A Comparative study of Baseball and cricket injuries and their effect to prevent injuries in both sport events

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ABSTRACT

Cricket and baseball is the most popular sport in all over the world and Millions of peoples in this world enjoy and participate in bat-and-ball sports, like baseball and softball. Cricket, at different levels in the world. The enjoying nations of these sport are like Japan, Korea, Taiwan, Singapore, Malaysia , United States, India, Pakistan, Australia, New Zealand, Bangladesh, South Africa, West Indies, Sri Lanka, United Kingdom, and Zimbabwe. Although any player can be injured in General injuries including skin disease to participate in these bat-and-ball sport events at Local, National and International Level. Players are recommend-ed to wear an array of protective gear such as pads, gloves and boxes, to guard themselves from injury as these are the common protective safety equipments for these sports.

This review evaluates the scientific research on cricket and baseball injuries as they can suffer from a range of overuse injuries associated with Throwing, batting, bowling and running in both sports.

Key Words: Cricket, Bowling, Common Injuries, Injury Prevention
INTRODUCTION

Cricketers and baseball players can suffer from a range of overuse injuries associated with all aspects of the game including running, throwing, batting and bowling. The most severe overuse injury particularly to the fast bowler is the development of abnormalities in the lumbar spine. Bowling is mandatory in both sport and involves repetitive twisting, extension and rotation in a short period while body tissues and footwear must absorb large ground reaction forces. However, it is the speed and the force of the action that singles fast bowlers out as being particularly prone to injury.

The review of the cricket injury literature shows that three major cricket-playing countries have collected long-term injury data. In Australia the surveillance revealed 886 injuries were sustained by players representing the national and state teams. These data were collected retrospectively from 1995 to 1998 and then prospectively from 1998 to 2005. In England the incidence and nature of injuries to professional cricket players reported 990 injuries that were recorded retrospectively from records of a professional county club by the team physiotherapist (1985 - 1995). In South Africa 1 606 injuries to the national and provincial teams were reported prospectively by the physiotherapists and doctors working with the teams from 1998/99 to 2003/2004. While injury surveillance is fundamental to preventing and reducing the risk of injury, these studies used different injury definitions and methods of collecting and reporting the data, which prevented comparisons of injury rates between countries. As a result a consensus statement paper with regards to definitions and methods to calculate injury rates, incidence and prevalence, was developed in order to provide a standard which allows meaningful comparisons of injury surveillance data from different countries and time periods.

This review paper will evaluate the baseball and cricket injuries including short term and long term injuries including the reduced risk in both sport events.

METHOD

A brief review of the literature on the safety aspects of cricket and baseball batting equipment including helmets, gloves, pads and clothing, indicates that there are areas where improvements need to be made in order to reduce the risk of injury. The implications of the changes to the laws relating to the bowling action and the increased usage of the sliding stop in fielding, particular by young inexperienced cricketers were reviewed. From the review it is evident that there is a need to continue with injury surveillance, as well as a need to continue with and increase the number of studies that evaluate the efficacy of intervention strategies in order to reduce the risk of injuries.
Science and Medicine in Cricket and baseball

International Conference in Science and Medicine in Cricket and baseball brings together a wide range of professionals including sport scientists, sports medicine specialists, physiologists, academics, administrators and coaches with an interest in cricket et, from all major cricket-playing countries around the world. The world congress on science and Medecine in cricket also provide the forum about injuries in this sport , which is held every four years During the Cricket World Cup, is to provide a state-of-the art review of the basic, applied and clinical sciences as they relate to cricket and to offer a forum for integrating knowledge from the contributing sciences which address key areas in the prevention and management of cricket injuries and the enhancement of performance. This has contributed significantly to an increase in cricket research as sport scientists strive to assist players and coaches to achieve optimal performance in this competition.

Long and short term injuries

This method of injuries has been conducted in three countries in UK, Australia, South Africa and in baseball in Japan. Injury mean the onset of pain or disability caused while training for or playing cricket and which caused the player to seek medical attention. About near 1000 injuries were recorded in both sport events with an injury exposure of 18 370 days played and an injury incidence rate of 61.4 injuries per 1 000 days played in baseball and Cricket. Most injuries were sustained early in the season April and May as in some of the countries Cricket and baseball played at least level than other months. Bowlers in baseball and Cricket were the most susceptible to injury (72.2 injuries per 1 000 days), in both sport events followed by the all-rounder’s, batsmen and wicket-keepers with more than 55 and might be 48 injuries per 1000 days in both respective sport event. Muscle/ tendon strains, contusions/hematomas and alignment/joint sprains were found to be the most common injuries. Most injuries occurred to the lower limbs (45%), followed by the upper limb (29%), trunk (20%) and head and neck (6%). The thigh and calf (25%), fingers (14%) and lumbar spine (11%) were the sites most vulnerable to injury. Of the thigh and calf injuries, 72% were muscle/tendon strains and tears. Finger injuries consisted mainly of contusions (40%), fractures and dislocations (29%) and ligament /joint sprains (23%). Of the lumbar spine injuries, 63% involved ligaments and joints, while knee injuries were primarily ligament and joint sprains (28%), tendonitis (27%) and contusions (16%). The primary foot and ankle injuries were contusions/hematomas (41%) and ligament/joint sprains (29%). In a study in South Africa 8 1 606 injuries in 783 cricketers were reported prospectively by the physiotherapists and doctors working with the national and 11 provincial teams over a 6-season period from 1998/99 to 2003/2004. The data collection,
using a questionnaire, included biographical data as well as information about
the anatomical site of injury, month of injury, activity performed when injured, the
diagnosis and mechanism of injury and the recurrence of the injury.

More injuries occurred during first-class matches in baseball and Cricket (32%) with
limited-over’s (26%) matches and practices and training (27%) resulting in a
similar number of injuries, while 15% were of gradual onset, which may have been
as a result of a combination of factors such as training, practicing and playing
matches over a period of time. The chronicity of injuries showed that the majority
of injuries were classified as acute injuries (65%), with chronic (23%) and acute-on-
chronic (12%) making up the balance. The injuries occurred during the pre-season
(11%) (September), the early part of the season (35%) (October and November),
mid-season (18%) (December and January), in the latter part of the season (16%)
(February and March) and during the ‘off-season’ (20%) (April - August).

Information on injuries to Australian state and nation cricketers was collected
retrospectively for the first 3 season (1995 - 1996 season to 1997 - 1998 season)
years and the prospectively for the next 7 seasons (1999 - 2000 season 2004 -
2005 seasons). The definition of injuries was an injury or medical condition that
prevents a player being available for selection for a match or causes a player not to
be able to bowl or keep wicket during a match. Of the 886 injuries recorded, 92%
were new injuries, while 8% were recurrent injuries. Of these, 52% occurred during
major matches. The injuries were sustained while bowling (45%), batting (21%),
fielding (23%) and wicket-keeping (2%) The balance of the injuries (9%) either oc-
curred gradually or unknown activities. Lower-limb injuries accounted for near
half of the injuries (49.1%), with the upper limb (24.5%), back and trunk (18.6%),
head, neck and face (4.3%) and illness (7.3%) making up the balance. The mean
seasonal injury match incidence (injuries 10 000 player hours) was reported for
domestic 1-day (38.5 first-class (27.3), ODI (59.8) and test (31.4) matches. Fast
bowlers miss about 16% of potential playing time through injury while for other
positions it is less than 5%.

There is an increased non-significant risk of injury when bowling in the second
innings of a 1-day match, while a significant risk for the second innings of a first-
class match as compared with the first innings. Further, bowling after enforcing
the follow-on in a test match is associated with an increase in injury. There is an in-
creased risk of injury when bowling in the second match of back-to-back matches
in baseball and cricket where there is less than 1 day match in baseball and 3
days for 1-day and first-class matches, in cricket respectively.

Most injuries were sustained in cricket in test and first-class matches (40%) and
1-day matches (28%), with 28% sustained in activities outside of matches. New in-
juries accounted for 80% of the total number of injuries, with recurrent injuries from
the previous season (10%) and the same season (10%) making up the balance of
the injuries sustained. Bowlers (46%) and batsmen (40%) were found to be at the
greatest risk of injury, with the balance of the injuries sustained by the all-rounder’s (10%) and wicket-keepers (4%). Muscle injuries (26%) most common, followed by ligament injuries (12%), stress fractures (12%) and fractures (10%). Two players were struck by lightning in the same match.

Young cricketers (12 and 17 years) playing club and district cricket were monitored over a season in order to evaluate the appropriateness of bowling workload guidelines set by the Australian Cricket Board. All bowlers underwent a magnetic resonance imaging (MRI) scan at the start of the season and then immediately after any back or trunk injury. They were required to maintain a logbook where they recorded any injuries and their bowling workload. Bowlers tended to conform to the recommended number of deliveries to be bowled per match day, in baseball and cricket but bowled in excess of the recommended guidelines for practice sessions. Of the 44 bowlers, 11 reported over-use bowling-related injuries, with 7 sustaining back injuries. The study showed a relationship between a high bowling workload and injury. The injured players bowled more frequently and had shorter rest periods between bowling sessions (3.2 days) than the uninjured (3.9 days). The bowlers with an average of ≥3.5 rest days between bowling were at a significantly less risk of injury than those with an average of <3.5 rest days. Further, the results showed an increase of risk for the bowlers who bowled ≥50 deliveries per day or who bowled on average ≥2.5 days per week.

A further area of concern is the potential risk of injury to cricketers using the relatively new sliding stop technique. This requires the fielder to chase the ball which is slightly to the left, in the case of a right handed thrower. The fielder then slides with the right leg extended and the left knee fixed under the right leg, sliding on the left buttocks and hip area with the left hand used for balance. The ball is then picked up with the right hand, the right foot is engaged with the ground and the left hand pushes on the ground to bring the fielder upright and in position to throw. The sliding stop may have advantages at higher level of the game, but at the lower levels, particularly at school level, the correct technique is not taught and/or practiced and may predispose to injury. If the right foot is not engaged and the left hand not used to push up it may result in the left leg having to be extended while weight bearing with the rotational forces used to pivot on the left knee resulting in a maniacal tear. The sliding technique should be discouraged as a means of fielding in cricket and baseball unless appropriately coached.

**Common Injuries to Pitchers and Hitters**

*Shoulder*

- Bursitis
- Impingement syndrome (inflammation of the tendons of the rotator cuff)
Shoulder instability (a loosening of the structures that keep the ball of the shoulder in the socket)
Shoulder separation
Tendonitis
Rotator cuff tears

Elbow
- Little leaguer’s elbow (inflammation on the inner side of the elbow, common in pitchers age 16 and younger; also called golfer’s elbow or medial epicondylitis)
- Tennis elbow (inflammation on the outside of the elbow, also called lateral epicondylitis)
- Medial elbow ligament tears (‘Tommy John’ surgery, where the ulnar collateral ligament is grafted or replaced with a tendon from elsewhere in the body)

Hand or wrist
- Finger fractures
- Bursitis
- Wrist sprains
- Wrist tendonitis
- Tenosynovitis (inflammation of the tendons on the thumb side of the wrist)

Baseball and Cricket Safety and Injury Prevention Tips
- Get a pre-season physical exam to identify any orthopedic issues before they become a problem.
- Warm up and stretch before every game and practice session.
- Inspect the field for any uneven turf, glass, debris and other potential hazards before play begins.
- Be prepared for emergencies on the field with a first-aid kit, a supply of ice and the phone number readily available of your team physician or the nearest medical facility.
- Make sure all equipment fits properly and is worn correctly.
- Many injuries occur while sliding into bases; use breakaway instead of stationary bases to reduce the risk of injury.

Other common overuse injuries
In baseball and cricket the common overuse injuries are related to throwing, catching or running although there is no specific literature focusing on these over-
use injuries in association with cricket and baseball. Throwing can result in overuse shoulder problems, which are believed to be becoming more prevalent at the elite level. Given that bowlers and batters are expected to run long distances during a game, overuse injuries of the legs are also common. Bowlers, whether fast or slow, may predispose themselves to splitting or wearing away of the skin on the finger, which they drag across the seam of the ball to impart spin as it is released from the hand. A wicket keeper may also suffer knee problems, which may be attributable to the unnatural action of repeated squatting.

**General injury prevention warm-up/conditioning programs**

Good stretching programs before and after play, comprehensive conditioning and technique’s program before and during the season are very important to condition a player’s body to help prevent injury.

There have been no specific evaluations of the role of warm-up and conditioning programs for preventing cricket injuries.

**Recommendations for further research, development**

1. More research into the role of warm-up as an injury prevention measure for cricket is needed.
2. Research should be undertaken into the benefits of different types of warming-up, cooling-down and stretching practices.
3. Research into the optimal duration and frequency of warm-up should be undertaken.
4. Information about warm-up, cool-down and stretching techniques should be developed and widely promoted to improve specific knowledge of techniques.

**General Recommendations for both Sport Event**

01. More research is required to determine over’s to be bowled in both sports.
02. The international federations in Cricket and baseball needs to exceed funds for the improvement of the research.
03. Prospective studies need to be undertaken to fully explore this relationship.
04. Bowling over restrictions should take into account the fast bowlers physical maturity and not just chronological age.
05. Research should be conducted through bio mechanics for bowlers in both sport specially for fast bowlers in Cricket to determine the factors which lead to back overuse injuries.
06. Coaches must be trained with education and latest technology including refresher courses and latest techniques.

07. Research in the field of shoulders and legs injuries need to be work more to given awareness to players and coaches to safe from the injuries in both sport.

08. Both the international federations must arranged an educational sessions on quarterly or annual basis with the lectures of scientist, doctors, and experts for their education and awareness.

09. The area of resources should also be promoted in local level areas too.

10. There is a need of more research to work on the design of the shoes in both sport

11. Helmets with face shields should be worn by batters, wicket keepers and other in-fielders in order to reduce face injuries.

12. Cricket and baseball heroes should be encouraged to wear helmets as an example to younger players.

13. Investigations should be made into the advantages and disadvantages of development of a multi purpose helmet. Ideally this would have a removable shield and could be used for cycling, horse riding, roller skating as well as cricket and other sports.

14. Data collections should conform to guidelines for sports injury surveillance being developed and promoted nationally.

15. Information about preventing cricket injuries should be disseminated widely through cricketing and baseball broadcasts, equipments points of sale, magazines and more general magazines.

RESULTS

The literature shows that three major cricket-playing countries, Australia, England and South Africa, have collected long-term injury data. While these sets of data show definite trends, it was not always possible to make direct comparisons between data collected in various countries. As a result a consensus statement paper with regards to definitions and methods to calculate injury rates, incidence and prevalence was developed. The first study using this newly accepted injury surveillance method showed injury patterns in West Indies domestic and national cricket teams. There have been three primary studies carried out with regards to interventions aimed at reducing the risk of injury to fast bowlers. These included a coaching interventions programme, the use of a bowl- ing aid in an attempt to modify bowling technique and a study that evaluated the recommended bowling workloads in young cricketers. The implications of the changes to the laws relating to the bowling action and the increased usage of the sliding stop in fielding are reviewed.
CONCLUSION

The review and study shows about the full range of injury prevention activities for preventing cricket injuries. Recommendations for further countermeasure research, development have been based on the review presented here as well as discussions with experts acknowledged in this report. Many of the recommended countermeasures have yet to be proven to be effective and more attention to controlled studies “in the field” are needed. More effort directed to basic scientific studies to better understand the biomechanics of cricket, the mechanisms of injury and the role of various risk factors in causation are also required. Indeed, the evidence for the effectiveness of certain countermeasures such as warming-up, shoe design, limited over’s and body padding remains equivocal. Moreover before law changes are introduced by cricket and baseball International Federations and administrators, this needs to be thoroughly investigated to ensure that the risk of injury to cricketers and baseball players is not increased.

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