A Season of Football Injuries

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Abstract

All rugby and soccer players presenting to the Accident & Emergency department during the football season 1992 - 1993 (a total of 871) were prospectively studied to compare the injuries sustained in the two sports. The nature and site of injury, treatment required, age, fitness, experience and position of the player, situation giving rise to injury, and medical attention at the grounds were all analysed. The results show that rugby and soccer players had the same number of injuries, and while there were some differences in the nature of the injuries, there was no difference in overall severity. Rugby flankers and soccer goalkeepers are particularly at risk. Competitive matches produce more injuries than training sessions. Experience or fitness did not appear to be a factor and 45% of rugby injuries and 15% of soccer injuries were from school matches. Law changes (e.g. the rugby scrum and the use of gum-shields) have reduced some injuries, but other areas (e.g. jumping for the ball in soccer, rucks and mauls in rugby) also warrant consideration. There was one death, but no spinal cord injuries. Medical attention at the grounds was limited. Rugby injuries, therefore, do not appear to be more numerous or severe than soccer injuries. Law changes have been of benefit but they need to be enforced and perhaps more should be considered. Medical attention at sports grounds could be improved and Registers of injuries kept by the sporting bodies would be of benefit.

Introduction

Football, in its various guises is the most popular team sport around the world. It encourages fitness, physical skills and team work amongst players. However, all varieties of football involve physical contact, and this, coupled with the acceleration / deceleration and turning which football requires, results in a significant rate of injury. Many players are treated by a doctor or physiotherapist at their club, but a large number present to Accident & Emergency departments every weekend throughout the football season. They represent a significant workload in these departments.

Rugby football, in particular, has had a reputation for serious injuries. This has resulted recently in many alterations in the laws of the game with the intention of making the game safer. The laws for scrums, line-outs, rucks and mauls were all altered as these were seen as danger points. The changes in scrummaging have resulted in less neck injuries[1], but it is not known if the other changes have been effective.

Our hospital has a catchment area which incorporates most of the rugby clubs in Dublin, and sees a large number of rugby injuries[1]. Other hospitals in the city see a much smaller proportion[2]. Our catchment area also includes a number of soccer clubs - both amateur and professional, and schools playing both sports, but more rugby than soccer. No review of these injuries has studied them over the course of a whole season. We have compared the rugby and soccer injuries presenting to our Accident & Emergency department for the 1992 - 1993 football season.

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Patients and Methods

All patients who presented to the Accident & Emergency department, having been injured playing or training for rugby or soccer, during the season August 1992 to May 1993 were included in this study. Children under 12 years of age would not usually have attended this hospital - one did and has been included. A proforma sheet was filled for each patient by the attending doctor, noting details of the injury and treatment, how and when the injury occurred, the player's experience and level of fitness etc. These details were later computerised and analysed.

Results

During the season being studied, 871 footballers presented to the Accident & Emergency department. These were equally divided between rugby (435) and soccer (436). All rugby and all but two soccer players were male. The mean age was 22.2 years (SD = 6.7), with a range from 10 to 48. School players accounted for 45% of all the rugby injuries, but only 15% of the soccer injuries. Consequently, the mean age for the rugby players was significantly less than for soccer players - 19.6 (5.9) versus 24.8 (6.3) years, $p < 0.0001$ (t test).

Injuries were divided throughout the season in soccer, which starts earlier and finishes later than the official rugby season. Rugby injuries appeared to be related more to those months when competitive matches (league and cup competitions) are being played (see Figure 1). December was a quiet month. Most injuries occurred during matches. Training accounted for 75 rugby injuries and 63 soccer injuries. Indoor soccer accounted for 34 injuries, and impromptu unorganised games of soccer for 13. In both sports there were slightly more injuries in the first half of the season and during the first half of matches, but these differences were not significant.

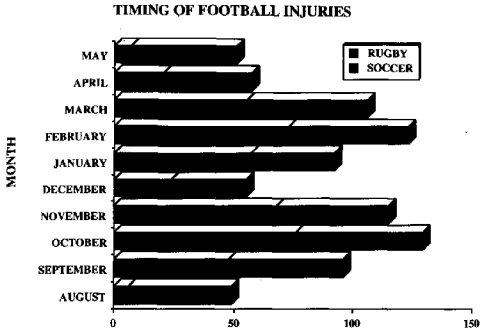

Figure 1 showing when during the season the injuries occurred in both rugby and soccer. There were no significant differences between the two sports.

The level of fitness did not appear to be a factor as very few players would admit to having a poor level of fitness, and equal numbers claiming good or average levels of fitness. Similarly inexperience did not appear to be a factor -those with experience in their position of less than a year (53 rugby and 93 soccer players) having the same range of injuries as their more experienced colleagues (13 head injuries, 11 lacerations, 25 fractures and 97 soft tissue injuries). In both sports the standard ranged from school and social games to internationals.

Table 1 shows the number of injuries sustained in each position on the field. In soccer midfield players and the goalkeeper were the most injured players and the winger the least injured. No goalkeeper was injured in open play– they were the most susceptible to contact injuries. In rugby, the flanker was the player most likely to be injured, but the other forwards (and particularly the other backrow forward - the No. 8) were less likely to be injured than the backs. A referee (soccer) accounted for one injury.

TABLE I

Showing the number injured playing in each position in both rugby and soccer, with the figure then adjusted based on the number of players per position.

POSITION	NO. OF INJURIES	ADJUSTED
RUGBY		
FULLBACK	31	31
WING	65	32.5
CENTRE	67	33.5
OUT-HALF	27	27
SCRUM-HALF	29	29
HOOKER	25	25
PROP-FORWARD	45	22.5
LOCK FORWARD	51	25.5
FLANKER	76	38
NUMBER 8	19	19
SOCCER		
GOALKEEPER	51	51
FULLBACK	60	30
CENTRE-BACK	62	31
MID-FIELD	163	54.3
FORWARD	82	41
WINGER	17	17
REFEREE	1	1

The situation resulting in the injury is shown in Figure 2. With the law changes in rugby, it is pleasing to note only 16 injuries occurring in scrums (but 11 of these were neck injuries to front-row forwards) and 24 in lineouts. Rucks and mauls remain a significant problem, accounting for 75 injuries. In rugby 56 injuries occurred during open play, but tackles accounted for the majority of injuries - 254. Tackling was also the major source of injury in soccer, accounting for 228, with 100 injured during open play and a further 100 injured while jumping for the ball. Violence accounted for 12 rugby and 9 soccer injuries.

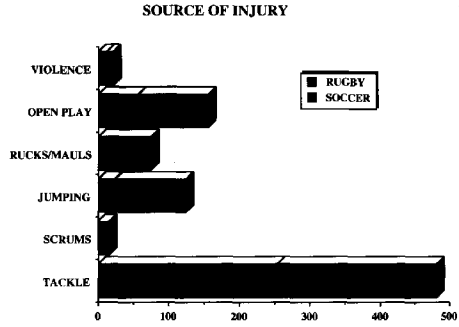

Figure 2 showing the type of incident which caused the injury in both sports. Scrums, rucks and mauls only occur in rugby.

Significantly more rugby players than soccer players sustained head injuries -60 as opposed to 26 ($p < 0.001$; χ^2 test). Of these 14 had loss of consciousness and 12 (11 rugby and 1 soccer) required admission, but none required more than 24 hours of neurological observation. In soccer the head injuries were predominantly caused in jumping for the ball (20 of the 26); in rugby, tackling accounted for 37 and 11 occurred in rucks and mauls.

Figure 3 shows the injuries sustained in the two sports.

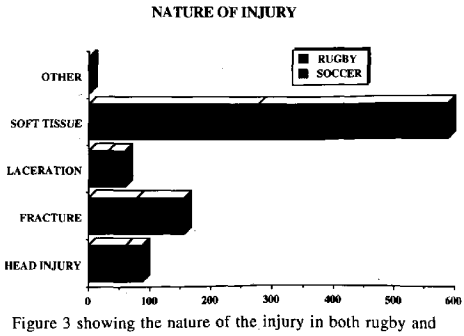

Figure 3 showing the nature of the injury in both rugby and soccer.

TABLE II

Showing the type of injury sustained in each position in both rugby and soccer, where H.I. = head injury; LAC. = laceration; FRAC. = fracture and S.T.I. = soft tissue injury.

POSITION	H.I.	LAC.	FRAC.	S.T.I.
RUGBY				
FULLBACK	3	2	5	21
WING	9	3	13	40
CENTRE	11	3	14	39
OUT-HALF	0	2	8	17
SCRUM-HALF	5	2	6	16
HOOKER	1	0	3	21*
PROP-FORWARD	8	2	3	32*
LOCK FORWARD	7	4	11	29
FLANKER	12	7	10	47
NUMBER 8	4	0	3	12
SOCCER				
GOALKEEPER	3	0	16	32
FULLBACK	4	4	10	42
CENTRE-BACK	7	4	6	45
MID-FIELD #	7	5	33	117
FORWARD	4	5	9	64
WINGER	1	1	1	14
REFEREE	0	0	0	1

* For 10 props and 1 hooker, the soft tissue injury was of the neck
\# One midfield player died of a cardiac arrest - see text

Fractures were sustained in 76 rugby players (chiefly clavicle and nasal bones) and 75 soccer players (predominantly hand, wrist and ankle fractures). There was no significant difference in the number of lacerations between the two sports. Soft tissue injuries were by far the most common - 274 in rugby and 315 in soccer. Neck injuries occurred in a total of 17 rugby players and all were only soft tissue injuries. Of the 17, 10 occurred in props and 1 in a hooker, indicating that, though reduced in incidence[1], this remains a problem for front-row forwards.

One player died of a cardiac arrest minutes after completing a soccer match. He had a prosthetic aortic valve in situ, but had been playing football for a number of years with this. There was no other mortality from football in this series.

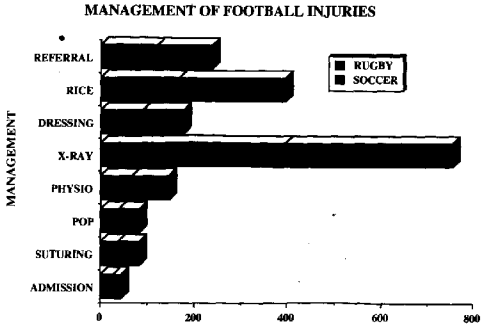

Figure 4 showing the management provided in the Accident & Emergency department for the injuries sustained.

Players received attention at the ground from a variety of people, from groundsmen to referees, from TV commentators to consultant surgeons. In rugby, 107 players received attention from a doctor, nurse, physiotherapist, St. John's Ambulance or the Order of Malta. Significantly less soccer players did (only 48, $p < 0.001$, χ^2 test). Physiotherapists were the commonest provider of attention in soccer grounds, doctors in rugby grounds.

Most patients had x-rays performed in the Accident & Emergency department (87% - see Figure 4). 27% of the patients were referred to a specialist clinic for follow-up, 17% had physiotherapy and 5% (chiefly those with head injuries and ankle fractures) were admitted, with no differences between the sports.

Discussion

Sports injuries are common, and while the majority occur in non-contact sports[3], a significant number occur playing football. An estimated 1.2 million injuries occur from football in the U.S. annually[4] (mainly American Football). In England, the Rugby Football Union have set up a register and are attempting to collect data, but the response is poor[5]. There are an estimated 91,000 rugby injuries per year in Britain[6]. There is no collection of similar data for Ireland in either rugby nor soccer.

Soccer injuries[2] and rugby injuries[1] have been studied recently, but in both cases only over a short period of time. The series by O'Brien[7], while it covered an extended time period, was a retrospective survey of 50 senior players. We have compared prospectively all the rugby and soccer injuries occurring during an entire season which have presented to us.

An equal number of soccer and rugby injuries presented to us during the season 1992-3, and the range and severity of injuries were similar. In rugby, head injuries were more common - but none were serious. The fractures sustained tended to be less serious in rugby (nasal bones, clavicle and fingers) than in soccer (lower limb). We could not relate injuries to fitness or experience, as other authors have done[8]. Most injuries (particularly in rugby) did however occur during competitive matches rather than training. This concurs with other observations in rugby[9,10], but interestingly not in American football[4], where half the injuries occurred during training. Perhaps their training is more competitive?

The importance of the players position has been commented on previously in rugby[1,7,10], but with differing conclusions. This has not occurred with soccer injuries. In rugby we found the flanker to be the most vulnerable, followed by the three-quarters (wings and centres). In soccer, midfield players were the most vulnerable, followed by goal-keepers. Nearly all the indoor soccer players classified themselves as mid-fielders and sustained non-contact soft tissue injuries. Goal-keepers appear to be at their most vulnerable while jumping for the ball. Most soccer head injuries also occurred jumping for balls - the injury was from the head or limb of another player, not the ball.

Neck injuries have always been a concern in rugby and law changes have been made to diminish these. Previous series[1,8] have shown this improvement in Britain and Ireland. The same has happened in American football[4]. Our series confirmed the low number of neck injuries (17) and none of these was serious. However, 11 of the 17 were in front-row forwards, emphasising that the laws in this area need to be well supervised. Reports from South Africa indicate that high tackles have taken over there as the major cause of neck injuries[11,12]. Luckily this has not occurred in Britain or Ireland.

One other area where law changes have been of benefit has been the area of oral injuries. Gumshields are now standard in rugby and we only experienced two players with lip lacerations and no gum or teeth injuries. Prior to the introduction of gumshields, oro-facial injuries were quite common in rugby[13].

This study can obviously not include players treated at their clubs or elsewhere, but of those presenting to the Accident & Emergency department, only a small percentage had received treatment prior to arrival. Many of these patients required admission, x-rays or specialist referral, but many could also have been managed at their clubs if they were appropriately equipped and staffed.

In conclusion, rugby and soccer injuries are common, but most are not serious. While there are some differences characteristic to both sports, essentially the severity of injury is similar in both. Some danger areas in rugby have improved with law changes; perhaps the laws on rucks and mauls need some further consideration. Similarly in soccer, greater compliance with the rules relating to jumping may reduce injuries in this area. Treatment at clubs could certainly be improved and national registers of injuries in both sports as has been advocated[14] and set-up[5] in England in the case of rugby and the U.S. for American football. These would be beneficial in the continued monitoring of injuries in these sports.

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