# Sports Injury Prevention and Rehabilitation Training Methods in Physical Education Teaching

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**Keywords:** Physical education teaching; Sports injury; Preventive strategies; Rehabilitation training; Safety education

**Abstract:** Through various methods, this paper deeply discusses the prevention strategies and rehabilitation training methods of sports injuries in physical education teaching, in order to cope with the frequent sports injuries in current physical education teaching and ensure the physical and mental health of students. Specifically, through questionnaire survey and field observation, this paper collects the first-hand data of sports injuries in physical education teaching, and analyzes the types, distribution and causes of injuries. On this basis, combined with sports science, rehabilitation medicine and other theories, the theoretical framework of preventing sports injuries is constructed, and specific prevention strategies are put forward. At the same time, in view of common sports injuries, a personalized rehabilitation training program has been formulated. The results show that strengthening education and publicity, optimizing teaching methods and curriculum design, strengthening environment and equipment management, and implementing risk assessment and monitoring can significantly reduce the incidence of sports injuries. The individualized rehabilitation training scheme combined with psychological rehabilitation support can significantly accelerate the rehabilitation process of patients and improve the quality of rehabilitation. This paper provides scientific guidance and suggestions on prevention and rehabilitation for physical education teaching, which is helpful to protect students' physical and mental health and improve teaching effect.

## 1. Introduction

With the popularization of physical education and the vigorous development of competitive sports around the world, sports have become an important way to promote the physical and mental health of teenagers and cultivate teamwork spirit and perseverance [1]. However, with the increase of sports activities, the problem of sports injury has become increasingly prominent, which has become one of the key factors restricting the quality of physical education teaching and the enthusiasm of students [2]. Sports injury not only affects students' physical health, but also may have a negative impact on their psychology, even leading to a long-term decline in sports ability or termination of sports career [3-4]. Therefore, it is of great significance to explore the prevention mechanism and rehabilitation training methods of sports injuries in physical education teaching for ensuring students' safety, improving teaching effect and promoting the healthy development of sports undertakings.

The purpose of this study is to provide scientific guidance for physical education teaching and reduce the occurrence of sports injuries by comprehensively analyzing the occurrence law, influencing factors and the effectiveness of existing prevention and rehabilitation measures. This paper will explore rehabilitation training programs suitable for different types of sports injuries to help injured students recover their physical functions as soon as possible and return to the playground. At the same time, we also hope that educators, students and parents can pay more attention to the prevention of sports injuries, promote the whole society to form a good atmosphere of paying attention to sports safety and supporting rehabilitation treatment, and contribute to the construction of a safe, efficient and sustainable physical education teaching system.

## 2. Theoretical basis and current situation analysis of sports injury in physical education teaching

### 2.1. Classification and causes of sports injuries

Sports injury can be divided into acute injury and chronic injury according to its nature; According to the location, it can be divided into joint injury, muscle injury and ligament injury [5]. Its causes are complex and diverse, including biomechanical factors, physiological factors, psychological factors, environmental factors and teaching organization factors. See Table 1 for details:

Table 1: Classification and Causes of Sports Injuries

| Classification | Causes |
|---|---|
| Acute Injuries | 1. Sudden external impact or twist. 2. Improper sports technique. 3. Muscle fatigue or overexertion. 4. Issues with the field or equipment |
| Chronic Injuries | 1. Overuse of a particular muscle or joint. 2. Incorrect posture. 3. Excessive exercise volume or frequency. 4. Lack of adequate rest and recovery |
| Sprains | 1. Joint twisted by external force. 2. Excessive stretching of muscles or ligaments. 3. Uneven or slippery ground. 4. Inappropriate athletic shoes |
| Strains | 1. Muscles or ligaments overstretched. 2. Insufficient warm-up before exercise. 3. Improper sports technique. 4. Muscle fatigue or weakness |
| Fractures | 1. Strong external impact. 2. Osteoporosis or weak bones. 3. Unstable landing or improper posture during sports. 4. Improper use or damage to equipment |
| Contusions | 1. Collision with other athletes or objects. 2. Loss of balance and falling during sports. 3. Inadequate field facilities or hidden hazards. 4. Not wearing appropriate protective gear |

A deep understanding of these classifications and causes is the basis for formulating effective preventive measures.

### 2.2. The present situation of physical education and the theoretical framework of preventing sports injuries

At present, physical education generally faces problems such as unreasonable curriculum, insufficient teachers, outdated teaching methods and weak safety awareness, which directly or indirectly increase the risk of sports injuries [6-7]. At the same time, with the diversification of sports events and the differentiation of students' physique, how to balance the intensity and safety of sports and realize teaching in accordance with their aptitude has become an important challenge for physical education teaching.

Based on sports science, biomechanics, psychology and other multidisciplinary theories, this paper constructs a theoretical framework for preventing sports injuries, including risk assessment and hierarchical management, scientific training plan formulation, correct technical action teaching, psychological adjustment and stress management, environment and equipment safety optimization and so on. The framework emphasizes systematicness, foresight and individuation, aiming at reducing the risk of sports injury through comprehensive management.

### 2.3. Theoretical basis of rehabilitation training

The theoretical basis of rehabilitation training mainly comes from sports physiology, rehabilitation medicine and physiotherapy [8]. It is emphasized that on the basis of respecting the natural healing law of human body, the repair and functional reconstruction of injured tissues can be promoted through specific means such as physical therapy, functional training and psychological counseling. Rehabilitation training needs to make a personalized rehabilitation plan according to the type, severity and individual differences of injuries to ensure the safety and effectiveness of the rehabilitation process.

## 3. Sports injury prevention strategies in the application of physical education

### 3.1. Education and Publicity

In physical education teaching, strengthening the education and publicity of sports injury prevention is the primary task [9]. This includes popularizing the basic knowledge of sports injuries to students, such as the types, causes and harms of injuries, and improving their awareness of self-protection. Through regular lectures, posters and educational videos, the concept of prevention is deeply rooted in people's hearts, as shown in Figure 1:

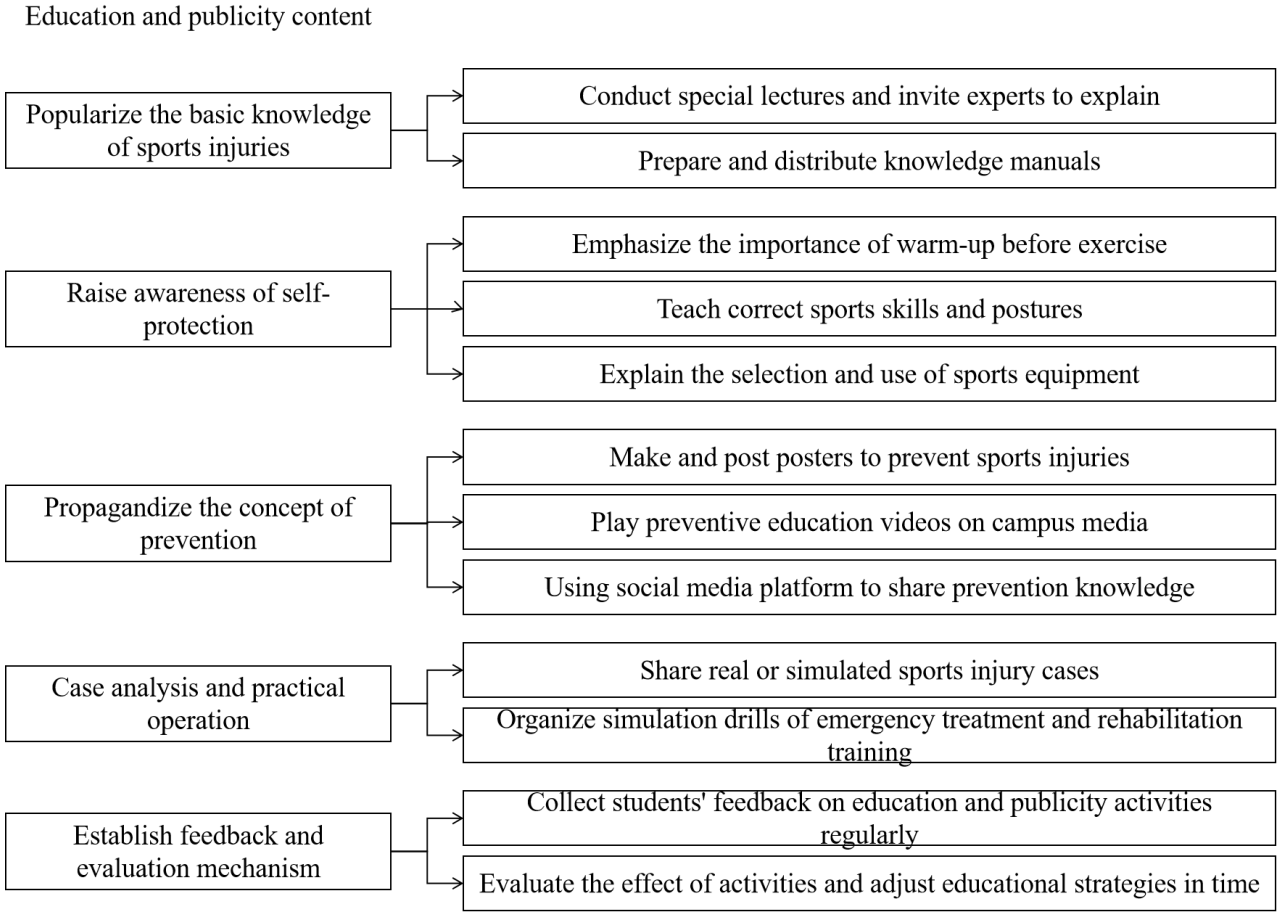


Figure 1 Strategies to strengthen education and publicity on sports injury prevention

Teachers can encourage students to participate in interactive discussions, share personal experiences or stories, and enhance the effectiveness and interest of education. At the same time, we should also spread the correct concept of sports to parents and all walks of life, and form a good atmosphere of family-school co-education and social support.

### 3.2. Teaching methods and curriculum design

Optimizing teaching methods and curriculum design is the key to prevent sports injuries. Teachers should make a scientific and reasonable training plan according to students' age, gender, physical level and other factors to avoid injuries caused by overtraining and single action repetition. Preventive exercises, such as comprehensive warm-up exercise, targeted stretching and relaxation, balance and coordination training, are integrated into the course to improve students' physical adaptability and flexibility. At the same time, diversified teaching methods, such as game-based learning and group cooperation, are adopted to stimulate students' interest in learning and reduce the distraction and action mistakes caused by boredom.

### 3.3. Environment and equipment management

Good sports environment and suitable equipment play a vital role in preventing sports injuries,

which together form a solid defense line to ensure the safety and health of athletes. As the main place for teenagers to carry out sports activities, schools are particularly responsible, and a series of effective measures must be taken to ensure the suitability of sports environment and the effectiveness of equipment.

First of all, the school should establish a perfect inspection and maintenance mechanism for sports facilities. This includes, but is not limited to, regular and detailed inspections of sports venues such as playgrounds, runways and stadiums, timely repairing the damaged ground, ensuring that the ground is flat and free of potholes, and reducing the risk of falls and sprains caused by uneven ground. At the same time, sports equipment, such as basketball stands, soccer doors and horizontal bars, should be thoroughly inspected to ensure that they are structurally stable, free from rust and looseness, and avoid injury accidents caused by equipment failures.

Secondly, for high-risk sports, schools should force students to wear professional protective equipment. These equipments include, but are not limited to, helmets, knee pads, ankle pads, elbow pads and tooth protectors. They can effectively absorb the impact force and protect the head, joints and other parts of the body from injury when athletes collide and fall. In addition, the school should regularly organize professionals to train students on the use of protective equipment to ensure that each student can correctly wear and understand its protective function, so as to maximize the preventive effect of the equipment.

In addition to the above hardware measures, schools should also pay close attention to the impact of weather changes on sports activities. In extreme weather conditions, the curriculum should be adjusted decisively to avoid students' outdoor activities in harsh environments. This is not only to prevent direct dangers such as heatstroke and lightning stroke, but also to avoid indirect injuries caused by inattention and physical function decline caused by weather factors.

### 3.4. Risk assessment and monitoring

Establishing a risk assessment and monitoring system for sports injuries is an important part of prevention. Teachers should conduct personalized risk assessment and identify potential high-risk factors according to students' physical condition, sports history and current performance. In the process of training, students' physical reactions should be closely observed, and the training intensity and content should be adjusted in time to avoid overload. At the same time, establish health records to record students' physical examination results, training and injury history, so as to provide reference for subsequent prevention and treatment.

## 4. Methods and practice of rehabilitation training after physical education teaching

### 4.1. Rehabilitation training principles and rehabilitation training programs

Rehabilitation training should follow the principles of individuation, gradual progress and comprehensive rehabilitation. The principle of individuation requires that a targeted rehabilitation plan be made according to the type, severity and physical condition of the patient. The principle of gradual progress emphasizes that the intensity and difficulty of training should be gradually increased in the rehabilitation process to avoid secondary injury caused by rushing for success. The principle of comprehensive rehabilitation pays attention to the comprehensive recovery of physical function, psychological state and social life ability, and realizes the harmony and unity of body and mind.

For common sports injuries, such as joint sprain, muscle strain, fracture, etc., specific rehabilitation training programs should be formulated, as shown in Table 2:

Table 2: Common Sports Injuries and Specific Rehabilitation Training Programs

| Type of Sports Injury | Rehabilitation Training Programs |
|---|---|
| Knee Sprain | 1. Initial cold compress to reduce swelling. 2. Physiotherapy to promote inflammation resolution. 3. Joint mobility restoration training. 4. Strengthening exercises for thigh muscles (front and back) |
| Ankle Sprain | 1. Rest and cold compress to alleviate pain and swelling. 2. Ankle joint |

| | |
|---|---|
| | stability training. 3. Balance and coordination exercises. 4. Gradual increase in weight-bearing walking |
| Shoulder Strain | 1. Local cold compress and massage to relieve pain. 2. Shoulder joint mobilization to increase range of motion. 3. Strengthening exercises for rotator cuff muscles. 4. Gradual resumption of daily activities and work |
| Lumbar Sprain | 1. Bed rest and hot compress to alleviate pain. 2. Lumbar muscle stretching and relaxation exercises. 3. Core muscle stability training. 4. Gradual increase in lumbar mobility and weight-bearing |
| Muscle Strain (e.g., Hamstring) | 1. Cold compress and compression during the acute phase. 2. Gentle stretching to promote muscle recovery. 3. Gradual increase in muscle strength training. 4. Functional testing before returning to sports |
| Tennis Elbow (Pain on the Outer Side of the Elbow) | 1. Rest and cold compress to reduce inflammation. 2. Elbow joint mobilization and muscle stretching. 3. Forearm and wrist strength training. 4. Adjustment of sports techniques and reduction of overuse |

### 4.2. The importance of psychological rehabilitation

Psychological rehabilitation plays an important role in the process of sports injury rehabilitation. Sports injury often brings negative emotions such as anxiety and depression to patients, which affects the rehabilitation effect. Therefore, at the same time of rehabilitation training, we should pay attention to patients' psychological state and provide necessary psychological support. Through psychological counseling, relaxation training, cognitive behavioral therapy and other means, help patients adjust their mentality, enhance their confidence in rehabilitation, and promote comprehensive physical and mental recovery. At the same time, patients should be encouraged to actively participate in social activities, maintain communication with family, friends and rehabilitation teams, and jointly face the challenges in the rehabilitation process.

## 5. Conclusions

The purpose of this study is to deeply explore the prevention strategies and rehabilitation training methods of sports injuries in physical education teaching. Through on-the-spot investigation and other methods, the classification, causes, prevention theoretical framework and rehabilitation training principles of sports injuries are systematically analyzed. It is found that strengthening education and publicity, optimizing teaching methods and curriculum design, strengthening environment and equipment management, and implementing risk assessment and monitoring are the key measures to effectively prevent sports injuries. At the same time, the individualized rehabilitation training program for common sports injuries, combined with the support of psychological rehabilitation, can significantly accelerate the rehabilitation process of patients and improve the quality of rehabilitation.

Based on the research conclusion, this paper puts forward the following suggestions: the education department should formulate unified sports safety education standards and strengthen teacher training. Schools should improve the physical education teaching system and introduce scientific concepts of prevention and rehabilitation. Teachers should improve their professional quality, pay attention to students' individual differences and implement accurate teaching. Students and parents should enhance their safety awareness and actively participate in prevention and rehabilitation activities. All walks of life should pay more attention to sports safety and provide necessary support and guarantee for sports teaching.

## References

[1] Shi Daling. Research on the Evaluation of the Impact of Tai Ji Chuan Sports on Sports Injury and Rehabilitation [J]. Contemporary Sports Science and Technology, 2019,9(26):21-22.

[2] Chen Shuqin, Liu Gang, Wu Ruiren, et al. Study on the influencing factors of athletes' injuries and rehabilitation strategies [J]. Progress of Sports Science, 2024, 12(1):43-49.

[3] Wang Xuefei. Analysis of sports injuries of college students [J]. Sports Fashion, 2022(4):140-142.

[4] Luo Weiting. Research on the causes and preventive strategies of college students' sports dance injuries [J]. Shanxi Youth, 2019,(01):97-98.

[5] Fan Zizhe. Analysis on the prevention and treatment of college students' sports injuries [J]. Cultural and Sports Supplies and Technology, 2019,(24):179-180.

[6] Cao Weiping. On the causes of college students' sports dance injuries and preventive strategies [J]. Cultural and sports supplies and technology, 2018,(14):162-163.

[7] Hu Wei. Rehabilitation methods of sports injuries in college physical training [J]. Contemporary Sports, 2022(34):0122-0124.

[8] Lu Xiaoqiang. Research on sports injuries of college sports teams [J]. Contemporary Sports Science and Technology, 2023, 13(10):37-40.

[9] Zhang Jiayi. The application of myofascial chain theory in the rehabilitation of basketball injuries in colleges and universities [J]. Cultural and sports supplies and technology, 2020, 008(008):202-203.