

Research on sports injury of competitive aerobics athletes in China West Normal University

Zhirong Zheng, Longan Cao and Chaoling Qin*

School of Physical Education, Southwest University, Chongqing 400799, China

* Corresponding Author

Abstract

With the continuous improvement of the level of competitive aerobics in universities and colleges, the risk of sports injury is also increasing. This paper takes 31 athletes of the aerobics team of China West Normal University as the research object, and comprehensively adopts the research methods of questionnaire survey, literature data and mathematical statistics to study the sports injury of competitive aerobics athletes of this university. In order to promote the healthy development of competitive aerobics in colleges and universities, this paper analyzes the rules and characteristics of athletic injury, injury sites and types, injury causes and main problems of athletic injury.

Keywords

Universities; Competitive aerobics; An athlete; Regularity of sports injury.

1. Introduction

With the rapid development of competitive aerobics in colleges and universities in our country, the competitive aerobics has become more and more intense in the competition between colleges and universities, and the level of competitive aerobics in colleges and universities has also been improving. The technical level of competitive aerobics in West China Normal University is first-class in major universities in Sichuan Province, and it has won awards frequently in major competitions and achieved excellent results. However, with the rapid development of competitive aerobics in colleges and universities, the athletes of the competitive aerobics team of West China Normal University need to train for longer and higher intensity in order to achieve better competitive sports results. And this longer, higher intensity training also makes the school competitive aerobics athletes sports injury rate is very high. Sports injury exists in any sports event. Although it is not fatal, it brings physical pain to the competitive aerobics athletes of this school, and also has a great negative impact on their spirit and psychology [1]. Taking the competitive aerobics athletes of China West Normal University as an example, this paper analyzes a series of sports injury problems of the competitive aerobics athletes of the university, and puts forward corresponding preventive measures, aiming at promoting the healthy development of competitive aerobics in colleges and universities.

2. Analysis and discussion

2.1. Rules and characteristics of sports injury of competitive aerobics athletes in China West Normal University

After investigation and research, it is found that 26 athletes in the 31 athletes of the competitive aerobics team of the school have different degrees of sports injury, the sports injury rate is as high as 83.87%, the injury situation is not optimistic.

Table 1: Time of sports injury

Time	Number of people	Proportion
From January to March	14	53.85%
April-june	3	11.54%
July-september	2	7.69%
From October to December	7	26.92%

As for the injury time, as shown in Table 1, most of the sports injuries of competitive aerobics athletes in this school occurred in October, 11, 12, January, February and March. October to December was the transition from autumn to winter, and January to March was the transition from winter to spring. During this transition period with the coldest weather, athletes' physical adaptability was low, and body activation was not so easy. The risk of sports injury will increase, and adequate preparation is particularly important; In addition, the climatic characteristics when sports injuries occur are more winter than summer, which is applicable to sports injuries in almost all sports events [2].

As for the injury sites and types, the survey results showed that the ankle, waist, thigh, knee (61.54%, 42.31%, 42.31%, 26.92%) and other parts of the competitive aerobics athletes of the school had higher sports injuries. There were even high acute injuries such as ligament strain, joint injury, muscle sprain (76.92%, 42.31%, 57.69%). Because there are continuous operation movements, difficult skill movements and high-load jumping movements in competitive aerobics, the special physical quality and physical fitness requirements are high, if the athlete's physical quality is insufficient, it is easy to cause injury during high-intensity training. It can be seen that there is a high correlation between the movement characteristics of competitive aerobics and the injury sites and types of competitive aerobics athletes.

Table 2: Locations of sports injuries

Locations	Number of people	Proportion
In class	11	42.31%
In daily training	23	88.46%
In the game	8	30.77%

The survey on the place of sports injuries in Table 2 shows that the proportion of sports injuries occurring in daily training is as high as 88.46%. In order to get good results in the competition, the training method, content, intensity and load in daily training are relatively large, but this high-intensity training content will be more prone to sports injuries.

As for the venue facilities, through the investigation of the school, it was found that the venue and equipment facilities of the school were used for too long, there was damage, the ground was uneven, and there were safety risks, forcing athletes to suffer injuries during practice.

2.2. Main problems of sports injury of competitive aerobics athletes in China West Normal University

Table 3: Causes of sports injuries

Reason	Number of people	Proportion
Underwarm-up	20	76.92%
Misorganization	8	30.77%
Poor physical fitness	17	65.38%
The training method and content are unreasonable	10	38.46%
Old and dilapidated facilities	6	23.08%

According to Table 3, the causes of injury were: insufficient warm-up, improper organization, poor physical fitness, unreasonable training methods and contents, old and damaged facilities, accounting for 76.92%, 30.77%, 65.38%, 38.46%, 23.08%. The cause of sports injury is complex, because the injury occurring in the process of sports is not necessarily a single cause, but also may be a combination of causes.

2.2.1. Inadequate preparation and improper organization

Preparation before training is not meticulous. Warm-up preparation activities are organized by the athletes themselves, because there is no unified organization of the coach, some athletes are lucky, lazy and slack in the warm-up, ignoring the importance of warm-up activities, resulting in sports injuries due to inadequate warm-up preparation activities during training.

2.2.2. Physical fitness is not up to standard

Good physical quality is the key to learn competitive aerobics. The competitive level of the athletes in the competitive aerobics team of this school is uneven, and some athletes have "short board" in terms of physical quality, such as poor flexibility, weak strength, poor endurance, and lack of coordination and sensitivity. When the athletes who are not up to standard in physical fitness practice difficult skill movements, the sports injury occurs because of the existence of "short board" and repeated high-intensity wrong practice.

2.2.3. Unreasonable training content and load arrangement

The coaches ignored the individual differences among the athletes and arranged the same training content and load for all the athletes, which did not vary from person to person. This makes the athletes with poor exercise level face the high intensity and not suitable for their own training content when excessive exercise fatigue, which leads to the occurrence of sports injury.

2.2.4. The venue facilities are old and old

The site facilities have been used for a long time, leading to aging, and the lack of management inside the site, and the athletes did not cherish the relevant equipment and facilities during daily classes or training, some facilities were damaged, and some equipment and equipment inside the venue had certain security risks.

2.3. Preventive measures for sports injury of competitive aerobics

2.3.1. Pay attention to the preparation before training

Do a good warm-up before training. Due to the special competitive characteristics of competitive aerobics, it is necessary to conduct adequate warm-up preparation activities [3]. Inadequate warm-up preparation is the main cause of sports injury in the training process of most competitive aerobics athletes, which indicates that warm-up preparation before training cannot be ignored [4][5]. Moreover, the coach should organize the classroom and training tasks in an orderly manner throughout the entire training process, which can greatly reduce the risk of injury.

2.3.2. Strengthen functional training and improve physical fitness

The condition of athletes' physical injury is closely related to their own physical ability and physical quality. Athletes with high physical fitness and high sports level have a lower risk of sports injury [6], while athletes with obvious weak links have a higher probability of sports injury than athletes with high sports level. From the characteristics and content of competitive aerobics training, it can be seen that when the athletes' physical fitness can not reach a good state, they can not get a good sports performance, and even the problem of sports injury is very likely. To solve this series of technical difficulties, the coach must first give targeted and comprehensive professional guidance strictly according to the sports characteristics of each competitive aerobics athlete, and formulate a set of scientific, perfect and efficient physical

training programs. Physical training should be based on functional training, it is different from traditional physical training, not a single, out of technical training, but combined with special physical training; Such targeted functional training can not only improve the quality of movement techniques, but also improve the physical fitness of athletes [7]. And each athlete himself should also work hard, with more reasonable and scientific training methods to increase their own good physical fitness and reserve level, in order to make up for their own "short board".

2.3.3. Reasonable arrangement of training content and load

There is a gap in the skills, physical qualities, physical strength, psychological conditions and individual competitive sports ability of each athlete, so coaches should vary from person to person in the arrangement of training content and load, pay attention to individual differences, and must proceed from the specific situation of the athlete [8]. In order to effectively prevent sports injuries in training, training content should be scientifically and reasonably arranged [9] to improve sports level, so designing a scientific and reasonable training plan and content is crucial and essential for athletes.

2.3.4. Optimize the training environment

Starting from the objective environmental factors, a good training environment can not only improve the athletic performance of athletes to a certain extent, but also effectively prevent the occurrence of injuries [10]. In terms of environment, competitive aerobics is an indoor sport, the indoor environment should be ventilated, pay attention to environmental health, and strengthen the management of the site to protect public equipment and facilities. In terms of venue facilities, there are many strength and impact strong pace movements in competitive aerobics, the best choice of ground material is wood floor: because the wood floor is not too hard nor soft, the friction is controlled within a certain range, and has good elasticity, not easy to cause damage to the ankle; Because it involves some difficult technical actions, it is necessary to practice with auxiliary facilities, and it is necessary to constantly improve equipment and facilities. Athletes for years to use the same site, the same batch of facilities, high utilization rate is easy to aging, there will be a certain security risks, so to carry out regular inspection, timely update and replacement, to create a good training environment.

3. Conclusions and Suggestions

3.1. Conclusion

3.1.1. Sports injuries are complex and diverse

The sports injuries of the athletes in this school are more frequent, more kinds and more complicated. In the competitive aerobics sports, if the athlete's physical quality is not up to standard, the technical movement is not in place, or the training method is unreasonable and other problems, it will cause great physical damage to the athlete during training, and even lead to the ruin of their competitive aerobics career.

3.1.2. Ignoring the importance of preparation

The speed and strength of competitive aerobics have a great impact on the athlete's body, so the competitive aerobics requires extremely high preparation work. However, the competitive aerobics athletes and coaches in this school do not pay enough attention to the early preparation work of training, insufficient warm-up preparation activities, improper organization of classes and lack of necessary safety education. This is the cause of most of the sports injuries of the competitive aerobics athletes in this school. Effective preparation can not only promote the progress of the training program, but also prevent sports injuries more effectively.

3.1.3. The training plan and contents are not applicable

Changing the training plan of athletes can avoid the occurrence of sports injury. The training content and load of the competitive aerobics athletes in this school are unreasonable. In the daily training, the exercise intensity is large, and the frequency of ligament strain and muscle sprain is the highest, followed by joint injury. In the competition, the exercise load is small, and the proportion of injury is the lowest. Due to the different load of the training content, the two results are completely different.

3.2. Suggestions

3.2.1. Strengthen strength training and strengthen physical fitness

For the special competitiveness of competitive aerobics, strength quality is particularly critical. Organic combination of general physical training and special physical training can lay a good physical foundation and achieve twice the result with half the effort [11]. At the same time, competitive aerobics athletes should constantly improve and strengthen their physical quality. Strength training can not only enhance the physical quality of athletes, so as to improve the athletic level and athletic performance of athletes, but also effectively reduce sports injuries.

3.2.2. Strengthen ideological education

It is the so-called "sharpening the knife does not mistake the firewood", so that competitive aerobics athletes fully realize the importance of warm-up activities, venues, clothing, weather and other subjective and objective potential sports injury factors, while enhancing the safety awareness of athletes and self-protection ideas, strengthening safety education, and creating a safe, good and comfortable training environment.

3.2.3. Pay attention to individual differences

Learn competitive aerobics step by step. The training content arranged by the coach should be flexible, but also according to the aptitude, different from person to person, starting from the actual level of the athletes, according to the physical quality of the athletes and the training load they can withstand, develop a scientific training plan.

References

- [1] Hong Qihuan. On the characteristics and technical prevention of sports injury in competitive aerobics teaching in colleges and universities [J]. Journal of Heihe University, 2019,6:131-133.
- [2] LIU Shengsheng. A study on the characteristics of jumping difficulty injury in competitive aerobics [J]. Contemporary Sports Science and Technology, 2019, 9(8) : 11-12.
- [3] Ren Chaofan, Luo Minghui. Injury characteristics and preventive measures of competitive aerobics athletes: A case study of the aerobics team of Gannan Normal University [J]. Journal of Sports Excellence, 2019,1:58-62.
- [4] Li Wenwen. Study on the characteristics and technical prevention of sports injury of college students competitive aerobics athletes [D]. Jinan: Shandong Normal University, 2019.
- [5] WANG Yuxin. Research on sports injury characteristics and preventive measures of Competitive aerobics [J]. Sports Science, 2021,466:92-93.
- [6] Peng Peng. Research on the construction of Special Physical fitness index model for Chinese elite female competitive aerobics athletes [D]. Wuhan: Wuhan Institute of Physical Education, 2019.
- [7] Jing Ruilin. Research on the application of Functional Training in Competitive aerobics Physical Training -- A case study of the aerobics School team of Harbin Institute of Physical Education [D]. Harbin: Harbin Institute of Physical Education, 2019.
- [8] ZHOU Chao. Research on Injury rules and Countermeasures in Competitive aerobics [J]. Sports Fashion, 2021(10).
- [9] ZHAO Yuzheng. Causes and Prevention of knee joint injury in competitive aerobics athletes in universities [J]. Sports Science and Technology Literature Bulletin, 2020,

- [10] LU Y. Effects of upper body impact aerobics training on wrist bone mineral density and body composition of special students [D]. Beijing: Beijing Sport University, 2019.
- [11] Meng Xinjie. Study on the Characteristics and Causes of Sports Injury of Chinese elite competitive gymnasts [D]. Xi 'an Physical Education University,2019.