

The incidence and nature of injuries in first-league and provincial cricketers

R. A. STRETCH

Abstract This study investigated the incidence and nature of injuries sustained by club and provincial cricketers during a season. Questionnaire responses were obtained from 183 (59%) of 308 cricketers canvassed. The overall seasonal incidence of risk of injury in all players was 49,1% and this was higher for provincial cricketers (71,6%). The single most common site of injury was the fingers (20,5%). The seasonal incidence of injuries in bowlers (42%) and fielders (40,9%) was higher than in batsmen (17,1%). Young players (< 26,2 years) sustained more injuries than older players. The majority of injuries occurred during matches (69,3%), particularly near the beginning and the end of the season. Furthermore, 23,9% of the injuries were recurrent injuries from the previous season and 22,7% of injuries sustained recurred during the season. Cricket injuries have not yet reached serious proportions, but all involved need to be aware of their incidence and nature.

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The popularity and success that cricket, especially limited-overs cricket at provincial level, has enjoyed over the past decade has placed greater demands on cricketers as a result of the increase in the number of matches played. The increased physical demands on the players may be associated with an increased risk of injuries. However, few well-conducted studies have documented the incidence and nature of cricket injuries during a season, and no studies have been made of South African cricket players.

The incidence of cricket injuries has been reported in two studies. In club cricket players the incidence of cricket injuries was reported as 2,6/10 000 man-hours played,^{1,2} while the incidence in first-class cricketers in Australia was 333/10 000 man-hours played.³

The anatomical sites of injuries in cricket have been reported in a number of studies. Injuries to the head, neck and face accounted for between 20% and 25%.^{2,4} Concussions, contusions, lacerations and nose bleeds were most commonly reported.

However, traumatic eye injuries are the most serious injuries in cricket and were first reported at the beginning of this century.⁵ Chronic glaucoma secondary to trauma⁶ and ocular concussion⁷ have also been reported. It has been estimated that eye injuries account for between 5,4%⁸ and 9%⁹ of sport-related injuries in the UK.

Injuries to the upper limb account for between 25% and 32% of all injuries.^{2,4} The fingers were consistently found to be the most common site.^{1,2,4} Common types of injury are fractures, dislocations and contusions sustained during batting and fielding. A case of Clay Shoveller's fracture has also been recorded.¹⁰

Back and trunk injuries account for 14 - 18% of all injuries sustained by cricketers.⁴ The reported frequency of lower limb injuries varies from 25%² to 30%.⁴ Injuries to the lower limbs can occur as a result of impact from the ball or they can be stress injuries associated with repetitive movements.

The injuries sustained by bowlers, batsmen and fielders have also been investigated. Bowling was found to be the major cause of injuries. It has been documented that 38% of young schoolboy bowlers¹¹ and 65,7% of provincial bowlers³ suffer from back injuries. These were predominantly lower back injuries,^{4,11,12} but muscle tears, especially of the hip flexor, the adductor longus and the rectus femoris muscles,^{13,14} and other overuse injuries, such as shin splints and bruised heels, also occur.^{4,11,13} Rare injuries, such as acute pneumomediastinum and bilateral pneumothoraces, have also been reported in fast bowlers.¹⁵ Spondylolysis of the lumbar vertebrae was particularly common in Australian fast bowlers who played first-class cricket.¹¹ Stress fractures at other sites are also common in fast bowlers and occur primarily in the metatarsal bones, the fibula and the tibia.¹⁴ Other overuse injuries reported in bowlers include abdominal muscle tears,¹⁴ shoulder injuries,⁴ talotibial exostoses, patellar tendonitis,¹⁴ bruised heels and shin splints.^{4,14}

The most frequently reported batting injuries are muscle strains and impact injuries.⁴ Impact injuries include head⁴ and eye injuries. Specific eye injuries reported include retinal detachment and rupture of the globe.⁹ Other traumatic injuries sustained during batting include fractures to the distal third of the ulna, fractures of the ribs¹⁴ and phalanges⁴ and soft-tissue injuries, especially to the upper leg, abdomen and testicles.¹⁴ A case of a traumatic splenic rupture in a batsman has also been described.¹⁶ Lower limb injuries in batsmen are usually hamstring, quadriceps and calf muscle strains that result from running between the wickets.¹⁻⁴

Three cases of ruptured spleens have been reported in fielders who landed heavily while attempting to field the ball.¹⁴

Shoulder injuries⁴ and 'thrower's shoulder' have also been reported in fielders.^{12,14} Severe traumatic eye injuries can occur while fielding close to the batsman.⁹

The literature on cricket injuries usually takes the form of cases or case series. Specific data on the incidence and nature of injuries incurred during a season by club and provincial cricketers are therefore limited.^{1,2} The aim of this investigation was thus to determine the incidence of the most common injuries sustained by club and provincial cricketers during a season. A secondary aim was to identify possible risk factors associated with these injuries.

Subjects and methods

The sample population consisted of 308 male cricket players who had been injured while playing for their province's top club team at the National Cricket Club Championships or a provincial team that played in the author's home province during either the 1988/89 or 1989/90 seasons. A questionnaire was handed out to all the players by the team manager; it sought the following information: (i) anatomical site of injury; (ii) month of injury; (iii) the cause of the injury; (iv) whether it was a

Department of Human Movement Studies, University of Fort Hare, Alice, Ciskei

R. A. STRETCH, D.PHIL.

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recurrence of a previous injury; and (v) whether the injury had recurred again during the season. The players were required to complete the questionnaires and return them. The return rate was 59,4% (183 players). As this is considered a high response for a questionnaire study¹⁷ a second questionnaire was not sent out.

An injury was defined as any physical damage that occurred during a match, practice or training session and prevented the player from completing the match, practice or training session. For the purpose of this survey the incidence of injury was expressed as a percentage of the total number of respondents. The injuries were grouped according to which of four areas in the body they affected: (i) the head, neck and face region; (ii) the upper limbs; (iii) the back and trunk; and (iv) the lower limbs. These injuries were classified according to whether they were batting, bowling or fielding injuries. To allow for comparisons between the phases of play during which the injuries were sustained, the number of injuries for each phase was then expressed as a percentage of the total number of injuries. A comparison was made showing the time of the season when the injury occurred. The off-season was defined as that period when no specific cricket practice or training was performed. The pre-season was when specific cricket practice, training and friendly matches were played. The season was defined as that period when official matches in the various competitions were played. No medical records were obtained from the injured players.

Statistical analysis

The Sample Statistical Analysis System (SAS) was used to compute univariate statistics, frequency distributions and to perform cross-tabulations. The χ^2 -test was used to document the differences in frequency of injury among subpopulations of players.

Results

Ten of the cricketers in this investigation had played cricket at international level and 104 at provincial level. The remaining 69 had played only first-league cricket. The respondents were 54 batsmen, 56 all-rounders, 55 bowlers and 18 wicket-keepers. The age, body mass and stature of the cricket players were $26,2 \pm 5,0$ years, $81,6 \pm 9,0$ kg and $181,7 \pm 7,0$ cm, respectively.

The training histories of the respondents are detailed in Fig. 1. During the off-season 58,5% of the respondents spent no time practising or training. In the pre-season period 68,5% of the respondents spent between 1 hour and 6 hours a week practising and training specifically for cricket. During the season 48,4% and

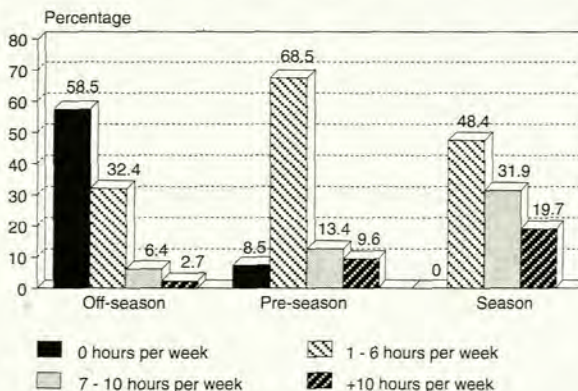


FIG. 1. Training history of the cricketers.

51,6% of the respondents spent 1 - 6 hours and more than 6 hours per week, respectively, practising and training.

A total of 88 injuries were reported by the respondents. The seasonal incidence of cricket injuries in this group was thus 48,1%. These included injuries to the head, neck and face (9,1%), upper limbs (34,1%), back and trunk (19,3%) and lower limbs (37,5%) (Table I). The incidence of injuries in provincial cricketers (71,6%) was higher than in club cricketers (28,4%), although this was not statistically significant ($P > 0,05$). Bowling (42%) and fielding (40,9%) accounted for the majority of all injuries sustained. Most bowling injuries affected the lower limbs (51,4%) and the back (40,5%). Fielding injuries were sustained mainly in the upper limbs (26,1%). The batting injuries (17,1%) were predominantly muscle strains and impact injuries (Table I).

TABLE I. Phase of play during which injuries occurred (%)

	Bowling	Batting	Fielding	Total
Head, neck and face	—	4,5	4,6	9,1
Upper limbs	3,4	4,6	26,1	34,1
Back and trunk	17,0	2,3	—	19,3
Lower limbs	21,6	5,7	10,2	37,5
Total	42,0	17,1	40,9	100,0

The recovery time from injuries sustained in the different anatomical areas is shown in Table II. Twenty-three per cent of the injuries were severe enough to prevent the cricketers' return to play for more than 21 days, while 47,8% and 27,2% of those injured were not able to practise or play for between 1 and 7 days, and 8 and 21 days, respectively.

TABLE II. Recovery time from injury (%)

	1 - 7 d	8 - 21 d	> 21 d
Head, neck and face	6,8	2,3	—
Upper limbs	17,1	6,8	10,2
Back and trunk	11,4	4,5	3,4
Lower limbs	12,5	14,8	10,2
Total	47,8	28,4	23,8

Table III shows the number of injuries sustained in the four anatomical regions during matches alone, practices alone or during matches and practices. Most injuries occurred during matches (69%).

TABLE III. Injuries sustained during matches and practices

	Match	Practice	Match/ practice	%
Head, neck and face	6	2	—	9,1
Upper limbs	22	7	1	34,1
Back and trunk	9	5	3	19,3
Lower limbs	24	9	—	37,5
Total (%)	69	26	5	100

The total number of injuries among respondents in each month during the pre-season period and the season is depicted in Fig. 2. In the pre-season period most injuries occurred in the last month before the season began. During the season most injuries occurred early or late in the season.

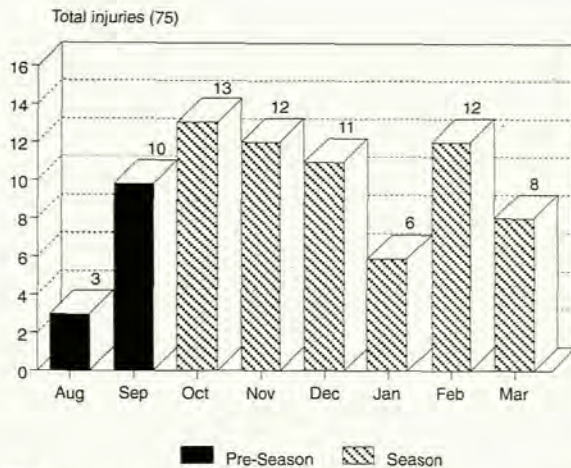


FIG. 2. Month of occurrence of 75 injuries — 10 subjects did not indicate when the injury occurred and 3 injuries occurred during the off-season.

Discussion

The principal finding of this study was that cricket injuries are common in club and provincial players (48/100 players per season). Most injuries were to the upper and lower limbs; bowlers and fielders are most often affected. Most injuries occur during matches and 29% of injuries are severe enough to prevent the cricketer from returning to play for more than 21 days.

The high seasonal incidence of injuries is probably a result of the respondents' playing a lot of cricket. Provincial cricketers attend provincial team practices and play at least 30 days of provincial cricket a season, as well as attend provincial practices. In addition, they play in matches and practices for their clubs. This is more physically demanding and makes them more susceptible to injuries. However, a limitation of this study is the 59% response rate to the questionnaire. This could also account for the high reported incidence of injuries in the respondents. Injured players may be more likely to respond to a questionnaire than non-injured players.

The most common anatomical sites of injury were the lower (37,5%) and upper limbs (34,1%), as reported in other studies.¹⁻³ These upper limb injuries were predominantly to the fingers (20,5%) and occurred while fielding, catching and batting. Lower limb injuries were mainly hamstring, quadriceps and calf muscle strains.

Injuries occurred mostly in bowlers (42%) and were more common in the fast to medium-fast bowlers. This is consistent with the findings of other researchers.^{1,2,4} The major cause of bowling injuries was not a single factor but rather a combination of factors.^{11,12,15,18} These included one or more of the following: inadequate physical and/or physiological attributes, postural defects, poor bowling technique or high physical demands on young fast bowlers.

Batting injuries were common but were mostly impact injuries to the head and face as a result of either the ball deflecting off the bat or the batsman ducking into the ball. In two of these cases the batsman was wearing a helmet with ear-pieces only, while in the other two cases no helmet was worn. Five injuries to batsmen resulted from being struck on the hand and lower arm by fast bowlers. Batsmen should thus be encouraged to wear protective helmets and forearm protectors, while cricket equipment manufacturers may need to investigate the possibility of increasing the protection afforded by batting gloves.

Lower limb injuries in batsmen were also mainly hamstring, quadriceps and calf muscle strains. These injuries were sustained in matches while they were running between the wickets. These results should encourage batsmen to practise this skill by including it in their training sessions. To stimulate the actual match situation they should practise this running between the wickets with their full kit on, as well as place more emphasis on strength and flexibility training.

The majority of injuries (69%) are sustained during matches; this could be the result of a number of factors, e.g.: (i) sudden increase in the length of bowling spell(s) during a match, as opposed to the amount of bowling usually performed in the nets; (ii) attempts to bowl too fast; (iii) captains over-bowling a bowler who is performing well; (iv) a bowler returning for subsequent bowling spells, often without adequate recovery from a previous bowling spell; (v) a sudden increase in the number of matches played; (vi) inadequate warming up before bowling, batting and fielding; and (vii) return to match play too soon after an injury. A further explanation for the higher incidence of injuries in matches could be that the players are more likely to try that little bit harder in a match than a practice, predisposing them to more injuries.

Of concern to cricket coaches, administrators and those involved with training and rehabilitation of the injured cricketer is the amount of time lost through injury. Severe injuries were predominantly fractures to the upper limbs caused by impact when batting and fielding, and lower limb muscle strains and overuse injuries normally associated with repetitive movement. Of the injuries sustained, 23,9% were a recurrence of an old injury, while 22,7% of the new injuries sustained were re-aggravated during the same season. A possible explanation for this may be that the South African season, particularly at provincial level, is comparatively short; this causes players to rush back to play in matches too soon after an injury. This situation could be exacerbated by the lack of adequate training and rehabilitation.

This study shows that injuries tend to occur during specific stages of the season. The many pre-season friendly matches and the fact that the first half of the season is made up predominantly of limited-overs cricket, particularly at provincial level, could be partly to blame for the high number of injuries during that part of the season. A large percentage of players do no off-season training (60,1%) and then go into concentrated fitness and skill training sessions early in the season. This, combined with the fact that limited-overs cricket requires a greater physical work-rate from the players when fielding and running between the wickets, makes them more susceptible to injury. The players who took part in off-season training were better able to adapt to these early season demands and were thus at less risk of injury. Furthermore, the increase in the number of injuries towards the end of the season would appear to be a result of the many league and provincial finals in the various competitions. The slight decrease in the number of injuries suffered during January might be the result of the break from club fixtures over the holiday season, as well as the increased number of 3-day first-class games which are not as physically demanding as the limited-overs games.

The incidence and nature of injuries sustained by club and provincial cricketers during a season have been presented. The high incidence of severe injuries recorded needs to be addressed by those involved in cricket — the players, coaches, administrators and medical personnel. Many of the injuries were either a recurrence of an injury from the previous season, or recurred again during the season. Bowlers, especially fast to medium-fast

bowlers, were found to be the most susceptible to injury, with injuries to the upper and lower extremities the most serious in terms of the number of days that a cricketer was not able to practise or play. The majority of injuries occurred fairly regularly in matches throughout the season, with an increase during those parts of the season where there was a lot of cricket played.

Further investigations into cricket injuries need to expand on this study by collecting data over more seasons. In particular the number of injuries in relation to the number of hours spent playing should be assessed. Epidemiological data should also be collected on injuries in young cricketers. The personnel involved in the treatment and rehabilitation of injured cricketers need to be aware of the large number of recurrent injuries. Finally, administrators and coaches need to be aware that injuries occur mainly in matches and during periods in the season when a lot of cricket is played.

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