

Sports injury research of basketball specialized college students

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Abstract: Based on the investigation of basketball sports injury of the students in University, the questionnaire was collected, and the location and incidence rate of students in basketball were: finger(26.42%), ankle joint(22.54%), knee joint(11.92%), wrist(10.10%) and back(8.81%). The cause and incidence of damage are: to prepare activities(30.9%), to break the rules(25.13%), the technical error (19.43%), and the site(13.47%). Through literature review, interview method, mathematical statistics method, logical analysis method, the conclusion is that college students in basketball sports injury, because they do not seriously do the preparatory activities, technical differences, poor thinking, self-protection awareness, etc. Finally, some suggestions are put forward to reduce the student injury in basketball.

Key words: Physical education, College students, Basketball, Sports injury

1. Introduction

Basketball is a sport characterized by intense physical contact and thrilling competition, which is greatly loved by college students. As college students are adolescents in the developmental stage, engaging in such highly competitive basketball activities can easily lead to sports injuries if proper precautions are not taken. Therefore, it is essential to conduct a survey and analysis of basketball injuries and implement effective prevention measures to minimize the probability of injuries in future basketball activities. In college campuses, there are many students who love to play basketball, but the shadow of sports injuries caused during the game has made some students who love basketball hesitant to play. This also leads to some students not participating in basketball classes, resulting in missed opportunities for exercise and physical training. What should be a time for physical training is instead a time of inactivity due to the fear of injury, which is not good for health. This paper investigates and analyzes injuries that occur in college basketball, attempting to identify how to reduce injuries among students during basketball activities.

2. Research subjects and methods

2.1. Study participants

The basketball enthusiasts among students mainly include students from non-physical education and health colleges; as well as classmates who take other elective courses in basketball.

2.2. Research methods

2.2.1. Literature review method

By accessing the China Journals Network and the Wan fang Database, we performed searches and collected relevant literature on the current status of basketball teaching in ordinary universities.

2.2.2. Interview method

Communicate with relevant experts and teachers to collect the indicators related to this study.

2.2.3. Questionnaire survey method

A questionnaire survey was conducted among 450 students who are basketball enthusiasts. Out of these, 400 questionnaires were collected, resulting in a recovery rate of 88.89%. Among the respondents, there were 268 males and 132 females.

2.2.4. *Mathematical statistics method*

The valid data collected were subjected to routine mathematical statistical analysis.

2.2.5. *Logical analysis method*

The collected materials and the content of the surveyed questionnaires were analyzed through induction and synthesis.

3. Survey results and analysis

3.1. Survey results

3.1.1. *Distribution of injury locations*

The survey revealed that the main parts of the body injured during basketball activities among students are the fingers, ankle joints, knee joints, lumbar and back, and wrists. Students majoring in physical education and basketball are prone to knee pain due to the high volume of exercise, which can significantly impact their training in basketball classes if it occurs. During basketball activities, if the finger strength is weak, coupled with incorrect hand shape or poor technique when catching or intercepting the ball, it is easy to sustain finger injuries. The ankle is also a vulnerable area for injuries in basketball, especially when landing unevenly after jumping or landing on another player's foot, which can easily result in an ankle sprain. After organizing the basketball activity survey questionnaires, it was found that the most commonly injured part of the body for students during basketball activities is the finger, accounting for 26.42%. This is followed by the ankle joint (22.54%), knee joint (11.92%), wrist (10.10%), and lumbar and back (8.81%). (See Table 1)

Table 1: Composition of Basketball Injury Sites Among College Students

| Part | Number of People | Incidence Rate |
|-----------------|------------------|----------------|
| Fingers | 105 | 26.42% |
| Ankle Joint | 90 | 22.54% |
| Knee Joint | 48 | 11.92% |
| Wrist | 40 | 10.10% |
| Lumbar and Back | 35 | 8.81% |
| Others | 18 | 4.40% |

3.1.2. *Injury cause composition*

During outdoor basketball activities, the survey found that 30.31% of students admitted to not preparing sufficiently or seriously before playing basketball. Some students accounted for 25.13% and 19.43% for violating rules and improper techniques during the basketball activity. Some were due to the condition of the field, accounting for 13.47%. Others were related to improper attire, such as wearing jewelry while playing, and some might be due to psychological shadows from previous injuries, etc., accounting for 2.33%. (See Table 2)

Table 2: Composition of Injury Causes

| Reason | Number of People | Incidence Rate |
|--------------------|------------------|----------------|
| Warm-up Activities | 121 | 30.31% |
| Violation of Rules | 100 | 25.13% |
| Technical Errors | 78 | 19.43% |

| | | |
|------------------|----|--------|
| Field Conditions | 54 | 13.47% |
| Others | 9 | 2.33% |

3.2. Survey results analysis

3.2.1. *Inadequate warm-up*

Warm-up activities are a hidden factor that contributes to sports injuries, yet they are often overlooked and neglected by many students. Many basketball enthusiasts are too eager to get on the court and skip warm-up stretches, or they perform them perfunctorily and inadequately. Inadequate or absent warm-up activities can lead to poor muscle strength, elasticity, and flexibility, and a lack of necessary coordination in the body, making it susceptible to sports injuries.

3.2.2. *Poor physical fitness, unreasonable technique*

College students are more vulnerable to injuries during basketball activities if they have poor physical fitness and weak strength, as the university period is a time when physical conditions gradually strengthen. During basketball, if finger strength is weak, it is easy to injure the fingers. There are many opportunities to catch, grab, and flick the ball with fingers, and weak finger strength can easily lead to finger sprains. If this is compounded with incorrect hand technique when catching the ball, it can exacerbate the degree of injury, potentially leading to chronic overuse injuries over time. If students have poor flexibility, they are prone to strains when making larger movements during the game. Their movement range may be limited, and sudden large movements, such as when an opponent interrupts the ball, can easily result in muscle strains. Additionally, unreasonable techniques during basketball activities can easily lead to back injuries, especially during quick dribble stops and jump shots. The fear of being blocked may cause the back to twist and lose balance, leading to a back sprain.

3.2.3. *Lack of preventive awareness, neglect of warm-ups, and inadequate self-protection*

Many students are passionate about basketball, but they have little knowledge about preventive measures for the sport. Many students love playing basketball but never bother to learn about injury prevention, thinking it's not very useful. They mentally regard warm-up activities as a waste of time for playing, so they just go through the motions without taking them seriously when the teacher asks them to do warm-ups. This attitude can easily lead to injuries during sports activities. Some students have poor self-protection awareness. After suffering a sports injury, they don't take it to heart and can't resist playing basketball before the injury has fully healed. After a brief rest following a relapse of the old injury, they go back to playing. This can easily lead to chronic sports injuries. If the injury is in the ankle, it can result in habitual dislocation.

3.2.4. *Hazards of playing field and attire accessories*

Students may encounter potential hazards for basketball injuries when playing outdoors, such as rainwater that hasn't completely dried, causing puddles on the ground, slippery court surfaces, and hard ground conditions. The quality of outdoor basketball courts also affects students' performance and can cast a small psychological shadow, but their passion for basketball may cause them to overlook these factors. When dribbling near the water, they may suddenly realize the danger but fail to respond quickly and flexibly, which can easily lead to sports injuries. During an intense game, a sudden ball coming from another court can also be dangerous and likely to cause injuries. It's important to be aware of such situations while playing basketball.

Some students attend basketball classes or play wearing leather shoes and jeans, which can also lead to sports injuries. Wearing leather shoes on the court can hinder movement, and jeans can restrict leg movement, especially when performing moves like cradle dribbling or quick sliding defense, which require lowering one's center of gravity. This can be difficult to achieve in jeans and can easily result in injuries. Wearing clothes that are too loose or too tight can also affect the completion of movements and may inadvertently cause injuries. Wearing jewelry while playing basketball is another potential cause of injury, as intense ball grabbing and body contact can easily lead to self-inflicted or inflicted injuries on others on the court.

3.2.5. *Students' ideological perception issues*

During physical education classes, students often don't take sports injuries seriously, continuing to play basketball before fully recovering, with a complete lack of awareness of their injuries and no sense of self-protection. Students do not pay enough attention to pre-class warm-up activities in their minds, with their only thought being to play basketball. Due to these mental attitudes, some students want to skip warm-ups and just play basketball, and even if they do warm-up exercises, they are not done seriously. This situation is a potential factor in causing sports injuries. Some students are mentally timid and lack experience on the court. Others, in their eagerness to score points, become overly aggressive in their thinking, lacking in sportsmanship and resorting to unreasonable violent means to prevent the opposing team from scoring. Such behavior is likely to cause injuries to both parties.

3.2.6. *Lack of concentration, distraction*

Students may become distracted and lack concentration during basketball activities due to poor skills and lack of experience, which makes them susceptible to external influences and results in poor self-control. This can lead to slow reactions on the court, sometimes making incorrect judgments, not running to the right positions to catch the ball, and thus easily causing sports injuries. Basketball is highly attractive to students, and they play whenever they have time. Since the duration of the activity is long and the physical contact in basketball is intense, it requires maintaining concentration for extended periods. Prolonged exercise without rest consumes a lot of energy, leading to both physiological and psychological fatigue. If continued, it may result in over-fatigue. When fatigue sets in, the excitement of the cerebral cortex nervous system's focal points will significantly decrease, and the speed of transition between excitement and inhibition slows down, causing a dispersion of mental attention. In basketball, this can lead to deformed movements and reduced stability in passing and catching the ball, which can easily result in sports injuries.

4. Preventive measures

4.1. Fully recognize the importance of warm-up activities

Before engaging in sports activities, the human body's various systems are in a state of dormancy. The circulatory, respiratory, and musculoskeletal systems are not fully activated, which makes it difficult for the body to balance the supply of athletic function with the actual needs, thus increasing the risk of injury during sports participation and preventing the achievement of sports goals and objectives. According to sports training and exercise physiology theories, it is essential to perform adequate warm-up exercises before engaging in sports activities. Warm-up activities can mobilize the respiratory system in advance, increasing the body's oxygen intake and the efficiency of gas exchange in the alveoli. This allows hemoglobin in the blood to effectively bind with oxygen, increasing the amount of oxygen and hemoglobin in the blood, providing ample oxygen for subsequent strenuous activities. On the other hand, warm-up activities can increase blood flow to the muscles, raise body temperature, effectively reduce the viscosity of muscle tissue, and improve muscle coordination efficiency during exercise, preventing sports injuries.

4.2. Improve basketball skills

Basketball matches are intense and require a high level of technical and physical ability from participants. Therefore, players need to actively improve their sports skills in their daily practice. On one hand, they can train under the guidance of their physical education teachers; on the other hand, they can watch videos or online courses for further explanations and demonstrations to standardize their basketball skills. Finally, through basketball class competitions, they can identify the shortcomings in their basketball techniques, and with the guidance and suggestions of their physical education teachers, further refine their skills to achieve standardized and effective offense and defense in matches.

4.3. Gradually enhance physical fitness and tactical level

Basketball is a skill-based, same-field competitive sport that demands a high level of technical and coordination abilities from participants. However, due to the long duration and high intensity of the game, the importance of physical fitness should be increasingly recognized. Therefore, in daily practice, basketball enthusiasts should gradually strengthen their training, combining popular core strength training and functional stability training in China. They should train their core region's superficial large muscle groups and deep small muscle groups purposefully, enhancing the body's ability to maintain balance in unstable conditions, to successfully complete various offensive movements and cooperation, achieving effective transitions in attack and defense during the game.

The competitive ability of basketball participants, that is, their ability to compete, is determined by their physical, learning, psychological abilities, and technical application capabilities. Therefore, in the daily practice process, it is necessary to gradually integrate tactical concepts, tactical guidance, tactical knowledge, tactical awareness, tactical forms, and tactical actions. Cultivate individual tactics while also strengthening the team's coordinated tactics, gradually optimizing personal tactics, team tactics, and offensive and defensive tactics. At the same time, strengthen the understanding of basketball tactics, reinforce the correctness of tactical guidance, improve the level of tactics, and pay attention to the quality of action completion, in order to enhance the competitive performance of basketball participants.

5. Conclusion

In universities, there are many students who love playing basketball. During the process of playing, many suffer injuries due to poor skills, inadequate awareness, lack of self-protection, not taking warm-up activities seriously, or even playing without any warm-up, wearing inappropriate attire, and so on. After being injured, some students do not pay attention to their injuries and continue to play before fully recovering, leading to overuse injuries.

College students are prone to sports injuries in basketball. To reduce injuries during sports activities, I hope everyone can achieve the following seven points: one, Take warm-up activities seriously before exercising, such as jogging around the basketball court to warm up, and when the body feels slightly warm and starts to sweat, do some stretching and flexibility exercises. two, In your spare time after class, strengthen the practice of the standardized basketball techniques taught by the teacher to reduce injuries caused by unreasonable technical movements. three, Pay attention to improving your physical fitness, take time to run and do push-ups and other simple physical exercises to improve your overall physical fitness. Four, Strengthen your self-protection awareness and improve your self-protection skills. Exercise the parts of your body that are prone to injury to enhance your ability to resist injury. Five, After being injured, especially joints, strengthen medical supervision and ensure a full recovery before playing again to prevent the injury from worsening. Six, Prepare suitable basketball shoes, and you can also wear protective gear, such as ankle guards. Wear loose and appropriate clothing during the game so that your movements are not affected by your clothes. Seven, Listen carefully to the teacher's explanation of basketball technical rules and improve your sportsmanship.

6. References

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