

Injury data and arguments to support a rule change to allow substitutes in Test and first class cricket

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The major argument against the use of substitutes or interchange players in Test (and first class) cricket is that no sport has ventured down the road of only allowing substitutes for the purpose of injury/illness.



Cricket is one of the world's most popular team sports, perhaps second in worldwide popularity only to soccer. Cricket is far and away the most popular sport in India, home to a sixth of the world's population, and it is one of most popular sports in most of the countries of the British Commonwealth. The landscape of the sport has changed remarkably in the last decade. The traditional form of the game at elite level (first class cricket) is matches of two innings per team, played over four or five days. Games between nations are called Test matches and are the pinnacle of the traditional form of cricket. Other shortened forms of cricket are now highly prominent, particularly the modern version of T20 cricket (games limited to 20 overs per team). The traditional calendar of Test cricket matches for each country is now peppered with a multitude of one day international (ODI) 50-over matches and then distinct competitions of T20 cricket which are most often club/franchise-based rather than matches between countries.

Batsmen in cricket wear protective padding and at amateur level, cricket is a relatively safe sport. To illustrate this, injury data from the New Zealand Accident Compensation Corporation (ACC), the national insurer for all sports injuries, show that cricket has only one fifth the injuries and claims notified of soccer (ACC 2010). Both sports have slightly more than 200 000 participants in New Zealand (NZ SaR 2011), showing that at amateur level, cricket is a much safer sport than soccer. Under the traditional international cricket schedule of years gone by, cricket was also a relatively safe sport, as there was only one form of the game with more lengthy breaks between matches and Test series. All sports have the potential to demonstrate increases in injury risk as workload increases. For example, jogging is a relatively low-injury sport, but rates of injuries in marathon or ultra-marathon running are much higher. The prevalence of injuries in cricket has risen in recent years as the calendar has become more congested (Orchard et al 2010).

Cricket is also unique among team sports in that substitutes or interchanges are not allowed for specialist players, such as batsmen, bowlers and wicketkeepers (Orchard 2011), with the 12th man being only involved in the game as an interchange fielder if any of the fielding side is temporarily required to leave the field. Historically, other team sports had similar rules but over the years all have changed to allow substitutes or interchange players as part of revised rules (Steen 2005). For example, in soccer, substitutes were first allowed in the

World Cup in the 1930s, but not sanctioned by the Football Association until 1965, apparently after a succession of FA Cup finals had been affected by one team being forced to play a man short for a long period (Steen 2005). It is surprising that cricket Test matches last longer than any other team sport (up to five days) and hence the length of time that a team can be a player down due to injury or illness (more than four days) is protracted, yet it is the sport which has held out among all team sports in allowing replacements. Presumably it is the history of the sport being traditionally of lower injury risk than the other team sports, such as football, which has given the impression that a team being forced to play with a man short is a relatively uncommon event.

The major argument against the use of substitutes or interchange players in Test (and first class) cricket is that no sport has ventured down the road of only allowing substitutes for the purposes of injury/illness. Because of the difficulty of policing whether a replacement was legitimate or not, all other team sports simply allow a various combination of substitute or interchange players to be used for reasons of injury (if required) or alternatively, at the tactical discretion of the coach or manager in other circumstances. The fact that unlimited substitutes have long been a feature of baseball (cricket's closest cousin) and that the rotation of players in baseball may seem excessive to the cricket purist has probably contributed to the preference of the cricket community to keep the status of Test cricket distinct in the other direction.

However, all decisions (even non-decisions to keep the status quo) should be occasionally reviewed in light of updated evidence of their effect on the game. This paper is written with the objective of assessing what impact injury has on games of first class cricket over roughly the last decade, before and after the advent of T20 cricket. The hypothesis to be tested is that injuries are increasing in first class cricket due to the modern congested calendar and that their impact on first class games may have reached the point where substitutes need to be considered by the ICC (International Cricket Council) as a way to make first class cricket fairer and less onerous (on fast bowlers in particular) with respect to injuries and workloads.

Methods

This paper will use selected extracted data from Cricket Australia's injury surveillance system, which has been in place using the same methods

since the 1998–99 cricket season (Orchard et al 2002). Injury definitions used for this surveillance system have been agreed upon by other researchers in an international consensus statement (Orchard et al 2005). Most importantly, the definition of an injury is not broad and considers significant injuries only which impact on players' ability to fully participate in cricket. The definition of a cricket injury (or 'significant' injury for surveillance purposes) is: any injury or other medical condition that either prevents a player from being fully available for selection in a major match, or causes a player to be unable to bat, bowl or keep wicket when required during a major match by either the rules or the team's captain (Orchard et al 2005).

This particular paper will extract injuries from the Cricket Australia injury surveillance system to examine the trends in matches played, players missing through injury, and risk of suffering an injury during a match over the past 14 seasons of injury surveillance. This data will be discussed to consider whether the ICC should consider allowing substitutes in first class cricket (including Test matches).

Results

From Table 1 it can be seen that there has been an absolute trend towards more cricket over the past 14 seasons in Australia, a trend which would almost be certainly matched in the other major cricket playing nations. This increase has been made up primarily by an increase in T20 cricket. While there is annual fluctuation depending on the number of series to be played, the rate of Test matches and ODIs plus domestic first class and one-day matches has stayed fairly constant over the past 14 seasons. However, the amount of T20 cricket has exploded since season 2005–06. T20 cricket has been added to the traditional cricket program rather than replacing any games. There are two significant net effects of this. Firstly, the first class matches have been compressed to be played over a shorter time period than was previously used. Prior to the introduction of T20 cricket, the Australian domestic teams played a season of 10–11 first class games roughly evenly spread over six months (from October to March). The current schedule requires a seven-week window for a T20 tournament to be played, so that the 10 first class matches are now compressed roughly

into two periods of two months each, rather than the previous even spread over six months. The second effect of T20 cricket is that it requires players to rapidly change between the various forms of the game with minimal time period for adjustment. A fast bowler, for example, will bowl an average of four overs per game (only) during a T20 tournament, but on resuming first class cricket, may regularly be called upon to bowl 30–40 overs per game, a sudden ten-fold increase in workload. In athletics it would be considered a grave training error for a runner to upgrade from running 10 km per week to 100 km per week, yet this is now expected of fast bowlers who play all forms of the game. A traditional cricket team consists of five specialist batsmen, one all-rounder, one wicketkeeper and four specialist bowlers. Of the five bowlers, if one is injured during a first class game, the other four bowlers may all be called upon to further increase their workloads by approximately 25 per cent to make up for the bowler unavailable through injury.

Table 2 shows that an average of 34 per cent of teams in first class matches will have at least one player who suffers an injury which satisfies

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Table 1. Number of scheduled matches for the Australian national team and six domestic Australian teams annually from 1998–99 to 2011–12 seasons

Competition	98–99	99–00	00–01	01–02	02–03	03–04	04–05	05–06	06–07	07–08	08–09	09–10	10–11	11–12
Champions league T20												11	9	9
Domestic first class	62	62	62	62	62	62	62	62	62	62	62	62	62	62
Domestic one day	42	42	62	62	62	62	62	62	62	62	62	62	62	50
Domestic T20								14	26	32	34	34	40	62
International T20							1	3	1	11	6	10	12	8
One day international	23	37	19	22	39	25	26	35	36	20	23	39	29	24
Test match	12	13	8	14	12	11	14	17	5	6	15	13	9	14
All matches	139	154	151	160	175	160	165	193	192	193	202	231	223	229

Table 2. Percentage of teams in first class games suffering an injury 1998–99 to 2011–12 seasons

	98–99	99–00	00–01	01–02	02–03	03–04	04–05	05–06	06–07	07–08	08–09	09–10	10–11	11–12
Matches with an injury	29	26	20	35	22	26	19	18	21	27	30	23	31	34
Matches with no injury	45	49	50	41	52	47	57	61	46	41	47	52	40	42
Percentage of games affected by injury	39.2%	34.7%	28.6%	46.1%	29.7%	35.6%	25.0%	22.8%	31.3%	39.7%	39.0%	30.7%	43.7%	44.7%

Cricket clinic: part 2

the consensus definition. That is, the player is either unable to continue playing in the match in question or needs to miss the following match through injury. Either of these conditions should not be encouraged. A player who cannot continue in a match will leave his fellow players to increase their workload burden to make up for their missing colleague. If the player pushes through the pain barrier to not let his teammates down but then needs to miss the following match through injury, it is quite likely that in doing so he will have worsened the severity of his injury and will face a more prolonged recovery period. Advice which is given to amateur sportsmen—‘if you are injured, remove yourself from further participation and seek medical advice’—is routinely being ignored by professional cricketers because of the lack of availability of substitutes. Although annual figures vary from year to year, there appears to have been a recent trend towards injuries affecting more games in recent seasons, with four of the last five seasons having 39 per cent or higher first class teams having a player suffer a significant injury in games.

Table 3 and Figure 1 show a trend towards increasing injury prevalence over the 14 year period, particularly among fast bowlers. In season 2010–11, an alarming one in every four fast bowlers in first class cricket in Australia was unavailable through injury across the duration of the season. Between seasons 1998–99 and 2002–03 (prior to the introduction of T20 cricket) the annual overall injury prevalence was less than 10 per cent every year. Since 2006–07, the injury prevalence was greater than 10 per cent every year and actually reached 15 per cent in 2010–11. The compression of games to introduce windows for T20 tournaments and the rapid turnover between the various forms of cricket appear to have been responsible for a marked increase in players missing through injury.

Discussion

Although cricket is a relatively low risk sport when played at amateur levels under relaxed scheduling, it has clearly evolved into a sport of high injury risk, particularly for fast bowlers, at first class level. There appears to have been a marked increase in injury prevalence since the introduction of T20 cricket. The traditional thinking about the need for substitute players, based on the premise that players are not commonly injured during cricket matches, needs re-assessment. From a medical and player welfare viewpoint, we believe that there is a strong argument for cricket to follow the path of all other team sports and allow substitute players (that is the ability of the captain or coach to replace a player or players during a first class match for reasons of injury or otherwise, including fatigue or exceeding desired workload). The components to this argument include:

The high rate of injury in first class games

In 34 per cent of first class games, a team will have at least one player suffer an injury that either prevents continued participation in the game or causes him to miss the following game. With one third of teams affected, it cannot be argued that injuries in professional cricket are rare events that do not need to be catered for. Cricket has injury prevalence rates similar to football and therefore has the same need to consider substitute players.

Increasing fast bowler injury prevalence

Fast bowlers are clearly not coping with the new make-up of the cricket calendar, which is here to stay given the eight-year forward planning of the Future Tours Program and the popularity of the T20 tournaments. The key factor is that bodies are generally not designed for participating in the cricket equivalent of a sprint event (four

overs of extreme pace are called for in a T20 match) rapidly followed by the cricket equivalent of a marathon (30–40+ overs are required from each bowler in a first class match). This transition would be made far easier if a first class or Test match workload was shared between a greater number of bowlers. A substitute (or substitutes) could allow a typical fast bowler workload in a first class match to be 20–25 overs, which, although far higher than a T20 workload, is a much more reasonable upgrade than moving from four overs to 40+ overs.

Risk of injuries worsening if players push through pain

Cricket has prided itself on the ‘tough’ environment of the Test match arena where players are required to push through pain and minor injuries for the benefit of the team. A player is expected to continue to bat or bowl even if suffering from cramp, for example. However, serious injuries do occasionally occur in cricket and the expectation that a player should always push through pain for the benefit of the team could, in rare cases, be catastrophic. Cricketers can suffer concussion, cardiac conditions, severe dehydration (especially if playing with gastroenteritis in hot, humid environments) and medically, this could lead to dire consequences if there is major pressure from the rules not to pull out and leave the team short. More commonly, fast bowlers can suffer stress fractures of the lumbar spine. Although hard data is difficult to come by, the clinical impression is that if a bowler stops bowling early in the cycle of a lumbar stress fracture, the bone can heal nicely, but permanent non-unions which can affect the entire playing career can occur if the bowler pushes through the pain barrier for too long. Rules which encourage pushing through pain probably lead

Table 3. Injury prevalence (players missing through injury) by player position by season

	98–99	99–00	00–01	01–02	02–03	03–04	04–05	05–06	06–07	07–08	08–09	09–10	10–11	11–12
Batsman	3.9%	3.5%	5.2%	4.7%	3.9%	6.7%	9.8%	6.3%	5.5%	7.7%	6.6%	6.8%	9.0%	9.2%
Keeper	2.8%	1.4%	0.9%	0.6%	0.8%	3.9%	3.2%	2.9%	0.5%	1.7%	3.0%	8.6%	8.2%	13.6%
Pace bowler	11.5%	14.1%	15.0%	19.4%	16.5%	18.2%	9.3%	14.4%	18.6%	19.1%	17.9%	21.5%	24.7%	25.2%
Spinner	4.9%	1.4%	10.1%	1.1%	3.6%	7.1%	4.2%	8.8%	4.1%	10.7%	5.3%	4.6%	10.3%	10.1%
All players	7.2%	7.5%	9.5%	9.7%	8.7%	11.4%	8.1%	9.7%	10.3%	11.4%	10.4%	12.8%	15.9%	15.9%

to worse outcomes for back injuries in young fast bowlers, which is a blight on the game of cricket.

Risk of players being lost to Test cricket as T20 is a full-time career option

Because of the lucrative contracts being offered by T20 franchises, it is an increasing option for players to retire from first class cricket to become T20 specialists. If the rules of first class cricket remain as arduous as they currently are, T20 cricket will be seen by more players as 'money for jam' and the talent pool for Test cricket will diminish (along with perhaps the popularity of this form of the game). Updated rules of Test cricket which allowed first class cricket workloads to be more compatible with T20 workloads would encourage more players to continue in all forms of the game without the overuse injuries of first class cricket preventing players from enjoying the lucrative proceeds of T20 tournaments.

Benefits for amateur cricket: 12th man can become more involved

Although there is far less need for a change to the rules of cricket for amateurs and juniors who typically only play cricket on two days per week, the concept of requiring a 12th man is out-dated in modern society. It is unfair for a sport to

require any player to attend a match with no prospect other than to carry drinks out to fellow players and field for a few overs. Allowing the 12th man, plus perhaps other substitutes, to be fully involved in the game as specialist players would encourage more amateur players to enjoy cricket. No other team sport in the world makes a player suffer the indignity of being a substitute with no prospect for meaningful participation in the game.

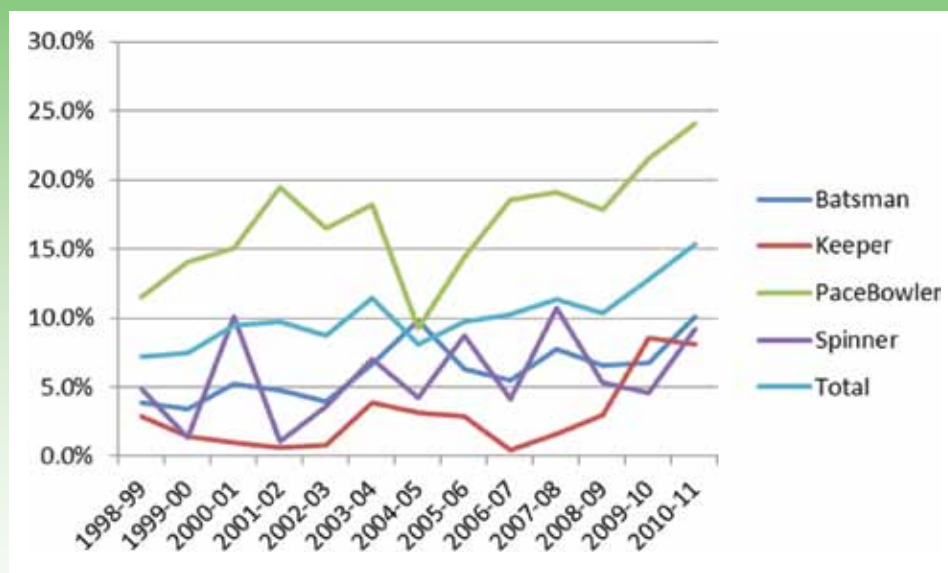
Redress balance of first class game in favour of bowlers

The changes to modern first class cricket have been criticised for swinging the balance of the game too far in favour of batsmen, such as improvements in protective equipment and bat size, covering of wickets and shortening of the boundary dimensions. Fast bowlers suffer far too high an injury burden in cricket and rule changes should occasionally also favour the bowlers and swing the balance back into a fairer contest between bat and ball. Because of the effects of fatigue, substitutes would typically be bowlers and be used to limit workloads in first class cricket. Allowing such a rotation of one or more fresher bowlers would make life easier for bowlers and more difficult for batsmen, a change which is probably overdue with respect to balance.

Conclusion

We recognise that there are traditional arguments for maintaining the status quo (ie, no specialist substitutes being allowed in test and first class cricket). The nature of the game would be changed substantially by such a rule change and those who feel that Test cricket maintains a unique link to the past may not want the major traditions altered. However, the nature of the cricket calendar has changed permanently with the success of T20 cricket. Never before in the history of cricket have bowlers been required to transfer rapidly from sprint-like four over efforts to marathon-like 40 over stints. Injury statistics in this paper support the notion that modern fast bowlers, despite high quality medical support, are simply not coping with these regular transitions. In order to reduce the toll of what is now a high-injury environment of Test cricket and to maintain the tradition that the average player should aspire to a Test cap (rather than a T20 contract) as the pinnacle of achievement in cricket, lateral solutions are required to make Test cricket less arduous. Our medical perspective is that the time has come for cricket to join all of the other team sports of the world and allow substitutes to play in first class cricket, which on balance will help modern Test cricket maintain its status as the pinnacle form of the game.

Figure 1. Injury prevalence by player position by season



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