

# The Impact of Aerobics Sports Injuries on Long Term Training: A Case Study of Nanchang University

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**Abstract:** This article mainly explores the impact of sports injuries on long-term training of aerobics. Using methods such as literature review, questionnaire survey, and data statistics, this study investigates the training status, injuries, and post training impacts of aerobics athletes in Nanchang City, and proposes reasonable solutions to reduce the incidence of sports injuries and maintain their competitive state. The results indicate that the continuous improvement of difficulty movements and training intensity is the main cause of injury in aerobics. It is recommended that athletes strengthen their own medical supervision, enhance their self-protection awareness, and learn to self regulate their psychological emotions. In addition, correcting technical movement errors, strengthening correct power shaping, and strengthening preparation and relaxation activities are also effective methods to prevent sports injuries.

**Keywords:** Aerobics; Sports injury; Long term training

## 1. Introduction

Aerobics is a whole-body exercise that lasts for a certain period of time and has a certain intensity of exercise. This sport requires high physical fitness and coordination for athletes, which requires them to have good physical condition<sup>[1]</sup>. In recent years, the number and frequency of people participating in aerobics sports activities have greatly increased, and sports injuries have occurred from time to time, which has had a huge impact on the training of aerobics athletes<sup>[2]</sup>. Sports injuries are caused by multiple factors, and the summarized common factors include the following aspects: sports physical fitness, sports skills, tactical ability, psychological ability, sports intelligence, and external environment<sup>[3]</sup>. Therefore, how to effectively prevent sports injuries and how to recover has become a hot topic in society<sup>[4]</sup>. This study conducts in-depth exploration of sports injuries among aerobics athletes, which is beneficial for improving the training level of aerobics athletes in Nanchang City, understanding the causes of injuries, providing guidance on measures to prevent sports injuries, improving sports performance, and providing a basis for the prevention of various sports injuries.

## 2. Research objects and methods

### 2.1 Research subjects

The research focuses on 50 athletes from various university aerobics teams in Nanchang who specialize in aerobics.

### 2.2 Research Methods

#### 2.2.1 Literature method

By searching literature related to sports injuries in aerobics training, such as China National Knowledge Infrastructure, National Library, and Wanfang Database, and flipping through books related to sports injuries and sports scientific research, the existing research results are summarized and summarized, providing theoretical basis and research direction for this study, which is beneficial for us to comprehensively and correctly grasp the impact of sports injuries on later training.

### 2.2.2 Questionnaire survey method

By distributing a survey questionnaire on aerobics injuries and their impact on training and written test results to athletes of the college aerobics team in Nanchang City, 50 questionnaires were distributed, 50 were collected, and 50 were valid. The questionnaire recovery rate and effectiveness rate were both 100%. After SPSS testing of the reliability and validity of the questionnaire, the KIO value and Cronbach  $\alpha$  The coefficient value is above 0.6, which can be used for writing and discussing this study.

### 2.2.3 Mathematical Statistics

The research use SPSS to statistically process the data obtained from the survey and quantitatively analyze the impact of aerobics sports injuries on athletes' later training.

## 3. Results and Analysis

### 3.1 Investigation and Analysis of the Basic Situation of College Aerobics Athletes in Nanchang City

#### 3.1.1 Investigation and Analysis of the Dressing Situation of Aerobics Athletes in Nanchang City during Training

Table 1 Dressing of Aerobics Athletes during Training (n=50)

Professional sportswear wearing situation	Number of people	Percentage
Not wearing	10	20
Occasionally wear	19	38
Often wear	9	18
Always wear	12	24

Table 2 Aerobics athletes wearing protective equipment (n=50)

Wearing of protective equipment	Number of people	Percentage
Wearing	23	46
Not wearing	27	54

According to Table 1 and Table 2, a survey on the dressing and wearing of protective equipment by athletes during training found that 20% of athletes do not wear professional sportswear during training, 38% occasionally wear professional sportswear, and nearly half of their classmates do not wear protective equipment during training.

#### 3.1.2 Investigation and Analysis of Preparation Activities for College Aerobics Athletes in Nanchang City before Training

Table 3 Preparation activities of aerobics athletes before training (n=50)

	Number of people	Percentage
Don't know	5	10
I've seen it, but don't do it myself	12	24
Can do it but not comprehensive	21	42
Make a set of systems	12	24

According to Table 3, it is shown that nearly half of the students do preparatory activities but are not comprehensive, and the professionalism of training needs to be improved. 24% of the students do systematic preparatory activities, but there are still 24% of athletes who lack preparation activities. They do not engage in professional preparatory activities before training and competitions, and 10% of athletes do not know how to do them.

#### 3.1.3 Investigation and Analysis of the Relaxation Activity Duration of Aerobics Athletes in Nanchang after Training

Table 4 Duration of Relaxation Activities for Aerobics Athletes after Training (n=50)

min	Number of people	Percentage
0	3	6
5	8	16
10	18	36
Above 15	21	42

According to Table 4, 6% of athletes do not engage in muscle relaxation after training, 16% of

athletes have too short a relaxation time, 36% of athletes have a relaxation time of 10 minutes, and 42% of athletes have a relaxation time of more than 15 minutes. Overall, the relaxation situation of athletes is not optimistic.

### 3.2 Common Injuries and Analysis of Aerobics Training in Colleges and Universities in Nanchang City

#### 3.2.1 Characteristics and Analysis of Sports Injury Sites of Aerobics Athletes in Nanchang City

Table 5 Sports Injury Sites of Aerobics Athletes (n=50 Multiple Choice Topics)

Damage location	Number of people	Percentage	Frequency
Shoulder joint	24	48	0.48
Elbow joint	26	52	0.52
Wrist joint	26	52	0.52
Finger	8	16	0.16
Waist	18	36	0.36
Thigh	13	26	0.26
Knee joint and meniscus	21、10	62	0.62
Ankle joint	22	16	0.44
Achilles tendon	8	18	0.16
Toes	9	20	0.18
Other	5	10	0.1

According to the data analysis in Table 5, it can be seen that sports injuries are very common among aerobics athletes, and the great challenge of training difficult movements in aerobics is the main reason for this phenomenon. Among them, the common injuries of aerobics athletes in Nanchang City are mainly in the upper and lower limbs, generally occurring in the wrist, waist, knee, and ankle joints.

#### 3.2.2 Characteristics and Analysis of the Causes of Sports Injuries among Aerobics Athletes in Nanchang City

Table 6 Causes of Sports Injuries among Aerobics Athletes (n=50 Multiple Choice Topics)

Reason	Number of people	Percentage	Frequency
Insufficient activity before and after exercise	35	70	0.7
Technical actions are not standardized	42	84	0.84
Insufficient self-protection awareness	35	70	0.7
Excessive exercise	20	40	0.4
Site reasons	13	25	0.26
Other	9	18	0.18

According to Table 6, the analysis of the causes of sports injuries among aerobics athletes in Nanchang City shows that the vast majority of sports injuries are caused by irregular technical movements of athletes, with a frequency of 0.84. Secondly, athletes have insufficient pre exercise preparation activities and insufficient self-protection awareness, with a frequency of 0.7. The frequency of sports injuries caused by excessive exercise volume is 0.4.

#### 3.2.3 Analysis of post-injury treatment methods for aerobics athletes in Nanchang City

Table 7 Treatment Approaches for Aerobics Athletes after Sports Injuries (n=50)

Channel	Number of people	Percentage
Deal with by oneself or themselves	16	32
Network or official account	24	48
Refer to books	3	6
Professional rehabilitation therapy	7	14

According to Table 7, it can be seen that Nanchang aerobics athletes who choose to seek common sense of injury treatment through the Internet and official account for the highest proportion of athletes after sports injury, 24, accounting for 48%; There are 16 athletes who handle their own affairs, accounting for 32%; Three people expressed that they would seek damage treatment methods by consulting books; Seven athletes also indicated that they would seek professional rehabilitation treatment.

### 3.3 Impact of Aerobics Sports Injuries on Long Term Training in Colleges and Universities in Nanchang City

#### 3.3.1 Analysis of the understanding level of sports injuries among aerobics athletes in Nanchang City

Table 8 Degree of understanding of sports injuries among aerobics athletes (n=50)

degree	Number of people	Percentage
Don't know	6	12
Only know the damaged area	15	30
Know, but unconsciously	13	26
Have a sense of prevention	16	32

According to Table 8, it can be seen that the highest proportion of people who have awareness of preventing sports injuries during the training process is 32%. 30% of athletes only know the location of the injury, and their understanding of sports injuries is not thorough. 26% of athletes know about sports injuries but are unaware of them during the training process, and 12% of athletes do not know the extent of their injuries.

#### 3.3.2 Analysis of the emotional impact of sports injuries on aerobics athletes in Nanchang City

Table 9 The emotional impact of aerobics athletes after sports injuries (n=50)

Sports interest	Number of people	Percentage
Greatly reduce interest in sports	3	6
Slightly reduce sports demand	27	54
Not reducing interest in sports	20	40

According to Table 9, the fluctuation of emotions can directly affect the physiological and psychological changes of athletes, ultimately affecting the outcome of the competition to a certain extent. Therefore, mastering emotional management skills is crucial for improving the overall performance of athletes. The survey found that 30 athletes believe that their interest in sports has decreased after sports injuries, accounting for 60%. Among them, 6% of athletes believe that their interest in sports has greatly decreased after sports injuries, and only 20 people believe that their interest in sports has not decreased. It indicates that athletes' enthusiasm for training decreases after sports injuries, which is not conducive to long-term training of aerobics<sup>[5]</sup>.

#### 3.3.3 Analysis of the psychological impact of sports injuries on aerobics athletes in Nanchang City

Table 10 The psychological impact of aerobics athletes after sports injuries (n=50)

Psychological situation	Number of people	Percentage
Massive loss of confidence	5	10
Slight loss of confidence	32	64
Confidence is sufficient	13	26

According to Table 10, it can be seen that 32 athletes caused short-term psychological shadows after sports injuries, accounting for 64%, 5 athletes lost a lot of sports confidence, and 32 athletes slightly lost confidence after sports injuries, accounting for 64%. This indicates that athletes may have a certain psychological impact after sports injuries, which hinders the development of later training.

#### 3.3.4 Analysis of the Impact of Sports Injuries on Training of Aerobics Athletes in Nanchang City

Table 11 Impact of Aerobics Athletes' Sports Injuries on Training (n=50)

Training frequency	Number of people	Percentage
No	10	20
Slightly reduced	35	70
Significant reduction	5	10

According to Table 11, it can be seen that 40 aerobics athletes in Nanchang City will experience a decrease in their exercise frequency after sports injuries, of which 35 will slightly decrease, 5 will significantly decrease, accounting for 80%, and 10 will not experience a decrease in their exercise frequency.

*Table 12 The impact of sports injuries on completing difficult movements in aerobics athletes (n=50)*

Difficulty completion impact	Number of people	Percentage
Unable to complete A-level difficulty movements such as push ups, slits, helicopters, and leg rotations	39	78
Unable to complete B-level difficulty actions such as split leg support and right angle support	1	2
Unable to complete C-level difficult movements such as jumps, group jumps, and split leg jumps	6	12
Unable to complete D-level difficult movements such as leg splitting, Yiliuxin, and single leg rotation	4	8

According to Table 12, the maximum number of athletes who are unable to complete A-level difficult movements after injury is 39, accounting for 78%, followed by C-level difficult movements with 6, accounting for 12%. The less affected are B-level difficult movements and D-level difficult movements, accounting for 2% and 8%.

## 4. Conclusion and Suggestions

### 4.1 Conclusion

#### 4.1.1 Causes of Sports Injuries in Aerobics Athletes

The duration of training for aerobics athletes majoring in physical education in colleges and universities in Nanchang is generally not long, and the situation of wearing professional clothing and protective equipment during training is not optimistic. Due to the high intensity and difficulty of aerobics, athletes do not pay enough attention to pre training activities and post training relaxation activities.

#### 4.1.2 Common parts of sports injuries for aerobics athletes

The majority of sports injuries among aerobics athletes majoring in physical education in colleges and universities in Nanchang City are sprains and strains, with more limbs than the trunk, and more often occurring in the knee, wrist, ankle, elbow, and shoulder joints.

#### 4.1.3 Treatment of Sports Injuries for Aerobics Athletes

The aerobics athletes majoring in physical education in colleges and universities of Nanchang City have insufficient understanding of sports injuries and awareness of prevention. They mainly know the injured part through the network or official account, and most students only know the injured part. Their understanding of the treatment method is not comprehensive and scientific.

#### 4.1.4 The adverse effects of sports injuries on aerobics athletes

Most aerobics athletes believe that sports injuries have a significant impact on themselves, manifested in psychological effects such as decreased interest in sports and loss of confidence, as well as a decrease in exercise intensity and action completion.

## 4.2 Suggestions

### 4.2.1 Suggestions for coaches

The training load is arranged within the range that athletes can accept, and appropriate training plans are developed according to individual differences. Appropriate training methods are selected to arrange technical training within the range that athletes can bear.

### 4.2.2 Suggestions for athletes

Athletes should strengthen their own medical supervision, enhance their self-protection awareness, and pay special attention to the injured area in future training, conducting targeted rehabilitation training. Athletes should learn to regulate their psychological emotions, maintain a good psychological state, strengthen correct technical actions, prevent prejudice of power towards incorrect techniques, strengthen attention to preparation and relaxation activities, and improve safety awareness. They should also learn how to deal with common sports injuries.

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