

ANALYSIS AND INTERVENTIONS OF COMMON SPORTS INJURIES IN COLLEGE BASKETBALL PLAYERS



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ANÁLISE E INTERVENÇÕES DOS ACIDENTES ESPORTIVOS COMUNS EM UNIVERSITÁRIOS JOGADORES DE BASQUETE

ANÁLISIS E INTERVENCIONES DE ACCIDENTES DEPORTIVOS COMUNES EN JUGADORES DE BALONCESTO UNIVERSITARIOS

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ABSTRACT

Introduction: As college basketball continues to develop, more and more college students are joining the sport, and the resulting sports injuries have also gradually increased, affecting the quality of life and academic performance. **Objective:** Analyze the most common sports injuries and offer solutions for the safe practice of college basketball. **Methods:** This article studies, through interviews and literature review, the basketball injuries of college students, analyze the main causes of sports injuries, and presents corresponding countermeasures to promote the safe development of sports education in colleges. **Results:** The main injuries were during training, excessive force, and inadequate preparation. Deficient muscle work is also associated with most of these injuries. **Conclusion:** Basketball is highly competitive and popular on college campuses. It is a sport that can exercise and enrich the extracurricular life of college students, requiring from its practitioners greater attention in the pre-training warm-up phase and parallel muscle strengthening to reduce its major injuries in college students. **Level of evidence II; Therapeutic studies - investigation of treatment outcomes**

Keywords: Basketball; Exercise; Athletic Injuries; Accident Prevention.

RESUMO

Introdução: Com o desenvolvimento contínuo do basquetebol universitário, cada vez mais estudantes universitários aderem ao esporte e as lesões esportivas resultantes também tem aumentado gradualmente, afetando a qualidade de vida e o desempenho nos estudos. **Objetivo:** Analisar as lesões esportivas mais comuns e oferecer soluções visando a prática segura do basquetebol universitário. **Métodos:** Este artigo estuda por meio de entrevistas e revisão literária as lesões no basquetebol dos estudantes universitários, analisa as principais causas das lesões no esporte e apresenta as contramedidas correspondentes para promover o desenvolvimento seguro do ensino esportivo em faculdades. **Resultados:** As principais lesões encontradas foram durante o treino, excesso de força e preparo inadequado. O trabalho muscular deficitário também está associado a maior parte dessas lesões. **Conclusão:** O basquetebol é um esporte altamente competitivo, muito popular nos campi universitários. É um esporte que pode exercitar e enriquecer a vida extracurricular dos estudantes universitários, requerendo de seus praticantes uma maior atenção na fase de aquecimento pré-treino e fortalecimento muscular paralelo para redução das suas principais lesões em universitários. **Nível de evidência II; Estudos terapêuticos - investigação dos resultados do tratamento.**

Descritores: Basquetebol; Exercício Físico; Traumatismos em Atletas; Prevenção de Acidentes.

RESUMEN

Introducción: Con el continuo desarrollo del baloncesto universitario, cada vez más estudiantes universitarios se incorporan a este deporte y las lesiones deportivas resultantes también han aumentado gradualmente, afectando a la calidad de vida y al rendimiento en los estudios. **Objetivo:** Analizar las lesiones deportivas más comunes y ofrecer soluciones orientadas a la práctica segura del baloncesto universitario. **Métodos:** Este artículo estudia, mediante entrevistas y revisión de la literatura, las lesiones de baloncesto de los estudiantes universitarios, analiza las principales causas de las lesiones deportivas y presenta las correspondientes contramedidas para promover el desarrollo seguro de la enseñanza deportiva en los colegios. **Resultados:** Las principales lesiones encontradas fueron durante el entrenamiento, la fuerza excesiva y la preparación inadecuada. El trabajo muscular deficiente también está asociado a la mayoría de estas lesiones. **Conclusión:** El baloncesto es un deporte altamente competitivo, muy popular en los campus universitarios. Es un deporte que puede ejercitar y enriquecer la vida extraescolar de los universitarios, requiriendo de sus practicantes una mayor atención en la fase de calentamiento previo al entrenamiento y el fortalecimiento muscular paralelo para reducir sus principales lesiones en los universitarios. **Nivel de evidencia II; Estudios terapéuticos - investigación de los resultados del tratamiento.**

Descriptor: Baloncesto; Ejercicio Físico; Traumatismos en Atletas; Prevención de Accidentes.



INTRODUCTION

Basketball is one of the favorite sports of college students, which plays an important role in improving the health level of college students and enhancing their physique.¹ With the exchange and holding of basketball competitions at home and abroad, especially the broadcasting and promotion of the American men's basketball professional league, which is very competitive and ornamental, many college students have aroused their love for basketball.² Basketball is a popular sport in China. As an active game, it can activate the body and mind and strengthen the body.³ As a kind of competitive sports, it has a certain fight for high altitude, so it is inevitable for the athletes to have physical confrontation, so there is the risk of injury.⁴ Basketball is one of the most popular sports in China. It is not only a competitive sport, but also plays a positive role in strengthening physique and improving various functions of human body.⁵ Basketball is a sport with high intensity, fierce confrontation and more physical contact. All kinds of injuries occur from time to time. Due to the high intensity of basketball, fierce confrontation, more physical contact, as well as the lack of enough attention and effective preventive measures in basketball teaching and training, all kinds of injuries occur from time to time, which seriously perplex basketball teaching and training, and bring a lot of inconvenience to students' daily life.⁶

Basketball is a very competitive and ornamental project, which is very popular in the university campus. It is a sport with great physical exercise and rich college students' extracurricular life.⁷ With the continuous development of basketball and the development of comprehensive fitness movement, more and more college students participate in basketball, and the sports injury is also increasing, which seriously affects their life and study.⁸ With the deepening of education reform, schools not only pay more attention to the education of basic culture courses, but also comprehensively strengthen the teaching of sports. However, the emergence of sports injury in the process of basketball will not only seriously damage the health of students, but also have a certain impact on the development of basketball.⁹ In order to ensure the smooth development of basketball with large amount of exercise, high skill and strong antagonism, relevant teachers must comprehensively strengthen the guidance of basketball players, so as to minimize the risk of basketball players in the actual movement process.¹⁰ Based on this, this paper studies the basketball injury of college students, analyzes the main causes of students' basketball injury, and puts forward the corresponding countermeasures, in order to promote the safe and smooth development of college basketball teaching.

Analysis on the causes of College Students' basketball injuries

In basketball or games, most sports injuries are caused by insufficient preparation activities. Inadequate or no preparation activities before exercise can not make the body's moving organs and internal organs change from inert state to active state. Before carrying out basketball, because the students did not do a good job in the preparatory work according to the requirements of basketball, a series of sports injuries will appear in the process of sports. Many college students tend to neglect the practice of preparation activities, and have insufficient understanding of the significance of preparation activities. The preparation activities are carried out casually, and even throw themselves into high-intensity basketball without preparation activities, which often leads to sports injuries of different degrees. Activity preparation is not only to enable students to better adapt to the later intense basketball, but also to comprehensively improve the excitement and sensitivity of students' central nervous system.¹¹ In this way, the static state of the human body can be quickly transformed into the intense activity state of preparing for exercise, so that students' organs can actively complete related movements and operations in the later exercise process.

If college students want to perform well in basketball, only solid skills and tactics are not enough, and at the same time, they must have good physical fitness. The decline of physique and physical ability will lead to the inaccuracy of running, jumping, throwing, technical and tactical actions in basketball, which will increase the local burden of the body, resulting in sports injuries caused by non-standard technical actions. For example, Table 1 is the statistics of the causes of sports injuries of some basketball players. It can be seen that sports injuries caused by training with injuries are the first.

In the process of basketball, because basketball itself has high technical requirements and antagonism, students can have reasonable confrontation and collision while exercising. Some students don't pay attention to the cultivation of self-protection consciousness of basketball injury, but only pay attention to competition and practice in the actual sports process, and don't pay attention to the prevention of sports injury. The decline of physical fitness has caused the college students to be unable to cope with their basketball practice. Many college students can't bear the load of basketball practice. The duration of practice is short, and the intensity and intensity of practice are low, so they can't play the role of basketball exercise effectively. Under the influence of internal and external factors, college students' lack of competition experience and experience in basketball can easily lead to lack of concentration, rapid heartbeat, persistent tension in mentality, stiff muscles and irregular technical movements, thus affecting their normal performance and further increasing the probability of sports injuries. Physical education teachers and students have insufficient understanding of the significance of preventing sports injuries or lack of prevention concepts. Teachers do not pay attention to safety education for students, and do not take effective preventive measures. Students lack basic knowledge of injury prevention and do not know how to protect themselves in practice.

Basketball players in competitive sports highlight that sports injuries are more moderate injuries and less severe injuries. Moderate injury means that after injury, training may have been carried out, but it is necessary to stop or reduce the activity of the affected part. Severe injury refers to the complete inability to participate in normal training and the need for rest and treatment for a period of time. Very few high-level athletes have never suffered any injuries. Table 2 shows the percentage of sports injuries with different degrees.

In the process of optimizing the modeling of elbow and knee joint injury caused by overtraining of basketball players, assuming that $\delta(X)$ represents the variance vector of the vector set X of elbow and knee joint injury caused by overtraining of basketball players, the following formula can be obtained:

$$\delta(X)(i) = \frac{1}{2} \sum_{n=1}^N [X_n(i) - X(i)]^2 \quad (1)$$

Table 1. Statistics of causes of sports injuries of basketball players.

Cause of injury	Number of people
Inadequate preparation	37
The technical action is not standard	19
Poor self-protection ability	27
Injury training	51
Mental state is not good	21
Partial overburden	49
The ability of confrontation is poor	17

Table 2. Proportion of sports injuries of different degrees.

Degree of injury	Moderate injury	Severe injury	No injuries
Proportion of people	71%	23%	6%

In the process of optimizing the elbow and knee joint injury modeling process of basketball players over training, the following formula can be drawn:

$$X = E(X) = \frac{1}{N} \sum_{n=1}^N X_n \quad (2)$$

The contribution of each joint's work to lower limb's work increases with the applied load. The contribution of hip joint increased gradually, while that of knee joint decreased gradually. There is no significant difference in ankle joint contribution under various load-bearing conditions. There is no linear relationship between the contribution of three joints and load, and the contribution does not increase or decrease linearly with the increase of load, as shown in Figure 1.

Some schools only pay attention to sports practice teaching, but do not strengthen the education of sports injury treatment methods and related knowledge of sports injury and prevention according to the actual situation in the process of basketball, and do not arrange enough teachers to effectively protect and supervise basketball, thus making students unable to get effective care and treatment in the first time after sports injury occurs in the process of basketball. Under normal circumstances, the functions of each organ system of the human body are in a normal state. College students' excessive exercise or competition in basketball will dramatically increase sports fatigue, which will lead to excessive fatigue.¹² Physical fitness is the foundation of college students' basketball exercise, the starting point and foothold of basketball teaching, and it is very important for basketball teaching and exercise. In recent years, physical monitoring shows that college students' physical fitness is gradually declining, and their vital capacity, endurance, speed, strength and other qualities are reduced to varying degrees. High-intensity exercise, long duration of exercise and disordered life rules are all possible causes of excessive fatigue. Once excessive fatigue occurs during exercise, the functional level of each organ system of the body will be lowered, and in severe cases, the functional disorder of each organ will be caused. Each sport has its own technical and tactical characteristics. Different technical and tactical characteristics are the driving force for the vitality and sustainable development of the sport, and correct technical and tactical skills can avoid injuries.

Treatment measures of common injuries in the process of College Students' basketball

Good physical fitness is the foundation of all sports, especially basketball with frequent physical contact and confrontation. Strengthen physical exercise, improve various physical function indexes of college

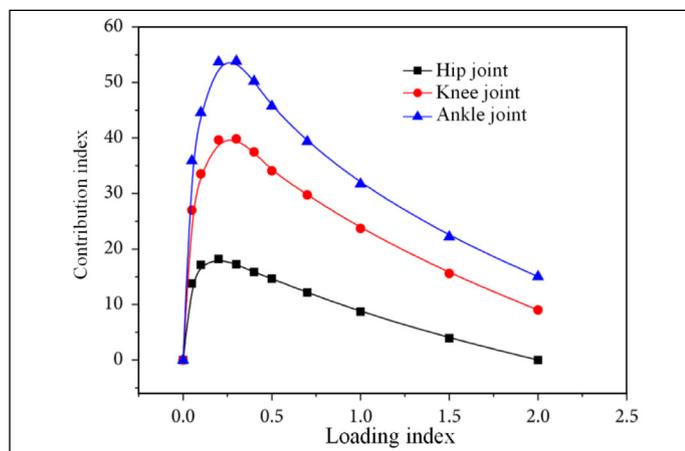


Figure 1. Contribution of three joints and weight bearing data.

students, and form good physical qualities such as strength, speed, endurance, sensitivity and flexibility. When students do semi-squat in basketball, the medial and lateral ligaments and cruciate ligaments are in a relatively relaxed state, the knee joint is mainly protected by quadriceps tendon and skeleton, and the muscles do not play any protective role. It is easy to cause different degrees of sports injuries to the knee joint when this kind of action with less protection and long arm force is carried out for a long time. In the process of basketball, because the fingers are too nervous, sports injuries of different degrees may occur when they are impacted by a large lateral external force. A large number of sports practices have proved that the key to winning a competitive competition depends not only on the normal exertion of skills and tactics, but also on the strength and weakness of psychological quality and resistance to stress. Strengthen the training and training of college students' psychological quality and anti-stress ability, improve the cultivation of college students' sports morality, carry forward the noble basketball style, and adhere to the principle of friendship first and competition second. The amount of exercise for preparing activities should be determined according to the intensity of exercise, students' physical condition and climatic conditions, and it is advisable to have slight fever and sweat. There should not be too long interval between the preparation activities and the end of the official sports. If you have a long off-court rest in basketball match, you should warm up again before playing again.

In the actual sports process, the muscles and ligaments of the lateral ligament are not as strong as those of the medial ligament. Therefore, in the actual basketball process, most of the injuries of the lateral ligament are caused by excessive varus of the knee joint. If the sports injury of ankle joint is serious, and the patient suffers from avulsion fracture and complete ligament rupture, it is necessary to use short leg plaster to fix the affected part. Excessive exercise load not only increases the burden of the exercise system, but also leads to the fatigue of the nerve center, reduces the function and coordination ability of the body, and reduces the attention and alertness of the body.¹³ Improving students' interest is an important way to avoid basketball injury. Therefore, in basketball teaching, teachers should take improving students' interest as an important teaching goal, adopt reasonable teaching methods and means, choose scientific teaching content and apply effective teaching methods and means. With the popularization and promotion of basketball, college students' basketball skills are constantly improving, and there are more and more factors causing sports injuries. It is very important to arrange the amount of exercise properly and reasonably. Some colleges and universities have serious problems in the construction of basketball court equipment, which adversely affects the safety of basketball. Therefore, colleges and universities should increase economic investment, increase the construction of field equipment, constantly improve the quality of field equipment and further increase the quantity of field equipment.

CONCLUSIONS

In the process of basketball development, sports injuries will seriously reduce students' enthusiasm for participating in basketball. If not handled properly, it will also cause psychological shadows to students to a certain extent, which will also cause extremely adverse effects on the comprehensive development of basketball. Basketball is a social and cultural phenomenon of human civilization, which is not only a vigorous sport, but also bears rich spiritual connotation and positive significance, and is more popular in Chinese universities. Basketball injury has gradually become the main factor affecting the development of college basketball, and the main reasons are students' low interest in basketball, poor physique, incomplete facilities, average teachers'

level and low students' technical and tactical level. University is a place where mass basketball is widely carried out, and it is also the main way to develop and spread basketball. Therefore, we should pay enough attention to sports injuries in college basketball teaching and training, and give appropriate assistance and active rehabilitation. Teachers should carry out safety education for college students, so as to make them realize the harm of inadequate or no preparation before sports, improve

their understanding of basketball injuries, actively participate in various basketball games, accumulate competition experience, and constantly improve their self-confidence and pressure resistance, so as to be competent for future basketball games and competitions.

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