

SHORT REPORT

Review of sports injuries presenting to an accident and emergency department

S H Boyce, M A Quigley

Emerg Med J 2004;21:704–706. doi: 10.1136/emj.2002.002873

The sport and leisure industry is one of the fastest growing sectors of the business market. It has been estimated that each year 1–1.5 million people attend accident and emergency (A&E) departments in Britain,¹ and 3.7 million people present to emergency departments in the USA,² with an injury related to sport and exercise. With these levels of presentation A&E departments can provide valuable research into the demographics of sports related injuries.

There are numerous studies regarding the incidence of sports injuries within a community or defined population, however, there is little modern research investigating specifically the nature of sports injuries presenting to an A&E department in Britain.^{3–6} Other studies have been published from Ireland,⁷ Europe,^{9–11} Australasia,^{12–13} Asia,¹⁴ and more recently North America.^{2–15}

This observational study aimed to determine the incidence of attendance, types of injuries, nature of the sport involved, and the arrangements for follow up management in patients presenting, with an injury related to sport, to the A&E department of Crosshouse Hospital, Kilmarnock.

METHOD

The study took place prospectively over a period of three months from February to April 1999 and included people 16 years of age or over. Any patient presenting with an injury attributable to participation in organised sport or recreational activity had their details and A&E number noted by the triage nurse on duty. Only new attendances were included. Relevant A&E cards were analysed retrospectively by hand. Demographic trends for each patient were recorded:

RESULTS

Incidence of attendance

During the study period overall attendance, excluding children, was 10 172. Of these, 273 cases (2.7%) were classified as sports injuries. Men attended more frequently than women by a ratio of about 9:1. There were only 30 female cases.

Age

Ages of both male and female patients were classified into decades. In both sexes attendance peaked in the 16–20 age category followed by a steady decline in progressing years (fig 1)

Sport

In total 29 different sports were represented. Football was the most common sport by a substantial margin (table 1).

Types of injuries

Soft tissue injuries (STI) dominated (70%) (fig 2). Injuries to the lower limb accounted for 60% of all injuries. The upper limb, head and neck, and trunk were responsible for 25%, 10%, and 4% respectively (tables 2–4). Ankle sprains were the most common injury (19%).

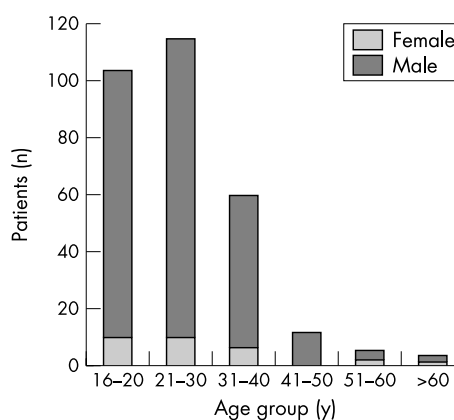


Figure 1 Age of male and female patients.

Follow up

Most patients were discharged with instructions to attend their general practitioner (GP) if complications occurred (67%). Altogether 25% were referred to hospital based out-patient clinics (fracture, A&E soft tissue, hand, ENT, and ophthalmology). Five per cent were referred directly to physiotherapy and 3% admitted to hospital (fracture manipulation or observation after head injury) (fig 3).

DISCUSSION

About 50 000 new patients attend Crosshouse Hospital A&E department a year. Sports injuries accounted for 2.7% of attendances. A&E departments manage patients with acute injuries from sport and this value possibly represents the “tip of the iceberg” of sport related injuries. Limiting the study to three months may introduce a seasonal variation. A year long study would reflect the true representation of overall sports injuries attendance.

The incidence of presentation is lower than other studies where values ranged from 3.6%–8.3%. Difficulties exist when comparing the incidence in these dissimilar studies. In some, children were included.^{5–8} Study periods varied from one week¹⁵ to one year.^{3–7–8–11–13–14} There is also the problem of comparing values between countries where different health-care mechanisms exist. In all studies most injuries occur in the under 30 years’ age group irrespective of country of origin. More men present with injuries than women. In this study the male: female ratio was 9:1. Other studies from abroad have a far greater female attendance.^{11–15}

Football was the most common sport implicated in injuries (65%). There was little difference in the other sports represented. Football had a high representation in all studies.

Abbreviations: STI, soft tissue injury; A&E, accident and emergency; GP, general practitioner

Table 1 Sports involved in all injuries

Type of sport	Patients (n)
Football	178
Rugby Union	18
Basketball	9
Badminton	7
Karate	6
Running	6
Squash	5
Ski-ing	5
Horse riding	4
Aerobics	3
Boxing	3
Fishing	3
Swimming	3
Others (16 different sports)	24

Table 2 Injuries to the head/neck and trunk

Injury	Patients (n)
Minor head injury	9
Chest wall bruising	9
Fracture of the nose	4
Nasal bruising	3
STI neck	3
Facial bruising	3
Lacerations	3
Lumbar muscle strain	2
Hyphaema (eye)	1

National sporting variations, for example, hurling (Ireland),⁷ ice hockey (Finland),⁹ skiing (Norway),¹¹ and rugby union (New Zealand)¹² are present. Contact sports will result in a higher chance of injury. Football, a contact sport, will result in injury. The high incidence of injury in football reflects the mass national participation in this sport within this country from a recreational level to organised leagues.

Injuries to the soft tissues are the commonest diagnosis in all studies. Injuries to the lower limb and specifically the ankle are most frequently represented; a fact supported by this study. With lower limb injuries widespread, aspects of injury prevention must be considered. Shin guards are often worn by all level of footballers and injuries to the tibia are uncommon. However, ankle injuries and knee injuries can lead to significant long term morbidity. Currently there are no ankle or knee braces specifically designed to prevent injury and development in this area is required.

Most patients (67%) received no hospital outpatient follow up, either discharged directly from the department or referred to their GP if complications arose. This may suggest that a significant proportion of injuries were of a minor nature and could be managed in the first instance at primary care level or with first aid measures at the scene. Despite the direct availability of the physiotherapy department only 5% of patients were referred. Not all sports injuries require physiotherapy. However, physiotherapy does perform an integral role in the rehabilitation of soft tissue injuries.

A significant proportion (25%) of patients was referred to outpatient clinics, mainly fracture and A&E soft tissue. This

Table 3 Injuries to the upper limbs

Injury	Patients (n)
STI wrist/hand	14
STI thumb	9
STI shoulder	8
Fracture of wrist/hand	7
Fracture of finger	7
STI finger	7
Fracture of thumb	3
STI elbow	3
Acromio-clavicular joint rupture	2
Fracture of shoulder/upper arm	2
Fishing hooks in finger	2
Dislocated thumb	1
Dislocated finger	1
Laceration	1

figure is comparable to other studies. This is a comparatively large group of patients and the benefits of a separate sports injury clinic to deal with A&E referrals and possibly community based referrals merits consideration. Conversely, on the basis of this study, this equates to less than 30 new patients a month, which would be challenged on the evidence of cost effectiveness.

This study may have some limitations in that only three months of data are included and relied upon inclusion of patients by the triage nurse. Future research involving sports injuries and the A&E interface require a longer study period producing a greater sample size and include the time of presentation after injury, the treatment performed, reviewing the injuries referred to the GP, and any complications after injury.

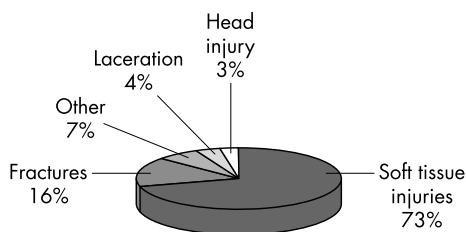


Figure 2 Types of injury.

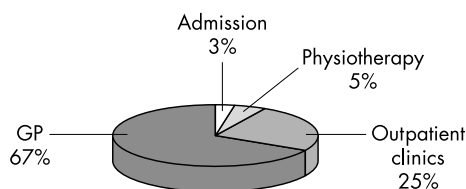


Figure 3 Follow up arrangements of sports injury management.

Table 4 Injuries to the lower limbs

Injury	Patients (n)
Ankle sprain	52
STI knee	35
STI foot	19
Bruising to ankle	10
Calf muscle strain/tear	9
Fracture of ankle	7
Lacerations	7
STI hip/upper thigh	5
STI toes	4
Fracture of tibia	3
"Pulled hamstrings"	3
STI lower leg	3
Fracture of toes	3
Fracture of fibula	2
Fracture of foot	2
Quadriceps bruising	2
Achilles tendon rupture	1

CONCLUSION

Sports injuries present only a minor increase in the workload of an A&E department. This may increase in the future with expansion in leisure time and sporting facilities available to the general public. Patients presenting to an A&E department with a sports injury will typically be male and under the age of 30 years. Football is the most common sport implicated in injury. The lower limb is the most frequently injured area and ankle sprains the most common single injury. Most sports injuries presenting seem to be of a minor nature and could possibly be managed with first aid measures by parents, teachers, and coaches at the scene or by attending primary care.

Authors' affiliations

S H Boyce, Accident and Emergency Department, Crosshouse Hospital, Kilmarnock, UK

M A Quigley, Accident and Emergency Department, Dumfries Royal Infirmary, UK

Correspondence to: Dr S Boyce, 176 Troon Avenue, Greenhills, East Kilbride G75 8TJ, UK; steveboyce_scotland@yahoo.com

Accepted for publication 18 February 2003

REFERENCES

- 1 **Nicholl JP**, Coleman P, Williams BT. Pilot study of the epidemiology of sports injuries and exercise related morbidity. *Br J Sports Med* 1991;**25**:61–6.
- 2 **Burt CW**, Overpeck MD. Emergency visits for sports related injuries. *Ann Emerg Med* 2001;**37**:301–8.
- 3 **Watters DAK**, Brooks S, Elton RA, *et al*. Sports injuries in an accident and emergency department. *Arch Emerg Med* 1984;**2**:105–11.
- 4 **Pickard MA**, Tullett WM, Patel AR. Sports injuries as seen at an accident and emergency department. *Scott Med J* 1988;**33**:296–7.
- 5 **Bedford PJ**, MacCauley DC. Attendances at a casualty department for sport related injuries. *Br J Sports Med* 1984;**18**:116–21.
- 6 **Jones RJ**, Taggart T. Sport related injuries attending the accident and emergency department. *Br J Sports Med* 1994;**28**:110–11.
- 7 **Cuddihy B**, Hurley M. Contact sports and injury. *Ir Med J* 1990;**83**:98–100.
- 8 **Murphy AW**, Martyn C, Plunkett PK, *et al*. Sports injuries and the accident and emergency department—ten years on. *Ir Med J* 1992;**85**:30–2.
- 9 **Sandelin J**, Kiviluoto O, Santavirta S, *et al*. Outcome of sports injuries treated in a casualty department. *Br J Sports Med* 1985;**19**:103–6.
- 10 **Sandelin J**, Santavirta S. Occurrence and epidemiology of sports injuries in Finland. *Ann Chir Gynaecol* 1991;**80**:95–9.
- 11 **Maehlum S**, Daljord OA. Acute sports injuries in Oslo: a one year study. *Br J Sports Med* 1984;**18**:181–5.
- 12 **Lingard DA**, Sharrock NE, Salmond CE. The impact of sports injuries in winter on medical services. *N Z Med J* 1975;**82**:229.
- 13 **Smithers M**, Myers PT. Injuries in sport. A prospective casualty study. *Med J Aust* 1985;**142**:457–61.
- 14 **Sadat-Ali M**, Sankaran-Kutty M. Sports injuries in Saudi Arabia. *Br J Sports Med* 1985;**19**:28–9.
- 15 **Pelletier RL**, Anderson G, Stark RM. Profile of sport/leisure injuries treated at emergency rooms of urban hospitals. *Canadian Journal of Sports Sciences* 1991;**16**:99–102.