

PREVENTION OF SPORTS INJURIES IN SOCCER

PREVENÇÃO DE LESÕES ESPORTIVAS NO FUTEBOL

PREVENCIÓN DE LESIONES DEPORTIVAS EN EL FÚTBOL



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ABSTRACT

Introduction: Football, a popular sport worldwide, is very popular in Chinese university physical education elective courses. However, various sports injuries are frequent in its practitioners. **Objective:** Investigate the common sports injuries in university soccer elective courses, analyze the causes of injuries, and propose preventive measures. **Methods:** A total of 208 students from 4 universities, who chose soccer as an elective course, volunteered in this research. The probability, types, positions, and causes of sports injuries are analyzed by questionnaire and mathematical statistics. **Results:** Most sports injuries of soccer players are in the lower limbs, and the ankle is the most injured joint. Joint sprain is the most common among sports injuries, followed by collision and contusion. The degree of injury is mostly mild; sports injuries in student soccer occur mainly in competitions and after-school activities. **Conclusion:** Sports injuries in student soccer courses can be reduced by college students. Colleges and faculty should strive to formulate preventive measures to ensure that elective soccer courses are conducted in a suitable environment, reducing injuries in college students.

Level of evidence II; Therapeutic studies - investigation of treatment outcomes.

Keywords: Soccer; Injuries, Sports; Students.

RESUMO

Introdução: O futebol, como esporte popular em todo o mundo, é muito popular nos cursos eletivos de educação física universitária chinesa. No entanto, várias lesões esportivas são frequentes em seus praticantes. **Objetivo:** Investigar as lesões esportivas comuns nos cursos eletivos de futebol universitário, analisar as causas das lesões e propor medidas preventivas. **Métodos:** Um total de 208 estudantes em 4 universidades, que escolhem o futebol como um curso eletivo, foram voluntários nessa pesquisa. A probabilidade, tipos, posições e causas das lesões esportivas são analisadas por questionário e estatísticas matemáticas. **Resultados:** A maioria das lesões esportivas dos praticantes do futebol estão nos membros inferiores e o tornozelo é a articulação mais lesionada. Entre os tipos de lesões esportivas, a entorse articular é a ocorrência mais comum, seguida de colisão e a contusão. O grau das lesões é majoritariamente leve; as lesões esportivas no futebol estudantil ocorrem principalmente em competições e atividades pós-aula. **Conclusão:** As lesões esportivas nos cursos eletivos de futebol esportivo podem ser reduzidas pelos universitários. As faculdades e os professores devem se esforçar para formular medidas preventivas garantindo que os cursos eletivos de futebol sejam realizados em um ambiente adequado, reduzindo as lesões nos universitários. **Nível de evidência II; Estudos terapêuticos - investigação dos resultados do tratamento.**

Descritores: Futebol; Lesões Esportivas; Estudantes.

RESUMEN

Introducción: El fútbol, como deporte popular en todo el mundo, es muy popular en los cursos optativos de educación física de las universidades chinas. Sin embargo, son frecuentes diversas lesiones deportivas en sus practicantes. **Objetivo:** Investigar las lesiones deportivas habituales en las asignaturas optativas de fútbol universitario, analizar las causas de las lesiones y proponer medidas preventivas. **Métodos:** Un total de 208 estudiantes de 4 universidades, que eligen el fútbol como asignatura optativa, se ofrecieron como voluntarios en esta investigación. La probabilidad, los tipos, las posiciones y las causas de las lesiones deportivas se analizan mediante cuestionarios y estadísticas matemáticas. **Resultados:** La mayoría de las lesiones deportivas de los futbolistas se producen en las extremidades inferiores y el tobillo es la articulación más lesionada. Entre los tipos de lesiones deportivas, el esguince articular es el más frecuente, seguido de la colisión y la contusión. El grado de las lesiones es mayoritariamente leve; las lesiones deportivas en el fútbol estudantil se producen principalmente en las competiciones y en las actividades extraescolares. **Conclusión:** Los estudiantes universitarios pueden reducir las lesiones deportivas en las asignaturas optativas de fútbol. Las universidades y el profesorado deben esforzarse por formular medidas preventivas que garanticen que los cursos optativos de fútbol se desarrollen en un entorno adecuado, reduciendo las lesiones en los estudiantes universitarios. **Nivel de evidencia II; Estudios terapéuticos - investigación de los resultados del tratamiento.**

Descriptorios: Fútbol; Lesiones en Deportes; Estudiantes.



INTRODUCTION

With the development of physical education in Universities, football has become a popular project in Physical Education in Universities. It includes factors such as competition, fun and fitness. It is precisely for these reasons that football is loved and pursued by university students.¹ Compared with professional athletes, students of football elective courses often cause unnecessary injuries in sports due to non-standard technology, excessive movement range, insufficient preparation activities and other reasons.² The occurrence of sports injuries is closely related to sports events, technical actions, students' physical conditions, field facilities and other factors. Due to the characteristics of sports majors, sports injuries often occur in special training.³ Sports injury is different from injury in labor production or daily life. Its occurrence is closely related to sports training arrangement, sports events, technical actions, sports training level, physical condition, sports environment, site equipment and other factors.⁴ For sports injuries, prevention is more important than treatment. As long as teachers and students have a full understanding of the significance of preventing sports injuries, master the occurrence rules of sports injuries, and take effective preventive and protective measures, they can minimize or avoid sports injuries, thereby ensuring the physical health of sports participants and the normal progress of sports teaching, training and competition.⁵

Sports injuries are common in Universities, especially for students majoring in physical education. Because of their professional characteristics, they need to regularly participate in various sports or sports training, and require high technical difficulty, high intensity and strong antagonism, so the incidence of sports injuries is higher.⁶ For university students, it is inevitable that they will be injured in football activities due to the lack of systematic and professional training, which will also have an extremely adverse impact on the physical health of university students.⁷ Sports injury will not only bring harm to students' bodies, affect their learning and training, but also bring psychological pressure to students.⁸ This paper mainly analyzes and discusses the injuries that are easy to occur on the college football elective students and how to prevent them, so that the majority of college football elective students and fans can understand the common injuries in sports and master the effective methods to prevent them.

RESEARCH OBJECT AND METHOD

Research object

A total of 208 university students who choose football as an elective course in 4 universities were selected as the research object. The study is Purely observational studies which no need to registry ID of ICMJE, and all the participants were reviewed and approved by Ethics Committee of Qingdao Agricultural University, China (NO. QAU2022013)

Research method

Questionnaire survey

By means of questionnaire and mathematical statistics, this paper analyzes the probability, types, locations and causes of sports injuries. A questionnaire survey was conducted among 208 students in public physical education class of 4 universities, and 207 questionnaires were collected, with a recovery rate of 99.5%, 200 valid questionnaires, and an effective rate of 96.2%.

Mathematical statistics

Through data processing of questionnaire survey results, we can understand the influence of different factors on sports injuries and find out the causes of injuries.

Results and analysis

Common injury parts and causes of football elective students

Sports injuries usually refer to various types of injuries that occur in the process of sports. Many people will be injured in different degrees during exercise, and the main parts are concentrated in the joints of the body and lower limbs.

1. Shoulder joint injury

Shoulder joint is a multi-axial joint, its capsule is thin and loose, and its own ligaments are few and weak, so it is the most flexible joint in human body, but its stability is poor, and it is easy to be damaged. The injury is related to its local anatomy. For example, when the shoulder joint is in motion, the rotator cuff is easily rubbed and squeezed with the surrounding tissues, resulting in injury. Generally speaking, the shoulder strength of university students who are not professional athletes is weak, coupled with unreasonable and inadequate movements in the preparatory activities or activities, it is easy to cause shoulder ligament injuries when doing some empty ball dunking or spiking arm swinging movements, and serious shoulder injuries such as tearing can occur.

2. Wrist joint injury

Wrist joint injury is also a kind of injury that occurs frequently among amateurs. Wrist joints can bend, stretch, expand, retract and rotate in four directions, which is very flexible. The wrist is made up of 9 small bones, and different movements have different bone connections. The power transmission and connection angle between them are extremely complicated and delicate, and the ligament connection between the knuckles is weaker, which makes its buffering capacity very limited, and it is easy to be injured in the process of competition and defense.

3. Knee joint injury

The knee joint is composed of the lower femur, the upper tibia and the patella, which are closely linked by ligaments, joint bundles and muscles and tendons outside the joint. The ligaments of knee joint include anterior and posterior cruciate ligament and meniscal ligament. Knee joint is the largest joint in human body, with the most complex structure and the most chance of injury. Because it is located between the two longest lever arms of human body, knee joint injury is the most common occurrence. When the knee joint exerts force in the semi-squat position, there is almost no muscle protection around the joint, and the stability of the joint can only be maintained by the medial and lateral ligaments, cruciate ligaments and patella. In football, dribbling will weaken the stable function of the knee joint, which will easily cause injuries to the ligaments, meniscus and patella of the knee joint.

4. Ankle injury

The stability of ankle joint is mainly supported by bilateral ligaments, the lateral ligament is composed of three thin ligaments, and the medial ligament is a wide and thick triangular ligament. Among ankle injuries, valgus injuries are the most common, because the lateral ankle is longer and lower than the medial ankle, which can prevent excessive valgus of the talus. The most common injury of ankle joint is the lateral ligament injury of ankle joint. In football, when the foot moves up and down, strides or takes off, the body deflects due to unstable center of gravity or excessive forward momentum, resulting in the lateral landing of foot. Football is often accompanied by the tendency of foot valgus. The medial ligament is in a taut state and the lateral ligament is in a squeezed state. The great pressure caused by abnormal foot valgus or valgus will cause ankle sprain.

Cause analysis of damage

Table 1 is the cause analysis of football sports injuries. According to the statistical results, the main causes of injuries are irregular technical

Table 1. Analysis of the causes of damage.

Cause of injury	Number of people	Proportion (%)
Technical action is not standard	51	34.0
Inadequate preparation	42	28.0
Physical fatigue	21	14.0
Exercise with injury	22	14.7
Sudden situation	14	9.3
Total	150	100.0

movements and inadequate preparation activities, which are also the most common problems among amateurs. According to the survey results, although most of the fans deliberately do pre-exercise preparations, due to inadequate preparations, they still can't play a very good role in preventing the occurrence of sports injuries. If we want to effectively prevent injuries, we must correct the wrong technical actions and make reasonable preparations.

Damage type analysis

Table 2 shows the cause analysis of football sports injuries. Most of the sports injuries of students in football class are in the lower limbs, and the ankle joint is more likely to be injured in the lower limbs. Among the types of sports injuries, joint sprain is the most common occurrence, followed by collision, contusion also accounts for a certain proportion, and the degree of injury is mostly mild. Students' football sports injuries mostly occur in competitions and after-class activities.

Prevention of sports injury in public football elective course

Preparation activities before sports

When university students take football elective courses, they often don't pay attention to the preparation activities, which will raise the body temperature, reduce the viscosity of muscles, and increase the elasticity of muscles and the range of motion of joints. In class, we should make preparations scientifically, pertinently and comprehensively, so as to reduce sports injuries. The purpose of preparation is to improve the excitement of the central nervous system, strengthen the functions of various organs and systems, overcome all kinds of functional inertia, and make full functional preparations for formal sports. The content of preparation and the amount of exercise should be reasonably arranged according to the content of teaching, training and competition, personal physical function and meteorological conditions. The preparation should be targeted, including general preparation activities and special preparation activities related to formal sports. You can do some static actions first, such as wrist pressing, ankle pressing, knee bending, leg pressing and pressure measuring. Then do some loop movements, such as ankle loop, shoulder loop, and finally run in a small range. You can also do in-situ leg lifting. But we should grasp the principle of moving from slow to fast, from static to dynamic. Doing warm-up activities can avoid injuries caused by muscle stiffness and movement deformation.

Reasonably grasp the amount of exercise

When making the teaching and training work plan, arrange the teaching and training contents, methods and organizational measures according to the students' age, gender, health status and sports skill level. It is of great significance to fully understand the key points and difficulties in the textbook, and to prepare for the prevention of those

Table 2. Analysis of damage types.

Damage type	Number of people	Proportion (%)	
Shoulder joint	Sprain	7	4.7
	Bruise	3	2.0
	Contusion	5	3.3
Wrist joint	Sprain	8	5.3
	Bruise	7	4.7
	Contusion	6	4.0
Knee joint	Sprain	36	24.0
	Bruise	14	9.3
	Contusion	9	6.0
Ankle joint	Sprain	29	19.3
	Bruise	19	12.7
	Contusion	7	4.7

movements and links that are difficult to master and prone to wrong movements or sports injuries in advance, so as to ensure the safety of teaching and training. During exercise, we should pay attention to reasonably controlling the strength of the upper and lower limbs, not too strong and too dense. The amount of exercise should be controlled according to the bearing capacity and physical strength of the body. If you feel an uncomfortable reaction in some part of your body, you should stop exercising immediately.

Strengthen physical fitness training

Only by having good physical fitness can we ensure the good play of technology and tactics. Physical fitness exercises include strength, endurance, speed, flexibility, etc. Meanwhile, good physical fitness can effectively reduce the occurrence of sports injuries. Muscle strain is very common in sports and should be paid enough attention to. The active and strong contraction or passive and excessive elongation of muscle exceeds the burden of the muscle itself, and the slight injury, partial tearing or complete breaking of the muscle caused by it is called muscle strain. Football is also a sport with professional knowledge and skills. Therefore, teachers should teach students sports skills to demonstrate the correct actions in football. A lot of experience has proved that proper stretching exercise can reduce muscle strain, tendon sprain or other injuries caused by muscle fatigue.

CONCLUSIONS

Generally speaking, university students' participation in football plays a positive role in improving their physical fitness. However, attention should be paid to common sports injuries, and the above effective measures should be actively applied in practice. This paper explores the characteristics, causes and preventive measures of campus football sports injuries, hoping to improve the situation of students' football sports injuries in the future development of campus football. Most of the sports injuries of students in football class are in the lower limbs, and the ankle joint is more likely to be injured in the lower limbs. Among the types of sports injuries, joint sprain is the most common occurrence, followed by collision, contusion also accounts for a certain proportion, and the degree of injury is mostly mild.

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