CAUSE AND MANAGEMENT OF SPORT INJURY AND ITS IMPACT ON ATHLETS PERFORMANCE: THE CASE OF ETHIOPIAN YOUTH SPORS ACADEMY

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As thesis research advisor, I hereby certify that I have read and evaluated this thesis prepared under my guidance by Yeshitila Kassa Masresha entitled: Cause and Management of Sport Injury and Its Impact on Athletes' Performance: The Case of Ethiopian Youth Sports Academy /Addis Ababa and Assela Campus/. I recommend that it is submitted as fulfilling the thesis requirement.

As members of the Examining Board of the Final MSc Open Defense, we certify that we have read and evaluated the thesis prepared by Yeshitila Kassa Masresha and examined the candidate. We recommend that the thesis be accepted as fulfilling the thesis requirement for the Degree of Masters of Science in Sport Science, Athletics Coaching

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ACRONYMS AND ABREVATIONS

EYSA - Ethiopian Youth Sports Acadamy

ATDSTC- Athlete Tirunesh Dibaba Sport Training Center

E.C - Ethiopian Calendar

FDRE - Federal Democratic Republic of Ethiopia

HPTC - High Performance Training Center

IAAF - International Association of Athletics Federation

ITBFS - Illiotibial band friction syndrome

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ABSTRACT

Most athletes that participate in high level sports experience some type of injuries during their athletic careers. The multi-event nature of track and field posses a particular challenge to a coach trying to prevent and treat athletic injuries because each event presents its own unique problems. Thus the common types of athletics injury, causes, its impact on athletes' performance and treatment and prevention mechanism at the Academy and ATDSTC were discussed under this paper. The purpose of the study was to assess the Causes and Management of Sport Injuries and its impact on Athlete's performance at Ethiopian Youth Sports Academy and Athlete Tirunesh Dibaba Sport Training Center. 320 athletes and 1 physiotherapist were included as source of information for the study. Data were collected from primary and secondary sources. The method of data collection employed includes questionnaire for athletes', self-administered questionnaire, depth document analysis and observation. The data were analyzed by using simple descriptive statistics such as percentage, frequency and rank order to summarize the results of the research objectives. The findings revealed that most athletic injuries where occurred due to lack of training error, proper training equipments, training area and proper treatment. Similar to previous studies done so far the common athletics injuries were seen in the training center. Training errors, lack of proper training equipments, areas and injury management were the major causes and their impacts have seen on athlete's performance.

Key wards: Performance, Rehabilitation, Sport injury, and Treatment.

CHAPTER ONE

1. Introduction

1.1 Background of the Study

Excellence is not often met without adversity. For many Athletes, adversity can mostly in the form of injury. Sports injuries occur with alarming frequency, and large number of sports performers are treated each year by medical personnel. Although contact sports produce more injuries per participant than non-contact sports, sudden and traumatic incapacitation may occur in either type of activity (Dunn & Syrotuik, 2003).

Athletics is one of Ethiopian's most popular sporting and becomes national identity. While athletics is promoted by health professionals and has a wide variety of medically and socially related benefits, it needs to be recognized that, as with any sport, injuries can occur. Injury is an unfortunate risk that, according to most coaches, athletes, and medical practitioners, is an unavoidable part of athletics. Most athletes that participate in high level sports experience some type of injuries during their athletic careers. The multi-event nature of track and field posses a particular challenge to a coach trying to prevent and treat athletic injuries because each event presents its own unique problem; Peter JL Thompson (2009).

There are basically two types of injuries: acute injuries and overuse injuries; Herring SA, Nilson KL (1987). As Andre Panagos, (2009) stated acute injuries are usually the result of a single, traumatic event. Common examples include wrist fractures, ankle sprains, shoulder dislocations, and hamstring muscle strain. While overuse injuries are more common in sports than acute injuries, they are subtle and usually occur over time, making them challenging to diagnose and treat. They are the result of repetitive micro-trauma to the tendons, bones, and joints. Common examples include tennis elbow, swimmer's shoulder, Youth Pitching elbow, runner's knee, jumper's knee, Achilles tendinitis, and shin splints.

It is no longer a secret that athletes who are not treated properly and who participate in sports again before their injury is fully healed, put themselves at tremendous risk for recurrent injury and often career-ending injuries (Taunton et.al, 2002). Various methods of preventing sports injuries, such as use of insoles, external joint supports and multi-intervention training

programs, have been proposed (Aaltonen, et-al Parkkari, & Kujala, 2007; Parkkari, et-al, 2004; Pasanen, Parkkari, Pasanen, Hiilloskorpi, Mäkinen, Järvinen, & Kannus; 2008).

The level of treatment following an injury is usually related to the severity of the injury. However; the availability of treatment on site might be the crucial factor to determine the type and level of treatment received. A review of the literature focusing on lower extremity injuries in runners also indicated that a reduction in running distance to below 32km/week would decrease the risk of a recurring injury (Macrea, 1992). Indeed, athletes use a variety of methods and medicines to treat injuries, cure illnesses, and obtain a competitive edge. All injury treatments have potential adverse effects that may have deleterious impact on the maximum exercise performance of elite athletes. Parallel to this standardized assessment of severity, practices and treatments of sports injuries provides important information and directions for injury prevention and treatments both from the coaches and physicians point of view; Brukner & Kahn (2012).

Similarly the current conceptualization of science of training, basic principles, theories as well as specific safe methods of strength and conditioning for athletes training are common problems in most coaches and athletes that predispose athletes for an overtraining and injury. This can also have a significant negative impact on performance, health and daily life. Fortunately overtraining can be prevented by implementing a sensible training monitoring program and careful training planning. The easy-to-implement strategies and guidelines have been suggested by many recent research and real-life coaching and athletic experiences.

The Ethiopian Youth Sports Academy is established in 2013 which is found in Addis Ababa city at Bole Sub-city. Similarly, Athlete Tirunesh Dibaba Sport Training Center is found in Oromia regional state, Arsi zone, Asella town and established by former Ministry of Youth and Sports on September 2010 by recruiting athletes from all regions and city administration. The main mission of the training centers is to produce new talented athletes by providing scientific training to support Ethiopian Athletics. The Training Centers train athletes for only four years and then transfer to different clubs.

Different type of injuries happed in the training centers that need an attention by the Coaches, athletes and the concerned bodies of the training center. Injuries are also common for

beginner athletes due to a number of factors. Due to the fact that athletes' performance is highly affected by repeated occurrence of injury, athletes' development at this special age specifically affected worse with this injury related fact. Since the researcher is a part of the training center and has observed the existence of the problem, he is motivated to investigate the Causes and Management of Sport Injuries and its impact on Athlete's performance at these Sport Training Centers.

1.2. Statement of the problem

According to Andre Panagos, (2009) "Sports injuries" are injuries that happen when playing, exercising or running. Some are from accidents. Others can result from poor training practices or improper warm up. Some athletes get injured when they are not in proper condition. Not warming up or stretching enough before playing, running or exercising can also lead to injuries.

Coaches must be aware that each athletics event and training or competition situation contains an element of danger. It is important that they should have a good understanding of these inherent safety risks and wherever possible to remove or reduce these risks. Obviously, certain events place athletes at greater risk than others. Coaches have a duty to develop a safe environment for each athlete and to prevent injuries. But injuries and illness are an almost inevitable consequence of training and competition at some time, no matter how safe the environment and the coach must be able to manage them promptly and correctly. In order to promote prevention of sports-related injuries, the magnitude and type of the problem must first be identified and described. In relation to this, systematic surveillance of sports injuries and knowledge of the risk factors and the specific patterns of injury treatment are inadequate in Ethiopia. With this end, Systemic study of the training science and Athletics injuries should be expanded in order to develop appropriate preventive measures.

Many preventive measures are very much common sense but specific precautions are still important. (Peter J L Thompson, 2009). In addition, there are very few research investigating injury prevention strategies in Ethiopia and scientific training injury prevention is not translated to coaching practices.

There is still a controversy among coaches regarding to the cause and management of injuries in the training centers. This is relevant to come to possible solutions to have a maximum performance without jeopardizing the athletes' injury. Such problems definitely require scientific observations and evaluations. In most cases at in the training centers athletes are facing common injuries especially at the time of the beginning of the training year and when we are preparing them for the national competition that is organized by the Ethiopian Athletics Federation. As a result of this the researcher was interested in investigating the Causes and Management of Sport Injuries that was happening in the Training Centers and its impact on Athlete's performance.

Thus enhanced coaches' experience, quality observations and this research is necessary to overcome and explain the existing controversies in the causes and prevention strategies of injuries. Identifying the common sport injuries and their possible causes would help the training center for what measures should be taken to manage the existing problems. Since the researcher was a part of the training center these initiate him to deal with this topic. In addition the study plays a very significant role for other Athletics Clubs and Athletics training centers as well as Sport Academy on how to identifying and managing sport injuries that the athletes' are facing during engaging themselves on regular training.

1.3. Research questions

The study answered the following research questions.

What were the common sport injuries that occurred in different Athletics events in the training centers?

What were the common causes' of sport injuries in the sport Training Centers?

What were the impacts of athletic injuries on athlete's performance?

1.4. Significance of Study

This study has a valuable importance for EYSA and ATDSTC particularly; because there is sport injuries in the training centers that are frequently affect the performance of the athletes. Identifying the common sport injuries and their possible causes would help the training centers what measures should be taken to manage the existing problems. In addition the

study plays a very significant role for other Athletics Clubs and Athletics training centers as well as sport training centers on how to identify and manage injuries that the athletes' are facing during engaging themselves on regular training. Appropriate Injury prevention mechanisms will be revealed in line with the current actual problem for coaches, athletes, physicians, managers and sport ministers officials. Lastly this study would initiate other researchers to conduct further studies on similar issues.

1.5. Objective of the study

1.5.1. General Objectives

The primary purpose of this study was to investigate the causes and management of sport injuries and its impact on athletes' performance in the training centers.

1.5.2. Specific objective

The specific objectives of this study were to:

Identify the common injuries in the training center by event.

Find out the causes of athletic injuries in each event.

Assess the impacts of athletic injuries on athlete's performance.

1.6. Definition of Terms

Athlete: - Someone who has the abilities necessary for participating in physical exercise, especially in competitive games and races or a competitor in track or field events(dictionary of sport and exercise science, 2006)

Athletics - sports such as running jumping, throwing etc.

Field - an area of land used for sports such as jumping and throwing.

Performance - The level at which a player or athlete is carrying out their activity, either in relation to others or in relation to personal goals or standards(dictionary of sport and exercise science, 2006)

Track - race course, running track

1.7. Delimitations

Subjects in the present study were comprises of a convenience sample from both Ethiopian Youth Sports Academy and Athlete Tirunesh Dibaba Training Center. This study was delimited to only 2006-2009 E.C trainees who visit physiotherapy centers in both Sport Training Centers. The research was also delimited to Ethiopian Youth Sports Academy which is found in Addis Ababa at Bole Sub-city and Athlete Tirunesh Dibaba Training Center found at Asela, Central Oromiya Regional state of Ethiopia. Thus the study result might be delimited to the particular areas.

1.8 Limitation of the study

The problems encountered during undertaking this thesis was: some of the injuries causes and the management measures that could be taken by the coaches did not registered properly. Secondly, the athletes couldn't understand the questionnaire. This is due to the fact that the questionnaire consists some technical and medical terms to distinguish the kind and location of injuries. Thus a lot of time had been spent during data collection from athlete's respondents. The assistant data collectors have assisted them during filling the questionnaire. Thirdly, scarcity of published literature has been observed in the Ethiopian context.

Moreover the required time to investigate the different situation that various natures, kinds and location of sport injuries had had required much more time for observation and to critically analyze the findings. Since the nature of the research required many physicians support for data collection and interpretation as well as technologies, it costs a lot for further in-depth injury incidence analysis. Thus due to those facts the research is limited.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1. Sports Injuries

"Sports injuries" is a name applied to all types of damage occurring in the course of sporting activities (van Mechelen et al. 1992b). Injuries are variously defined. The most common definitions are based on time lost from training or competitions, or on medical treatment, defined as injuries requiring treatment by a physician. However, this may or not result in time lost from training or competitions (Brooks & Fuller 2006).

A considerable amount of literature has been published on sports injuries in general. These studies state numerous different ways that one may choose to define the term sports injury. According to Cromwell et al., (cited in Newell 2011) sports injury is sustained during training or competition and restricts an individual's involvement or time lost from play. Whereas, Brooks & Fuller (2006) states that an injury is one that prevents a player from taking part in a training or match and the injury has been there for a period greater than 24 hours.

According to Orchard J. Seward (2003) Injury is an unfortunate risk that, according to most coaches, athletes, and medical practitioners, is an unavoidable part of athletics. Most athletes that participate in high level sports experience some type of injuries during their athletic careers. The multi-event nature of track and field posses a particular challenge to a coach trying to prevent and treat athletic injuries because each event presents its own unique problems.

"Sports injuries" are injuries that happen when playing, exercising or running. Some are from accidents. Others can result from poor training practices or improper warm up. Some athletes get injured when they are not in proper condition. Not warming up or stretching enough before playing, running or exercising can also lead to injuries. (Andre Panagos, (2009)

2.1.1 Acute and overuse injuries in sport

Junge and Dvorak (2000) have defined an acute injury as an injury caused by a macrotrauma or as an injury which caused a trauma, the reason being, e.g., tackling, kicking or running. Faude et al. (2006) classified a traumatic injury as an injury which was caused by a single traumatic incident. An acute injury has also been defined as any injury or condition which did not exist prior to the date of injury occurrence (Giza et al. 2005). In many studies, an acute sports injury is defined as injury with a clear onset as a result of trauma, and which has occurred in training or competition (Arnason et al. 2004, Hägglund et al. 2009), and has caused at least one day away from training and/or competitions (Hawkins & Fuller 1999, Arnason et al. 2004, Alonso et al. 2009). An acute injury has also been described as any physical injury that keeps an athlete away from at least one training session or competition, or needs a physician's care (Söderman et al. 2001, Orchard & Seward 2002).

An overuse injury is defined as an injury which is caused by the consequences of repetitive microtraumas (Junge & Dvorak 2000). Lüthje et al. (1996) defined an overuse injury as a pain syndrome of the musculoskeletal system appearing during physical exercise without any known trauma, disease, deformity or anomalia that have given previous symptoms. An overuse injury has also been described as an injury with an insidious onset with a gradually increasing intensity of discomfort without an obvious trauma (Arnason et al. 2004). The injury causes worsening pain during or after exercise and continuation of loading causes even worse pain and may stop exercise completely (Brukner & Bennell 1997, Beck 1998). A chronic injury has also been classified as any injury with insidious progression that existed prior to the date of the injury's occurrence or an exacerbation of a previously existing condition (Giza et al. 2005).

2.1.2 Types of acute and overuse injuries

Acute injuries

Sports injuries can be classified according to injury type and tissue. Acute injuries usually occur to the muscle, ligament, or skin. Bone or joint injuries are rarer, but can also be more severe (Brukner & Khan 2006). Cramps, strains with different grades, and contusion are common acute injuries in the muscle (Brukner & Khan 2006). Cramp is a sudden muscle

contraction which is painful and may occur in any muscle, but mostly the calf. The etiology of muscle cramp is poorly understood (Maquirriain & Merello 2007). Muscle strain is most prevalent in sudden acceleration or deceleration (Pleacher & Glazer 2005). Highest grade muscle tears can be very damaging. The most common strain among athletes is hamstring strain (Croisier 2004). Contusions can result from a direct blow, especially in team sports such as soccer, football, ice hockey and basketball. The most common site of muscle contusions is the thigh (Chomiak et al. 2000).

Ligament injuries are strains of various grades from stretched fibers to a complete ligament tear with excessive joint laxity (Pleacher & Glazer 2005, Brukner & Khan 2006). Ankle and knee ligament injuries in particular are common (Arendt and Dick 1995, Baumhauer et al. 1995, Hägglund et al. 2009). Anterior cruciate ligament (ACL) injuries are among the most severe knee injuries, limiting training and competition time (Dugan 2005). Moreover, severe injuries in the knee increase the risk for degenerative joint disease (Thelin et al. 2006). Skin injuries include abrasions and lacerations (Basler et al. 2004). Acute tendon injury can be a sudden tear of the tendon, the rupture usually occurring in an older athlete with history of injury of the tendon (Brukner & Khan 2006). The most common acute tendons injuries are either partial or complete rupture of the Achilles and supraspinatus tendons (Kannus & Natri 1997). Dislocations and subluxations of joint injuries can occur after trauma. The shoulder joint has the greatest range of motion of any joint in the body and as a result is particularly susceptible to dislocation and subluxation (Good & MacGillivray 2005). Joint injuries can also result from surrounding joint capsule or ligament injuries (Brukner & Khan 2006). A bone fracture can occur from a direct blow or a fall. Soft tissue damage is often associated with fracture. Also articular cartilage defects may occur in severe joint injuries. Major nerve injuries are unusual in athletes. However, the ulnar nerve and the peroneal nerve can be injured from a direct blow (Brukner & Khan 2006). Concussion with mild traumatic brain injury can be induced by hits and blows on the head.

Overuse injuries

Overuse injuries can occur to the same tissues as acute injuries, but the pathology of these injuries is different. The most common overuse injury occurs to the tendon and is called tendinopathy (Khan et al. 1999). It is prevalent in the Achilles, patellar and rotator cuff

tendons. There is no clear understanding of the pathology of tendinopathy (Khan et al. 1999). Another common overuse injury among athletes is situated in the bursae. Bursae such as the subacromial bursa and greater trochanteric bursa can become irritated and inflamed (Adkins & Figler 2000, Pleacher & Glazer 2005). Another overuse injury prevalent among athletes is a stress fracture, which is a result of a microfracture in bone caused by repetitive physical loading (Bennell et al. 1996, Iwamoto & Takeda 2003, Snyder et al. 2006). The most common stress fractures occur to the tibia, metatarsals, fibula, tarsal navicular and femur (Iwamoto & Takeda 2003, Laker et al. 2007). Among ballet dancers, figure skaters and gymnasts repetitive bone stress in the spine may lead to a spondylolysis. Although upper limb stress fractures are less common than those of the lower limbs, stress fractures occur in sports where athletes are dominantly using an upper limb such as in swimming and tennis (Brukner 1998).

Overuse injuries in the muscle are focal tissue thickening, chronic compartment syndromes and muscle soreness (Pleacher & Glazer 2005, Brukner & Khan 2006). Overuse damage to muscle fibers are a result of repetitive microtrauma. Focal areas, such as tissue thickening, can be palpated and can cause local pain. Overuse damage can also negatively affect rapid contraction and relaxation of the muscle (Brukner & Khan 2006). Chronic compartment syndrome is the most prevalent in the lower leg (Brukner & Khan 2006). Compartment syndrome can also be located in the forearm in, e.g., tennis players. Intracompartmental pressure increases and may cause local muscle swelling. The thigh fascia prevents expansion of the muscle and impairs the blood supply (Englund 2005, McDonald & Bearcroft 2010). Muscle soreness, known as delayed onset muscle soreness, is typical 24 to 48 hours after unaccustomed physical activity. The etiology of delayed onset muscle soreness is still poorly understood (Herbert et al. 2011).

Joint overuse injuries are inflammatory changes associated with repetitive loading, and are known as synovitis or capsulitis. Examples of such injuries are sinus tarsi syndrome of the subtalar joint and synovitis of the hip joint (Adkins & Figler 2000, Brukner & Khan 2006). Skin overuse injuries are blisters and calluses. A blister can occur at any site of friction with an external source, such as shoes or sports equipment (Basler et al. 2004). Dermatologic complaints are common among athletes, for example long-distance runners (Jaworski 2005).

Nerve entrapment syndromes occur as a result of swelling in the surrounding soft tissues. Examples of the latter overuse injuries are entrapments in the peroneal nerve, suprascapular nerve, posterior tibial nerve at the tarsal tunnel and interdigital nerves, a condition known as Morton´s neuroma. Nerve entrapment represents an uncommon but important cause of lower limb pain, especially among runners (Peck et al. 2010). Overuse injuries in ligaments are rare (Brukner & Khan 2006).

2.2. Causes and Management of Overuse Injuries

According (Australian Social Trends, 1997) Overuse injuries are the most common type of injury to runners. They result from repeated stress to the tissues involved due to repetitive episodes of trauma overwhelming the body's ability to repair itself. Overuse injuries in runners usually begin with pain and stiffness. Depending on the severity, the runner will suffer pain and stiffness at the beginning, during or after the run, or a combination of these. Continuous pain and stiffness will eventually lead to the cessation of running. The majority of the overuse injury risk factor studies have been based on competitive athletes.

2.2.1. Injuries by Event

A. Sprinters and Hurdlers

a. Upper Leg Muscle Strains

These include strains in the hamstrings (back of the thigh), quadriceps (front of the thigh) and hip flexors (area in the front of the thigh where the leg bends at the hip). Treatment for upper leg strains is I-C-E, a compression wrap to reduce swelling, and referral to an M.D. if pain persists. Gentle stretching (not forced) can begin 24 hours after a mild strain.

b. Shin splints

Shin splints is a non-specific term for an overuse injury to the lower leg. Pain is usually found in the lower two-thirds of the shin and is associated with tendonitis of the posterior tibial tendon or other flexor tendons along the shin. Treatment for shin splints includes I-C-E, taping to support the arch (this takes the pressure off the lower leg tendons, which attach to the foot), and strengthening the muscles of the foot and the lower leg. Increase the strength of the muscles on the front of the lower leg to help balance and absorb landing shock.

An important factor in preventing shin splints is analysis of the biomechanics of the sufferer's foot.

Does it over-rotate?

Is the arch unusually flat or high?

Do the shoes provide enough support and stabilization?

Do they still adequately absorb shock?

A training program with a gradual increase in volume and intensity is essential. Shin splints are usually an early season injury resulting from attempting to do too much too soon!

c. Achilles Tendonitis

Achilles tendonitis is an inflammation of the tendon that leads from the calf down to the heel. Treatment is I-C-E, rest, placing a heel lift of inch inside the shoe to shorten the stretch of the tendon, and a gradual return to training. Prevention measures for Achilles tendonitis include daily flexibility exercises for the calf muscles, a strength program for the lower legs to improve balance, and wearing good running shoes that provide support and stability.

d. I.T. Band Syndrome

The iliotibial band runs along the outside of the thigh and connects at the outside lateral border of the knee. As runners increase the volume and intensity of their training, they frequently develop pain on the outside of the knee that has nothing to do with the knee structure itself but with the attachment of this tendonous band. Treatment for I.T. band syndrome includes I-C-E and wearing a neoprene knee-sleeve to keep the area warm and compress the tendon. The best way to prevent I.T. band problems is to employ a daily stretching program as outlined in this coaching manual.

e. Knee Pain.

Patellofemoral pain (pain around the kneecap) often develops directly under the kneecap. Pain is caused by the back of the kneecap rubbing against the end of the femur (thigh bone). This is usually caused by a malalignment (a tilt) of the kneecap. The underside of the

kneecap then becomes rough and sometime catches as the athlete tries to straighten the leg. You may have heard this problem referred to as chondromalacia. Symptoms include pain when running or going down stairs (worse than going up stairs) and difficulty standing and straightening the leg after sitting for a long period. The athlete may feel like his or her knee gives way. This instability is caused by an occasional release of the muscles in the thigh. Treatment of knee pain should include ice massage or wrapping an ice pack over the kneecap and strengthening the quadriceps muscles (especially the quadriceps muscle on the inside of the thigh). That muscle is referred to as the vastus medialis. Prevention of knee pain requires improving the balance of muscle strength between the front and back of the thigh and increasing the flexibility of the leg and lower back.

B. Distance Runners

Distance runners suffer many of the same injuries sprinters and hurdlers experience.

a. Plantar Fascitis

Plantar Fascitis is an inflammation of the thick, triangular tissue on the bottom of the foot. The fascia attaches at the bottom of the heel and runs to the front of the foot, widening as it spreads to attach to the heads of the metatarsals (the long bones of the foot). Symptoms of plantar fascitis are pain on the bottom of the foot with the first few steps taken in the morning, pain present at the beginning of a workout that diminishes during the run only to recur after training, and palpable tenderness at the place on the bottom of the foot where the fascia attaches to the heel. Treatment for plantar fascitis is I-C-E, rest, stretching the lower leg and small muscles of the foot, and placing a plastic heel cup or ¼-inch felt heel pad inside the running shoe. Some individuals may need to see a podiatrist to be fitted for an orthotic (a custom molded foot-stabilizing device for insertion in the running shoe). Preventive measures for plantar fasciitis include stretching prior to running, wearing supportive shoes that stabilize the heel, and training on soft surfaces such as grass or dirt, rather than asphalt.

b. Stress Fractures

These are overuse injuries that generally occur in the fifth metatarsal (lateral long bone of the foot) or one of the two bones in the lower leg. Fractures occur when the stress placed on the

bone is greater than the muscle supporting the bone can absorb. Symptoms of stress fractures are deep, persistent pain and localized tenderness that increases with activity. Treatment for stress fractures is immediate referral to an M.D. for an X-ray.

The fracture, however, may be undetectable for 8–14 days until the calcification healing process is under way. This may be a season ending injury. It takes 6–8 weeks for bones to heal completely.

C. Shot Putters and Discus Throwers

Throwers are susceptible to torso and upper limb problems as well as leg injuries.

a. Tendonitis

This is a common problem for throwers. The sudden explosive movement and the abrupt blocking action required to propel the shot and discus place a great deal of pressure on tendons. There are several tendons that seem to be especially vulnerable to tendonitis. Biceps tendonitis occurs where the biceps muscle on the front of the upper arm attaches near the shoulder. Symptoms are tenderness over the tendon when trying to lift the arm above shoulder height or when lifting an object that requires bending the elbow. Treatment for tendonitis includes an ice pack or ice massage over the tender area, rest and exercises to improve flexibility and strength. This condition may require referral to M.D. Effective preventive measures for tendonitis are improving flexibility and strength and mastering good throwing technique.

b. Epicondylitis Elbow

This is commonly known as “Little League elbow” or “tennis elbow” and is often seen in novice shot putters. Symptoms are tenderness over the inside (medial) part of the elbow joint, pain on throwing and pain on grasping. Treatment for epicondylitis elbow is ice, rest, an elbow-sleeve to keep the tendon warm, and possibly physical therapy.

The most effective prevention measure for epicondylitis elbow is using proper putting technique. Good strength, balance and flexibility also help.

c. Torn Knee Ligaments

There are several ligaments in the knee. The ligament most susceptible to tears is the anterior cruciate ligament (which supports the inside of the knee joint). The injury occurs most often during the plant, just prior to the release of the implement. Symptoms are sudden pain, instability and tenderness around the joint. Sometimes a popping sound can be heard. Treatment for a torn knee ligament is ice and immediate referral an athletic trainer or a physician. The most effective preventive measure for torn knee ligaments is a well-balanced strength training program. Hand Injuries (usually wrist and finger sprains). These sprains occur when the weight of the shot causes an overextension of the joint. In both cases the mechanism of injury causes either the wrist or the fingers to be bent back farther than normal. Symptoms are pain in the joint, swelling and limited movement. Treatment for hand injuries should include immersing the hand in a bucket of ice water and taping to support the joint during practice. (Beware of the rules about taping the hand during competition.)The most effective preventive measure for hand injuries is proper putting technique. (Poor technique is often the result of fatigue at the end of a throwing session.)

d. Rotator Cuff Tears

The rotator cuff consists of four muscles which hold the head of the humerus (upper arm bone) in its socket. These muscles stabilize the shoulder during the action of throwing.

The explosive nature of throwing frequently causes tears or complete ruptures of one or more of the rotator cuff muscles. Symptoms of a rotator cuff tear are pain deep in the shoulder (sometimes radiating down the arm to the elbow) and difficulty in lifting anything for the first 15-degrees of movement to the side. Immediate treatment for a rotator cuff tear is ice, compression, and referral to a physician. (This is usually a season-ending injury.) Effective preventive action for rotator cuff tears is a well-balanced weight-training program that strengthens not only the large muscle groups around the shoulder, but also includes specific exercises to strengthen the rotator cuff muscles.

D. Jumpers

The ligaments most frequently torn by jumpers are the anterior cruciate and the medial collateral ligaments.

a. Inversion Ankle Sprains

These generally occur upon landing or when planting at takeoff. The mechanism of injury is landing with the sole of the foot turned inward. Symptoms are tenderness around the outside lateral ankle bone where the ligaments attach, swelling, discoloration and limited function. Treatment for inversion ankle sprains is I-C-E, rest, and referral to a physician if pain persists. The ankle may need to undergo a strengthening program and be taped prior to returning to training. Effective preventive measures for inversion sprains include training on safe surfaces, emphasizing proper technique and utilization of a well-balanced strength program.

b. Cartilage Tears

These often result from either a severe twisting motion or a hyper flexing action as one might see in a long jumper's landing. The cartilage is the joint cushion that sits between the tibia (shin bone) and the femur (thigh bone). As the knee flexes and extends, the cartilage can catch between the two bones in such a fashion as to tear it. Once torn, cartilage rarely has the capability to heal itself due to its lack of blood supply. Symptoms are pain in the joint, tenderness when palpated (rubbed) along the joint line, instability and locking or clicking of the joint. Treatment for a cartilage tear is I-C-E, rest, and referral to an M.D. (This can be a season-ending injury.) The best prevention for joint injuries is a well-balanced weight training program.

c. Back Pain

Back pain frequently results from the jarring impact jumpers experience upon landing. The pain may be caused by stiff muscles in the least severe cases or by a disc or nerve injury in more severe cases. Symptoms range from stiffness to sharp pain sometimes radiating down into the legs. Treatment for back pain is ice, flexibility exercises, and referral to an M.D. if the pain persists. Due to the nature of the jumping events, it is impossible to eliminate the

jarring impact the spine experiences upon landing. The best prevention for low back pain is a good stretching/ flexibility program and a well maintained landing pit.

d. Neck Injuries

It is most often see in the High Jump and Pole Vault. If you have any question as to the severity of the injury, do not attempt to move the athlete! A severe neck injury is a medical emergency! If the athlete expresses concern about moving or is experiencing tingling sensations in the arms, fingers, or feet, do not move the athlete! Call the paramedics immediately. It is always better to be overly cautious than to make a mistake that may leave a youngster paralyzed for life.

Injury	Related Sports Activities
Golfers' Elbow	Golf, Racquet games (table tennis, badminton, tennis), Weights, Rowing, Tug-of-war, activities that lead to overuse or overload of wrist flexors that include non sporting activities like wringing a Dishcloth or carrying a heavy load.
Tennis Elbow	Tennis elbow is an overuse injury, involving repeated Contraction of wrist extensors. The repeated motion injures the extensor tendons and lead to enthesopathy. As the name tennis elbow indicates, playing tennis, particularly, repeated use of the backhand stroke with poor technique, is a possible. However, a wide range of common arm such as using a screwdriver, painting, carrying heavy weights, gardening e.g. pulling weeds, knitting and typing may be causal.
Rotator-cuff Tendinitis	Activities requiring repeated over the shoulder arm motions e.g. competitive swimming, tennis and other racquet games, weights.
Achilles Tendinitis	Running, track and field, badminton and other racquet games, soccer.
Patello-femoral	Pain Running, repeated weight bearing impact e.g. soccer, athletics, basketball etc.
Metatarsal Stress Fractures	Running, track and field.
Posterior Femoral Hamstring Strain	Activities that require sudden violent contraction of the hamstring muscles e.g. Sprinting Long Jump.
Lumbar Strain	Activities that require pushing against weight or sudden twisting of the trunk e.g. baseball, basketball, soccer, golf.

Table 1: common injuries and related sport activities

2.3. Injury Incidence

A study by Phillips (2000) suggests that incidence of injury pertains to the number of new injuries that occur in a population at risk over a period of time or the number of new injuries during a period divided by the total number of sportspeople at that period.

It is also pointed out by Van Mechelen & Hlobil (1992) that the incidence of injury can also be referred to as the injury rate. It determines the number of new injuries in a specific period divided by the total number of players exposed to injury (the population at risk). Therefore the risk per player per year is equal to the number of new injuries during one year among the total population at risk (Van Mechelen, 1992, Dvorak and Junge, 2000).

According to Newell (2011) there is an expectancy that a greater number of injuries occur in training as teams are likely to have six times more training sessions than games with more participants likely to be involved in training sessions than in games. The research from the study shows that out of the 471 injuries recorded 276 happened during a game with the remaining 195 in training. However, according to Murphy et al., (2012) in which they tracked the injuries of 851 GAA players over four years they found that of the 1014 injuries recorded, 397 occurred in training, 553 in games and 64 other. Evidence was also provided by Newell (2011) to show which injury occurred the most in each month during the season.

2.4. Returning an Injured Athlete to Competition

Athletes should be free of injury symptoms before you allow them to return to competition. There is a natural temptation on the part of the athlete, coach, and sometimes, parents to get the athlete back into competition and training too soon. When dealing with young athletes who in many cases have never experienced an athletic injury before, it is your responsibility as coach to be the voice of reason when there is not an athletic trainer on staff to help make those decisions. The athlete should be asked daily, “How does your pain rate on a scale of 1 to 10, with 10 being the worst?” When the response is 0, a gradual re-entry to training can begin. Until that time, injured athletes should be involved in a rehabilitation program and other fitness activities to maintain their conditioning. Those fitness activities can include cycling (or stationary bike), swimming, or running in deep water with a life jacket if those activities do not stress the injury. When an athlete attests to 0-pain and can pass tests that

assess the function of the injured body part, he or she is ready to return to competition Brukner & Kahn (2012).

2.5. Principles of Injury Prevention

In recent years, there has been an abundance of literature on the principles of injury prevention. The IAAF (2012) suggests principles to adhere to prevent injury, which are as follows

- Physical conditioning - strength, balance, flexibility, endurance.
- Appropriate training methods - Exercises that are include strength, relaxation, and flexibility specifically geared to the demands made on the body of that sport, i.e. relaxation, strength, flexibility, progression.
- Rest and recovery- adequate sleep in order to avoid overexertion and fatigue.
- Appropriate equipment- properly fitted shoes, equipment must meet biomechanical requirements of the sport.

The following principles of injury prevention were also identified by Kents Sports Development Unit (2012):

- Warm up/cool down- a warm up should allow muscles and tendons to become more elastic, which enables muscles to be stretched further without the fear of injury. While a cool down helps to stabilize blood pressure and lower heart rate to help the body returns to its resting state.
- Flexibility- poor flexibility can result in awkward or uncoordinated movements which may lead to injury.
- Recovery- following the advice of a medical practitioner will aid recovery and a return to performing in the recommended time frame, will help to minimise the chance of the original injury re-occurring. It is also advised to include adequate rest periods in between trainings and games to aid recovery.
- Muscle balance- among stabilisers and mobilisers i.e. muscle groups that work alongside each other, e.g. hamstrings and quadriceps.

- Withdraw from participation if injured- it is stated by Jackman (2011) that players play through the pain of injury in the fear of losing their place in the team for the future.

It is also stressed by Newell (2011) that allowing adequate time to recover from injury can help reduce the incidence of non-contact injuries. In addition, Quinn (2012) says that returning early from an injury increases the chances of a re-occurrence or developing a chronic problem that will lead to a longer recovery.

2.6. Role of Coaches and Problems for the Implementation of Injury Prevention

Anderson et al. (2000) stated that coaches do not typically have the background in human anatomy and physiology, health and nutrition, injury prevention, assessment, management and rehabilitation or first aid and emergency care. Therefore, coaches should be updated in this area mainly on cardiopulmonary resuscitation and emergency first aid. Coaches should recognize their contribution to the health, safety and success of the athlete (Sharkey & Gaskill, 2006). The coach occupies a critical position in the organizational structure of preventive effort. As a supervisor of the athlete in practice and competition, the coach must recognize potentially risky situations and either avoid them or develop strategies to minimize their danger (Weaver et al., 1996). This would be achieved by properly supervising the conditioning programme and planning the activities so as not to predispose the athlete to excessive fatigue or injury. In addition, coaches should inform athletes the risk of injuries as well as the modalities for prevention and first aid. Furthermore, the coach must ensure that sports equipment, especially protective equipments are of the highest quality, properly fitted and maintained (Arnheim & Prentice, 1993).

According to Tippett (1990), the team therapist's role in injury prevention includes the provision of education to the athletes and coaches about the risks, precautions, prevention, treatment and rehabilitation. Education should be provided to all club stakeholders on the strategies required to prevent injury, achieve peak performance, healthy playing careers and lifestyles. In addition, education on the safety and emergency policies and procedures, health care insurance coverage, review of medical forms, policies and procedures to ensure compliance are the duties of the 63 team medical personnel. The role of medical practitioners

in injury prevention is paramount and should perform a range of activities such as the examination and review of preseason physical examinations and conditioning programmes, the provision of first aid, diagnosis, treatment, rehabilitation and return to training. The team therapist should be present at training and competition. Moreover the club leader's responsibility encompasses the development; implementation and monitoring of comprehensive sport safety .Few studies have been done in the domain of safety policies in the clubs (Donaldson & Hill, 2002; Casey et al., 2004). In a study conducted by Casey et al. (2004) to investigate the factors that influence sport safety policies and practice, lack of qualified personnel (referees, trainers and medical support) was observed to have led to insufficiencies that resulted in the rules of the game not always being enforced and some athletes not receiving adequate treatment. In addition, participants in the study suggested that financial constraints led to their inability to employ qualified trainers or provide adequate club facilities. They also complained of shortage of volunteers, which led to a situation whereby the available staff were unable to adequately render services necessary for the prevention of injury. Therefore, this study had complemented the existing knowledge regarding the implementation of injury prevention strategies in Ethiopian context. In addition, the results of a study conducted among different sports indicates that coaches were the most important source of information followed by teammates, magazines, books, television, internet and finally the doctor (Sefton, 2003).

2.7. Massage

Running requires sustained, repetitive muscle contractions. The greater these contractions are, the greater the force generated is, and the more muscle fibers are required to shorten. These sustained, repetitive muscular contractions translate into speed, power, and distance allowing us to run further and faster. However, this can also translate to shortened, tight muscles, joint range of motion losses, and decreased circulation to compressed tissues. Massage works to elongate the muscles, relieve muscle tightness, restore joint range of motion, and improve circulation. In a nutshell, massage improves the effectiveness of the circulatory system. This system is responsible for oxygen transfer, nutrient delivery, and waste removal at the cellular level. Our circulatory system delivers blood enriched with oxygen and nutrients, like glucose and electrolytes, to muscle tissue. It then picks up and removes muscle metabolic by-products and waste. Zhenya (2003) further explained that, the

circulatory system impacts all the other systems of the body too. Therefore, increasing the effectiveness of the circulatory system directly or indirectly impacts our entire body. Better circulation means better delivery of nutrients and oxygen to surrounding cells and tissues.

Therapeutic massage can elicit very specific physiological responses, such as, increased blood circulation, increased diameter of blood vessels, and decreased blood pressure. These effects are significant for everyone, but are of particular importance to a runner looking for ways to recover faster, prevent injuries, and improve performance. Keep in mind, though, that "therapeutic" massage means a specific type of massage, which involves applying a deep pressure that is designed to be corrective to soft tissue. This is very different than spa or relaxing massage and it must be administered by a licensed and trained professional. More Massage benefits include: 1. Dilates blood vessels which promotes circulation and lowers blood pressure 2. Assists venous blood flow 3. Promotes rapid removal of metabolic waste products 4. Improves the oxygen carrying capacity of red blood cell 5. Improves pulmonary function by loosening tight respiratory muscles 6. Reduces muscle soreness and fatigue 7. Increases/restores joint range of motion 8. Reduces cortisol levels and norepinephrine and epinephrine levels 9. Restores posture and gait 10. Improves connective tissue healing It is important to note that the effects of massage are cumulative. This means that the effects and benefits increase with sequential, repetitive massages. Receiving one massage prior to a race will not reap the same benefits as a regular program of massage therapy throughout your training. Massage therapy also works best as a preventative program. Once an athlete sustains an actual injury, seeking medical attention comes first. After a proper diagnosis and treatment, massage therapy may become part of the recovery process (Yackzan, L., C. Adams, And K.T. Francis,1984) .

Massage treatment plans are very individual. The most important goal is to set a regular schedule for your massages whether it is once a week, once a month, or every two months. Assess your running goals and your budget when deciding how often to get a massage. Take into consideration whether you have recurring injuries, are you tackling a new distance, or are you pushing your limits? Next, consider how much you can realistically afford to spend on massage. Look at your training schedule and note the dates of long runs, key workouts, or races. If possible, schedule your massages around these targeted dates. For example, if you

are increasing your mileage for a long run every second or third weekend, schedule your massages a day or two after these long runs. Pre-Race Massages should be scheduled 3-5 days before the race and, likewise, Post-Race Massages should be scheduled 3-5 days after a race when muscles are no longer sore to the touch. After assessing your training schedule, budget, and available time, plan accordingly. Massage is a nice training reward to look forward too! And, last but not least, between massages, drink lots of water, stretch after your runs, foam roll often, and eat clean healthy foods to extend the life of your massages (Weber, M.D., F.J. Servedio, and W.R. Woodall, 1994).

CHAPTER THREE

3. Methodology

3.1. Research Design

The purpose of this study was to investigate the causes and management of sport injuries and its impact on athletes' performance in both Sport Training Centers. To achieve these, the quantitative and qualitative research approach was used. According to Bryman (2004) states that quantitative research is outlined as a distinctive research strategy. It can be defined as imposing numerical data collected and as exhibiting a view of the relationship between theory and research as deductive, a predilection for a natural science approach and as having an objectivist conception of social reality.

The method that was chosen to obtain the relevant data was quantitative and qualitative research in the form of a questionnaire, depth document analysis and observation. It is stated by Bryman (2004) in Ronan Baxter (2013) questionnaires are cheap and quick to administer, cost effective and is convenient for respondents. The questionnaire was designed based on the objectives and literature review. As a result, retrospective research design was used.

3.2. The study Area

The research was conducted at the Sports Training Centers in Addis Ababa and Asella. It is found at an Altitude of 2200 and 2700 meter above Sea level with an Average temperature of 22 and 20c respectively.

3.3. Target Population /Subjects

Target population of the study was 320 Athletics trainees (2006-2009 E.C) at EYSA and ATDSTC. Both male and female athletes; which is 86 male and 94 female from Asela campus and 60 male and 80 female from Addis Ababa campus with an age range of 17 to 23 years who participated in Athletics training in the training center.

3.4. Data Collection Instruments

To get reliable information from the research participants, types of instrument used have paramount importance. Thus, questionnaire, Depth document Analysis and observation were

identified as pertinent tools of this study. Below, the detailed description and procedures are presented.

3.4.1. Questionnaire

Questionnaire was used to collect data not only because it is a popular means of collecting all kinds of data in research, but also an appropriate instrument to obtain information about conditions, practices and problems for relatively large sample studies (Best and Khan, 1996). In order to elicit the necessary data, a questionnaire was adopted for athletes. However some items related to the causes of common injuries were included to address the objectives of the study and gather more information. The questionnaire contained two parts. The items of the questionnaire included both closed format question and open format questions. This questionnaire was adopted intentionally since the validity and reliability of the questionnaire was excellent or good. The questionnaire had earlier been validated by comparing questionnaire and document analysis after a one-week interval among 320 subjects of athletics sport trainees. And the reliability of the background information questions was excellent: the intra class correlation coefficient (ICC) varied from 0.96 to 0.99 ($p<0.001$). The reliability of sports and training information was good or excellent (ICC = 0.81 to 0.95, $p<0.001$). The reliability of questions concerning acute and overuse sports injuries varied from moderate to good (ICC = 0.75 to 0.88, $p<0.001$) (Karhula & Pakkanen 2005, Eloranta & Tittonen 2006).

3.4.2. Document analysis

The documents and injury recorded lists of 320 Athletics trainees (2006-2009 E.C) at EYSA and ATDSTC. Both male and female athletes with the age range of 17 to 23 years who participated in Athletics sport. The injuries were categorized based on the types and their causes on the prepared format. The managements that the physiotherapists prescribed for different type of injuries was also be taken properly as to help to relate how much is related with literature reviewed.

3.5. Pilot Study

Before the actual data gathered, with questionnaire, guiding questions were piloted for Middle Distance athletics trainees of Ethiopian youth sports Academy to check whether they could generate the expected information from the respondents and to see their consistency to the study. Then, the instrument was given to the expertise to check validity and reliability. This is to see the consistency of the instrument and check up on whether the instrument has measured the required objectives or not. Finally, the instrument was improved based on the suggestions and recommendations gathered.

3.6. Data Collection Procedure

First of all, the researcher got permission from both training centers to collect data from the physiotherapists to get the four years (2006-2009 E.C) injury report Document. All the participants of the study were informed about the purpose of the study before the document inferred and questionnaire distributed.

Moreover, during the administration of the questionnaire further clarifications were given wherever question raised by respondents. It was distributed to all athletes as well as field event athletes with the presence of the researcher. The questionnaire was distributed to the available athletics sport trainees in the training centers currently. Athletes were encouraged to ask any question during filling the questionnaire. Since all athletes lived in the training centers, most athletes were able to fill the questionnaire in the scheduled date. Athletes who were not attended the program were also rescheduled for second day program. The questionnaire was distributed to and collected from the respondents with the help of assistant data collectors.

3.7. Data Organization and Analysis

The data that was collected through Questionnaires, depth document analysis and observation was organized and categorized based on the objectives, considering the research question of the study. Therefore quantitative and qualitative analyses were employed. Descriptive statistics was also presented using Microsoft Excel to accomplish the relevant aims and objectives. Results were produced in a graph format and viewed in the research section.

CHAPTER FOUR

4. RESULTS AND DISCUSSION

This chapter comprises the study findings to be discussed under different sections, based on the objectives of the study.

4.1 General Characteristics of the Respondents

The average age of short distance athletes was 17 ± 1.2, while the middle distance average age was 18.9. Similarly long distance athletes were looks older with an average age of 20 ± 2. On the other hand jumping and throwing events had an average age of 18 ± 1.1 and 18 ± 1.3 respectively. This indicated that the respondents were mostly young with the age between 18 – 23 years.

In the case of their height, middle distance athletes from running events seem taller with an average height of 1.74 ± .21. While short and long distance athletes height were 1.72 ± .4 and 1.70 ± .47 respectively. On the other hand jumping events for triple and long jump athletes was 1.82 ± .4. While the tallest height was for high jump events with an average of 1.92 ± .2. Were as throwing events specially javelin throw athletes had an average height of 1.86 ± .3 and discus throwers and shot putters had an average height of 1.79 ± .2 and 1.77 ± .1 respectively.

4.2. Common Injuries Identified

4.2.1. Injuries by short distance running events

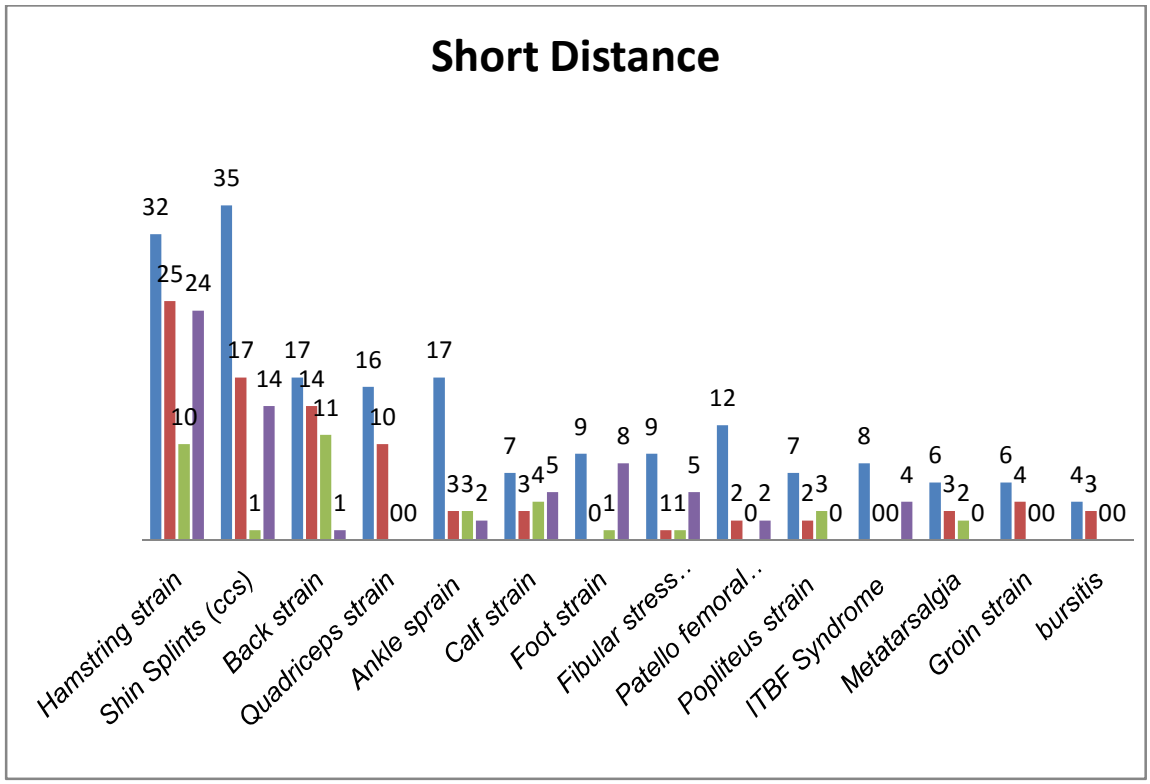

Figure 1 Short Distance Injury occurrence from 2006-2009 E.C

As the above figure show that the highest injuries which occurred in 2006 was shin splints and hamstring strain with a frequency 35 and 32 respectively. As this frequency number indicate that mostly short distance runners were exposed to shin splint and hamstring strain. As document analysis from the physiotherapist revealed in this regard, the causes for those injuries were mostly associated to the training age, the intensity of training, the training field and sport wear problems mainly. This study was with agreement to Herring SA, Nilson KL. (1987) Shin splints are a non-specific term for an overuse injury to the lower leg Pain was usually found in the lower two-thirds of the shin and is associated with tendonitis of the posterior tibial tendon or other flexor tendons along the shin. A training program with a gradual increase in volume and intensity was essential. Australian social trend (1997) stated that as runners increase the volume and intensity of their training, they frequently develop

pain on the outside of the knee that has nothing to do with the knee structure itself but with the attachment of the tendonous band. So, Shin splints were usually an early season injury resulting from attempting to do too much too soon!

The lowest injuries occurred in 2006 were metatarsalgia, groin strain and bursitis with a frequency of 6, 6 and 4 respectively.

In 2007 E.C the highest injury frequency was showed on hamstring strain and shin splint with 25 and 17 respectively. Indicate that still the athletes were not cope up to the training program which provided by the training camp. But the lowest injuries occurred were metatarsalgia and bursitis with frequency of 3 and 3 respectively. Illiotibial Band Friction (ITBF) was not occurred throughout the year.

By the year 2008 E.C back strain and hamstring strain were injuries occurred with a frequency of 11 and 10 respectively. The main cause for these injuries was the training field problem. Quadriceps strain, Patello femoral syndrome, Illiotibial Band Friction (ITBF) Syndrome, Groin strain and bursitis were not occurred in this year.

In 2009 E.C the highest injury occurred was hamstring strain and shin splint with a frequency 24 and 14 respectively. According to Australian Social Trends, (1997) Overuse injuries are the most common type of injury to runners. They result from repeated stress to the tissues involved due to repetitive episodes of trauma overwhelming the body's ability to repair itself. Those injuries problems were happened due to overuse of unfit muscles. None occurred injuries throughout the years were Quadriceps strain, Popliteus strain, Metatarsalgia, Groin strain and bursitis. As the study showed the injuries rate was decrease progressively through 2006 – 2009E.C training years due to may be due to the adjustments made on training program considering their age and individual difference. In this regard the observation checklist indicates that the number and availability of physiotherapists and rehabilitation materials has improved from year of 2006 to 2009 significantly. Moreover more qualified coaches were employed at 2007 and training experience of the coaches has been supported by different capacity building coaching trainings.

4.2.2. Injuries by middle distance running events

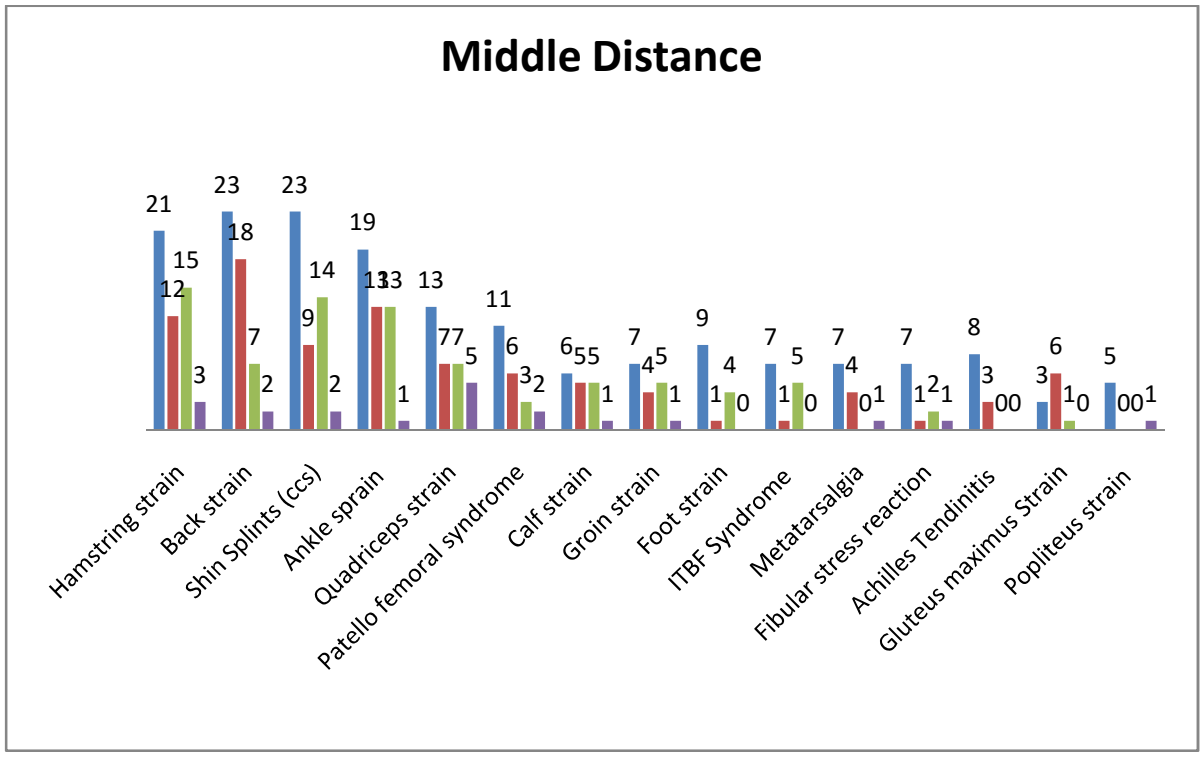

Figure 2 Middle distance injuries occurrences from 2006-2009 E.C

As the above graph 2 showed the highest injuries occurred in 2006 were shin splints and back strain both with a frequency of 23. As this figure indicate that mostly Middle distance runners were exposed to shin splint and back strain due to the training age, the intensity of training, the training field and sport wear problems mainly. Whereas the lowest injuries occurred in 2006 were Popliteus strain and Gluteus maximus Strain with frequency of 5 and 3 respectively. According to Newell,(2011) there was an expectancy that greater number of injuries occur in training as teams were likely to have six times more training sessions than competitions with more participants likely to be involved in training sessions than in competitions. As runners increase the volume and intensity of their training, they frequently develop pain on the outside of the knee that has nothing to do with the knee structure itself but with the attachment of this tendonous band. On the other hand the lowest injuries

occurred in 2006 were Popliteus strain and Gluteus maximus Strain with frequency of 5 and 3 respectively.

In 2007 E.C the highest injury frequency was shown at the Back strain and Ankle sprain with 18 and 13 respectively. But the lowest injuries occurred were Foot strain, Illiotibial Band Friction (ITBF) Syndrome and Fibular stress reaction with frequency of 1 respectively throughout the years. Whereas non occurred injuries are Popliteus strain.

In 2008 the highest injury frequency was traced on hamstring strain and shin splint with 15 and 14 respectively. The causes as the document injury profile indicated are mostly the training field associated mainly with forest and wet grass land which the training provided was not as such comfortable for the trainers. The non occurred injuries throughout the year were Popliteus strain, Achilles Tendinitis and Metatarsalgia.

In 2009 E.C the highest injury frequency was showed on Quadriceps strain and Hamstring strain with 5 and 4 respectively. In this regard, the injury profile indicates that athletes get injured such type of injuries while they run more frequently on the wet grassy land. Furthermore the observation checklist made in 2009 proved that athletes were more frequently run on the highland grass lands at a very low temperature in the morning.

The non occurred injuries throughout the years were Gluteus maximus Strain, Achilles Tendinitis, Illiotibial Band Friction (ITBF) Syndrome and Foot strain. As the injuries rate was decrease though the four training years.

4.2.3 Injuries by long distance running events

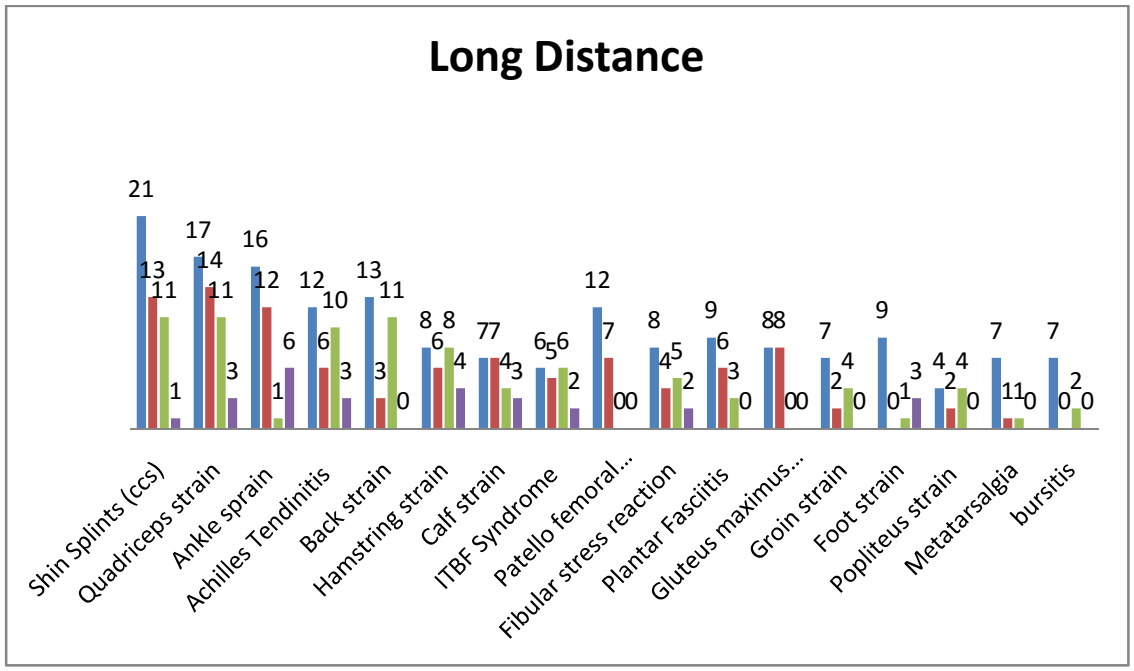

Figure 3: Long distance injuries occurrence from 2006-2009 E.C

As the above graph showed that the highest injuries which occurred in 2006 was shin splints and Quadriceps strain with 21 and 17 frequencies respectively. As this frequency number indicate mostly long distance runners were exposed to shin splint and Quadriceps strain due to the training age, the intensity of training, the training field and sport wear problems mainly. Whereas the lowest injuries occurred in 2006 were Illiotibial Band Friction (ITBF) Syndrome and Popliteus strain with frequency of 6 and 4 respectively.

In 2007 E.C the highest injury frequency was showed on Quadriceps strain and Shin Splints with 14 and 13 respectively. But the lowest injuries occurred were Groin strain, Popliteus strain and Metatarsalgia with frequency of 2, 2 and 1 respectively throughout the years. Whereas none occurred injuries are Foot strain and bursitis.

In 2008 the highest injury frequency was showed on quadriceps strain, shin splint and Back strain with the same of 11 respectively. Similarly as the injury profile indicated that the cause for these injuries was mostly training error. Bursitis, Metatarsalgia and Foot strain were the

lowest injuries with frequency of 2, 1 and 1 respectively throughout the years. None occurred injuries throughout the year were Gluteus maximus Strain and Patello femoral syndrome.

In 2009 E.C the highest injury frequency was showed on Ankle sprain and Hamstring strain with 6 and 4 respectively. The non occurred injuries throughout the years were Back strain, Patello femoral syndrome, Plantar Fasciitis, Gluteus maximus Strain, Groin strain, Popliteus strain, Metatarsalgia and bursitis. The injuries rate was decrease though the four training years.

4.2.4 Injuries by Jumping Events

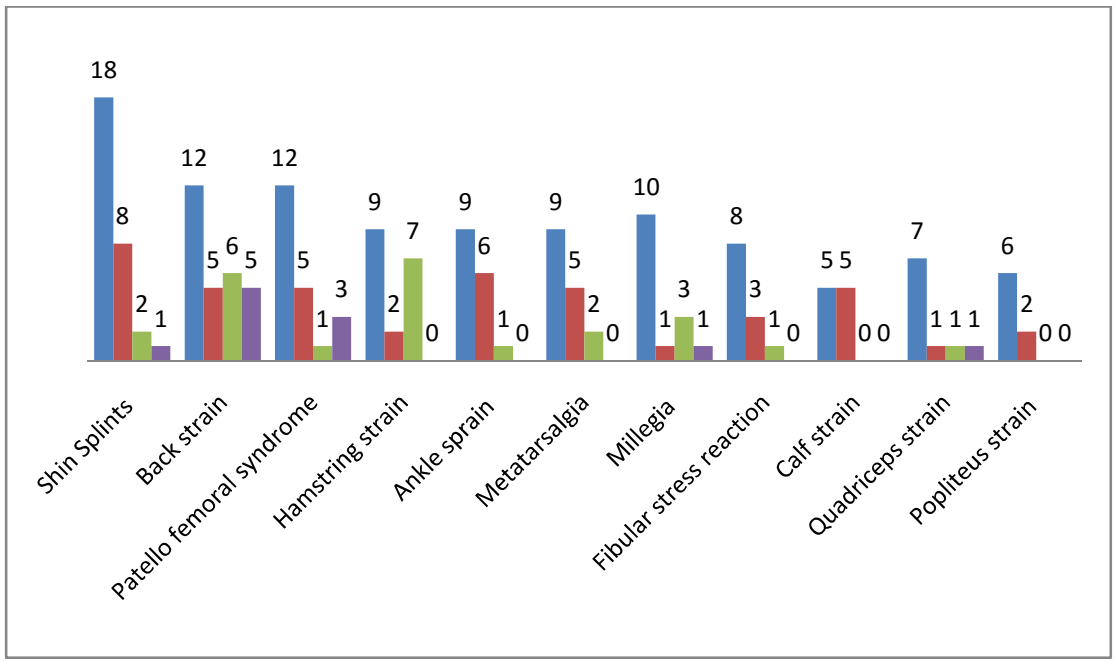

Figure 4: Jump injuries occurrence from 2006-2009 E.C

As the above figure show that the highest injuries which occurred in 2006 was Shin splints, Back strain and Patello femoral syndrome with 18, 12 and 12 frequency respectively for jumping events. As this frequency number indicate that mostly jumping events were exposed to shin splint, back strain and Patello femoral syndrome. The injury profile also indicated that most injury associations were with the training age, the intensity of training, the training field and sport wear problems. The lowest injuries occurred in 2006 were Quadriceps strain, Popliteus strain and Calf strain with frequency of 7, 6 and 5 respectively.

In 2007 E.C the highest injury frequency was showed on shin splint and Ankle sprain with 8 and 6 respectively. In this case the injury profile still associated the occurrences of injury with training errors like too much frequency of trainings and high intensity trainings. Generally it Indicate that still the athletes were not cope up to the training program which provided by the training camp. On the other hand the lowest injuries showed were Popliteus strain, Hamstring strain, Quadriceps strain and Millegia with frequency of 2, 2, 1 and 1 respectively.

In 2008 the highest injury frequency was showed on hamstring strain and back strain with 7 and 6 respectively. The associated cause for these injuries from the profile was the training field which the training provided was not such comfort for the trainers. But the lowest injuries showed were Quadriceps strain, Fibular stress reaction, Ankle sprain and Patello femoral syndrome. None occurred injuries were Calf strain and Popliteus strain.

In 2009 E.C the highest injury frequency was showed on Back strain and Patello femoral syndrome with 5 and 3 respectively. None occurred injuries throughout the years were Hamstring strain, Ankle sprain, Metatarsalgia, Fibular stress reaction, Calf strain and Popliteus strain.

4.2.5 Injuries by throwing events

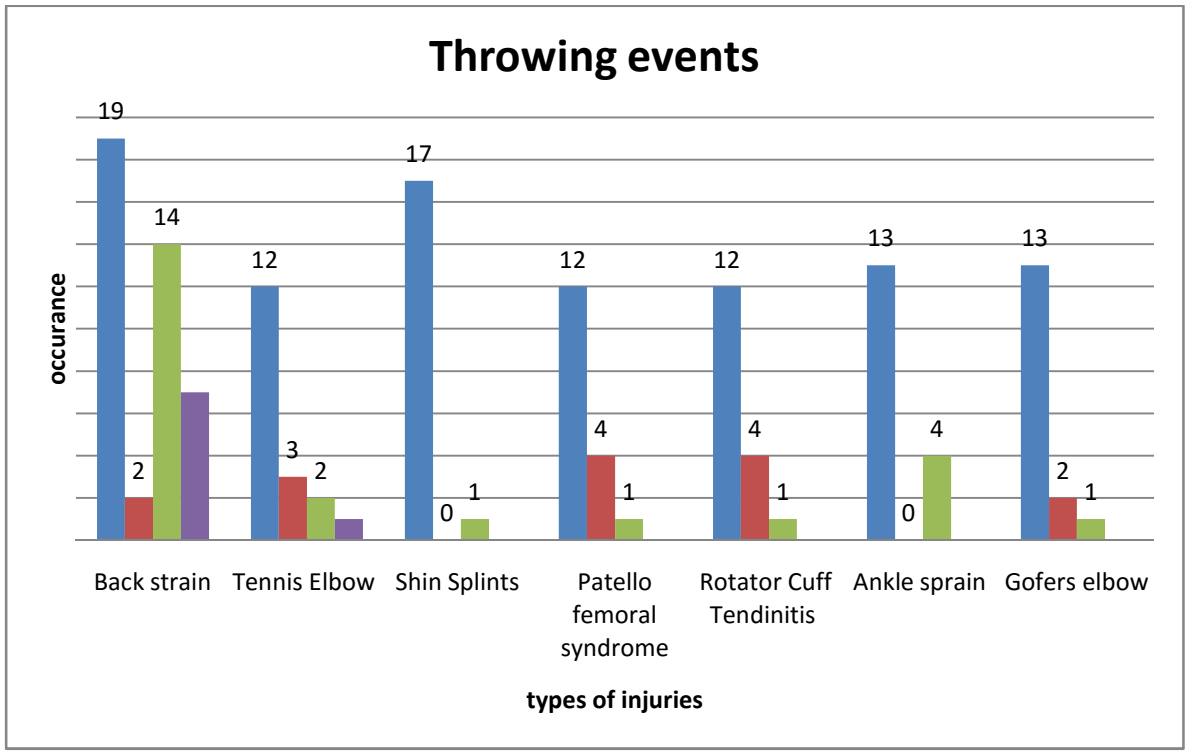

Figure 5: throwing events injuries occurrence from 2006-2009 E.C

As the above figure 5 showed that the throwing events athletes were most frequently injured in 2006 was Back strain and Shin Splints with frequencies of 19 and 17 respectively. As this frequency number indicate that mostly throwing events athletes were exposed to back strain and shin splint due to the training age, the intensity of training, the training field and sport wear problems. Most of the above mentioned injuries were caused due to over use and biomechanical errors.

In 2007 E.C the highest injury frequency was showed on Rotator Cuff Tendinitis and Patello femoral syndrome with 4 and 4 respectively. This indicates that still the athletes were not cope up to the training program which provided by the training camp. But none occurred injuries were Shin Splints and Ankle sprain.

In 2008 the highest injury frequency was showed on back strain with frequencies of 14 times. The lowest injuries were Gofers elbow, Rotator Cuff Tendinitis, Patello femoral syndrome and Shin Splints with frequency of 1 each.

In 2009 E.C the highest injury frequency was showed on Back strain with frequencies of 7 times. None occurred injuries throughout the years were Shin Splints, Patello femoral syndrome, Rotator Cuff Tendinitis, Ankle sprain and Gofers elbow. The injury profile in this regard indicated that training errors like frequent repetition without recovery and improper warming up were highly associated with the incidence of those injuries. Furthermore the observation checklist for throwing events have indicated some incompleteness of warming up activity and very less recovery practices and control to some extent due to one coach to train up to 12 athletes .

4.3. Analysis on Common Causes of Sport Injuries

Resulting from questionnaires, observation and depth document analysis the following major causes were Indentified.

Training error including running to far, increasing the distance or time to quickly, high intensity and poor techniques and fatigue.

Many running injuries were re-injured or aggravation of pre-existing injuries due to running with the previous injury that were not healed completely or rehabilitated that may cause the repair tissue may damage again.

Training not considering the training age of an athlete's (i.e. athletes mostly working together in groups without considering chronological and training).

Proper training equipment like sport shoe problems mainly happened that were forced the athlete to train and compete with the same improper shoe.

Training area i.e. not proper training area especially in 2006 and 2007 E.C due to that many athletes were injured.

Lack of proper treatment provided by the training centers.

As observed on the above were training error, aggravation of pre-existing injuries, mass training without considering age, absence of proper training equipments and materials, training environment and lack of proper treatment were the causes for the common injuries identified in the training centers.

4.4. Impact of Sport Injuries on Athletic Performance

Athletic injuries were mostly affecting athlete's performance negatively due to taking long time to recover or fully rehabilitate from the injuries in the training center. According to Laurel T MacKinnon (2000) Recovery from injury may require weeks to months of complete rest or greatly reduced exercise training. Inconsistent or poor performance at critical times in an athlete's career may influence selection for representative teams and possibly cause the athlete to prematurely retire from sport.

Table 2: Impact of injury on athletes

No	Impacts of Injury Indicators	2006					2007					2008					2009				
		S.D	MD	LD	J.E	TE	S.D	MD	L.D	J.E	TE	S.D	MD	LD	J.E	TE	S.D	MD	LD	J.E	TE
1	No. athletes terminated sport career as a result of injury.	1	1	-	1	-	2	-	1	-	-	1	-	-	-	-	-	2	-	-	-
2	No. athletes absent from major competitions	1	2	2	-	-	3	3	2	1	-	2	3	2	-	-	-	2	2	-	-
3	No. athletes absent from trainings for more than 15 days.	3	2	2	1	2	3	2	1	1	-	1	1	1	-	-	1	2	1	-	-
4	No. athletes with Negative Performance improvement analysis.	3	2	2	1	-	2	3	1	1	-	1	1	2	-	-	1	2	1	-	-

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

Based on the major findings of the study the following could be concluded:

- Shin splint, hamstring strain, back strain, quadriceps strain and ankle sprain were the most Common injuries seen in all events in the training center.
- Training error, aggravation of pre-existing injuries, mass training without considering age, proper training equipment and materials problems, training environment and lack of proper treatment were the common problems.
- Performances of the athletes were declined due to Training error, aggravation of pre-existing injuries, mass training without considering age, proper training equipment problems, training environment and lack of proper treatment.
- As the study showed the injuries rate was decrease progressively through 2006 – 2009E.C training years due to the adjustment made on training program considering their age and individual difference.

5.2. Recommendations

Based on the major findings of the study the following should be recommended:

- Running speeds and distances should be built-up gradually and a campaign aimed at increasing runners' awareness of the injury consequences of training errors should be developed and promoted.
- Runners should ensure they drink adequate water, wear appropriate clothing and shoes carefully preferably with professional advice. Purchasers should be encouraged to look for certain characteristics of shoes and not to be unduly influenced by price. In addition Runners should avoid hard rigid surfaces.
- Training centers should seek prompt attention to athlete's injuries from a person with first aid qualifications. A structured pre planned schedule with regard to treatment of injuries should be discussed and agreed upon at the season outlet.

- Runners should seek prompt attention to their running injuries which were occurred in specific events so, the coach, athletes and other sport practitioners had aware of it.
- Since the present study focuses on the common causes of athletic injuries and its impact on athlete performance which occurred in the training centers, it might not be generalize the result of this study to other clubs and national team athletes. So, further study is essential on common athletics injuries with their respected clubs and national team athletes with well execute treatments and its impacts on athletes performance.
- Performance enhancement and rehabilitation centers should be organized in the academy to control the injury effects towards performance, for avoiding the occurrence and reoccurrence of injury as well as using research findings for scientific training.

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Web Sources

http://www.EAF.org.et

Appendix A

Addis Ababa University

College of Natural and Computational Science

Department of Sport Science

Questionnaire to be filled by Physiotherapy

The purpose of this questionnaire is to obtain information on Causes and Management of Sport Injuries and Its Impact on Athlete's Performance at Athlete Tirunesh Dibaba Sport Training Center. The information procured through the questionnaire will be used only for statistical analysis purpose. Any information that you give will be kept confidential. Hence your cooperation in giving genuine information is highly valuable for the accomplishment of the study.

N.B

- There is no need of writing your name on the questionnaire.
- Please respond all questions.

As physiotherapy do you mention?

1. In which area mostly the athletes were injured in:

Short Distance,

_____

_____

_____.

Middle Distance

_____

_____

_____.

Long Distance

_____

_____

_____.

Jumping

_____

_____

_____.

Throwing

_____

_____

_____.

2. What do you think the causes of athletics injuries commonly seen in the training center?

_____

_____

_____

_____.

3. Is the treatment which is given for an athlete in the training center is enough?

Yes b. No.

if your answer is no reason out

_____

_____

_____

_____.

4. What is your suggestion to the training center to manage athletics injuries?

_____

_____

_____

_____.

Thank you in advance for your cooperation!!!

Appendix B

አዲስ አበባ ዩኒቨርሲቲ

የተፈጥሮና ኮምፒዩቴሽናል ሳይንስ ኮሌጅ

የስፖርት ሳይንስ ትምህርት ክፍል

<u>በኢትዮጵያ ወጣቶች ስፖርት አካዳሚ አትሌቲክስ ስፖርት ሰልጣኞች የሚሞላ መጠይቅ</u>

የዚህ መጠይቅ ዋና አላማ በአካዳሚዉ ዉስጥ በሚሰጡ የአትሌቲክስ ስልጠናዎች የሚቸርሱ ጉዳቶች ምክንያትና የመቆጣጠሪያ ዘዴዎች ላይ ለሚደረግ ጥናት መረጃ ለመሰብሰብ ነዉ። የምትሰጡን ምላሾችና መረጃዎች ለዚህ ጥናት መሳካት እጅግ ከፍተኛ ጠቀሜታ አላቸዉ። ስለዚህ በመጠይቁ ላይ የቀረቡትን ጥያቄዎች በግልጽና በታማኝነት ትሞሉ ዝንድ በአክብሮት እጠይቃለሁ።

አመሰግናለሁ

<u>አጠቃላይ መመሪያ</u>

- ስም መፃፍ አያስፈልግም
- እያንዳንዱን ጥያቄ በመመሪያዉ መሰረት ይመልሱ
- በጥያቄዎቹ ላይ ተጨማሪ ሃሳብ ካላችሁ በመጠይቁ መጨረሻ ላይ ባለዉ ክፍት ቦታ መፃፍ ትችላላችሁ።

<u>የመላሾች ዳሰሳ ወይም ሁኔታ</u>

እድሜ _____

ፆታ _____

የስልጠና ማእከሉ ስም _____

የስልጠና ዘርፍ _____

የስልጠና ቆይታ ጊዜ_____

<u>ክፍል አንድ</u>

<u>መመሪያ 1</u>፡ በዚህ ክፍል 16 ጥያቄዎች ይገኛሉ። ስልዚህ ችያንዳንዱን ጥያቄ አንብበዉ ከተረዱ በኋላ ከተቀመጡት አምስት አማራጮች ዉስጥ አንዱ ላይ "✓" ይህንን ምልክት በመጠቀም ይመልሱ። እነዚህም አማራጮች በጣም እስማማለሁ (በእ) ፤ እስማማለሁ (እ) ፤ አልወሰንኩም (አል) ፤ አልስማማም (አ) እና በጣም አልስማማም (በአ) ናቸዉ።

ተ.ቁ	አይነት	የመልስ ክፍል				
		በእ	እ	አል	አ	በአ
1	በአሰልጣኞቻችሁ የሚሰጡት ስልጠናዎች ለሚደርሱባችሁ ጉዳቶች ምክንያት ናቸዉ ብላችሁ ታስባላችሁ?					
2	የምትሰለጥኑበት ቦታ ለስልጠናዉ አመች ነዉ ትላላችሁ?					
3	ጉዳቶች ብዙ ጊዜ በጅምናዚየም ዉስጥ ይደርሉ?					
4	የስልጠና ጫና ለጉዳት መንስኤ ነዉ ትላላችሁ?					
5	በስልጠና ወቅት የምትጠቀሙት ጫማ ለጉዳት መንስኤ ነዉ ብላችሁ ታስባላችሁ?					
6	በስልጠና ማዕከሉ ዉስጥ በሰልጣኞች ላይ የሚደርሱት ጉዳቶች ተመሳሳይ ናቸዉን?					
7	በስልጠና ማዕከሉ ዉስጥ ለሰልጣኞች የሚደረገዉ እንክብካቤ በቂ ነዉ ትላላችሁ?					
8	የስልጠና ማዕከሉ በስልጠና ወቅት የሚደርሱ ጉዳቶችን ለመቆጣጠር የሚያስችሉ አመች ሁኔታዎች አሉት?					
9	ከሽግግር ወቅት መልስ ስልጠና ስትጀምሩ ጉዳት ይደርስባችኋል?					
10	የህክምና ባለሙያዎች ለሚደርሱ ጉዳቶች በቂ እዉቀት አላቸዉ ብላችሁ ታስባላችሁ?					
11	በወጌሻዎች የሚሰጡት ህክምናዎች ሰልጣኞች በፍጥነት አገግመዉ ወደ ስልጠና እንዲመለሱ ይረዷቸዋል?					
12	በፍጥነት ልምምድ ወቅት ጉዳት ደርስባችኋል?					
13	አሰልጣኞች የማገገሚያ ስራዎች ያሰሯችኋል?					
14	የሚሰጣችሁ ስልጠና የያንዳንዳችሁን አቅም መሰረት ያደረገ ነዉን?					
15	ስልጠናዉ አዲስና ነባር ሰልጣኞችን በመቀላቀል ይሰጣል					
16	አሰልጣኞች በስልጠና ወቅት እድሜንና የስልጠና ቆይታን ታሳቢ ያደረገ ስልጠና ይሰጣሉ					

ክፍል ሁለት

መመሪያ 2፡ እያንዳንዱን ጥያቄ ካነበቡ በኋላ በተሰጠዉ ክፍት ቦታ ላይ መልስዎትን ያስቀምጡ።

ብዙ ጊዜ በየትኛዉ የሰዉነት ክፍላችሁ ላይ የጉዳት ስሜት ይሰማችኋል?

_____

_____

_____

ለሚሰማችሁ የህመም ወይም የጉዳት ስሜት ምክንያቱ ምንድን ነዉ ብላችሁ ታስባላችሁ?

_____

_____

_____

የትኞቹ የስልጠና አይነቶች ለጉዳት መንስኤ ናቸዉ ብላችሁ ታስባላችሁ?

_____

_____

በስልጠና ወቅት የሚደርሱ ጉዳቶችን ለመቆጣጠር ማዕከሉ ምን ምን ነገሮችን ማሟላት አለበት ትላላችሁ?

_____

_____

ከምትሰለጥኑባቸዉ የስልጠና ቦታዎች ዉስጥ ብዙ ጊዜ ጉዳት የሚደርስባችሁ በየትኛዉ ነዉ?

_____

_____

Observation check list for short distance

		1	2	3	4	5
		Not at all	Rarely	Sometime /fairly/	Most of the time	always
1	Running surface					
	Asfalt	X				
	Track				X	
	Hill				X	
	Dirt road			X		
	Forest	X				
	Grass land		X			
	Wet surface		X			
2	Training related					
	Com. Warmup				X	
	Com. Cooldown				X	
	Too much intensity			X		
	Too much volume			X		
	Inappropriate recovery		X			
	Technical errors			X		
3	Facility and equipment					
	appropriate sport wear		X			
	Standard sport materials		X			
4	Environment					
	High tempe.		X			
	Very low temp.		X			
	Rainy	X				
	High altitude		x			

Observation check list for Middle distance

		1	2	3	4	5
		Not at all	Rarely	Sometime /fairly/	Most of the time	always
1	Running surface					
	Aasfalt		x			
	Track			x		
	Hill			x		
	Dirt road			x		
	Forest			X		
	Grass land			x		
	Wet surface		X			
2	Training related					
	Com. Warmup			X		
	Com. Cooldown			X		
	Too much intensity				X	
	Too much volume			X		
	Inappropriate recovery			X		
	Technical errors	X				
3	Facility and equipment					
	appropriate sport wear			X		
	Standard sport materials	x				
4	Environment					
	High tempe.		X			
	Very low temp.			X		
	Rainy		X			
	High altitude					

Observation check list for Long distance

		1	2	3	4	5
		Not at all	Rarely	Sometime /fairly/	Most of the time	always
1	Running surface					
	Aasfalt			X		
	Track			X		
	Hill			X		
	Dirt road			X		
	Forest				X	
	Grass land				X	
	Wet surface			X		
2	Training related					
	Com. Warmup			X		
	Com. Cooldown			x		
	Too much intensity				X	
	Too much volume				X	
	Inappropriate recovery			X		
	Technical errors	X				
3	Facility and equipment					
	appropriate sport wear			X		
	Standard sport materials	X				
4	Environment					
	High tempe.					
	Very low temp.		X			
	Rainy			X		
	High altitude			x		

Observation check list for Jumping

		1	2	3	4	5
		Not at all	Rarely	Sometime /fairly/	Most of the time	always
1	Running surface					
	Aasfalt	X				
	Track				X	
	Hill			X		
	Dirt road			X		
	Forest		X			
	Grass land		X			
	Wet surface	x				
2	Training related					
	Com. Warmup				X	
	Com. Cooldown				X	
	Too much intensity			X		
	Too much volume				X	
	Inappropriate recovery			X		
	Technical errors				X	
3	Facility and equipment					
	appropriate sport wear			X		
	Standard sport materials			X		
4	Environment					
	High tempe.				X	
	Very low temp.		X			
	Rainy	X				
	High altitude	x				

Observation check list for Throwing

		1	2	3	4	5
		Not at all	Rarely	Sometime /fairly/	Most of the time	Always
1	Running surface					
	Aasfalt	X				
	Track			X		
	Hill		X			
	Dirt road		X			
	Forest	X				
	Grass land	X				
	Wet surface	X				
2	Training related					
	Com. Warmup				X	
	Com. Cooldown				X	
	Too much intensity		x			
	Too much volume				X	
	Inappropriate recovery			X		
	Technical errors				X	
3	Facility and equipment					
	appropriate sport wear			X		
	Standard sport materials			X		
4	Environment					
	High tempe.			X		
	Very low temp.	X				
	Rainy	X				
	High altitude	X				

DECLARATION

I declare that this thesis is my original work, has not been presented for a degree in another university and that all sources of materials used for the thesis have been duly acknowledged.
Name: Yeshitila Kassa

Signature:

Date:

This has been submitted for examination with my approval, as a university advisor.
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Signature:
Date: