

# Investigation and prevention measures of the epidemiology of common sport injury in college physical education

**Wei Liu**

*Physical Education Department, Xi'an University of Science and Technology, Xi'an710070, China*

*Corresponding author's e-mail: liuwei0901@163.com*

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## Abstract

**Objective:** This paper provides relevant suggestions and measures on the basis of understanding of the common types of injury and their influencing factors among ordinary university students in order to further reduce, and even avoid the occurrence of sports injury so as to improve college students' health conditions as well as secure their lives. **Method:** A questionnaire survey method is applied here. 150 copies of questionnaires are randomly distributed among Wuhan University students to analyze several aspects, namely, the parts of the college students' sports injury, sports preference, the main causes of damage and damage frequency. **Results:** The frequency of such sports injury occurred among college students hits 58.3%; the sports injury of boys are more likely to happen than of girls; the most common body parts which are vulnerable to sport injury are ankles, wrists, knuckles, waist and knees in sequence; muscle strain, bruise and ligamentous sprain are main types of injuries by classification of their respective characters; the causes of the college students' sports injury mainly lie in the inadequate preparation; doing exercises too intensely, poor ability of self-protection and poor physical quality. **Conclusion:** (1) Schools and teachers should attach more importance on the popularization and publicity of scientific knowledge of sports; (2) For the sports enthusiast in college, the awareness of necessity and significance for pre-exercise activity and warm-ups should be increased; (3) Schools should enlarge both investment and facility construction of sport equipment and athlete field to avoid as much as possible the non-human factor of injury in the process of movement.

**Keywords:** College students, Physical education, Sports injuries, Prevention measures

## 1 Introduction

Sport injury refers to all kinds of human-made or non-human injury made in sport activities [1]. During their college life, students can be highly involved in many sport events with relatively strong arbitrariness, which increases the occurrence of sport injury [2]. The flexible joints in human body like knees, ankles, elbows and knuckles, etc., are subject to sport injury. It will also causes the organ systems of human body significant harm, and then influences college students' lives, studies, both physical and psychological health in different degrees. Choosing some college students in Wuhan University as its research objects, this study investigates and analyses the actuality along with reasons of the injuries made in sports by means of question-and-answer survey. Opinions and suggestions on decreasing or avoiding sport injury among college students are also given in this paper.

## 2 Research Objects and Methods

### 2.1 RESEARCH OBJECTS

150 self-made questionnaires were issued in random to college students, 77 male and 73 female, in Wuhan University who are the objects in this study.

### 2.2 RESEARCH METHODS

**Questionnaire Design:** The questionnaire is designed on basis of related articles combined with previous research, in

which the frequency, time, body parts, nature, degree, reasons and preference degree of sport activity are covered. Besides, post-injury treatment, measures and recovery are also included in the questionnaire.

**Sampling:** Special trained investigator helped the research objects with their form filling and retrieved the completed ones before due time.

### 2.3 STATISTICAL APPROACH

Input the collected information by Epidata 3.0 using double entry and comparison to ensure accuracy of the data. Software SPSS17.0 is applied to process and analyze data, using t for validation and comparison of the age differences between the male and female objects, and  $\chi^2$  for the different injury possibility of two genders.

## 3 Results

### 3.1 IN GENERAL CASE

Among altogether 150 questionnaires, 145 completed qualified ones are reclaimed. The recovery rate of this research is up to 96.7%. The overall age of the subjects range from 18-25 (AVG  $20 \pm 0.5$ ); 62 male objects (64.6%) whose age range is 19-25 (AVG  $20 \pm 0.8$ ); 34 female objects (35.4%) whose age range is 18-24 (AVG  $19 \pm 0.4$ ). The age differences between two genders have no statistical significance ( $P > 0.05$ ).

### 3.2 IN THE CASE OF SPORT INJURY

In the reclaimed 145 questionnaires there are 84 cases of either ever-happened or undergoing sport injury, the occurrence rate of 58.3%, among which male objects constitute 69.6%. By contrast, 25 female reporting injuries makes up 30.4%. The differences between two genders in this case do have statistical significance ( $P < 0.05$ ).

TABLE 1 Sport injury occurrence of college students

Gender	Cases / Percentage				P
Male	59	69.6%	3(75.0%)	6(46.2%)	0.4
Female	25	30.4%			
$X^2$ P	--	2.14 <0.05	1(25.0%)	7(53.8%)	

### 3.3 COMMON INJURED PARTS

The result shows that the injured parts are ankles, wrists and knees according to frequency (see Table 2).

TABLE 2 The common injured parts for college students and the proportion

Gender	Injured Parts					P
	Ankles	Wrists	Knees	Knuckles	Others	
Male	25 (71.4%)	15 (75.0%)	10 (76.9%)	3 (75.0%)	6 (46.2%)	0.4
Female	10 (28.6)	5 (25.0%)	3 (23.1%)	1 (25.0%)	7 (53.8%)	
Percentage	41.7%	23.8	15.4%	4.7%	15.4%	

### 3.4 REASONS FOR SPORT INJURY

Inadequate preparation, doing exercises too intensely, lacking of self-protection, poorly-equipped sports arena and insufficient sports equipment can be counted as primary reasons for sport injury (See Table 3).

TABLE 3 Main reasons for sport injury happened among college students

Reason	Case	Ratio (%)
Inadequate Warm-Up	33	37.5
Doing Exercises too Intensely	22	26.0
Poor Self-protection	10	15.6
Poorly-equipped Sports Arena	7	8.3
Insufficient Sports Equipment	6	6.3
Poor Physique	5	5.2
Being Against Regulations	1	1.1

## 5 Conclusion

In this study, the occurrence rate of sport injury of college students is up to 58.3%, among which 59 cases take place on male students (69.6%) and 25 on female (30.4%). It can be concluded that male students are much easier get injured than female students,  $P < 0.05$ , a lower result data compared to the one collected from students of sports specialty. The possible explanations for such difference could be different subjects and methods applied for sampling, and distinct

design of the questionnaire.

Ankles, wrists and knees are the top three injured parts for college students according to frequency, which is similar to the study results of Zhang Yong [4-6]. Ankle is one of the most important body joints for its stability and flexibility enabling human body to complete movements like standing, walking, running and jumping, etc. However, the stability of ankles will be lost because of plantar flexion. Since medial collateral ligament (MCL) is tougher than lateral collateral ligament (LCL), which tend to cause LCL tear triggered by ankles inversion when the field surface is uneven or the position of center-of-gravity is unsteady on landing [7-8]. Sport events, such as basketball, volleyball and table tennis, usually played with hands, are subject to wrists sport injuries due to the relatively high degree of flexibility of wrists making it's easier to be injured by rotating or bending. This result is similar to ones drawn from other relative research [7].

The main causes of sport injury in sequence are inadequate preparation, doing exercises too intensely, lacking of self-protection, poorly-equipped sports arena and insufficient sports equipment [9-10]. In addition, it is also found that sport injuries often take place when doing exercises at extracurricular time. And in this sense the current PE do not lay enough stress on self-protection or doing physical exercises scientifically. On the other hand, college students are also responsible for their injuries in terms of lacking of awareness of their own safety, failing to abide by the law of physical exercises and master scientific skills. Therefore, it requires PE teachers to reinforce the popularization of practicing not only scientific but also wholesome exercises. And for college students, they should pay close attention to the relative knowledge in class and put them into daily use to avoid unnecessary threat on personal safety [11-13]. Some injuries caused by some reasons related to sport field or facilities reflect insufficient investment on sport at college, which should draw attention from concerned department.

In conclusion, this paper proposes some suggestions as follow on causes of sport injury among college students: Firstly, make fully preparation. Bear in mind the importance of warm-ups no matter in class or out of class and choose preparation activities in either proper form or with suitable intensity in accordance with own actual situation to minimize any possible injuries. Secondly, enhance the awareness of self-protection. Wear gym suit and protect vulnerable body joints, like ankles, knees and elbows with protective body gear. College students should take responsibilities for themselves doing moderate sports consciously. Thirdly, improve constructive situation of sports ground with good management and maintenance. The sports ground should be designed and constructed strictly according to national standard, and orderly managed in accordance with rules and regulations to reduce non-human injury as much as possible. Lastly, do physical exercises in a healthy way through correcting improper manner. When doing sports any movements that run counter to either the framework pattern of body movement or motion principles would lead to sport injury [14, 15]. Thus, PE teacher are required not only to

instruct students with correct technical moves in patience but also teach them how to modify their moves, from which

students could develop a correct concept of action.

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## Author



**Liu Wei, 1982.06.04, Heibei ChenDe, China**

**Current position, grades:** graduate student at Xi'an University of Science and Technology in sports education.

**University studies:** master's degree from the Xi'an University of Physical Education.

**Scientific interest:** physical education and sport injury prevention.