Clinical Topics

Injuries in Rugby Union football

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Summary and conclusions

In a prospective study of 185 players attached to 10 British rugby clubs, 151 injuries were recorded among 98 of them (53%) during a single season. Forwards sustained significantly more injuries than backs. The standard of rugby, players' body weights, degree of fitness, and presence of joint hypermobility did not affect the risk of injury. The leg was the most common site of injury. Head and neck injuries were significantly more common when play was static and on wet pitches. Scrummaging accounted for no neck injuries. Almost half the injuries occurred during the last quarter of games. Foul play might have caused as many as 47 (31%) of all reported injuries.

Complete eradication of deliberately dangerous play would considerably reduce the high incidence of injuries in this sport.

Introduction

The need for a better system of preventing sporting injuries has been emphasised.[1] In the athletic injury clinic at Guy's Hospital Rugby Union football accounts for more referrals than any other single sport.[2] This may reflect a regional bias, but the large number of rugby players with injuries severe enough to warrant attendance in an outpatient clinic places an unwelcome stress on hospital resources. Preventing injuries necessarily depends on recognising their causes. Previous studies have examined the prevalence and characteristics of rugby injuries, either among patients referred to hospital[3 4] or subjects confined to a single club or playing site.[5 6] There has been only one prospective survey, which was conducted entirely by postal questionnaire.[7] None of these studies was sufficiently comprehensive to ascertain the incidence of minor injuries or their precise causes. We therefore performed a detailed prospective analysis of injuries sustained throughout the season 1976-7 to define their pattern and examine several potential predisposing factors.

Method

The survey was conducted among 10 first-class British rugby clubs, seven English and three Welsh. Participants were examined in the weeks before the beginning of the season. Details obtained at interview were: age, weight, position of play, and expected grade of performance (first, second, or third sides). A joint mobility score of 0-5 was compiled for every player, recording the presence of hypermobility at each of five specific joints.[8] Fitness was assessed by a modification of the Astrand-Ryhming step-up test, in which subjects were given a predetermined exercise over five minutes and their pulse rates 15-30 seconds after exercise measured with an electronic sphygmomanometer cuff attached to an automatic pulsometer.[9]

Players were asked to notify any injury to the investigators on prepaid reply cards. An injury was notifiable if it was severe enough to cause at least a temporary interruption of a player's contribution to a game or impaired his subsequent ability to train or play. One of the authors (JED) visited the clubs monthly and tried to interview all subjects. A questionnaire was sent to players who were unavailable for interview or who stopped playing during the review period. The following details relating to each injury were documented: site; nature (laceration, fracture, dislocation, etc); quarter of match when injury was sustained; surface of pitch; whether play was static (scrum, lineout, or maul) or in motion (accidental collision, tackling, or being tackled); and whether the injury was the result of an accident or a foul (kick, punch, or gouge). The data were compiled on punch cards and cross-tabulated by computer. When appropriate, results were evaluated statistically by χ^2 and t tests for paired or independent data.

Results

Out of 185 players, 171 were followed throughout the season. Seven moved away from their clubs and seven abandoned the sport. A further eight players failed to complete the season because of injury. Information was available on all subjects for at least half the season and we therefore included all entrants in our analysis. A total of 151 injuries was recorded among 98 of the players (53%). Sixty-two (34%) sustained a single injury, 36 (19%) two or more, and five had as many as four injuries (table I).

TABLE I—*Details of 185 rugby players, according to number of injuries sustained during one season. Percentages are given in parentheses*

No of injuries	No of players	Mean age (±SD) in years	Grade of performance			Position	
			1	2	3	Forward	Back
0	87 (47)	23 (±5·0)	39 (41)	27 (57)	21 (48)	41 (42)	46 (53)
1	62 (34)	24 (±4·6)	33 (35)	13 (28)	16 (36)	32 (32)	30 (35)
≥2	36 (19)	23·5 (±4·0)	22 (24)	7 (15)	7 (16)	26 (26)*	10 (12)*

*$\chi^2 = 6{\cdot}28$; $P < 0{\cdot}02$.

The ages of uninjured and injured subjects were similar. Out of the 94 who played at first-team level 55 (59%) had one or more injuries compared with 20 out of 47 (43%) at the second grade ($\chi^2 = 3{\cdot}2$; NS), and 23 out of 44 (52%) at the third grade ($\chi^2 = 0{\cdot}48$; NS). More first-grade players had two or more injuries when compared with second- or third-team players, but the differences were not significant ($\chi^2 = 1{\cdot}39$ and 1·37). At least one injury was sustained by 58 of the 99 who played in a forward position (58%) and by 40 of the 86 backs (58%) ($\chi^2 = 2{\cdot}69$; NS). Nevertheless, 26 forwards (26%) had two or more injuries compared with 10 of the backs (12%), and this difference was signifi-

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cant ($\chi^2=6{\cdot}28$; $P<0{\cdot}02$). Those who played prop forward were most prone to injuries, 10 out of 16 (62%) having sustained one or more injuries. Those who played centre had fewest injuries, six out of 18 (33%) having been injured. The incidence of injury between these two positions was significantly different ($\chi^2=5{\cdot}62$; $P<0{\cdot}02$).

The mean body weight of injured players was 79·1 kg (means 78·8 kg and 84·7 kg for those with one injury and those with two or more injuries respectively) (table II). The mean weights of players with no injuries and those with two or more differed significantly ($t=2{\cdot}73$; $P<0{\cdot}01$). Since this may have reflected the relatively high incidence of injury among forwards (who tend to be heavier) we compared the weights of uninjured and injured forwards. Those with no injury had a mean ($\pm$SD) weight of $85{\cdot}6\pm10{\cdot}4$ kg; those with one injury, $83{\cdot}8\pm10{\cdot}6$ kg ($t=0{\cdot}61$; NS); and those with two or more injuries, $88\pm10{\cdot}8$ kg ($t=1{\cdot}02$; NS). Only seven players (4%) had generalised joint hypermobility (joint mobility score >4), and these did not sustain a disproportionate number of injuries. The distribution of joint mobility scores was similar among those with and without injury (table II). The influence of fitness on injury was evaluated by examining the step-up test results of players with a history of injury within one month of their fitness assessments. There were 17 players with an injury during this period, and their mean ($\pm$SD) pulse rate was 37·1 ($\pm$7·2) beats/15 s. An equal number of uninjured players, matched for playing grade and position, had a mean pulse rate of 38·8 ($\pm$3·3) beats/15 s ($t=1{\cdot}3$; NS) (table II).

TABLE II—*Physical characteristics of uninjured players ($n=87$) and of those with one ($n=62$) or several injuries ($n=36$) sustained during one season. Percentages are given in parentheses*

No of injuries	Mean body weight ($\pm$SD) in kg	Joint mobility score			Fitness score* (mean $\pm$SD) (pulse beats/15 s)
		0–1	2–3	4–5	
0	79·1 ($\pm$10·6)†	65 (75)	20 (23)	2 (2)	38·8 ($\pm$3·4)
1	78·8 ($\pm$10·1)	45 (73)	14 (22)	3 (5)	37·1 ($\pm$7·2)
$\geq$2	84·7 ($\pm$11·1)†	27 (75)	7 (19)	2 (6)	

*Seventeen players sustained an injury within one month of fitness assessments. Results were compared with those of 17 matched uninjured players.
†$t=2{\cdot}73$; $P<0{\cdot}01$.

Table III shows the anatomical distribution of the 151 injuries. Over two-fifths affected the legs, and of these, the knee was the most common site, accounting for 15 of the 64 leg injuries (23%). Precise diagnostic information was lacking for many of the injuries, particularly those affecting joints such as the knee. Nevertheless, diagnosis was unequivocal for several categories: there were 25 muscle tears (16%); 15 lacerations (10%); 14 fractures (9%); and nine joint dislocations (6%). Only three cases of concussion were reported. Details about the state of play were available for 141 injuries (table III). Of these, 80 (57%) occurred when the player was running and 40 (28%) as the result of being tackled. Leg injuries were the most common, and these occurred significantly more often when players were running ($\chi^2=3{\cdot}98$; $P<0{\cdot}05$). Sixty-one injuries (43%) occurred when play was static. Again, the leg was the most commonly affected site, but head and neck injuries were significantly more common when play was static than when players were running ($\chi^2=5{\cdot}31$; $P<0{\cdot}05$). Scrummaging accounted for two head injuries and no neck injuries.

The state of the pitch was recorded for 138 injuries (table III). Eighty-two (60%) occurred when the pitch was considered to be either normally soft or very muddy. Hard surfaces were associated with 56 injuries (40%), of which 45 (33%) occurred on hard and dry pitches and 11 (7%) on hard and frosty pitches. Head and neck injuries together were significantly more common on wet surfaces than on dry pitches ($\chi^2=6{\cdot}8$; $P<0{\cdot}01$). Information about when an injury occurred was obtained in 119 instances. Of these, 55 (46%) occurred during the last quarter of a game, 18 (15%) in the third quarter, and 46 (39%) in the first half. The nature and anatomical sites of injuries were similar for each period. Of the total injuries, players were certain that 18 (12%) were caused by deliberate punches or gouges. Kicking produced 29 (19%) injuries, all of which were thought to be possibly due to foul play.

Discussion

Our results confirm the very high incidence of injuries in rugby football. Over half the players in our survey reported at least one injury in the course of a season. Results of a previous prospective study suggested that a player could expect an injury once in every five seasons.[7] Our data suggest that this is a considerable underestimate. Those playing at first-grade level were more likely to experience several injuries than those at other grades, but the differences were not significant. We kept no account of the number of games played by an individual, but any increased susceptibility to injury of first-grade players might be ascribed to their playing additional games as representatives at county or national level. Forwards were more injury-prone than backs, an observation which agrees with those of a previous study.[4] Those with several injuries were significantly heavier than uninjured players, a finding which may be attributed to the predominance of bulkier forwards in this group.

Joint hypermobility may increase the predisposition to joint injury among sportsmen.[10] Our sample of rugby players contained few who showed an increased range of joint movement and these did not seem unduly at risk. Attainment of efficient cardiorespiratory fitness is an obvious asset for any athlete. Rugby coaches often claim that fitness may lessen the risk of injury but we could find no evidence to support this assertion. Injuries to the legs, predominantly the knee, were most common. The head was the second most common site of injury. These findings agree with other reports.[4 7 11] Leg injuries were more likely when players were running, but were also the most common site of injury when play was static. The incidence of head and neck injuries was higher when players were static than when running, and when playing on wet rather than dry surfaces. Surprisingly, only three cases of concussion were reported. Neck injuries are a cause for concern, and fatal cervical cord lesions have been recently reported among rugby players.[12] No neurological sequelae were recorded among our eight cases of neck injury. Scrummaging is thought to be a major cause of cervical injury[13] but was not associated with any in our study. Most neck injuries occurred when play was static, particularly during mauls.

Interestingly, more injuries were sustained in the closing quarters of games than during any other period. No specific type of injury characterised the last quarter of a game. Whether this reflected fatigue, desperation, or frustration is speculative.

The practical implications of our findings are limited. Certain patterns of injury seem more likely in given circumstances, and this should provide a basis for closer analysis. The finding that at least 12%, and conceivably as many as 31%, of the total injuries were the result of deliberate attempts to harm opposing sportsmen is an ugly indictment of rugby football as played today.

TABLE III—*Anatomical distribution of injuries and their relation to phases of play and state of pitch*

Anatomical distribution:	Head	Neck	Shoulder girdle	Arms	Trunk and spine	Legs	Total No
No of injuries	29 (19%)	8 (5%)	20 (13%)	14 (9%)	16 (11%)	64 (43%)	151
State of play:							
Running	12 (15%)*	2 (3%)	15 (19%)	6 (7%)	4 (5%)	41 (51%)†	80
Static	15 (25%)*	6 (10%)	4 (6%)	5 (8%)	10 (16%)	21 (35%)†	61
State of pitch:							
Hard	8 (14%)‡	0	11 (20%)	6 (11%)	7 (12%)	24 (43%)	56
Soft	20 (25%)‡	8 (10%)	8 (10%)	6 (7%)	6 (7%)	34 (41%)	82

*$\chi^2=5{\cdot}31$; $P<0{\cdot}05$. †$\chi^2=3{\cdot}98$; $P<0{\cdot}05$. ‡$\chi^2=6{\cdot}8$; $P<0{\cdot}01$.

Vigorous prohibition of deliberately dangerous play is needed to reduce the very high rate of injury in this sport.

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Hospital Topics

Doctors, physiotherapists, and placebo pharmacology

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Summary and conclusions

A seminar of physiotherapists studied the psychological aspects of their work. Difficulty with doctors rather than patients was unexpectedly prominent. The following factors were identified as contributing to their dissatisfaction: doctors misused physiotherapy as a placebo in cases of incurable and untreatable disease and mental problems; because they faced questions about diagnosis and prognosis that doctors escaped they learnt to avoid knowing the facts about their patients; using quasi-scientific apparatus had tended to replace physical contact; they saw their psychological skill as illicit and unprofessional; and they were uncertain about their role as social workers.

Nevertheless, they tended to idealise doctors, which sharpened gratification in collaborative work and helped to alleviate anxiety about death and disease, but tended to reinforce sexual stereotyping and the image of physiotherapy as "unscientific," empirical, and intuititive ("feminine").

Introduction

A seminar of 16 experienced female physiotherapists met weekly for two years to study the psychological problems in physiotherapy. They aimed at combining education with research[1] by discussing relevant case histories.[2] I led the discussions, having done similar work with seminars for general practitioners.[3-5]

General practitioners complain that they are subject to "non-medical" demands. Balint[3] described "the drug doctor"—the illness and the treatment are often merely a convention that allows doctor and patient to spend time together. Doctors may prescribe the placebo physiotherapist as a way out.

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Chronic problems

In chronic incurable conditions and obscure functional disorders physiotherapy is used as a placebo. Many of the treatments are rituals known frankly not to work, and this increases the contempt with which physiotherapists vaguely feel surrounded, even though colleagues are personally friendly. Apparatus and gadgets intensify feelings of quackery and the undercurrent of scorn.

Clinical example 1—After a road accident a boy had no physical injury but refused to walk. The family was disrupted because of his father's alcoholism. No one felt like tackling the problem, and referral for physiotherapy was a cynical "supportive" measure, mainly evasive.

Hopeless cases

Doctors rarely think of how much despair physiotherapists shoulder in treating patients with hopeless conditions for which "there is no treatment but physiotherapy." Doctors sense the burden of crippled patients that physiotherapists carry, but know little about the other side of their work that annihilates optimism—for example, sustaining the semblance of treatment in a patient with an inoperable tumour. In many units the physiotherapist confronts every patient who has undergone a mastectomy, as she also confronts the amputee with bone sarcoma. All incurable cases (malignant, degenerative, neurological, arthritic, and geriatric) converge on the physiotherapy department. The roles of doctors and nurses who treat incurable or dying patients are hard, but can still be performed without recourse to misplaced therapeutic zeal; they must offer comfort and care to the end. By contrast, the physiotherapist's job is to promote an illusion of "treatment," implying improvement or even "rehabilitation." The doctor may fall into the same trap but need not—for physiotherapy the unrealistic aim is built in.

Clinical example 2—Amputee aged 80 with arteriosclerosis. While trying to teach him to walk, ". . . we had to give up *for the day* (my italics) when he was just dripping faeces."

Working in intensive care units now brings physiotherapists into direct touch with death, a useful antidote to the unreality which has