

The Prevalence of Musculoskeletal Sport Injuries Inprofessional Basketball Playeres

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Abstract

Introduction: Basketball is one of the most popular sport activities in the world. In Iran, basketball fans are increasing in the recent decade. To apply effective interventions for the treatment and the prevention of musculoskeletal injuries, the reliable and accurate information about the injury prevalence is essential. This study was performed with the evaluation purpose of prevalence of musculoskeletal injuries in basketball players in Ramtan clinic of physiotherapy in Tehran. **Method and Materials:** In this descriptive observational study, 36 male adolescent athletes were participated. All data including demographic data and injury reports were collected through a questionnaire. **Results:** Based on the findings, ankle injury was recorded as the most common injury which 19 players (52.8% of players) experienced. Knee and lumbar injuries with prevalence close together (41.7% for knee and 38.9% for lumbar) were considered as the second common injuries in players. **Conclusions:** Ankle, then, knee and lumbar damages are the most common injuries in adolescent basketball players. Therefore, it is important to pay attention to injury prevention programs and coaches should be educated well in appropriate training to prevent these injuries.

Keywords: Basketball, Epidemiology, Sport Injury, Injury Prevention

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Introduction

Basketball is one of the most favorite sports in the world (1). Over the past 20 years, participation of adolescent people have increased in basketball (2, 3). For example, in 2005-2007, basketball was the most common cause of sport injuries in USA(4). Participation in such aggressive contact sport with high physical demand may result in a greater risk of injury since the athletes perform frequent jumps and landings during games and training, abrupt changes in direction, running and deceleration during competitive games and training sessions (5).

Prevalence of sport injuries like basketball in different age groups is different. Basketball sport injuries were estimated in 5-9 years old basketball players for 4.9%, boys aged 10-14 for 15.2%, and 25.9% for boys aged 15-19 (6). In a recent study carried out in Iran, the statistics showed that sport injuries had a relatively high prevalence (7). Thus, risk of injury is one of the major items which should be considered in any sports. This is

especially so crucial in children and teenagers because the process of growth and maturation is still incomplete (6).

Musculoskeletal injuries can result in loss of playing time, hospital and doctor visits, and increase in healthcare cost. Modern games require greater physicality and athleticism which indeed need increased intensity of practice and gameplay. These two factors are thought to be significant causes contributing to the increase in the number of injuries reported (8, 9) A number of studies describing basketball injuries have focused on specific levels of competition, among high school, adult and professional basketball players, and found that relative risk of injury were increased with level of competition (2, 3, 6, 10, 11). Other investigations have focused on a specific body site or diagnosis such as shoulders injuries, ankle injuries, or concussions. It seems the most common cause of injury in basketball players are ankle sprains (12-15).

To apply effective interventions for the treatment and the prevention of musculoskeletal injuries, reliable and accurate

Table 1. samples' demographic characteristics

	Mean $\pm$ SD	Range
Age	15.5 $\pm$ 2.56	10 - 20
Height (m)	1.80 $\pm$ 0.19	1.45 - 2.08
Weight (kg)	71.40 $\pm$ 1.75	40 - 100
BMI (Kg/ m ²)	21.43 $\pm$ 1.93	17.26 - 24.72

BMI: body mass index

Table 2. Prevalence of sport injuries in body regions

Body regions	Ankle		knee			Lumbar and SIJ		Shoulder		
Injury cause	Foot arch problem	Ankle sprain	tendon	structure	both	Weakness and instability	SIJ	Both	tendinitis	Scapula thoracic
Number	2	17	6	7	2	12	1	1	1	1
Percent	5.6%	47.2%	16.7%	19.4%	5.6%	33%	2.8%	2.8%	2.8%	2.8%
Total	52.8%		41.7%			38.9%		5.6%		

information is essential. The understanding of epidemiology of musculoskeletal injuries in basketball is an important first step in the development of targeted, evidence-based interventions to provide recommendations for the prevention of injuries (16). To the best of our knowledge, there is no study to investigate the prevalence of musculoskeletal sport injuries in basketball players in Iran. Therefore, the objective of this study was to evaluate the main epidemic musculoskeletal injuries in professional basketball players in Iran, so we can better provide good plans to prevent from these injuries.

Method and Materials

This study was a descriptive observational epidemiologic study of musculoskeletal sport injuries in professional basketball players carried out in 2018 at Ramtan clinic in Tehran. Thirty six male adolescent athletes was participated in this study based on a convenience sampling. All athletes were referred to Ramtan clinic from the pro basketball club. The physical examination of the injured area was conducted by a specialized physiotherapist. Participants were included in this study if they were athletes with a musculoskeletal injury which had accrued during the basketball sport. Study participants were excluded if they had sports injuries that occurred outside the period of competition or training sessions and unwilling to participate in this study.

A questionnaire with two sections developed by the authors was utilized to collect data. The first section was used to collect the demographic data, and the second one to determine the incidences and regions (neck, shoulder, lumbar, knee, and ankle) of the sport injury (Appendix 1). So, Injuries which caused athletes to stop or limit the participation in their sport activities were evaluated in this study.

The prevalence was defined as the athletes' proportion with an existing injury at any given point in time; it is calculated by dividing the number of injured athletes by the number of athletes exposed at the specified time. All data was collected using Excel 2007.

Results

Demographic data (age, weight and height) for 36 basketball players is shown in Table 1.

As shown in Table 2, ankle injury was recorded as the most common injury which 19 players (52.8% of players) experienced. 2 players had ankle pain due to foot arch problems and the rest of them (17 players) had the ankle sprain injury. Fifteen players experienced knee injuries which 7 people had structural problems, 6 players had patellar tendon problems, and 2 had both of them. Lumbar problems were reported in 14 subjects that 12 players had weakness and instability in lumbar region, one suffered from sacroiliac joint problem, and one had both problems. Therefore, Knee and lumbar injuries with prevalence close together (41.7% for knee and 38.9% for lumbar) were considered as the second common injuries in basketball players. Shoulder problems were at the bottom of the list with 2 players, one because of the rotator cuff tendinitis and another had the scapula thoracic dyskinesia. The frequency and percentage of each injury is shown in Table 2.

Discussion

Basketball is one of the sports with has a lot of fans, but it is also associated with a high risk of sports injuries. Understanding the

acute and chronic sports injuries caused by basketball exercises helps prevention of injury and create a healthier sports community (9, 17, 18). Education and training of players usually begin in adolescence, exactly the age range in which sports injury prevention and effective injury treatment play an important role in a person's athletic future (18). For this reason, in this study, we examined the adolescent team to assess the prevalence of sports damages to be able to focus more on effective treatment methods and injury prevention in future studies.

As mentioned in previous studies, the ankle injury is the most common injury among basketball players due to repetitive jumps and landings, sudden directional changes, and repeated collisions (9, 10, 17-19). In the present study, this injury was more common than other injuries and mostly due to ankle sprains caused by improper landings. In most cases, repeated sprains result from instability in the ankle joint and constant pain in players, and as a result, person's athletic performance is reduced. In future studies, it is needed to investigate the cause of this problem and plan an effective program to prevent it.

After ankle injuries, knee and lumbar injuries have been demonstrated to be more common in this study which could be due to kinetic chain connections. For example, when the proprioception of the ankle is disturbed due to repeated sprains, this problem can put more pressure on the knee as a compensatory mechanism. It is necessary, therefore, to examine the relationship between these two injuries in future studies.

Some recommendations such as postural correction and strengthening or stretching muscles are counseled to the players. Also, getting physiotherapy sessions for players with the injuries needed to treatment are suggested. Final results of the present study were given to the coach team to make better decisions for training plane and arranging the team.

The limitations of this study compared to previous studies were the limited number of subjects and the time limit for specialized tests due to the participation of the team in competitions. Therefore, we examined the individuals' physical condition and asked the questions about their current injuries, so that in future studies, we can perform appropriate specialized tests according to the results of this study.

Conclusion

Understanding of the epidemiology of musculoskeletal injuries in basketball is an important step for preventive strategies in the adolescent basketball players. According to the specific anatomical region in this study, the largest proportion of injuries occurred in the ankle followed by the knee and lumbar. Thus, it

is important to pay attention to injury prevention programs and coaches should be educated well in appropriate training to prevent these injuries.

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Authors' contributions:

All authors made substantial contributions to conception, design, acquisition, analysis and interpretation of data.

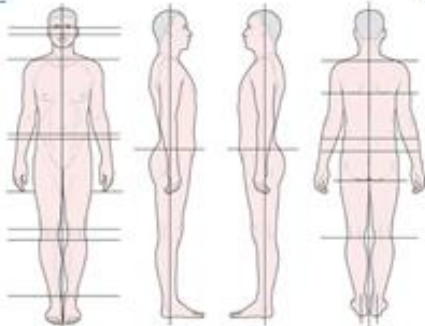
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Appendix 1. Evaluation form of subjects

First Name: _____
 Last Name: _____
 Age : _____
 Weight : _____
 Height : _____



Injured body part :
 Lumbar ☐ neck ☐ shoulder ☐ ankle ☐ knee ☐ hip ☐ elbow and hand ☐ thoracic ☐
 Nature of injury :
 Sprain ☐ strain ☐ dislocation ☐ fracture ☐ tendinitis ☐ postural ☐
 Cares needed
 Rest ☐ physiotherapy treatments sessions ☐ refer to physician ☐
 Final Diagnosis: _____