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## CAUSES AND MANAGEMENT OF SPORT INJURIES: ITS IMPACT ON ATHLETE’S PERFORMANCE AT ATHLETE TIRUNESH DIBABA SPORT TRAINING CENTER, ETHIOPIA

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### ABSTRACT

**Background:** 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 possess 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 ATDSTC will be discussed under this paper.

**Purpose:** The purpose of the study was to assess the Causes and Management of Sport Injuries and its impact on Athlete’s performance at Athlete Tirunesh Dibaba Sport Training Center.

**Methods:** 320 athletes and 1 physiotherapist were included as source of information for the study. Data were collected from secondary sources. The method of data collection employed includes questionnaire for athletes’, self-administered questionnaire and depth document analysis. The data were analyzed by using simple descriptive statistics such as percentage, frequency and rank order to summarize the results of the research objectives.

**Results:** The findings revealed that most athletic injuries were occurred due to lack of training error, proper training equipments, training area and proper treatment.

**Conclusion & Recommendation:** similar to previous studies done so far, the common athletics injuries are 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.

**Keywords:** Sport Injury, Rehabilitation, Performance, Treatment.

### Introduction

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 possess a particular challenge to a coach trying to prevent and treat athletic injuries because each event presents its own unique problems.

There are basically two types of injuries: acute injuries and overuse injuries. 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.

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 280 athletes from all regions and city administration. The main mission of the training center is to produce new talented athletes by providing scientific training to support Ethiopian Athletics. This is a huge boost to the national sport. The Training Center trains athletes for only four years and then transfer to different clubs. In this study we tried to investigate Causes and Management of Sport Injuries and its impact on Athlete’s performance at Athlete Tirunesh Dibaba Sport Training Center.



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## 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 sports or 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. As a result of this the researchers are interested in investigating the Causes and Management of Sport Injuries that is happening in Athlete Tirunesh Dibaba Sport Training Center and its impact on Athlete's performance. Because the saying, "Prevention is better than cure" is especially relevant to the athlete. Many preventive measures are very much common sense but specific precautions are still important. (Peter J L Thompson, 2009).

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 researchers are a part of the training center these initiate them to deal with this topic. In addition the study plays a very significant role for other Athletics Clubs and Athletics training centers on 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.

1. What are the common sport injuries that are happening in different Athletics events in the training center?
2. What are the common causes's of sport injuries in Athlete Tirunesh Dibaba sport Training Center?
3. What are the impacts of athletic injuries on athlete's performance?
4. Is the treatments, which is given to the Athletes by the training center, is enough?
5. Is there any administrative difficulty to manage the injury problems in the training center?

## 1.4. Significance of Study

This study will have a valuable importance for ATDSTC particularly; because there is sport injuries in the training center that are frequently affect the performance of the athletes. Identifying the common sport injuries and their possible causes would help the training center what measures should be taken to manage the existing problems. Since the researchers are a part of the training center these initiate them to deal with this topic. In addition, the study plays a very significant role for other Athletics Clubs and Athletics training centers on identifying and managing injuries that the athletes are facing during engaging themselves on regular training. Lastly this study will initiate other researchers to conduct further studies.

## 1.5. Objective of the study

### 1.5.1. General Objectives

The general objective of the study was to know the causes and management of sport injuries and its impact on athletes' performance in ATDSTC.

### 1.5.2. Specific objective

The specific objectives of this study were to:

- Identify the common injuries in the training center by discipline.
- Find out the causes of athletic injuries in each discipline.
- Assess the impacts of athletic injuries on athlete's performance.
- Investigate the administrative problems in the training center to give full treatment for injured athletes.

## 1.6. Definition of Terms

**Athlete:** - a competitor in track or field events

**Athletics** - sports such as running jumping, throwing etc.

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

**Track** - race course, running track

## 1.6. Delimitations

The study is delimited to only 2002-2005 E.C trainees who visit physiotherapy center in Athlete Tirunesh Dibaba Sports Training Center.

## REVIEW OF RELATED LITERATURE

### 2.1 Definition of Sports Injury

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 and power, (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 poses 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)



Picture 1; Sport Injuries. (Adopted from: Kurt Duster berg page 70)

### 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

###### i) 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.

###### ii) 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



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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 is usually an early season injury resulting from attempting to do too much too soon!

**iii) 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.

**iv) 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.

**v) 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.

**i) Plantar Fasciitis**

Plantar Fasciitis 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 the foot, widening as it spreads to attach to the heads of the metatarsals (the long bones of the foot). Symptoms of plantar fasciitis 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 fasciitis 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.

**ii) 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.

**i) 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.



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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.

**ii) 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.

**iii) 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.)

**iv) 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 cuffs 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.

**i) 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.

**ii) 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.

**iii) 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.



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#### iv) Neck Injuries

It is most often seen 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.

### 2.3. 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.

### 2.4 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 others. Evidence was also provided by Newell (2011) to show which injury occurred the most in each month during the season:

### 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 seven principles to adhere to prevent injury, which are as follows:

Physical conditioning- strength, balance, flexibility, endurance.

Appropriate training methods- Exercises that 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 return to its resting state.

**Flexibility-** poor flexibility can result in awkward or uncoordinated movements which may lead to injury.



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**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.

### 3. Methodology

#### 3.1. Research Design

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 we have chosen to obtain the relevant data is quantitative research in the form of a questionnaire depth document analysis. It is stated by Bryman (2004) in Ronan Baxter (2013) questionnaires as are cheap and quick to administer cost effective and is convenient for respondents. The questionnaire was designed based on the objectives and literature review. This method is particularly effective for me as I'm a student and cannot afford an expensive method and a large amount of information was being sought so therefore a convenient method was needed.

#### 3.2. The study Area

The research was conducted in Oromia Ro+ads Construction Enterprise Athletics club, Oromia region, Arsi zone, Asela.

#### 3.3. Target Population /Subjects

Target population of the study was 320 (2002-2004 E.C) Athletics trainees at ATDSTC.

#### 3.4. Data collection Tool

Data was collected through observation, Questionnaires and Depth document Analysis.

#### 3.5. Procedure

The first step that was taken by the researchers was to get the permission of the physiotherapist in the training center to get the four years (2002-2004E.C) injury report. After permission was granted and before distributing the questionnaire in the dressing room after the first home game of the season, the author read a detailed explanatory sheet to make the participants aware of the aim and objectives of the research.

#### 3.6. Data Organization and Analysis

The data collected through observation, Questionnaires and depth document analysis is organized and categorized based on the objectives, considering the research question of the study. Therefore, quantitative and qualitative analysis will be employed.

#### 3.7. Method Analysis

Descriptive statistics will be presented using Microsoft Excel to accomplish the relevant aims and objectives. Results will be produced in a graph format and can be viewed in the research section of the project. Not all questions will be illustrated graphically. Those with many variables lend themselves to graphic illustration.

## RESULTS AND DISCUSSION

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

### 4.1 Short Distance Runners

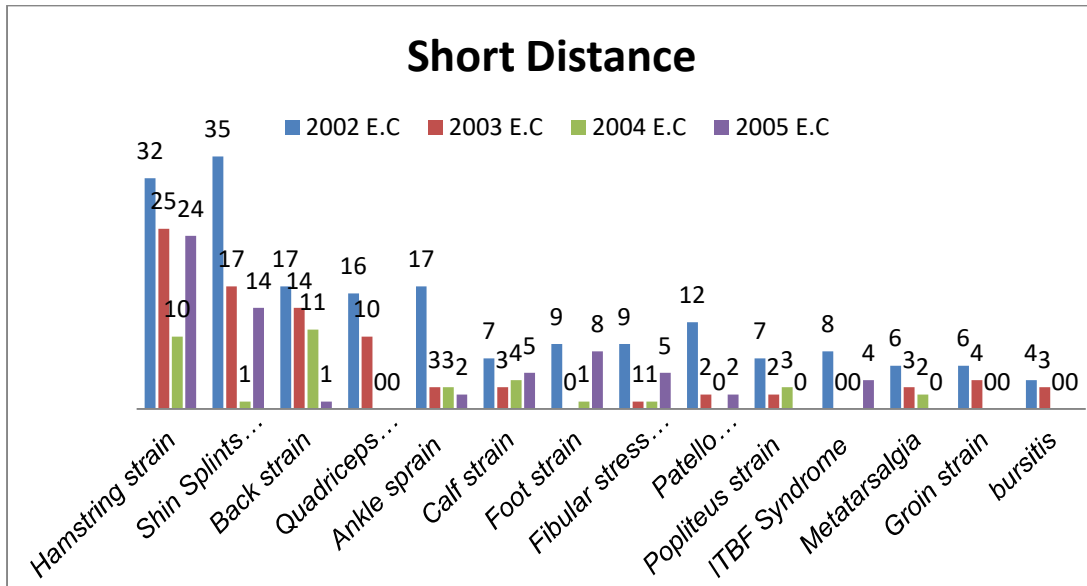


Fig. 1 short distance injury occurrence from 2002-2005e.c

As the above figure show that the highest injuries which occurred in 2002 was shin splints and hamstring strain with 35 and 32 frequencies respectively. As this frequency indicate that mostly short distance runners were exposed to shin splint and hamstring strain due to the training age, the intensity of training, the training field and sport wear problems mainly. This study was with agreement to ....

Whereas the lowest injuries occurred in 2002 were metatarsalgia, groin strain and bursitis with frequency of 6, 6 and 4 respectively.

In 2003 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 showed were metatarsalgia and bursitis with frequency of 3 and 3 respectively. Whereas, ITBF were not occurred throughout the years.

In 2004 the highest injury frequency was showed on back strain and hamstring strain with 11 and 10 respectively. The cause for these injuries was the training field which the training provided was not such comfort for the trainers. The non-occurred injuries were Quadriceps strain, Patello femoral syndrome, Illiotibial Band Friction (ITBF) Syndrome, Groin strain and bursitis.

In 2005 E.C the highest injury frequency was showed on hamstring strain and shin splint with 24 and 14 respectively. The non-occurred injuries throughout the years were Quadriceps strain, Popliteus strain, Metatarsalgia, Groin strain and bursitis. As the injuries rate was decrease though the four training years.



### 3.2 Middle Distance Running Events

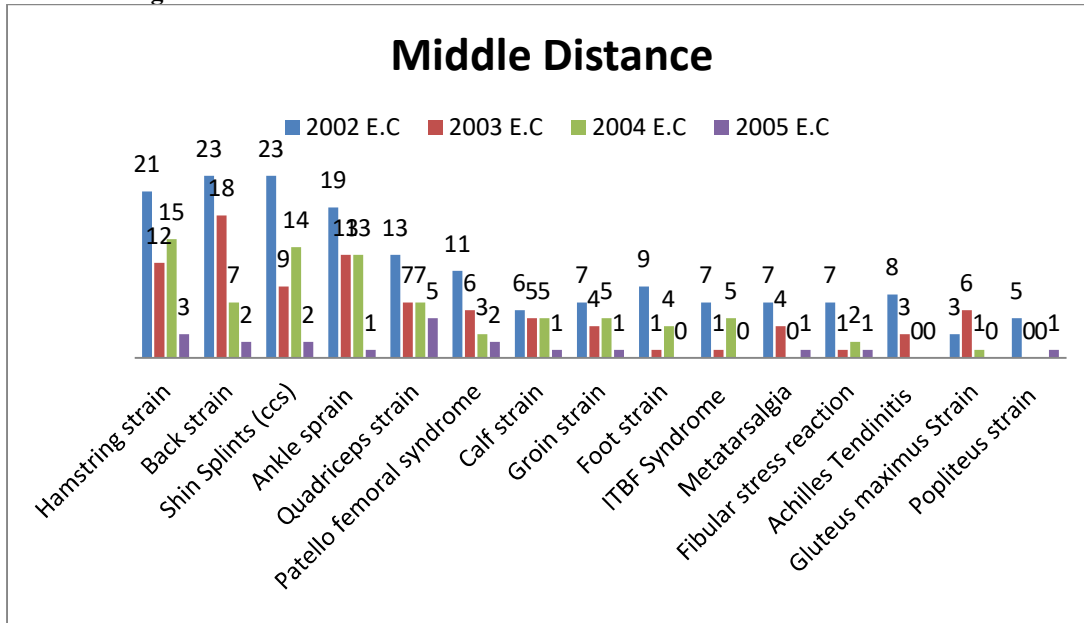


Fig 2. Middle distance injuries occurrences from 2002-2005 E.C

As the above figure 2 showed that the highest injuries which occurred in 2002 was shin splints and back strain with 21, 23 frequencies respectively. As this frequency number 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 2002 were Popliteus strain and **Gluteus maximus Strain** with frequency of 5 and 3 respectively.

In 2003 E.C the highest injury frequency was showed on 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 2004 the highest injury frequency was showed on hamstring strain and shin splint with 15 and 14 respectively. The cause for these injuries was the training field which the training provided was not such comfort for the trainers. The non occurred injuries throughout the year were Popliteus strain, Achilles Tendinitis and **Metatarsalgia**

In 2005 E.C the highest injury frequency was showed on Quadriceps strain and Hamstring strain with 5 and 4 respectively. 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.**



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### 3.3 Long Distance Running Events

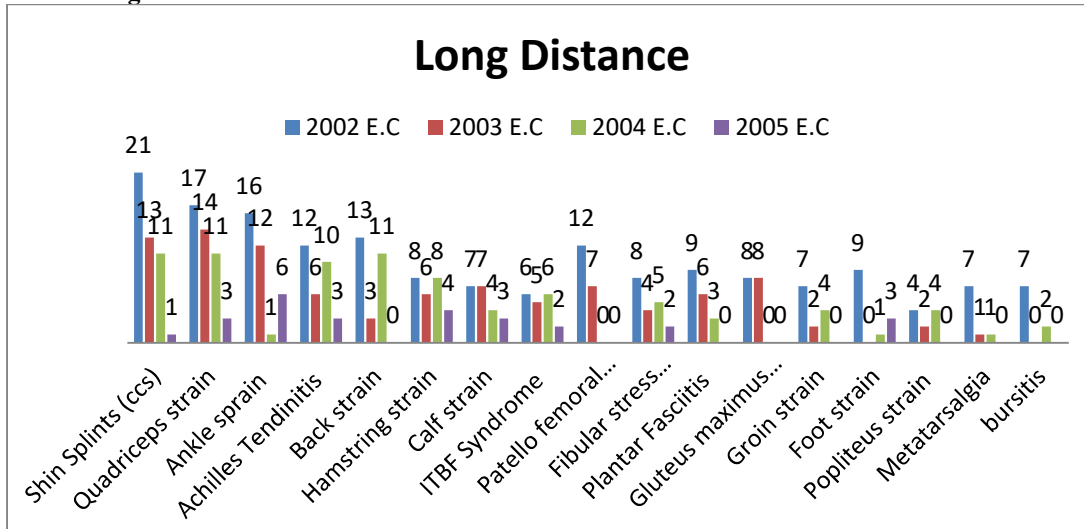


Fig 3. Long distance injuries occurrences from 2002-2005 E.C

As the above figure 3 showed that the highest injuries which occurred in 2002 was shin splints and Quadriceps strain with 21 and 17 frequencies respectively. As this frequency number indicate that 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 2002 were Illiotibial Band Friction (ITBF) Syndrome and Popliteus strain with frequency of 6 and 4 respectively.

In 2003 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 2004 the highest injury frequency was showed on hamstring strain, shin splint and Back strain with the same of 11 respectively. The cause for these injuries was the mostly training error. **bursitis**, **Metatarsalgia** and **Foot strain** with frequency of 2, 1 and 1 respectively throughout the years. The none occurred injuries throughout the year **Gluteus maximus Strain** and Patello femoral syndrome.

In 2005 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**. As the injuries rate was decrease though the four training years.



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### 3.4 Jumping Events

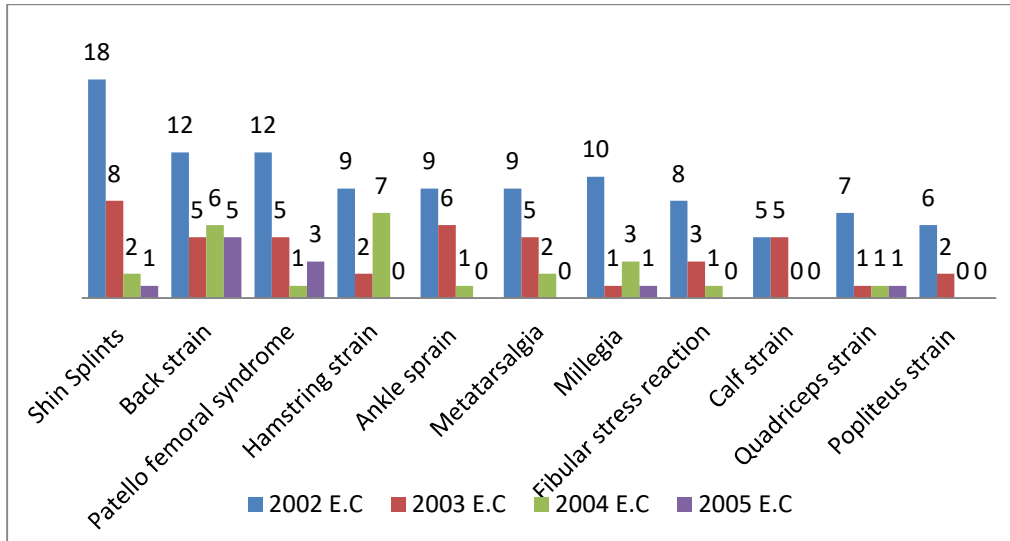


Fig 4. Jump injuries occurrences from 2002-2005 E.C

As the above figure show that the highest injuries which occurred in 2002 was Shin splints, Back strain and Patello femoral syndrome with 18, 12 and 12 frequency respectively. As this frequency number indicate that mostly jumping events were exposed to shin splint, back strain and Patello femoral syndrome due to the training age, the intensity of training, the training field and sport wear problems mainly. Whereas the lowest injuries occurred in 2002 were Quadriceps strain, Popliteus strain and Calf strain with frequency of 7, 6 and 5 respectively.

In 2003 E.C the highest injury frequency was showed on shin splint and Ankle sprain with 8 and 6 respectively. Indicate that still the athletes were not cope up to the training program which provided by the training camp. But the lowest injuries showed were Popliteus strain, Hamstring strain, Quadriceps strain and Millegia with frequency of 2, 2, 1 and 1 respectively.

In 2004 the highest injury frequency was showed on hamstring strain and back strain with 7 and 6 respectively. The cause for these injuries 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. The none occurred injuries were Calf strain and Popliteus strain.

In 2005 E.C the highest injury frequency was showed on Back strain and Patello femoral syndrome with 5 and 3 respectively. The none occurred injuries throughout the years were Hamstring strain, Ankle sprain, Metatarsalgia, Fibular stress reaction, Calf strain and Popliteus strain.



### 3.5 Throwing Events

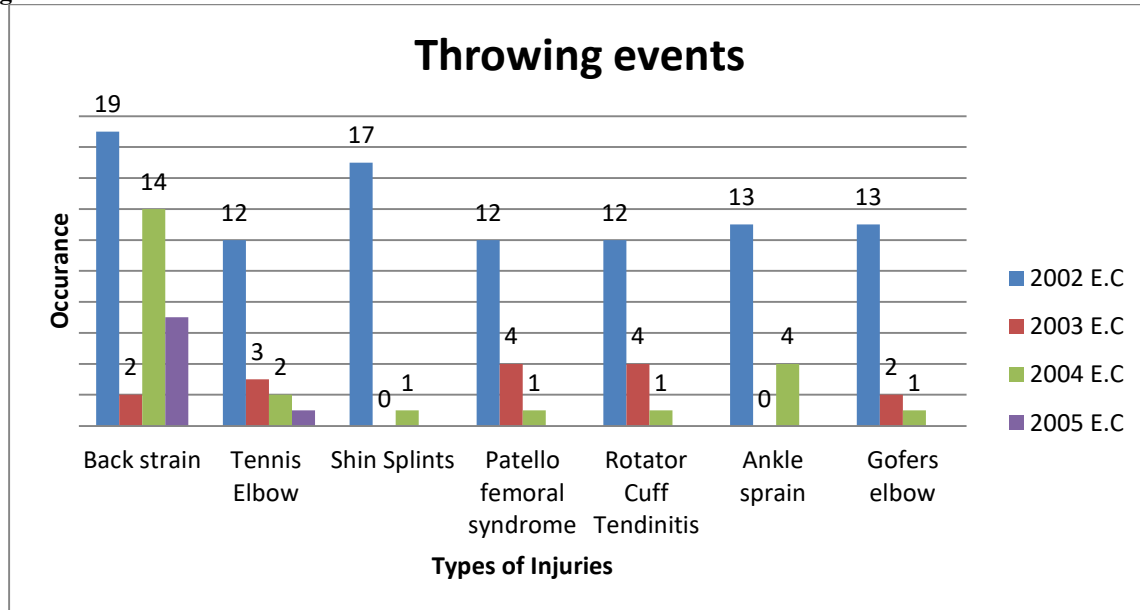


Fig.5 Throwing Events Injuries Occurrence from 2002-2005 E.C

As the above figure 5 showed that the throwing events athletes were most frequently injured in 2002 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 mainly.

In 2003 E.C the highest injury frequency was showed on Rotator Cuff Tendinitis and Patello femoral syndrome with 4 and 4 respectively. Indicate that still the athletes were not cope up to the training program which provided by the training camp. But the none occurred injuries were Shin Splints and Ankle sprain.

In 2004 the highest injury frequency was showed on back strain with frequencies of 14 times. The none occurred injuries were **Gofers elbow**, Rotator Cuff Tendinitis, Patello femoral syndrome and Shin Splints.

In 2005 E.C the highest injury frequency was showed on Back strain with frequencies of 7 times. The none occurred injuries throughout the years were Shin Splints, Patello femoral syndrome, Rotator Cuff Tendinitis, Ankle sprain and **Gofers elbow**.

### 3.6 Analysis on Common Causes Sport Injuries

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

1. Training error including running to far, increasing the distance or time to quickly, high intensity and poor techniques and fatigue.
2. 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.
3. Training not considering the training age of an athlete's (i.e. athletes mostly working together in groups without considering chronological and training).
4. Proper training equipment like sport shoe problems mainly happened that were forced the athlete to train and compete with the same improper shoe.
5. Training area i.e. not proper training area specially in 2002 and 2003 E.C due to that many athletes were injured
6. Lack of proper treatment provided by the training center.
7. Not Good strength, balance and flexibility also have great effect



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### 3.7 Impact of Sport Injuries on Athletic Performance

As it obvious that athletic injuries were mostly affecting athletes performance negatively due to taking long time to recover or fully rehabilitate from the injuries.

## CONCLUSION AND RECOMMENDATIONS

### Conclusion

There is significant evidence throughout this literature review to suggest that injury is largely prevalent throughout the GAA as well as other sports. There are a number of different injuries that are common in the GAA however; the hamstring injury remains most prominent. Despite this, there is still a large amount of money paid out on insurance claims for a vast amount of injuries such as cruciate ligament damage, groin injuries, etc

The large sporting organizations around the world provide a number of guidelines, tips, etc. as to how athletes and coaches can help to prevent and minimise the risk of injury. These guidelines differ depending on the sport you are involved in. However, despite all these guidelines being available for clubs, injuries are inevitable in such a multi directional contact sport.

Although the participants were made aware of ways to minimize or prevent injury it was evident that a number of participants felt that the club could have better ways of treating and dealing with injuries. It is also demonstrated in this project that non-contact injuries are hugely prevalent within the GAA and that more research is needed to get to the root of this problem.

The GAA club also needs to consider making their participants more aware of protective equipment as this can not only be beneficial to the individual but also to the club as well. Another important point arising from this project is the fact that a number of players continue to participate despite suffering an injury. This suggests that more consultation is needed between the club, players and management as this may have drastic effects for the health of participants in the future.

Overall, the author feels that the club and the majority of participants need to be more aware of ways to prevent, treat and recover from injury. Channels of communication can be improved between club officials and players regarding the injuries as the author felt that participants were grateful for the opportunity to voice their opinion via the questionnaire.

Having conducted this research, the author believes further research and a detailed analysis is needed in the area of injuries within GAA.

### Recommendations

- ➔ A study should be conducted to determine the maximum distance that should be run by runners of specific characteristics. This needs to take into account differences in individual goals and abilities.
- ➔ Running speeds and distances should be built-up gradually.
- ➔ A campaign aimed at increasing runners' awareness of the injury consequences of training errors should be developed and promoted
- ➔ More research is needed to demonstrate the relationship between running style imperfections and injury risk.
- ➔ Purchasers of running shoes should be encouraged to look for certain characteristics of shoes and not to be unduly influenced by price.
- ➔ Runners should choose their shoes carefully, preferably with professional advice.
- ➔ Runners should seek prompt attention to their running injuries from a person with first aid qualifications.
- ➔ The author believes that the club needs to be more proactive in the treatment of injured players.
- ➔ A structured pre planned schedule with regard to treatment of injuries should be discussed and agreed upon at the season outset.
- ➔ Runners should avoid hard rigid surfaces.
- ➔ Drinking water should be provided at all running events
- ➔ Runners should ensure they drink adequate water.
- ➔ Runners should wear appropriate clothing when running.