

ORIGINAL ARTICLE

Injuries in West Indies cricket 2003–2004

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Objective: To analyse injuries in West Indies Cricket and compare them with those of other cricket playing nations.

Methods: Injuries between June 2003 and December 2004 were surveyed prospectively in all major matches of the West Indies Cricket Board.

Results: Most injuries occurred in the West Indies Test and one day international teams. Mean match injury incidence was 48.7 per 10 000 player-hours in Test cricket, and 40.6 per 10 000 player-hours in one day international cricket, with injury prevalence of 11.3% and 8.1% respectively. In domestic cricket, the match injury incidence was 13.9 per 10 000 player-hours for first class cricket, and 25.4 per 10 000 player-hours in one day domestic competitions. There were more injuries on tour for the West Indies team than at home. The batsmen and fast bowlers sustained 80% of injuries, with many leading to long absence from the game, although many of these injuries were sustained while fielding. Most injuries were of the phalanges (22%) and the lumbar spine (20%) sustained mainly while fielding (including catching) and fast bowling respectively.

Conclusions: Injuries in West Indies cricket may be reduced by (a) early detection and management of injuries on tour, (b) attention to fielding and catching techniques, and (c) monitoring of young fast bowlers.

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Sporting injuries have been reported with increasing frequency in a quest to identify patterns by which they can be predicted and prevented. Injury surveillance in cricket has been undertaken for almost a decade. The only sport with a true "World League" comprising 10 nations has not, however, had universal reporting of injuries. Only reports from Australia and South Africa^{1,2} have been published, although other nations have started to set up injury databases and some—for example, England—have produced reports.

Through consensus of injury surveillance coordinators of most of the member Cricket Boards of the International Cricket Council, a standard data collection and reporting format has been adopted.³ This aims to standardise the definitions and reporting of injuries. This format was used in this report.

This study was undertaken to present the injuries seen in West Indies Cricket between June 2003 and December 2004 and is the first such study to be conducted. As of January 2005, there have been significant changes in the structure of West Indies cricket, with a new coach, assistant coach, manager, physiotherapist, and trainer whose responsibilities extend to the all teams in so far as fitness policy, protocols for work load, and other aspects that would directly affect injuries are concerned. The period for this study was therefore chosen to exclude any changes from the new structure. Unlike previous studies from single countries, the West Indies is a group of 14 separate countries, each with its own medical system. Four of the larger countries (Guyana, Jamaica, Barbados, and Trinidad and Tobago) have their own cricket boards, and the other smaller countries are covered by two boards (Leeward and Windward Islands). These collectively make up the West Indies Cricket Board. The medical panel of the West Indies Cricket Board coordinates the medical management of cricketers in all these countries.

METHODS

Between June 2003 and December 2004, major matches³ played under the auspices of the West Indies Cricket Board were monitored prospectively. The West Indies team had

three home Test series (eight matches) and home one day international (ODI) series (11 matches), three away Test series (10 matches), and four away ODI series (20 matches). The Carib Beer Cup first class season (January–March 2004), the Red Stripe one day competition of 2003, and the Presidents Cup one day competition of 2004 were also monitored.

Matches were defined as Tests and ODI played by the West Indies Team, first class domestic (FC), and one day domestic (ODD). Injury was defined as any injury or medical condition that would either prevent a player from being fully available for selection for a major match or, during a match, prevent a player from performing their role.³

All injuries that led to absence from practice, matches, or part of a match were recorded by the medical personnel at the ground or the physiotherapist accompanying the team.

Forms were distributed to all medical personnel involved with the teams who were responsible for the capturing data on the player, his role in the team, the activity leading to injury, diagnosis, and time lost because of the injury. Surgical intervention for an injury was also recorded. The forms were then returned to the senior author, who entered the data on a Microsoft Access Database.

The definition of injury was taken from the consensus paper, which had minor differences from the Australian study.^{1,3} Match injuries were differentiated from survey injuries, and hence injury match incidence and injury prevalence were calculated.

Statistical analysis was performed using the SPSS program (SPSS Inc, Chicago, Illinois, USA).

RESULTS

Seventy nine injuries were reported over the study period, of which 50 (63%) led to at least part of a match being missed and were therefore considered for match incidence and prevalence calculations. Injuries occurred in players aged 18–37 years, with 50% in players less than 23 years of age. Table 1

Abbreviations: FC, first class domestic; ODD, one day domestic; ODI, one day international

Table 1 Injuries per teams of West Indies Cricket Board

Team	No of injuries
West Indies	26 (52)
West Indies U19	1 (2)
Barbados	5 (10)
Guyana	4 (8)
Jamaica	4 (8)
Leeward Islands	2 (4)
Trinidad and Tobago	3 (6)
Windward Islands	4 (8)
Other	1 (2)
Total	50 (100)

Values in parentheses are percentages.

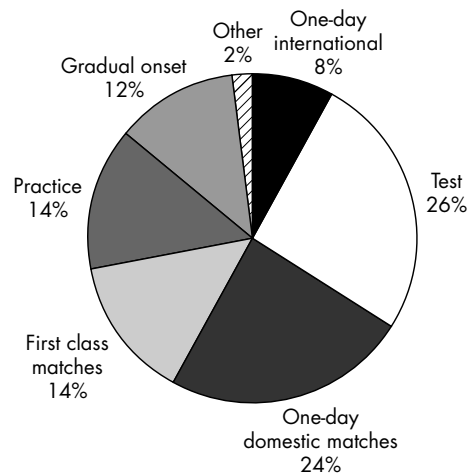


Figure 1 Injury occurrence (50 injuries).

represents a breakdown of injuries per team. During the study period, 25 players represented the West Indies in Tests and 25 in ODIs. In all, 33 players formed the cohort as many played both Tests and ODIs. For domestic cricket, the cohort was 162 players, all of whom played ODD, and 128 played FC cricket.

Forty (80%) injuries were first time injuries, five (10%) were recurrent during the present season, and the other five (10%) had first been sustained in previous seasons. Of these, 38 (76%) were acute, eight (16%) acute on chronic, and four (8%) chronic.

Figure 1 shows that most injuries were sustained in Test matches, and that first class (four days) and Test (five days) matches led to 40% of injuries. Of the remainder, 32% were in one day matches, and 28% were sustained outside of matches, resulting in the unavailability of the player for selection for a match.

Table 2 shows the match injury incidence and injury prevalence in international cricket. Table 3 shows the match injury incidence in domestic cricket. Owing to the small numbers of injuries, few conclusions can be drawn from the figures for individual countries, which are presented as a baseline for future studies. The total is more useful in accessing match incidence of injuries in domestic first class cricket.

There was a clear increase in injuries sustained while the West Indies team was on tour compared with at home in both Tests and ODI. In domestic cricket, the number of injuries in ODD were almost double those in FC matches.

Table 4 shows the time lost because of injury in relation to the role of the player. Batsmen and fast bowlers suffered 80% of the injuries. This group also comprised 77% of those players who lost >21 days and 81% of those who lost <4 days. These two categories comprise the serious and minor injuries respectively. Most teams consist of six batsmen and three fast bowlers, and hence these categories collectively account for most of the team.

Among the >21 day group, it is interesting to note that 64% were injuries sustained while playing for the West Indies team. Of these, 10 were sustained on tour and included two acute and eight gradual onset injuries, and three were sustained during a home series, of which one was acute.

Muscle strains comprised 26%, ligament strains 12%, stress fractures 12%, and other fractures 10% of all injuries. Two players were struck by lightning during an ODD game. Both were struck in the same game, played in an open field with a small pavilion as the only stand. Lightning hit the bowler and batsman at the same time. The bowler had muscle pain in the arm, whereas the batsman had abdominal pain and nausea. Both recovered without incident but were admitted to hospital for one night for observation. The match was abandoned immediately after the incident.

Table 2 Injuries, match injury incidence (injury/10 000 player-hours) and injury prevalence (percentage of squad unavailable per match) for West Indies cricket teams

	No of injuries	Incidence	Prevalence
Test			
Home	4	31.1	7.3
Away	11	61.3	14.2
Total	15	48.7	11.3
ODI			
Home	1	23.1	7.3
Away	4	50.2	8.6
Total	5	40.6	8.1

ODI, One day international.

Table 3 Match injury incidence (injury/10 000 player-hours) for domestic cricket

Team	First class	One day matches
Barbados	0.0	88.8
Guyana	32.0	0.0
Jamaica	16.0	0.0
Leeward Islands	16.0	28.8
Trinidad and Tobago	0.0	23.1
Windward Islands	10.7	23.1
Other	NR	0.0
Total	13.9	25.4

NR, Not reported.

Four (8%) injuries required surgical intervention. Two were finger fractures, one of which was open, and two were knee injuries requiring arthroscopic intervention.

Most injuries were of the phalanx, sustained by batsmen, or the lumbar spine, sustained by fast bowlers (table 5). Of the 10 lumbar spine injuries, four were stress fractures (three bilateral), of which one was in a spin bowler, two fast bowlers had symptomatic prolapsed intravertebral discs, two fast bowlers had facet joint inflammation, and one fast bowler and a wicketkeeper had muscle strains.

Table 6 shows that there were 14 injuries each sustained while bowling and fielding and 10 while batting. Most of the bowling injuries were to the lumbar spine. A comparison of tables 5 and 6 shows that only half of the injuries to batsmen were sustained while they were batting, with the others sustained while fielding.

Table 4 Time (days) lost because of injury in relation to main role of player

	1-3	4-7	8-14	15-21	>21	Total
All rounder	2	-	-	-	3	5
Batsman	8	-	3	1	8	20
Wicketkeeper	-	1	-	-	1	2
Fast bowler	5	2	4	-	9	20
Medium pace bowler	1	-	-	-	-	1
Spin bowler	-	1	-	-	1	2
Total	16	4	7	1	22	50

All stress fractures were in bowlers less than 23 years of age and were sustained while on tour for the West Indies Test team.

DISCUSSION

Of the all injuries to West Indies cricketers, 52% were sustained by the Test and ODI teams, whereas in South African cricket 51.5% were in provincial sides.² In the West Indies, there is a considerable difference in the amount of cricket played at domestic and international levels. The domestic season is spread over three months, with each team playing seven matches, and the top four playing up to two additional matches. These are four day matches played around a weekend. The ODD competition is held six months later, over a two to three week period. It is held in two countries, where all teams assemble and play matches in rapid succession. At a senior level, however, the West Indies team was engaged in cricket for 10 of the 18 months of the study. This was considered a light period for the team. International cricket is played as series made up of a number Test matches, which can last up to five days. A Test series between two countries consists of two to five matches. There is less time now between matches (sometimes just two days) and there are fewer practice matches interspersed between the Test matches, often just one or two per series. ODI series usually precede or follow the Test series, and may include another competing country as well as those involved in the Test series. In addition, many one day competitions are played between some or all of the international teams, in separate competitions, in places such as Sharjah, Morocco, and The Netherlands, as well as the ICC Cup between all Test nations every two years, and the World Cup every four years. All ODI competitions have games clustered around weekends, with a mid-week game as well. Injuries are therefore

most likely to occur during these series, as there is not much time for recovery.

Among the Test team, the overall injury incidence was 48.7 per 10 000 player-hours, compared with 23.1 per 10 000 player-hours for the last three years of the Australian study.¹ The incidence in home series, however, was similar (31.1 injuries per 10 000 player-hours for West Indies, 34.4 injuries per 10 000 player hours for Australia), but on overseas tours, the injury incidence in the West Indies team was almost doubled (61.3 per 10 000 player-hours) whereas in the Australian team it was almost halved (16.1 per 10 000 player hours). Although the Australian and South African studies did not have exactly the same definition of injury as in this paper, general comparisons can be made.

In ODIs, a similar pattern was seen: the injury incidence in overseas tours was more than double that at home (23.1 per 10 000 player-hours and 50.2 per 10 000 player-hours respectively), giving an overall rate of 40.6 injuries 10 000 player-hours. This overall rate was comparable to the Australian 38.5 injuries per 10 000 player-hours, but in that study the home injury incidence was double the away injury incidence (54.5 per 10 000 player-hours and 27.3 per 10 000 player-hours respectively).¹

A high rate of injury on tour is not unique, as many injuries were reported on South African tours in the early 1990s.^{4, 5} In the West Indies team, however, many of these injuries led to long lay offs from cricket. Ten of the 13 injuries causing absence from cricket for over three weeks were sustained on tour, and eight of these were gradual onset injuries such as stress fractures and osteitis pubis. Three of these included bilateral lumbar spine stress fractures in fast bowlers. Two of these bowlers had had technetium bone scans for other indications before the tour, which showed no activity in the back, suggesting that these stress fractures developed entirely

Table 5 Site of injury by main role of player

Site	All rounder	Batsman	Wicketkeeper	Fast bowler	Medium pace bowler	Spin bowler	Total
Cranium	-	3	-	-	1	-	4
Cervical spine	-	2	-	-	-	-	2
Humerus	-	1	-	-	-	-	1
Shoulder	-	-	-	1	-	-	1
Ulna	1	-	-	-	-	-	1
Phalanx	-	8	-	3	-	-	11
Lumbar spine	-	-	1	8	-	1	10
Ribs	-	1	-	-	-	-	1
Abdominal muscle	-	-	-	3	-	-	3
Groin	1	1	-	1	-	-	3
Hamstring	1	1	-	1	-	1	4
Quadriceps	-	1	-	-	-	-	1
Knee	-	2	1	-	-	-	3
Tibia	-	-	-	2	-	-	2
Ankle	1	-	-	-	-	-	1
Other soft tissue	1	-	-	1	-	-	2
Total	5	20	2	20	1	2	50

Table 6 Injury incidence by site and activity

Site	Batting	Bowling	Catching	Fielding	Throwing	Ex	Other	Total
Cranium	–	–	1	3	–	–	–	4
Cervical spine	1	–	–	1	–	–	–	2
Humerus	–	–	–	1	–	–	–	1
Shoulder	–	–	–	–	–	1	–	1
Ulna	1	–	–	–	–	–	–	1
Phalanx	3	–	5	2	1	–	–	11
Lumbar spine	1	8	1	–	–	–	–	10
Ribs	–	1	–	–	–	–	–	1
Abdominal muscle	1	1	–	1	–	–	–	3
Groin	–	2	–	–	–	–	1	3
Hamstring	2	–	–	2	–	–	–	4
Quadriceps	–	–	–	1	–	–	–	1
Knee	–	–	–	2	–	–	1	3
Tibia	–	2	–	–	–	–	–	2
Ankle	–	–	–	–	–	1	–	1
Other soft tissue	1	–	–	1	–	–	–	2
Total	10	14	7	14	1	2	2	50

Ex, exercise/fitness activities.

during the tour. This may reflect on training intensity and poor recovery technique during tours. During home series, accessibility to medical personnel and investigations is easier, and this may be part of the reason why the injury rates in home series are much lower.

There was therefore a high turnover of players returning prematurely from tours, which is not only an economic strain, but affects squad dynamics. Over the previous three years, a similar pattern was noted, except for one tour in which a doctor was part of the touring party. That tour was the most hectic (12 cities), but only one player had to return home. Injury management on tour is therefore a matter of grave concern in West Indies cricket, as injury incidence in home series is similar to those of other countries but much higher away.

In domestic cricket, injury incidence in first class and one day competitions was 13.9 injuries per 10 000 player-hours and 25.4 injuries per 10 000 player-hours respectively, compared with 19 injuries per 10 000 player-hours and 29.3 injuries per 10 000 player-hours in Australia.¹ The lower rates may reflect fewer matches and the interval between first class and domestic seasons in the West Indies.

Injury prevalence in the West Indies team was also higher in away series, although the difference was not so great in ODIs. The overall rates of 11.3% and 8.1% for Test and ODI cricket respectively is the reverse of the 7% and 10% seen in Australian cricket, but is in keeping with the general values world wide.¹

As expected, most injuries were in fast bowlers and batsmen, although half of the injuries in the batsmen were sustained while fielding and catching. As these two groups make up most of the team, high numbers of injury in these groups can be expected. A more accurate assessment would be injury rates per exposure time—that is, player exposure in each category. This was not measured in this study. Injury rates are known to be higher in fast bowlers, especially young bowlers (mean 16.8 years).^{6,7} All lumbar stress fractures were in the younger bowlers, although at a higher age than in the South African studies. This, however, may be due to the greater amount of cricket played in South Africa in the younger age group. In addition, on the basis of previous studies,⁷ the number of overs per spell and per day in competitions below the age of 19 is restricted in West Indies Cricket Board competitions.

Injuries from catching and fielding (42%) were higher than in both Australian (11.4%) and South African (28.6%) studies.^{1,6} Many of these were muscle strains caused by running after and picking up the ball. Attention to stretching

exercises and fielding drills may reduce this. It is noteworthy that very few West Indian players have adopted the sliding techniques used by players of most other countries while fielding. There were consequently none of the ankle or knee injuries increasingly caused by sliding.⁸

The relatively high number of phalangeal injuries, mainly from catching and fielding, may also reflect technique. Whereas slip catching is associated with a higher likelihood of these injuries, many were actually sustained during outfield catching, and again technique may require attention.

Forty injuries (80%) were new injuries, compared with 63.6% in South African cricket.² Only 10% were recurrent injuries from the previous season compared with 28.4% in South Africa, which were perhaps due to long layoffs before return to competitive cricket. Likewise 76% of injuries were acute (62.6% in South Africa), with fewer acute on chronic (8% and 22.7% respectively). However, there were almost equal numbers of chronic injuries (16% and 14.7% respectively),² which may be due to the nature of the injuries themselves.

There were only three knee injuries; one was a chronic problem requiring frequent surgery, another a result of an on field collision, and the third, seen in a wicketkeeper, presumably as a result of chronic wear. A higher rate in

What is already known on this topic

- Most cricket playing countries are noticing an increase in injuries at the highest level of the game, and joint statements by the captains have suggested that the hectic schedule is a contributory factor
- Reports from Australia and South Africa have identified rates and trends in injuries

What this study adds

- This paper is the first to follow the consensus paper on reporting of cricket injuries and adds to the emerging knowledge on cricket injury rates and trends
- It is the first report to come from the West Indies, which has its own peculiarities with respect to cricket and medical facilities

South Africa was attributed to cross training, especially football used in training drills.⁶ These drills are not used in West Indies cricket.

Injury incidence in West Indies cricket is similar to reports from other countries except in overseas international tours. Many of the injuries are overuse syndromes, suggesting that modifications to training and recovery methods may be required. Many injuries are seen in young fast bowlers, who enter the West Indies team after a handful of first class matches and are thrust into a very busy international schedule without proper core strengthening and biomechanical assessment of their bowling techniques. Bowlers do not maintain a bowling log, and are certainly bowling in excess of the number of overs associated with injury.⁹ Each factor is a constituent of the triad of causes of injuries in fast bowlers¹⁰ and needs attention. Meanwhile, a rotation of young bowlers may serve to reduce the number of injuries.

Although the numbers of injuries may be considered too small for conclusive recommendations, they are an accurate reflection of patterns in West Indies cricket. Injury prevention measures on tour, especially for fast bowlers, along with attention to catching and fielding techniques may reduce the number of injuries in West Indies cricket.

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COMMENTARY 1

Cricket injury data have, over the past few years, been collected for some of the major cricket playing countries such as Australia, England, and South Africa. This paper represents the first study to be published on cricket injuries recorded for another major cricket playing nation, the West Indies, as well as the first using the internationally agreed injury definitions. As such it will significantly contribute to broadening of the database and understanding of cricket injuries.

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COMMENTARY 2

The importance of this research is not only in providing data about injury patterns in West Indies first class cricket, but in demonstrating the alignment of techniques and definitions in injury surveillance for cricket throughout the main test playing nations. This makes data from the various nations valuable to compare. That injury incidence is higher on overseas tours than home series is important to highlight. The West Indies Cricket Board would be wise to consider preparation, workload, and technique of their fast bowlers. What is more, the potential benefit of having a doctor on tour with a cricket team is correctly emphasised, and advance planning and resources are necessary to make accessibility to medical services on tour equal to that at home.

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