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Original Research

Profile of soccer injuries at the 19th Nigerian University Games

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Abstract. Soccer, the most popular team sport in the world is associated with injuries. Profile of soccer injuries at the 19th Nigerian University Games was studied and the incidence, causes, locations, severity, mode of treatment and effect of play position on injuries were studied. The observational technique was used to obtain relevant data during the competition. Out of a total 16 matches played and studied, 57 players were injured with 113 incidences of injuries recorded. The results were analyzed using frequency, percentages. The ankle was most frequently injured with 25 (22.12%) cases, while the groin and the foot regions were the least injured body part (1 case, 0.88%). The incidence of injury to the knee joint was 22 (19.47%). The most frequently injured body segment was the lower extremity, while the least injured body segment was the trunk. Minor injuries recorded were 48 (42.48%), while 2 (1.77%) serious injuries were observed. Most of the injuries sustained were due to direct trauma. Physiotherapy treatment included cryotherapy, massage and passive stretching of muscles. Midfielders recorded the highest number of injuries, while the highest number of injuries was recorded among the University of Ibadan soccer players. The Federal University of Technology, (FUTA) players sustained 5 (8.8%) the least injury. In conclusion, the most frequently injured segment of the body and body part was the lower extremity and the ankle respectively. Rules of the game should be modified to reduce the incidence of injuries in these body parts.

Keywords. Injury, NUGA games, soccer.

Introduction

Soccer is the most popular sport in the world with approximately 200 million players in 186 countries registered with the International Federation of Football Association (FIFA) (McGrath & Ozanne-Smith, 2000) and there is an estimated equal number of unlicensed soccer players (McGrath & Ozanne-Smith, 2000; McHardy & Pollard, 2001). Sanya & Owotade (1998) observed that soccer is a game involving a lot of contact with the ball, ground as well as lots of body contact at top speed with other players on the field of play. The Nigerian University Games Association (NUGA) Games draw the cream of athletes from Nigerian Universities together, not only to entertain but most importantly to be used as a vehicle in promoting unity, oneness and social interaction among students (Mahad, 2002).

Sports injuries are common, yet an unwanted aspect of participation in sports (Lower, 1996; Khan et al., 2019). The characteristics of soccer along with the functional activities, which include acceleration, deceleration, jumping, cutting, pivoting, turning, lateral and backward displacement, heading and kicking of the ball, and contact with other players, obviously places great demands on the technical and physical skills of individual players. Injuries associated with sports can be related to a variety of

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factors; including participants level of conditioning or training, failure to use safety equipment, hazards on the field of play like ill-fitting equipment and poor maintenance of the field of play, contact, over-exertion, difficulty in conducting the task required, mismatch in skill or size between players and adverse environmental conditions (MacAuley, 1999). With an increase in popularity and expectation of players, along with the characteristics of soccer, significant numbers of injuries are conceivable (Grenier, 1999; McGrath & Ozanne- Smith, 2000).

According to McHardy & Pollard (2001), although soccer is perceived as relatively safe, injuries are common. Sports injuries according to Hartley & Rotella, (1999) fall into two categories including those that are caused by a direct mechanism (example, trauma, overstretch) and injuries without a direct mechanism that has an insidious onset.

In order to stay long in soccer-playing career, players need to be knowledgeable about sports injury and safety practices particularly those common to soccer (Okuneye, 1999). Sports injury prevention measures by soccer players and organizers based on the outcome of scientific research have been severally advocated for (VanMechelen, 1997). Furthermore, it has been suggested by Auley et al., (1996) that a reliable data system of injuries among soccer players be developed and maintained, upon which further researches could be based. The hosting of the 19th Nigerian University Games by the University of Ibadan provided a unique opportunity to study and ascertain the frequency, causes, location, and severity of injuries among soccer players from eight Universities in Nigeria, in the soccer event. Thus the aim of this study was to determine the frequency, causes, locations, and severity of injuries sustained during the 19th Nigerian University Games hosted by the University of Ibadan.

Methods

Participants and Design of the Study

Ethical standard in accordance with the guidelines provided by the World Medical Association Declaration of Helsinki on Ethical Principles for Medical Research was strictly adhered to in this study. The participants for this study included all undergraduate soccer players who took part in all the soccer matches of the 19th Nigerian University Games hosted by the University of Ibadan. The age range of participants was between 19 and 25 years. The research design used was a survey and observational technique to carry out surveillance of injury and relevant data was obtained.

Participants' Selection

A total of 57 undergraduate students who are soccer players and sustained injuries on the field of play during the sixteen soccer matches were allowed to participate after verbal consent was sought and obtained from each of them.

Data Collection

Soccer injury assessment form was completed for every injured player to collect information on causes of injury, the severity of the injury, parts of the body injured and treatment received on the field of play. Data were obtained from every soccer match played during the 19th Nigerian University games and with the researcher sitting in a vantage position near the sideline where an uninterrupted view of the length and breadth of the soccer pitch can be viewed. Data for every injured soccer player on the field of play such as incidence, causes, locations and severity of injuries, mode of treatment received on the sideline, player's position of play and the stage of the competition were recorded with the use of the Soccer injury assessment form.

All obtained data were presented with descriptive statistics of frequency and percentages.

Results

Sixteen matches were played in the four rounds of the competition. A total of 113 incidences of injuries were recorded during the entire competition. The results showed that the highest number of injuries, 86 (76.11%) occurred during the preliminary round of the competition, 23 (20.35%) occurred during the semi-finals, 3 (2.65%) occurred during the third-place match while the lowest number of injuries 1 (0.88%) was recorded during the final match. The mean injury per match was 7.06.

The injuries sustained during the four stages of the competition were further divided into various body segments, which are lower extremity, trunk, upper extremity and head, and neck as shown in Table 1.

The frequency distribution showed that the lower extremity recorded the highest incidence of injuries with 69 (61.05%), followed by the head and neck, 18 (15.92%), while injuries to the upper extremity were 17 (15.04 %) and the least body segment injured was the trunk with 9 (7.96%) of the incidence of injuries. However, in the third-place match, the highest numbers of injuries occurred in the upper extremity, 2 (1.77%) while the lower extremity recorded 1 (0.88%).

Table 1

The severity of Injuries sustained during all the stages of the soccer competition.

Severity	Lower Extremity		Trunk		Upper Extremity		Head and Neck		Total	
	N	%	n	%	N	%	n	%	n	%
Preliminary stage										
Minor	14	12.39	3	2.65	5	4.42	6	5.31	28	24.77
Moderate	38	33.63	3	2.65	7	6.19	9	7.69	57	50.43
Serious	1	0.88	0	0.00	0	0.00	0	0.00	1	0.88
Total	53	46.90	6	5.30	12	10.61	15	13.27	86	76.08
Semi-Final Stage										
Minor	8	7.08	2	1.77	2	1.77	1	0.88	13	11.50
Moderate	6	5.31	1	0.88	1	0.88	2	1.77	10	8.84
Serious	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	14	12.39	3	2.65	3	2.65	3	2.65	23	20.34
Third Place Match										
Minor	0	0.00	0	0.00	1	0.88	0	0.00	1	0.88
Moderate	1	0.88	0	0.00	0	0.00	0	0.00	1	0.88
Serious	0	0.00	0	0.00	1	0.88	0	0.00	1	0.88
Total	1	0.88	0	0.00	2	1.76	0	0.00	3	2.64
Final Match										
Minor	1	0.88	0	0.00	0	0.00	0	0.00	1	0.88
Moderate	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Serious	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total	1	0.88	0	0.00	0	0.00	0	0.00	1	0.88

The severity of injuries sustained during the preliminary round of the competition which had the highest number of matches played (12 matches), is presented in Table 1. The results showed that the lower extremity recorded 53 (46.90%) of total injuries sustained during this round while the head and neck recorded 15 (13.27%). The trunk was the least injured body part with 6 (5.30 %) injuries. The lower extremity recorded the only serious injury in this round 1 (0.88%). In the semi-final round, two matches were played, and minor injuries were the most sustained degree of injuries 13 (11.50%) of the cases while moderate injuries recorded 10 (8.84%) of the total injuries sustained. In the final match, only one injury was sustained which was of minor degree and it occurred in the lower extremity 1 (0.88%).

The injuries sustained by various parts of the body are shown in Table 2. The ankle recorded the highest numbers of injuries 25 (22.12%) in the competition followed by the knee 22 (19.47%) while the least parts of the body affected were the groin and the foot, 1 (0.88%) each, during the entire competition. Some injuries sustained by the player's required immediate treatment on the sideline. Incidence of injuries that required treatment to be 65 (57.52%) while 48 (42.48%) did not require treatment.

Table 3 showed a mode of treatment given to the injured players on the sideline. 76 (67.25%) of the injuries required cryotherapy, followed by bandaging 17 (15.03%), massage 5 (4.42%), and combination of cryotherapy and massage 5 (4.42%).

Table 2

Injuries to various body parts.

Body Parts	Minor	Moderate	Serious	Total (n)	%
Head / Neck	3	5	0	8	7.08
Face	3	6	0	9	7.96
Arm / shoulder	1	1	1	3	2.65
Forearm / elbow	4	2	0	6	5.31
Hand	3	0	0	3	2.65
Wrist / finger	5	2	0	7	6.19
Groin	0	1	0	1	0.88
Hip	2	2	0	4	3.54
Thigh	4	5	0	9	7.96
Knee	5	16	1	22	19.47
Leg	6	3	0	9	7.96
Ankle	10	15	0	25	22.12
Foot	0	1	0	1	0.88
Back	0	2	0	2	1.77
Trunk	2	2	0	4	3.54
Total	48	63	2	113	100.00

Table 3
Mode of treatment on the sideline.

Stages of Competition	Cryotherapy		Massage		Cryotherapy & Massage		Bandaging		Total	
	n	%	n	%	n	%	n	%	n	%
Round 1	65	57.52	5	4.42	5	4.42	13	11.50	88	77.88
Round 2	9	7.96	0	0.00	0	0.00	3	2.65	12	10.62
Round 3	2	1.77	0	0.00	0	0.00	1	0.88	3	2.65
Round 4	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Total (n)	76	67.25	6	4.42	5	4.42	17	15.03	103	91.5

The results show that midfielders sustained the most injuries 39 (37.90%), followed by defenders 37 (35.90%) while attackers sustained 20 (19.40%) of injuries with the least injured players being the goalkeepers 7 (6.8%).

Discussion

A total of sixteen matches were played and from the results obtained in this study, it was observed that the highest incidence of injuries occurred during the preliminary round of the competition, followed by the semi-final round, with the least frequency of injury observed in the final. The fact that the frequency of injuries recorded during the preliminaries was highest may be due to the fact that most matches were played in this round (twelve matches altogether). It may also be due to the nature of the pitch, which was rough. This may have caused a higher incidence of injuries to the players who were not used to the pitch initially. This opinion is supported by Lees & Nolan, (1998) who observed that since soccer players adapt to surface types over a period of time, changing from one playing surface to another is a major aetiological factor in surface- related injuries. Another reason may be due to the match fixture, which did not allow the soccer players up to one day of rest after a match before playing another one. The preliminary round was concluded within the space of three days. However, as the competition progressed from the preliminary stage to the elimination stage (knock-out round), the incidence of injuries was observed to reduce. This may be due to the fact that the soccer players got used to playing on the pitch as matches were played daily. It may also be as a result of fewer matches played in this round (two matches in the semi-finals and one each in the third-place match and the final match).

The ankle was the body part most frequently injured with 25 (22.12%) cases, while the groin and the foot regions were the least injured body parts during the competition with 1 (0.88%) case. This result, however, is in variance with the previous works (Schmidt-Olsen et al., 1991; Steinbruck, 1996) that reported that injury to the knee was more common than ankle injuries. The finding of this research agreed with Thomas et al., (1991), Cromwell et al., (2000) and Quinn et al., (2000) when they reported in their respective studies that the ankle is the most commonly injured anatomic site in soccer players. The incidence of injuries to the knee joint was 22 (19.47%) which is in agreement with the studies of de Loes et al. (2000) and Steinbruck (1999) that reported that knee injuries make up about 15-50% of sports injuries.

The most frequently injured body segment observed in this study was the lower extremity while the least injured body segment was the trunk. This may be due to the fact that most soccer skills like passing, kicking, and shooting is executed using the lower extremity (McGrath & Ozanne-

Smith, 2000). Several studies carried out previously reported that the lower extremity was the most commonly affected body part (Steinbruck, 1999; Cromwell et al., 2000; Soderman et al., 2001).

During the competition, it was observed that severities of soccer injuries sustained were of moderate degree in 63 (55.75%) injury cases and required treatment by the medical personnel on the sideline. Minor injuries recorded were 48 (42.48%) while 2 (1.77%) serious injury cases were observed. The result of this study is supported by Jensen et al, (1993) who reported 44% of injuries sustained as minor injuries, 46% as moderate injuries and 9% as severe injuries. This result can also be related to a variety of factors as observed by MacAuley (1999), which includes participants' level of conditioning or training, failure to use safety equipment, contact, overexertion, mismatch in skill or size between soccer players, and adverse environmental conditions. Okuneye (1999) stated that youth soccer has become more competitive and so players are more determined and explosive during game situations. In addition, Soderman et al. (2001) also reported a higher incidence of moderate injuries in his study.

In this study, most of the injuries sustained were due to direct trauma. This result agrees with studies by Hawkins & Fuller (1998) reported that at least 60% of injuries involve player-to-player contact (direct trauma). Indirect trauma results due to a sprain of the ankle by a player in motion, a faulty pass, or any other form of injury a player sustain without contact by another player (Intrinsic injury).

Treatment of injuries showed that approximately two-thirds of the total number of injuries sustained by the players required treatment intervention on the sideline. The mode of treatment included cryotherapy, cryotherapy and/or massage, which also included passive stretching of muscles. Cryotherapy was in the form of cold water and ice pack. Olavi et al. (2003) stated that the use of ice for the treatment of injuries is widespread in sports medicine today.

Injuries sustained among the soccer players during the competition showed that midfielders recorded the highest numbers of injuries but according to Hawkins et al. (1996) who reported that defenders are proportionately subjected to a greater risk of injury than other players. Engstrom et al. (1998) believe that offensive forwards, defensive fullbacks, and the goalkeeper, suffer the most injuries. The results of this research are further corroborated by Rahnama & Reilly (2002), whose studies showed that playing actions with high injury risk are linked to contesting for ball possession.

Conclusion

The ankle region was the most frequently injured body part and the lower extremity was the most frequently injured body segment in this competition. The midfield players sustained the highest number of injuries during the competition. Most of the injuries sustained were of moderate severity. Cryotherapy was utilized more than massage and bandaging in the treatment of injuries. The preliminary stage of the competition recorded the highest incidence of injuries. The injuries recorded show that direct trauma caused more injuries than indirect trauma. University of Ibadan players sustained the most injuries.

The NUGA organizing committee should include at least a day of rest in between the match fixtures to enable soccer players to recover from match fatigue. Stiffer penalties should be meted out to players who commit infringement to reduce the incidence of injury. The NUGA organizing committee should insist on the use of protective gadgets like shin guards and ankle braces to reduce the incidence of injury. The Local organizing committee should ensure that soccer matches are played on well-grassed pitches to reduce the incidence of injuries. The NUGA Organizing committee should ensure that all the participating

universities have at least a physiotherapist in their medical team, who would carry out pre-tournament physical fitness examination to ensure that only fit athletes are selected for the competition. The medical team of each participating university should carry out follow up treatment to ensure that injured athletes are rehabilitated.

Declaration of Interest

The authors report no conflict of interest.

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