ANALYSIS OF INJURIES INCURRED BY AMATEUR FEMALE RUGBY PLAYERS: A CASE OF SELECTED CLUBS IN KAMPALA DISTRICT, UGANDA

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DECLARATION

This thesis entitled "**Analysis of Injuries Incurred by Amateur Female Rugby Players: A case of Selected Clubs in Kampala District, Uganda**" is my original work and has not been presented for a degree in any other University.

Sign..... Date..28/Jan/2014

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APPROVAL

This thesis entitled "**Analysis of Injuries Incurred by Amateur Female Rugby Players: a case of Selected Clubs in Kampala District, Uganda**" by Atukei Harriet Proscovia has been submitted for examination with our approval as University supervisors.

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DEDICATION

This work is dedicated to my parents Mr and Mrs. Imakit Okou, brothers Imakit Richard and Imakit Martin, sisters Asekenye Sylvia, Asekenye Lillian, Akello Christine and finally to Okwaja Martin my husband and my son Asianut Elijah

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LIST OF ACRONYMS

COU	Council of Europe
EU	European Union
FIFA	Federation of International Football Association
HBV	Hepatitis B Virus
IFR	Injury Frequency Rate
NRUA	National Rugby Union Association
RICE	Rest Ice Compression Elevation
WHO	World Health Organization
WTO	World Trade Organization

ABSTRAT

Rugby players are exposed to injuries which are most especially on the upper and lower limbs since the game involves a lot of collisions. The purpose of the study was to analyse the injuries incurred by 25 amateur female rugby players in two selected clubs in Kampala District, Uganda. The objectives of the study were: to establish the injuries incurred by female rugby players during rugby playing, to identify the factors that lead to injuries incurred by the female players during the game and to establish relationship between causes and injuries during training and competition. It was hypothesized that: there was no significant relationship between the occurrence of injuries and the time of the day of occurrence; and that there was no significant relationship between the occurrence of injuries and the phase of play; and finally there was no significant relationship between the occurrence of injuries and the site of the body at which the injury occurred. Questionnaires for players, coaches and medical personnel as well as an observation checklist were used to collect data. Finally, an interview guide was used to collect the information that could not be obtained using the other tools. The study was mainly quantitative in which descriptive statistics was used and data was analyzed using SPSS. The hypotheses were tested using Chi-square and Pearson's correlation at $P < 0.05$. Both frequency and cross-tables were used for data presentation. The results indicated that most injuries (92%) were bruises caused by collision with other players and many injuries (56%) were sustained during the middle phase of the games. Participants experienced most injuries around the knee and the treatment given to most injured participants (47%) was pain killers. Occurrence of injuries had no significant relationship to the time of occurrence of the injury, phase within which the injury occurred and the degree of the injury. Based on the findings, the study recommended consideration of time of the day, necessary protective gear and presence of qualified and full time medical personnel during the competitions in addition to sensitization of the teams' administration and players about the usefulness of injury prevention in relation to retention and performance of the players. More research should be carried out to find out about injury management and rehabilitation of injured athletes.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Rugby is an international body contact and collision sport that originated from a rugby school in the United Kingdom and was one of the several versions of football played at English public schools during the 19thcentury,(Mwathi & Kamenju, 2006). During that time, players were allowed to handle the ball but not allowed to run with it in their hands towards their opponent's goal, (Budget, 2005). In Africa, South Africa picked up very fast participation in the game of rugby (Union) in the name of fighting against doping in their country. As the adolescent rugby players came to participate, they were checked on doping, (Tony, 2009). The rugby union in East Africa was first established in 1950 as a multi national rugby team, drawing players from Kenya, Tanzania and Uganda. Most players came from Kenya which traditionally, has been the strongest playing nation in this part of the world (Kiganjo, 2003).

The rugby game is played at amateur, semi- professional and professional levels by both male and female players (Gabbetts, 2002). It is played in two halves of 45 minutes each. It is a fast game which involves skills like throwing, catching, pas sing, tackling, kicking, and running with the ball. Rules of the game allow pushing and pulling which makes the players prone to injury (Cantu, 1981). The intense physical nature of the game requires players to have a variety of physical fitness components which include: muscular

strength, power, endurance, flexibility, speed, agility and cardiovascular endurance (Cantu, 1981).

Rugby being a contact game, chances of players getting injuries is high. As a result of a high number of physical collisions and the dynamic nature of rugby, musculoskeletal injuries are extremely common. In men, they tend to occur in the lower limbs though the upper limbs also receive frequent injuries while women rugby players have a high incidence of injuries around the head, the face and the upper limbs (Bodnar, 1977). The female rugby players mostly get the injuries during the kicking, tackling, mauling and scrumming (Kiganjo, 2003).

Hodgson (1998) found a progressively increasing incidence of injury (from 277.6 to 490.2 per 1000 players- position in game hours) in one professional rugby union team over four consecutive seasons. The injury rates have been attributed to many factors and a high incidence of injury is a recurrent theme throughout most rugby union injury studies (Huskins, 2006). Injury rates of different sports have been reported such as for football players at different levels (Lader, 1992). It is possible that owing to differences in fitness and skill, ground conditions, refereeing standards and attitudes towards aggression and violence, injury rates may be higher in amateur rugby union among women players (Garrick & Webb, 1990; Taimela, 1990).

During participation in sports activities, one may not escape the risk of injuries varying from mild to severe (Williams, 1975). The mild injuries are in most cases ignored and if they are severe they are looked at and treated (Plato, 1995). The nature of the physical activity directly or indirectly determines the athlete's risk to injury (Watson, 1995). It is, therefore, important to note that everyone involved in sports should be aware of the serious problems of injuries and the consequences associated with them (Watson, 1995). Injuries may lead to temporary stoppage of the athlete from the training or competition besides other consequences which range from inability to complete the training or competition as scheduled to serious or permanent damage to the athlete. The incidences of these conditions were rising at such an alarming rate that international bodies such as the Council of Europe (COE), Federation of International Football Association (FIFA) and the World Health Organization (WHO) demanded effective intervention measures to be implemented to protect the players (Werner, 1993; Biddle & Fox, 1998). For example FIFA introduced the rules of giving a red card to a player who tackles the opponent from the back (FIFA Football Manual, 2005).

Women in Uganda participate in Rugby Union under the National Rugby Union Association: (NRUA) (Magwanzu , 2010), NRUA has three teams namely: Thunder Birds and Rangers teams who train in Kyadondo grounds in Nakawa Division and Black Panthers team who train from Kampala Rugby Club, Uganda. Just like any other rugby

teams, the Thunder Birds, Rangers and Black Panthers seem to be exposed to a lot of injuries. Injuries that are incurred by the players are usually assessed and interpreted from different perspectives by individual persons like the coaches, trainers, team managers, team doctors and athletic managers including athletes. According to Requa (1993), maintenance of meaningful records on the nature, degree and cause of injuries should be taken seriously so as to be aware of injuries that may affect athletes. It is upon this background that the research analyzed the injuries incurred by amateur female rugby players in selected clubs in Kampala District in Uganda.

1.2 Statement of the problem

Involvement in sports activities of any intensity poses risks of injuries during training and competition (Smith and Bunch, 1986; Tursz and Crost, 1986). Causes of injury vary, from the equipment to the athlete himself or herself. A study among the rugby players in Kenya in 2003 noted that the injuries sustained by players during training and competition seem to depend on the nature of equipment and facilities, type of coach and player's welfare; and observed a lot about incidences, sites and nature of injury occurrence (Onywera, 2004). Laoruengthana *et al.* (2009) noted that such data is potentially useful in developing injury surveillance systems for the future of any sporting event. In Uganda rugby is a game that has been associated with men. And one of the fears women have is the contact nature of the game whereby players keep on colliding (Magwanzu 2010). The nature of the game makes players susceptible to injuries. Just like any other rugby team, the Thunder Birds, Rangers and Black Panthers are susceptible to

injuries and yet no clear record is available to track injury incidences amongst the players. Hence a study was conceived to analyze the injuries incurred by amateur female rugby players in Uganda.

1.3 Purpose of the study

The purpose of the study was to analyze injuries incurred during training and competitions in rugby by amateur female rugby players in selected clubs in Kampala District, Uganda.

1.4 Objectives of the study

1. To establish the injuries incurred by female players during rugby playing in selected clubs in Kampala District.
2. To identify the factors that lead to injuries incurred by the female players during rugby playing among the selected clubs in Kampala District.
3. To establish the relationships between causes of injuries and injuries during training and competition in rugby in selected clubs in Kampala District.

1. 5 Research questions

1. What are the most common injuries incurred by rugby female players during training and competition in selected clubs?

2. What factors lead to injuries incurred during female rugby training and competition in selected clubs in Kampala District?
3. What is the relationship between the causes of injuries and injuries during training and competition in selected clubs?

1.6 Hypotheses

The study used the following hypotheses which were tested using Chi-Square and Pearson correlation at Alpha (α) 0.05 level of significance.

$H0_1$ There is no statistical significant relationship between the occurrence of injuries and the time of the day of occurrence.

$H0_2$ There is no statistical significant relationship between the occurrence of injuries and the phase / round of play.

$H0_3$ There is no statistical significant relationship between the occurrence of injuries and the site of the body at which the injury occurred.

1.7 CONCEPTUAL FRAME WORK.

The research was based on concepts advanced by Watson (1995), Howley and Frank (2003) and Williams (1975). With the involvement in sports activities, one may not escape the risk of injuries because sport involves body movement and contact (Williams, 1975 and Watson, 1995). Many factors can lead to injury during rugby participation. These may include low fitness level, the equipment and facilities used by the players,

poor officiating, the nature of the sport activity itself and overuse of players by trainers and coaches (Cantu, 1987; Colberg and Swain, 2000). These concepts are as shown in the diagram below.

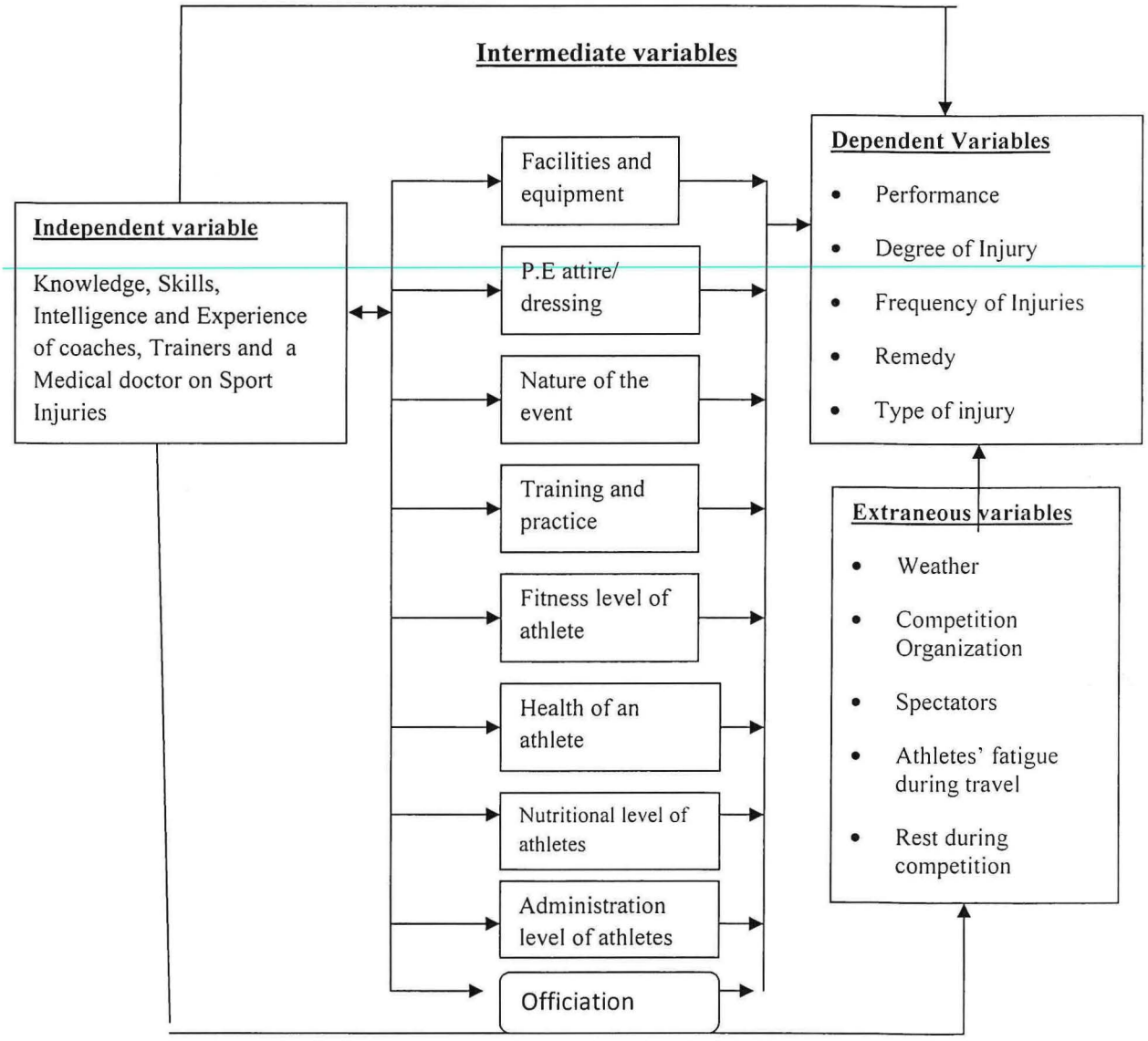

Figure 1: Relationship among variables that may lead to common injuries during rugby playing, as adapted from Watson (1995).

As reflected in figure 1, inadequate knowledge of trainers and coaches about rugby injuries coupled with poor facilities and equipment used, low fitness level of players,

poor health of players, inadequate training and practice, nature of the event, poor administration of the competition, poor quality of sports attire, and poor nutritional level of players have led to a high frequency of injuries (Watson, 1995). In addition, Howley and Frank (2003); Williams (2003) and Corbin (2003) agree that all these are exacerbated by poor weather during competition, poor competition organization, unfriendly spectators, and players fatigue during travel and little rest during competition.

1.8 Scope of the study

The geographical location of the study was Kampala District, Kyadondo ground where the two clubs train and compete from. The study was about the injuries incurred by amateur female rugby players in selected clubs in Kampala District, Uganda. The participants included the following categories of people: female rugby players, coaches / trainers, administrators and a team doctor.

1.9 Limitations of the study

The research was limited by the following factors:-

a) Time was a constraint for the researcher to exhaust information from the respondents since they were participating on specific days and this was overcome by the researcher working hand in hand with the players for a long period of time of about 4 to 6 weeks to achieve the desired results.

b) Reluctance of respondents to give information. Some respondents were not willing to give information as they were just from training or competition. This was overcome by the researcher building confidence in the respondents by assuring them that all information given by the players would be confidentially handled.

c) Some athletes were seriously injured, feeling a lot of pain and could not participate in the interview. This was overcome by the researcher rescheduling another day to meet such players to respond to the interview questions.

1.10 Significance of the study

The outcome of the research was hoped to help the following stakeholders:

a) The coaches / trainers may gain knowledge of injuries incurred during rugby playing which can help them plan better in relation to prevention and treatment of injuries.

b) The players may benefit by being aware of the causes of injuries associated with rugby and prevents / minimizes their occurrence during a game.

c) The rugby administrators and stakeholders may gain knowledge about the nature and quality of the facilities and equipment needed by the players for the game.

d) The information may also be of help to the local community to give moral support to the injured players and avoid circumstances that may lead to injuries during training and competitions.

e) The information may be used to inform more people about rugby injuries as well as helping identify areas for further research in the area of the female rugby injuries.

1.10.1 Operational definitions of terms

Amateur: An athlete who takes part in any sport event with artistic skills without receiving money for it.

Analysis: Looking at a sports injury in details and in different stages or parts in relation to discomfort, with a view of minimizing it

Athletes: These are participants or people engaged in any sports events.

Competition: It refers to different activities participated in by different kinds or groups of people with an aim of getting a winner.

Equipment These are movable items that the athlete uses in the training and competition during the sports activity.

Facilities: These are fixed items that athletes use in the game during play like in the field / court of play

Game hour: The specific hours when the athletes are either actively training or in a competition

Incurred: To become exposed to an injury during participation in an event.

Injury: An instance of physical damage / harm to the body of an athlete during a physical activity which makes one feel pain.

Phase: Round of play

Selected clubs: These include Thunder Birds, Rangers and Black Panthers tearms.

Sport: This is a human activity that is institutionalized for leisure or competition and has specific rules and regulations governing it.

Sports injury: This is any occurrence of accident or harm on an athlete during any sports activity which makes one feel pain or discomfort.

Sports season: It is the time period when the sport activities are being participated

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction.

In this chapter, the researcher looked at a variety of related literature as given by other researchers. The review of literature was done using the following headings: Different definitions of injuries, types of injuries, causes of injuries, rate of injuries during rugby sport, strategies to prevent injuries, related studies about rugby injuries and summary.

2.2 Definitions of injuries.

According to the studies by various scholars, injuries have been defined differently. For instance injuries are harmful accidents that occur in athletes during sports activities mostly happening in /on the body of an athlete during play (Collins, 1989). According to Watson (1995), injury can be defined as the stress that is imposed upon the body and is greater than its ability to resist, becoming an inevitable consequence that is understandable. Injuries are also defined as any occurrence of accidents intended or not intended to harm an athlete during any sports activities which make one feel pain and can make one temporarily stop participating (Howley & Frank, 2003). Gibbs (1994) defines an injury in terms of subsequent missed matches in training while Cantu (1981) and Gissane (1997) define injuries as time away from training and playing. In addition, Watkins, (1983) defined an injury as physical damage caused by a sport related incident. Injuries are any occurrence of accidents on an athlete during any sports activity which

makes one feel pain or discomfort (Bodnar, 1977). For the purpose of this study an injury is an instance of physical damage / harm to the body during a physical activity. The seriousness of an injury is usually quantified in terms of the degree of the effect upon the athlete. Seriousness of injuries is rated in terms of one of the following: amount and nature of the disability sustained, implication for long term health of the athlete, complexity of the treatment necessary and the cost of treatment and after care (Watson, 1995).

2.3 Types of injury.

Garrick (2003) remarked that rugby as a contact game has both soft and hard tissue injuries such as facial laceration especially around the eyes, jaw fracture, head injuries, neck sprain/dislocation, internal abdominal injury to spleen, liver or kidney, which the players face during play of rugby. Types of injuries vary with the sport undertaken and also the magnitude of exertion. These types are categorized under the following categories.

2.3.1 Soft tissue injuries.

These are injuries that normally happen around the muscles and according to the research studies those injuries include; bruises, sprain (pulled muscles), concussions, strains, overuse injuries, laceration, muscle cramp, muscle pull, headache, stitch, cut and many others (Williams, 1975). Tropp (1984) notes that ankle sprain is one of the most common

sports injuries especially in females and instability is a predisposing factor in the rugby game. The injury tends to recur unless special exercises are undertaken to strengthen the joint and to improve the wellness in the tissues that surround it.

2.3.2 Hard tissue injuries.

These are injuries that take place around and between the bones. The examples of these types of injuries include the following; fractures, dislocation, contusion and fractures of the wrist (Williams, 1975). According to Watson (1995), back injuries are common in sport and are often very troublesome. The risk of back injury is increased when strength, flexibility and body mechanics are poor and when the individual is overweight. Nicholl (1996) asserts that most common injuries are intrinsic (happen inside the body) and the other injuries occur to the lower limb.

2.4 Sites of injuries.

These are positions of the player's body where the injuries take place especially on the upper and lower limbs; head, face, eyes, chest, jaw, neck, nose, back, shoulder, hamstrings, thumb, abdomen, ankle, fingers, hand, knee, leg, quadriceps and wrist.

2.5 Causes of injuries.

Injuries are caused by many different factors as discussed below.

2.5.1 Facility.

The sport injuries may be caused by facilities which refer to all immovable structures used in sports. Facilities include items like play grounds and courts. According to Bucher et al (1999), individuals should be provided an environment in which they have adequate space to move freely and safely. Athletes cannot rule out using facility because one has to use a court for playing and yet most courts may not be in good condition. This is backed by Franks (2008) who noted that inadequate protection by the playing ground and the foot wear is a major contributor to the variety of leg and low back problems, adding to improperly maintained exercise equipment and facilities which also contribute to the higher overall injury risks.

2.5.2 Equipment.

Equipment can cause rugby players injuries. Equipment includes items like balls, mouth - guards, sheen pads, helmets, goggles, clothing, and footwear to mention but a few. If the equipment is inappropriate or is used in an inappropriate manner, it may cause injury or hamper skill development or intimidate individuals. According to Bucher and Welest (1999), equipment must be appropriate to each individual's size, skill and confidence level. In addition, Howley & Garrick (2003) remarked that an involvement in any sports activity which imposes movement and with increased movement brings a risk of injury especially during jumps, use of rough equipment and congestion of athletes during running phase as they push one another, an uneven playing surface or foul play by an

opponent also contributes to the risk of injuries. There is need to wear the correct clothing and gear for a specific sport.

2.5.3 Instructions.

Watson (1995) noted that wrong instructions can demotivate players from playing especially if the instructions are wrongly applied to players causing injuries. Instructions are usually given by the trainers and coaches during training and competitions and if this is wrongly done, it exposes the players to injuries.

2.5.4 Collision with other players.

In rugby, players keep colliding due to the nature of the sport being a contact game. This causes acute injuries to the rugby players. In addition, Collins (1989) noted that rugby as a contact game has a number of factors that cause injuries such as collision with other players, direct blow to elbow, indirect stress due to falling on an outstretched hand with `the elbow locked, infection in one's fractures (skin broken over fracture site), unstable joint following repeated injury and over use of muscles.

2.5.5 Weather.

This factor too causes injuries on rugby players as the weather may be bad in terms of being too hot, the players during play can sweat and loose water from their bodies causing dehydration or rainy, it causes slippery ground and if the ground becomes slippery the players can slide / fall causing injury. When it is extremely cold the players take long to warm up. Similarly, Azubuike and Okojie (2009) noted that factors such as weather, experience and activity tend to influence injury occurrence.

In a different study, Seward (2002) notes that though less trained athletes are more prone to heat injuries during hot conditions, the time of the day may not be a direct determinant of heat injury occurrence and the hot temperature. The incidence of injury differs depending on many factors, such as the kind of weather that period of time of play may be, level of competition, type of sport, and standard of surveillance system. A potential risk of injury occurs predominately in full-contact sports than in limited-contact sports (Laoruengthana et al. 2009).

2.5.6 Skill.

The players must be knowledgeable and skillful to avoid injuries during matches as they are prone to injuries due to the nature of the sport. According to Taimela (1990), it has been shown that inexperience increases the risk of injuries. Watkins (1983) noted that as

the game progresses, players become less efficient in their execution of skills hence creating a risk of injury to themselves or the opponents.

Watson (1995) also noted that lack of flexibility due to lack of a skill is a major cause of injuries such as muscle strains and tendonitis. In a related study, Watson (1995) further suggested that injuries due to lack of flexibility are a particular problem in older athletes and less in younger athletes due to their easy flexibility. Furthermore, rugby injuries are mostly caused during the tackling phase when players try to tackle to get the ball to their side during play (Lowdon, 2007). Additionally, being overweight or exceptionally tall increases susceptibility to ankle injuries due to increased mechanical stress on the ankle (Norton, 1995); Watson (1995) and Taimela, (1990) observed that athletes who are tall or over weight are more likely to suffer from injury generally.

2.5.7 Warm up.

Inadequate warm up causes injuries in the life of a rugby player because warm up prepares the body for exercise, so without proper warm up the body is not properly prepared for a big game hence the likelihood of injury occurrence. Additionally, Garrick (1990) and Williams (1975) noted that with fatigue women become more aggressive and violent hence injury rates may be higher in rugby union among women players than their male counterparts due to inadequate warm up. The high level of muscle strains, in particular, indicates possible weakness in fitness training programmes and use of

warming up and cooling down procedures by clubs and the need for benchmarking players' levels of fitness and performance (Hawkins and Fuller, 1999).

2.5.8 Health of athlete.

Most of the players may come to play when they are not healthy and this exposes them to injuries because the body is weak and not ready for any vigorous activity (Hodgson, 1998). Some of them may come with previous injuries on their bodies or may be sick of other diseases that are not cured. Some injuries can be caused by previous injuries which predispose an individual to sports injury for a number of reasons. For instance, factors that led to the first injury might not have been removed. Secondly, the body is weaker after an injury unless special exercises have been taken to strengthen it. Lastly, many athletes resume activity before they have recovered fully (Keller, 2010).

2.5.9 Other causes of injuries.

Other causes of injuries include the following; psychological factors and sharp objects on the court. An Australian study found the use of oversized aluminum racquets to be the only predisposing factor to tennis elbow which is one of the common injuries to tennis players (Kamien, 2009). Watson, (1995) pointed out that: a variety of psychological factors may predispose an athlete to injury. Personality, anxiety, loss of control and self esteem are determining factors to the injury incurred by any athlete. Psychological factor

was used by many researchers on injured athletes and found that tender minded players were more likely to be injured thus suffer more severe injuries, Gibbs (1994). Gordon, (1991) noted that the majority of gymnastics athletes reported lack of concentration and thinking about other things as the major cause of injury. This lack of attention or concentration may be explained in terms of psychological information processing system used by the athletes.

2.6 Rate of injuries during rugby sport.

Watson (1995) and Norton (1995) observed that it is very vital for everyone involved in sports to be aware of serious problems of injury. The incidence of injury is rising at such an alarming rate that international bodies such as the Council of World Health Organization have expressed the need for effective intervention measures to be implemented. This statement emphasizes that injuries among players occur and factors that cause them must be identified and interventions found.

Hodgson (1998) found an increasing incidence of injury among the professional rugby union teams. The different injury rates found in studies can be attributed to many factors and a high incidence of injury is a recurrent theme throughout most rugby league injury studies (Huskins, 2006). However, Kiganjo (2003) observed that injury frequency was higher in the later phases of the game.

Sullivan (1998); Tursz (1986); Smith (1986); Watson (1995) and Zariczny, (1996) found out that the injury rate for girls dropped in the teenage years that is between 15-18 years due to a decline in the participation levels while the injury rate of the boys in the final years at school was high especially in those individuals who were involved in competitive sports. The rate was of the order of 20-30 injuries per 100 athletes per year.

The rate of injuries in players increases as the duration and frequency of play increases. According to Hawkins and Fuller (1999) in the study on the players in the English premiership found out that the overall injury frequency rate (IFR) was 8.5 injuries/1000 hours, with the IFR during competitions (27.7) being significantly ($p < 0.01$) higher than that during training (3.5). The IFRs for youth players were found to increase over the second half of the season, whereas they decreased for professional players. There were no significant differences between IFRs for professional and youth players during training. There were significantly ($p < 0.01$) injuries during competition in the last 15 minute periods at the end of each half.

2.7 Strategies to prevent injuries.

Watson (1995); Jennings (1998); and Huskins (2006) revealed that a daily stretching program reduces the incidence of both acute and overuse injuries such as tendonitis when flexibility is improved. In exercise program where games are used for aerobic activity, injury risk may be reduced by controlling the tempo of the activity or by modifying

existing rules to enhance participant safety (Howley & Frank, 2003, James *et al.* 1993). Furthermore, Watson (1995) and Kusala (1998) recommended that athletes should be encouraged to seek professional advice regarding the selection and finding of proper equipment, and that there should be strict control using the game rules.

Based on the high injury pattern in most ball sports, Jorgensen (1984) suggested some modifications to the rules and equipment, like the "boot-type" footwear should be tried out and the soles in the games should correspond to the different playing surfaces that may be encountered. He further noted that stricter enforcement of the rules, and the use of a maximum size playing ground in the respective sports as well as a modification of the Rugby rules concerning substitution were a must.

It is further recommended that preventive measures such as adequate treatment of injuries, full rehabilitation after injuries, use of protective equipment, appropriate exercises and warm-ups, continual team education on injury managements and skill improvement be utilized and enforced to protect the athletes (Azubuike and Okojie, 2009).

Additionally, Junge and Dvorak (2004) suggested that ankle sprains can be prevented by external ankle supports and proprioceptive / coordination training, especially in athletes

with previous ankle sprains. With regard to severe knee injuries, the results of prevention studies are partly inconclusive. However, training of neuromuscular and proprioceptive performance as well as improvement of jumping and landing technique seemed to decrease the incidence of anterior cruciate ligament injuries in female athletes.

Prevention programs are likely to be more effective in groups with an increased risk of injury. More methodologically well-designed studies are required to evaluate the effects of specific preventive interventions. The open cuts should be covered to prevent more injuries and infection. Cotton clothes which soak sweat should be used by the athletes and necessary supplies such as latex gloves, dressings and spirit should be available to care for open wounds (Howley & Frank, 2003, Kirk, 1996).

Finally, Junge *et al.* (2002); recommended that since the incidence of rugby injuries can be reduced by preventive interventions, coaches and players need better education regarding injury prevention strategies and should include such interventions as part of their regular training.

2.8 Related studies.

A study by Onywera (2004) was carried out in Kenya in Kenyatta University about the incidence, site and nature of injuries in amateur rugby league over three consecutive

seasons and it was found out that the incidence of injury was 160.6 per 1,000 player-position game hours, with forwards having significantly higher incidence of injury than backs (182.3 per 1,000). Over 25% of the total injuries (40.6 per 1,000) sustained during the three year period were at the head and neck while injuries to the face and abdomen and thorax (21.3 per 1,000, 13.3%) and knee (17.8 per 1,000, 11.1 %) were less common. Muscular injuries (hematomas and strains) were the most common type of injury (45.7 per 1,000, 28.5%). Significantly, more injuries occurred in the later stages of the season with most injuries (70.8 %) sustained in the second half of the matches. The above study was carried out in Kenya on the rates of injuries but it did not address the occurrence of injuries which was to be looked at in Uganda as the study of research.

A study by Marwan (2011) among 452 professional athletes participating in ball sports from 5 sports clubs in Kuwait found that 73.1% of the most common sites of injuries were the lower limbs and (43.6%) were joint injuries. Compared to football (soccer), and rugby players that were (95%) and (95%) respectively who were more likely to take more than 10 days off practice due to injury. The study concluded that sports injuries were highly prevalent among professional athletes in Kuwait and future studies were needed to provide guidelines for interventions that may reduce such injuries. This study was about the sites of injuries in Kuwait and it did not address injuries incurred in rugby female players in clubs in Kampala.

Another study by Azubuike and Okojie (2009) among 196 rugby players noted 204 injuries with a prevalence rate of 81.6%. More injuries were recorded during matches (46.1%) than during training (36.8%). Injuries occurring by body contact constituted 62.3% of the total injuries. The ankle part of the body constituted (25%) and was the most affected site, followed by the knee (20.1%), while sprain injury (33.3%) and strain (13.2%) were the commonest injury types. Moderate injury (28.9%) was the highest form of injury recorded. Recurrent injury accounted for 38.8% of injuries, occurring more in training (44.9%) than in matches (36.7%). A greater percentage (86.8%) of the injuries was traumatic in nature, with tackling (44.6%) being the commonest mechanism. Defenders (34.3%) and strikers (31.4%) had higher injury occurrence. The association between the player's role and the mechanism of injury was significant ($p = 0.02$), while that between weather condition and injury type was very significant ($p = 0.004$) yet there was no significance of time of the day to the injury occurrence. Moreover, the association between experience and mechanism of injury was extremely significant ($p<0.001$). The study also showed that injury has economic, physical and psychological impacts on players including the rate of injuries while the study carried out in Uganda was on female rugby players on common injuries in athletes not on the prevalence rate.

Among the players whose number is not known in the English premiership, Hawkins and Fuller (1999) found out that strains (41%), sprains (20%), and contusions (20%) represented the major types of injury. The thigh (23%), the ankle (17%), knee (14%), and lower leg (13%) represented the major locations of injury, with significantly ($p < 0.01$)

more injuries to the dominant body side. Re-injury counted for 22% of all injuries. Only 12% of all injuries were caused by a breach of the rules of football, although player to player contact was involved in 41% of all injuries. This study shows that there are injuries in contact games.

A study by Ekstrand and Gillquist (1983) among one hundred eighty players in a male soccer division to assess etiologic factors in soccer injuries indicated that 71% of the injuries proved to be explicable by and associated with, equipment, playing ground, or player factors such as joint instability, muscle tightness, inadequate rehabilitation, or lack of training. This study was about injuries in soccer players but did not address injuries in female rugby players.

When Stephenson, *et al.* (1996) investigated the incidence of injury in English professional rugby league over a period of four playing seasons, the overall injury rate was 114 per 1000 playing hours (95% confidence interval 105 to 124) the most frequent type of injury were muscular injuries [34 (29 to 40) per 1000 playing hours], while the most frequently injured site was the head and neck region [38 (16 to 25) per 1000 playing hours]. Players incurred the largest percentage of injuries when being tackled [46.3% (41.9 to 50.7)]. Most injuries occurred in less than one week away from playing and training [70.1% (66.1 to 74.2)], and forwards had a higher injury rate than backs (139 v 93 injuries per 1000 hours). The study concluded that the high rates of injury in rugby league were undoubtedly due to the high frequency of bodily contact in the game. Being

tackled had the highest risk of injury, because of being hit forcibly by other players. Forwards suffered higher injury rates than backs, probably because they were involved in a larger number of physical collisions. This study was about investigation of incidence of injuries in England while the researcher looked at the analysis of common injuries among female rugby players.

Addley and Farren (1988) documented the injuries sustained during one season by players whose number was not indicated at an Ulster Senior Rugby Club with reference to time of injury, phase of play, team position, and nature of injury. The overall injury pattern in Irish rugby as found in this study was broadly comparable with that in similar studies in England and Scotland. Eighty-four players out of one hundred were injured in total. Three of these had fractures of which one required hospital admission for open reduction of a fractured wrist. The remaining eighty-one players had various types and grades of soft-tissue damage. The tackle accounted for approximately one-third of all injuries. There were few serious injuries and none involving the spine. Injuries to forwards made up almost sixty per cent of the total. This study concentrated on injuries in terms of time, phase, team position and nature of injury and did not look at site of injury on the body, type, cause, degree of injury and that caused a study in Uganda to close the gap.

Another study was carried out by Onywera, *et al.* (2004) about injury surveillance in a soccer tournament in Kenya and the following were the findings: it was established that most injuries 44 (43.14%) occurred in the preliminary phase of the tournament. The big number of injuries 50 (49%) were caused by an opponent as a result of tackling or fouling 28 (27.5%). The offensive zone recorded more injuries 37 (36.3%) compared to the defensive and construction zones, which recorded 35 (34.3%) and 30 (29.4%) respectively. Soft tissue injuries accounted for the highest percentage (77.45 %) of injuries during the tournament that was carried out in Kenya and there was need to do one in Uganda.

A study by Laoruengthana *et al.* (2009) on 14,429 athletes and staff participating in the "Phitsanulok" where games showed a total of 496 injuries during the competition, of which 300 male and 196 female athletes sustained injuries, resulting in an incidence rate of 4.1 injuries per 100 registered athletes. For all sports, 71, 50 and 38 injuries occurred during Rugby, Handball and Basketball, respectively, which accounted for 32% of all injuries. No injury was reported from many non-contact sports, such as table tennis, shooting, dancing, and golf. The most common diagnoses were sprains and strains. About half of injuries were caused by contact with another athlete and the risk of incurring an injury was highest in rugby football. About half of injuries affected lower extremities, while 135, 53, and 49 injuries involved upper extremity, head & neck, and axial body parts, respectively. The knee and ankle were the most common sites of injury. This study

was carried out concentrating on injuries on many sports while the researcher looked at the study about the rugby injuries in females only.

In addition, a study in Belgium about the management of injuries among athletes found that about 1.2% of the sports injuries in Rugby were treated appropriately by their doctors while the rest were either mishandled or not treated at all (Luxbacher, 2005). In Uganda especially among the female rugby players, no written record of injuries incurred by athletes is readily available for reference that is why the researcher decided to carry out this research.

2.9 Summary.

All literature reviewed pointed to the fact that rugby players just like other players in sports are susceptible to injuries. Literature also agrees that there is need to document injury occurrence among athletes of any sport so as to help curb the situation for proper progression of performance. All the available literature points to the fact that injury occurrence among rugby players can be minimized if appropriate measures are put in place. It was further noted from the available research literature that most of the studies have been done in developed countries and among those carried out in African countries especially in Uganda, where no study has been done among the female rugby players. It is therefore against this background that the researcher set out to analyze common injuries incurred by rugby female players in training and competition to fill the gap in Uganda.

CHAPTER THREE

METHODOLOGY

3.0 Introduction.

This chapter presents the methodology used in the research namely: research design, study area, target population, the sample size, sampling procedure, research instruments (validity and reliability), data collection procedure and data analysis.

3.1 Research design.

A descriptive survey using the case study design was adapted for the study. According to Arnold (1997) this method was best suited to provide baseline data about the target population since it was a dynamic one and rather small. There was a difficulty in assembling and accessing the same players over a long period of time; that is why the study had to be carried out within one season. The study used both qualitative and quantitative methods and techniques.

3.2 Study area.

This study was carried out at Kyadondo rugby ground in Nakawa Division, Kampala District. This is the home ground for the two selected teams for the study. Kyadondo Rugby ground is an open ground, with a grass surface and wooden fence.

3.3 Target population.

This research targeted female rugby players in Kampala District. These comprised three teams namely Thunder Birds, Black Panthers and Rangers which play from Kyadondo rugby club grounds and Kampala rugby grounds. that totalled to 25. Target population included; 3 team coaches / trainers, 1 team doctor and 1 administrator that totalled to 5. These were included in the study because they were responsible for the well being of the players. This study population was selected because they are directly involved in activities of the two rugby teams.

3.4 The sample size.

The researcher used a sample of 30 respondents who were selected from the players, coaches / trainers, a doctor and a manager. The sample was composed of twenty five (25) players, three (3) coaches / trainers, one (1) team manager and one (1) team doctor. The sample size was rather small because there are only three female rugby teams in Kampala and one of the clubs was used for pilot testing.

3.5 Sampling technique.

Purposive sampling was used in the selection of the teams and players. This was because this technique guides the researcher to use only the class of the target population needed because they have the information the researcher needs for the research Junge et al. (2004). Only female players and their respective officials were used in getting

information. The lists of names and their roles were got from the rugby offices in Kyadondo Club in Nakawa. Out of the three teams, two teams were used in the main study because the third team was involved in the pilot study and could not be used a second time. All the female players of the two teams, who totalled to 25, all the 3 coaches and 1 manager who works for the female teams were used in the study. In addition, the team doctor who helped in treating the players when they got injury was included.

3.6 Instrumentation.

An observation checklist, questionnaires and an interview guide were used for collecting data. These instruments were selected because they are easy to administer and get data (Amin 2005). All these instruments were piloted before being used in the study.

3.6.1 Observation checklist.

Observation checklist (Appendix F) was used for gathering data from players during play. This instrument was designed by the researcher under the guidance of the supervisors and with help from other technical staff in Sport Science department following the already set objectives of the study. It was used to get information on the nature, site, time of injury, type of injury, cause of injury and the degree, phase and management of injury. It was first piloted before being used in the real study.

3.6.2 Questionnaires.

Self-administered questionnaires (Appendices A, B and C) were used to collect data from players, coaches / trainers and team doctor respectively. These questionnaires were designed to capture the bio-data of the participants, causes and types of injuries. Both open and closed ended items were used for easy and precise response (Kamien, 2009). This instrument was designed by the researcher under the guidance of the supervisors with help from other technical staff in Sport Science department following the already set objectives of the study.

3.6.3 Interview guide.

The interview guides (Appendices D and E) were used for team manager, coaches / trainers and players. The interview guides were used to triangulate the information obtained using other tools. This instrument was designed by the researcher under the guidance of the supervisors with help from other technical staff in Sport Science department following the already set objectives of the study. The interview guide captured responses on the nature, causes and types of injuries.

3.7 Pilot testing.

Pilot testing was done using the Black Panthers team who train from Kampala grounds and the data gathered was not included in the main study. Piloting was done to test the

research tools. It was also used to familiarize the research assistants with the data collection procedure in regard to handling instruments and recording data.

3.8 Validity and reliability of the instruments.

The self-administered questionnaires, the interview guides and the observation checklist were piloted using the third rugby team not selected into the sample. This was intended to establish whether the instruments had been well designed to tap the desired information.

3.8.1 Validity.

Both internal and external approaches of validity were employed. Content validity was used for interview guides. Content validity intends to establish whether the test measures what it is supposed to measure (Amin, 2005). The interview guide, observation checklist and questionnaires were given to 3 members in Sport Science department, Kyambogo University who were used as inter judges to vet the content. The validity of the items was established by computing the content validity index (CVI) which had the value of 0.7.

3.8.2 Reliability.

The reliability of the instruments was done to check the internal consistency of the tools. This was done by split-half method where the researcher piloted the instruments only

once to all the players and the scores were divided into two halves in order to test the correlation of the responses. A correlation coefficient value of more than 0.7 is significant, for the statistical significant values (Amin, 2005). The correlation coefficient of 0.95 was obtained which was high enough to pass the internal consistence of the tools.

3.9 Data collection procedure.

A letter (Appendix I) was got from the Department of Sport Science, Kyambogo University to the coaches, team manager medical personnel and players, to introduce the researcher and seek permission from the relevant authorities. The respondents were specifically requested to complete an informed consent form (Appendix J). This letter also helped the researcher not to be doubted by the respondents in the field during the research process. After consent of the respondents, the questionnaires were distributed to the coaches / trainers, team manager, sports doctor and the players and later collected after the respective persons had completed filling them. The respondents were given a period of 4-6 weeks to fill in the questionnaires. The interview was administered at the convenience of the respondents after scheduling while the observation checklists were filled in by the researcher and the assistants during the15 games observed.

3.10 Data analysis.

Data was analyzed quantitatively. This analysis was done using a statistical package for social scientists (SPSS), Chicago version 16. The data was analysed using, Chi-square and Pearson's correlation after sorting and coding. Cross tabulations and, probability values were also generated. The resultant chi-square value and correlation values were

compared with alpha (α) 0.05 (the level of significance) to determine significant variables in relation to the hypotheses postulated. Results generated also included means, modes, medians, frequencies and percentages presented in frequency tables and cross-tabulations. The responses from the coaches / trainers, team manager and a team doctor were incorporated into the players' results before the analysis was carried out. All the data gathered from the questionnaires, interviews and observations were merged and handled together during the analysis.

3.11 Ethical Consideration

The researcher was at the center of the research process to ensure factual information and truth in this case, the researcher ensured;

Confidentiality of agreed position between respondents. This was done in the way that questionnaires and interview guides were administered to individuals. This gave the officials and player's confidence that their information was kept secret.

Work is open to academic criticism. This research was academic purposed whereby it is open for academicians criticism for quality work and reference for further readers especially someone researching a similar topic.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.0 Introduction.

The findings of the study are presented, interpreted and discussed in this chapter. A total of thirty (30) respondents consisting of twenty five (25) players, three (3) coaches / trainers, one (1) team manager and one (1) team doctor were interviewed as well as responding to the questionnaires. 53 observations were made about injures during the fifteen games. The results are presented as follows.

4.1 Demographic information of the respondents

This section describes the demographic characteristics of the respondents who took part in the study.

4.1.1 Ages of the respondents

The ages of the respondents, both officials and players were compiled and the results are as shown below.

Table 4.1 Age of the respondents (N=30).

Age Range (years)	Frequency	Respondents	Percentage
<20	4	Players	13.3
20–30	21	Players	70.0
>30	5	Officials	16.7
Total	**30**		**100**

The results in table 4.1 show that, four (13.3%) of the respondents were below 20 years. Twenty one (70.0%) of the respondents, who were the majority, were between 20 and 30 years and at club level. This could have been brought about by the fact that levels of fitness peak at the age of 20-30 years of an individual's life (Williams, 1975). Five participants or 16.7 % of the total sample were above 30 years. Rugby is a body contact and collision sport which needs a lot of strength and endurance thus calls for younger people. This is in agreement with Cantu (1981) who believes that rugby is an intense physical game by nature and requires a variety of physical fitness.

4.1.2 Experience of the Respondents

The experience of the respondents in terms of years was recorded as reflected below.

Table 4.2 Experience of the Respondents (N=30).

Experience Range (years)	PLAYERS		OFFICIALS		TOTAL	
	F	%	f	%	f	%
<3	12	40	00	0	12	40
3-6	13	43.3	03	10	16	53.3
>6	0	0	02	6.7	02	6.7
Total	**25**	**83.3**	**05**	**16.7**	**30**	**100**

The findings in Table 4.2 indicate that 40% of the respondents who were players had experience of less than three years and no officials (0.0%) had an experience of less than

3 years. The respondents who had experience between 3-6 years were the majority and comprised players at 43.3% and officials at 10%. This was followed by the respondents who had experience of more than 6 years who were officials at 6.7%. No player, (0%), had an experience of more than 6 years. This can be attributed to the fact that female rugby is a new game in Uganda. Uganda Rugby Nation Association (URNA) was formed in 1959 to develop the game of rugby in Uganda for both males and females though female Rugby was introduced 1995 (Magwanzu, 2010). There is a likelihood that the older female players either transferred their services into management and officiating or retire into private business.

4.1.3 Players' frequency of training

The players were asked to indicate the number of times they go for training in a week. Information obtained from the administered questionnaires is presented in the table that follows.

Table 4.3 Frequency of weekly training by the players(N=25)

Frequency of training	Frequency	Percentage
Once	0	0
Twice	12	48
Three times	10	40
More than three times	3	12
Total	**25**	**100**

Findings in Table 4.3 indicate that 12 (48 %) respondents trained only twice a week, 10 (40 %) of the respondents trained three times a week and only 3 (12 %) of the respondents trained more than three times a week. The variation could have been caused by the fact that some players were so preoccupied with other duties for survival that they could not afford to attend training for the mandatory three times. The other category of three players who trained more than three times put in extra time outside training sessions. For training to be effective, the athletes should train at list three times in a week Kiganjo (2003).

4.1.4 Frequency of weekly training by the officials (N=5)

The coaches / trainers, team manager and the team doctor stated that they trained their players three times a week and that was on Monday, Wednesday and Friday. These days were mandatory for training scheduled by the Kyadondo club management. The table 4.1.4 shows the weekly training by the officials.

Table 4.4 Frequency of weekly training by the officials (N=5)

Frequency of training	Frequency	Percentage
Once	0	0
Twice	0	0
Three times	05	100
More than three times	0	0
Total	**05**	**100**

The percentage of 100% of the officials trained their players three times a week. This was to improve on their fitness, skills and strategies for playing the game. This is in agreement with American College of Sports Medicine (ACSM) (1998) which recommended that officials should train their players 3 times a week.

4.2 Injuries incurred by female players during rugby playing in selected teams in Kyadondo club

Players encounter injuries during their participations in rugby game, below are injuries that the players encountered in play.

4.2.1 Injuries players encountered while participating in rugby

The twenty five (25) players were asked about the injuries they had incurred during their time in rugby playing and their responses are as shown in Table 4.5.

Table 4.5 Injuries the players encountered while participating in rugby as perceived by players (N=25).

Injury	Frequency	Percentage
Bruise	25	100
Sprain	23	92
Heat injury	22	88
Other injury(ies)	19	76
Dislocation	17	68
Strain	15	60
Muscle pull	14	56

Findings in Table 4.5 show that all players 25 (100%) had sustained bruises and 23(92 %) had ever sustained sprains, 22 (88%) sustained heat injuries while 17 (68 %), 15 (60 %) and 14 (56 %) had ever sustained dislocations, strains and muscle pulls respectively. Some players, 19 (76 %) reported to have sustained different injuries that included cuts, concussions, splits, and fractures. It was observed that the majority of players sustained bruises at the knee and cuts around the noses.

These findings are in line with Tropp (1984) who noted that an ankle sprain is one of the most common sports injuries especially in females and instability is a predisposing factor in the rugby game. Additionally, the findings are in agreement with Williams (1975) who noted that others injuries in contact sports include sprains (pulled muscle), contusions,

fractures of the wrist, strains, overuse injuries and many others. According to a study carried out among the players in the English League, Hawkins and Fuller (1999) found out that strains (41%), sprains (20%), and contusions (20%) represented the major m types of injury and this is in agreement with this study.

4.3 Factors that led to injuries incurred by the female players during playing among selected teams in Kampala District

When the players were asked about what had caused the injuries they had ever sustained, their responses were as shown in Table 4.7

Table 4.6 Causes of injuries in rugby game (N=25)

Cause of injury	F	%	Remark on causes
Collision with other athletes	23	92	Intentional, accidental
Weather	19	76	Slippery, wet ground
Equipment	17	68	Damaged shoes, poor balls
Clothing	16	64	Inappropriate, old, poor material
Instructions	14	56	Unclear, confusing instructions
Skill	13	52	Poor skill
Facility	12	48	Poor, rough surface
Lack of adequate warm up	11	44	Rush to play, late coming
Other causes	8	32	Sharp objects: pins, bottle tops, fitness, etc
Health of athlete	7	28	Sickness, stress, pressure, old injuries

Findings in Table 4.6 indicate that the main cause of injuries in rugby as reported by the players and observed by the researcher during the time of training and competitions was players colliding with each other 23 (92 %). The collision was either intentional or accidental. This is in line with Cantu (1981), who stated that the rules of rugby allow pushing and pulling which makes players prone to collision hence injuries. In addition, the researcher observed that 70% of players did not play in a fair way during tackling leading to intentional and accidental collisions, hence more injuries.

Kyadondo rugby ground is an open ground, it has no roof. The ground is exposed to rain making it wet and slippery ground to which 19 (76 %) of the players admitted caused injuries. Weather is a cause of injuries because it makes the ground wet and slippery. This is in agreement with Budget (2005) and Mclntosh *et al.* (1981) who noted that poor and rough play surface, slippery and wet grounds, sharp objects such as pins, bottle tops and sticks were the major causes of injuries to athletes in sports.

Sixty eight percent (17) of the respondents revealed that equipment was one of the factors that caused injuries during rugby playing. The equipment included damaged shoes and poor balls. According to Franks (1987), the inadequate protection by the footwear and the playing ground is a major contributor to the variety of leg and low back problems, adding that improperly maintained equipment and facilities contribute to the higher overall injury risks. Sixty four percent (16) of the respondents noted that clothing which were inappropriate, old and poor quality materials were one of the factors causing injuries. It

was observed that some of the players had damaged shoes which were not fitting properly. The materials for some of the jerseys could not absorb sweat or allow proper aeration. This is in agreement with Franks (1987) that inappropriate, poor and old clothing with inadequate protection of the playing ground and of the footwear is a major contributor to the variety of leg and low back problems.

Unclear and confusing instructions from the coach to the players, during training and competition, caused injuries as was shown by 56% (14) of the respondents. Players get confused when instructed wrongly on what to do. This is in agreement with Budget (2005) and Meir (1993) who noted that a number of causes leading to acute injuries were; wet ground, lack of protective gear, inappropriate skill training and instructions, inappropriate warm-up and collisions.

Fifty two percent (13) of the respondents agreed that poor skills were a factor that led to injury. If a player cannot execute the skill correctly, it would possibly lead to injury. This is in agreement with McIntosh et al. (1981) who noted that wrong technique execution among others, was some of the causes of injuries. This too is in line with findings by Addley and Farren (1988) who documented the injuries sustained during one season by players at an Ulster Senior Rugby Club in Ireland, in the study eighty-four players were injured in total and the tackle accounted for approximately one-third of all injuries. In another study carried out by Onywera, *et al.* (2004) about injury surveillance in a soccer

tournament in Kenya, most injuries (49%) were caused by an opponent as a result of tackling or fouling (27.5%).

Injuries were also caused by the nature of facility the players used during training and competitions because 48% (12) of the respondents reported that poor (unkempt) and rough surface caused them injuries. This is in agreement with Ekstrand and Gillquist (1983) who noted that among one hundred eighty players in a male soccer division assessment was made of etiologic factors in soccer injuries that indicated that 71% of the injuries proved to be explicable by and associated with poor facilities, equipment, playing ground, or player factors such as joint instability, muscle tightness, inadequate rehabilitation, or lack of training.

Inadequate warm up was cited as one of the factors that cause injuries to female rugby players, this was shown by 44% (11) of the respondents said that they do not warm up because they are either rushing to play or have come in late. Yet a warm up prepares the body physically, physiologically and psychologically for physical activity (Williams (1975). Therefore, lack of adequate warm up can lead to injuries. The findings are in agreement with Budget (2005) and Meir (1993) who noted that a number of causes leading to acute injuries include; inappropriate warm up and collisions. Watson (1995) and Sanderson (1977) added that lack of flexibility that is caused by lack of warm up is a major cause of injuries such as muscle strains, muscle sprains ,tendonitis to mention but a

few. In addition, Watson (1995) and Sanderson (1977) indicated that injuries due to lack of flexibility are a particular problem in older athletes and less in younger athletes due to their easy flexibility attained in a warm up. This is not in line with the study because most of the players were young between age (20 years and 30 years)

It was observed that other causes of injuries included sharp objects, pins, bottle tops, and levels of fitness to mention but a few. Thirty two percent (8) of the respondents claim that there were other causes of injuries other than the ones stated above and these included coming from work tired and low levels of fitness. If a player is not physically fit then she is susceptible to injuries. This is in agreement with Watson (1995) and Sanderson (1977) who noted that lack of flexibility is a major cause of injuries such as sprains and strains. Azubuike et al. (2009) noted that other factors such as previous injuries, experience, and role tend to influence injury occurrence. However, Laoruengthan et al. (2009) noted that the incidence of injury differs depending on many factors such as level of competition, type of sport and standard of surveillance systems, potential risk of injury occurring predominately in full contact sport than in limited contact sport. Since rugby is a full contact sport, the risk of injuries is high.

It was observed that the health of athletes, 28% (7) was also a cause of injuries. Sickness like malaria, stress, pressure from other factors like from work place, home matters and old injuries were noted as the most common ailment on the health of the athletes. These

findings are in line with Gibbs (1994) who pointed out that a variety of psychological factors may as well predispose an athlete to injury. Personality, anxiety, loss of control and self esteem are determining factors to the injury incurred by an athlete. Stress was found to be one of the factors affecting the health of the player. Players who are not aggressive were more likely to be injured thus suffer more severe injuries. This is in agreement with Gibbs (1994) and Gordon (1994) who claim that the majority of gymnastics athletes reported lack of concentration and thinking about other things as the major cause of injury. This lack of attention or concentration may be explained in terms of psychological information processing system used by the athletes.

4.4 Treatment given to injured athletes

Observations were made by the researcher and research assistants as treatment was being administered to the injured players and the findings are indicated in table 4.7

Table 4.7 The treatment for injuries given to injured players (N = 30)

Type of treatment	Frequency of the Treatment	Percentage
Pain killers	14	46.7
Disinfectants	8	26.7
Bandaging	4	13.3
Muscle massage by hand	3	10
Rinsing the mouth with water	1	3.3
Total	**30**	**100**

Pain killers (tablets and spray) were the most administered treatment for 46.7% (14) of injuries. Pain killers were given to stop the pain. Pain is the common symptom of any injury. This is in agreement with Watson (1995) who noted that pain killers are good for players who have just got injured. Disinfectants were used by 26.7% (8) to clean injuries like bruises and cuts. These were all washed with a disinfectant to prevent bacterial infection from entering the injured part. This is in agreement with Watson (1985) who noted that fresh wounds should be cleaned with disinfectant. Bandaging was administered as treatment for 13.3% (4) of acute injuries especially on the deep cuts and bruises. Ten percent (3) of the acute injuries were treated using muscle massage by hand. Rinsing the mouth with water was used as treatment for 3.3% (1) for mouth injuries.

Findings from the study in Table 4.7 indicated that apart from first aid that included use of pain killers, bandaging, disinfectants, rinsing the mouth with water. However, according to the Team Doctor the players with serious complications were taken to the hospital for further treatment. Millions (1991) and Mellor (1994) stated that it is much safer to treat an injury when it is fresh rather than when it has had time to get worse. The team doctor used to provide pain killers as a form of treating acute injuries such as sprains and strains. However, the players with mild and moderate injuries such as headache, bruises, and cuts were not given time to rest because they were injured but rather continued to train or compete. Luxbacher (2005), in a study in Belgium about the management of injuries among athletes, found out that about 1.2% of the sports injuries in Rugby were treated appropriately by their doctors while the rest were either

mishandled or not treated at all. This is in agreement with the research finding of this study, where some injuries were treated appropriately and others were not treated.

According to Armstrong (2002) the procedure for administering first aid which is the most recommended for acute injuries is summarized under the acronym RICE (R – Rest the injured part; I – Apply ice on injured part; C – Compress the injury; E – Elevate the injured part). This is not in agreement with the research findings, which revealed that the players are given pain killers. The research findings got from players interviewed and through observations revealed that some acute injuries under others 19 (76%) in table 4.6 were not treated and these injuries included: groin swellings, heat injuries and upper thigh injuries. Some of the reasons for the failure to treat these injuries are pointed out here:

(i) Some of the players 3 (12%) were shy to reveal injuries such as groin swellings, and upper thigh injuries to the male team doctor.

(ii) Some players 2(8%) had conflicts with their team doctor so they could not present injuries sustained to him.

4.4.1 Period when players sustain most injuries.

Players were asked to state when they incurred injuries mostly and their responses were as indicated in Table 4.8

Table 4.8 Period when players sustain most injuries (N=25)

Phase in the game	Frequency	Percentage
Beginning phase of the game	3	12
Middle phase of the game	14	56
Ending phase of the game	8	32
Total	**25**	**100**

Findings in Table 4.8 indicate that high numbers of injury occurred in the middle phase of the game as reported by 14 (56 %) of the players. Eight (32 %) of the players reported the ending phase while only 3 (12 %) reported sustaining injuries at the beginning phase of the game. It was observed that most of the injuries occurred during the middle phase of the game. This was attributed to the fatigue, decreasing levels of concentration and increasing levels of anxiety. Onywera (2004) notes that significantly more injuries occur in the later stages of the session with most injuries sustained in the second half/ phase of the matches which is in line with the findings of the research. In addition, Hawkins and Fuller (1999) in the study on the players in the English premiership found out that though there were no significant differences in injury frequency rates (IFR) between professional and youth players, whose IFR were significantly high in the last 15 minute periods at the end of each half of the competition which was partly in agreement with findings of the study.

4.4.2 Observed Injury type and degree of the injury

From the observation checklists which were completed during training and competition of the players, the following injury types and the degree of the injuries were made. Table 4.9 gives the details in a cross tabulation about injury and degree of severity.

Table 4.9: Types of Injury and degree of severity (N=12)

Injury type	Degree			Total
	1st (Mild)	2nd (Moderate)	3rd (Severe)	
Bruise	9 (45%)	8 (28.8%)	0	**17**
Cut	4 (20%)	7 (22.6%)	0	**11**
Dislocation	1	5	0	**6**
Contusion	0	1	1	**2**
Fracture	0	0	1	**1**
Headache	1	0	0	**1**
Laceration	0	1	0	**1**
Muscle cramp	1	1	0	**2**
Muscle pull	3	2	0	**5**
Sprain	0	4	0	**4**
Stitch	1	0	0	**1**
Strain	0	2	0	**2**

From Table 4.9, the finding of the study shows that most common of the injuries (58.4%) were 2nd degree by nature followed by mild injuries (37.7%) and lastly the severe ones at 3.7% of the injuries. It is observed that bruises were the most common type of injuries which occurred during play and were 1st degree (mild) (9). This is in agreement with Azubuike and Okojie (2009) who carried out a study among 196 rugby players where they found out that of the 204 injuries they observed, the moderate injuries were the highest (196) form of injuries recorded. Emphasis need to be put on moderate and severe

as the researcher found out that all fractures were severe, bruises were mild and moderate, cuts were mostly moderate and muscle pulls were reported to be mild.

4.5 The relationships between causes and types of injuries during play

4.5.1 Observed Injury type and time of day the injury occurred

From the observation checklists which were completed during play or training of the players, the following injury types and time of the day they occurred were made in table 4.10 below that addresses hypothesis one (1) that states that there is no statistical significant relationship between the occurrence of injuries and the time of the day of occurrence.

Table 4.10: Type of injury and time of occurrence (N=25)

	Time				
Injury	Evening	Afternoon	Mid-morning	Morning	**Total**
Bruise	8	4	4	1	**17(32.1%)**
Cut	4	3	3	1	**11(20.8%)**
Dislocation	2	2	2	0	**6(11.3%)**
Contusion	1	1	0	0	**2(3.8%)**
Fracture	1	0	0	0	**1(1.9%)**
Headache	0	0	0	1	**1(1.9%)**
Laceration	0	0	1	0	**1(1.9%)**
Muscle cramp	2	0	0	0	**2(3.8%)**
Muscle pull	2	1	1	1	**5(9%)**
Sprain	3	0	1	0	**4(7.5%)**
Stitch	0	1	0	0	**1(1.9%)**
Strain	1	0	0	1	**2(3.8%)**
Total	**24 (45%)**	**12 (22.6%)**	**12 (22.6%)**	**5 (9.4%)**	**53 (100%)**

Table 4.10 shows that most injuries that occurred are: bruises 32.1% (17), cuts20.8% (11), dislocations 11.3% (6), and muscle pull 9% (5). These injuries mostly happened in the evening hours 24 (45%). The players responded in the interview that most of the players were tired, wanted to go home and the other injury occurrence during afternoons was 12 (22.6%), mid- morning hours was 12 (22.6%) and morning was 5 (9.4%). The bruises and cuts usually occurred in the evening hours, dislocations happened during afternoon, evening, and mid-morning hours. Sprains as well as muscle cramps and muscle pulls happened in the evening hours. Lacerations were incurred during the mid-morning. The finding show that most of the injuries occurred during the evening and this is in agreement with Gordon (1991) who noted that the majority of the injuries are caused by lack of concentration and thinking about other things which occurs mainly in the evening.

As observed, most of the bruises and cuts were sustained when the players fell down after being tackled or tripped while running. Acute injuries that were noted from observation checklists and interview guides included sprains, strains, fractures, contusions, dislocations, bruises, and shin sprints. Information from the team doctor indicated that most of these injuries were attributed to players' encounter with either the other player or other foreign bodies on pitch. Due to inadequate information about these injuries, the team doctor could not readily identify the actual cause because the officials only looked at the injury and referred the players with complications to hospital.

4.5.2 The relationship between injury occurrence and the time of occurrence of injuries.

During play in any invasion game, injuries can occur any time. This is because players are scrabbling for the ball and trying to run and score so as to win the game. The table below shows the results of the chi-square test carried out on the type of injury and the time of the day it occurs. The information on table 4.12 addresses hypothesis one of the study.

Table 4.11 The chi- square test of type of injury and time as determined by the time of occurrence

Injury	Evening - Afternoon			Mid-morning - Morning			TT	TT of chi-square
	Observed	Expected	Chi-square	Observed	Expected	Chi-square		
Bruise	12	12	0	5	5	0	17	0
Cut	7	7	0	4	4	0	11	0
Dislocation	4	4	0	2	2	0	6	0
Contusion	2	1	1	0	1	1	2	2
Fracture	1	0	1	0	0.3	0.3	1	1.3
Headache	0	0	0	1	0.3	2	1	2
Laceration	0	1	1	1	0.3	2	1	3
Muscle cramp	2	1	1	0	1	1	2	2
Muscle pull	3	3	0	2	2	0	5	0
Sprain	3	3	0	1	1.2	0	4	0
Stitch	1	0	1	0	0	0.3	1	1.3
Strain	1	1	0	1	1	0	2	0
TOTAL	36	33	5	17	18.3	6.6	53	**11.6**

The results in the Table 4.11 show that the relationship between injury occurrence and the time of the day when injury occurred is not significant. This is backed by the calculated value which was 11.6 which was less than the tabular value of 19.68 at 0.05 of alpha value (Kothari, 1992). Therefore, the hypothesis stating that there is no statistical significant relationship between the occurrence of injuries and the time of the day of occurrence was accepted. Further, the data was subjected to Pearson Correlation to check whether the results in table below would give the same information with the ones above in table 4.11

Table 4.12: Relationship between injury occurrence and time of occurrence of injury using the Pearson Correlation

	N	Correlation	Sig.
Injury and Time of occurrence	53	.910	.061

The results in Table 4.12 indicate a high correlation coefficient of ($r = 0.910$). Despite the high correlation, there is no significant correlation ($p = 0.061$) between injury occurrence and the time of the day. This agrees on the test results of Chi-Square table 4.12 that there was no significant relationship between the injury occurrence and the time of the day, the hypothesis was accepted. This implies that at different times different injuries can occur, so there is no specific time for a specific injury to occur. Similarly, Stanford (2007) notes that though less trained athletes are more prone to heat injuries during hot conditions, the time of the day may not be a direct determinant of heat injury occurrence and of course

the temperature. This means that either the injuries are caused by the low level of fitness / training or the temperature at the time of the activity other than the time of the day according to observed results. Nevertheless, the findings of Azubuike and Okojie (2009) do not agree with those of this study; they noted that apart from weather condition as a factor to cause injury, there was significant correlation between time of the day and the injury occurrence.

4.5.2.1 Observed Injury type and phase of play within which the injury occurred

From the observation checklists which were completed during training or competitions of the players, the following injury types and the phase/ quarters of play within which the injury occurred were noted as shown in table 4.13 below.

Table 4.13: Cross tabulation showing injury type and phase/ quarters of the play (N=25)

Injury type	Phase									
	1st		2nd		3rd		4th		Total	
	f	%	F	%	F	%	F	%	f	%
Bruise	4	23.5	7	58.3	3	30	3	21.4	**17**	**32**
Cut	4	23.5	3	25	1	10	3	21.4	**11**	**20.7**
Dislocation	1	5.8	1	8.3	3	30	1	0.7	**6**	**11.3**
Contusion	1	5.8	0	0.0	1	10	0	0.0	**2**	**3.7**
Fracture	1	5.8	0	0.0	0	0.0	0	0.0	**1**	**1.8**
Headache	1	5.8	0	0.0	0	0.0	0	0.0	**1**	**1.8**
Laceration	1	5.8	0	0.0	0	0.0	0	0.0	**1**	**1.8**
Muscle cramp	0	0.0	0	0.0	0	0.0	2	14.2	**2**	**3.7**
Muscle pull	2	11.7	0	0.0	1	10	2	14.2	**5**	**9.4**
Sprain	0	0.0	1	8.3	0	0.0	3	21.4	**4**	**7.5**
Stitch	1	5.8	0	0.0	0	0.0	0	0.0	**1**	**1.8**
Strain	1	5.8	0	0.0	1	10	0	0.0	**2**	**3.7**
Total	**17**	**32**	**12**	**22.6**	**10**	**18.8**	**14**	**26.4**	**53**	**100**

Findings in Table 4.13 indicate that most injuries occurred during the 1st (32%), 4th (26.4%) and 2nd (22.6%) phase/quarter of play. The 3rd (18.8%) phase/quarter had the least injuries. This finding is contrary to Kigajo (2003) who noted that injury frequency was higher in the later phases of the game.

Most bruises happened during the second phase (58.3%) of the game as compared to 1st phase of the game (23.5%). The research also found out that most cuts happened during 1st phase (23.5%) as compared to 2nd (25%) and 4th phases (21.4%). The researcher observed dislocations that happened during the 3rd phase (30%) of the game. Contusion was cited in the 1st (5.8%) and 3rd (10%) phase of the game. Muscle cramps happened

during 4th (14.2%) phase and most sprains (14.2%) happened during 4th phase of the game. These findings are in agreement with Onywera (2004) who noted that bruises and cut are the most common injuries during the first phase of play. On contrary Marwan et al. (2011) noted that any type of injury can occur at any phase of play. This addresses hypothesis two (2) which states that, there is no statistical significant relationship between the occurrence of injury and the phase / round of play.

4.5.3 Relationship between injury occurrence and the phase of play.

Phases of play mark the first, second, third and fourth quarters in games such as rugby. Injuries may occur during the play in those different phases of play depending on several factors. Data from observations made during play about injury occurrence and phase of play within which injury occurred was subjected to Pearson Correlation and the results are as shown below.

Table 4.14 Relationship between injury occurrence and phase within which the injury occurred using the Person Correlation.

	N	Correlation	Sig.
Injury and phase of play	53	.880	.053

The results indicate that though there is a substantial correlation coefficient (r = 0.88), but there is no statistically significant relationship (p = 0.053) between the phase of play and injury occurrence. Therefore there was no significant relationship between the occurrence

of injuries and the phase of play. Hence the hypothesis that there is no statistical significant relationship between occurrence of injuries and phase of play was accepted.

On the contrary, Hodgson (1998) found a progressively increasing incidence of injury with the phases of play among the professional rugby union teams. This is also reflected in the findings of Kiganjo, (2003) that injury frequency was higher in the later phases of the game which was not the case with findings in this study. Watkins (1983) too observed that, as the game progresses, players become less efficient in their execution of skills hence creating a risk of injury to themselves or the opponents, According to Garrick and Webb (1990), with fatigue, women become more aggressive and violent hence injury rates may be higher among women players, thus the injury prevalence was high and yet with the study injuries were more in phase one. However, findings of this study indicated that the highest number of injuries occurred during the first phase of the game. The study also does not agree with Garrick and Webb (1990) since injury distribution was generally average throughout all the phases of the game with the first phase taking the highest.

4.5.4 Injury type and site of the body affected from observations

From the observation checklists which were completed during training or competitions of the players, the following injury types and sites that were affected were registered. Table 4.15 gives the details in a cross tabulation.

Table 4.15: Cross tabulation showing type of injury and the part that it affected (N= 25)

Injury Type	Site																				
	Abdomen	Ankle	Back	Chest	Eye	Face	Finger	Hand	Ham strings	Head	Jaw	Knee	Leg	Neck	Nose	Quadriceps	Shoulder	Thumb	Wrist	**Total**	**Percentage**
Bruise	0	0	0	1	2	1	0	1	0	2	1	4	2	1	0	0	2	0	0	**17**	**32.1**
Cut	0	0	1	0	3	0	0	0	0	0	0	2	0	1	4	0	0	0	0	**11**	**20.8**
Dislocation	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	1	**6**	**11.3**
Contusion	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	**2**	**3.8**
Fracture	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**1**	**1.9**
Headache	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**	**1.9**
Laceration	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**	**1.9**
Muscle cramp	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	**2**	**3.8**
Muscle pull	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	2	0	0	0	**5**	**9.5**
Sprain	0	2	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	**4**	**7.6**
Stitch	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1.9**
Strain	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	**2**	**3.8**
Total	**1**	**3**	**2**	**1**	**5**	**1**	**3**	**1**	**4**	**6**	**1**	**7**	**6**	**2**	**4**	**2**	**2**	**1**	**1**	**53**	**100**
%	**1.9**	**5.7**	**3.8**	**1.9**	**9.4**	**1.9**	**5.7**	**1.9**	**7.6**	**11.3**	**1.9**	**13.2**	**11.3**	**3.8**	**7.6**	**3.8**	**3.8**	**1.9**	**1.9**	**100**	

Table above shows that most of the injuries were mostly bruises 17 (32.1 %) which were mostly around the knees, cuts 11 (20.8%) mostly around the nose, dislocations 6 (11.3 %)

mostly around the fingers and muscle pulls 5 (9.5 %) around the hamstrings and quadriceps. The research noted that most injuries happened at the knee site 7 (13.2 %), head 6 (11.6 %), leg 6 (11.3 %), eyes 5 (9.4 %), hamstrings 4 (7.6 %) and nose 4 (7.4 %). The researcher also found out that most cuts happened on the nose 4 (7.6%) and around the eye 3 (3.9%). Most of the bruises occurred on the knee 4 (7.6%), dislocations were sited mostly on the fingers 3 (3.9%) and muscle pulls happened mostly around the hamstrings.

It was found out that most injuries occurred on the legs, knees and around the head. This is possibly because rugby involves a lot of running and making scrums which requires the use of legs hence leading making them prone to injury. The players were of the view that head and facial injuries were due to the nature of the game.

The findings in Table 4.15 are in agreement with Garrick (2003) who observed that rugby as a contact sport exposes players to head injuries, neck sprain / dislocation, facial laceration on different parts of the body especially around the eyes, nose, jaw fracture, internal abdominal injury to spleen, liver or kidney, which the players face during play of rugby.

According to Watson (1995) back injuries are common in sport and are often very troublesome, these findings, were contrary to the results since only 3.8 % (2) of the injuries observed occurred to the back. Similarly, a study by Onywera (2004) which was

carried out in Kenya in Kenyatta University among amateur rugby league found out that muscular injuries (hematomas and strains) were the most common type of injury (45.7 per 1,000, 28.5%) followed by the head and neck injuries (40.6 per 1,000) while injuries to the face were (21.3 per 1,000, 13.3) were abdomen and thorax were (21.3 per 1,000, 13.3%) and knee (17.8 per 1,000, 11.1 %) were less common. This is contrary to the findings in this study where most of the injuries 13.2% occurred on the knee followed by 11.3% leg and the head 11.3% When Stephenson, Gissane, and Jennings (1996) investigated the incidence of injury in English professional rugby league, the most frequent type of injury were muscular injuries 34 (29 to 40) per 1000 playing hours), while the most frequently injured site was the head and neck region (38 (16 to 25) per 1000 playing hours). This is in agreement with the research findings. Among the players in the English premiership, Hawkins and Fuller (1999) found out that the major locations of injuries were the thigh (23%), ankle (17%), knee (14%), and lower leg (13%).

4.5.4.1 Relationship between injury occurrence and the site of the injury in the body.

Injuries may occur at any part / site of the body of the players once one is engaged in a rugby game. In order to establish whether there is a correlation between the injury and the site of the injury, the data was analysed using Pearson Correlation and the results are as recorded below.

Table 4.16 Pearson Correlation Results showing the relationship between injury occurrence and the site of the injury.

	N	Correlation	Sig.
Injury and site of injury	53	.950	.077

The results in Table 4.16 show a high correlation coefficient of r = 0.950. Much as the coefficient is high, the same table indicates that there is no significant relationship (p = 0.077) between the site of injury and injury occurrence. This implies that any injury would be sustained at any site. Hence, using the results in table 4.16 above, the hypothesis stating that there is no statistical significant relationship between the occurrence of injuries and the site of the body at which the injury occurred was accepted. The results in Table 4.16 are in agreement with Watson (1995) who observed that an injury can occur on any part of the player accidently or intentionally during play. Additionally, Onywera (2004) noted that injuries occur to any part of the player during play of rugby.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter summaries on the findings of this study, as well as conclusions drawn and recommendations made.

5.1 Summary

The types of injuries sustained and prevailed during this study amongst the female rugby players were identified and confirmed. These types of injuries included; sprains, strains, bruises, muscle pull, dislocation, heart injuries and others. The majority of the respondents reported that they incurred acute injuries that were handled by their team doctor who administrated appropriate first aid.

Respondents reported actions such as collisions being the most common causes of acute injuries. In addition, wet and slippery ground caused by weather, and lack of appropriate protective equipment were identified as the major causes of the other injuries incurred by the athletes during play. The protective gear lacked by the athletes includes gum guards, gloves, shoulder and hip guards for use during play

The results indicate that occurrence of injuries has a very weak or negligible relationship with the time of occurrence of injury, phase within which the injury occurred and the degree of the injury. There might, therefore, be other factors that influence injury

occurrence such as the fitness level of the athletes, their health state, over-use of their body structures, facilities and equipment among others.

The injuries that happened to be acute that athletes incurred during the study were managed and administered by their team doctor. The most untreated injuries were the upper thigh bruises with reasons that the players' team doctor was of opposite sex, some players had personal conflicts with the team doctor and the team doctor did not have the right drugs to treat their injuries. Research findings also showed that all the respondents confirmed that the team doctor was not regular on pitch.

Research showed that all the respondents confirmed that most injures could be prevented. The respondents suggested that new uniforms and protective gears could be provided to avoid acute injuries; additionally, they recommended that fair play should be exhibited by the players. Use of pain killers and RICE were the most observed type of treatment given to the injured athletes.

5.2 Conclusions

From the findings of the study, the following conclusions can be drawn.

(a) Collisions, wet grounds and lack of protective gears were the most common observed causes of injuries among the female rugby players within Kyadondo club.

(b) Bruises were the most common observed types of acute injuries among the female rugby players within Kyadondo club and the use of pain killers was the most common observed type of treatment.

(c) Though most injuries were attended to, a few were not due to the players' team doctor being of opposite sex and some players having personal conflicts with the team doctor or the team doctor not having the right drugs to treat the injuries.

(d) All respondents noted from interview guide that most injuries were preventable if the right precautions were taken into consideration.

(e) There was no significant relationship between the injury occurrence and time of occurrence of injury, phase within which the injury occurred, the degree of the injury and site of injury in the body.

5.3 Recommendations

Basing on the findings and conclusions of this study, the following recommendations are made.

5.3.1 Recommendation on Policy

Policy reviews are necessary to include issues of athletes safety at all levels of rugby participation and performance to reduce on injury occurrence rate.

5.3.2 Recommendation on practice

The following was generated on practice to the clubs, Uganda rugby medical society, rugby officials and the Uganda rugby union.

5.3.2.1 Recommendation to Clubs

a) The club members should follow up injuries till the player is fit to play again including covering costs.

b) The sports clubs should have full time medical personnel who in addition must have the knowledge of Sports Science to aid them in helping the players' welfare.

c) The clubs' administration should provide all the necessary protective gear to the athletes to minimize injuries.

d) The time of the day should be considered when games are to be played to minimize physiological negation due to the hot weather or slippery state of the pitch on rainy days.

e) Female team doctors should be employed to handle female rugby players.

5.3.2.2.1 To Uganda Rugby Medical Society

i) Give medical support to Uganda rugby medical members to support their department.

ii) Conduct first aid and injury management courses for all rugby stakeholders and safety studies courses in sport science.

iii) Set up a rugby treatment center for rugby players.

iv) Sensitize the sports administration and the players about the usefulness of injury prevention in relation to retention and performance of the players.

5.3.2.3 To the rugby officials

i) Conduct the game in a well organized manner with proper spelled out instructions to void injuries.

ii) Give moral support to the players before and after a training or competition.

iii) Conduct short courses with players about rugby injuries and safety methods.

5.3.2.4 To the Uganda rugby union

i) Set up and uphold clear safety rules and enforce severe penalties for dangerous play.

ii) Make sure all clubs have qualified medical experts who should be available on pitch whenever the team is performing.

iii) Facilitate injury awareness and first aid courses to all stakeholders including players.

iv) Carry out safety related studies like this one to improve on players' safety.

v) Provide the required standard and safety of the facilities for the players during training and competition.

For Further Research

Since this study was not exhaustive, more research in safety studies in sport science be carried out to find out about injury management and rehabilitation of injured athletes to enhance performance.

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APPENDIX A

QUESTIONNAIRE FOR PLAYERS

This study attempts to analyze injuries incurred by amateur rugby players within Kyadondo Club in Kampala District, Uganda. By completing this questionnaire you will have contributed to the better understanding of common injuries in rugby playing.

Tick where applicable

1. **(a)** How old are you?

(i) 15-20 ☐ (ii) 25-30 ☐ (iii) 30-35 ☐ (iv) 35-40 ☐

(b) How many years have you played the sport of rugby?

1yr	☐	6yrs	☐
2yrs	☐	7yrs	☐
3 yrs	☐	8yrs	☐
4yrs	☐	9yrs	☐
5yrs	☐	10yrs	☐

2. How often do you train in a week?

(i) Once ☐ (ii) Twice ☐ (iii) three times ☐ (iv) More than three times ☐

3. What injuries have you ever encountered while participating in rugby?

Injury	**Tick**
Sprain	
Strain	

Bruise	
Muscle pull	
Dislocation	
Heat injury	
Name any other injury (ies)	

4 What causes injuries in rugby game?

Cause of injury	**Yes**	**No**	**Explain how it was caused**
Facility			
Equipment			
Instructions			
Collision with athletes			
Weather			
Skill			
Lack of adequate warm up			
Health of athlete			
Clothing			
Name other causes not in above			

5. During what period did you get injured?

(i)Beginning of the game ☐ (ii) middle of the game ☐ (iii) end of the game ☐

APPENDIX B

QUESTIONNAIRE FOR COACHES

This study attempts to analyze injuries incurred by amateur rugby players within Kyadondo Club in Kampala District, Uganda. By completing this questionnaire you will have contributed to the better understanding of common injuries in rugby playing.

Age (i) 25-30 ☐ (ii) 31-40 ☐ (iii)41-50 ☐ Sex; Male ☐ Female ☐

Tick the best description of your choice

1 What is your qualification regarding rugby game?

(i) Degree ☐ (iii) Certificate ☐ (ii) Diploma ☐ (iv) Experience ☐

2 How long have you been a coach

(i)1 yr ☐ (ii)2yrs ☐ (iii)3yrs ☐ (iv)4yrs ☐ (v)5yrs ☐ (vi)More ☐

3. How often do you train your players?

(i) Once a week ☐ (ii) Twice a week ☐ (iii) Three times a week ☐
(iv) More than three times a week ☐

4. What are the most common causes of injuries identified among the players during play?

(i) Fitness ☐ ii) clothing ☐ (iii) weather ☐ (iv) equipment ☐

(v) Warm up ☐ (vi) instructions ☐ (vii) facilities ☐ (viii) instructions ☐

5. In which phase of participation do injuries often occur?

(i) Warm up ☐ (ii) game situation ☐ (iii) Skill application ☐ (iv) Cool down ☐

6. What advice would you give your players to overcome the common injuries?

APPENDIX C

QUESTIONNAIRE FOR THE TEAM DOCTOR

This study attempts to analyze injuries incurred by amateur rugby players within Kyadondo Club in Kampala District, Uganda, by completing this questionnaire you will have contributed to the better understanding of common injuries in rugby participating.

Demography

Age (i)25-30 ☐ (ii) 31-40 ☐ (iii) 41-50 ☐

Sex Male ☐ Female ☐

Tick the best description of your choice

1. What is your qualification regarding injuries

(i) Degree ☐ (ii) Diploma ☐ (iii) Certificate ☐ (iv) Experience ☐

2. How long have you worked/treated these rugby players?

1yr	☐	3 yrs	☐
2yrs	☐	4yrs	☐
5yrs	☐	6yrs	☐
7yrs	☐	8yrs	☐
9yrs	☐	10yrs	☐

3.What are the causes of these injuries among these players that you treat?

i) Fitness☐ (ii) clothing ☐ (iii) weather ☐ (iv) equipment ☐

(v) Warm up ☐(vi) instructions ☐(vii) facilities ☐ (viii) instructions ☐

Thank you very much

APPENDIX D

INTERVIEW GUIDE FOR PLAYERS

1. For how long have you exposed yourself into rugby game in terms of participation?

(i)1yr☐ (ii)2yrs☐ (iii)3yrs☐ (iv)4yrs☐ (v)5yrs☐ (vi)6yrs☐ (viii)7yrs☐
(ix) more☐

2. Which injuries commonly occur during participation?

(i) Dislocation☐ (ii) Bruises☐ (iii) Muscle pulls ☐ (iv) Fatigue ☐

(v) Sprain ☐ (vi) Strain☐ (vii) Fracture ☐ (vii) name others

3. Are there other injuries that occur to you as a player other than the above, outline them?

(i)---------- (ii)----------(iii)----------(iv)---------

(v)---------- (vi)----------(vii)----------(viii)------

4. During participation which factors cause injuries in the game?

(i)---------- (ii)----------(iii)----------(iv)----------

(v)---------- (vi)----------(vii)----------(viii)------

5. During which phase of the game do the injuries often occur?

(i) At the start☐ (ii) In skill application☐ (iii) At the end ☐

APPENDIX E

INTERVIEW GUIDE FOR COACHES

1 For how long have you been a coach?

(i)1 yr ☐ (iii) 3 yrs☐ (v) 5 yrs☐ (vii) 7 yrs☐ (ix) 9 yrs ☐

(ii)2yrs☐(iv) 4yrs☐ (vi) 6yrs☐(viii) 8yrs☐ (x)10 yrs ☐

2. Outline the causes of injuries they have encountered

(i)----------

(ii)----------

(iii)----------

(iv)----------

3. What factors lead to injuries incurred during training / competition?

4 What is the relationship between the causes and injuries during the play?

5.What do you do to players who have been injured?

(i)Give first Aid ☐ (ii) rest ☐ (iii) give pain killers ☐

(iv) continue to play ☐ (v)name others----------,----------,----------

Thank you very much

APPENDIX F

OBSERVATION CHECKLIST FOR INJURIED PLAYERS

ACTIVITY----------

DATE ----------TIME----------VENUE----------

TEAMS: HOME----------VISITING----------

ACTIVITY STAGE----------

ACTIVITY PHASE.....

No of injury	1 Nature of injury	2 Site on body	3 Time it happened	4 Type of injury	5 Cause of injury	6 Degree of injury	7 Phase of play	8 Management of injury
1								
2								
3								
4								

SUMMARY: 1ST HALF----------2ND HALF----------TOTAL-------

OBSERVED BY----------DATE----------SIGN---------

CHECKED BY----------DATE----------SIGN----------

APPENDIX G

THE TABLE SHOWING THE ITEMS USED TO COLLECT DATA IN RELATION TO THE OBJECTIVES AND THE QUESTIONNAIRES FOR BOTH THE PLAYERS AND OFFICIALS

Objectives	Instrument A Questionnaire for players	Instrument B Questionnaire for Coaches / Trainers	Instrument C Questionnaire for Team Doctor	Instrument D Interview guide for players	Instrument E Interview guide for coaches	Instrument F Observation checklist
1.To establish the common injuries incurred by female players during rugby playing	1a, b, 2, 3a and b	1, 2, 3, and 4.	1, 2, 3	1, 2 and 3	1, 2 and 4	1, 2, 3 4,
2.To examine the factors that lead to injuries incurred by the female players during rugby playing	4	5	4	4	3	5
3.To establish the relationship between injury and when they occur during play, site where they occurred and their degree	5	6	-	5	4	1

APPENDIX H

SUMMARY OF DATA ANALYSIS TESTS USED

Objectives	Research questions	Hypothesis	Independent variable	Dependent variable	Intermediate variables	Extraneous variables	Test
1. To establish the injuries incurred by female players during rugby playing.	1. What are the incurred injuries by female players during rugby playing?	1. There is no statistical significant relationship between the occurrence of injuries and the time of the day of occurrence.	Players, coaches and Medical personnel on their Knowledge, skills, Experience	Frequency of injuries, degree of injury	Facilities, equipment, attire	• Weather, • Competition • Organization, • Spectators, • Athletes fatigue, • Little resting • Period between • Competition.	Pearson correlation.
2. To identify the factors that lead to injuries incurred by the female players during playing.	2. What factors lead to Injuries Incurred During female Rugby training and Competition?	2 There is no statistical Significant relationship Between the Occurrence of injuries and the phase of play.	Knowledge, Skill.	Health, Fitness, Weight, Height, Sight.	• Training and • Practice, • Nature of the • Event, • Nutritional • Level of • Athlete, • Facilities and • Equipment, • Health of • Athlete.	• Weather, • Attire/dressing	Pearson correlation
3.To establish the relationships between causes and injuries during play	3. What is the relationship between the causes and injuries during play?	There is no statistical significant relationship between the occurrence on injuries and the site on the body at which the injury occurred.	Weather Organization of the Participation	Fatigue	Competition organization Athletes fatigue Weather	Weather	Pearson correlation and Chi-Square

APPENDIX I

INTRODUCTION LETTER

KYAMBOGO UNIVERSITY

P. o Box 1 Kyambogo
KAMPALA- UGANADA

Phone: 285001/2
DIR Line: 285272
Fax No: 256-041-220464
mail: arkyu@kyambogo.ac.ug

Department of Sport Science

22nd July, 2009

To Whom It May Concern

Dear Sir/Madam,

INTRODUCTION OF MASTER OF SCIENCE RESEARCH STUDENT

The bearer of this letter, **Atukei Harriet Proscovia,** is a Master of Science student (Reg.No. 2006/HD01/MSS) in the Department of Sport Science, Kyambogo University.

She defended and passed her research proposal entitled **"Analysis of Injuries Incurred by Amateur Female Rugby Players: a case of Selected Clubs In Kampala District, Uganda"**

The purpose of this letter is to introduce to you the student and request you to render any possible assistance to her as she proceeds with the data collection.

Your positive response to this request will be highly appreciated.

Yours faithfully,

Mr. Okou John Michael

Head of Department

APPENDIX J

DATA ANALYSIS SHEET

Injury type	Evening-Afternoon	Mid-Morning Morning	Total
1 bruises	0	0	0
2 cuts	0	0	0
3 dislocation	0	0	0
4 contusion	1	1	2
5 fracture	1	0.3	1.3
6 headache	0	2	2
7 laceration	1	2	3
8 muscle cramp	1	1	2
9 muscle pull	0	0	0
10 sprain	0	0	0
11stitch	1	0.3	1.3
12 strain	0	0	0
Total	**5**	**6.6**	**11.6**

$$\text{Chi-Square} = \frac{(\text{Observed} - \text{Expected})^2}{\text{Expected}} = \frac{(12-12)^2}{12} = \frac{(0)^2}{12} = 0$$

APPENDIX K

INFORMED CONSENT FORM

"ANALYSIS OF INJURIES INCURRED BY AMATEUR FEMALE RUGBY PLAYERS: A CASE OF SELECTED CLUBS IN KAMPALA DISTRICT, UGANDA"

Department of Sport Science

Kyambogo University

Researcher team:

Harriet Proscovia Atukei

Ass.Prof. W. F. Epeju : Department of Agriculture, Kyambogo University

Dr. Eunice Kateshumbwa : Department of Sport Science, Kyambogo University

I have agreed to participate in the study being conducted by the above listed researchers. I understand the focus of this study is analysis of common injuries incurred by amateur female rugby players in selected clubs in Kampala District, Uganda. I understand that I will have my age and experience in the club recorded. In addition I will respond to various questions from both the questionnaire and the interview guide as well as being closely examined by the researcher who will observe and record the details about the injury I may have suffered.

I understand the information provided by this study may be used for research purposes, including publications in research journals. All individual information will be coded and at no time my personal identity be revealed.

ATUKEI HARRIET PROSCOVIA ..... 28/JAN/2014.....

Participant's Name and Signature Date