



## A Study on the Sports Injuries in Wushu Teaching at Beichen Children's Art School in Hohhot

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**Abstract:** Wushu, also known as Chinese martial arts, is a traditional sport and cultural treasure of China that has a history of thousands of years. In China, Wushu is widely practiced and has been integrated into the national physical education curriculum, with Wushu being taught in schools and training centers across the country. This study adopts research methods such as survey, literature review, and statistics to investigate and analyze the injuries that occur in Wushu teaching at Beichen Children's Art School in Hohhot, China, with the aim of exploring the causes and preventive measures of these injuries and reducing their occurrence in Wushu teaching. The integrated approach of combining internal and external training, as well as the unity of form and spirit, is a major feature of Wushu practice. "Internal" refers to the mental and breath-related activities of the heart, mind, intention, and qi. "External" refers to the external physical activities of the hands, eyes, body, and steps. Many martial arts styles and schools emphasize the integrated approach of internal and external training and the unity of form and spirit. Wushu practice not only has a high exercise value but also has rich content and diverse forms. Different boxing and equipment have different action results, technical requirements, styles, and exercise volumes. It can be carried out without limitation by age, gender, time, season, venue, or equipment. People can choose appropriate projects for exercise according to their needs and conditions, which provides convenient conditions for carrying out mass sports activities. Therefore, Wushu practice has a wide range of adaptability.

**Keywords:** Wushu teaching; primary school; injury; prevention.

### Introduction

Wushu, also known as Chinese martial arts, is a comprehensive system of fighting techniques and skills that has a history of thousands of years in China. It includes various styles and schools, such as Shaolin Kung Fu, Tai Chi, and Wing Chun, and incorporates both internal and external training methods<sup>[1]</sup>. Wushu is characterized by a combination of explosive power, agility, flexibility, and grace, and is considered both an art form and a sport<sup>[2]</sup>. In addition to being a form of combat training, Wushu is also considered an art form and has become a popular sport worldwide. It involves the practice of various forms, weapons, and sparring techniques, as well as the cultivation of mental discipline, self-control, and respect for others. Wushu is an important part of Chinese culture and has been practiced for thousands of years<sup>[3]</sup>.

The teaching of Wushu in China has a comprehensive curriculum that covers basic skills, forms, and sparring techniques. Students are trained in both internal and external training methods, including training in the use of various traditional weapons. In addition to physical training, Wushu teaching also emphasizes the importance of moral values, such as respect, self-discipline, and perseverance<sup>[4]</sup>.

Wushu has also become a popular competitive sport in China, with various national and international Wushu competitions held annually. China has achieved great success in international Wushu competitions and has won numerous medals in events such as the World Wushu Championships and the Asian Games<sup>[5]</sup>.

With the rise of national fitness and the emphasis on Wushu teaching in primary and secondary schools, Wushu has been popularized in many primary schools in Hohhot city in recent years. Primary school students are in a critical period of growth and development, and their musculoskeletal systems are not yet mature<sup>[6]</sup>. Their safety awareness and prevention awareness are relatively weak, and they are prone to muscle, joint, and bone injuries during training<sup>[7]</sup>. Therefore, safety prevention in Wushu sports is extremely important and deserves high attention from Wushu teachers and students.

### I. Research Object and Method

#### 1.1 Research Object

A total of 90 students from the Wushu class of Beichen Children's Art School in Yuquan District, Hohhot City are chosen as the study object. The students are between 6 and 15 years old, including 73 boys and 17 girls. Classes are held on Saturdays and Sundays from 8 am to 10 am.

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## 1.2 Research Method

### 1.2.1 Questionnaire Survey

Ninety questionnaires were distributed to 90 students in the primary, intermediate, and performance Wushu classes of Beichen Children's Art School in Yuquan District, Hohhot City. The content of the questionnaire involved the parts of the body where sports injuries occurred and their causes. Among the respondents, 73 were boys and 17 were girls. Ninety questionnaires were collected, with a recovery rate and effective rate of 100%.

### 1.2.2 Literature Review

Literature on sports injuries and prevention measures in Wushu teaching was searched and cited from Inner Mongolia Normal University Library and CNKI, to understand and reference various causes of sports injuries in Wushu teaching.

### 1.2.3 Mathematical Statistics

Excel spreadsheet software was used to classify and summarize the collected questionnaires, and to calculate percentages and other routine mathematical statistics.

## II. Results and Analysis

### 2.1 Characteristics of Primary School Students' Physical Functions

Primary school students are in the stage of growth and development, with incomplete bone development and more cartilage; thick articular cartilage around the joint, and slender muscles around the joint; thinner muscle fibers, and less effective components in muscle contraction. Therefore, compared with adults, primary school students have better bone elasticity and flexibility, are prone to fatigue, but recover faster.

### 2.2 Sports Injury Rate in Wushu Teaching

The number of student injuries during the teaching process of the Wushu class at Beichen Children's Art School in Yuquan District, Hohhot City is analyzed in detail in Table 1.

Table 1. Incidence of sports injuries in martial arts teaching.

Group	Number of respondents	Number of injuries	Injury rate %
Males	73	19	65.51
Females	17	10	34.48
Total	90	29	32.22

As shown in Table 1, out of the 90 students surveyed, 29 reported having suffered injuries, resulting in an injury rate of 32.22%. In terms of a comparison of sports injuries between male and female students, it can be seen that the injury rate is higher for females. This is because males generally have better overall physical fitness than females, and therefore suffer fewer sports injuries when completing the same level of martial arts movements.

### 2.3 Sports injuries in martial arts teaching

Table 2. Main categories of sports injuries in martial arts teaching.

Injury type	Number of injuries	Percentage
Strains	14	48.27
Scrapes	3	10.34
Kicks	1	3.44
Sprains	5	17.24
Contusions	4	13.79
Others	2	6.89
Total	29	100

As seen in Table 2, strains, sprains, and scrapes account for 75.85% of all sports injuries, while other injuries make up 24.15%. From a functional perspective, strains are mainly caused by inadequate warm-up exercises before martial arts teaching, rapid muscle contractions, or excessive muscle stretching. Sprains are mostly caused by large ranges of motion, incorrect movements, or carelessness, resulting in falls or strains. Scrapes are caused by surface skin abrasion resulting from venue equipment or other blunt objects. Therefore, it is crucial for students to enhance their awareness of self-protection and improve their self-protection abilities during physical activities.

### 2.4 Common Injury Sites in Wushu Teaching

In Wushu teaching, due to the special nature of Wushu projects, such as the high difficulty and complexity of movements in routines, the requirement for solid basic skills, the need to frequently perform movements such as bow stance, rest stance, empty step, and jump, the knee joint, ankle joint, arm, and other body parts are prone to sports injuries. The specific injury sites are shown in Table 3.

Table 3 Common Injury Sites in Wushu Teaching

Injury site	Number of injuries	Percentage
Leg and knee	16	55.17
Ankle	5	17.24
Toe and finger	3	10.34
Arm	1	3.44
Head and face	2	6.89
Others	2	6.89
Total	29	100

As can be seen from Table 3, the leg and knee as well as the ankle are the most prone to injuries, accounting for 72.41% of the total injuries. Other injury sites include toes, fingers, arms, head, and face, which are also susceptible to injuries due to their frequent use in practice. Therefore, the likelihood of injury in these body parts is slightly higher than in other parts.

#### 2.5 Analysis of the Causes of Sports Injuries in Primary School Wushu Athletes

The study analyzes the causes of sports injuries in primary school Wushu athletes from six aspects, including specialized technical factors, preparatory activity factors, physical function factors, cognitive factors, organizational arrangement factors, and environmental and venue factors, as shown in Table 4.

Table 4 Common Causes of Sports Injuries in Wushu Athletes

Factors	Causes of Injury	Number of Injuries	Percentage
Specific Technique	Incomplete mastery of technique	6	20.68
Preparation Activity	Unscientific and unreasonable preparation	2	6.89
Physical Function	Poor specific qualities	10	34.48
Mental Awareness	Lack of concentration	2	6.89
Organizational Arrangement	Excessive local load	6	20.68
Environmental Condition	Poor field conditions	3	10.34

##### 2.5.1 Specialized Technical Factors

Wushu routines consist of many technical movements. In the teaching and training process, teachers only focus on teaching students new movements without correcting non-standard movements. Students' mastery of technical movements is incomplete, and blindly practicing can easily cause muscle strains and ligament injuries.

##### 2.5.2 Preparatory Activity Factors

Preparatory activities are important in teaching. It is a transition from a relatively static state to a tense state, which can stimulate the nervous system, strengthen the metabolic energy of the body, overcome the physiological inertia of the body, improve muscle and ligament elasticity and flexibility<sup>[8]</sup>. Therefore, teachers should do a good job in pre-class preparatory activities before training.

##### 2.5.3 Physical Function Factors

Completing a Wushu routine requires the practitioner to use several parts of the body together. In addition, poor coaching methods and unreasonable exercise loads can easily cause excessive fatigue, which increases the risk of sports injuries. Coaches should reasonably arrange the exercise load and strengthen students' specialized physical fitness training to reduce the likelihood of injuries.

##### 2.5.4 Cognitive Factors

Mental state and injuries are closely related. If students' attention is not concentrated during training, the likelihood of injuries increases. Teachers should help students improve their concentration and attention in training.

#### 2.5.5 Arrangements Factors

In martial arts teaching, insufficient or unscientific preparation activities may result in insufficient mobilization of the muscles and ligaments of the waist, leading to insufficient strength, flexibility and elasticity, and making it easy to cause ligament strains and muscle sprains. Therefore, in martial arts training, the load arrangement should be gradually increased from small to large, avoiding blind practice and causing unnecessary injuries.

#### 2.5.6 Environmental Conditions Factors

Training grounds may have hard terrain, non-standard equipment, inadequate equipment maintenance, improper teacher protection and assistance measures, and insufficient necessary training equipment in schools. Therefore, coaches and school management departments should strengthen the improvement of training facilities and enhance their management to provide students with more safety and protection.

### 2.6 Measures to Prevent Sports Injuries in Primary School Students

#### 2.6.1 Standardize Martial Arts Techniques

Before class, teachers should have a thorough understanding of the rules of martial arts, provide correct technical guidance to newly enrolled students, and promptly correct incorrect movements. The process of guiding and correcting students must be in accordance with the physiological characteristics of the human body. Before practicing martial arts techniques, students should start with basic skills and gradually complete the entire technique in sequence.

#### 2.6.2 Sufficient Preparation Activities

Due to the special nature of martial arts sports, teachers should carry out targeted preparation activities during lesson planning. In addition, the intensity and load of preparation activities should be well-managed because excessive loads during training can cause physical fatigue. Recognizing the importance of preparation activities can help increase awareness of self-protection.

#### 2.6.3 Improve Students' Overall Physical Fitness and Martial Arts-Specific Physical Fitness

Coaches should focus on comprehensive fitness training for students during martial arts teaching, preventing one-sided pursuit of improving the function of a specific body part while neglecting the development of other qualities. Martial arts-specific physical fitness is different from that of other sports. Therefore, physical fitness training should be strengthened during training.

#### 2.6.4 Strengthen Ideological and Psychological Education

Due to the special nature of martial arts, there are many flying and basic movements during classroom teaching, making it more prone to sports injuries than other sports. Therefore, coaches should often instill a sense of self-protection and safety in students during regular classroom teaching, so that the concept of safety first is deeply ingrained in students' minds.

#### 2.6.5 Strengthen the Arrangement and Inspection of Training Venues and Equipment

School leaders should improve the conditions of training venues and equipment, ensuring that sports venues meet normal standard requirements. In addition, teachers should check the training venue and equipment in advance during class, and students should be aware of self-protection to reduce the injury rate as much as possible.

#### 2.6.6 Popularize Knowledge of Sports Injuries

Coaches should use other methods to convey knowledge of sports injuries to students during regular classroom teaching, enabling students to have a certain understanding of injuries.

#### 2.6.7 Increase the Importance Attached to Medical Supervision

When developing a training plan, teachers must follow scientific and reasonable training principles, pay attention to understanding and clarifying the physical condition of students, and combine martial arts sports characteristics and rules. The content and load of practice should be arranged according to the age characteristics and physical development of students to effectively promote the growth and development and improve the sports skills of primary school students.

### III. Conclusion and Recommendations

#### 3.1 Conclusion

Due to the complexity and difficulty of martial arts movements, students' lack of self-protection awareness, inadequate emphasis on the importance of warm-up activities, poor specialized qualities, and careless classroom attitudes, the frequency of student injuries is relatively high. The injuries mainly occur in the thighs, knees, ankles, calves, feet, buttocks and other parts, resulting from seven factors, including technical factors, warm-up activity factors, physical function factors, ideological awareness factors, organizational arrangement factors, environmental factors, and other factors. Corresponding measures should be taken according to the reasons for sports injuries. Coaches should increase their attention to sports injuries both mentally and practically.

#### 3.2 Recommendations

Schools should improve their facilities and equipment and strengthen mandatory supervision. Coaches should scientifically arrange sports loads, master relevant knowledge about martial arts sports injuries, and improve their awareness of sports injuries. Students should enhance their self-protection awareness, receive education on preventing

sports injuries, actively cooperate with coaches for post-injury rehabilitation training, and strengthen their recovery from training fatigue.

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