

# Investigation the injury patterns and reasons of the Turkish first league female volleyball players according to playing position

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## Abstract

The aim of this study was to investigate the injury patterns of Turkish first league women volleyball players according to playing position. Totaly 84 firts leauge players who were average 24.1±7.5 years age and 11.4±4.7 years sport age participated in to the sduy voluntary. Data collected by using sport injury survey sheet which was developed by researcher. Survey investigated injury patterns whish were occured in last past 2 yaers. Survey analysis showed that % 77.3 of participant had injury before and injuries mostly (%62.1) accrued in training. Spiker was the most injured (%22.6) playing position, sprain was the most reported (%39.2) injury type, arm-shoulder was the most injured (%27.4) body part, overuse was the most injury reason (%47.3) and generally the injuries needs more than four week for recovery time (%52.3). According to findings it is possible to say that for the preventing injuries in first leauge women volleyball players, trainers should set the training loads carefully.

**Keywords:** Sport, volleyball, injury, female.

## Türkiye Bayan 1. Lig Oyuncularının Mevkilere Göre Sakatlanma Türleri ve Nedenlerinin İncelenmesi

### Özet

Bu çalışmanın amacı 1. Lig bayan voleybol sporcularının sakatlanma düzeylerini belirlemek ve mevkilere göre incelemektir. Çalışmaya Bayanlar voleybol 1. Lig'inde lisanslı olarak spor yapan toplam 84 bayan voleybol sporcusu (yaş ortalaması 24,1±7,5 yıl ve spor yaşı ortalaması 11,4±4,7 yıl ) gönüllü olarak katılmıştır. Çalışmadaki veriler, araştırmacı tarafından hazırlanan demografik form ve sakatlık geçmişi formu kullanılarak elde edilmiştir. Sporcuların son 2 yıl içerisindeki sakatlık geçmişleri mevkilere göre incelenmiştir. Çalışma sonucunda çalışmaya katılan sporcuların %77,3'ü daha önce sakatlık geçirdiği ve sakatlanmanın daha çok (%62,1) antrenman sırasında olduğu tespit edilmiştir. Mevkiler dikkate alındığında; en fazla (%22,6) smaçör mevkisinde oynayan sporcuların sakatlandığı, sporculardan en fazla burkulma türünde ve sakatlanma yaşadıkları (%39,2) sakatlanmaların en fazla (%27,4) kol-omuz bölgesinde gerçekleştiği, sakatlanma sebebinin en fazla olarak (%47,3) aşırı yüklenme olduğu ve sporcuların iyileşme süresinin genellikle (%52,3) 4 haftadan daha fazla sürede olduğu belirlenmiştir. Araştırma bulgularına dayanarak, sakatlanmaalrın önlenmesi için antrenmanda aşırı yüklenmelerden kaçınılmasının etkili olabileceği söylenebilir.

**Anahtar Kelimeler:** Spor, voleybol, sakatlık, bayan.

## INTRODUCTION

Volleyball is the team game what has its own rules, motion models and the uncurtein game duration. Because of the net which is dividing the court in to the middle and prevent contacting each other, it is possible to guess that the injury frequency

is lower in volleyball according to other team games. However, studies proved that injuries were occured quite often in volleyball (10,14,15,17). Researchers noticed that, overuse injuries were as often cocured as acute injuries. While ankle sprain was the most occured acute injury, shoulder and knee injuries

were the most occurred overuse injuries (1,4,9,17). Because of the game mechanics that need jumping very often and by the rule of throwing the ball over the net it is possible to predicting the foot and shoulder areas should be the most injured body part. However the question should be what is the reason for injury happen in that body part? Were these injury varies according to playing position?

Because of the previous studies focused on amateur players, studies on elite players were very rare. Especially this study was the first which was investigated the injury condition of first league Turkish Female Volleyball players. Thus the aim of this study was the investigation the injury condition and comparing it according to playing position of high level female volleyball players.

## MATERIAL & METHODS

### Participants

Totally 84 female volleyball players (24.1±7.6 years age and 11.4±4.7 years sport age) who were played in different 12 teams (Yeşilyurt, İller Bankası, Konya Ereğli, Nilüfer Belediyesi, Galatasaray, Eczacıbaşı, Fenerbahçe, Beşiktaş, Vakıfbank, Ted Koleji, Ankaragücü, Pursaklar Belediyesi) in Turkish Arom Female volleyball first league joined in to the study voluntarily.

### Data collection

Data collected by using sport injury survey sheet which was developed by researcher. Survey consist of two parts and 19 questions that investigate demographic variables (5 questions) and injury

conditions (14 questions) what were happened in last past 2 years.

### Statistical Analysis

SPSS 16.0 statistical program used for analysis. Findings showed as frequency (n) and percentage (%).

## RESULTS

Demographic variables of player according to playing position showed in Table 1. Analysis showed that average body weight, body height, body mass index (BMI), age and sport age were 183.1±7.9 cm, 67.7±9 kg, 20.1±1.8 kg/m<sup>2</sup>, 24.1±7.5 year 11.4±4.7 year respectively.

Injury history and injury occurrence of players according to playing positions showed in Table 2. Analysis showed that 77.3% of players had an injury before. Injuries occurred in the training (62.1%) mostly. Spiker was the most injured players (22.6%) and injured occurred in training mostly (37.0%).

Sport injury condition according to playing position of players cont. Showed in Table 3. Analysis showed that sprain was the most occurred injury type (39.2%) and mostly occurs in libero players (25.8%). Besides injuries majority occurred in arm-shoulder area (27.4%) and spiker players injured from that area generally (39.3%). In addition overuse was the most injury reason (47.3%) and spiker players mostly injured because of overuse (26.7%). Injuries need more than 4 weeks for recovery in general (52.3%) and spiker players need that duration mostly (32.4%).

**Table 1.** Demographic variables of players (x±sd).

	Spiker (n=29)	Setter (n=12)	Opposite setter (n=11)	Middle player (n=18)	Libero (n=14)	Total (n=84)
Body Height (cm)	184.4±7.3	181.5±5.7	185.3±5.9	187.8±6.2	173.7±6.9	183.1±7.9
Body Weight (kg)	69.6±8.2	66.7±8.4	68.8±9.6	71.4±8.0	58.7±6.4	67.7±9
BMI(kg/m <sup>2</sup> )	20.4±1.7	20.1±1.6	19.9±1.8	20.2±1.8	19.4±1.9	20.1±1.8
Age (year)	22.4±3.9	22.7±3.3	24.6±3.0	27.1±14.5	23.7±4.4	24.1±7.5
Sport age (year)	10.8±4.5	10.7±4.1	11.6±3.7	11.7±5.3	12.6±5.7	11.4±4.7

**Table 2.** Injury conditions according to playing positions (n-%).

		Spiker	Setter	Opposite setter	Middle player	Libero	Total
Injury history	Yes	19- 22.6	7- 8.3	10- 11.9	16- 19.1	13- 15.4	65- 77.3
	No	10- 11.9	5- 5.9	1- 1.1	2- 2.3	1- 1.1	19- 22.6
Injury occur	In the training	17-37.0	3-6.5	7-15.2	13-28.3	6-13.0	46-62.1
	In the game	5-18.5	5-18.5	4-14.8	5-18.5	8-29.6	27-36.4
	In free time	1-100.0	0.0	0.0	0.0	0.0	1-1.3

Table 3. Injury conditions according to playing position cont (n-%).							
Questions	Variables	Spiker	Setter	Opposite setter	Middle player	Libero	Total
Injury type	Muscle rupture	7-26.9	2-7.7	6-23.1	6-23.1	5-19.2	26-32.9
	Fracture	0.0	1-12.5	3-37.5	3-37.5	1-12.5	8-10.1
	Dislocation	1-20.0	1-20.0	0.0	1-20.0	2-40.0	5-6.3
	Contusion	5-41.7	0.0	2-16.7	4-33.3	1-8.3	12-15.1
	Sprain	7-22.6	4-12.9	5-16.1	7-22.6	<b>8-25.8</b>	<b>31-39.2</b>
Injured body part	Head- neck	0.0	1-33.3	0.0	1-33.3	1-33.3	3-2.9
	Arm- shoulder	<b>11-39.3</b>	1-3.6	6-21.4	6-21.4	4-14.3	<b>28-27.4</b>
	Back-hip	3-42.9	0.0	0.0	2-28.6	2-28.6	7-6.8
	Hand-finger	1-11.1	2-22.2	1-11.1	4-44.4	1-11.1	9-8.8
	Chest	0.0	0.0	0.0	0.0	0.0	0.0
	Leg	3-42.9	1-14.3	1-14.3	1-14.3	1-14.3	7-6.8
	Knee	7-31.8	2-9.1	3-13.6	5-22.7	5-22.7	22-21.5
	Foot	7-26.9	2-7.7	4-15.4	8-30.8	5-19.2	26-25.4
Injury reason	Wrong technique	0.0	0.0	0.0	1-100.0	0.0	1-1.1
	Overuse	<b>12-26.7</b>	5-11.1	7-15.6	11-24.4	10-22.2	<b>45-47.3</b>
	Court	2-25.0	1-12.5	1-12.5	2-25.0	2-25.0	8-8.4
	Lack of strength	8-34.8	3-13.0	4-17.4	4-17.4	4-17.4	23-24.2
	Insufficient warm up	2-25.0	0.0	0.0	0.0	2-25.0	4-4.2
	Opposite team player	5-34.7	2-14.3	0.0	5-35.7	2-14.3	14-14.7
	Poor quality equipment	0.0	0.0	0.0	0.0	0.0	0.0
Recovery time	1 week	2-28.6	0.0	0.0	4-57.1	1-14.3	7-10.7
	1-4 week	6-25.0	2-8.3	4-16.7	6-25.0	6-25.0	24-37.0
	More than 4 week	<b>11-32.4</b>	5-14.7	6-17.6	6-17.6	6-17.6	<b>34-52.3</b>

## DISCUSSION

In this study analysis showed that 77.3% of players had an injury before. Previous studies noticed that injury rate of female volleyball players were various. Uluöz (16) found that injury rate in second leauge of female volleyball players were %37.6. In another study, Bavlı (8) found that injury rate was %88.6 in second leauge female volleyball players. Other findings reported by Agel ve et al. (2) that injury rate was 4.58 per 1000 players. Baneka et al. (2009) reported that injury rate was %46.4 in male volleyball players. While Bahr and Bahr (4) showed that injury rate was 1.7 per 1000 players, Solgard et al. (15) noticed that injury rate was 1.9 per 1000 players and Aagaard ve Jorgensen (1) proved that 3.8 per 1000 players. Studies proved that injury rate was higher in female players. The strength differences between gender should be the reason that higher rate.

Recent study found that players injured in training mostly (62.1%). Previous studies noticed similar findings that injuries occurred in training (6,8,12). However, only one study noticed that female volleyball players injured in game majority (16). It is possible to say that the over loading in the training for prepartion the game may cause injury. Findings of this study which were support this

prediction showed that players generally injured by overuse (47.3%). Previous studies noticed various injury reasons for female volleyball players. Uluöz (16) and Baneka et al. (6) found that majör injury reason was contacting with opposite team player (35.0%). Besides Malliou et al. (12) noticed that the mostly reason was incorrect spawls (26.8%). In addition as the same as this study Bavlı (8) noticed that main reason was the overuse (32.8%). These different findings of literature may cause of the participants were the members of sport clubs which were performing in different leauge level and the players may had different technique level.

Because of the Volleyball game needs quick and often jumps, sprawls, blocks and ball throwing arm and foot should be most active body areas. In this study findings showed that sprain was the major injury type in first leauge female volleyball players (39.2%). Arm-shoulder and foot were mostly injured body parts (27.4%, 25.4% respectively). As the similar, previous studies noticed that sprain was the major injury type and foot was the most injured body part in female volleyball players (6,8,16). Also Reaser et al. (13) noticed that volleyball players had higher risk for ankle sprain by acute trauma and for injured from knee and shoulder by the overuse.

In volleyball players have different game positions which have their own tasks. Spiker may be the most active playing position in the game. As the proving of this prediction spikers were the most injured players as found in this study (22.6%). Findings of previous studies were various. Literature included that mostly injured playing positions were middle player (6,8) and spiker (12). Because of the game mechanics these playing positions were the most active positions. So that it can explain why that positions were mostly injured. In addition researchers proved that injuries mostly occur on front of the net and general reason of the injuries were the unsuitable floor while landing after the blocking or spiking (3,5,11).

Especially about the first league female volleyball players there is lot of study findings needed. According to findings it is possible to say that for the preventing injuries in first league women volleyball players, trainers should set the training loads carefully.

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