Injury Detection and Protection Method Based on Human Body Structure Analysis

Lifeng Li
Shenyang Sport University, Shenyang, 110000, China

Zongyuan Jiao *
Shenyang Sport University, Shenyang, 110000, China
jzy800@sina.com

Abstract
Football is a very competitive and Antagonistic Game on the same field, and it is loved by people. Because of the fierce attack-defense confrontation, fast rhythm and frequent body contact in football matches, the occurrence of sports injuries is inevitable. With the continuous development of football, the occurrence of sports injuries is also escalating. The level of a team is disturbed by many factors, among which sports injury has become a stumbling block in the development of football. It affects the progress of training and the results of competition, but also affects the life of athletes, causing physical and psychological injury. Therefore, how to prevent and reduce sports injury is an important question in the development of football. Question. Therefore, the purpose of this study is to screen out the risk factors affecting the occurrence rate of football injury by investigating and analyzing the current situation and characteristics of sports injury of football majors in Colleges and universities, and to put forward preventive measures to reduce the occurrence rate of sports injury of football majors in Colleges and universities, which is of great significance to the development of youth football and football environment, Theoretical and practical significance.

Key words: Human Body Structure, Football, Damage Detection, Protection Methods

1. Introduction
Football belongs to the same-field antagonistic sport, which requires participants to possess comprehensive qualities such as strength, endurance, sensitivity, speed, skills and so on, and has higher requirements for technical action [1-4]. Football injury is different from other sports injuries. It has its own characteristics and laws. It is closely related to the biology and anatomy characteristics of athletes, technical and mechanical characteristics and the characteristics of the project itself. Firstly, football is an all-weather sport. It has a large playing field, a long time and fierce competition. Intense physical confrontation and frequent physical collision.
are insurmountable. As a result, the incidence of football players' injuries is very high, and the most common human-induced injury factors are [5]. Secondly, football technology is complex, most of the technical movements are mainly performed by feet, and the self-feeling is relatively poor. It is difficult to complete the technical movements easily and reasonably, and frequently change their lower limb technical movements. They work under the condition of intense physical confrontations for a long time, so football players' lower limbs are easily injured. Thirdly, athletes learn and master technical movements and tactical coordination, after a long period of time and intensive systematic training, the body load is large, easy to produce physical functional fatigue injury. The physical and mental health of adolescents has been paid more and more attention by the society, and the upsurge of national fitness has arisen. The participation of adolescents in physical exercise plays an important role in national fitness [6]. Since the Eighteenth National Congress of the Communist Party of China, the Party Central Committee, with Comrade Xi Jinping as its general secretary, has put the revitalization of football on the agenda as an important task of developing sports [7] and building a strong sports country. The development of football in China has come at a good time. Football has a wide range of participants in our country, including many teenager friends. Football can not only play a role in physical and mental exercise for young people, but also improve an ideal communication platform for the daily life of young people, and also provide some help to promote the realization of "healthy China".

With the rapid growth of working and learning pressure of adolescents in the world, the physical and mental health of adolescents has become an important issue of international concern [9]. Sports is the simplest and most direct way to make people physically and mentally healthy, but because young people's physiological functions are on the rise in all aspects, their physical condition can not meet the wear and tear consumption brought by sports, as well as the dangerous factors in all aspects of sports, young people are extremely vulnerable to sports injury when they participate in sports. Therefore, it has become an important international issue to formulate certain preventive measures to reduce the impact of sports injury on the physical and mental health of adolescents caused by risk factors in sports. Smith has proposed that the factors leading to injury should be divided into risk factors and injury mechanism [10]. Risk factors are divided into internal and external risk factors. Internal risk factors refer to some physical characteristics of athletes themselves, which increase the probability of sports injury. Such as: age, sex, physical fitness level, skill level, etc. External risk factors refer to the environment in which athletes participate in sports when they begin to exercise, such as sports habits, human factors (such as teammates, opponents, referees), sports equipment, weather, venues and so on. Sometimes external risk factors may interact with internal factors, making athletes more vulnerable to injury. The Exploratory Study of Football Injury and Occurrence Mechanisms written by Jane Extrand and Jane Gilquist prevents injury from happening from athletes' self-consciousness. It points out that over training is one of the most important causes of injury to football players, and the quality of shoes and the condition of football field are also factors worthy of football players' attention. According to Mukhia et al. [11], the range of foot injury is generally between Achilles tendinitis and fasciitis. The main manifestations of foot injury are planar fasciitis and Achilles tendinitis. It can be concluded from the analysis that when the quality of footwear is poor or the foot is not fit, it is easy to cause acute injury to knee and ankle joints when technical movements occur in the course of competition [12]. Kaila et al. placed the experimental data on the artificial grassland and measured the dynamic data of linear acceleration running and sudden stop turning. It was proved that the ACL damage risk coefficient increased when the valgus moment was larger than that of straight running. It is concluded that the protective ability of sneakers to their bodies is often ignored by participants. A large proportion of people pursue the lightness of shoes. In the process of reducing weight, they also reduce the cushioning force to assist the foot to reduce. Another large part of people pursue a stronger grasp on the lawn, which enables them to "brake" in time while running at a faster speed and stop in a hurry. Behavior is a key factor in increasing knee injury [13-15].

In China, the research on football injury has also made great progress and development following the world's pace [16]. Through the research, it can be seen that the time of sports injury of athletes in our country is mainly long-term competition and daily training work. The main types of injury are sprain and contusion, and the data show that the injured parts are mainly thigh muscles. The reason can be traced, because he is the body's main sports support system, and injuries such as knees are also the focus of our attention. And related research also shows that the main injured parts of football players in China are our limbs [17-18]. Data show that this value reaches 86%. Most of the injuries are mild, accounting for about half, and the more serious injuries account for nearly one fifth, with less serious injuries. Longitudinal observation of these data shows that in the injured areas, knee ligaments and meniscus injuries, including some fractures and fractures, are less likely to occur, but it is not optimistic that once these injuries occur, they will have a great impact on the daily life of athletes, because his recovery cycle is long and can only be taken. Conservative treatment can not recover from surgery. At present, some countries generally adopt special ways for professional athletes, but this may bring their career to an end. Some injuries are related to their profession. For example, goalkeeper injuries usually occur on the wrist and ankle. The main reason is that goalkeepers have to make frequent rescues in football.
That's the problem. Therefore, wearing appropriate protective gear has become the method adopted by most athletes. Sun Ronghui, a famous scholar, pointed out in his book that football injury can be roughly divided into internal and external factors [19]. He believed that the internal factors mainly include some physiological characteristics of athletes themselves and cognitive factors caused by social experience. For example, the problems brought about by the age of the body, the strength of the muscles, the previous medical history and the psychological problems caused by some mechanical problems of the muscles belong to such internal factors, while the external ones include some specific environmental problems, such as the time of the competition, the rigid rules of the competition, the professional skills of the athletes [21-22], which the body can bear. Pressure and load are external factors that affect athletes. Generally speaking, the actual performance of athletes is the result of the long-term comprehensive effect of these factors [23-25].

Based on the actual situation of sports injury of football majors in Colleges and universities, this paper tests and puts forward corresponding preventive countermeasures and suggestions, which can provide certain reference for effectively preventing and reducing sports injury of college football players, improving training effect and overall competitive level of football teams.

2. Proposed Method

2.1. Common Injuries in Football

1) Type and location of injury
(1) Damage types
1). Laceration.
Muscle strain refers to the excessive stretching of muscle during active and passive contraction, which results in partial or complete tearing of muscle microfibers. As far as the technical characteristics of football are concerned, the strong swing of the upper and lower legs is required in kicking, and it is easy to cause the pull of the front and rear thigh muscles when the preparatory activities are inadequate.
2) Sprain.
Sprain refers to the injury of soft tissue (such as muscles, tendons, ligaments, etc.) in the joints or body parts of the extremities without fracture, dislocation, skin and flesh damage. The main clinical manifestations were pain, swelling and limited joint activity in the injured areas, mainly in the waist, ankle, knee, shoulder, wrist, elbow, hip and other parts. In football teaching practice, it involves acceleration, sudden stop, pedal and orientation, so the lower limb joints of students will bear a greater load of exercise. Especially in the case of greater knee and ankle valgus, it is easy to cause sprain of knee and ankle joints.
3) Contusion.
In football teaching practice, the cause of contusion is due to collision and fierce collision between the body of college students in the course of confrontation. In addition, head collision is also prone to occur in the competition for headball, resulting in leg and head contusion.
(2) Injury site
1) Ankle joint.
Ankle joint is composed of articular surface of tibia and fibula and talus trochlea, so it is also called talus crus joint. The lower articular surface of the tibia and the joint surface of the medial and lateral malleolus form a "splash" joint fossa, which accommodates the talus trochlea (articular head). Because the front of the trochlea joint is wide and narrow, when the dorsum of the foot flexes, the wider anterior part enters the fossa and the joint is stable. But when the plantar flexion occurs, if the trochlea is narrower, the back of the trochlea enters the fossa, and the ankle joint is loose and can move laterally. Sprain easily occurs, among which varus injury is the most common, because the outer ankle is longer and lower than the medial ankle, which can prevent talus from over-valgus. The human ankle joint lacks too much muscle coverage. It is fixed only by several small muscles, ligaments and tendons. At the same time, the ankle joint bears the weight of the whole body. At the moment of running and jumping, it needs to bear up to several hundred kilograms of gravity. The impulse of the ground first acts on the ankle joint. At the moment of landing of the foot, it also needs to take off or turn the body. These violent movements can cause the ankle joint at any time. Injury.
2) Tibia.
The upper end of the bone consists of the medial and lateral condyles of the tibia and the tuberosity of the tibia. On the orthopaedic film, the shape of the medial and lateral condyles is similar, but the lateral edge of the upper tibia is inclined, while the medial edge is nearly square. The upper articular surface of both tibial condyles is flat, corresponding to the medial and lateral femoral condyles respectively. The lateral inferior condyle overlaps with the fibular head to form the fibiofibular joint. The trabeaculae of the upper tibia are obvious, and the ephysisal line is often transverse. The tibial trochanter in the middle of metaphysis is not usually seen on the orthopaedic film. On the lateral film of the tibia, the inner and outer condyles of the upper end overlap. The anterior cortex of the upper tibia is prominently protruded forward, which is the tibial trochanter. The posterior

50
Improper sports equipment is one of the important factors that cause college students' injuries.

1) Inadequate preparatory activities

College students usually take part in football exercises for less time and do not learn relevant sports health knowledge. Therefore, they do not pay attention to preparatory activities before the exercise. They just do simple passing and catching, pressing and pulling, then they begin to play football with greater intensity, and even do not have any warm-up to participate in the competition directly. At this time, because the functions of sports organs and visceral organs are still in the stage. Inhibitory state and inadequate oxygen can not be obtained by motor organs, which results in inadequate mobilization of nervous system and visceral functions, poor muscle stretching ability, inflexibility of joint activities and incoordination of movements. At this time, the excitability of nervous system has not reached a better state, and short pause of nerve centre is easy to occur in heavy-load exercise, thus it is easy to judge actions. Error, muscle strain is easy to occur when sudden stretching is large.

2) Unscientific organization of teaching and competition activities

In teaching practice, teachers do not follow the principle of gradual and differentiated treatment, coupled with the lack of correct demonstration and detailed explanation, students' requirements and rules for the game are vague, while the organization of the game lacks scientific nature. It is difficult to avoid sports injuries in football matches.

3) Unreasonable technical action

Beginners are not skilled in football technology, even violate the characteristics of human body structure and the principles of human sports mechanics, and exceed the range of activities of body functions, which can cause sports injury. For example, in football teaching, technical specifications such as ankle straightening are required. If toes touch the ground when kicking, they are vulnerable to injury. When foot is stepping on the ball or heading the ball, the center of gravity of gravity is unstable, and when falling, ankle sprain or wrist are easily caused by hand support, Joint sprain.

4) College students lack self-protection consciousness

In football, shoveling and unreasonable collision are easy to cause sports injury, which requires physical education teachers in Higher Vocational Colleges to pay attention to strengthening the cultivation of students'self-protection consciousness and ability, and effectively improve their ability and consciousness of self-protection. However, in the actual football teaching process, many physical education teachers cultivate students' self-protection ability. Lack of attention will inevitably affect the personal safety of College students.

5) Sports equipment does not meet the requirements

Improper sports equipment is one of the important factors that cause college students'football injury. In football, without leg guards, uneven football soles or poor anti-skid, with jewelry with potential safety hazards, etc., are easy to cause sports injuries.

6) Potential safety hazards of site equipment

Influenced by the expansion of enrollment, colleges and universities have more college students, but the
venues are seriously inadequate. Football teaching practice courses and extracurricular activities are crowded, and students without venues even compete on the cement ground; some college football venues are uneven or hard objects such as stones; some college football venues are loess, dusty when playing; the goal is not reliable and reliable. Fixed, and even found that some colleges and universities football goal corrosion is serious, cross beam and door post joints appear incomplete fracture, security problems are prominent.

(7) Adverse climatic and weather factors such as wind, rain and snow
High temperature in summer can easily cause heatstroke, low temperature in winter can easily lead to muscle stiffness and poor physical coordination. Football teaching sometimes encounters bad weather such as rain, which can cause wet and slippery football venues. These factors are easy to lead to injury of students in sports.

2.2. Damage Detection Method

1. Detection of common muscle strains
   (1) Examination method of dorsal longus muscle
   Let the patient do the back extension of the spine, such as pain may be spinous process ligament injury; back longus muscle injury; vertebral plate fracture. At this time, it should be differentiated, if the tenderness of the spinous process is the injury of the spinous process ligament. Then let the patient do micro-back extension of the spine without causing pain, then hold shoulder back with one hand, buttocks with the other hand, do resistance test of dorsal muscles. If there is pain, it is pulled back longus muscle. No pain may be spinous process ligament injury or vertebral plate fracture.
   (2) Examination method of gluteus maximus
   Let the patient lie prone, thigh back stretch, make gluteal muscle tense, hold the back of thigh with hand, exert resistance, while looking for tenderness point. If there is pain when pressing the calf, the injury is the flexor muscle behind the thigh.
   (3) Examination method of adductor muscle
   Patients lie on their side. The examiner places his hands on the medial knees of the patients and forces them apart. The patient's resistance to resistance, such as pain in the medial thighs, is positive.
   (4) Examination methods of semi-healthy, Semimembranous and biceps femoris
   Patients lie prone, knee flexion, thigh back extension, the examiner put one hand on the waist, the other hand on the abdomen of the gastrointestinal muscle, and exert resistance. If the patient has pain, the pain is the injured muscle.
   (5) Examination method of quadriceps femoris
   Check for lateral and medial head injuries. The patient lies on his back and bends his knee slightly. The examiner puts one hand behind the knee joint of the patient and the other hand at the lower end of the tibia. He exerts himself in the opposite direction. The patient resists resistance and appears pain, which is injury. Examine straight head and skeletal cavity lesions.
   Patients lie on their backs, knees flex 90 degrees. The examiner puts one hand on the knee joint, the other hand under the tibia and exerts resistance. The patient resists resistance. Pain is the injury site.
   (6) Examination methods of deltoid and supraspinatus muscles
   Patients abduct shoulder 90 degrees to 120 degrees. The examiner holds the patient's wrist with one hand and exerts resistance. The patient resists resistance. The pain spot is the injury.
   (7) Examination method of tensor fasciae latae
   Patients lie on the side, limb abduction, resistance to find tenderness point, pain point is the injury.
   (8) Examination methods of abdominal muscles
   Let the patient sit up on his back and look for the tenderness point. The tenderness point is the injury point.

2. Treatment of Muscle Injury
1) To prevent swelling, analgesia and alleviate inflammation in the early stage of muscle injury or accompanied by tearing injury of some muscle fibers. Methods There were cold compress, local pressure bandage and elevation of affected limbs, external application of new wound medicine or oral administration of herbs for clearing heat, relieving pain, promoting blood circulation and removing scars. Cold compress methods are: cold water immersion, cold towel compress, if conditions can also use ice bags or chloroethane spray injured parts. Pressure bandage, with appropriate thickness of cotton or sponge placed in the wound, immediately bandage or other non-invasive bandage slightly pressure bandage (24-128 hours after the removal of the bandage fixed, according to the condition of further treatment). External application of new wound medicines can reduce swelling, pain and inflammation.

Mid-term: improve local blood and lymphatic circulation, promote tissue metabolism, accelerate the absorption of exhausted blood, promote regeneration and repair. Methods: Physiotherapy (wax therapy, mud therapy, phototherapy and low, medium and high frequency electrotherapy). Massage: Manipulation should be from light to heavy, from around to local injury, the first few times of injury must be light. Acupuncture and
moxibustion: Damage the surrounding acupoints. Drug Pain Point Injection: Procaine or corticosterone, External application of Huoxue ointment or external application of Huoxue, scabies, new Chinese herbal medicine and hot compress.

Late stage: restore and strengthen muscle function. Mainly massage, physiotherapy and functional exercise.

2) Most of the broken and completely broken muscle fibers were dressed under pressure with the help of others and sent to the hospital for treatment immediately. In the medical period, in order to prevent muscle atrophy, functional exercises should be carried out purposefully and systematically according to the condition of injury, when exercising, intensity, range, load and number of times should follow the principle of gradualness. Do not overexert to cause re-injury.

3. Examination and treatment of joint sprain
   (1) Examination of joint sprain
   Sprain is caused by the destruction of the arch of the foot when the manic joint is inverted, valgus or turned straight (no force on the forefoot or heel). The manic joint bears pressure directly, and the pressure exceeds the endurance of the manic joint itself. It causes the tearing and breaking of the periphery ligaments, muscular bonds, periosteal peeling and bone avulsion of the manic joint. Check whether the injured area is painful, sound appears, whether the injured area is rapidly swollen, and if the anterior talus ligament is injured, it is often accompanied by joint swelling, and the pain increases with the degree of swelling. Whether or not the joint can perform abnormal varus and valgus activities, widen the joint space, and if so, indicate complete rupture of ligaments. There are obvious tenderness and subcutaneous fatigue in the injured area. Attention should be paid to whether the ligament injury is complicated with fracture. Simple ligament tear tenderness is mostly below the internal and external trees. When there are combined avulsion fractures, there are obvious local tenderness in the restless and restless apex.

   (2) Treatment of sprained joints
   After careful examination and determination of the damage, it should be dealt with immediately. First of all, cold compress should be applied, because the whole body blood circulation is intensified during exercise, and the capillaries rupture after injury, resulting in internal bleeding, cold compress can play the role of hemostasis and analgesia. Secondly, apply new wound medicine and fix it with bandage, pay attention to the direction of the bandage when bandaging, so that the injured ligament is in a relatively relaxed state: that is, the injured lateral collateral ligament fixes the trample joint in a slightly valgus position, and vice versa. After injury, we should pay attention to rest, not walk with crutches, not to participate in sports. Because Crutching feet and exercise are easy to cause secondary injury of stepping on joints: complete tear of ligament muscles without complete tear, abrasion of bone and joint inflammation and so on.

3. Experiments
   3.1. Research subjects
   This paper takes football majors in Colleges and universities as the research object, including freshmen to seniors. The basic situation of students is as follows:

<table>
<thead>
<tr>
<th>Age group</th>
<th>Average age</th>
<th>Number</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-21</td>
<td>19.23</td>
<td>1000</td>
<td>730</td>
</tr>
</tbody>
</table>

   According to the statistics of the age of football majors in Colleges and universities in Table 1, it is found that the oldest is 21 years old, the youngest is 17 years old, and the average age is 19.23 years old. The total number of the experiment was 100, of which 73 were boys and 27 were girls.

3.2. Time and place of experiment
   Experiments: February 21, 2018 - December 31, 2018 (a school year).
   Place of the experiment: College hospitals in Colleges and universities.

4. Discussion
   4.1. The characteristics of injuries in various parts of the body
   (1) Characteristics of ankle joint injury
   Ankle sprain and contusion refer to the injury of ligaments around ankle joint, accounting for about 80% of the total joint injury. In football, ankle sprains are usually caused by its high-intensity characteristics such as
sprint, jump and diversion. Generally, there are two kinds of sprain: varus sprain and valgus sprain. Most of them are varus sprain. When it happens, external force is acting on the ankle joint, causing anterior talofibular ligament injury, and the incidence of sprain is high.

Figure 1. Sprain is the most common type of ankle joint injury, accounting for 69.7% of the total injury type; then contusion, accounting for 11.2% of the total injury type; then strain, accounting for 8.8% of the total injury type; the fourth is fracture, accounting for 5.1% of the total injury type; then abrasion, tear and dislocation, accounting for 4.3%, 3.6% and 1.4% of the total injury type.

Figure 1. Athlete Ankle Injury Type Diagram

(2) Characteristics of knee joint injury
The interaction of knee joint's skeleton shape and ligament determines its movement characteristics, mainly flexion and extension. At the same time, under the bending condition, there is a little rotation movement, and there is a little passive movement of inversion and valgus in the knee joint injury. Sprain, abrasion, strain and contusion are the main types of injury. Sprain is mainly due to medial collateral ligament and external knee joint Damage to collateral and cruciate ligaments.

Figure 2. Type of Knee Joint Injury in Athletes

Figure 2, sprain accounted for 28.2% of the total injury types, contusion accounted for 20.1% of the total injury types, strain accounted for 17.6% of the total injury types, fracture accounted for 13.3% of the total injury...
types, and abrasion, tear and dislocation accounted for 10.9%, 8.9% and 0% of the total injury types.

(3) Characteristics of thigh injury

The common thigh injuries in football are quadriceps femoris and hamstrings. Quadriceps femoris, as a bridge between hip and knee joint, supports the body's weight. When it contracts forcefully or meets external force, it may be pulled.

![Athlete's thigh injury type chart](image)

**Figure 3.** Athlete thigh injury type chart

As shown in Fig. 3, among the injury types of thighs, pull injury is the most common, accounting for 73.5% of the total injury types; then abrasion accounted for 10.1% of the total injury types; tear accounted for 7.3% of the total injury types; then contusion accounted for 4.2% of the total injury types; fourth sprain accounted for 3.9% of the total injury types; finally dislocation, fracture and labor accounted for 0%.

(4) Characteristics of Inguinal Injury

Inguinal injury ranges from mild muscle strain to severe muscle fiber tear. For football, which is a fast-changing sport, the incidence is often high. Inguinal injury is mainly caused by excessive stretching or tearing of the adductor muscle group or its tendons in the medial thigh.

![Athlete's Inguinal Injury Type Map](image)

**Figure 4.** Athlete Inguinal Injury Type Diagram

From Figure 4, it can be seen that in the groin injury types, pull accounted for 69.1% of the total injury types; then tear accounted for 13.3% of the total injury types; then sprain accounted for 11.9% of the total injury types; then contusion accounted for 3.8% of the total injury types; then dislocation accounted for 1.9% and fracture accounted for 0%.
types; fourth contusion accounted for 3.8% of the total injury types; fifth abrasion accounted for 1.9% of the total injury types; and finally dislocation and fracture. The number of injuries was 0.

(5) The Characteristics of Lumbar Sports Injury

Lumbar injuries in football often occur in sprains, strains and strains. Sprain generally refers to the injury of ligaments, pull refers to the injury between muscles or tendons. Ligaments connect bone and tendons connect muscle and bone. In football, most of the acute waist sprain is caused by the waist muscle contraction without preparation, which is caused by the football player’s inadequate warm-up or not doing enough warm-up, and the instantaneous disadvantageous position in the intense sports during training or competition. Lumbar muscle strain is a chronic disease. Chronic lumbago left over from acute injury treatment is not timely, the method is incorrect or repeated injury. Most of the injuries are accumulated over the years.

As can be seen from Fig. 5, sprain is the most common injury type, accounting for 48.5% of the total injury type; then strain, accounting for 26.3% of the total injury type; then pull, accounting for 9.1% of the total injury type; abrasion, accounting for 8.7% of the total injury type; fifth, contusion, accounting for 4.5% of the total injury type; sixth, tear, accounting for the total injury type. The total proportion of types was 2.9%. The last was dislocation and fracture, and the number of injuries was 0.

4.2. Protection Method

(1) There should be adequate preparatory activities to strengthen the protection of vulnerable parts.

Preparatory activities are a series of physical exercises and activities that make the body gradually enter the working state and prepare the body and mind for the main body activities before the main body activities of training or competition. The preparatory activities can be divided into general preparatory activities and special preparatory activities. For football players, besides general preparatory activities, special stretching preparatory activities, such as positive leg, side leg, splitting and bridge, should also be carried out for the parts with long running distance and easy to be injured in football. The purpose is to enhance the flexibility of the central nervous system, to achieve the best working state, to reduce the inertia of muscle activities, and then to be able to do so. Make the players enter the best working state at the fastest speed, so as to lay a good foundation for formal training or competition. In addition, sufficient and necessary preparatory activities can regulate the psychological state of football players.

(2) Strengthening self-supervision and medical supervision

Since self-supervision is the most direct information of athletes’ self-reaction in the process of training and competition, it is of great significance to adjust training plan, arrange the amount of exercise and prevent sports injury. At the same time, the practice content of football self-protection method is added to the training to improve the self-protection ability and consciousness of athletes. Because football players often complete a great amount of exercise when their physiological state permits, their bodies are in the so-called critical state for training and competition. Therefore, it is difficult to distinguish or even confuse the adaptation phenomenon and disease phenomenon in training. At this time, medical supervision is needed to distinguish this limit, so as to discover the injuries and find the injuries, and then timely treatment can be carried out. At the same time, sports
teams should regularly hold lectures and discussions on sports theory and sports injury knowledge, establish a system of mutual learning between team doctors and coaches, and suggest that team doctors and coaches should analyze and discuss the injuries in combination with their own injuries and integrate theory with practice. This further unified understanding avoids athletes with injuries for training and competition.

(3) Attention to adjust psychological and emotional factors

Bad psychological factors can cause injuries to athletes to some extent. It is necessary for football players to sum up the psychological factors that cause their injuries in theory and practice. Good mood can make people optimistic, decisive, creative and inspired. Bad emotions can lead to fatigue and even illness. Therefore, football players should learn to self-regulate their psychology, and be able to adjust their depression and negative emotions to a suitable state of competition or training, so as to ensure that the injury caused by psychological effects can be reduced in training or competition.

5. Conclusions

(1) This paper introduces the common types of sports injuries in football and the location of sports injuries. It also analyses the seven major causes of sports injuries in football, the detection methods of common sports injuries and the treatment methods after injuries.

(2) Through the study of football majors in Colleges and universities, it is found that the proportion of major types of injuries in various parts prone to sports injuries is different. Among them, ankle joint, knee joint and waist were mainly sprained, accounting for 69.7%, 28.2% and 48.5% respectively; thigh and groin were the major types of injuries in various parts prone to sports injuries and the treatment methods after injuries.

(3) According to the results of the research and analysis, this paper summarizes three protective measures: adequate preparatory activities, strengthening the protection of vulnerable parts, strengthening self-supervision and medical supervision, and paying attention to regulating psychological and emotional factors.

References


