

FOOTBALL INJURIES IN OSLO: A ONE-YEAR STUDY

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Sunnaas Hospital, 1450 Nesoddtangen and **Emergency Department, Ullevål Hospital, Oslo, Norway*ABSTRACT**

All football injuries treated at the Emergency Department, Oslo City Hospital, 1329 patients, 1167 males and 162 females, were recorded for one year, accounting for 28.4% of all sports injuries. Most injuries seen were in the 15-19 years age group in females and 20-24 years age group in males; 68% of the females and 42% of the males ($p < 0.001$) were below 20 years of age, and 87% of the injuries occurred in competitive football. During matches, 695 players were injured giving an incidence of 34.5 injuries/10,000 player matches. The injuries occurred all year with a peak in June. Sprains accounted for 41% of the injuries, 23% were contusions and 19% fractures. Most injuries (59%) affected the legs. Hospital admission was required for three females and 57 males. The football injuries required 1966 consultations and necessitated that 349 patients had to stay away from work for a total of 6137 days.

Key words: Football, Football injuries, Injury epidemiology, Sport injuries.

INTRODUCTION

Football is one of the most popular sports in the world; in 1982 FIFA recorded more than 40 million registered active players. In addition a vast number of people enjoy recreational football. The popularity of the game, however, is also reflected in the many injuries suffered by football players. Franke (1977) has estimated that in Europe, football is responsible for 50-60% of all sport injuries. Data on football injuries are mostly collected in special sports injury clinics (Nilsson and Roaas, 1978; Sullivan et al, 1980), from insurance claim reports (Pritchett, 1981; Roaas and Nilsson, 1979) or by doctors affiliated with football clubs (Albert, 1983; Bass, 1967; McMaster and Walter, 1978). These data, therefore, tend to reflect mainly the pattern of injuries seen in competitive football.

In a previous paper (Mæhlum and Daljord, 1984) we have reported the results of a one-year registration of all sport injuries treated in a large emergency department in Oslo, Norway. Of these injuries 28.4% occurred in football, competitive as well as recreational. The present publication provides the details on these football injuries.

MATERIAL AND METHODS

All sports-related injuries treated at the Emergency Department, Oslo City Hospital were registered during the period 12.10.81 to 11.10.82. In addition to the age and sex of the patient, the day and month of the injury,

the diagnosis and treatment, information was collected on the type of sport and level of participation (i.e. competitive or recreational). Our registration procedures have already been described in detail in the preceding article in this journal.

The data were analysed at the EDP-centre at Oslo University, using a locally developed statistical package (DDPP) on a DEC-10 computer. In addition, when applicable, the Chi-square evaluation and student's t-test were used in the analysis of the data.

RESULTS

During the year, 1329 patients; 28.4% of the total number of sport injuries, sustained their injury while playing football during the registration period. Of these, 1167 (87.8%) were males; 162 (12.8%) females. They required 1966 consultations. The majority, 956 patients, needed one consultation only.

The highest number of injuries occurred in the 15-19 years age group in the females and in the 20-24 years age group in the males (Fig. 1). Of the females 68% were below 20 years of age as compared with 42% of the males ($p < 0.001$). No females above 40 years were injured in football.

A majority of both males (87%) and females (88%) were injured in connection with competitive football (i.e. during actual matches or while training for matches). A total of 695 injuries, 601 in males and 94 in females, was reported as having occurred during matches (Table 1). This means we have registered 34.5 injuries/10,000 player-matches corresponding to 7.6 injuries/100 matches.

Relatively fewer males were injured in connection

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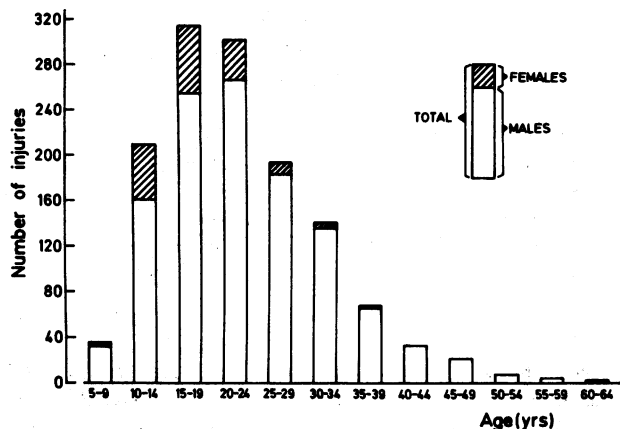


Fig. 1: Age distribution in injured males (open bars) and females (hatched bars) in football.

TABLE I

Incidence of male and female injuries.

Sex	Number of matches	Number of injuries during matches	Injuries per 10,000 player-matches
Male	8290	601	33.0
Female	875	94	48.8
Total	9165	695	34.5

with competitive football in the age groups below 20 years — 78% — than above 20 years — 93% — ($p < 0.001$). In females no such differences were observed; the corresponding figures being 87% and 88% respectively.

Most football injuries (20.2%) were found to occur on Tuesdays (Fig. 2). This was the case in competitive as well as in recreational players above and below 20 years of age, but 31.5% occurred during weekends. This figure was similar in players both below (33%) and above (31%) 20 years of age, and 85% of these injuries occurred in connection with competitive football. Correspondingly 88% of the injured football players during Monday-Thursday suffered their injury in competitive football.

The number of football injuries per month varied from 280 in June to 42 in December (Fig. 3), and they accounted for 28.4% of all sports related injuries throughout the whole year. However, during the football season, from May to September in Norway, football injuries accounted for 52% of the total number of sport injuries.

More than 80% of the injuries affected the

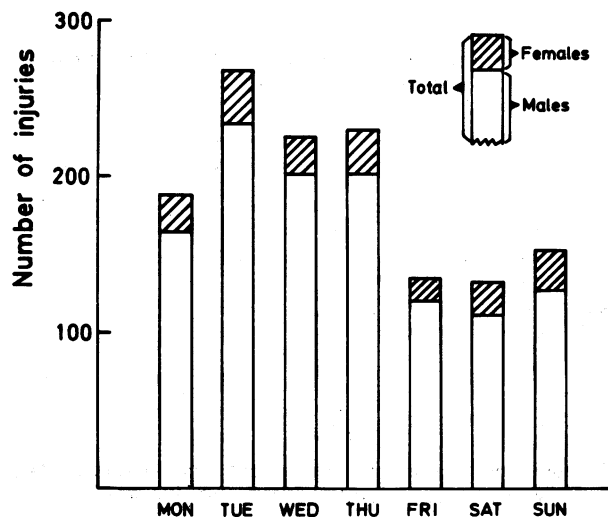


Fig. 2: Weekly distribution of football injuries in males (open bars) and females (hatched bars).

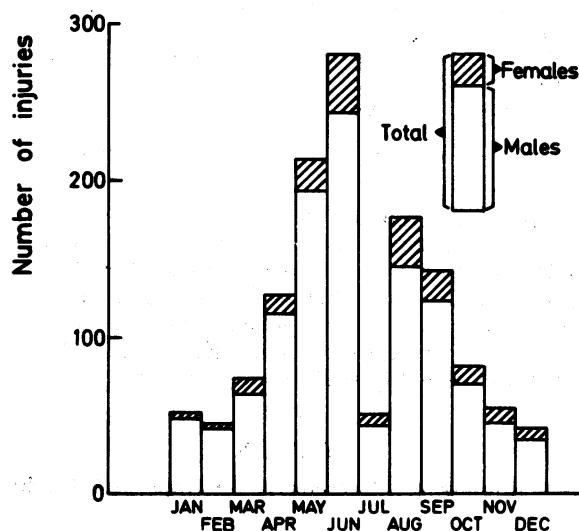


Fig. 3: Monthly distribution of football injuries in males (open bars) and females (hatched bars).

extremities (Table II). Both in males and females ankle injuries occurred most frequently (Table III). The second and third most common location of injury were the knee and the head in males, and fingers and wrist in the females (Table III). During competitive football slightly more injuries occurred in the lower extremities ($p < 0.05$) and fewer in the upper extremities ($p < 0.01$) than during recreational football. In addition head injuries occurred more frequently in competitive than in recreational football ($p < 0.01$).

TABLE II

Number of injuries in different body regions in male and female football players.

Body region	Number of injuries	
	Males	Females
Head/Neck	100	9
Shoulder/Clavicular	46	2
Upper extremity	257	51
Thorax/Back/Abdomen	63	4
Pelvis/Hips	8	1
Lower extremity	693	95
Total	1167	162

TABLE III

Number of injuries in most frequently injured body regions in male and female football players.

Males (n = 1167)		Females (n = 162)	
1. Ankle	339	1. Ankle	61
2. Knee	150	2. 2-5 fingers	20
3. Head	97	3. Wrist	18
4. Calf	81	4. Knee	16
5. Wrist	80	5. Head	9
6. Toes	73	6. Calf	7
7. 2-5 fingers	65	6. Thumb	7
Total	885	Total	138

Sprains occurred in 41% of the patients, 23% had a contusion and 19% a fracture (Table IV). Most of the sprains occurred in the ankle while most of the fractures occurred in the wrist (Table V). We found 23% of the sprains and 43% of the fractures affecting the upper extremities; the corresponding figure for the lower extremities were 75% and 33% respectively.

TABLE IV

Distribution of the different types of injuries in football.

Injury	No. of injuries
Sprain	545
Contusion	311
Lacerations	103
Fracture	254
Dislocation	27
Rupture of tendon, ligament or muscle	44
Other	45
Total	1329

The relative distribution of injuries in the seven categories were similar in competitive and recreational football. The relative number of fractures, sprains and contusions were similar in players above and below 20

TABLE V

Most frequent localisation of sprains and fractures in football.

Sprains (n = 545)		Fractures (n = 254)	
1. Ankle	312	1. Wrist	45
2. Knee	71	2. Rib	33
3. 2-5 fingers	41	3. Toes	27
4. Wrist	40	4. Ankle	24
5. Thumb	32	5. 2-5 fingers	23
Total	496	Total	132

years of age. However, 86% of the ruptures (of muscles, tendons and ligaments) occurred in people over 20 years of age and only 14% in those below ($p < 0.001$).

The 254 fractures required 549 consultations, averaging 2.2 consultations/injury. The 103 wounds required 113 consultations giving 1.1 consultations/injury.

In 212 patients an injury required no treatment (Table VI); 50% were treated with elastic bandage or tape. Few patients (7%) were given drugs (mostly anti-inflammatories). There were 60 patients, three females and 57 males, who had to be admitted to hospital for treatment. The relative number of hospitalised patients increased with increasing age (Table VII). It should be noted that no patient below 10 years had to be admitted to hospital, but 13% of the older patients with fractures, 19% of those with dislocations and 20% of the players who had a rupture of muscle, tendon or ligament were admitted.

TABLE VI

Treatment given in 1329 football injuries.

Treatment	No. of injuries
None	212
Plaster cast	188
Suture	65
Dressing	36
Elastic bandage/Tape	662
Drugs (alone)	64
Drugs (in comb. with other treatment)	34
Hospitalisation	60
Other treatment	8
Total	1359

Due to injury, 349 of the patients had to stay away from work for a total of 6137 days. The patients who suffered from fractures, ruptures and dislocations (Table VIII) were out of work on the average almost three times as long as those suffering from sprains, contusions and lacerations ($p < 0.001$).

TABLE VII

Age distribution of 60 patients hospitalised due to football injury.

Age group	Total no. of injuries	% hospitalised
0- 9	35	0.0
10-19	523	3.3
20-29	496	4.8
30-39	209	5.7
> 40	66	10.6
Total	1329	4.5

TABLE VIII

Number of patients out of work and average duration of sick-leave in patients with different football injuries.

Injury type	Total number of	Number of patients off work	Average duration of sick-leave (weeks)
Sprains	545	144	1.9
Contusions	311	76	1.7
Lacerations	103	4	1.8
Fracture	254	84	4.4
Dislocations	27	8	5.1
Ruptures of tendons ligaments, muscles	44	21	5.0
Total	1284	337	

DISCUSSION

Football injuries accounted for 28.4% of all sport injuries in our material. This is lower than that which has been reported from Denmark by Lang-Jensen in 1982 and Sørensen et al in 1977, England (Crompton and Tubbs, 1977) and Ireland (Burke et al, 1983), but considerably higher than that seen in the USA (Garrick and Requa, 1978; Jackson et al, 1980). In a previous study from our department (Johansen, 1955) 21.8% of the injuries were caused by football.

Our reported incidence of injuries during matches, 34.5 injuries/10,000 player matches, is lower than what has been reported in professional football (Albert, 1983; Bass, 1967; Weightman and Browne, 1980) as well as that seen in a large tournament for adolescent football players (Nilsson and Roaas, 1978). Our incidence may be slightly too low since the 2-3 best teams in the city all have team physicians to take care of many of the acute injuries. However, the error is not large since these teams together play only about one hundred matches out of our total of 9165 matches. Our finding of a higher incidence of injuries in females than in males support Nilsson's and Roaas' previous finding in young players.

The incidence of injuries in recreational football

cannot be stated from our material as we have no information about the number of people engaged in that aspect of the sport. It should be noted, however, that only about 13% of the injuries occurred during recreational football.

Men sustained 87.8% of the injuries in football. In comparison 70.4% of all sport injuries in the same period occurred in males (Mæhlum and Daljord, 198). If football injuries are excluded, only 63.5% of the sport injuries affected males. Football, therefore, can still be considered a male dominated sport. However, in Johansen's study from our department in 1946/48, ALL football injuries occurred in males. Thus the football participation is rising in young women in Norway, as also indicated by the fact that in the age group below 20 years of age 20% of the injuries occurred in females.

Less than one percent of the football injuries occurred during wintertime (i.e. from November through March) in 1946/48 (Johansen, 1955). In the present investigation more than ¼ of all injuries (27.8% in females and 26% in males) took place during this period. The relative contribution of recreational injuries was the same during summer and winter. Thus football seems to be an all-year sport in Oslo now, for competitive as well as recreational players of both sexes, though little is played in the winter months.

The reason for the high incidence of football injuries on Tuesdays must be sought in the organisation of the leagues. Since the top division games are usually scheduled at weekends, most other teams play on weekdays. The players accordingly tend to get injured on these days. It is interesting that in a study from Ireland, peak attendance of sport injury patients was noted on Mondays and Tuesdays (Burke et al, 1983).

We found, in agreement with others already quoted, and with Biener in 1982, that most injuries affected the extremities. Close to 60% of both males and females were injured in the lower extremities, which is slightly less than that reported in professional football players by Albert (1983) in adolescent players (Nilsson and Roaas, 1978) and from Danish division football (Jørgensen, 1981). The difference may reflect the contribution of recreational injuries in our material; since we observed slightly less leg injuries in recreational than in competitive football. However, others have also reported less than 50% leg injuries in football (Biener, 1982; Burke et al, 1983; Johansen, 1955; Roaas and Nilsson, 1979). Head injuries occurred more frequently during competitive than recreational football. We feel that this may be caused by a higher intensity of the game during competition.

More than 40% of the injuries were sprains. Similar results have been reported by others (Albert, 1983; Johansen, 1955; McMaster and Walter, 1978; Sullivan

et al, 198; Nilsson and Roaas, 1978). However, it is lower than that reported previously from our department by Johansen in 1955 and that seen in an insurance material of Norwegian football injuries (Roaas and Nilsson, 1979).

Most of the football injuries were minor, as 212 patients required no treatment and altogether 896 patients needed one consultation only. The fractures on average needed 2.2 consultations/injury, the lacerations 1.1 consultations/injury, as most patients had their

stitches removed by a nurse at school or at work. They were accordingly seen once only.

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