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## Present situation investigation and prevention strategy analysis of the college table tennis players' sports injury

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### ABSTRACT

Through the investigation of provincial, municipal colleges and universities sports injury of college table tennis athletes and personal basic information, training conditions, the site of injury, type of illness and injury causes, carries on the preliminary data statistics, analysis and summary. It can provide a theoretical basis for the prevention and reduction of college table tennis sports injuries and analyze prevention strategies. According to the principle of randomized controlled, table tennis athletes in a random sample of 180 is the research object from colleges and universities in the city of Zhejiang, Jiangsu and other provinces, to obtain the results of the study. By means of questionnaire survey and mathematical statistics methods analyzed the results. Injury rate of college tennis players reached 67.22%, susceptible to hurt muscle, ligament injuries, terminal disease, tendon injuries and other diseases. The prevalence of different table tennis player technical and tactical play is different. The incidence of table tennis player occurrence of sports injuries is high. The universities need to take reasonable and effective preventive measures for mainly due to injury, such as fully prepared activities, exercise reasonable arrangements, arrangements for body parts science exercise load, strengthen physical training to improve protection awareness and improve medical supervision work.

### KEYWORDS

Table tennis player; Sports injuries; Reasons; Prevention strategies.



## INTRODUCTION

Table tennis is known as China's "national sport", which is the most important sports in college. Table tennis is a high skill sport, it requires that the athletes must be in a very short period of time accurate judgment and make the explosive hitting the ball movement. During the entire course of each joint force with all parts of the body which should be rapid and flexible collaboration<sup>[1,2]</sup>. Table tennis movement itself this feature determines the movement of the body's main joints and criticism is a great power parts. In the practice of over time, if not attention, these joints and power parts can easily lead to injury. The key to this research is the college table tennis players to explore common sports injuries and damage from the injury site causes, etc. Aim at research status of table tennis in sports injuries and how to take preventive strategies<sup>[3]</sup>. The exploration of college table tennis athletes to Beijing, Shanghai, Liaoning and other provinces, municipalities conducted a survey of sports injuries. Aimed at understanding our athletes are suffering from various wounds incidence to identify the cause of damage to actively and effectively do prevention work and the promotion of college table tennis skill levels improve<sup>[4,5]</sup>.

## SURVEY OBJECTS AND METHODS

In the province of Zhejiang, Jiangsu and other provinces, a random sample of 180 college table tennis players was extracted, of which 93 female athletes, 87 male athletes, aged 17-24 years old. This research refers to the investigation and study literature of Qu Mianyu and Ren Yuheng to design the "college table tennis athletes injury" questionnaire<sup>[6]</sup>. The questionnaire filled out by college tennis player, the main contents include basic personal information, training case, the site of injury and illness types. The survey a total of 180 questionnaires, 180 valid questionnaires taken back, the effective rate is 100%. The questionnaire was subjected to mathematical statistics, and statistics and analysis to classify the site of injury and damage reasons, such as college tennis players.

## RESULTS AND ANALYSIS

### The incidence of injury in tennis players

Prevalence = number of patients during the investigation /the same period the total number of investigation  $\times 100\%$ . There are 121 athletes suffering from sports injuries 180 college table tennis players. The rate was 67.22%, of which 73 male athletes, female athletes 48 people. The male and female incidence rates are 83.91% and 51.61% respectively, the specific results are shown in TABLE 1

TABLE 1 : The incidence of different sex college table tennis sports injury

sex	the number of investigations	the number of sports injuries	percentage
male	87	73	83.91%
female	93	48	51.61%
total	180	121	67.22%

### The incidence of injuries athletes play different technologies

Different technologies play table tennis player injury incidence, including the use of penhold single loop style play athlete injury is the highest, the rate is 33.06%. Followed by post-tinge fast-break

combined arc ball, post-binge pull loop, penhold loop combination of fast-break, chop and penhold fast-break. Specific conditions are shown in TABLE 2.

**TABLE 2 : The incidence of injuries athletes plays different technologies**

sequence	technology play	the number of injuries	prevalence percentage
1	penhold single loop style	40	33.06%
2	post-binge fast-break combined arc ball	34	28.10%
3	post-binge pull loop	16	13.22%
4	penhold loop combination of fast-break	14	11.57%
5	chop	9	7.44%
6	penhold fast-break	8	6.61%
total		121	100.00%

### Sports injury site

In the survey of 121 injury athletes, according to statistics found in the injured area college tennis players are mainly distributed in 10 parts, namely the neck, shoulders, chest, waist, wrist, elbow, hand, thigh, knee and ankle, which the most vulnerable parts of the knee is 23.14%, waist is 20.66%, neck is 15.7%, thigh is 12.40% and shoulder is 9.92%. The details are shown in TABLE 3.

**TABLE 3 The sports injury site**

sequence	injury site	the number of injuries	Trauma constitutes percentage
1	neck	19	15.70%
2	shoulders	12	9.92%
3	chest	4	3.31%
4	waist	25	20.66%
5	wrist	8	6.61%
6	elbow	5	4.13%
7	hand	3	2.48%
8	thigh	15	12.40%
9	knee	28	23.14%
10	knee	2	1.65%
total		121	100.00%

### The sports injuries type

In the survey found that there are 121 injury athletes, and there are 210 cases of sports injuries, a total of 10 kinds of injury types. The sports injuries types among former four are: 30 cases of muscle injury, 24 cases of ligament injury, 17 cases of terminal disease, 16 cases of tendon injury (See in TABLE 3).

**TABLE 4 : The sports injuries type**

sequence	injuries type	the number of injuries	prevalence percentage
1	muscle injury	30	24.79%
2	ligament injury	24	19.82%
3	terminal disease	17	14.05%
4	tendon injury	16	13.22%
5	tenosynovitis	8	6.61%
6	joint injury	7	5.79%
7	synovitis	5	4.13%
8	Pad plate injury	5	4.13%

9	cartilage injury	4	3.31%
10	bursitis	3	2.48%
11	fractures	2	2.21%
total		121	100.00%

## The reason analysis of sports injury

### Local strain

The primary reason of injury in college table tennis is a local strain. In table tennis training process, overload training and local overloading caused the body parts often is in a state of high intensity, so that the neck, local parts neck, wrists, hands, waist and other long-term bear too heavy causing local joint, ligaments and muscle strain<sup>[7-8]</sup>.

### Insufficient preparation

Before college table tennis technical training, if did not sufficient preparations, and relax the muscles, ligaments fully open, often lead to different degrees of sports injuries. In training or competition, if the state of mental is instable, also has the potential to cause injury. Therefore, before table tennis training or competition, whether physical or psychological, should be well prepared<sup>[9-11]</sup>.

### Incorrect sports technology

During the table tennis match, because the key points according operation, action, technology is not enough precise, which contrary to the nature of the layout and movement mechanics principle. It prone to all kinds of sports injury caused by incorrect movement way, led to increasing the burden of body parts. At the same time, technology of sports master exact enough, it may be limited by physiological structure<sup>[12,13]</sup>.

### Self-protection awareness is not high

Emergence of sports injuries, general because of the understanding physical exercisers, athletes and coaches to avoid sports injury reason is not enough. Most tennis players are not enough to address safety education, awareness of self-protection aspects lack a deep understanding. In the usual physical training, sports instruction and competition in a variety of athletes did not actively adopt effective preventive measures. It is because that they have not enough aware of the need for self-protection<sup>[14]</sup>. Every time after sports injury, the coaches and athletes ignored and did not carefully consider whether there is own reason, which often cause damage events frequently occur<sup>[15]</sup>.

## PREVENTIVE MEASURES

### Fully prepared activities

Every time the athletes stand to the front of the table, should make full of stretching. The purpose of doing so is to enhance the activity of a specific physical joint<sup>[16]</sup>. If he does not give muscles enough contact time to make it fully open. Each joint parts of the body also will be difficult to control in place, then the occurrence of damage probability will increase again and again. Don't talk during the game more quickly into the role. Make adequate preparations can help students increase speed, power, relax stiff muscles and reduce muscle recovery time, but also an important measure to guard against sports injuries occur<sup>[17,18]</sup>. Logically, before the table tennis training and competition should strengthen vulnerable joints and parts of the preparation exercise. Simultaneously throughout the course of the campaign must cultivate the ability to defend the safety of table tennis players and self-awareness. The sports injury dropped to the lowest level as far as possible

### Reasonable arrangement of exercise

Injury caused by a large part of the reason is caused because of excessive exercise load, so arrange exercise has become one of the most pay attentions to the responsibility of the coaches. In a total, the impact of sports on human formed not simply depend on the amount of exercise, training occurred during load can not be ignored. "Intensity" and "quantity" are the central element of the composition of the exercise load<sup>[19]</sup>. In the sports, attention should be paid to properly handle the relationship between strength and quantity. Moderate exercise intensity, the amount of exercise can be scaled up a little. The greater the exercise intensity, the amount of exercise they should be reduced accordingly. During the whole process of table tennis training and competition, we must firmly follow the guidelines step by step. In the exercise reasonable arrangements must ensure that there are small, medium and large rhythm, restraint extremely tense after exercise and very tired condition under technical hone difficult. Meanwhile, coaches are also necessary to constantly improve the quality aspects of sports medicine.

### **Scientific treatment exercise load**

Medical treatment is always passive, only by constantly adjust strategy, to reduce the occurrence of sports injury. Besides reasonable scientifically arrange the amount of exercise and intensity of exercise, it should take all kinds of technical training to scientific arrange the sports load with local body. Especially when the training need to pay attention to is not too long time to repeat an action, avoid the shoulder, waist and knee because the load is too large and cause local damage. Table tennis players in a very long time due to high-intensity exercise load, holding a racket hand side of the limb movement under normal circumstances would be much stronger than the other side. Especially the waist muscle will be relatively greater than in the muscle of the lateral load<sup>[20]</sup>. Therefore, we must focus on the process of drilling a reasonable coordination, particularly careful waist. If long time is not concerned about this, it is very likely to occur scoliosis, sprains, back problems, muscle strain, and even fractures and other sports injuries.

### **Strengthen the physical quality training**

The main purpose of increasing physical quality is that the body in the table tennis training can flexible master various training methods reasonably. So that it can effectively enhance the athletes' physique, gradually change the body physique, improve athletes basic activity ability and physical quality specially arranged by the planned for steps. Most sports injuries, probably caused due to technical hone difficult, there may be a scarcity of certain honed physique caused. For example, weak little wrist strength, hone times less than normal, but keep trying, it will lead to even more likely to cause injury. Only with excellent physical quality as guarantee, technology training is likely to reach a higher realm. In addition to associate a single table tennis racket in hand, more so unbalanced direction towards physique. If the level of development is not the same on both sides of the upper extremity, then honed the process to achieve the best possible balance between left and right, which is prevent all kinds of sports injuries advantage<sup>[21]</sup>.

### **Improve protection awareness**

College athletes in table tennis training, should raise awareness of protection, which is an important aspect of table tennis effectively prevent sports injuries. Through some events timely education and always remind of, make the athletes attention on thought, enhance the safety awareness, get high safety consciousness formation of athletes, preventing safety accident happened<sup>[22]</sup>. Coaches should be properly combined with the latest scientific changes to increase the sports medicine and activity hone frontier knowledge, enhance the understanding of table tennis movement damage. At the same time, they should adopt effective measures to prevent scientifically. In table tennis technical training, waist, knee and shoulder part of the load is most serious. After the workout, can use massage and hot compress, so as to promote the circulation of the blood of these parts. After the the game or the

gap between activity process, to find a way to take to weaken the improvement of the local load, eliminate fatigue, such as relaxation relax muscles.

### Perfect the medical supervision

Athletes should be done to strengthen the comprehensive ability of self-control and adjust comprehensive ability. The medical staff must be on time to test the athletes and timely grasp athlete sports injury situation, improve medical supervision work, try to weaken sports injuries occur<sup>[23]</sup>. Movement of medical supervision is very important, it is also very necessary. It is the study of disease prevention campaigns, pathology athlete training and competition arise, physiological problems, examination of the athlete's physical condition, athletes on physical skills judged, reasonably good sports nutrition recovery after training and competition issues. The use of medical methods guide people reasonable table tennis training and competition to promote the physical development of athletes, enhance health and disease prevention campaigns actively and sports injuries, improve athletic skill level<sup>[24]</sup>.

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