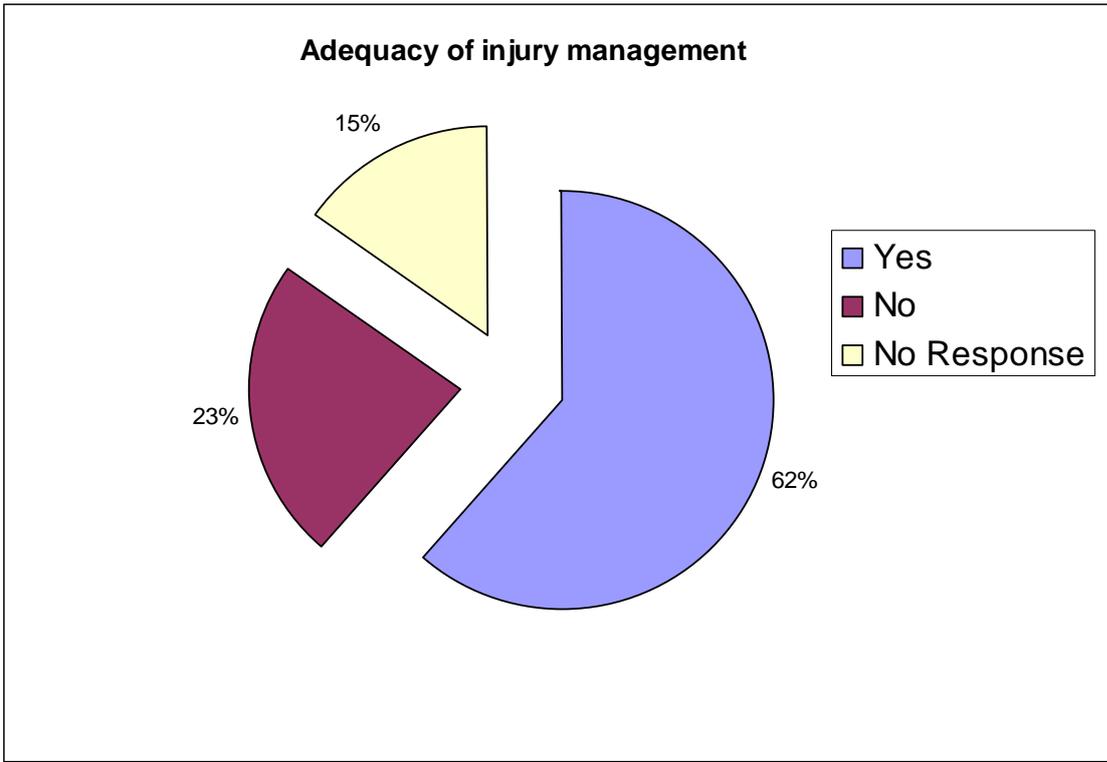


Figure 4.5.5: Adequacy of injury management

Figure 4.5.5 shows the adequacy of injuries among players. The results revealed that injured players were adequately managed as responded to by 61.5% with a CHI-square (χ^2) value of 9.273^c and the p-value of .0132 of the participants. According to the remaining 23% of participants injured players were not adequately managed.

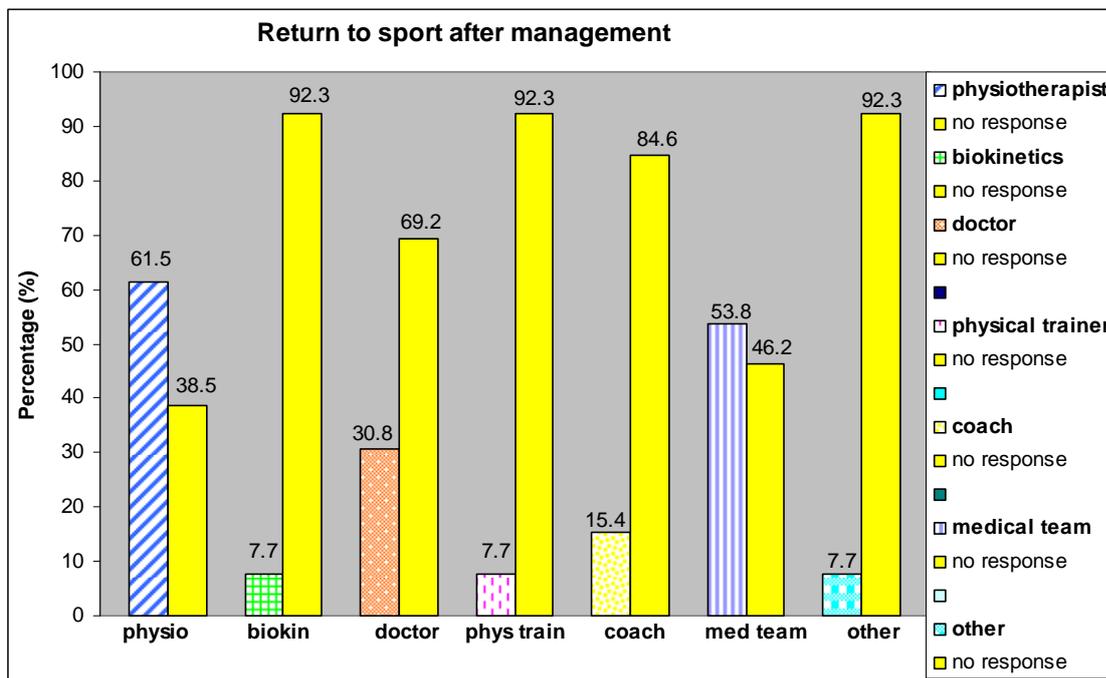


Figure 4.5.6: Decision to return players back to sport

Figure 4.5.6 shows the disciplines that decide if the injured player is ready to return to sport. Physiotherapists are the main team members who decide a player should return back to sport as reflected by 62% of the respondents. The biokineticist does not play any role in the decision to return to sport as indicated by 8% of the respondents.

Table 4.5.7 Factors considered before returning the injured player to sport

| | Frequency | Percent |
|---|-----------|---------|
| Pain free and full range of movement | 7 | 53.8 |
| No response | 6 | 46.2 |
| Total | 13 | 100.0 |
| No persistent swelling | 4 | 30.8 |
| No response | 9 | 69.2 |
| Total | 13 | 100.0 |
| Adequate strength | 7 | 53.8 |
| No response | 6 | 46.2 |
| Total | 13 | 100.0 |
| Good proprioception | 6 | 46.2 |
| No response | 7 | 53.8 |
| Total | 13 | 100.0 |
| No persistent biomechanical abnormality | 1 | 7.7 |
| No response | 12 | 92.3 |
| Total | 13 | 100.0 |
| Adequate cardiovascular fitness | 4 | 30.8 |
| No response | 9 | 69.2 |
| Total | 13 | 100.0 |
| All of the above | 6 | 46.2 |
| No response | 7 | 53.8 |
| Total | 13 | 100.0 |

Table 4.5.7 represents the factors that are considered before returning the player to sport. Attainment of pain free full range of movement and adequate strength are the main criteria considered prior to return to sport. Less consideration is given to persistent biomechanical abnormality

- *Summary of the main findings for management of recurrent injuries.*

Other variables in this section were constant therefore the CHI-square test could not be performed. However there was a high significance of $p < 0.005$ on the number of players consulting outside the club medical team and adequacy of injury management.

Injured players still undergo training while on treatment for their injuries. Players still choose to consult outside their club medical team. The traditional healers happen to be the informal service provider that injured players consult. Majority of the participants don't consider referring the injured players to orthopaedic surgeons. The results of the study confirm that injuries were being adequately managed. Physiotherapists are the members who decide on the return to sport. Pain free full range of movement and adequate strength are factors considered before returning the player to sport.

CHAPTER 5

DISCUSSION

5.1 INTRODUCTION

The aim of this study was to review the current management of injuries sustained by professional soccer players and how injury recurrence is prevented among premier soccer league (PSL) players in RSA. This chapter aims to critically review results of this study in relation to literature available.

The objectives of this study were to determine the demographic characteristics of the medical team and to identify the most occurring injuries sustained by soccer players. Furthermore the researcher determined the possible factors contributing to recurrence of injuries. The management that the players received following recurrent injuries was also determined. Lastly, the researcher determined the decisions taken regarding participation of the player in the team following a recurring injury. The chapter ends by showing the strength and limitations of the study.

5.2 DEMOGRAPHIC CHARACTERISTICS

The most common professional in the medical team was a physiotherapist (46.2%). The least being the other category indicated by 15.4% of the participants.

Bruckner and Khan (2002) recommended that the medical sports team should ideally comprise of a team doctor or physician, physiotherapist, masseur, dietician, and sports psychologist. Every medical profession in the team has their specific role to the injured player and the entire team therefore dominance of a particular profession leaves a loop hole in the team. However in the study almost all teams had a physiotherapist as the main profession in the medical team.

The findings of this study show that other teams don't have a full medical team. The study reflected that other medical team members included a fitness conditioner, a rehabilitation trainer and biokineticists, a different composition that was recommended by Brukner and Khan (2002).

The highest qualification obtained by the professionals in the team was the masters degree (61.5%) and the least being a diploma with (7.7%).

The study highlighted that most of the medical team members had a post graduate degree. This confirms that there is more depth of knowledge present within the functions of the medical teams in the PSL. The masters degree that most participants did was in sports medicine and the diploma that was obtained was by the rehabilitation trainer who didn't work much with acute injuries. Hence the advantage of acquired post graduate knowledge makes an individual to be advanced in relation to management and prevention of sports injuries. Consequently creates a secure and comfortable environment for the player to participate in the game of soccer without fear of any debilitating consequences of an injury.

Regarding working experience a large number of medical team members (85%) had more than three years working experience with the professional soccer players. This confirms that PSL teams have contracts for medical teams as well. This is good in that people who know each player's problem are kept for sometime instead of new medical people each game. The years of services by the participants ranges between 1 year and 25 years while the least number of months being only 2.

Most medical members also had previous experience in treating soccer injuries. When working with professional soccer players one needs to acquire a lot of experience and have confidence.

Some of the medical team members worked in the following areas:

- Orthopaedics
- under – 19 girls soccer academy at a high performance centre,
- players in all the youth squads in the developments,
- sports private practice,

- sports science institute of south Africa,
- Luton town footballers in England,
- South African national soccer squad (Bafana- Bafana),
- South Africa under 23- Olympic soccer team.

5.3 SOCCER INJURIES

In the lower limb, the ankle was found to be the most commonly affected body part (69.2%), and both the quadriceps and tendon achillies were the least affected (15.4%).

In the upper limb the shoulder, elbow and hand were equally affected by injury.

The findings are supported by Twizere (2004) who reported that the most affected body part was the ankle followed by knee.

This could be explained by the fact that soccer players do a lot of tackling; sudden turns when chasing the ball, thus predisposing the lower limb to injuries.

Brukner and Khan (2002), also confirms this by stating that adductor muscle strains are a common injury in sports that involve sudden changes of direction. From these findings it is clear that soccer players do a lot of sprinting in which major muscles like quadriceps and the groin become involved.

The poor percentage in the upper limb can still be attributed to the fact that, soccer is a sport whereby the lower limbs are more involved than the upper limb thus explaining the above findings. This was supported by Twizere (2004) who also found the lower extremities as more commonly affected than the upper limb.

5.4 PATTERN OF RECURRENT INJURIES

In the lower limb the groin (69.2%) was found as the most recurring area to be injured and the least being the tendon achillies 7.7%. In the upper limb there was no body part that incurred recurring injuries.

It was revealed in the study that players return to play in the team after the injury with minimal rehabilitation as was the case with groin injuries, thus explaining the above findings. Correspondingly Brukner and Khan (2002) reported that recurrent adductor muscle strains are common. Furthermore, he also stated that this may be due to inadequate rehabilitation of the initial injury, resuming sport too quickly or not resolving associated problems such as lumbar spine stiffness or pelvic imbalance.

Contrary to Orchard, Best and Verrall (2005) who found that of all the common sports injuries, and muscle strains have one of the highest recurrence rates (incidence of recurring) after a game. The current rate for hamstring strains during their study was around 12% in professional soccer and around 30%(cumulative recurrence rate for the remainder of the season) in professional Australian football.

These findings compare with findings by, Ibrahim, Murrell and Knapman (2007) they found that reduction of hip range of movement (ROM) may be considered aetiology in the occurrence of adductor strain in professional soccer players. However, prospective study to determine whether appropriate interventions directed at players with limited hip ROM lead to a decrease in adductor strain was not looked into in their study.

5.4.1 Factors contributing to recurrence

One of the main factors contributing to recurrence was playing surface, which can be explained by saying that players are used to good surfaces and become easily injured when using sub-standard pitches.

Similarly Norton, Schwedt and Lange (2001) correlated the increased speed of the game in top level of Australian football to the number of collisions and the estimated injury incidence. Factors such as ground hardness and level of the game are therefore important in injury development in Australian football.

Player co-operation was one of the main factors that contributed to recurrence in the current study. Steffen, Pensgaard and Barhr (2008), examined psychological characteristics of players and established that a perceived mastery climate and a high level of life stress were significant predictors for new injuries in a cohort of young female football players. Similarly, Ivarsson (2008) found distinct personality factors that predict the occurrence of sport injuries. The significant factors were somatic traits, anxiety, mistrust, negative life event stress and ineffective coping skills. The author further explained that these factors together with stress susceptibility could together explain 23% of the injuries that occurred in the study.

Pressure from the team management was also regarded as the main factor contributing to recurrence. Conversely, Brukner and Khan (2002) believe that players with high self-esteem and good concentration are more able to control their frustration levels, have a positive outlook and focus on the rehabilitation tasks they are required to perform. As a result they may have a more rapid recovery from injury. Players with good psychological skills tend to cope well with external sources of pressures during rehabilitation.

In agreement with the current study McKenna, Delaney and Phillips (2002) stated that rehabilitation is pressured by time, elite athletes want to be better yesterday, but the available time is rarely sufficient for full recovery. Yet, the elites themselves are in the main, portrayed as “ideal “patients, knowledgeable, compliant, and committed, but may exceed guidelines for effective rehabilitation. Much of this pressure is exerted from management and coaches, particularly in team sports and where the financial stakes and expectations are highest, particularly (though not exclusively) in soccer.

Other factors contributing to injury highlighted by some of the participants were:

1. Poor rehabilitation, overtraining, not understanding the importance of rest including wrong training methods, poor understanding of biomechanics and physiology by staff.
2. rehabilitating too soon or too much, not fully recovering from an injury also played a major role in injury recurrence.
3. On the other hand players may have a hidden agenda and want to play certain games for personal reasons without healing fully.

Hagglung, Walden and Ekstrand (2006) established that a previous injury is a high risk factor for injury recurrence. Similarly Crosier et al., (2002) found that persistent muscle strength abnormalities may give rise to recurrent hamstring injuries. The author further stated that previous injury is a risk factor for future injury recurrence.

A busy schedule due to an increased number of matches in a short period may result in players experiencing injuries. Supported by Hagglung, Walden and Ekstrand (2006), a period with a congested match calendar can lead to fatigue and poor performance during the following period.

Hamzat et al., (2004) established that the Confederation of African Football (CAF) matches recorded the highest incidence of injuries followed by Federation International Football Association (FIFA) matches. Most of the injuries in the tournaments were minor injuries. The Federation International Football Association and Union of European Football Association (UEFA) matches had the highest and least number of severe injuries respectively. However, high occurrence of severe injuries mainly in the Confederation of African Football (CAF) and Union of European Football Association (UEFA) matches may indicate that players at the club and continental levels of competition were more aggressive than those playing at the world level.

Other contributing factors highlighted by participants were:

1. fitness level of the player, genetic make up of a player for example, left leg shorter than the right, genu valgus deformities and genu varus deformities,
2. Normal wear and tear (once damaged more likely to get damaged again with same/equal or less stress) may lead to recurring injuries.

Therefore occurrence of injuries occurred in a number of players who were previously injured due to lack of strength and stability within the necessary muscle groups (Hagglung, Walden and Ekstrand 2006)

5.5 MANAGEMENT OF RECURRENT INJURIES

The combination of treatment and training during the period of injury seem to be the norm in most teams whilst treatment and competition, were not often considered.

From the researchers experience training and competition during treatment could be attributed to later. During the rehabilitation process players are allowed to participate in friendly games. The study also found that other teams do gentle and gradual return to sport depending on the nature of the injury.

Other teams in the study explained that treatment and training involved modified training to avoid stress on injured areas or rest was allowed only and treatment given mainly if severe.

Correspondingly Jeffery (2009) also clarified that a soccer player spends a considerable amount of time preparing the cardio respiratory system, when injury occurs and the player is forced to miss training the levels of cardio respiratory fitness may decelerate quickly. Thus the player must substitute alternative activities that allow themselves the ability to maintain their existing levels of fitness.

The author further explained that non-weight bearing activities such as swimming, pool running and exercises cycling can provide an excellent way to maintain fitness without playing stress on the injured limbs.

This was supported by Momberg, Louw and Crous (2008) in their case studies to determine accelerated hydrotherapy and land-based rehabilitation in soccer players after anterior cruciate ligament reconstruction, confirmed that the two rehabilitation programmes may be useful in improving patient outcomes and that there are no risks for harm.

The other management options that were highlighted by the participants were:

1. Players were only entered into the competition phase only if the injury was fully recovered.
2. Other clubs usually treat players and rest them from all activities.
3. In some cases no training was allowed until a pain free situation was established, whereas in some cases minimal pain was ignored and the player returned to sport.

This was supported by Anderson (2005), who mentioned that time frames for recovery have been linked with particular injuries and are used to estimate return to play. Similarly Bandyopadhyay and Shaharudin (2009) in their overview article to determine the Anterior Cruciate ligament injuries in soccer players, it was mentioned that rupture of the anterior cruciate ligament (ACL) is classified as a severe injury which requires surgical treatment and keeps many athlete out of training and competitions for months.

Other factors of interest that were attributed to injury recurrence found in this study were:

5.5.1 Consultation outside the club medical team

The majority of players 77% did consult outside the club medical team for management of their injury. This might be as a result of injured players' geographical convenience.

In contrast to the present study Chen et al., (2005) found that 74% of athletes were suffering from sports injury and sought treatment themselves. However, the authors further stated that when a sports injury occurred more than half of athletes attempted to treat the condition themselves before seeking professional medical attention, and only a few ignored the injury (Chen et al., 2005).

The findings of the study also revealed that most players consulted traditional healers and were as well less likely to consult both the biokineticists and podiatrist. According to the researchers opinion the traditional healer didn't form part of the formal medical team therefore the injured player would always want to try something he did not try before or not offered in the team.

Chen et al., (2005) again found that most of the athletes who had experienced a sports injury in the past decided to use a combination of eastern and western treatments. According to their survey 14.5% of the athlete selected western treatment only, whereas 8.1% chose traditional Chinese medicine. Thus most athletes preferred combining western and eastern treatments (Chen et al., 2005).

It was discovered from the study that other professions who were consulted were doctors outside the club medical team, a specialist, on referral by the club doctor or physiotherapist. One club mentioned that they occasionally refer players to a sport science institute for further management probably to also access other rehabilitation facilities that the club medical team did not have.

5.5.2 Referral to specialist care (orthopaedic surgeon)

The majority of the medical team did not have a referral protocol to an orthopaedic surgeon who could predict the prognosis of the injury.

5.5.3 Adequacy of injury management

Teams with appropriate medical structure managed injured players adequately but there were still teams (quite a number of them) in the PSL without a doctor (let alone sports physician) and physiotherapist, predisposing players to poor management of the injury.

The study also revealed that players underwent full rehabilitation before return to sport and injury counseling was offered within a few teams. It was also found that other medical teams put player's needs first before the team when it came to injury management thus experiencing a low rate of recurrence.

One of the clubs also introduced a programme that ensures players are ready before returning to sports. Supported by Fuller and Walker (2006) mentioned that a structured quantified rehabilitation programme based on routine fitness and skills exercises and a graded subjective assessment of performance provides a reliable record of a player's functional recovery and a transparent exit from rehabilitation.

Sherry and Best (2004), confirmed that a rehabilitation program consisting of progressive agility and trunk stabilization exercises is more effective than a program emphasizing isolated in prompting stretching and strengthening in promoting return to sports and preventing injury recurrence in athletes. However, a randomized clinical trail to investigate the potential for progressive agility and trunk stabilization programs in the prevention of hamstring strain injury during sports was not looked into (Sherry and Best 2004).

As mentioned in the study, some teams have smaller squads and they need their most experienced players all the time. Coupled with that, the competitiveness of the PSL compels these teams to fielding even those who are not fully rehabilitated. Again some clubs lack facilities to rehabilitation.

The study discovered that other players will force their way to return to sport earlier than usual because of fear of loosing a place in the first team selection. Some players might be inclined to return earlier for financial gain and not give a true account as to their true pain levels as well. In some instances players also become pressurized by coaching staff from time to time as revealed in the study.

In support of the finding McKenna, Delaney and Phillips (2002) also stated that soccer players were noted as having a strong desire to return to playing even before the physiotherapist believed them to be ready. The authors further highlighted that, these conflicts with the desire to offer ethical treatment, and concern for fully recovery influence the adequacy of management prior to return to sport. However, elite athletes were surrounded, and were sometimes driven, by a concern to be better yesterday (McKenna, Delaney and Phillips 2002).

5.5.4 Decision for a player to return back

The physiotherapist decides whether the player may return back to the sport or not. This study also revealed that some teams comply with the theory of a multi disciplinary approach in sports whereby members managing the injured player includes a team physician, Physiotherapist, biokineticists and a coach. Players are also considered as important role players in the medical

team. Contrary to the researcher's experience, some medical professionals would still sideline other professionals especially on decision making. The study found that coaches, owners and directors sometimes made decisions about the player's return to sport without the medical team's knowledge.

5.6 FACTORS CONSIDERED BEFORE RETURNING THE INJURED PLAYER TO SPORT.

It was revealed in the literature that rehabilitation consisted of components that needed to be followed while treating an injured player. Therefore the following rehabilitation component: muscle conditioning, flexibility, neuromuscular control that entails balance and proprioception, functional exercises, sport skills, correctional of abnormal biomechanics and maintenance of cardiovascular fitness, if properly being followed it will make life easier for the sport physiotherapists when reaching a stage of considering factors before returning the injured player to sport.

Despite the above findings from the literature, the current study revealed that pain free, full range of movement and adequate strength was the most considered before returning the injured player to sport. As a result a player will only be allowed back to training once he is fit enough (following the injury) with no signs and symptoms of discomfort.

Similarly, improved prognostic assessment of muscle strains with injury identification and injury assessment may assist practitioners to lower, but not eliminate, recurrent injuries (Orchard, Best and Verrall 2005)

Furthermore the author also stated that there are no consensus guidelines or agreed upon criteria for safe return to sport following muscle strains that completely eliminate the risk for recurrence and maximize performance. Though biomechanical abnormalities are not always easy to correct during a hectic schedule and management of professional soccer players is not as easy as in general clinical practice. The study confirmed that cardiovascular fitness and persistent biomechanical abnormalities can be developed during training or corrected while returning to

sport respectively. The authors also found that there have been no studies directly comparing different return to play approaches. Studies have instead concentrated on recurrence risk factors and prognosis assessment risk factors for hamstring injuries (Orchard, Best and Verrall 2005).

It was also indicated in the current study that some players would take medication other than that prescribed by their team doctors. It is therefore important to assess the player as a whole during injury management before returning to play. Depending on the injury and qualities of rehabilitation; players would be re-assessed, then taken into functional training before returned to play.

Conversely Cross et al., (2002) mentioned that self reported functional measures in conjunction with athlete's ambulation status are important factors in predicting the number of days to return to sport following acute lateral ankle sprains. However large sample sizes and other clinical and functional measures were not considered in their study (Cross et al., 2002).

The sample of the study was representative of the medical team members of Premier Soccer League. Some of medical team members also render services in the national soccer teams.

In conclusion, the sample of the study was representative of the medical team members of Premier Soccer League. Some of medical team members also render services in the national soccer teams.

The research report is concluded with chapter six. The value of findings of this study is discussed. Recommendations are included in this chapter.

CHAPTER 6

SUMMARY, CONCLUSION, LIMITATIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

In this chapter, a summary of the main findings is provided. Thereafter a concise conclusion is drawn. To counter the management of recurrent soccer injuries among PSL players and some suggested recommendations are made at the end of this chapter.

6.2 SUMMARY

Findings from the study revealed that, the most common profession was physiotherapist (46.2%). The above results do agree with the literature since the management of recurrent soccer injuries was appearing more on physiotherapy than other medical discipline.

The current study further revealed that, the highest qualification obtained in the study was the masters degree (61.5%). The large number of medical team members (84.6%) had more than three years working experience in treating soccer injuries. Most members (76.9%) worked on a part time basis.

The ankle was the most commonly affected body part (69.2%) and the groin injuries were found as the most recurring 69.2%. Factors contributing to injury recurrence were: playing surface (53.8%), player co-operation (53.8%) and pressure from the team management (53.9%). Combination of treatment and training allowance showed a high frequency of 46.2%.

Most players (76.9%) do consult outside the club medical team for management of their injuries. No protocol exists for referral of the injured player to an orthopaedic surgeon. Injured players are adequately managed. The physiotherapist decides whether the players return to sport or not. Lastly pain free full range of movement and adequate strength are considered before returning the injured player to sport.

6.3 CONCLUSION

The composition of most PSL medical teams have sufficient health professionals with sufficient knowledge background to offer acceptable treatment for prevention of injury recurrence to injured players however various factors influence the implementation of acceptable principles of return to sport following an injury. The current study reflects that painfree, full range of movement and adequate strength are being considered by the medical team before returning the injured player to sport.

6.4 LIMITATIONS OF THE STUDY

The researcher concedes that this study had its limitations and deficit:

1. To follow up on the pattern of acute injuries and possibilities of leading to recurrence on the same player would be more valuable in a prospective study.
2. The follow up of an open ended question for why the injured players consult the traditional healers was overlooked in the current study since participants were the medical team. Players themselves would give a depth of reasons on why they consulting traditional healers.
3. The follow up of an open ended question on why the medical team members are not referring the injured players to an orthopaedic surgeon was not looked at in the current study. Hence limited the current study to express more details on the above mentioned question but these would also be valuable in a prospective study.
4. One of the factors that were overlooked in this study was player position versus recurrence of injuries and would also be more valuable in a prospective study.
5. Overall questionnaire development was overlooked and may also be taken into consideration for future studies.

6. Lastly, management options such as treatment rendered or prescribed by the entire medical team was overlooked in the current study since the information on injuries was based on subjective information and the researcher was not involved in the treatment/management of the injuries.

6.5 RECOMMENDATIONS

The results of this study need to be made available to all soccer stakeholders, soccer players and the entire medical team among the PSL in the form of a workshop.

A session needs to be held with soccer administrators to advocate the avoidance of factors contributing to recurrence of injuries.

REFERENCES

- Andersen M. B. 2000, *Doing sport Psychology*. Champaign (Ill): Human Kinetics. pp.223-236.
- Anderson M.K., Hall S.J., Martin M. 2000, *Sports Injury Management*. 2nd edition. Philadelphia: Lippincott Williams and Wilkins.
- Anderson S. J. 2005, Sports injuries, *Journal of disease a month*, vol. 3, no.4, pp.110-164.
- Arnason A., Andersen E., Holme L., Engebretsen L., Bahr R. 2006, Prevention of hamstring strains in elite soccer: an intervention study. *Scandinavian Journal of Medicine and Science in Sports*, 05 December pp.1-9.
- Bandyopadhyay A, Shahamdin S 2009, Anterior Cruciate Ligament (ACL) injuries in soccer player: An overview. *International Journal of Sports Science and Engineering*, vol.03, no.01, pp.050-064
- Brukner, K., Khan, K., 2000, *Clinical sports medicine*. McGraw-Hill Companies, Australia.
- Brukner K., Khan K. 2002, *Clinical sports medicine*. Revised 2nd Edition, McGraw-Hill Companies, Australia
- Brukner K., Khan K. 2007, *Clinical sports medicine*. 3rd Edition. McGraw-Hill Companies, Australia.
- Carlson C., 2008, The natural history and management of hamstring injuries, *Current musculoskeletal Medicine*. vol.1, pp.120-123.
- Carpenter T.W. Klein P., Schaferhoff, P., Appell, H.J., Mir, L.M., & Wehling, P. 2004, Treatment of muscle injuries by local administration of autologous conditioned serum: a pilot study on sportsmen with muscle strains. *Journal of Sports Medicine*, vol.25, pp.588-593.

Chamari K., Weimao D., Wiscoff U., Hong Y. 2007, Higher plantar pressure on the medial side in four soccer related movements, *British Journal of Sports Medicine*, vol.14, pp.93-100.

Chen S.J., Cheng Y.M., Lin Y.C., Hong Y.J., Huang P.J, Chou P.H. 2005, Investigation of management models in Elite Athlete Injuries. *Kaohsiung Journal of Medicine in Science*, vol.21, pp.220-7.

Croisier J.L., Forthomme B., Namurois M.H., Vanderthommen M. Crielaard, J.M. 2002, Hamstring muscle strain recurrence and strength performance disorders. *American Journal of Sports Medicine*, vol.30, no.2, pp.199-203.

Cross K.M., Worrell T.W., Leslie J.E., Khalid E. 2002, The relationship between self-reported and clinical measures and the number of days to return to sport following acute lateral ankle sprains. *Journal of Orthopaedics and Sports in Physical Therapy*, vol.32, pp. 16-23

Crossman J. 2001, *Coping with Sports Injuries: Psychological strategies for rehabilitation*, Oxford University Press, Canada.

Danchick J., 2006, Recurrent ankle sprains, *The American Chiropractor*. vol.29, no.1 Published December 30.

<http://www.theamericanchiropractor.com>

Drawer S., Fuller C.W. 2002, Evaluating the level of injury in English professional football using a risk a risk based assessment process. *British Journal of Sports Medicine*, vol.36, no.6, pp.446-451.

Freddie H. Fu., Stone David A. 2001, *Sports Injuries: mechanisms, prevention, and treatment*. 2nd edition, Lippincott Williams & Wilkins, Philadelphia.

Frigg A., Frigg R., Hintermann B., Barg A., Valderrabana V. 2007, The biomechanical influence of tibio-talar containment on stability of the ankle joint. *Knee Surgery Traumatology Arthroscopy*, vol.15, no.11, pp.1-8.

Fuller C.W., Walker J. 2006, Quantifying the functional rehabilitation of injured football players. *British Journal Sports Medicine*, vol. 40, pp. 151-157.

Fuller C.W, Ekstrand J, Junge A, Andersen T.E, Bahr R, Dvorak J, Hagglund M, Mc Crory P, Meeuwisse W.H, 2006, Consensus statement on injury definitions and data collection procedures in studies of football(soccer)injuries. *Clinical journal of sports medicine*, vol.16, no.2, pp.97-106

Garrick G. Schekun P.H. 1997, Managing ankle sprains: keys to preserving motion and strength. *The physician and sports medicine*, vol.25, no.3, pp.1-5.

Hagglung, M., Walden, M., Ekstrand J. 2006, Previous injury as a risk factor for injury in elite football: a prospective study over two consecutive seasons. *British Journal of Sports Medicine*, vol.40, pp.767-772.

Hammersley M, 1991, A note on Campbells distinction between internal and external validity. *Journal of quality and quantity*. Published by Springer Nertherlands, vol.25, no.4, pp.381-387.

Hamzat T.K., Adeniyi A.F., Awolola O.E., Olaleye O.A. 2004, Injury patterns of FIFA, CAF and UEFA soccer tournaments: a retrospective study of selected 2002 matches. *South African Journal of Physiotherapy*, vol.60, no.3, pp.10-14.

Hawkins R.D., Hulse M.A., Wilkinson C., Hodson A., Gibson M. 2001, The association football medical research programme: an audit of injuries in professional football. *British Journal of Sports Medicine*, vol.35, pp.43-47.

Herrington L. 2004, The rehabilitation of two functionally unstable ACL deficient knees: a case report, *Physical therapy in sport*, vol.5, pp. 175-178.

Hoskins W.T., Pollard H.P., 2005, Successful management of hamstring injuries in Australian rules footballers: two case reports.13:14Published 12 April.
<http://www.chiroandosteo.com/content/13/1/14>.

Ibrahim A., Murrell G.A.C., Knapman P 2007, Adductor strain and hip range of movement in male professional soccer players. *Journal of Orthopaedic Surgery*, vol.315, no.1, pp.46-9.

Ivarsson A. 2008, Psychological predictors of sport injuries among soccer players. *University School of social and health sciences Masters –essay in Sports Psychology*. Halmstad.

Jeffrey R., When to return to return to playing soccer, *Physio sports clinic*
Accessed 25 May 2009,
www.rjphysio.co.nz/articles/when%20to%20Return%20to%20Playing%20After%20injury.

Klenk C.A. 2006, Psychological response to injury, recovery and social support: A survey of athlete at an NCAA University. *University of Rhode: Honors program*, May.
Available from: Island [http:// digitalcommons.uri.edu/srhonorsprog/g](http://digitalcommons.uri.edu/srhonorsprog/g)

Lilley K., Gass E., Locke S. 2002, A retrospective injury analysis of state representative female soccer players. *Physical Therapy in Sport*, vol. 5, no.3, pp.2-9.

Mahlangu L. 2006, Lowerlimb injuries in teenage girls playing soccer. *University of Pretoria: Master Dissertation Physiotherapy Department*, April 06. Available from:
<http://upetd.up.ac.za/thesis/availableetd-07312007-140938/>

Management:[http:// medical-dictionary.thefreedictionary.com/management](http://medical-dictionary.thefreedictionary.com/management).Accessed on 25.07.2009

McKenna J., Delaney H., Phillips S. 2002, Physiotherapist “lived experienced of rehabilitating elite athletes. *Physical Therapy in Sport*, vol.3, pp.66-78.

Momberg B.L, Louw Q, Crous L 2008, Accelerated hydrotherapy and land –based rehabilitation in soccer player after anterior cruciate ligament reconstruction: a series of case studies. *South African Journal of Sports Medicine*, vol.20, no.4, pp.104-114.

Noronha M., Refshaunge K.M., Herbert R.D., Kilbreath S.L. 2006, Do voluntary strength, proprioception, range of motion, or postural sway predict occurrence of lateral ankle sprain. *British Journal of Sports Medicine*, vol.40, pp.824-828.

Norton K., Schwerdt S., Lange K. 2001, Evidence for the aetiology of injuries in Australian football, *British Journal of Sports Medicine*, vol .35, pp .418-423.

Olsen S.S., Buremann L.K.H., Lade V., Brassle J.O.K. 1985, Soccer injuries of youth. *British Journal of Sports medicine*, vol. 199, no.3, pp 161-164.

Orchard J., Seward H. 2002, Epidemiology of injuries in the Australian Football league, seasons 1997-2000. *British Journal of Sports Medicine*, vol .36, no.1, pp. 39-44.

Orchard J., Best T.M., Verrall G.M. 2005, Return to play following muscle strains. *Clinical Journal of Sport Medicine*, vol.15, pp. 436-441.

Physical therapy: World Confederation for physical therapy 2007, Description of physical therapy WCPT: London, UK, www.wcpt.org.co.za. Accessed on 25.07.2009.

Porat A., Roos E.M., Roos H. 2004, High prevalence of osteoarthritis 14 years after an anterior cruciate ligament tear in male soccer players: a study of radiographic and patient relevant outcomes. *Annals of the Rheumatic Diseases*, vol. 63, pp. 269-273.

Puffer J.C. 2001, The sprained ankle. *Clinical Cornerstone*, vol. 3, no.5, pp. 38-49.

Reed F.E. 2002, Making the decision for return to play. *The e Journal of the South Carolina Medical Association*, vol. 48, pp .1-10.

Rehabilitation: World health organization 1952, www.wcpt.org/node27544. Accessed on 25.07.2009

Rupp T.J., Purcell C. 2004, Groin injury. *The e –Medicine instant access to the minds of medicine*.

September 15 Available from: [http:// www.emedicine.com/sports/topic162.htm](http://www.emedicine.com/sports/topic162.htm)
Accessed 01 October 2005.

Sherry M.A., Best T. M. 2004, A comparison of rehabilitation programs in the treatment of acute hamstring strains. *Journal of Orthopaedics in Sports and Physical Therapy*, vol. 34, no.3.

Steffen K., Pensgaard A.M., Barhr R. 2008, Self reported pschychological characteristics as risk factors in female youth football. *Scandinavian Journal of Medicine and Science in Sports*, vol. 18, pp.221-234.

Struwig F.W, Stead G.B 2001, *Planning, designing and reporting research*. Pearson Education South Africa, Forest Drive, Pinelands, Cape Town.

Twizere J. 2004, Epidemiology of soccer injuries in Rwanda: a need for physiotherapy intervention, *Masters Degree in department of Physiotherapy University of Western Cape, South-Africa*, November.

<http://ww3.uwc.ac.za/docs/%20library/Theses/theses%202005%20Grad/Twizerej.pdf>.

Walker I. 2003, Soccer Injuries, hip injuries, *British Journal of Sports Medicine*, vol. 37, pp. 80-81.

Wilkeson G.B., 2002, Biomechanical and neuromuscular effect of ankle taping and bracing, *Journal of Athletic Training*, vol. 37, no.4, pp. 436-445.

Willens T., Witvrouw E., Delbaere K., Philippaerts R. 2005, Intrinsic risk factors inversion ankle sprains in female –a prospective study, *Scandinavian Journal of Medicine and Science in Sports*, vol .15, no.5, pp .336-34.

Wilson A.J., Myers P.T. Accessed 05 February 2008

Hamstring injury. *Orthopaedic and Sports Medicine Clinic*, Brisbane Australia.

Available from: www.isakos.com/asstes/innovations/Myers.Hamstring%20injuries.pdf.

Wimmer R.2004, Management and prevention of lateral ankle sprains, *The Accupuncture and Oriental Medicine News source, Accupuncture Today*, An MPA Media Publication, vol.5, no.3, pp. 1-6 March.

Woods C., Hawkins R.D., Maltby S., Hulse M., Thomas A., Hodson A. 2004, The football Association Medical Research Programme: an audit of injuries in professional football- analysis of hamstring injuries. *British Journal of Sports Medicine*, vol. 38, no.1, pp .36-41

Zoch C., Fialka-Moser V., Quittan M. 2003, Rehabilitation of ligamentous ankle injuries; a review of recent studies, *British Journal of Sports Medicine*, vol. 37, pp 291-295.

Appendix 1

| |
|--|
| MANAGEMENT OF RECURRENT SOCCER INJURIES AMONG PREMIER SOCCER LEAQUE(PSL) PLAYERS |
|--|

QUESTIONNAIRE

Make a cross (x) in the appropriate boxes where necessary.

SECTION A: DEMOGRAPHIC CHARACTERISTICS

1. (A) what is your profession?

| | |
|-----------------|--|
| Doctor | |
| Physiotherapist | |
| Other | |

(b) If other specifies:

(c). what qualifications have you obtained?

| | |
|----------------|--|
| Diploma | |
| Degree | |
| Masters degree | |
| PhD degree | |

(d) Kindly provide any other information that was not accountable above:

2. (A.) How long have you been working with the team?

| | |
|--------|--|
| Days | |
| Weeks | |
| Months | |
| Years | |

(b). Are you working on a:

| | |
|-----------------|--|
| Part time basis | |
| Full time basis | |

(c.) Do you have any previous experience in treating soccer injuries?

| | |
|-----|--|
| Yes | |
| No | |

(d.) Elaborate:

SECTION B: SOCCER INJURIES

1. What are the common injuries sustained by soccer players. (Place the numbers in the boxes following a scale of 1-3).

1: Very common

2: Common

3: Less common

(a.) Lower Limb:

| | |
|-----------------|--|
| Hip | |
| Groin | |
| Quadriceps | |
| Hamstrings | |
| Knee | |
| Shin | |
| Calf | |
| Tendon Achilles | |
| Ankle | |

(b.) Upper Limb:

| | |
|----------|--|
| Shoulder | |
| Elbow | |
| Hand | |

Other:

SECTION C: PATTERN OF RECURRENT INJURIES

1. In which area do you find most recurring injury amongst players?

Place the numbers in the boxes following a scale of 1-3

1: More recurring

2: Recurring

3: Less recurring

(A). Lower Limb:

| | |
|-----------------|--|
| Hip | |
| Groin | |
| Quadriceps | |
| Hamstrings | |
| Knee | |
| Shin | |
| Calf | |
| Tendon Achilles | |
| Ankle | |

(b). Upper Limb:

| | |
|----------|--|
| Shoulder | |
| Elbow | |
| Hand | |

Other:

2. In your opinion what are the possible factors contributing to recurrence? (Make a cross (x) in the appropriate boxes)

| | |
|-----------------------------------|--|
| Playing surface | |
| Player co-operation | |
| Pressure from the team management | |
| Other | |

If other specifies:

SECTION D: MANAGEMENT OF RECURRENT INJURIES

Make a cross (x) in the appropriate boxes where necessary

1. Which of the following activities is the player subjected to during management of recurrent injuries?

| | |
|-------------------------------------|--|
| Treatment only | |
| Treatment and training | |
| Treatment, training and competition | |

1.1 Give any information that is not accountable above:

2. In your experience do players consult outside the club medical team for management of their injury?

| | |
|-----|--|
| Yes | |
| No | |

2.1 If the answer is yes. Who do they consult?

| | |
|--------------------|--|
| Physiotherapist | |
| Biogenetics | |
| Doctor | |
| Podiatrist | |
| Traditional healer | |
| other | |

If other specifies:

3. Is it a protocol that players be referred to orthopedic surgeon following an injury?

| | |
|-----|--|
| Yes | |
| No | |

4. In your opinion do you feel that the injured players are adequately managed prior to return to sport?

| | |
|-----|--|
| Yes | |
| No | |

Elaborate:

5. Who decide that the player is ready to return back to the sport?

| | |
|------------------|--|
| Physiotherapist | |
| Biogenetics | |
| Doctor | |
| Physical trainer | |
| Soccer player | |
| Coach | |
| Medical Team | |
| Other | |

If other Specify:

6. (A) what are factors considered before returning the injured player to sport?

| | |
|---|--|
| Pain free and full range of movement | |
| No persistent swelling | |
| Adequate strength | |
| Good proprioception | |
| No persistent biomechanical abnormality | |
| Adequate cardiovascular fitness | |
| All of the above | |
| None of the above | |

(b) Please specify:

Appendix 2

P.O.BOX 742
MEDUNSA
0204
07 May 2005

Team Manager

.....
.....
.....
.....

Dear Sir/Madam

Re: Permission to conduct the study

I am a postgraduate physiotherapy student, studying at University of Limpopo (MEDUNSA CAMPUS).

I am currently involved in the post graduate research project. The title of the research is: Management of recurrent soccer injuries among PSL players during the season 2005/2006.I would like to ask for permission, to include your medical team to participate in the study.

I will appreciate if you will allow me to do this with your team. The results of the study will be sending to you.

Yours Faithfully,

.....

Appendix 3

Rapoo V.M

INFORMATION SHEET

Title of the study: Management of recurrent soccer injuries among premier soccer league (PSL) players.

Department of Physiotherapy

University of Limpopo (Medunsa Campus)

Chief researcher

Ms. Violet M. Rapoo

Supervisor

Prof. T. Taukobong

Dear Participants (Member of the medical team)

With this information leaflet I wish to invite you to participate in the research as entitled above. The information contained in this document aims to assist you to decide whether or not you would like to participate. Before you agree to participate in this research project, you should fully understand what is involved. If you have any questions please call Ms Violet M. Rapoo AT (w) 012 521 3180 or© 0823517532/0761989874

Rights of the participants (member of the medical team)

Your participation in this study is entirely voluntary and may withdraw at any time during the process should you wish to without any giving reasons for doing so.

Confidentiality

All information obtained during the study will be treated anonymously.

Chief Researcher details

Ms Violet Rapoo

Appendix 4

Tel (Work) 012 521 3180

Cell: 0823517532 or 0761989874

INFORMED CONSENT

Title of the study: Management of recurrent soccer injuries among premier soccer league (PSL) players.

Department of Physiotherapy

University of Limpopo (Medunsa campus)

Chief Researcher:

Violet Rapoo

I _____ agree to participate in the study. I understand that the focus of the study is to determine the management of recurrent soccer injuries among premier soccer league (PSL) players.

Confidentiality: I understand that the information provided by the study have been explained to me. I understand that participation in this study is voluntary, and refused to participate will involve no penalty or victimization. I may terminate my participation at any time if I choose to do so. I understand that I may withdraw from participation at any point in the study with no penalty whatsoever.

Person to contact: I understand that the chief researcher in this study is Violet Rapoo Tel: 012 521 3180(work), Cell0823517532/0761989874

Consent and participation

I certify that I have read all of above and received satisfactory answers to any questions that I might have had. I therefore, willingly give my consent to participate in the study.

I understand that my anonymity is guaranteed.

Participant's signature:

Date: