



Identifying the Incidence and the Causes of Injuries in Female Football Players in Iranian Premier League

KEYWORDS

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ABSTRACT *The main goal of this study was to identify injuries in female football players in the Iranian Premier League. The Statistical Society of this study included 200 football players that purposefully from injured samples including 70 football players were selected and participated in the study. The information about injuries has collected in a period of 2 years retrospectively by using a standard questionnaire of Hawkins and Fuller through the players, physicians and team leaders. The results on 145 injuries for 10 football teams showed generally lower extremity injuries was (62.31%) that the highest of them happened (50%) in the knee, the most common type of injury in footballers was sprain (45.51 %). The tackling and hit the kick, was the leading cause of injury. Given the alarming prevalence of injuries in women football and prevalence of knee and ankle injuries in varying degrees of strain and sprain because of tackling, this recommends to coaches and team physicians in addition to developing and implementing prevention strategies such as identification and specific training, helps the players to reduce injuries.*

Introduction:

Football is the most popular sport in the world. International Federation of Association Football (FIFA), in a statistical report announced that the number of people in the worldwide who play football are two hundred and sixty-five million people that the number is equivalent to four percent of the world's population. Also, this reported that the number of people who play football in Iran is one million and eight hundred and six thousand that four hundred and fifty thousand of them are officially registered. According to the report, 301 thousand clubs worldwide and 120 football clubs in Iran are working in the field. Although this field is so popular but is the most injurious sport in the world [1]. Due to increasing development of professional leagues and a large number of football players, the risk of injury and consequently the costs of injury in the sport are considerable. Football is a team sport that requires potential impact of physical, psychological, technical and tactical [20]. For example, football players get injuries on average with 710 injuries per 100,000 hours of racing or training, so have been reported that the overall level of injury to professional football players is about 1000 times higher than industrial workers [11]. Available studies indicate that the risk of injury in football is high. The incidence of injuries in footballers about 10 to 35 injuries per 1,000 hours of racing has been reported. It means that any player in each year faces limiting injury of performance which involves significant costs [11]. In the case of the women games in New York, the overall rate of injury per 100 hours, 74/4 cases have been reported that the differences in men rather than in women and in men than in older men was not significant [15].

Ekstrand et al reported that, among female footballers, 60% of injuries occurred in the lower body and most affected areas are the knees, head, and foot and ankle sprain is the most common type of injury. [5]

Roi et al, report on their study that the majority of injuries in women football was non-collision. Usually injuries in official competitions were collision and in unofficial competitions and training injuries were non-collision mostly [21].

Bahr and Racer in their study reported that, 19-10 % of acute injuries that treated for football players in emergency rooms are about women. [2]

Jacobsen et al. in a study of Swedish elite female football players reported that the prevalence of hamstring injuries in this group are high, and with specific trainings, pain clearly decreases so that the amount in the trained group was (3/15) and in the control group was (10/15) and also trained group showed a greater resistance to injury and recommended that exercises and special training to prevent injuries should be done on a regular basis [12].

putukian et al reported that in their study on female players, the overall rate of injury per 100 hours were 4/74 cases and 25 of 38 cases of injuries were mild and 27 injuries occurred in the Lower body and the most common injuries is the ankle and severe injury was about the knee and the collected information on this matter pointed out that the injury to the players in indoor is less than outdoor, and also stated that injuries always happen both in indoor and outdoor [16]. research and study on the characteristics of the muscle and bone of the lower extremity in 26 male professional football players showed that as a result of lower limb injury of 21 persons got number 2/5 or less in control, coordination, flexibility walk, indicating that this is a deviation from the normal coordination during embarking or raise one leg and also, 15 persons had trouble in lifting the knee and walking [23]. The incidence of injuries of adult females was lower than adult males has been reported [4]. For example, Jacobsen et al (2007), reported that there are 13/9 injuries per 1,000 hours of racing in the

Swedish elite female players [12].

Julie et al. (2007), also stated that female players in the match, suffered sprains ankle ligaments 4 times more than in the training, also the players in the match got lower extremity injuries 13 times more than the training [13]. Despite low incidence of injury in female football players rather than males, many types of the injuries occur for women, for example, the incidence of ACL injuries in women due to hormonal influences, the small size of the gap between the knee condyle and hamstring muscle weakness, three to four times more likely than men has been reported [9].

Also Giza et al.(2005), reported the rate of injuries is 12/63 per 1,000 hours of the racing in the National Women Football League Players in America [10]

Faude et al. (2005), reported that the rate of injuries per 1,000 hours of the racing among professional footballers is 3/23 in Germany [7]. Junge et al. (2004), reported the incidence of 73 injuries per 1,000 hours of international tournament football matches for men and 30 injuries per 1,000 hours of competition for international women football tournament [14].

The important point is that the injured athletes, in addition to the loss of physical, psychological terms are also serious threats for them. it seems that, the negative effects of injuries among female athletes must be particularly considerable. In Iran, comprehensive research has not been done in this field and such investigation seems very necessary. And also in spite of the various problems of women football at different ages in different countries, yet, there is no enough extension to the study of injuries on female footballers. Therefore, the information in this section particularly in Iran is not very noticeable, and more points are needed to identify the causes, extent and type of injury to be assessed. From this section is not very noticeable, particularly in the country and needed to learn more for identifying, causes, extent and type of the injury. The Necessities of the above have prompted researchers to determine the incidence of sports injuries in female football players in Iran. There are reports based on specific definitions of football injuries and risk factors to reduce the harm are the important points that there is a vacuum in the internal investigation about them. By identifying the extent of the injuries, we can make the necessary recommendations to prevent the risk of injuries on football athletes and it is also provided necessary guidance to the coaches in their training program. The results of this research provides both prevention of injuries especially in girls and necessary cost-saving on treatment costs.

Method

This study examines the prevalence of injuries in female footballer and statistical description of the incidence of injury(injured area, injury mechanism, the cause of injury, type and severity of the injury), the research used the methods of descriptive research and inferential statistics. The statistical society of this study included 200 female players of the Premier League football clubs, including 10 clubs (Esteghlal Tehran, Malavaan, KosarSirjan, Shensa, Shahrdarie Bam, Parisa, Shahrdarie Eslamshahr, Bushehr,Mobarakeh Isfahan,Tejaaratkhaneh). Among them,70 injured player were selected. The information collected through questionnaires and referring to the caregivers and physicians of female football league clubs. In collecting data on injuries of athletes, a retrospective study in a specific period of time (2 years old) were used. Using

purposive sampling, all the players were identified by the questionnaire. Thus, they completed the statistical sample for the project, consent form and personal information form and also completed hawkins and Fuller valid questionnaire. The research was analyzed by using one-sample and two-samples test. The assumption so significantly were evaluated (P<0.05) and for data analysis software SPSS (ver21) was used.

Results:

Describing the characteristics of football players

You can see the characteristics of the testable features about age, height, weight, background and other features in Table 1.

Table 1: describing the characteristics of the players

Lost match	Background (year)	Weight (kg)	Height (cm)	Age (year)		
3	6/7	57/3	163/42	22/18	Mean	n=70
1/2±	3/3±	7/5±	7/7±	3/5±	SD	
9-1	19-1	84-40	178-137	30-15	Range	

Table 2:The players' Injury time in the first and second half

In Table 2, the football players have been injured and observed that the injury time in the second half was more than the first half.

Total	Second half	First half	Time	Activity
70	42	28	n	Soccer
100	60/3	39/7	0/0	

Table 3: Time of injury to the players in training and competition.

Match	Training	Time	Activity
45	25	n	Soccer
65/2	34/8	0/0	

In Table 3, it is specified that depending on players' training and competition,the injury occurred.

The Background of knee surgery

Some players have had knee surgery and that is why in Table 4 the background of knee surgery of the players are given. 24.6% of football players have had knee surgery.

Table 4: Evaluation of knee surgery in soccer players

Non-Surgery	Surgery		
52	18	N	Soccer
75/4	24/6	0/0	

The severity of the injury

Table 5, the severity of the injuryof the football players is specified. As it can be seen, injured playershad Medical leave more than a week, 60% of the players in the game have been in this situation.

Table 5: evaluation of the severity of the injury.

Rest(more than a week)	Rest (a week)	Rest(3days)		
38	9	21	N	Soccer
60	9/1	30/9	0/0	

Types of the Injuries among the Football Players

All sorts of injuries depending on their type can be classified into 6 groups that the information related to the injuries frequency is given in Table 6 below. You can see that which types of injuries are more frequent. The types of injuries include the knee meniscus injury, muscle injury, joint injury, bone injury, tendon injury and nerve injury and other injuries, respectively. Sprain injury, dislocation or subluxation in football with plenty of (66) is allocated to the most common types of injury (45.51%), and the other injuries as the least frequent type of injuries (6) have been found (4/1%).

Table 6: investigating the type of female football players injury

O/0	n	Type of injury
51/5	8	Meniscus injuries
79/33	49	contusion/bruise tear/ strain/
51/45	66	sprain/dislocation/subluxation
51/5	8	Open fracture/ Close
51/5	8	tendinitis
1/4	6	Ets
100	145	Total

The causes of Injury

The Information contained in Table 7, shows football players' causes of injury. As it can be seen in the table, the most common cause of injury is related to the first reason about the tackling, hit or kicks.

Table 7: the causes of injury in female football players

O/0	n	Causes of injury
37/49	39	tackle/ hit/ kick / elbow hit / ball hit
19/15	12	running/ diving/ pulling/ turning/ landing/ jump/ throwing
99/18	15	shoot/ pass/ head strike/ dribbling
45/16	13	Etc
100	79	total

Injured areas

The Information contained in Table 8, shows injury in football is in what extent and in what areas. As it can be seen that most of the lower organs got injured and the most of the injuries affected knee (50 %).

Table 8: injured areas of female football players

combinatorial	Lower extremity	trunk	Upper extremity	Head and Neck	injured areas
14	43	3	5	5	n
85/18	31/62	34/4	25/7	25/7	0/0

soccer

Discussion and Conclusion:

The main goal of this study, analyzing injuries in female football players in the Premier League of Iran In this study, a total of 145 injuries were recorded for 10 teams and most of the injured players had medical leave more than a week, in football 60 % of football players were in such a situation. Most injuries occurred in the lower body (62.31 %), the highest of injuries were in the knee (50%) and lowest of them were (2%) in the hip groin. The background of knee surgery was (24.6%). Because in the simplest possible analysis, we can say football is a sport that can be done by your legs and almost all of the skills of running, hitting, controls done by the lower limbs. The lower body suffer the maximum pressure of trainings. The lower body accomplishes weight of the athlete to static modes like standing, and also the dynamic modes such as running,

jumping, changing. Internal muscle forces and external impact of lower limb exerted the lower body of the players were so more than the upper body. Junge et al. (2004), Price et al. (2004), Hawkins et al. (2001), and Junge et al (2006) have reported the injury of the lower extremity in above [11,14,15,19]. Giza et al reported that 60 % of injuries in female football players occurred in the lower body and the most injured areas were the knee, head, foot, and ankle sprains were the most common injuries [9]. Melbourne College of Sports Medicine Center reported that the most common vulnerable are as in football are the knee, arm, shoulder, leg and elbow, respectively [8]. James (1981), in his study reported that in football, one-third of the injuries occur in players' lower extremity.

The most common type of sprain injury was (45.51%). Ligaments ACL and PCL together are known as cruciate ligaments of the knee, the main task avoid moving forward and back leg and also control the rotation of the inner and outer knee and mostly get injured by sudden stops and turns. The injuries which we talked about mostly happen in the sports that are associated with stops, turns and landing mainly they occur non-collision (85%). Such movement patterns seen in football mostly. There were complex open and close surgical techniques and also a variety of rehabilitation measures to reconstruct, especially using of ACL reconstruction that according to its application, causing significant costs. The knee surgery is the most expensive and the most common cause of injury in football.

Cumps et al (2008), in their study reported that the highest medical costs are for ACL injuries. Its reason can be this that the lower limbs are more involved in football. [3]

Tackling, hitting, kicking are the main causes of injury in this group. However, football is full of conflicts and confrontations, catching the ball means to fight for it and physical encounter is inevitable in this sport. More research reported that getting tackled and tackling are the mechanisms of most injuries. Nilsson et al. (1989), also believe that tackling is the cause of injury in their research [18].

The severe of injury was more than moderate and mild and the players got injured more in the second-half and during the official game. It seems that a major cause of injuries is exhaustion which occurs more in the semi-finals. Fatigue not only impaired decision-making ability of the players but the player might be imposed more psychological stress which can be another factor for injuries. Tired muscles do not have the proper coordination of nerve and muscle, and thus are susceptible to get injured [17]. Price et al (2004), reported that there are more fatigue in the competition than in training and more strain muscle occur in training than the competitions [19]. Julie et al (2007), also stated that the players in the competitions get sprains 4 times more than trainings [13]. Jacobson et al (2007) stated that the incidence of knee injury in a match is more than in training [12]. Emotional and stressful factors which are one of the factors underlying the injuries occur in competitions more than trainings. Because training is the introduction of the team's preparation for the match and getting result. Thus, in competition the severe of injuries and collisions are usually over the training. Fatigue which has already been mentioned as a factor of injury happens more in the competition than in training, and there is more opportunities to rebuild and rest in the trainings than the matches. Each of the above reasons can be effective on the result [5,17].

The injuries which were considered in the study can be accounted a statistical program to reduce harms. The information which obtained here provides possible materials to reach an analysis of the program of the football club and the ability to preventive programs. It is an accepted fact that any type of training or physical activity is associated with risk of injury. Taking into consideration the popularity of football and also its high-risk nature, this can be expected that injury rate in this field is growing. These injuries sometimes result in physical disability associated with pain or other physical problems, which in turn leads to the use of medical resources and probably absence from the competition and training which its result also causing financial costs to the respective clubs.

The statistics of this study will help policymakers and relevant authorities in respect to the salient points of injuries, the types of injuries and the causes of injuries can present some programs to prevent or reduce these injuries by using the available information.

For this purpose, it is necessary to assess the injuries and the relevant factors. The purpose of this assessment is to help policymakers of the respective sports. It seem they

need to research this to decide whether or not to implement the new health-care. In this context, it is necessary that all the injuries and the effects of them are included in the analysis and this is who bears the costs and who will suffer from the effects of these costs is maybe a secondary issue because What is more important is the player as a human trustee to the club and its leaders and as a national asset who should be inspiring for all people and with correct knowledge they should reduce the chance of the player's injury and keep the athlete's career pathology and corrective exercise movements away from the risk of injury .

REFERENCE

- Andersen, T.E., Florenes, T.W., Arnason, A. and Bahr, R. (2004). "Video analyses of mechanisms for ankle injuries in football". 2. Bahr, R., and Reecer, J. C. (2003). "Injuries among world – class professional beach volleyball players". The American Journal of sports Medicine. 31:119-125. 3. Cumps E, Verhagen E, Annemans L, Meeusen, (2008) Injury rate and socioeconomic costs resulting from sports injuries in Flanders: data derived from sports insurance statistics 2003. British J Sports Med; 42:767-772. 4. Dvorak J, Junge A, (2000), Football Injuries and Physical Symptoms: A Review of the Literature, Am. J. Sports Med; 28;3, S3-S9. 5. Ekstrand J, Gillquist J, (1983). Soccer injuries and their mechanisms: a prospective study. Med Sci Sports Exerc; 15:67-73. 6. Ekstrand J, Walden M, Hagglund M, (2004). A congested football calendar and the wellbeing of players: correlation between match exposure of European footballers before the World Cup 2002 and their injuries and performances during that World Cup. Br J Sports Med; 38:493-7. 7. Faude, O., Junge, A., Kindermann, W. and Dvorak, J. (2005). "Injuries in female soccer players". The American Journal of Sports Medicine. 39: 3-9. 8. Figures combine detailed analysis of 13,500 claims by Medibank private members in 2002 and information from the Melbourne Sports Medicine Clinic includes direct costs only, (53) 9. Giza E, Micheli L, (2005). Soccer Injuries Med sport sei, 49,140-169 10. Giza, E., Mithofer, K., Farrell, L., Zarins, B. and Gill, T. (2005). "Injuries in women professional soccer". British Journal of Sports Medicine. 39:212-216 11. Hawkins RD, Hulse MA, Wilkinson C, Hodson A, Gibson M, (2001). The Football Association medical research program. an audit of injuries in professional football, Br J Sports Med; 35:43-47. 12. Jacobsen I, Tegner Y, (2007). Injuries among Swedish female elite football players. A prospective population study. Scand J Med Sci Sports; 17:84-91. 13. Julie A, Todd AE, Randall D, Margot P, Stephen WM, (2007). Descriptive Epidemiology of Collegiate Men's Soccer Injuries: National Collegiate Athletic Association Injury Surveillance System. 1988-1989 Through 2002-2003. Journal of Athletic Training; 42: 270-277 14. Junge A, Dvorak j, Graf – Baumann, T, (2004) Football injuries during FFA tournaments and the Olympic Games , 1998-2001 : development and implementation of an injury-reporting system , Am J sports Med; 32(supp11) :S80-9 15. Junge A, Langevoort G, Pipe A, (2006). Injuries in team sport tournaments during the 2004 Olympic Games, Am J Sports Med; 34:565-76 16. Margot putukian , MD , William K . Knowles (1996) , ATC , Scott Swere , ATC , and Nick G . Castle ,phD. Injuries in Indoor Soccer - The American Journal of Sports Medicine, Vol 24, No.3 17. McMaster WC, Walter M, (1978). " Injuries in soccer ", Am J sports Med; 6:354 – 357. 18. Nielsen A, Yde J, (1989). Epidemiology and traumatology of injuries in soccer, Am J Sports Med 17: 803-807 19. Price RJ, Hawkins RD, Hulse MA, Hodson A, (2004). The Football Association medical research programme: an audit of injuries in academy youth football, Br J Sports Med; 38:466-471 20. Reilly, T. (2000). The physiological demands of soccer. In: Bangsbo J. (ed) : soccer and science : in an inter disciplinary prespective. Copenhagen: Munksgaard . 91-105 21. Roi, G.S., Nanni, G., Tavana, R., Tencone, F. (2006). "Prevalence of anterior cruciate ligament reconstruction in professional soccer players". Sport Science for Health . 1:118-121. (103) 22. Wayne Hoskins , Henry pollard , Chris Daff , Andrew Odell , peter Garbutt , Andrew McHardy , Kate Hardy and George Dragasevic – BMC Musculoskeletal Disorders (2009)-(Low back pain status in elite and semi-elite Australian football codes : a cross-sectional survey of football (soccer), Australian rules, rugby league , rugby union and non-athletic controls