

## Original Article

# Common Types and Countermeasures of Ankle Ligament Injury Caused by Intense Basketball Movement

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## INTRODUCTION

Basketball, as a much-loved sport with a great number of participants, has gradually become a major sporting event that integrates quality, skills, and intelligence of players. In some primary and secondary schools and university campuses, basketball is more and more favored by students, and it has become a relaxation tool for students' extracurricular life. However, in basketball, a variety of injuries often occur, which bring a serious impact on players' body. Among all injuries, ankle injury is particularly widespread. The reason why ankle joint is a common sprain area in human movement is that in the process of movement, lateral ankle ligament will become more relaxed than inner side. Main clinical manifestations of ankle ligament injury in players are swelling, pain, and subcutaneous bruising. Once without timely treatment, ligament laxity will occur, which results in instability of ankle part, thereby causing intense repeated impact of articular surface,

### ABSTRACT

**Objective:** To analyze ankle ligament injury of basketball players caused during movement, summarize injury types, analyze the causes of injury, and put forward corresponding control measures. **Methods:** The author selected 3100 basketball players with ankle ligament injury during basketball movement and admitted to different hospitals from June 2011 to June 2015 for stochastic analysis. Through the literature, investigation, and observation, etc., common types of injuries of basketball players are analyzed, and damage preventive measures of basketball players are discussed, so as to find measures to prevent and treat ankle ligament injury of basketball players and promote physical rehabilitation of players, which is in favor of their better career development. **Results:** Basketball players are prone to ankle ligament injury in training or competition, which has a direct relationship with players' poor safety consciousness and insufficient preparation during movement. **Conclusion:** Basketball players will often have serious ankle ligament injury in the process of movement. Basketball coaches and players should reduce serious injury to players in training or competition, so as to stimulate passion of more professional basketball sports students for basketball, which also has a positive meaning for their future career.

**KEYWORDS:** Ankle ligament injury, basketball movement, intense, prevention, type

triggering cartilage damage, and then leading to severe osteoarthritis. Respectively, show ankle injury of two well-known basketball players in a competition.

## METHOD

### General information

In this research, the author selected 3100 cases of ankle ligament injury patients in basketball movement and admitted in different hospitals from June 2011 to June 2015. Among them, 1590 cases were professional basketball players, whereas 1510 cases of patients were students loving basketball. All patients were between the ages of 13 years to 32 years, all were male, and detailed analysis and observation of patient data were done.

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**Observation method**

By observation of all patients' information and daily behavior, effective analysis of their injury was done.

**Survey method**

The questionnaire survey issued by the author investigated basketball team coaches and players as well as some physical education teachers and students in schools. A common type of injury in ordinary sports of basketball players was inquired, and final recovery rate of this questionnaire was 100%.

**RESULTS**

**Injury types of basketball movement**

*Basic Information of All Basketball Players.* The basic information of all basketball players are shown in Table 1.

**Skin Abrasions:** In basketball movement, as archer conversion in movement is relatively fast, basketball itself is easier to get close to the body, a sport event with intense confrontation. When basketball players play basketball, as the ground is relatively slippery and not flat enough, sometimes debris may cause players to strike each other and fall, resulting in serious abrasions in players' parts such as legs, knees, and back. During defense, as some players' defensive action is irregular, abrasions of offensive players can occur. After players have abrasions, the wounds get pale. In the basketball event, injuries to players can be very painful, which is mainly because there are relatively rich nerve endings in the body's skin. After players have been injured, due to relatively strong epidermis cell regeneration, union will occur before players have wound infection, without severe scarring. However, without effective treatment, scar will stay, which can have a certain impact on players.

**Players' Finger Joint Injury:** In basketball movement, basketball players' hands are prone to injuries. In the

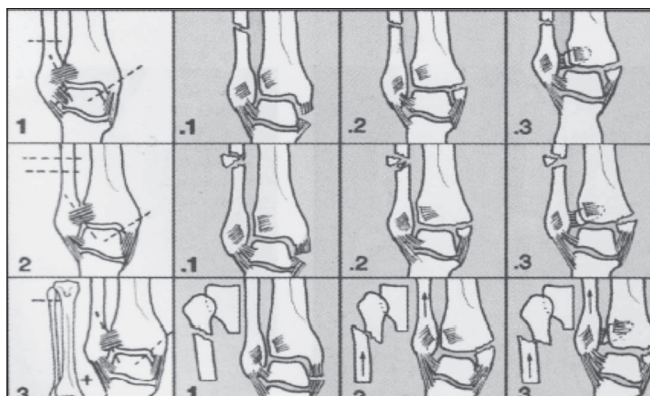
process of dribble, fast pass can lead to finger joint injury, but this slight injury will not cause great impact on players. Finger joint injury can be accompanied by severe joint pain. Redness or swelling around the injured joints can occur, which poses as a barrier in the process of players' playing basketball and makes extension and flexion of finger relatively difficult for players.

**Ankle Ligament Injury:** When players play basketball, since the foot often exerts strength, ankle ligament can have injury. When players have ankle ligament injury, lateral or inner ankle has severe pain with local swelling and joint hematoma, resulting in subcutaneous congestion and other phenomena, which lead to serious injury of ankle joints, and thereby causes limping. The injured part of players will have obvious tenderness, with lateral collateral ligament sprain. When lateral collateral ligament ruptures, lateral ankle joint space increases, which makes joints unstable. As players' lateral ankle ligament injury can be accompanied by fracture, this situation should be effectively identified. The medial ankle ligament injury of a basketball player is shown in Figure 1. The ankle ligament injury picture of a player is shown in Figure 2.

**The main reasons for ankle ligament injury among basketball players**

*Investigation of factors causing ankle ligament injury.* Investigation results of factors causing ankle ligament injury are shown in Table 2.

**Fail to Make Full Preparations before Movement:** An important reason why basketball players have serious ankle ligament injury is that players fail to make necessary preparations before basketball movement. Players' nervous system and tracheal system are not in a state suitable for movement; thus, players are not very well prepared. In this process, as players are not fully prepared, preparation time is not long, players' physiological knowledge of preparatory activities is insufficient, so players cannot effectively grasp the training content.



**Figure 1:** Medial ankle ligament injury of a basketball player



**Figure 2:** Ankle ligament injury picture of a player

**Table 1: Basic information of basketball players (n=3100)**

Number of people	Age(y)	Height(cm)	Weight(Kg)	Length of playing time (y)	Length of playing time per month (d)
3100	22.8 ± 1.3	174.3 ± 7.3	75.9 ± 9.3	3.2 ± 1.5	22.1 ± 5.3

**Table 2: Factors causing ankle ligament injury**

Rank o factor	Factor causing injuries	Score	Rank o factor	Factor causing injuries	Score
1	Insufficient preparation before exercise	140	10	Inattention	88
2	nonobservance of training principle	136	11	Poor physical quality	86
3	Insufficient training level	130	12	Overexcitation	72
4	Playing with injuries	128	13	Feeling down	68
5	poor protective consciousness	124	14	Poor proprioceptive sense	64
6	local overload	121	15	Hypertension	60
7	non-timely dealing with injuries	110	16	exercise overload	50
8	unproper warm-up	106	17	influence of other diseases	48
9	exhaustion of physical power	102	18	Ill-fitting shoes	40

### **Basketball Players Do Not Comply with the Corresponding Training Principles:**

In the training process, as some basketball players violate corresponding structural characteristics of the human body and cannot exercise in accordance with corresponding activity rule of human organs, serious damage to the body can be caused. Meanwhile, in the process of basketball, some basketball players blindly train, rushing for quick results. Therefore, they tend to arbitrarily change training plans, which causes severe deformation of original technical movement and failure to effectively cooperate.<sup>[1]</sup> Players have tension, and panic in this process. At the same time, basketball players tend to participate in relatively frequent competitions, which can lead to athletes' fatigue, serious decline in body function and alertness, make players' defense slow and cause injury.<sup>[2]</sup>

**Players' Training Level is Insufficient:** In basketball movement, the training level of athletes is reflected in physical fitness, strength, and speed. In this process, if athletes' training is not in place, basketball players will obviously be powerless and even have serious energy dispersion.<sup>[3]</sup> Once this occurs, athletes can have ankle injury, which can impact career of athletes.

### **Basketball players' prevention measures for ankle ligament injury**

**Make Full Preparations:** Before basketball players begin movement, adequate preparations are essential. Before basketball movement begins, full preparatory activities can enable muscles and joints of the whole body of players to relax and make athletes' muscles under a relatively excited state.<sup>[4]</sup> A sufficient preparation before game can make players fully engaged in the sport, and thus avoid severe injuries as much as possible.<sup>[5]</sup>

### **Basketball Coaches Should Properly Make Training Plans:**

In the process of basketball movement, basketball coaches should properly make corresponding training plans. During basketball movement, coaches should make reasonable arrangement of training contents and decide appropriate exercise amount based on age and actual health of players. In this process, it is worth noting that burden on moving organs should not be excessive, and players' physical exercise should be comprehensively enhanced, so as to improve players' physical fitness.<sup>[6]</sup> Meanwhile, coaches should also strengthen training of weak parts of players' body, to effectively improve function of the weak parts, which can prevent athletes' injury.<sup>[7]</sup>

### **Strengthen Rehabilitation Training after Injury:**

After basketball players have ankle injury, control of ankle joint itself gets significantly weakened. In this process, rehabilitation training should be carried out among players. In balance board training, one leg of players stands on a balance board. In the process, basketball players cannot maintain balance with hand and can only do so through ankle adjustment, which can thus rehabilitate the ankle.<sup>[8]</sup>

### **Strengthen Medical Supervision on Players:**

Whether it is basketball-loving students or professional basketball players, in the process of basketball movement, medical supervision should be strengthened<sup>[9]</sup> so that corresponding sports activities can be arranged based on the physical condition of players. As a result, students can undergo medical examination on a regular basis, with the physical condition of students being important basis for the amount of exercise and arrangement of movement contents, which thus effectively prevents occurrence of serious injury and is conducive to healthy development of players' body.<sup>[10]</sup>

## DISCUSSION

All in all, ankle is most injury-prone part in movement of basketball players. During ordinary training, basketball players should cover every aspect of practice, so as to enhance their physical fitness. Therefore, attention should be paid to ankle injury. This requires that basketball players should perform preparatory activities before movement, avoiding exercise fatigue to prevent serious injury. Moreover, players should strengthen the awareness of self-protection and enhance their level of health.

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## Conflicts of interest

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