

# Analysis of Sports Injuries in Teenage Campus Soccer and Research on Prevention Strategies

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**Abstract:** With the comprehensive deepening reform of school sports in our country, campus football has attracted widespread attention from all sectors of society. Campus football players represent campus football, and conducting research on the causes, characteristics, and prevention of sports injuries among adolescent campus football players is of theoretical significance and practical value in the new era of heightened attention to campus football. This article analyzes the main causes of sports injuries in adolescent campus football, elaborating on both physiological and psychological aspects. However, understanding the causes of football sports injuries is a crucial prerequisite for developing targeted prevention and control measures. By taking preventive measures in terms of physiology, psychology, technique, training, and other aspects, the risk of sports injuries in adolescent football can be reduced. The research findings can serve as a basis for the prevention and control of sports injuries in adolescent campus football in our country.

**Keywords:** Youth School Football; Sports Injury; Causes of Injury; Prevention and Control

## 1. Introduction

Campus football, as an educational project to comprehensively promote the comprehensive reform of school physical education, is a major strategic initiative to cultivate football talents comprehensively with schools and football as the key points[1]. Football, as one of the fundamental courses in school physical education, has had a significant impact on various aspects of cultural education since its inception[2]. However, due to its inherent

physical confrontational nature, athletes participating in football may face higher rates of injury and severe injury. Sports injuries can have a significant impact on athletes' training, competitions, and even their academic life. Deepening the understanding of sports injuries among young campus football players and coaches, and actively participating or guiding matches and training scientifically, can help reduce the risk of sports injuries in campus football to a certain extent, and contribute to the healthy development of campus football. Therefore, conducting relevant research on sports injuries in young campus football is crucial, as it holds theoretical significance and practical value in the new era where campus football is receiving increasing attention.

## 2. Characteristics of Youth Football Injury

### 2.1 Characteristics of Sports Injury in Adolescents of Different Ages

Every year, over 400 million people are involved in football, with the majority being youths under 18 years of age[3]. Football's high contact nature results in a higher injury rate and lower limb injuries compared to other contact sports. In primary school, athletes often experience limb or joint injuries such as elbow twists, leg, hand, or arm abrasions during football activities. In middle school, injuries among male football players are usually occasional, more common during matches, mostly minor, focusing on the lower limbs, and primarily abrasions. High school football players commonly sustain injuries to the ankle, knee, thigh muscles, and waist. It is evident that from primary to high school, football injuries mostly occur in the lower limbs, predominantly being abrasions and contusions, with injury rates for fewer than 18 athletes approaching those of adults.

## 2.2 Characteristics of Sports Injury in Adolescents of Different Genders

There are certain differences in injury characteristics and incidence rates between males and females in soccer. Adult male athletes are more prone to ankle injuries, while female athletes are more susceptible to knee injuries. However, young females have a 42% higher incidence rate of ankle injuries compared to males[4]. Among them, young female soccer players have a higher incidence rate of anterior cruciate ligament (ACL) injuries[5], three to four times more than males, which is associated with factors like core stability, hormone levels, and leg strength. Research by Strickland et al. using a sheep model indicates that estrogen does not significantly affect ACL injuries. On the other hand, other studies suggest an increase in ACL injuries in females during the pre-ovulation period, indicating that gender differences in ACL injuries may be influenced by dynamic multifactorial factors.

## 2.3 Characteristics of Youth Sports Injury in Different Parts

A significant amount of research on youth soccer injuries indicates that about 60% of sports injuries occur in the lower limbs, with the knee and ankle joints being the most common injury sites[6]. Among these, knee injuries account for around 25%, which is similar to adult soccer injury rates. Upper limb injuries in youth soccer account for approximately 20%, slightly higher compared to adult upper limb injury rates. Although the frequency of upper limb injuries in soccer injuries is significantly lower than lower limb injuries, goalkeepers experience more upper limb injuries than other players. Age is not only related to injury mechanisms but also to the location of fractures. Femoral fractures are more common in those under 13 years old, while tibias fractures are more common in those over 13 years old, with tibias fractures being more common than femoral and fibular fractures. Moreover, the characteristics of youth soccer injuries are related to the player's on-field position and technical level.

Goalkeepers have similar physiological and psychological characteristics to other players on the field, but they have a 25% lower risk of injury. Research on tibias fractures in football shows that nearly 40% of serious injuries occur outside of the forwards, indicating a specific relationship between injury and player position.

In different levels of play, athletes have different injury rates and mechanisms. In more intense matches or training sessions, players have a higher rate of injury. Compared to lower-skilled players, higher-skilled players have a lower injury rate, and the number of injuries in young, lower-skilled players is double that of young, higher-skilled players. This is mainly because high-skilled players train more frequently and scientifically, have stronger self-protection abilities, whereas lower-skilled players are more prone to injury due to their own qualities and health conditions[7].

## 3. Analysis of Influencing Factors of Injury of Young Campus Football Players

### 3.1 The Degree of Scientific Training of Coaches Is Insufficient

At the grassroots level, there is a relative lack of soccer coaches, with insufficient coaching abilities and levels, low levels of scientific training, inadequate knowledge of sports physiology and sports training science, and a gap in understanding the physiological and psychological growth and development characteristics of young people. The coaching guidance is inadequate, as coaches fail to provide timely corrections when athletes perform technical movements incorrectly. This not only hinders athletes from mastering soccer techniques and affects their physical motor skills but also increases their risk of injuries. Soccer technical movements are complex and difficult to master, and young people have limited time to participate in soccer activities. They mainly learn soccer technical movements through physical education classes, which have limited time and rarely engage in specialized soccer training courses for professional learning. Their understanding of soccer technical concepts is vague, mostly imitating surface appearances. In intense soccer activities, incorrect technical movements violate the principles of human anatomical structure and biomechanics, making them highly prone to sports injuries.

### 3.2 Special Ability Quality Is Poor

In comparison to other sports, soccer stands out for its multitude of technical moves and strong ball control skills. Many technical actions require abrupt stops and changes in direction under high-intensity, high-speed physical confrontations, and even need to be executed

when the body is completely weightless. Without specialized physical fitness, young soccer players may exhibit poor flexibility and agility, stiff and uncoordinated movements, inability to control body balance, especially in dribbling and passing, which makes them more prone to sports injuries.

### 3.2 Preparation Activities Are Not Scientific

Pre-training and pre-competition warm-up activities aim to enhance the excitability of the central nervous system, allow muscles, and ligaments to stretch adequately, strengthen the functioning of various organ systems in the body, to ensure the effectiveness of exercise, and to effectively prevent and reduce the risk of sports injuries. [7] Insufficient warm-up, improper movements, and monotonous activities can lead to parts of the body not being mobilized, even in a relatively inactive state, with muscles not reaching the required temperature for training or competition. This lack of warmth can affect the elastic and stretching capabilities of muscles and ligaments, increasing the likelihood of muscle strains and joint sprains. Excessive or intense warm-up exercises, or excessive speed, not only lead to fatigue before formal training or competition but also increase the risk of sports injuries during the preparation phase.

### 3.3 Not in Good Physical Condition

Teenagers participating in soccer have a high degree of spontaneity, often engaging in intense soccer confrontations when in poor physical condition, leading to serious risks of sports injuries. In soccer training or matches, teenagers tend to exhibit incomplete and delayed injury treatment, resulting in recurring injuries and habitual damage. Engaging in high-intensity soccer activities on an empty stomach or lack of sleep often leads to symptoms like dizziness and limb weakness, as their physical fitness fails to meet the energy demands required for the sport, resulting in sports injuries.

### 3.4 Psychological and Ideological Factors

Adolescents' immature minds in the process of playing soccer tend to experience emotional tension, leading to narrowed vision and difficulty in detecting various dangerous situations in their surroundings. Due to their competitive nature, adolescents may perceive rough and risky defensive moves as effective

techniques, while also engaging in physical confrontations to secure ball possession or scoring opportunities, resulting in sports injuries. Apart from the desire to win, adolescents' understanding of participating in soccer activities for enhancing physical fitness, cultivating willpower, fostering teamwork, and nurturing a spirit of perseverance and cooperation is often vague. Driven by passion for soccer, they are prone to emotional fluctuations and even loss of emotional control when faced with setbacks.

### 3.5 Objective External Causes of Football Injury

Fouling is a significant cause of injuries in soccer. The more fouls committed, the higher the likelihood of players getting injured. In situations where the game is tied or one side is trailing, young student-athletes may experience significant psychological fluctuations, leading to impulsive behaviors and more fouls.

The training and competition of football are completed in high-intensity confrontation, and the fierce confrontation has a high probability of sports injury. For example: high-speed scrambling, emergency stopping, tackling, are easy to lead to thigh and calf muscle strain and fracture; Rapid change of direction makes the leg suddenly twist, adduction or abduction, which is easy to cause ligament and bone injury of knee joint and ankle joint.

Football field factor is also an important cause of football injury. At present, Chinese youth football activities are in a stage of rapid development, but the construction of football venues can't meet the rapid development of football. Poor football field conditions make it easy for teenagers to fall and twist their feet when they complete technical movements or tackle in running, and various bruises and sprains are easy to occur.

Temperature, wind speed, light intensity, season and other factors also affect the youth football injury. The influence of seasons on teenagers' sports status is obvious: under the climatic conditions of high temperature, high humidity and long sunshine time in summer, students are prone to heat stroke symptoms, which can easily lead to sports injuries; In the cold winter, the muscle has the characteristics of viscosity, insufficient preparation activities began to carry out strenuous exercise, which is also one of the reasons why sports injuries often occur in youth

football.

#### **4. Preventive Measures for Sports Injury of Young Campus Football Players**

##### **4.1 Prevention and Control Measures of Injury Caused by Physiological Factors**

Factors of insufficient physical fitness and strength: Athletes, through systematic training, should learn to allocate their physical energy reasonably during exercise, understand their own physical fitness and strength qualities, and coaches should regularly test athletes and inform them of their own physical fitness and strength characteristics, in order to develop a personalized physical energy allocation plan for each athlete during exercise.

Factors of unresolved old injuries: Strictly prohibiting non-rehabilitative training and competitions before injuries are fully recovered is essential for preventing and controlling such injuries. Coaches should assess athletes' old injuries, conduct physical ability tests before allowing players to return to regular training, and only resume training if they pass the tests. However, it is important to note that young athletes often tend to conceal or misreport their actual injuries in order to resume training quickly; coaches should be able to discern this behavior. Whether in risk factor analysis or inducement events, poor flexibility and agility are important factors leading to injuries, so coaches should pay attention to improving the flexibility and agility qualities of campus football players during training.

##### **4.2 Prevention and Control Measures of Injury Caused by Psychological Factors**

During training or competition, excessive excitement and nervousness can be factors. Most team members experience high levels of excitement and nervousness during competitions, while during training, it mainly occurs when practicing actions that are not well mastered. As a coach, it is important to first understand the psychological qualities of team members. For those with poorer psychological qualities, they should be given more opportunities to participate in training and competitions, using simulated training methods to achieve desensitization during both competitions and training sessions.

Factors to consider include attention and self-protection awareness. Coaches should

incorporate attention training into regular training and competitions, and help athletes focus quickly through self-suggestion and regulating breathing during sports. Maintaining focus during competitions or training can help reduce injuries to some extent. In terms of self-protection awareness, instructors should emphasize self-protection to athletes during training and guide their decision-making during sports. Especially for younger athletes who are prone to imitation, instructors should provide proper guidance to instill a sense of self-protection. As instructors develop and promote self-protection awareness, athletes will also pay more attention to self-protection during competitions and training.

##### **4.3 Prevention and Control Measures of Damage Caused by Technical Factors**

Instructors should aim to enhance their own skill level, master the essentials and techniques of the movements before teaching. Only when their own movements are correct can they teach students the right techniques. The point of contact with the ball is crucial in soccer teaching. Instructors should promptly correct players when they grasp the wrong areas, to prevent incorrect movements from becoming ingrained in muscle memory. Incorrect technical movements can easily lead to sports injuries.

Factors leading to fouls: Such injuries require coaches to provide regular sports ethics education to players, ensuring that games are based on rule compliance, enabling campus football players to develop the right attitude towards matches; correcting and educating players promptly when negative behavior is observed.

Don't understand the rules. In daily teaching, instructors can incorporate relevant football match rules education, and event organizers should provide centralized explanations and training on the rules, penalty criteria, and important points before the start of the season. Distributing football rule books or materials can also help players and instructors learn and fully understand the rules and requirements of football matches.

##### **4.4 Prevention and Control Measures for Damage Caused by Other Factors**

Weather cause: Weather during competitions or training sessions is an uncontrollable factor.

Since we cannot change the weather, we should consider adjusting training or competition times to prevent athletes from getting injured due to weather conditions. Coaches should also be mindful to train in certain weather conditions where changing training times is unnecessary.

Factors such as the venue play a crucial role. The organizing committee should strive to select newer and higher-quality facilities. While most players train on artificial turf, some schools utilize rubberized surfaces for soccer teaching and training. It is recommended that schools increase funding for venues, improve old facilities, and replace rubber and concrete grounds with artificial turf, as using smooth artificial turf for soccer training can effectively prevent injuries.

Equipment factors during competitions or training are mainly due to unreasonable equipment use and playful behavior while using the equipment. Coaches should have a thorough understanding of the equipment before using it for training, take precautions against potential injuries caused by the equipment, strictly prohibit casual attitudes and playfulness during training, always ensure the protection of athletes when using the equipment, and teach them protective measures to prevent injuries caused by improper operation.

## 5. Conclusion

Factors influencing sports injuries among adolescent campus football players include internal and external elements. Internal risk factors encompass physiological, psychological, and technical aspects. Understanding the causes of football injuries is crucial for developing targeted prevention measures. Despite the lack of comprehensive research in China, there is a need for systematic, scientific, and widely applicable injury prevention programs. By recognizing the risks of sports injuries, learning from past experiences, and addressing the unique injury characteristics of football players at different school stages in terms of physiology, psychology, technique, training, and other aspects, we can effectively prevent sports injuries, reduce risks, and enhance the quality of training and matches in adolescent campus football.

Sports injuries can cause great harm to the physical and mental well-being of campus football players. Coaches should regularly

communicate with the athletes and their parents, promptly understand the athletes' psychological dynamics, and provide psychological counseling when necessary to help the athletes through the recovery period. Coaches themselves should have a full understanding and knowledge of the prevention of sports injuries, scientifically and reasonably arrange recovery training for the athletes, and minimize the risk of secondary injuries. In short, only by establishing a scientific training foundation for youth football based on injury prevention and control, can the entertainment and health functions of football be maximized. This, in turn, will promote the upward development of Chinese football through campus football, social football, and competitive football.

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