

CHARACTERISTICS OF SPORTS INJURIES IN TAEKWONDO ATHLETES IN PHYSICAL TRAINING



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CARACTERÍSTICAS DAS LESÕES ESPORTIVAS EM ATLETAS DE TAEKWONDO DURANTE TREINAMENTO FÍSICO

CARACTERÍSTICAS DE LAS LESIONES DEPORTIVAS EN ATLETAS DE TAE KWON DO DURANTE EL ENTRENAMIENTO FÍSICO

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ABSTRACT

Introduction: Taekwondo is one of the main events of the Olympic Games. It mainly uses hands and feet for fighting or confrontation and the competition is extremely fierce. Therefore, Taekwondo is more prone to muscle, bone, and joint sports injuries. **Objective:** To understand the characteristics of taekwondo sports injuries. **Methods:** Using the literature and questionnaire survey methods, mathematical statistics is used to investigate the sports injuries of young Taekwondo athletes. **Results:** Among 100 young Taekwondo athletes, 93 individuals had different degrees of sports injuries, accounting for 93%, and 7 had no sports injuries, accounting for only 7%. The total number of injuries was 160 or 1.6 injuries per capita. **Conclusions:** Athletes should improve their ideological understanding and training level and pay attention to the timely treatment of acute injuries, which can effectively reduce sports injuries. **Level of evidence II; Therapeutic studies - investigation of treatment results.**

Keywords: Martial arts; Athletic injuries; Accident prevention.

RESUMO

Introdução: O Taekwondo é um dos principais esportes dos Jogos Olímpicos. As mãos e os pés são os mais usados para lutar ou confrontar e a competição é extremamente acirrada. Portanto, os praticantes são mais sujeitos a lesões musculares, ósseas e articulares. **Objetivo:** Entender as características das lesões esportivas do Taekwondo. **Métodos:** Uso da literatura e de métodos de pesquisa por questionário. A estatística foi usada para analisar as lesões esportivas de jovens atletas de Taekwondo. **Resultados:** Entre 100 jovens atletas de Taekwondo, 93 indivíduos tiveram diferentes graus de lesões esportivas, representando 93%, e 7 não tiveram lesões esportivas, representando apenas 7%. O número total de lesões foi de 160 ou 1,6 lesões per capita. **Conclusões:** Os atletas devem ter melhor compreensão da ideologia e do nível de treinamento e estar atentos ao tratamento oportuno de lesões agudas, para que possam reduzir efetivamente as lesões esportivas. **Nível de Evidência II; Estudos terapêuticos - Investigação dos resultados do tratamento.**

Descritores: Artes marciais; Traumatismos em atletas; Prevenção de acidentes.

RESUMEN

Introducción: El Tae Kwon Do es uno de los principales deportes de los Juegos Olímpicos. Las manos y los pies son los más utilizados para luchar o enfrentarse y la competencia es extremadamente intensa. Por lo tanto, los practicantes son más propensos a las lesiones musculares, óseas y articulares. **Objetivo:** Conocer las características de las lesiones deportivas de este deporte. **Métodos:** Uso de la literatura y métodos de encuesta por cuestionario. Se utilizó la estadística para analizar las lesiones deportivas de jóvenes atletas de Tae Kwon Do. **Resultados:** Entre 100 jóvenes atletas de Tae Kwon Do, 93 individuos presentaron diferentes grados de lesiones deportivas, lo que representa el 93%, y 7 no presentaron lesiones deportivas, lo que representa sólo el 7%. El número total de lesiones fue de 160, es decir, 1,6 lesiones per cápita. **Conclusiones:** Los atletas deben conocer mejor la ideología y el nivel de entrenamiento y ser conscientes del tratamiento oportuno de lesiones agudas, para poder reducir eficazmente las lesiones deportivas. **Nivel de Evidencia II; Estudios terapéuticos - Investigación de los resultados del tratamiento.**

Descriptorios: Artes marciales; Traumatismos en atletas; Prevención de accidentes.



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INTRODUCTION

Taekwondo is one of the main events of the Olympic Games, it mainly uses hands and feet for fighting or confrontation, the competition is extremely fierce, therefore, taekwondo is more prone to muscle, sports injuries such as bones and joints.¹ Therefore, how to effectively prevent sports injuries has become the focus of current sports medicine research, among them, the research on the characteristics and causes of sports injuries of Taekwondo athletes is one of the current hot topics.²

Previous studies have shown that, Taekwondo's sports injuries are mainly concentrated in muscle strains, sprained joints, etc., however, there are few studies on its causes.³ At present, most of the causes considered by academia, most are speculations of experts and scholars, there is no direct evidence to support.⁴ As a result, it brings great difficulties to coaches and medical workers in the prevention and treatment of Taekwondo sports injuries. During the implementation of Taekwondo teaching, it is inevitable that there will be various sports injuries and teaching accidents,

this not only affects the physical and mental health of young students, it also severely slowed down the progress and satisfaction of Taekwondo teaching, therefore, it is necessary to take measures to prevent injuries from the perspective of teenagers and coaches.⁵

METHOD

Research objects

The research objects mainly include 20 young members of the Taekwondo team of A sports school, 45 young members of the Taekwondo Team of the Provincial Physical Education Brigade, and 35 young members of the C Academy Taekwondo Team, totaling 100 people. Through his injuries, cause of injury, and the post-injury rehabilitation training situation for investigation and research.

Method

1. Literature data method

Mainly through the National Library, China Journal Network, China Knowledge Network, Beijing Sport University Library books, Wanfang digital book online information, Internet network search query, self-purchased books, etc. to collect data related to sports injuries and rehabilitation of young Taekwondo athletes.

2. Questionnaire survey

100 questionnaires were distributed and 100 were collected. The main content includes the nature of the injury of young athletes, the reason, and the state of rehabilitation training, training after rehabilitation, the main part of preventing sports injuries of young Taekwondo athletes. Through the questionnaire, to understand the current training status of young Taekwondo athletes, in order to make a targeted training plan to prevent sports injuries.

3. Mathematical Statistics

Use the excel table to sort out the relevant statistical data, through comparative analysis, find out the main causes of injuries in young athletes, the location and the main type of injury, etc.

4. Logical analysis

According to relevant information in literature and survey records, use the methods of induction, deduction and comparison to explore the relationship between sports injuries and rehabilitation training of young Taekwondo athletes.

RESULTS

Characteristics of sports injuries of young Taekwondo athletes

1. Incidence of sports injuries

Through a survey of 100 young Taekwondo athletes surveyed, there were 93 people with different degrees of sports injuries, accounted for 93% of the total number of people in the survey, 7 people without sports injuries, only 7% of the total number of surveys, the total number of injuries was 160, 1.6 times per capita, which shows that the incidence of sports injuries among young Taekwondo athletes is relatively high.

2. Sports injury site

According to the survey of 100 young Taekwondo athletes (Figure 1), among the 160 injuries, the knee joint has the highest injury rate, there were 61 person-times, accounting for 37.5% of the total number of people surveyed, in the first place; There were 39 ankle injuries, accounted for 25% of the total surveyed people, in second place; The number of hip joint injuries was 24, accounted for 15% of the total surveyed athletes, in third place. There were 20 people on the waist, accounting for 12.5% of the total survey respondents, ranking fourth; The number of upper limb injuries was 16 times, accounting for 10% of the total number, ranking fifth.

3. Sports injury course

The course of sports injury is on the time level, it can be divided into two types: acute injury and chronic injury. Among the 93 young Taekwondo athletes who suffered sports injuries, among them, 63 athletes suffered acute injuries, thirty athletes are chronically injured. The incidence of acute injury is 67.74%, the incidence of chronic injury was 32.26%. Among the 93 young Taekwondo athletes who suffered injuries, 60 athletes were mildly injured, accounted for 65%; 28 athletes suffered moderate injuries, accounting for 30%; Five athletes suffered severe injuries, accounting for 5%, as shown in Figure 2, it can be seen that most of the injuries of young Taekwondo athletes are acute injuries in the course of the disease.

4. Degree of sports injury

According to the level of damage, can be divided into mild injury, there are three types of moderate injury and severe injury. Among the 93 young Taekwondo athletes who suffered injuries, 60 athletes were mildly injured, accounting for 65%; 28 athletes suffered moderate injuries, accounting for 30%; Five athletes suffered severe injuries, accounting for 5%, as shown in Figure 3, from the degree of damage. From the above point of view, it is mainly mild and moderate injuries, with severe injuries accounting for a very small number.

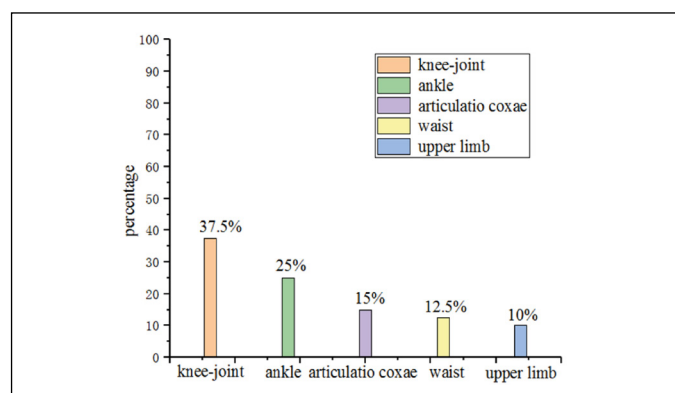


Figure 1. Injured parts of young Taekwondo athletes.

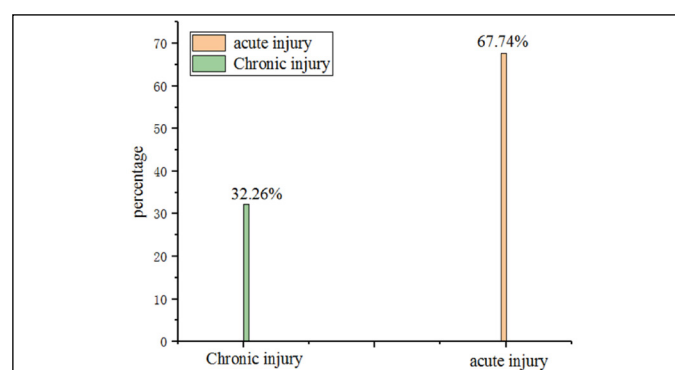


Figure 2. Injury course of young Taekwondo athletes.

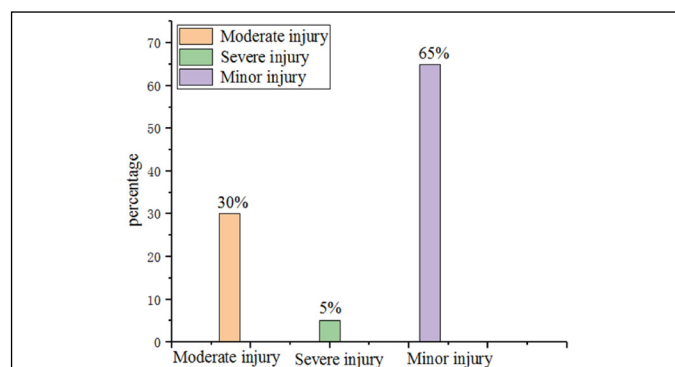


Figure 3. Damage degree diagram of young Taekwondo athletes.

Sports injury site

As can be seen from Table 1, the main location for sports injuries of young Taekwondo athletes is the training ground, the number of injuries was 102, accounted for 64% of the total injuries, much higher than other places, because the training ground is the most important place for concentrated sports, the exercise time here is also the most; Followed by the number of people with sports injuries on the field, 37 times, it accounts for 23% of the total injuries, ranking second, this is more related to the smaller number of youth competitions and the intensity of the competition; The second is amateur activities and other activities, with 20 injuries, it accounts for 13% of the total number of injuries, of which accidental injuries are the majority.

Causes of sports injuries of young Taekwondo athletes

As can be seen from Table 2, sports injuries of Taekwondo athletes occur from time to time, in related investigations and studies, in some teams, the injuries of young athletes have reached 100%, this also explains from the other side, competitive taekwondo events, prevention and rehabilitation of athletes' sports injuries, it is the top priority of training.⁶ There are many reasons for taekwondo athletes' sports injuries, through literature comparison and questionnaire surveys, there are many differences in the causes of injuries between young athletes and adult athletes, this is related to the physical and mental characteristics of young athletes and their mastery of the project's skills and tactics.⁷ Mainly include high training intensity, incorrect use of technology, athletes have a weak sense of self-protection and inadequate preparation activities, the coaches are not trained scientifically and because of the field protective gear.

DISCUSSION

Prevention of sports injuries of young Taekwondo athletes

1. Ankle joint injury prevention and rehabilitation training

Enhancing the muscle strength of the ankle joint is an effective way to prevent ankle joint injury, from an anatomical point of view, the ankle joint has only one degree of freedom, but with the aid of the axial rotation of the knee joint, the foot joint complex is equivalent to a single joint with

Table 1. Location Statistics of Sports Injuries (n=160).

Place	Training Course	Arena	Leisure activity	Other activities
Number of people	102	37	12	8
Percentage	64%	23%	8%	5%

Table 2. Reasons for sports injuries of young athletes.

Reason	Number of cases	Proportion
Training intensity	40	40%
Coach training is not scientific enough	28	28%
Incorrect use of technology	12	12%
Inadequate preparation	10	10%
Lack of self-protection awareness	6	6%
Reasons for site protective gear	4	4%

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three degrees of freedom, this structure enables the soles of the feet to deal with various irregular ground, at the same time, various postures can be made in space. For example, the flexion and extension movement of the ankle joint around the coronal axis in the sagittal plane, with the aid of axial rotation of the knee joint, adduction and abduction movements around a vertical axis, a movement of inversion and eversion around a nearly horizontal axis. During training, coaches often only pay attention to the flexion and extension of the ankle joint around the coronal axis in the sagittal plane, such as vertical jump training, weight-bearing heel lift exercises and so on, the other angles of training are rarely carried out, or even never involved.⁸ The existing training equipment does not meet the strength training of the ankle in each latitude direction (in terms of greater strength), and using resistance training among athletes, can more effectively solve this kind of problem, the main points of ankle joint multi-dimensional resistance training training methods are, according to the strength of the trainee's ankle joint, the auxiliary players hold the soles of the trainees with both hands to fight, the strength of the confrontation cannot be too large or too small, the strength is too high, the trainee cannot effectively train all the muscles and ligaments that maintain joint stability within the range of joint activities, the intensity is too small, there will be no training effect, in addition, this type of training can be used as a later stage of rehabilitation training for athletes after ankle joint injury, the strength should be properly controlled, and the athlete should not have obvious pain.

2. Hip joint injury prevention and rehabilitation training

Focus on active flexibility training, flexibility is divided into active flexibility and passive flexibility. Active flexibility exercises, "leg control" training commonly seen in Taekwondo events.⁹ According to the characteristics of the project, "leg control" exercises should not be static and maintain a certain height, instead, we should make random changes in multiple directions, alternation of fast and slow tempo, the instantaneous change of the motion trajectory, such control ability better caters to the characteristics of the special project, not only develops muscle strength, most importantly, due to the involvement of the nervous system, the athlete's proprioceptive ability has been strengthened, therefore, when dealing with emergencies in training and competition, athletes can react reasonably and achieve the purpose of preventing injury.¹⁰

CONCLUSION

Taekwondo is a sport that requires athletes to have high endurance, flexibility, speed, agility, endurance and other qualities, therefore, in the future, we must comprehensively improve the physical fitness of athletes in all aspects. Prevention, correct diagnosis and immediate and effective therapeutic intervention are important, at the same time, improve the medical diagnosis and treatment skills of the Taekwondo team, in this way, athletes can receive timely, effective and quick treatment after injury and shorten the healing process.

The author declare no potential conflict of interest related to this article