ORIGINAL ARTICLE

Frequency and Causes of Injuries of Female Basketball Players

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ABSTRACT
This study has been conducted to investigate the frequency and causes of injuries of athletes playing in Ünilig (Interuniversity Sports League). 90 female athletes participated in the study, and a questionnaire form prepared to examine the frequency and causes of sports injuries was applied. Reliability and applicability of the survey form used in our research was ensured by Öğün and Ocak, 2012. SPSS 18.0 package software was used to evaluate this questionnaire form. As a result of the questionnaires applied, it was observed that 46.7% of the athletes participating in the study have been subject to injury since they started playing basketball. A statistically significant difference was observed between the durations of playing basketball and the number of weekly training sessions held in the preparatory season. In the evaluation of the injury conditions of the athletes according to the activity, a significant statistical difference was observed between the training order, competition order and other out-of-field activities. Disabilities differ significantly when in the lower extremity and generally in the form of sprain. As the durations of playing basketball increased, rates of injury also increased. This difference was found to be statistically significant. Similarly, a statistical difference was observed between the playing durations of those who played basketball in the hall and in the open field. As a result, It has been found that the majority of basketball players were subject to injury and the causes for injury differed significantly between playing duration, playing ground, injury occurrence type and injured areas.
Keywords: Basketball, injury, sports, causes of injury.

INTRODUCTION
Number of organizations held in the field of basketball in recent years is the most important indicator of the increasing interest towards basketball. Turkey's success in both men's and women's basketball in World and European championships is the indicator of the distance covered by Turkey in basketball (Öğütveren 1993; Demirci 1995). Sports injuries occur when the endurance limit of tissues is exceeded as a result of the whole or a part of the body encountering a force exceeding the normal threshold (Uğur et al. 1999; Ozdemir et al. 2018). The National Athletic Injury/Illness Reporting System (NAIRS) has divided sports injuries into three groups based on this approach. 1. Minor injuries: Small injuries lasting 1-7 days. 2. Moderate injuries: Injuries lasting 8-21 days 3. Serious sports injuries: These are those which prevent participation in sports for more than 21 days or cause permanent damage (Kanbir 2001). Nose injuries are one of the most commonly encountered injury types in sports. Fracture of the nasal bone occurs as a result of a fall or an impact to the nose during sports (boxing, water polo, motor sports, etc.) (Yaman 2000; Griffith 2000). One of the most common types of injuries encountered in sports activities is injuries of the head area. Head and neck injuries may occur, especially during contact sports and ball sports. Although such injuries are observed in all sports branches, the most common situations are seen in horse riding, football, boxing and gymnastics fields. Especially in sports played with balls, serious injuries may occur when the ball hits the head (Kalyon 1994). Ear injuries are one of the injuries encountered in sports activities. Injury can occur to both the internal and external ear. External ear injuries can occur during more serious head injuries. Internal ear injuries can be observer together with serious head and neck injuries (Ergen et al. 2003). Causes such as a sudden and serious impact to the ear during sports or penetration of a sharp object into the ear can cause ear injuries. In cases of ear injury in athletes, symptoms such as pain and swelling of the ear, bruising of the skin around the ear, and in-ear bleeding are observed (Bağrıaçık and Açak 2000). Oral and dental injuries can be listed as cuts on lips and gums, tongue cuts, cuts and punctures of inner cheeks. This type of injuries can be caused by external factors or by the athlete's own teeth (Kalyon 1994). Shoulder tendon injuries are most common in the upper shoulder girdle muscles. These muscles are the muscles that move the arm away from the body and allow rotation. Acute and recurrent shoulder dislocations are seen especially in contact sports and sports with high probability of falling and hitting, such as skiing (Kanbir 2001). Knee is a joint that is often susceptible to injury during sports activities. Direct impacts forced adverse motions or repetitive overloads can cause damage the strong anatomical structures in this joint (Aşık and Atalar 2009; Bağrıaçık-Açak 2006). Apart from traumatic cases such as sprains and crushes, fractures and dislocations, the most common problems we encounter in feet are flat feet, calluses, warts, hammer finger and ingrown nails (Bağrıaçık-Açak 2006). Another unexpected situation that does not comply with these studies is the remarkably higher rate of injury during technical training. (Zorba, 1999,Ilkım and Mergan 2021) It is known that athletes are more exposed to falls and impacts, especially in branches that require tackling (Bavlı and Kozanoğlu 2008). In generally accepted researches conducted on sports injuries, it is observed that basic motor characteristics (strength, speed, endurance, balance, skill, etc.) occur as a result of hitting or direct impact during

challenging trainings and competitions. Based on these known facts, the research pattern was created on the causes and frequency of injuries of female basketball players.

MATERIAL AND METHOD

In this study, certain data were tried to be obtained by using the survey method. Materials were provided for our review with the contributions of 90 athletes who competed in Ünilig during 2014-2015.

Research Design, Population and Sample: The survey prepared by S. Augustsson and published in Scandinavian Journal Medicine and Science in Sports (akt.Javadifard, 2015, Ankara) was translated into Turkish in Turkey to for application to obtain data. The first part of the survey form consists of the first twelve questions to determine the training information of the participants while the second part consists of eight questions to determine the injury-related information throughout a season, which makes a total of 20 questions.

In the first twelve questions, questions such as how long the athlete has been playing basketball, whether the athlete has been injured since the athlete started playing basketball, what kind of activity the athlete was performing, the most frequent sports ground for injuries, what the injuries were due to, what were conditions that paved the way for the injury, how many weeks the athlete trained in the season are asked while questions such as previous injury areas and causes of injury, whether the athlete received first aid within the last year, and which physical and psychological mood changes the athlete felt throughout this process were asked in the remaining 8 questions. SPSS 18.0 package software was used to evaluate these data.

Data Collection Tools: SPSS 18.0 package software was used to evaluate these data. The data obtained were evaluated in the one-way analysis of variance in the SPSS 18.0 statistical software. The results are tabulated in terms of frequency, percentage distribution and significance levels at P<0.05 and P0.005.

Findings:

Table 1. Demographic Information Table of Participants

Variables		N	%
Age	15-18	8	8,9
	19 and over	82	91,1
	Total	90	100,0
Education Level	Primary	0	0
	High School	0	0
	University and	90	100,0
	Total	90	100,0
Basketball History	1-3 years	32	35,6
	2-4 years	45	50,0
	5 years and	13	14,4
	Total	90	100,0

Table 1 shows the demographic variables of the participants who participated in the study.

Table 2. Results of questions 1-8 are given.

		N	%
Have you been injured since you started playing basketball?	Yes	42	46,7
	No	48	53,7
What activity were you performing when the first injury occurred?	Weight	3	3,3
	Jumping	23	25,6
	Running	16	17,8
	I was not injured	48	53,3
What type of activity caused you to suffer from injury?	During Training	18	20
	During the Competition	25	27,8
	Other	47	52,2
What was the sports ground you were injured most often?	Hall	42	46,7
	Grass	1	1,1
	Concrete	5	5,6
	Other	42	46.7
How did you get injuries?	Hitting	3	3,3
	Falling	22	24,4
	Impact	11	12,2
	Other	54	60
Did you have any problems before the injury?	Yes	6	6,7
	No	81	90
Please mark the cause below which paved the way for the injury in your opinion.	Caused by inadequate	3	3,3
	Caused by exercise	4	4,4
	Caused by the sneakers you	15	16,7
	Caused by the ball or playing	20	22,2
	Caused by the struggle with the	9	10
	Other	39	43,3

Table 2 shows the responses of the participants to questions between 1 and 8.

Table 3. Results of questions 8-16 are given.

		N	%
How many weeks did you train during the preparation	2 – 5 Weeks	89	98,9
	6 – 8 Weeks	1	1,1
How many trainings did you perform per day during	1	88	97,8
	2	2	2,2
How many trainings did you perform per week	2	59	97,8
	3	31	2,2
How many trainings did you perform per week during the competition period?	1-2	57	63,3
	3	30	33,3
	4	1	1,1
	7 and more	2	2,2
How many weeks is your competition period?	3-4	1	1,1
	5	1	1,1
	8 weeks and over	88	97,8
Have you been provided first aid for injuries within the last year?	Yes	31	34,4
	No	57	63,3
Which of the following is the most frequent injury?	Sprain	29	32,2
	Bleeding	3	3,3
	Crushing	3	5,6
	Tearing	5	3,3
	Tendon or fiber rupture	3	5,6
	Crack or fracture	3	3,3

	other	42	46,7
What are the areas of previous injuries in your body?	Foot	3	3,3
	Ankle	23	25,6
	Knee injuries	7	7,8
	Leg injuries	1	1,1
	Achilles or patella, tendon injuries	2	2,2
	Lower back and back injuries	4	4,4
	Hand and forearm injuries	1	1,1
	Elbow Injuries	2	2,2
	Other	47	52,2
Do you use knee pads, bandages, creams, etc. for preventing or treating	Yes	32	35,6
	No	58	64,4

Table 2 shows the responses of the participants to questions between 8 and 16.

DISCUSSION AND CONCLUSION

The research aimed to determine the pre-season, competition period weekly and daily training durations, injury causes and types in Turkey Ünilig Women's Basketball Teams. It has been assessed that 35,6% of the athletes participating in this study played basketball for less than 2 years, 50% for 2-4 years, 14,4% for more than 5 years as well as their opinions about injury.

It is known that athletes are more exposed to falls and impacts, especially in branches that require tackling. Bavlı and Kozanoğlu (2008) reported in their study that the most common type of injury was sprains (67.2%), and the most injuries occurred during competition (62.1%). Çakmak (2012) reported in a study which investigated the types of injuries of athletes throughout a season that sprains occurred at a rate of 75.8%. Oğuz (1991) in the study attributed the injuries of basketball players to causes such as overloads, insufficient training during the preparation period, playing ground, and sports shoes. In another study conducted with the participation of 152 athletes, Dündar (1991), attributed the cause of injuries to excessive training with 28.35%, not warming up well and insufficient training with 16.41%. Similar studies have also shown that ankle injuries are the most common injuries in sports (Nelson et al. 2007, Önçağ et al. 1988; Cumps et al. 2007). Especially in fast games, changing direction movements performed when the body needs to speed up and slow down suddenly results in unusual strains of ankle and knee joints (Öğütveren et al. 1993). In their study, Kıratlı and Sanioğlu stated that the most common injuries in basketball players were ankle sprain (46.15%), knee ligament-tendon and meniscus injuries (17.95%) and back-lower back injuries (15.38%). In a similar study, McKay et al. (2001) reported that the most injured area on basketball players was the ankle (1.25%) and the knee area (0.29%). In the study conducted on female basketball players by Hickey et al. (1997), it has been reported that the most injured areas were the knee (18.8%), ankle (11.7%) and lower back region (11.7%). In similar studies in the literature, it can be observed that sports injuries were mostly in the lower extremity area (Esenkaya et al. 1994, Powell et al. 2000, Messina et al. 1999, Kingma and Jen ten Duis 1998). This situation can be expressed with a sport-specific reality. Recurrence of anterior cruciate ligament injuries is most commonly observed in soccer players, then handball players, then basketball players, volleyball players, and martial arts athletes. However, the hit rate of injury is highest for basketball players. Anterior cruciate ligament injuries occur three times more often in poorly prepared athletes, during, in the middle and at the end of a game, during the training season, when sudden movement changes are made without contact with the opponent on a post-jump landing or on dry ground.

The consequence is that most of the basketball players are exposed to injury, and the injuries seen mostly occur during technical works and overloads. In addition, most of the injuries seen are in the lower extremities and in the form of sprains. Causes of injuries, which are thought to be due to the nature of sports activities, should be analyzed well at the beginning of the preparation season, trainings should be planned accordingly, and the athletes should be ensured to start the competition phase with a complete psychological and physical well-being state. Physical fitness tests and medical checks should be done before the season and preparation seasons should be planned at the most appropriate times for branches.

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