A STUDY TO DETERMINE FIRST AID KNOWLEDGE & SKILLS OF JYVÄSKYLÄ JAGUAARIT YOUTH AMERICAN FOOTBALL TEAM ON COMMON INJURIES

A quantitative study

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Abstract

The aim of this study was to determine the existing level of knowledge and skills regarding first aid in common injuries amongst the Jyväskylä Jaguaarit youth American football team. The target group was the under 21 years old team. The study was inspired by the fact that, during practice and training sessions, the team usually has no trained professionals to take care of the injuries and provide first aid. Thus, the players and coaches assume this responsibility.

A descriptive quantitative approach was used in this study, using a closed-ended multiple-choice questionnaire to collect the statistical data from the participants. The questionnaire was projected to gain specific knowledge on the most common injuries occurring in youth football.

Results indicated that the youth team had the basic knowledge on the treatment of the most common injuries football, but clearly lacked knowledge on the various initial steps needed to care for an injured teammate. Twenty-seven participants took part in the study, out of which more than half had prior first aid knowledge or qualification. An average of 62% of the participants answered correctly. This can be attributed to the fact that, half of the participants had prior first aid knowledge.

Using the results from this study, it is recommended that further first aid education is needed for the team in order to boost their skills and confidence in handling injury situations. However, the responsibility of providing first aid should not be left to the players and coaches to handle. In addition, a larger nationwide sample-size would produce far more results, which could provide a bigger picture of the current situation in Finland.

Keywords
injuries, first aid, American football, youth

Miscellaneous

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1. INTRODUCTION

Sports injuries are the most damage-inflicting group of injuries in Finland, with an average of 330 000 injuries each year. Out of these injuries, 65-80 % are acute, the rest of which are stress injuries – injuries that happen due to excessive repetition. The age frame in which injures are most likely to happen is 15-34 years of age. The incidence for injury is up to 20-times more likely to happen during competitive mode, than while practice or training. (Parkkari, 2005, 567)

The Jyväskylä Jaguaarit team, founded in 1996, is young and vibrant, and has a long history of successful youth football program that have resulted in several national titles over the years. Like most other Finnish American football organizations, the Jyväskylä Jaguaarit is not a well-known team within the city due to the low number of players compared to other dominant sports like ice hockey. This results into problems such as difficulty in getting optimal practice times, lack of attention by local media and ultimately lack of first aid professionals present at practice sessions which is an essential component in this study. (jaguaarit, 2011)

The initial idea of undertaking this study was as result of our personal experiences as previous members of the Jyväskylä Jaguaarit American Youth Football team and the subjective opinions regarding the lack of medical personnel in the practice setting. The simple fact is that, if a drastic injury was to occur during a training session, the first line of care would be provided by players and coaches, whom either are skilled in first aid or not. This inspired the motivation to look into the situation and determine their knowledge of basic first aid skills on common injuries in football.

In spite of these alarming rates of injury, many youths in Finland and all over the world enjoy sports and specifically American football. This is due to their passion to develop physically, emotionally and socially through sports. This is achieved through their unwavering enthusiasm to practice daily and take part in competition with each other. Thus, a growing demand for adequate and safe training and play environment where they can harness their energy and develop their skills and talents as they mold into professional players.

2. AMERICAN FOOTBALL

2.1 Introduction to American Football

American football, known in the United States simply as football, is sport played by two teams of eleven players. Teams consist of far more players than just the eleven, usually from 40 to 50 but only eleven can be on the field at once. The sole objective of the game is to outscore the opposing team by taking the ball into the other team's end zone. (touchdown, 2010)

Points can be scored in various different ways: by running the ball into the end zone, throwing the ball forward to specific players and catching it within the end zone, kicking the ball through the opponent's goal posts or by tackling an opposing offensive player behind their own goal line.

American football is played on a rectangular field 109, 7 by 48, 8 metres (usually preferred in yards, 120 by 53,3yds). The actual playing field consists of two 10 yard end zones and 100 yards of actual playing field. At the back of each end zone lie two goal posts connected together by a crossbar 3,05m from the ground. The crossbar makes the goal post 5,64m wide. (touchdown, 2010)

The actual game is all about moving the ball, using different offensive plays as mentioned above. Each offensive turn consists of 4 attempts, called downs, in which the offense attempts to move the ball 10 yards towards the opposing team's end zone. If the ball is moved the 10 yards successfully, they receive yet another 4 downs to gain yet another 10 yards, and so on.

If the offense fails to gain the required 10 yards, the opposing team gets the ball and their offense steps onto the field. This all continues until the ball crosses the goal line resulting in a touchdown (6 points), or alternatively if the team fails to progress the 10 yards they may choose to kick the ball as far back into the opponents' end to make their attempt to score more difficult. (touchdown, 2010)

The players involved in playing American football differ from size, shape and responsibility. Some positions require fast paced movement, impressive bursts of speed in order to score more points. Still, the outcomes of games still fall down to the entire team working as a whole. It is the perfect example of a sport that is somewhat symbiotic in nature and cannot function without the full support of all teammates at one certain moment in time. (touchdown, 2010)

The main positions and descriptions are as follows:
Offense:

- Quarterback: Disputably the most important position in American football, the quarterback is responsible for orchestrating everything that happens on the offensive side of the ball. They act as the passage between the coach and the players, getting calls and strategies directly from the coach and relaying it on to the players.

  Once the quarterback tells the offensive team what to do, they then execute by either running of throwing the ball. The quarterback just before the snap can also change the strategy if any weaknesses or clear abnormalities are detected on the defensive side. The quarterback starts every play by getting the ball from the center and then either giving the ball to a running back, or passing it to one of the wide receivers. (touchdown, 2010)

- Offensive linemen: These strong, often large in size players are responsible for offering the quarterback protection in passing plays and physically pushing or blocking opposing defenders out of the way in running plays. The center is the middle position, which is responsible for snapping the ball to the quarterback in the beginning of every play. They are usually the only members of the offensive line who get to touch the ball.

- Running backs: These players most often line up behind the quarterback and are mostly responsible for carrying the ball and running with it. They also catch passes and block on occasion, which makes them a very demanding and versatile position. There can also be two running backs on the field at once, usually making the second one a blocking back or full back that literally makes way for the running back my running into opposing players. (touchdown, 2010)

- Wide receivers: The main function of these players is to catch the passes that the quarterback chooses to throw. The wide receivers, are faced by up to three defensive players and must navigate their way through the defensive backfield in a predetermined manner and try to catch the ball. They can then run with the ball after catching, or if tackled instantly this will be the new placement of the ball. Wide receivers are also responsible for making vital blocks on defenders in open field, making way for the running backs. (touchdown, 2010)

Defence:

- Defensive linemen: The sole purpose of the defensive line is to give the quarterback pressure and prevent him from throwing the ball downfield. The line is also responsible for the first line of defence against any run plays that they are faced with.

- Linebackers: Defensive players that operate behind the defensive line. They have several jobs to do, but the most important is to stop the opposing running back from getting past them. They may also be used as extra pressure on the quarterback by trying to get to him before he throws the ball. Linebackers can also defend the pass.
- Defensive backs: These defensive players are placed against the wide receivers and their objective is to prevent any passes from coming in their direction. (touchdown, 2010)

2.2 History of American Football

The earliest mentions of American football go back to the mid 1800's, where college students were challenging one another to play football. This form of football was nowhere near what it is today; players were only allowed to hit, kick or dribble the ball down the field and running with the ball was prohibited. American football derives from games played around the world. (Arolainen and Vartia, 1987, 16.)

Soccer and rugby both have strong history in England and have both played part in making American football what it is today. Rugby dates back to the 11th century, when small boys played tackle-ball with an inflated cow bladder. The King due to the brutal injuries and even deaths it caused outlawed this sport.

There has even been solid evidence proving that a form of soccer was played during the Han dynasty in China, which dates back to 206 BC. Whilst soccer was the dominant sport in England, rugby made its debut almost by accident. In 1823 at a university called Rugby College, a player decided to pick the ball up and run it into the goal. This was unsurprisingly not allowed in accordance with the current rules, but the spectators seemed to love what was happening. Therefore, the Rugby College began letting the players carry the ball and so, rugby was born. (Arolainen and Vartia, 1987, 16.)

Intercollegiate football was born soon after the American Civil War. Games were already held in 1865, but the first official rules were formed in 1867 by Princeton University. It seemed as though every school had its own rules. Nevertheless, the first official intercollegiate game was played in 1869, after which the biggest universities decided to meet and formulate official college football rules.

The Ivy League; the first American football league was formed. From there on, the sport quickly detached from any links to soccer or rugby and got its own identity. Perhaps the most important architect in how the game was changed was Walter Camp. He coached the game and had great new ideas on how to make the flow of the game better. (Arolainen and Vartia 1987, 16.)

The changes he made to the game can still be seen today. The final rule changes happened in the beginning of the 1900's. The sport had gotten so dangerous and violent that in 1905, at least 18 players died in college football games so President Roosevelt demanded the sport be made safer or it be outlawed. This meant that the violent strategies used in games were removed, forward passing was allowed and players began using protective equipment. (Arolainen and Vartia, 1987, 18.)

Soon after, the entire country was in a football pandemonium. It was not long until a professional league was created in 1920. The American Professional Football Association (APFA) was formed and two years later it was renamed, The National Football League (NFL). (Arolainen and Vartia, 1987, 19.)

2.3 American Football in Finland

In the 1970's and 80's, America seemed to dictate the trends in Europe. Finland had a great number of exchange students going to the United States to spend a year in their school system and naturally, they drew in what they saw and experienced there. They returned with footballs, some small equipment and most importantly a burning desire to begin playing the sport in Finland. (Arolainen and Vartia, 1987, 38.)

Perhaps the most vital group of young men going abroad was from a high school in Munkkiniemi, Helsinki. They returned in 1975 and began organizing games between the Finnish-American embassy and another high school in Tapiola. Rules were not the most important issue, they were altered on the go – playing was the main idea. This sparked enthusiasm in other Finnish cities and soon there was an urge to play all over the country.

Organizers varied from high school students returning from exchange periods to visiting missionary Mormons. In 1979, the growth in team numbers resulted in an official league being formed; the Finnish American Football Association (SAJL) was founded and the first national title game took place in 1980. The league was named the Maple League in 1982, when Canadian coach Mel Swenson gave the league its' championship trophy and thus its name (Arolainen and Vartia, 1987, 38.)

Football flourished from then on until it slowed down at the end of the 1900's. In 2010, there were over 100 teams and more than 1700 licensed players in Finland. The Maple League hosted 8 teams and the 2010 champions were the Porvoo Butchers, with the Seinäjoki Crocodiles as runners up. (Suomen Amerikkalainen Jalkapallon Liitto, 2010)

2.4 Youth American Football in Finland

Within a short span after the introduction of American football in Finland, the conception of the Finnish youth team in the 80's followed. This was a mandatory and essential part of the national teams all over Finland. The initial requirement for each team was to establish and run a minimum of four youth teams in the Maple League. (Suomen Amerikkalainen Jalkapalloliitto, 2011)

The performance of National teams in American football in Finland gauged by the performance of various youth clubs activities within it. The respective teams with support from Finnish American Football Association (SAJL) manage this youth clubs. Youth programs were established as part of the National teams. This was due to the increasing demand to develop local niches within the clubs that would function as a pool of young and vibrant players with skills and capability to succeed as professional players and thus, creating continuity in the teams. (Suomen Amerikkalainen Jalkapalloliitto, 2011)

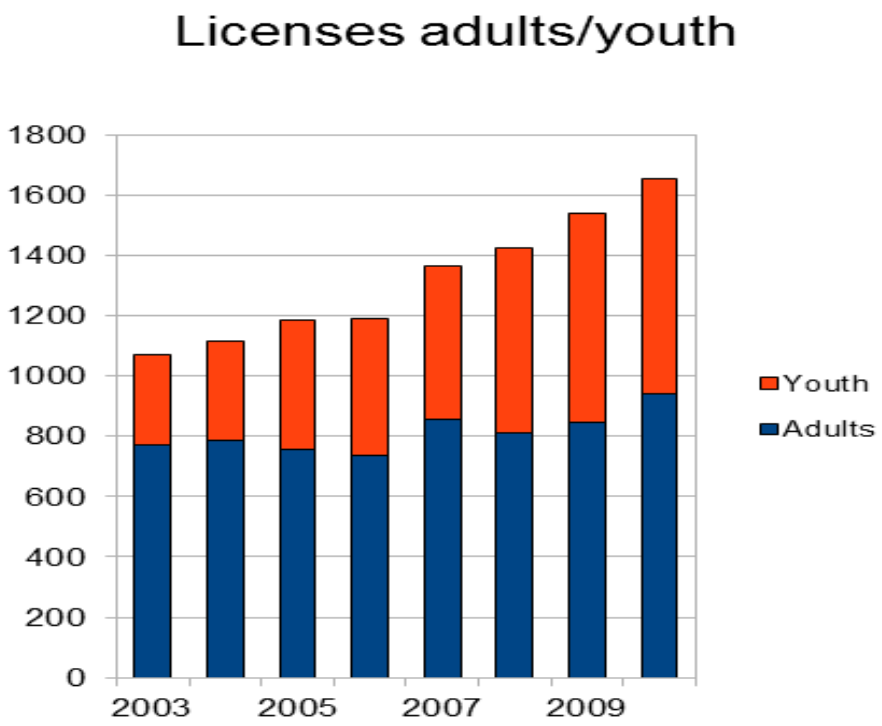
Maple league initiated a school program, following an upsurge of interest in the American Football in Finland. Here, students from various schools are introduced into the game and trained at school level, the basic simple foundation skills to enhance their interest in playing football with an aim of getting new recruits for the junior teams.

According to the statistics provided by the Finnish American Football Association, the number of licensed youth players in 2010 was 713, as shown in Figure 1. There are about 10,000 students in 90 schools across Finland, whom are also members. Forty schools are competitively engaged in tournaments and national championships. This in turn is aimed at building and developing young talents among the youths in Finland to embrace deeply the culture of American football and to be able to dwell in the challenging and dynamic nature of this contact sport. (Suomen Amerikkalainen Jalkapalloliitto, 2010)

This expansion initiated by the national teams to form the youth teams, has been viewed as a broader scheme to tap young talents of different age groups. There are both male and female ranging from the ages of Under 21 years old , 19, 18, 17 leagues , with the latest being the under 15 years old that was introduced in 2002.

The future expansion of the youth leagues targets even below 13 years of age, giving an opportunity for all to enjoy the sport. The league games and competitive games are organized by Maples all year round, with every age bracket having a season to play. For example the under 21 league are played in early spring, 19 and under league are played during summer among others. (Suomen Amerikkalainen Jalkapalloliitto, 2011)

FIGURE 1: The number of licensed youth in comparison to adults.



(Suomen Amerikkalainen Jalkapalloliitto, 2011)

3. INJURIES IN YOUTH AMERICAN FOOTBALL

3.1 Introduction to injuries

American football has been considered for centuries as a contact sport. This is due to the aggressive nature of the play that it has inherited from both the Rugby and soccer. The game is characterized by the collisions and impacts of players, resulting into injuries to various parts of the body. These injuries often force players out of the game for some time, or in extreme cases may end a player's career or result in loss of life.

The term injury can be can be defined as physical harm or damage to the tissue of the human body. This can be through one's self or by the surrounding environment. Injuries usually occur when the body tissues can no longer withstand the excess energy it receives, hence resulting into tissue damage. (Dictionary of Sport and Exercise Science, 112)

However, Sports injuries on the other hand, are injuries sustained when one participates on a physical activity or during training exercise. Sports therefore, if defined as a game or exercise where physical energy is used. Sport injuries, have been previously looked at as simply products of competition in a game, but in the contemporary sporting world, the entire training setting has to be considered, since injuries also occur to players during their daily training regimes. (Rolf, 2007, 1)

The injuries sustained by a player, can be due to their ability, skills and experience in a particular game and as in this case the American Football. Their general health and fitness levels also play a role. The position in the playing field that a player holds, usually act as a predisposing factor to the number of injuries they might undergo as shown in Figure 2. (Rolf, 2007, 3)

According to Seward, Orchard and Hazard (1993, 298-301), a sports injury is defined as an injury causing a player to be unavailable for selection in a match or participation in a training session. This injury requires specific medical treatment, rather than the typical conservative measures taken in everyday life.

Some studies regard sports injuries as amounts of time lost, which is an extremely useful tool when looking at the severity of injuries. Though when looking at the time lost, one must distinguish the level at which the athlete is participating in order to achieve an accurate result. For example, an athlete playing American football twice a week is far more likely to make it to the next training session, where as a competitive athlete training seven times a week will definitely lose time. (Junge and Dvorak, 2000, 28)

FIGURE 2. Below, shows the injury frequency by position of the player.

Table 1. Injuries by position

Offense	
Running backs	29
Offensive linemen	16
Wide receivers	9
Quarterbacks	6
Tight ends	5
Total	65
Defence	
Linebackers	21
Defensive linemen	16
Defensive backfield	9
Total	46
Special teams	
Kick-off	1

(Karpakka, 1993, 136)

3.2 Prevalence of injuries in Youth teams

American Football is a game characterized by a fast and powerful nature of movement by the players. This is a highly physically demanding game, where injuries are bound to occur. The most common injuries includes and limited to concussion, sprains, fractures, strains, heat strokes, cuts and bruises, cervical injuries among others. (Saal. 1991, 132 – 147).

American football is one of the most popular sports worldwide and has increased in popularity in the United States and specifically in Finland in the past years, especially among youths. In a study conducted by the American Football Coaches Association, published in February 2010 by the National Center for Catastrophic Sport Injury Research, an estimated 1,021 direct fatalities and 722 indirect fatalities was reported from the years 1931 to 2010. (Annual Survey of Football Injuries, 2010, 19- 20).

In addition to that, according to the National Electronic Injury Surveillance System of USA statistics, an estimated 451,961 injuries registered in 2009. This data was represents the estimated number of players treated in emergency care departments, sampled from 96 hospitals within USA. This further confirms that there are a higher number of injuries experienced by players in American football. (National Electronic Injury Surveillance System, 2009, 1)

Safety interventions to reduce injury incidence are in place, and players have a range of protective clothing, helmet, knee and shoulder pads, gloves, a mouth-guard, a jockstrap and other garment designed to protect them from injury during impact. However, still football remains the game with high prevalence of injuries.

In Karpakka study of American football injuries in Finland, during the 1991 preseason and season, where injuries causing absence from game or practice were registered, the study proved that the amounts and magnitude of injuries in Finland are indeed quite similar to those in America, taking into consideration the differences in proportion of sport and population. (Karpakka, 1993, 135)

In this study out of the 684 players, 112 injuries were registered. Knees were the most frequently injured (28, 6%) with ankles at (16, 7%), with only two severe cerebral concussions and no permanent cervical injuries recoded. Out of all reported injuries, 65 occurred in games and 47 during training. Forty-eight moderate injuries were registered causing 1-3 weeks of absence and 64 severe injuries causing more than 3 weeks of absence from games or practice. The study also points out that as the percentage of severe injuries during competition is only slightly higher than those during practice, competent medical personnel should therefore also be present during practice (Canale, Cantler, Sisk and Freeman, 1981, 384-9)

According to a study of neck injuries presented at emergency departments in the United States from 1990 to 1999, American football in comparison with other contact sports such as ice hockey and soccer remains the sport with greater number of neck injuries. Other injuries also include concussions, strains, sprains, with the knee, ankle, back, wrist, shoulders. (Delaney and Kashmir, 2004)

Football, remains one of the popular sporting activity for the youths in Finland, providing them with the opportunity for a healthy daily exercises. During training sessions for the under- 21 team, there are no trained medical staff present to take care of injured players. Therefore, the first line of care falls to the sole responsibility of the players and coaches.

The players and coaches are always under pressure to provide the much needed first aid care, which involves medical decisions. These cases require precise knowledge and skills that are vital to the outcome of the injury. This is a challenging, demanding task and errors made due to lack of proper knowledge, and skills can result into a faulty first aid that might affect the recovery of the patients or compound more the injury. (Rehberg, 2007, 2-12)

Numerous studies in the past have investigated the various types of injuries in American football, in relation to other contact sports. They dwell on injury sites, affected organs, and cover both the United States and Finland. However, neither of these studies has attempted to investigate the knowledge and skills on first aid of American Football Youth teams.

When defined, First Aid is the assessment and intervention of an injury or illness performed by a bystander or the victim himself or herself with minimal or no medical equipment. A First Aid Provider, on the other hand, is defined as an individual who possesses formal training in first aid, emergency care, or medicine who provides first aid. (Markenson, Ferguson and Chamiedes, 2010)

Likewise, Cardiopulmonary Resuscitation commonly used as CPR, is defined as a procedure of bringing someone back to life from a cardiac arrest. It is a basic technique that consists of chest compressions and artificial respiration that involves opening of airways. (Glanze, Anderson and Mosby, 1992, 257)

It is important to note that the knowledge on CPR is essential while providing first aid care to players, whom might be undergoing a cardiac arrest situation. The first aid provider must be able to know how to maintain the ventilation, by opening the air ways. Chest compressions ration to ventilation of 30 compressions to 2 breaths as in the case of an adult is recommended. The higher the number of chest compressions, the higher the chances of a victim recovering from the cardiac arrest, according to many studies. (Futterman and Lemberg, 2005, 83)

3.3 Common injuries and their treatment

3.3.1 Concussions

The American Academy of Neurology defines concussions as trauma-induced alterations in mental status – with or without loss of consciousness (American Academy of Neurology, 1997). They may be caused by a direct blow to the head, neck or body area or by a so-called whiplash effect where the head is hit after an initial blow to the body. Concussions characteristically result in swift onsets of neurological symptoms as shown in figure 3, which mostly resolve naturally. (Seidenberg and Beutler, 2008, 543)

Though controversial, the grading of concussions is commonly used when determining the magnitude of trauma to the head. These grading scales have been in use for quite some time, but due to the fact that little evidence exists on their validity and that we are left with the opinions of society's experts, one could question whether or not they are precise**.** (Seidenberg and Beutler, 2008, 545)

According to Cantu, the three grades of concussions are separated by observing the lengths of consciousness lost and posttraumatic amnesia. The prognosis also varies depending on the grade of concussion and number of concussions suffered prior to this one. For example, an athlete who suffers his first severe grade III concussion can return to play after one symptom-free week, whereas an athlete whom has already suffered a grade III concussion earlier can resume play the next season if symptoms are no longer present. (Cantu, 2001, 244-248)

The treatment of concussions is also an area with very little supporting research. The standard approach has been to rest until all symptoms have diminished and make sure that no mental symptoms such as impairment in cognition, memory or concentration are present. On-field evaluation is a vital part of treatment of acute concussion. This should begin with the typical assessment of the airway, breathing and circulation.

FIGURE 3. Signs and Symptoms of Concussions

Signs	Symptoms
Loss of consciousness or impaired conscious state	Headache or pressure in the head
Vacant stare or glassy eyes	Nausea
Appears dazed or confused	Dizziness or balance problems
Slow to answer questions or follow instructions	Visual problems
Easily distracted, poor concentration, unable to focus	Sensitivity to light or noise
Disorientation to game or situation	Feeling “foggy” or lightheaded
Inappropriate playing behavior	Feeling slowed down or fatigued
Slurred or incoherent speech	Hearing problems
Lack of coordination or clumsiness	Depressed mood or anxiety
Significantly decreased playing ability	Irritability or low frustration tolerance
Inappropriate emotional reactions	Sleep disturbances
Memory deficits	Feeling more emotional
Vomiting	Lack of attention or concentration difficulty
Changes in personality or typical behavior	Memory problems

(American Academy of Neurology, 1997)

The level of consciousness should be next in line; if the player is unconscious or unable to respond, cervical spine precautions should be taken. If he or she is complaining of neck pain or shows any symptoms in extremities, the neck should be properly immobilized and the player taken off the field on a backboard. The helmet should never be removed until further diagnosis is made. (Seidenberg and Beutler, 2008, 546)

So far, pharmacological interventions have not been proven useful in treating concussions, though symptoms can be alleviated with use of medication. Several options have been studied, including antioxidants and corticosteroids but none have proven useful in the treatment of mild brain damage. (De Kruijk, Leffers, Meerhoff, Rutten and Twijnstra, 2002, 167-172)

3.3.2 Fractures

Fractures can be simply defined as injuries to the bones. They can be grouped as either open or closed fractures. An open fracture is where the injured or broken bone pieces are visible out of the skin. In this case the bone has pierced the skin and is visible outside. Fractures usually involve the bones which are the main supporting structure that protects the body. Bones are greater part of the human musculoskeletal structure that consists of tendons, cartilage, ligaments and muscles.

Players usually recognise an open fractured characterised by a snap or pop on hard impact followed by external bleeding. While closed fractures, are those where the fracture does not penetrate the skin. The common types being dislocations (bone moved from normal position). They can be caused by a direct blow on the player or a twist. The primary care of fractures in sports mostly falls upon the first-aid providers present at the event. Proper evaluation, acute management and description of the trauma are essential in ensuring a successful comeback for the player.
(Peterson and Renstorm, 2000, 5-6)

When evaluating a patient with a musculoskeletal injury, the first aid provider should take note of certain signs and symptoms that are associated with fractures. These include the following:

- Pain and tenderness with accompanying loss of function
- Refusal to perform certain actions
- Deformity or swelling throughout the site of injury and
- Abnormal motion or crepitus

(Howard, 2008, 147)

Common fractures in American football include ankle fracture where the metatarsal bone, that moves from the ankle to the toes are broken. This is due to the fact that most of these bones are fragile and brittle and can easily break when prone to constant pressure. The other one is the orbital fracture, this are fractures that occur on the bones that surrounds the eyes. Fingers and wrist fractures occur occasionally during tackles by other players (France, 2010, 542). Clavicle fractures are usually sustained from an impact or high collision. (Bird, Black and Newton, 1997, 166)

Perhaps the most important line of action when dealing with an acute fracture injury is the immediate immobilization of the body part in question. Splinting helps in protecting the patient from further injury, alleviating the pain and decreases the risk of fat embolism or shock. It also enables the proper transport of the patient. Varieties of different products are available as splints, but according to the situation, anything firm may be used. Player should then be taken to emergency department for medical attention. (Howard, 2008, 147)

According to Rakel (2002, 925), all unnecessary handling of an injured body part without splinting should be avoided. He also points out that an injury of moderate seriousness may become greatly increased due to carelessness or incompetent handling whilst the patient is being transported to or from the hospital.

3.3.3 Cervical injuries

The most typical cervical spine injuries that occur during sports include cervical strains and transient brachial plexopathy. These injuries are mostly stable injuries that rarely need operative care, but some fall under the catastrophic and somewhat rare group and can result in drastic permanent disability or even death. The most common mechanism resulting in catastrophic cervical injury is an axial compression force to the top of the head with the neck slightly flexed (Seidenberg and Beutler, 2008, 277-279).

This scenario is most often seen in American football. This is because; most tackling situations place the head in a very injury-prone position. Such kind of spear tackling has been proven a major cause in severe quadriplegic injuries, and through a rule change, the incidence has decreased by 80%. (Torg, Vegso, O'Neill and Sennett, 1990, 50-57)

When dealing with an athlete with a cervical spine injury, the on-site medical team is of vital importance in terms of ensuring the player gets the needed care. They must be ready to act in an efficient, organized manner leaving no room for error. According to Seidenberg and Beutler the proper and early care of an athlete with cervical trauma may lead to improved outcome. Improper care of a player's cervical spine injury can radically worsen any existing spinal damage and result in devastating neurologic consequences. (Seidenberg and Beutler, 2008, 274)

According to the National Athletic Trainers' Association, in case of a cervical spine injury, the helmet and shoulder pads should not be removed until arrival at the emergency unit. This is because the removal of the helmet and shoulder pads may displace the neutral position of the cervical spine in majority of cases. (Kleiner, Almquist and Bailes, 2001)

The following steps should be followed when handling a suspected cervical injury:

- Immobilize the head and neck in a stable position
- Assess possible life-threatening conditions using the ABCDE approach (airway, breathing, circulation, disability and exposure of the athlete)
- Unconscious players should always be assumed to have a cervical injury
- Seek emergency attention

(Seidenberg and Beutler, 2008, 277)

3.3.4 Muscular injuries

This occurs when muscle fibres are over stretched; this commonly occurs in American football and any other sporting activity that involves quick movement of muscles that might result in to stretches. Physical activities such as twisting and turning or poorly-timed tackles during play may aggravate the situation. The muscle strains are usually grouped in three categories depending with the number of fibres affected and the healing and recovery time. (Clover, 2007, 329-334)

The first category involves few muscle fibres and healing time is about two to three weeks from the injury which is relatively fast. In category two, more fibres are involved, hence more pain is felt. This takes about six weeks to recover. The final category, there is a complete tear and damage of the tissue. This can take up to three months to heal or even more depending on the affected part of the body and the healing mechanism. The most common muscle strains experienced in American football includes hamstring strains, bicep strains, and quadricep strains among others. (Clover, 2007, 329-334)

The common symptoms of muscle strains, includes pain in the muscles accompanied by tenderness or soreness on the affected area. This is usually experienced when a player is involved in a physical activity that stretches the muscles. The visible symptom is always the swelling of affected area and discoloration or both. Muscle strength may be reduced or totally rendered functionless. (Clover, 2007, 329)

The management and treatment for muscle strains for the first and second category, involves the use of RICE rule (Rest, Ice, Compress, Elevate). Resting the injured muscle, and applying pressure with ice around the injured area to reduce swelling. Immobilization of the affected part of the body may be essential to alleviate further damage. Anti-inflammatory and analgesic medications may be taken to reduce pain. However in case of category three strain surgeries may be used. (Clover, 2007, 334)

3.3.5 Heat stroke

Heat stroke is a condition that is a form of hyperthermia, an increase in core temperature characterized by 40, 6 °C. Heat stroke is typically accompanied by physical and neurological symptoms. These include hypotension, tachycardia, reduced urine output, vomiting and diarrhea. An athlete may also display changes in mental status; disorientation and delirium are common, or go into hypovolemic shock. (Clover, 2007, 507)

The surrounding environment in which the sport is played commonly precipitates this condition. Normally the body metabolizes heat and is most commonly able to rid this heat by either sweat or radiation. In some cases, where heat is of extreme measures, the body is no longer able to vacate this heat, thus raising the core temperature of the body.

Dehydration is also linked to the triggering of heat stroke, where the body is unable to sweat out sufficient heat, due to lack of enough fluid in circulation. Thus, players are advised to take enough fluids to enable adequate balance and circulation during play, and reduce chances of heat stroke. In the case where the player is conscious, it is important to give fluids to help hydrate. (Clover, 2007, 509)

When treating a player suffering from heat stroke, the most important line of action is to cool down the body as fast as possible. The temperature must be lowered below 38,9 °C and the most efficient way of doing this is by taking the player into a shady area, removing excessive clothing and by cooling the body down with any available apparatus (cold water, ice packs, ice sprays) on on wrists, ankles, armpits, groin, and back of neck (Reeser, 2008, 104)

3.3.6 Cuts and Bruises

Cuts obtained during sporting activity can be grouped as superficial and deep cuts. Superficial cuts are most common cuts that are generally small and minor in nature. This can be caused by player grazing against an opponent in a game at close range, for example during a hard tackle. These cuts usually occur on the face, hands, arms or legs. (Clayton, 1999, 12)

Bruises, on the other hand are injuries sustained to the tissues under the skin that results into bleeding beneath the skin. In Football, players are prone to bruises more than cuts, as a result of impact with opponent arms or legs during tackles that cause brushing. A purple colouration may appear underneath the skin, occasioned by tenderness or pain when touched.

The following steps should be carried out when handling cuts

- Remove the injured player from the field and clean the wound with large amounts of water
- Wash around the cut with soap, without putting the soap on the wound
- Clean the area around the cut free from foreign materials
- If the wound is bleeding heavily, it must be stopped by applying pressure on the wound using a clean towel or dressing and raising the bleeding limb
- Then apply antibiotic cream on the cut to avoid infections
- Apply a sterile dressing or bandage and keep it clean

(Kaplan, 2007)

Nonetheless, while handling bruises, the following steps should be followed.

- Use ice packs to stop blood flow to the injured area and reduce the size of the bruise.
- Bruised legs or feet, may be elevated to reduce movement and assist in healing
- Pain medication may be taken if needed.
- Rest is needed to allow healing

(Kaplan, 2007)

3.3.7 Seizures

A seizure can be defined as an abrupt build-up of electrical activity in the brain for a short span of time that can affect how a player feels and act. This abrupt build up of charges results into a sudden spasm of the muscles with symptoms ranging from twitching, blackouts, foaming from the mouth, unconsciousness, amongst others. Seizures can occur in short lapses or for longer duration depending from the part of the brain they originate from. Seizures may begin from one point of the brain (localised) to other parts of the brain (generalised). (Thygerson, 2005, 269)

In American football seizures usually occur as a result of brain injury, from the impact on the head while tackling another player. Head injuries are the major cause of seizures in sports. It is therefore very vital to provide the much need first aid to victims experiencing seizures.

The following procedure should be followed when handling a player who is suspected of generalized seizure:

- Remove any other objects close to the player and protect him from any further injuries
- Ensure that the player's airways are open on a sideways position
- Loosen the player's outfits and leave the area around the neck free and open
- Clean the player's mouth in case of vomit
- Do not hold the player down and restrain movement
- Hold back and wait for the seizures to end
- Seek emergency care from medical personnel

(Thygerson and Thygerson, 2005, 271)

4. THE AIM AND PURPOSE OF THE STUDY

The aim of this study is to determine the existing level of first aid knowledge on common injuries in American football and their proper treatment. The results gained will be a useful tool for the development for the Jaguaarit team in raising the level of first aid knowledge and the skills in the future. In addition to that, it will act as a benchmark for further studies for future scholars in the field of first aid in American football youth teams.

The aims of this study in brief are therefore:

- To determine the existing level of knowledge and skills regarding first aid amongst players and staff
- To provide means for a further study, and possible first aid education for young football players

5. IMPLEMENTATION

5.1 Methodology of the study

A quantitative approach was used on this research. Quantitative research is a formal, objective, systematic process in which numerical data are utilized to obtain information about the world. (Burns and Grove 1991, 140.)

It is a research method in which is most commonly used to describe, test relationships and examine cause-and-effect relationships. Quantitative research is sometimes referred to as the 'traditional' research process – being regarded as the acceptable method for developing sciences. (Burns and Grove 1991, 145.)

According to Cormack, (1991, 117) qualitative methods, on the other hand are primarily concerned with the in-depth study of human phenomena in order to study their nature and the meanings they have for the individuals involved. It is a subjective approach used to describe experiences and give them a meaning.

This research utilises a descriptive design. This design is intended to describe particular characteristics of individuals, groups, or situations. Instruments used to gather data for descriptive designs include questionnaires, interviews and observations. (Cormack, 1991, 139)

5.2 Sampling

A non-random purposive sampling approach is used in this case, since the target is an already existing group of individuals. Purposive sampling involves the conscious selection by the researcher of certain subjects. (Burns and Grove, 2001, 374.) The reasoning behind this was the fact that the Jyväskylä Jaguaarit is a local team and was very willing to partake in a research of this kind.

The research target group in this study is a team of youth American football players. There are several different junior teams in Jyvaskyla, but the A-junior team (under 21-years old) was selected to participate. This is because the target age group is at an age where most have graduated from high school and possibly taken part in the compulsory military service, during which basic first aid is taught. All members of the team were taken into account for this research, since they all play vital roles in situations regarding provision of first aid care during training sessions. This includes players, coaches and visiting players whom provide training clinics.

Thus, the focus in conducting this study was to determine the existing level of knowledge on practical skills regarding first aid on the practice field amongst the Jyväskylä Jaguaarit U21 Youth American Football team. The team in question was chosen because of the simple fact that it represents local sports culture, thus being easily approachable, and because the team is well known for its success in youth football program.

5.3 Data Collection

A descriptive quantitative research approach chosen to conduct the study and a closed-ended questionnaire used to collect the data. The choice of closed ended questionnaire was because, the participants in this study have simply to mark the right choice or choices from the multiple choices given that help them to jog their memory and provide a more realistic response to the injury scenarios (see appendix 1). The questions are designed after a careful check of common injuries in football situations that may happen on the practice field. (Watson, McKenna, Cowman and Keady, 2008, 302)

The research aims to determine the level of knowledge regarding first aid. With the use of a descriptive quantitative research approach and questionnaire, we can easily comprehend the statistical values of the players who possess the required level of knowledge and therefore analyze the results to make further conclusions.

This method also helps the author by simplifying the coding and data acquisition, because the participants have no option of expounding on the topic hence no bias. This choice of questions helps us in this study to score faster and objectively the result obtained, by reducing the possibility of participants leaving out information and reduces subjective interpretations during the analysis.

However, the multiple-response closed- ended questions has disadvantage of since it demands that the researcher to spend time to gather a correct list of responses and possible answers. If the list is too long, participants may become confused or disinterested. (Watson, McKenna, Cowman and Keady, 2008, 305)

A total of 30 questionnaires and a letter of explanation were sent to all the U21 youth team players and staff. Express permission was obtained from the team President, through electronic mail, with the questions both drafted in two languages, English and Finnish (See appendix 3).

The questions were divided into three sections. The first section, asked participants for a small array of basic information, such as their role in the team; whether a player, coach or other member of the staff and if they had any prior first aid training or if they had suffered any previous injuries themselves. This was intended to gather data that will help to distinguish any possible trends between the role within the team and the knowledge on proper first aid on common injuries (see appendix 2).

Second section, sought data on practical knowledge of basic first aid procedures on common injuries sustained by players in the field. Here the participants were given choice to the questions where they were expected to choose the right procedures on each common injury scenario.

In section three of the questionnaire, the questions were intended to seek data from the respondents on their knowledge of basic cardio pulmonary resuscitation CPR. Knowledge on appropriate response and procedure were tested and their competence to manage the scenario effectively.

5.4 Data Analysis

The process of data analysis was through the use of simple arithmetic. The values of the results were calculated to get average percentages. Here, a total number of correct and wrong choices are calculated against the total number of participants whom responded to the questions to get the average number and percentage for each and every common injury and demographics in this study. The choice to use simple arithmetic was due to the fact that the number of participants in this study was relatively small.

The presentation of the data will be through tables. This is due to the fact that, the tables allows the presentation of different variable data variables to be presented in one format. This makes it easy for the reader to understand. It makes the data transparent to be able to meet the needs of the reader, since it is visual and the reader is able to access the contents easily. (Watson, McKenna, Cowman and Keady, 2008, 363)

Pivot tables from Microsoft Excel 2010 of two variables, will be used to display the results. Common injuries are used as an independent variable, while prior knowledge in first aid and previous injury experiences among others, used as dependent variables. the number of participants and other variables. This will enable the reader to better understand how two different Items inter-relate in the study.

6. RESULTS

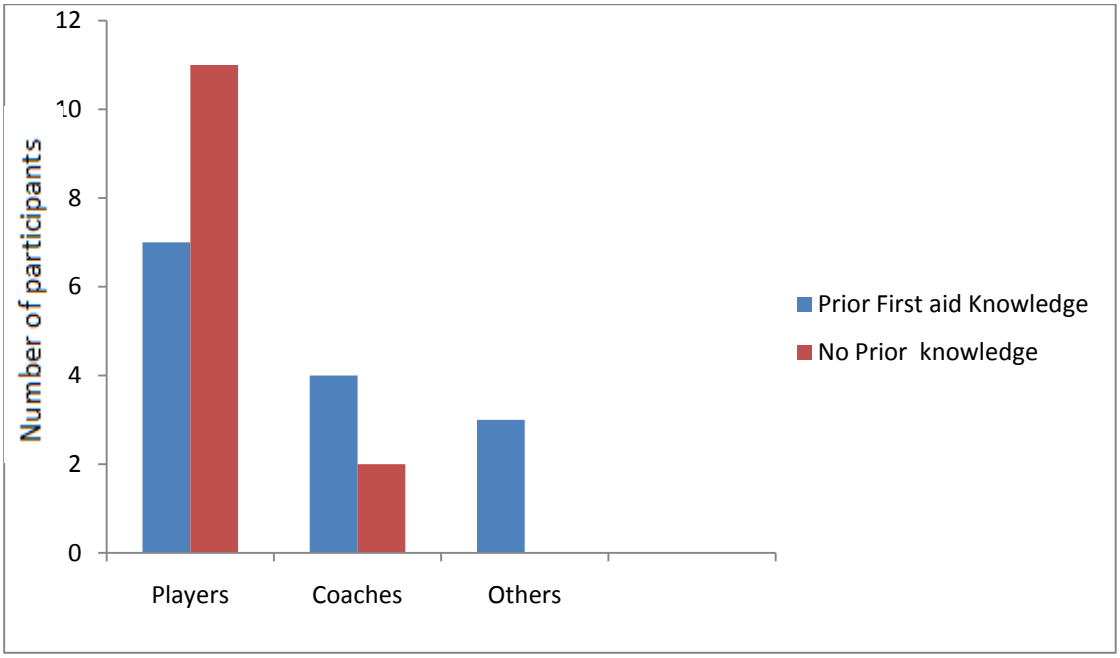
6.1 Demographics

The purpose of this study was to evaluate the existing level of knowledge on practical skills regarding first aid on the practice field amongst the Jyväskylä Jaguaarit U21 Youth American Football team. A total of 30 questionnaires were sent to team members through e-mail after gaining permission from the team president. The questionnaire was accompanied by a letter of confidentiality, stating that the data obtained was not to be forwarded to a third party and was anonymous.

In this study, a total of twenty- seven participants responded to the questionnaires, amounting to a response rate of 90 percent. The respondents comprised of Players 67 percent (n=18), coaches 22 percent (n=6) and other participants comprised 11 percent (n=3). This is a significant number while addressing the validity of the study, considering the fact that only three questionnaires were not returned.

Furthermore, out of the twenty seven responses, 14 had prior knowledge in First- aid which represents about half of the team while 13 did not have any prior knowledge. Players who possessed prior first-aid training were 7; coaches were 4, while others were 3 as shown in figure 4 below. Nearly three quarters (74%) of participants had sustained prior injuries in football, as compared to 7 who represent 26 percent that had not.

FIGURE 4. Previous first- aid qualifications.



The ages of the participants in this study, ranged from fifteen to thirty years plus of age. The first age group of 15-19 years old comprised of 15 participants, representing 52 percent of the total. The second age group (20-25 years) was represented by 10 participants which is 37 percent of the total. The final age group (26-30 + years) consisted of three participants, accounting to 11 percent.

6.2 Statistical analysis of common injury questions and CPR

In this section, the analysis involved the processing of statistical data on various choices by the participants of the study on first aid knowledge of common injuries in American football. A total number of 18 of questions regarding first aid procedures on various injuries were attempted. An average percentage of correct choice was 62 %. This can be attributed to the fact that half of the participants had previous knowledge on first aid.

First and foremost, Sixty-eight percent of the participants (n=18) got the correct answers to the two questions dealing with concussions. The participants knew the various signs and symptoms of a player who is experiencing concussion and how to manage it. There were three questions on the management of fractures, which dealt on how to treat open fractures, and the general management of fractures. Sixty three percent (n=17) responded correctly. However, two thirds of these respondents failed to get the right choice of the first line of treatment to open fractures. See figure 4.

Secondly, there were four questions dealing with muscular injuries and their treatment, covering areas on muscle tears, sprains and cryotherapy. Out of these, 79 percent (n=21) of the participants had the knowledge on how to manage these injuries. This was the common injury; where the participants had vast knowledge. This can attributed to their previous experiences.

Participants were asked about the management of heat stroke; with two questions on the symptoms and first aid. Seventy two percent (n=20) answered correctly. Surprisingly, the participants knew the symptoms of a player experiencing heat stroke, but more than half of the respondents, did not know the first procedure to undertake when a player experiences a heat stroke.

Thirdly, three questions sought to test the knowledge of the participants on typical procedures and treatment of cuts and bruises, Sixty tow percent (n=17) answered correctly. Seventy percent (n=19), of the respondents, knew how to handle a player with a suspected cervical spine injury. While, only 57 percent (n=15) got the correct choices on how to handle a player experiencing a seizures. This can be translated to their lack of knowledge and experience to carry out initial steps when a player undergoes a seizure (see figure 5).

Last but not least, a total of five questions were asked in regard to cardiopulmonary resuscitation (CPR) and management of an unresponsive player. The average percentage of correct answers was 73 percent (n=20). This is also due to the fact that most of the respondents had previous first aid training. However, three quarters of the respondents failed to know the ratio of chest compression to ventilation.

The table below shows a summary of the average percentages of various common injuries with correct choices.

FIGURE 5: Common Injuries in average percentages of correct choices

Common Injury	Average % of Correct Choices
Muscular Injuries	79%
Heat Stroke	72%
Cervical Injuries	70%
Concussions	68%
Fractures	63%
Cuts and Bruises	62%
Seizures	57%

7. DISCUSSION

The purpose of this study was to determine the first aid knowledge of Jaguaarit Youth American football team in handling common injuries. Twenty seven participants took part in this study, all showed exceptional knowledge on basic skills on regarding most common injuries in American football and their treatment.

Half of these participants had prior first-aid training. Players accounted for two thirds of the respondents in the study, but only less than a half of them, had previous first aid training. This can be attributed to various sources of the education and training, such as the compulsory military service and in high school. However, most of the first aid skills gained here may not be sufficient enough to handle sports injuries.

The results of this study further indicate that, a high percentage of the participants had knowledge of first aid procedures in most common injury scenarios such as muscular injuries, heat stroke, cervical injury and concussions. While on the other hand, a few numbers of the participants had no knowledge in managing fractures and specifically open fractures. This therefore points out to the fact that the team lacked the ability to handle appropriately a player who has a bleeding wound. This is very worrying trend, given the fact that this fractures type of fractures are mostly common type of injury.

Most respondents in this study, about three quarters, lacked confidence in the provision of cardiopulmonary resuscitation and did not know the ratio of chest compression to ventilation. Findings of various studies have revealed that there is a critical relation to the survival of a cardiac arrest victim to the number of chest compressions and breaths. Studies have established that victims of cardiac arrest have a greater probability of recovering more, with a higher frequency of chest compressions, even with reduced ventilations. This also has been proved to boost the neurological support of and maintain circulation even if the cardiac arrest last longer. (Futterman and Lemberg, 2005, 83)

Likewise, most respondents did not know how to handle a player undergoing seizure. In this case they did not know the initial steps to carryout incase a player experiences seizures. The initial step always involves the removal of any object that might harm the victim, and then letting the fits continue, while maintaining airways open. Hence, it is essential to train Jaguaarit team on first aids skills and the symptoms and signs of seizures, in order to empower them to carry out initial care effectively. (Thygerson and Thygerson, 2005, 271)

According to Rehberg, It is an essential component of a first aid provider to be able to recognize an injury and be able to apply necessary skills urgently needed. In this study, a number of participants were not able to recognize initial procedures or steps to take while handling common injuries. For example, two thirds of the respondents did not know how to handle a player who gets “the wind knocked out of him” and struggles to breath during a game. This is a scenario where the diaphragm is knocked into spasm and a player is not able to breathe. Thus, un- informed decision or action by the first aid provider could prove harmful. (Rehberg, 2007, 2-12)

Doubling of duties and roles as a coach or a player and a first aid provider can be a daunting task. This is due to the simple fact that, it is not possible carry out both roles effectively and efficiently as maybe expected. First aid provider has a key role of providing an early intervention to injuries, and protecting further harm to the players. This is through taking both legal and moral duty to ensure that the right care has been given. Thus, it is clear from this study that further training for the participant will boost their courage to undertake challenges and adapt to offer safer first aid practices.

Similarly, according to this study, more than half of the players and coaches and other team members of Jaguaarit do make medical decisions during injury situations, based on their prior experiences and training. This is demonstrated by the fact that, half of the respondents had no previous skills in first aid with three quarters of the team having sustained prior injuries.

Moreover, first aid skills are necessary while handling cervical injuries cases, which could be life threatening. American football has been proven to be the sport with higher number of neck injuries that can result into cervical injuries. In this study, seventy percent of the participants knew the steps to undertake for a suspected spine injury and this reducing possible fatalities in the team, due to the fact that cervical injuries is a major cause of fatalities. (Delaney and Kashmir, 2004)

Furthermore, the study suggest that most of the participants knew what to do in cases of muscular injuries, for instance, dealing with a player who has muscle tear which by applying the RICE (Rest, Ice, Compress, Elevate) treatment. This is encouraging fact since this are injuries that occur most of the time and appropriate initial interventions, contributes to quick healing and a player being able to return into play.

While the current legislation does not demand that practice settings must be under supervision of healthcare professionals, it should motivate coaches and players to keep their knowledge on treating injuries up to date and have the confidence to act when needed. This knowledge also enables the players and coaches to act preventively in order to minimize the prevalence of injury. After all, American football is a sport in which injuries are prone to happen and the players themselves should have a basic idea on what to do when they suffer an injury.

Generally, it is easy to suggest from this study, that a process should be designed to update the knowledge and skills of Jaguaarit team on first aid procedures of common injuries in American football. This should be an all inclusive process for both who posses previous training and those who have no training.

Naturally, this will in turn empower them to be able to recognize injuries or symptoms of injuries and be able to effectively apply appropriate immediate first aid skills and interventions. It is however important to note that, the results clearly demonstrate that knowledge of first aid exists amongst the players and coaches on various first aid skills of common injuries, but as first aid is a very dynamic and constantly expanding area of expertise and one can never know enough.

7.1 Reliability and Validity

The definitions of validity and reliability have different appearances in regard to the methodology of study. In this case, reliability is concerned with consistency and dependability, whereas validity is the degree to which the study instrument measures what it purports to measure. (Watson, McKenna, Cowman and Keady, 2008, 121)

The validity of this study can be tested through the methodology used in data collection, whereby a close-ended questionnaire was used. The questions were sourced from reliable literature and designed to determine specific knowledge on common injuries, reflecting the alleged competence of the target group.

The study was answered by 27 participants out of a total of 30 which is a vast majority in terms of the team as a whole. Therefore, the results gained were in fact valid, and the thesis manages to get a sufficient overview on the actual knowledge possessed by players, coaches and other team members.

One could question the reliability of this research in terms of how the questionnaire was answered. Since the questionnaire was sent via e-mail, one cannot be sure whether or not any sources were used in gaining the right answers. Though the cover letter politely asked the participants to answer truthfully, the target age-group is at an age where even the politest approach may indeed go unnoticed.

Ethical considerations were taken into account while collecting the data from the participants. The study obtained informed consent from the team, and the participants were requested to voluntarily take part in the questionnaire. The study took into account the confidentiality and anonymity of the participants and the fact that results were only intended to be published and used by relevant authorities, such as Jyvaskyla University of Applied Sciences and the Jyväskylä Jaguaarit team.

7.2 Conclusion

Injuries are an everyday occurrence in the sporting world, and the financial costs they bring to society are profound. By endowing the players and coaches the mindset of the importance of maintaining first aid skills, we can help minimize the incidence and help in preventing injuries from happening. Though this study did not address the players and coaches directly, it gives fuel for a further study to be conducted in educating and training the teams to successfully manage injury situations in a proper manner.

In summary, the results of this study shows that the Jyvaskyla Jaguaarit U- 21 team, have the basic first aid knowledge and skills in handling most of the common injuries, with the exception of a few. Further training is recommended, in order to effectively prevent, evaluate and care for the injured players during the practice sessions. The results from this study will be given to the Jaguaarit team through electronic link to enable them to identify the problems and strategize for a safer training environment.

The team needs to take a front role in introducing an active first aid training programs for the entire team, since only half of them had prior knowledge. This will as a result, boost the entire team’s confidence in taking up the role of providing first aid. This training should be made as a mandatory for all the team members. The training should be focused on various aspects of initial injury handling procedures and management where most of the participants demonstrated insufficiency.

Despite an excellent response rate in this study, evidence from data gathered suggests that there is risk in using non-qualified personal to provide emergency, whom are in this case members of the team. Thus, making available qualified players to handle the injuries should be a priority. The evidence from this study demonstrates that, there is a problem of unqualified players being responsible for providing first aid for the team. Thus, there should be a moral and legal obligation on all teams to have a qualified first aider present at all games and training sessions.

Finally, it is important to note that this study has opened avenues of future research on American Football in Finland, regarding first aid knowledge and skills of the other youth football teams in Finland. The study focused majorly on common injuries and not all forms of injuries sustainable in American football and therefore, other injuries present should be further studied.

Other avenues of further study, which were not explored by this study includes: the use of sport specific injury scenarios and other research methodologies which may ignite a different response from coaches, players and others in terms of their knowledge on injuries. In addition, the development of sports injury prevention and care programs and the effectiveness of such a program amongst the youth football players in Finland could also be studied. However, it is categorical to note that, this study only examined the level of knowledge of one Finnish youth team, and cannot be generalized to address the nationwide situation in various youth teams in American Football.

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APPENDICES

Appendix 1: Questionnaire

Section A:

Basic Information

Circle the following:

Are you a a) player b) coach c) other staff

Age: a) 16-19 b) 20-25 c) 26-30+

Do you have any prior first-aid training? a) Yes b) No

If Yes where? _____

Have you had any prior injuries? a) Yes b) No

If Yes Where? _____

Section B

The questions in this area test your knowledge on basic first aid skills for a player. Choose one option that suits your view.

1) An acute muscle tear must be treated by:
   a) elastic bandaging and heat bags
   b) ice and elevation
   c) applying pressure to decrease the bleeding underneath the skin
   d) both b and c

   70, 4% (19/27 participants) answered correctly

2) When using ice as treatment for injury you must:
   a) apply it immediately after injury
   b) make sure that there is a bleeding wound
   c) keep the ice in place for 20 minutes each hour
   d) apply it until pain goes away
   e) both a and c

   66,7% (18/27 participants) answered correctly

3) What is **NOT** a symptom of a concussion?
   a) confusion
   b) unconsciousness
   c) headaches
   d) memory loss
   e) none of the above

   74% (20/27 participants) answered correctly

4) If a player gets a concussion, they must be taken to the hospital if:
   a) start to present nausea
   b) if they are knocked unconscious
   c) they have slight memory loss
   d) both a and b

   63% (17/27 participants) answered correctly

5) A player gets “the wind knocked out of him” and struggles to breath during a game. The right thing to do is:
   a) have him lie on his back and lift his waist upwards, allowing him to breath
   b) put him into the rescue position, lying on his side
   c) walk him to the sideline and give him water
   d) Have him lie on his back and push his knees towards his chest, allowing him to breathe.

   33% (9/27 participants) answered correctly

6) Strained muscles are caused by:
   a) wearing too tight equipment
   b) not drinking enough water
   c) exercising too much
   d) sudden over-stretching of the muscle

   96% (26/27 participants) answered correctly

7) In the RICE procedure, the I stands for:
   a) initial
   b) ice
   c) intended
   d) instant

   81% (22/27 participants) answered correctly

8) The first thing to do to a player with heat-stroke is to:
   a) cool down the body
   b) give the victim some water
   c) raise the legs
   d) apply sun lotion to prevent the skin from burning

   48% (13/27 participants) answered correctly

9) When treating a fracture, it is important to:
   a) place a splint on the site of fracture
   b) immobilize the injured limb and apply dressing
   c) put the bone back in place
   d) both a and b

   78% (21/27 participants) answered correctly

10) The first line of treatment for an open fracture is:
   a) control the bleeding, then rinse and dress the wound
   b) apply ice and call an ambulance
   c) straighten the broken bone and apply dressing
   d) apply dressing

   22% (6/27 participants) answered correctly

11) A player is knocked down in a tackle and does not get up. He seems to have suffered a blow to the head/neck area. The first thing you must do is:
   a) quickly help him to the sideline and check neck area
   b) Stabilize his head and neck and make sure he is moved safely off the field.
   c) apply ice to the back of his head and carry off the field
   d) Remove the helmet and inspect the head and neck area before moving the player to the sideline.

   70% (19/27 participants) answered correctly

12) A splint should generally be:

a) loose enough for the player to still be able to move the limb

b) firm, but not so tight that circulation is slowed down

c) as tight as possible so that the injury does not get worse

89% (24/27 participants) answered correctly

13) Which would you do if a player began having a seizure?

a) place something between the player's teeth

b) try to hold the player still

c) remove any objects nearby that could cause injury

d) none of the above

48% (13/27 participants) answered correctly

14) Bleeding wounds must be initially treated by:

a) elevating the wound

b) applying pressure above the bleeding point to prevent further bleeding

c) apply direct pressure to the wound with a sterile dressing

d) let the wound bleed to minimize infection

44% (12/27 participants) answered correctly

15) If a player experiences nausea, headache, weakness and cramps, what are they most likely suffering from?

a) brain stroke

b) heart attack

c) heat stroke

d) stomach flu

96% (26/27 participants) answered correctly

16) What is the immediate first aid to an eye injury?

a) rinse the eye with at least one litre of water

b) apply ice and a dressing

c) inspect the eye by pulling down the eyelid and wiping with a clean dressing

d) tape the eye shut and see a doctor

52% (14/27 participants) answered correctly

17) A player is known to have diabetes and suddenly presents nausea and seems pale, irritated and restless. What is the first line of action?

a) give them some insulin from their insulin pen

b) Give them something high in sugar (fruit, sports drink etc.)

c) hydrate them with water

d) have the player jog and stretch in order to keep warm

67% (18/27 participants) answered correctly

18) What is the best way to minimize chances of infection of wounds after games?

a) take NSAIDS (panadol etc) immediately after the game

b) carefully rinse all open wounds and dress appropriately

c) allow wounds to bleed and apply dressings to prevent further blood loss

d) apply “air treatment” and leave wounds be

89% (24/27 participants) answered correctly

Section C

The questions in this section are based to test your skills on CPR. Choose the suitable answer.

19) The proper way to determine unresponsiveness is when a player collapse?

a) Pinch the earlobe
b) Pour cold water on the player
c) Use smelling salts rubbed on the nose
d) Tap the victim and shout "are you okay"

63% (17/27 participants) answered correctly

20) The preferred way to check for breathing when a player collapses is

a) Place your hand on the chest and see if it moves with respiration
b) Hold a candle to the nose and see if the flame moves with breathing
c) Look at the chest and see if it rises and listen and feel the air coming from the nose or mouth.
d) Tickle them and see if they laugh

93% (25/27 participants) answered correctly

21) What is the best position for the player to be in when you are doing CPR?

a) In a chair
b) On your lap
c) Flat on the ground
d) Turned on the side

100% (27/27 participants) answered correctly

22) What is the best way to open to airway prior to giving mouth to mouth ventilations?

a) Tilt the head forward and push down the neck

b) Tilt the head back and lift the chin up

c) Tilt the head on the side and press the Adam's apple

d) Tilt the head back and push on the chest.

81% (22/27 participants) answered correctly

23) What is the ratio of chest compressions to ventilation for a player during CPR?

a) 25 to 1

b) 10 to 1

c) 30 to 2

d) 20 to 2

30% (8/27 participants) answered correctly

Appendix 2: Cover Letter

JAMK University of Applied Sciences,
School of Health and Social Studies,
Keskussairaalantie 21 E, 40620,
Jyvaskyla, Finland

Dear Player/Coach/Member,

We are nursing students conducting a Bachelor's thesis assessing your team's knowledge on skills regarding first aid of the most common football injuries. The following questionnaire will ask you an array of multiple-choice questions regarding the treatment of the most commonly occurring injuries, after which it will test your knowledge on CPR. Please answer truthfully and try not to resort to any outside reference when thinking about the answers. All input will be confidential and completely anonymous. The findings of this study will be published in the Jyväskylä University of Applied Sciences (JAMK). The research is being supervised by Marjo Palovaara and Pekka Natunen. Thank you in advance!

Yours Sincerely,

Riku Haataja & Ernest Aluoch

If you have any questions, feel free to contact D7253@jamk.fi

JAMK University of Applied Sciences,
School of Health and Social Studies,
Keskussairaalantie 21 E, 40620,
Jyvaskyla, Finland

Hyvä Pejaaja/Valmentaja/Muu jäsen,

Olemme sairaanhoitajaopiskelijoita ja teemme opinnäytetyötämme teidän joukkueenne ensiapu-taidoista yleisimpiin Amerikkalaisen jalkapallon yhteydessä tapahtuviin vammoihin. Tämä kysely sisältää monivalintakysymyksiä jotka testaavat Sinun tietämystäsi erilaisten vammojen hoidossa, sekä muutama kysymys peruselvytyksestä. Ole hyvä ja yritä vastata kyselyyn mahdollisimman itsenäisesti ja totuudenmukaisesti, äläkä etsi vastauksia muualta. Kaikki vastauksenne ovat anonyymejä eikä niitä välitetä eteenpäin. Tutkimuksen tulokset tulevat Jyväskylän Ammattikorkeakoulun (JAMK) arkistoon. Tutkimustyötä valvovat Marjo Palovaara ja Pekka Natunen. Kiitos!

Ystävällisin Terveisin,
Riku Haataja & Ernest Aluoch

Jos ilmenee kysyttävää, ota yhteyttä D7253@jamk.fi

Appendix 3: Permission form

JYVÄSKYLÄN AMMATTIKORKEAKOULU
JAMK UNIVERSITY OF APPLIED SCIENCES
Health and Social Studies

Application for Research Permission 1

Student Implementing the Bachelor's Thesis	Name and Student Number Riku-Pekka Hästeja	Group Code SNP7S	
	Street Address Gummeruksenkatu 3 B 20	Postcode 40100	City Jyväskylä
	Telephone 050 411 66 08	Email Address D7253@jamk.fi	
	Degree Programme Nursing		
Other Students	Name and Group Code Ernest Aluoch		
Thesis Tutor	Name Marjo Paloniemi/Pekka Nätunen	Degree and Position	
	Unit and Address		
	Telephone	Email Address	
Host Company / Organization	Host Company / Organisation Jyväskylän Jaguaarit		
	Contact Information 040 967 4056 reo.landen@gmail.com		
Host Company / Organization Fills in	Granting Permission for Research ☒ Research permission granted ☐ Research permission denied		
	Terms for the Permission ☐ Applicant must submit a finished report when the research is completed. S/he must also give an oral presentation of the findings of the research. ☐ Other Terms Explanation for Denying the Permission		
	Decision maker REO LANDÉN TEAM PRESIDENT		
Place and Date (dd.mm.yyyy)	Place and Date Jyväskylä 3/11/2020	Signature	

JYVÄSKYLÄN AMMATTIKORKEAKOULU
JAMK UNIVERSITY OF APPLIED SCIENCES

RESEARCH PLAN SUMMARISED

Health and Social Studies

Researcher(s)	Riku-Pekka Hastaja Ernest Aluoch	
Name of the Research	A study to determine First Aid knowledge and skills of Jyväskylä Jaguaarit Youth American Football team on common Injuries	
Backgound	Initial idea was prompted by lack of trained first aid providers present in the training sessions.	
Objectives and Research Problems	- Determine existing level of knowledge and skills regarding first aid amongst players and staff.	
Schedule	11/10 - 05/11	
The Role of the Host Company (Responsibilities, Obligations and Advantages	Provide sample group	
Place and Date (dd.mm.yyyy)	Place and Date Jyväskylä 3/11/10	Signature

☐ Enclosed the research plan accepted by a JAMK representative