

Investigation and Research on Sports Injuries in Track and Field Classes of PE Majors in Universities

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Abstract: *The occurrence of sports injuries is closely related to sports events, training arrangements, sports environment, athletes' own conditions and technical movements. The impact of sports injuries on sports majors is serious. Research on preventing sports injuries has a positive effect on enhancing physical fitness and improving sports skills. The purpose of this article is to conduct a research on sports injuries in the track and field class of college sports majors. This paper conducts a specific investigation of sports injuries in the track and field classes of college sports majors in this city. Through the analysis of the specific conditions of sports injuries, it is found that the probability and characteristics of sports injuries of college sports majors in track and field classes are reduced to reduce schools and parents. As well as students' fear of sports injuries, the purpose of increasing students' enthusiasm for sports is to find evidence for effectively preventing and reducing the occurrence of sports injuries. This article uses literature method, questionnaire survey method, mathematical statistics method, logical analysis method and other research methods to conduct field survey questionnaires on five representative colleges and universities in this city, aiming at the current characteristics and causes of sports injuries in college students' track and field classes. Investigate and research in other aspects. Studies have shown that among the 167 sports majors surveyed, it is found that only 16 people are treated after each sports injury, accounting for 10%. It can be found that the students have sports injuries during the track and field training. Weak consciousness and lack of effective protection measures have made the incidence of sports injuries continue to increase.*

Keywords: *Physical Education, College Physical Education, Sports Injury, Injury Prediction*

1. Introduction

In-depth research on the causes and effects of sports injuries in sports majors [1-2], investigation, analysis, statistics, and research on sports injuries in track and field events, to provide a basis for the prevention of sports injuries [3-4]. This article analyzes the causes of sports injuries in sports majors in physical education colleges and departments in this province [5-7], and discusses the countermeasures to improve the sports performances of students in sports majors. It is important Theoretical significance and practical value [8-9].

In the research on sports injuries in the track and field classes of college sports majors, many scholars have studied them and achieved good results. For example, Pascal analyzed the causes of some common track and field sports injuries from an anatomical point of view, and proposed corresponding treatment measures. Etc. [9]. Timpka T analyzes the original training methods, anthropometrics, menstruation, and clinical biomechanics of the injury caused by the original training methods, anthropometrics, and clinical biomechanics of 95 track and field athletes during the year. The influence of factors, the main cause of damage, etc [10].

In the process of research, this article uses logical analysis to conduct in-depth discussion on sports injuries, using analysis, comparison, synthesis, induction and other methods, combined with sports, physiology, epidemiology and other multidisciplinary knowledge. On this basis, define the concept of sports injury, explore and study the causes of sports injuries in sports classrooms (gender, grade, sports events, etc.), and combine relevant literature research to cultivate students' safety awareness and injury protection during sports activities Measures put forward scientific and reasonable theoretical basis.

2. Sports Injury in Track and Field Courses for PE Majors in Colleges and Universities

2.1 Preventive Measures Against Sports Injuries in Track and Field Training for Majors

(1) Strengthen self-protection awareness

Self-protection consciousness includes two aspects: the athlete's foresight of the harmful actions that the opposing team members may use and the estimation of other situations. Self-protection actions also include the athlete's ability to resist the opponent's harmful actions. The main reason is that the accumulation of acidic substances in the muscles and the lack of energy substances reduce the elasticity, stretchability, strength and coordination of the muscles. If stronger stimulation is given to quickly elongate the joint ligaments, it is more prone to damage. Mainly occurs in the limbs; there are many reasons for technical errors. According to different sports, corresponding precautions should be taken to require sports majors to strictly abide by the training requirements to avoid injuries caused by dangerous actions or violations. To fully understand and understand the meaning of track and field injuries, we must also attach great importance to sports injuries ideologically, understand the relevant principles and prevention methods, and know how to protect ourselves. Coaches should work hard to eliminate the negative effects of sports injuries and improve students' self-protection awareness.

(2) Comprehensively improve physical fitness and strengthen training of vulnerable parts

Physical fitness is a comprehensive reflection of the functions of human organs in muscle work. It generally includes several aspects such as strength and speed. It is the basic abilities of the human body. As a student studying physical education, the level of physical fitness is directly related to the level of exercise and sports skills. The cultivation and improvement of sports injuries also restricts the probability of sports injuries.

(3) Improve physical fitness to prevent sports injuries

Good health is the fundamental guarantee for the systematic training of sports majors and a necessary condition for sports training of sports majors. Physical fitness training can effectively improve the functions of human internal organs, especially the cardiovascular system and respiratory system; strengthen the functions of motor organs such as bones, muscles, tendons, and ligaments, and significantly improve and enhance the functions of the central nervous system.

(4) Strengthen the exercise of emotional control of sports majors

Athletes can control their emotions well in the competition, and they will avoid vicious collisions, thereby avoiding sports injuries. Therefore, in today's track and field training, coaches and athletes should not only pay attention to physical fitness training, but also control emotions. Training cannot be ignored. Both are equally important. There are many ways to control emotions. The most common one is music relief.

(5) Fully prepare and organize activities

Preparatory activities generally do not have a fixed pattern, and can be arranged according to the different characteristics of different projects and different activities. It is necessary to give full play to the general purpose of warm-up activities, do a good job of muscle and joint exercises, and ensure that the coordination of the body and the flexibility of the muscles can meet the needs of subsequent training and competition. Thereby reducing the body's adaptation time to sports and reducing sports injuries.

2.2 General Influencing Factors of Sports Injuries

(1) Gender factors

Among the population of college students, boys are more interested in sports than girls and have more emotional participation in sports. Compared with girls, they have lower interest in sports and many people do not like to participate in sports. However, in physical fitness tests or sports meets, due to insufficient participation in sports activities in normal times, and short-term physical inadaptability, resulting in a higher incidence of sports injuries among girls in physical fitness tests and sports meets.

(2) Sports

Among ball sports, football is the most common ball game in our country. It has a strong mass base. It is a rapidly changing sport with strong competitiveness and physical antagonism, and requires the

athletes' own physical conditions. High, fierce competition and injury. In the competition, intense competition, sprinting and tackles are prone to muscle strains and breaks in the thighs and calves. Sudden changes in body position, sudden twisting, adduction or abduction of the calf can cause damage to the ligaments and bones of the knee and ankle joints.

(3) Damage treatment

In the treatment of sports injury, we pay full attention to the problem of our own sports injury, and we must deal with the injury after the specific situation of the sports injury. For example, in the emergence of simple skin abrasions and partial contusions, self-treatment can be carried out. To be timely and effective, you cannot ignore the more serious follow-up problems caused by minor problems. In the treatment of your own injuries, you must have a good knowledge reserve and emergency measures, and do a good job in the first time when minor sports injuries appear. Timely and effective processing.

2.3 Preventive Measures for Sports Injuries in Schools

(1) Strengthen the internal management of the school

In a classroom with equipment for physical education content, teachers must first prepare for safety education and safety protection measures, and do a good job of protection and assistance. Regular inspections and maintenance of outdoor sports equipment. Special personnel are assigned to maintain and manage indoor and outdoor sports equipment. Regular inspections can provide safety guarantee for students' sports and exercises inside and outside of class.

(2) Teachers' prevention of sports injuries

Warm-up activities before exercise can stretch the muscles and joints first, warm up the body, and allow blood to flow to the muscles to be exercised, which can effectively reduce the risk of sports injuries, increase the heart rate, and avoid sudden and intense exercises on the heart. The rapid warm-up of the body after the warm-up exercise will prevent the body from straining the muscles and bones, preventing the body from unexciting muscles and nerves, greatly increasing the safety of exercise, and effectively reducing and preventing the occurrence of sports injuries.

2.4 Least Squares Regularized Regression Algorithm Based on Non-Uniformly Distributed Sampling Questionnaire Survey

The regularized kernel network algorithm for Mercer kernel K is:

$$f_{z,\lambda} = \arg \min_{g \in H_K} \left\{ \frac{1}{m} \sum_{i=1}^m (f(x_i) - y_i)^2 + \lambda \|f\|_K^2 \right\} \quad (1)$$

Here $\lambda \geq 0$ is the regularization parameter. In the analysis of the algorithm, the error between $f_{z,\lambda}$ and f_ρ is estimated using the method of integral operator. Take $u_m = \frac{1}{m} \sum_{i=1}^m \rho_X^{(i)}$, give the following function: give the following function:

$$f_{z,\lambda} = \arg \min_{f \in H_K} \left\{ \int (f(x) - \int_p(x))^2 d\mu(x) + \lambda \|f\|_K^2 \right\} \quad (2)$$

The error estimate of $f_{z,\lambda} - f_\rho$ is decomposed into the following three parts:

$$f_{z,\lambda} - f_\rho = \{f_{z,\lambda} - f_{z,\mu}\} + \{f_{\lambda,\mu} - f_{\lambda,\rho_x}\} + \{f_{\lambda,\rho_x} - f_\rho\} \quad (3)$$

Among them, the first part is called the sample error; the second part is called the deviation; the third part is called the approximation error.

3. Experimental Research on Sports Injury in Track and Field Classes of PE Majors in Colleges and Universities

3.1 Research Objects

This article selects a total of 200 students in the track and field class in the Department of Physical Education of the City College of Sports Sciences as the research objects.

3.2 Distribute and Return Questionnaires

The questionnaire was distributed face-to-face and returned. A total of 200 questionnaires were distributed, and 196 questionnaires were successfully returned. The total recovery rate was 98%, of which 192 were valid questionnaires, and the effective rate was 97%.

3.3 Mathematical Statistics

Use sports statistics to process the acquired measurement data of various physical fitness, and use Excel data statistics software and non-uniformly distributed sampling questionnaire survey to carry out the least squares regularization regression algorithm processing analysis.

4. Experimental Research and Analysis of Sports Injury in Track and Field Courses for PE Majors in Colleges and Universities

4.1 Emotional Factors

As shown in Table 1, it can be seen that in a normal emotional state, sports majors have a low probability of sports injury, only 10.6%, and when they are anxious and in a bad mood, the probability reaches 38.3%.

Table 1 Investigation and Research on the Sports Injury Caused by Students' Mood in Track and Field Courses

Mood at the time of injury	Normal status	Anxiety	Bad mood
Moderate to mild injury	10	34	42
Severe injury	4	7	17
Proportion of moderate to mild injuries	7	32	10
Proportion of people with severe injuries	3.6	6.3	10.5

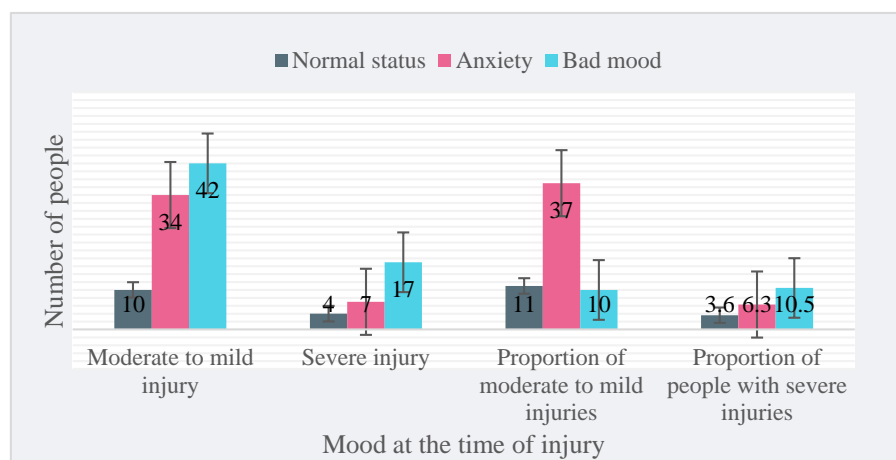


Figure. 1 Investigation and Research on the Sports Injury Caused by Students' Mood in Track and Field Courses

As shown in Figure 1, emotion has also become the main factor affecting sports injuries in sports majors. The specific manifestations of athletes' emotional out-of-control during the game are the athletes' low mood before the game, lack of confidence in the competition, rapid heartbeat, increased blood pressure, and breathing deepening and speeding up, emotional irritability; the athlete's sensory and perceptual ability is significantly reduced, there are errors in the judgment of position perception, time perception, and distance perception, causing sports injuries.

4.2 Treatment of Sports Majors After Sports Injuries

Among the 167 sports majors surveyed, it was found that only 16 people were treated after each sports injury, accounting for 10%. The number of people who chose not to be treated after injury reached 71, accounting for 43%. The experimental results are shown in Table 2.

Table 2 Survey of treatment after sports injury occurred in track and field class

Treatment situation	Boys	Girls
Each	7	9
Occasionally	13	19
Treat in severe cases	30	18
No treatment	44	27

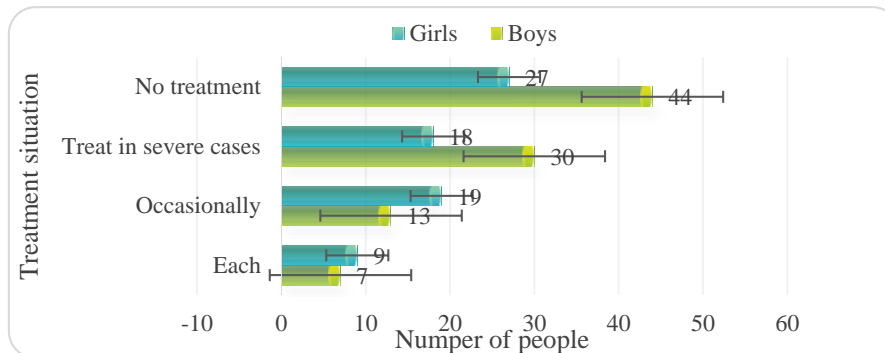


Figure. 2 Survey of treatment after sports injury in track and field class

As can be seen in Figure 2, when a sports major has a mild or moderate sports injury, if they do not choose treatment, they can recover through a certain amount of self-cultivation, but they can continue to participate in training and competitions without treatment and recuperation. If so, it is very likely that this kind of acute injury will be turned into a chronic injury, such as knee effusion, lumbar disc herniation and other chronic injuries, which directly affect the athlete's competition level.

5. Conclusions

Injuries in track and field training have a great relationship with sports majors and coaches' understanding of sports injuries. Only by thoroughly understanding sports injuries can sports majors be able to prevent and avoid injuries. During the training process, the awareness of sports injuries is weak and the lack of effective protection measures has made the incidence of sports injuries continue to increase; in addition, pre-exercise preparations are also very important to avoid sports injuries. Warm-up activities before exercise can improve physical fitness. Coordination and muscle extensibility can better enter the state of exercise. Lack of warm-up or incorrect warm-up is also one of the triggers for sports injuries.

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