

INJURIES IN ELEVEN SELECTED SPORTS

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ABSTRACT

All the clubs for 10 sports in the four northern counties were surveyed for injuries for a whole playing season and a 50% sample of the badminton clubs were surveyed in the same way. After the two types of football, hockey comes third in the injury league with women getting injured mostly in the legs, but men in the upper part of the body. Protective padding for hockey players' legs is suggested. Finger injuries and occasional concussion are characteristics of cricket and sprains and strains of badminton. The severity rate in fencing was low with an occasional superficial cut. Cycling was safe, but when an accident did happen it usually produced multiple abrasions as can be readily understood by anyone who has fallen off a bicycle. Boxing and judo did not produce many injuries, but when they did, they were severe, and needed a relatively long time (on average 3 weeks) off sport. But, paradoxically the medical attention which they attracted was better than that attracted by the minor injuries of the other sports. Rowing and swimming were both very safe sports, notwithstanding the potentially hazardous nature of water. The injuries in sub-aquatic activities seemed to depend upon the club rather than upon the sport itself, which suggests that rather more careful supervision may sometimes be necessary.

The range of injury produced by sport is so wide — from a bruise to a brain injury — that it is difficult to avoid the conclusion that the hospital accident room is the right place to receive the injured player in the first instance. From here he can, if necessary, be routed to another department for more specialized treatment.

Introducing more first aid training into sport, at, perhaps, the level of club officials, players themselves, and in addition, regular supporters will be the most useful steps which can be taken in the management of sports injuries.

Introduction

We have previously reported upon the sports injuries in rugby and association football (Weightman and Browne 1974) and we now wish to present a survey of the injuries sustained in the sports other than the two types of football. These sports are men's and women's hockey, cricket, badminton, fencing, cycling, judo, rowing, boxing, sub-aqua and swimming.

The area covered was the four Northern counties, Northumberland, Durham, Cumberland and Westmorland, and questionnaires sent by post were answered by the sports clubs' secretaries during a season. There were fewer clubs listed in the handbooks for these sports compared with football and we were able to cover the whole season for all the clubs with the exception of badminton, for which sport half of the clubs were surveyed.

The periods studied and response rates to the questionnaires for all the sports are shown in Table I.

The response from the club secretaries of the eleven selected sports was rather better than that from Association and Rugby Football. This was most likely due to the use of a different survey procedure which was dictated by the non-sampling method. Secretaries were ap-

Table I:
Period Studied and Response Rate for each Sport

Sport	Period studied	No. of Clubs	No. who replied	Response rates
Assoc. football	Aug '70 — May '71	1601	696	44%
Rugby	Sept '70 — May '71	232	117	50%
Hockey ♂	Sept '71 — April '72	31	25	81%
Hockey ♀	Sept '71 — April '72	40	36	90%
Cricket	April — Sept '72	271	213	79%
Badminton	Oct '71 — March '72	107	85	79%
Fencing	Oct '71 — Sept '72	28	18	64%
Cycling	March — Oct '72	30	23	77%
Judo	Sept '71 — Aug '72	12	8	67%
Boxing	Jan — Dec '72	24	16	67%
Rowing	Jan — Dec '72	32	30	94%
Sub aqua	Jan — Dec '72	8	6	75%
Swimming	Jan — Dec '72	75	65	87%

proached every month of the season whereas association and rugby football (with 1833 clubs) were sampled for only a month of the season.

Men's hockey

Twenty five of the thirty one men's hockey clubs in the four northern counties took part in the survey and reported 59 injuries. If all the clubs had answered, the estimated number of injuries would have been 73. Six clubs had none to report. The head and face received a third of the injuries, most of which were bruises and cuts, but three players sustained lacerations to their eyes from broken spectacles, which suggests that the spectacles worn by hockey players should be shatter-proof. The upper and lower limbs were equally at risk, although fractures occurred more commonly to collar bones and wrists than to legs. The rate of injury for men's hockey was 10.3 per 10,000 man-hours of play. Less than a third of all injuries were given first aid on the field and nearly a quarter of them went straight to hospital for out-patient treatment. Nearly half the accidents on the field received no attention at the time, and this included 7 fractures. If trained first aid had been available, it is likely that delay in treatment would have been much less. A little under three-quarters of the injuries caused some loss of playing time, and in about a fifth of them this was for over a month. Club secretaries thought that the medical treatment received was adequate in nearly three-quarters of the cases, but could have been improved for the remaining quarter, if there had been treatment facilities on the ground. Only one club had a doctor, and he was also a playing member.

Women's hockey

There were 40 women's hockey clubs in the four northern counties at the time of our survey and 36 of them took part and reported 58 injuries during the playing season. There would have been 64 estimated injuries if all the clubs had answered; 13 of them had no injuries to report at all. More than half (a greater proportion than in men's hockey) of the injuries were to the lower limbs, and as for the men, most of these were cuts and bruises. A possible way of parrying inevitable blows to these vulnerable areas is to protect the legs with tights padded with a dense light-weight material. The women players may be more amenable to such a suggestion for the obvious reason that cuts and bruises on their legs are more visible. The small number of fractures were to the hand, which contrasts with collar bones, wrists and legs in the case of the men. About half the injuries neither received, nor subsequently needed, medical attention. The part played by general practitioners was small, since they only attended 5 players whereas hospital out-patient departments gave first treatment to 8 players and to a further 10 later. Most of the injuries did not cost much playing time, but 7 players needed long periods off; one of them for as long as 6 months. The injury rate for women's hockey was 12.5 per 10,000 hours of play, but for men, only 10.3. Figure 1 shows injury rates at four grouped sites for each sport. Women hockey players

tend to be injured more in the legs and less elsewhere than the men, whose injuries are distributed more evenly over the body. As in men's hockey, the club secretaries thought that nearly all of the injuries were adequately treated at the time of the accident.

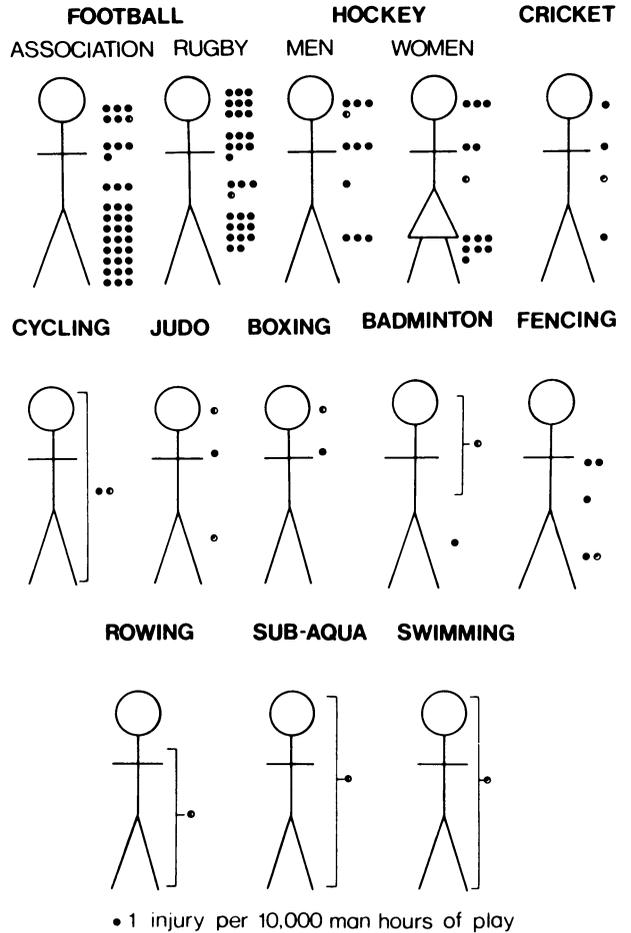


FIGURE 1. Injuries per 10,000 man-hours of play at four grouped sites (head, face, neck; shoulder, arm, wrist, hand; trunk; leg, knee, ankle, foot) for each sport.

Cricket

1972 was the season surveyed and 213 out of 271 clubs replied to the questionnaire and reported 251 injuries. If all the clubs had answered, the estimated number would have been 319. Ninety one of the 213 clubs had no injuries to report. The finger was the part most often injured, either by breaking, dislocating or bruising. About a quarter of the injuries were to the head, face or neck. Seven players were concussed by being struck on the head by a ball. Just over a quarter of all injuries were

to the legs or feet, and five players sustained fractures of a bone in the foot. A third of the injured players received first aid on the ground, and nearly the same proportion went to hospital out-patient departments, either immediately after the injury or later. Five players were admitted to hospital. Paradoxically, perhaps, the head, face and neck injuries were less serious than those at other sites in terms of time lost from play. Upper limb injuries caused 5 days loss of play on average, but with a range from 0 to 56 days. Lower limb injuries lost 6 days play and mid-body injuries, 9 days. As might be expected, fractures caused the greatest loss of play, but three players with dislocated fingers lost no play. There was general dissatisfaction among cricket club secretaries at the lack of first aid advice at grounds. Fourteen of the 213 clubs had doctors, some of whom were also players. Two clubs had a first aid man each, who was also a player. Cricket clubs, on the one hand, appear to be marginally better off for doctors than hockey clubs, but on the other hand, they appeared to be much less satisfied with injury treatment at the ground. The accident rate for cricket is low at 2.6 per 10,000 man-hours of play, being, therefore, about four times as safe as hockey.

Badminton

A 50% sample of the 214 badminton clubs, which were listed in the hand book took part in the survey, and 85 of 107 replied. All the results are doubled to give an estimated number of injuries from 170 clubs. This was 114, and if all the clubs had replied, the estimated number of injuries would have been 144. Rather surprisingly, perhaps, in a game where a racquet is used, most (63%) of the injuries were to the lower limbs and only 6 players were hurt in the arms. But upper limb injuries were more than twice as severe as lower, as they lost on average 24 days play, compared to only 10. The club secretaries felt that 80% of the injuries had been well treated, and put forward the usual reason – no first aid for those who they considered were not well treated. Three clubs had a doctor among the playing members, but none had one officially appointed to look after the players. The injury rate for each 10,000 man-hours of play was 1.49.

Fencing

There were no fencing clubs in Westmorland at the time of the survey, but 28 in the other 3 northern counties, 18 of whom replied to our questionnaire. Only 25 estimated injuries were sustained in the 1971-72 season in the 28 clubs, and as many as 20 clubs had none to report. Half the injuries were to the arms and most of them were bruises. Only two fencers were cut. Twenty eight per cent of the injuries were strains or sprains and they occurred all over the body. Most of the injuries received no medical attention and apparently needed

none and only one fencer had to go to hospital. But, 8 of the 25 injured fencers were given first aid at the time they were injured. Only one of these had to go to his doctor with a wound in the arm pit. Sixty eight per cent of those who were injured lost no time from fencing. Two players were said by the club secretaries to have been unsatisfactorily treated. No club had an official doctor but one had one as a playing member. The injury rate per 10,000 man-hours of play was 4.2.

Cycling

Twenty three out of 30 clubs answered the questionnaire and reported 25 accidents in 1972. Eighty eight per cent of the injuries were small and needed either no attention or simple first aid only, but 6 (24%) of the 25 cyclists who were injured had to go to hospital. One of these was concussed and had to be admitted for 3 days, and another with multiple abrasions for 2 days. General practitioners subsequently treated 3 cyclists. More than half the injured lost no time at all, and only two were off riding for more than 3 weeks. The club secretaries thought that nearly all (88%) of the injuries had been well treated. The fact that there was no medical attention available was the only reason given for the inadequate treatment of 3 injuries. None of the cycling clubs had an official doctor, and the accident rate per 10,000 man-hours of riding was only 1.56.

Judo

Eight of the 12 listed judo clubs responded to our questionnaire. An estimated twelve injuries happened in 4 clubs, but 8 clubs had nothing to report. Seven of the injuries were to the arms and 4 of these were fractures or dislocations. There were also two cases of damaged knee cartilages. Two players even lost consciousness as the result of a neck lock, and another man suffered from a damaged "neck nerve". The shoulders were most vulnerable to bruises, and the knees to strains. The minimum time off play was as much as 3 weeks and the maximum 8 weeks. But, the injury rate was low at only 1.6 injuries per 10,000 man-hours of play. Here we have quite a different pattern of injury, compared to the other sports. A small number of relatively severe injuries as assessed not only by their description, but also by the objective measure of time off play, whereas the other sports tend to have a larger number of superficial injuries needing little or no medical treatment or time off. But, this of course is what judo is all about, when looked at from the point of view of personal defence. Nine of the 12 injured (a high proportion) were given first aid at the time of the injury and all 12 were later treated at hospital. In every case the club secretaries felt that the treatment was adequate. Again this is a contrasting finding, since in most of the other sports some dissatisfaction with the minor injury management was voiced. None of the judo clubs had an official doctor.

Boxing

Questionnaires were sent to 24 boxing clubs and 16 replied. The estimated number of injuries for all the 24 clubs was 14. As many as 15 clubs had no injuries to report. There were nine injuries to the upper limbs and seven of them were fractures or dislocations which meant losing from 2 to 4 weeks sport. Two boxers who sustained damaged jaws were off play for as long as 7 months. There was only one knock-out reported in the survey and he was off boxing for the statutory period of 4 weeks. Six (43%) of the injured boxers went to hospital casualty departments. The injury rate is not high at 1.4 per 10,000 man-hours of boxing, but when injuries do occur, they are relatively serious, as shown by the high proportion going to hospital and the average time off sport, which was 22 days, with a range of one week to seven months. Six of the 16 clubs had a club doctor, which is a very high proportion compared to the other sports. None of the secretaries had any complaints to make about the adequacy of the medical treatment given which shows the paradoxical trend among sports that the more serious the injuries, the fewer the secretaries' complaints, and perhaps, the better they are treated.

THE WATER SPORTS

Rowing

The very high proportion of 30 out of 32 rowing clubs responded, but reported only 19 injuries. As many as 25 clubs had no accidents during the year. Twelve of the 19 injuries were reported by one club, each member of which rowed for 14 hours per week on the average. The other 7 injuries were reported by 4 clubs, 2 of which spent a great deal of time on the water. Nearly all (80%) of the injuries were to the lower limbs, and more than half of these were strains or sprains, but two men suffered from broken ankles. General practitioners treated 8 of the 19 rowers and 5 of them were further treated by the physiotherapist of a neighbouring football club. Both the men with broken ankles and one with a strained arm went to the out-patient department of a hospital for treatment. Five of the 19 injured men lost no rowing time, and the loss of time for the rest ranged from less than a week to 12 weeks, but the median loss was only 3 days. Seven (37%) of the 19 rowers were thought by one club secretary, to have been inadequately looked after. The injury rate for rowing was 1.4.

Sub-Aquatic activities

Six out of a possible 8 sub-aqua clubs replied to our questions. Five of them had no injuries to their members during the year under review, but the sixth reported 3 injuries. One diver cut his leg on the propeller of a boat. He received first aid, saw his doctor, and he was even-

tually treated in hospital. A second diver injured his knee, and he was treated in hospital as an out-patient. A third man sustained a cut arm and concussion from a blow on the head. These were the only injuries reported, and they were all from the same club, which suggests that the accidents which caused the injuries may have been a function of the club, rather than of the sport, and more especially since the injury rate of sub-aqua as a whole was only 0.49.

Swimming

Sixty five out of 75 swimming clubs took part in the survey and reported 27 injuries. Forty eight of the clubs had no injured members. Slightly more than half (51.9%) of the injuries were to the head, face or eyes, and nearly all of these were bruises and cuts. There was one case of sinus irritation due to chlorine and one swimmer was concussed. Ten of the injuries were to the lower limbs. More than half (a high proportion) of the injuries were initially treated by first aid and a quarter by general practitioners. Only one swimmer went to hospital at once, but 5 went after initial treatment. Five swimmers lost no time from sport and 21 lost from 1 to 28 days swimming. (For one swimmer, this information was not known). The club secretaries thought that they all received adequate medical attention, and this may well relate to the high proportion who received immediate first aid. Swimming was the safest of all the sports surveyed with an accident rate of only 0.3 or about 120 times safer than association football. The high proportion of injuries which received immediate first aid, together with the favourable comment of the secretaries may, perhaps, be explained by the presence of bath attendants, who had had training in resuscitation.

General Comparison

This report complements a previous paper upon football injuries (Weightman and Browne 1974) and figure 2 summarizes the number of injuries (irrespective of severity) per 10,000 man-hours of play for each sport in a single season, and the relative severity of injury indicated by the median days off play per injury. The football experience is brought in to make a broader comparison.

The two types of football produce by far the greatest number of injuries, with varying degrees of severity. After these two, at rates of 36.5 for association football and 30.5 for rugby football, the figures fall away through hockey, fencing, cricket, cycling, judo and badminton to the water sports, which seem to be very safe. However, the severity of the injuries by no means runs parallel to their rate. For example, association football has the highest injury rate per 10,000 man-hours of play, of 36.5 but the median number of days off play per injured man are only 6 — half what is needed for a rugby football injury, and less than a quarter of that needed to

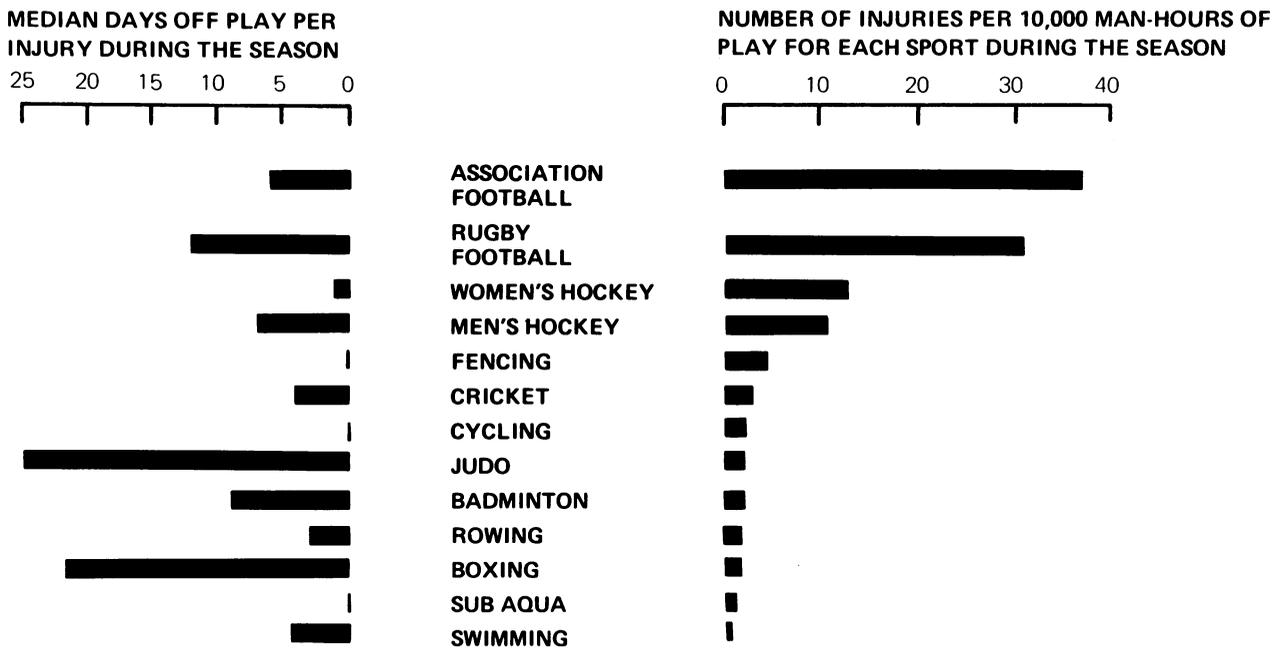


FIGURE 2. The relative rate and severity of injury in each sport.

recover from a judo injury. Judo and boxing both have low injury rates, but when a participant is hurt it is relatively severe, and he needs on average about 3 weeks off sport in which to recover.

The relative roles of first aid, doctor and hospital in the treatment of sports injuries are shown in Table II.

Table II:

Estimated numbers and proportions of injuries treated at any time by hospital, doctors and first aid, in each sport

Sport	Total Injuries	Hospital %	Doctor %	First Aid %	No Treatment %
Assoc. football	14078	30	30	74	10
Rugby	3888	51	40	46	12
Hockey ♂	73	45	19	32	22
Hockey ♀	64	34	14	41	31
Cricket	319	43	31	42	16
Badminton	144	32	17	29	35
Fencing	25	12	4	32	56
Cycling	33	27	12	39	30
Judo	12	100	8	83	0
Boxing	14	50	50	43	0
Rowing	20	20	65	5	10
Swimming	31	19	48	71	3
Sub-aqua	3	67	100	100	0

A little under three quarters of all association football injuries received first aid, but less than half the rigger injuries did so. On the other hand, a large proportion of the small number of judo injuries were so treated. Hospital treatment was given to a proportion of injuries, which varied depending mostly upon the severity. For example, all the judo injuries went to hospital, two out of three of the sub-aqua, half the boxing and a little over half the rugby football injuries. Table III shows the types of injury which were treated in hospital and gives some idea of the sports injury loading upon the hospital service in the four northern counties, with an estimated 6534 injuries from this organized sport being treated at hospital in a "sports year".

Table III: Estimated injuries treated at hospital during a 'sports year'

Injury	No.	%
Bruise and cut	2348	35.9
Fracture and dislocation	2315	35.4
Sprain and strain	1405	21.5
Concussion	283	4.3
Swelling and blister	143	2.2
Broken teeth	37	0.6
Other	3	0.05
Total	6534	

During the "sports year" 487 estimated injuries from all the 13 sports caused players to be admitted to hospital. This was 2.6% of the estimated total number of injuries, 332 were from association football, 144 from rugby and the remaining 11 from cricket, badminton, cycling and judo. General practitioners treated slightly under one third of the total number of injuries, about the same proportion as were treated in hospital. The proportions of injuries which received no treatment at any time, (last column, Table II) reflects the severity of injuries in each of the sports, i.e. for judo and boxing, treatment was given to all the injuries.

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REFERENCE

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