

The prevalence and mechanisms of injuries in male professional beach soccer players in Yazd province

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ABSTRACT

Background: Including the injury prevention, recognition of common injuries in sports and causes damage. The aim of this study was to investigate the prevalence and mechanisms of injuries in male professional beach soccer players in Yazd province. **Methods:** The present study is a survey- descriptive research that was conducted as a field study. Number of 50 players currently in the premier and a league country were selected as samples. For collecting information, the modified injury report questionnaire by Fuller et al. (2006) was used. Data were analyzed by using chi-square test at a significance level $P < 0.05$. **Results:** The results showed that the most common injuries were in lower extremities (%60.39) and then contusion and bruises (%24.75). Also, observed that the time of contest with 68.32 percent in the 3rd time of the match (%52.17) more damage were occurred. Furthermore, it was shown that the incidence of injury in games away from home (%68.12), sunny (%94.06) and late season (%53.46) was higher. Extent of the impact injuries (%38.70) was significantly higher than the non-injury impact (29.62 percent) $P < 0.05$. Also, 32.67 percent of damage was diagnosed repeated injury. **Conclusion:** Most of the injuries in this sport are caused by lack of shin guard and shoes on the legs and feet, and hitting the ball is the most important factor for beach soccer injuries.

Keywords: Incidence, Mechanisms, Injury, Beach Soccer.

Introduction

Football is one of the most popular sports in the world today, it is estimated that around 200 million men and women all over the world are somehow active in football field ^[1]. Football is a contact sport which needs physical, physiological, technical, and tactical skills ^[2]. All these factors together with an increasing trend towards this sport and competitions and matches has increased the prevalence of injury in this sport ^[3, 4]. Injury is considered a danger and a potential threat for this sport ^[4]. In general, football is classified as a high-risk and contact sport ^[5].

Beach soccer is a branch of football with its technical and legal features, leads to beautiful, acrobatic and emotional movements that make it aggressive, full contact, attractive and most popular in the world. Many studies have been done in football and

futsal, and also about their movements and injury factors have been widely known, but little studies have been done on beach soccer. On one hand beach soccer is proximate to futsal regarding techniques and time of play, and on the other hand it is proximate to football in the level of play, but different attires of players and sandy land are the unique properties of this game. So naturally, different injuries with different mechanisms are seen in this sport ^[6].

Because of the high prevalence of injury, it is costly for the team to restore the health of the injured player. Also, in some injuries, the injured person may have to take rest for more than a month to recover, which is not economically viable in today's football. Scrutinizing the proportion of incidence of harm and health hazards, is the basis of preventive programs ^[6].

Therefore, familiarity with the causes and mechanisms of injury in athletes, especially young athletes, is a necessity due to their physical, motional and mental characteristics which has been considered in sports circles ^[7]. Among the beach soccer teams of the country and footballers participating in the Premier League Category 1, Yazd teams were among the top national teams. Therefore, this study was conducted to determine the prevalence and mechanism of injury in men football players of Yazd province.

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Method

The present study is a descriptive-survey study that evaluates the prevalence and mechanism of injury in football players of Yazd beach soccer teams. For this purpose, 50 players from the Gulsaposh and Kosar Ardakan teams of Yazd who are currently in the Premier League of the country are selected as the statistical sample.

The mean age of subjects was 24 ± 3.8 years, their mean weight was 74.7 ± 6.5 kg, mean height was 178.6 ± 6.4 cm, the mean playing field in beach soccer was 3.4 ± 1.4 and average attendance in the nation beach soccer team was 2.66 ± 0.1 years. To collect information, Fuller et al. (2006) modified version of questionnaire was used.

This information questionnaire includes the following: Injury time, injured part, type of injury, cause of injury and injury mechanism. Injury time in each match was divided into four periods: first half (first 12 minutes), second half (second 12 minutes), third half (third 12 minutes) and extra time. The time to return to the game was divided into four periods: returning time to the game in less than 8 days, returning to the game at equal times and more than 8 days, returning to the game in less than 30 days, and returning to the game more than 30 days. Regarding injury areas, 17 areas were investigated. In types of injuries occurred, 22 types were investigated in the form of 13 options. In this questionnaire attention was paid to other factors, such as whether injury was a recurrence, the cause of the injury, whether it was the impact of hitting and contact with a player or a ball, or without hitting and contact. It is worth mentioning that in this research, another questionnaire, called the Personality Questionnaire, was compiled in the form of options such as age, height, weight, play post, kicking leg (dominant) and player's previous injury variables of the field Information was collected. The questionnaires were completed through interviews and with the help of doctors, coaches and team players completed.

The data was analyzed by descriptive statistics to determine percentage, table and frequency distribution, as well as Chi square test (χ^2) was used to determine the injury ratio at different game times. Statistical analysis was performed using SPSS software (version 20). The significance level of the tests was $P < 0.05$.

Results

In the last year, total 101 injuries were observed in 16 games of Yazd province beach soccer players. The results of this study showed that the most injuries were in the lower extremity injuries which account for (60.39%) and in the foot and toes (17.80%), followed by shin and Achilles tendon injury (16.83%), then the lumbar, sacrum, and pelvic parts were (13.86%) in the third row were common injuries (Table 1).

Table 1: Injured parts of the body

(%) Percentile	Number	Part of injury
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1.98	2	Head/face
3.95	4	Neck/cervical spine
4.95	5	Shoulder/clavicular
6.93	7	Sternum/ribs/upper back
13.86	14	Lower back/pelvis/sacrum
1.98	1	Elbow
5.93	6	Hand/ Wrist/ finger/thumb
0.99	1	Abdomen
10.95	11	Hip/groin
4.95	5	Thigh
7.92	8	Knee
16.83	17	Lower leg/Achilles tendon
1.98	2	Ankle
17.80	18	Foot/toe
100	101	Total

Regarding the types of injuries, contusions, Hematoma (24.75%), and strain (13.86%) was the most common type of injury. 43.75% of the injuries occurred as contusions on the feet and toes and 31.25% in the waist. Shin and Achilles injuries (41.66%) hand and fingers (34.33%) had the highest share of strain injury. Sprain injuries were not observed in feet, and skin lesions occurred only on the toes. All injuries related to the tendons and ligaments were divided (tear, sprains, strains, dislocation) as strains and muscle's injures as sprains (Table 2).

Table 2: Types of injuries

(%) Percentile	Number	Type of injury
0.99	1	Concussion (with or without loss of consciousness)
11.94	12	Fracture
3.95	4	Other bone injuries
4.95	5	Dislocation/subluxation
6.94	7	Sprain/ligament injury
4.95	5	Lesion of meniscus or cartilage
10.95	11	Muscle tear/sprain
13.86	14	bursitis/strain
24.75	25	Hematoma/contusion/bruise
8.91	9	Abrasion
5.93	6	Laceration
0	0	Nerve injury
0.99	1	Dental injuries
0.99	1	Other injuries
100	101	Total

In the feet and toes injuries, 55% of the injuries are related to metatarsal bones, especially the second and third bones, as well as 45% of injuries are related to the toes, especially the hallux of the foot.

The results showed that the amount of injury during the match (68.32%) was higher than the time of training (31.68%), which was the highest in the third half (52.17%) and in the first half 13/05%) had the lowest percentage of injury. The incidence of injury in outside home games (68.12%) was higher than inside house injury (31.88%). Regarding the incidence of injury in

different game modes, most injuries occurred during the match in the team which lost the game (69.57%). Most of the injuries in this study occurred on sunny days 94.06% and 3/96% in cloudy weather and 1/98% in rainy weather. In addition, the incidence of injury at the end of the season (53.46%) was more than the beginning of the season (26.74%) and the middle of the season it was 19.80%.

Percentage of injured players returning to the game less than eight days is 56/44%, equal time and more than eight days 15.84, less than thirty days 12.87 and in more than 30 days 14/85 %. The results showed that the amount of injury in the dominant leg was 72/13%, significantly higher than the non-dominant leg, 27/87%.

It was also observed that defenders with 24.75% had the highest and goalkeepers with 8.91% had the least amount of injury among the different posts in the beach soccer. The goalkeepers are more likely to have injury in upper extremity in hands and fingers (30%), defenders (back) also mostly in the lower extremity that is feet and the Achilles tendon (28%) and in forward players have the most injuries the shin and Achilles tendon (29.6%).

The amount of contact injuries was significantly 70.38% higher than non-contact injuries 29.62%. In addition, 32.67% of the injuries of the players were detected to be reinjuries.

Discussion

The purpose of this study was to investigate the prevalence and mechanism of injuries in male beach soccer players in Yazd province, which was studied on 50 footballers from two professional teams in the Premier League in a season. As observed, most injuries occurred in beach soccer are in the leg and shin region, which was similar to previous research^[8, 9], which may be due to the lack of covering for legs and not wearing of Shin Guard.

In this study, the main reason for injury was more likely to hit the ball (42.57%), the results were similar to those of the literal research of colleagues (2012); despite the fact that the beach soccer ball is very light and flexible, it still causes injuries.

Studies conducted in football have estimated the highest prevalence of injuries in the knee and ankle of footballers^[10-13]. However, if observed, these injuries do not have much to do with beach soccer injuries. This can be due to the game-surface specifications. Many of the ankle and knee injuries occur due to landing on hard surface, or in some of them foot because of shoes or cleat of shoes is fixed on the surface and body rotates. But in the sandy ground due to the flexibility and shock absorption level these sort of injury is less.

Type of injury allocated in this study is the most common injury "contusion". Haghghi and *et al.* Also reported this injury as the most injuring^[9]. Also, in the studies conducted on football, the highest proportion of injuries were reported for contusion^[5, 12, 14], which seems to be expected due to the nature of the contact of this field and football.

In this study, most of the injuries are the dominant limb (72.13%), which is in line with previous studies^[9]. Of course there are similar reports in football^[11, 12, 15, 16]. However, Hawkins and Fuller (1999) also state that number of injuries in the dominant of body is significantly higher than that of non-dominant^[11]. Which may be due to the use of dominant leg in comparison to non-dominant foot in movements such as shooting, dribbling, and other clashing in the ground. While it has been reported that the ratio of muscle strength in the hamstrings to quadriceps in the dominant leg is lower than the non-dominant^[15, 16], although this factor was not the objectives of this study, but perhaps this disproportion of strength is one of the major causes of more injuries in the dominant leg. The reasons for this imbalance is not known but may be due to the nature of the game, because players repeatedly shoot, pass and dribble, with dominant leg, and this leads to an imbalance in the ratio of hamstring muscle strength to quadruple^[16].

The greatest injury is experienced by forward players and back defenders, which could be due to the clashes of forward and back defenders' players in beach soccer. In addition, with a wide area of 9 meters, these players have to cover a wider area, of course this adds to the beauty of the game. The total of these factors can be a sign of much clashes in front of the beach soccer goals. In a study on women beach soccer, goalkeepers reported injury more than other posts^[9]. In general, in the present study there was no significant difference in the number of injuries with regard to the post (position) in the game, which can be concluded that the incidence of injuries in all posts is the same.

It was observed that number of contact injuries were more than non-contact, which was in consistent with past research^[9], including the study of the American Committee of health and medical Sports about Young Football Players^[7], Hawkins and Fuller's also reported this in their study. However, it should be noted that football and its branches are contact sports and the severity of the clashes is high, and this can be due to the high prevalence of contact injuries in this sport and its tendencies^[2, 3, 11].

Conclusion

Overall, according to the results of this study, which is one of the first reports in the field of beach soccer, it can be concluded that most of the injuries experienced in this field of sport are due to lack of leg and shin covering. Next, the hitting the ball was the main cause of injury in beach soccer, which could possibly be prevented by changing the characteristics of the ball.

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