

INJURY RISKS DURING PERFORMANCE IN CRICKET

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ABSTRACT

Cricket is a game of long endurance activity includes the fundamental skills i.e. batting, bowling and fielding, the three elements. that make up the game of cricket. each carry their own injury risks. The severity of the injury will determine how long the player must stay away from the field, but it is also important for therapists to take stock of the mode of injury. In the game of cricket during the performance of different type of skills and tactics of play, mostly head , neck, upper limb, lower limb and trunk related injuries may occurred due to some lacuna in health related and performance related fitness. The action of fast bowling places immense stresses on the spine and many fast bowlers are lost to the game because of low-back problems and others type of injury. In case of fielding, macroscopic and microscopic trauma, most commonly from the mid-supra-spinatus posterior to the mid-infraspinatus area, shoulder injury, head, neck, and facial injuries etc may occurred. In batting, mainly from the direct impact of the ball or from over-use injuries because of long hours at the crease. The eye, face, hand and wrist or soft tissue injury to shoulder and upper arm, stress fracture etc. may occurred in batsman. By the combined efforts of coach and sport medical officer, injury can be reduced among cricketers. They should take much care for them.

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INTRODUCTION

Batting, bowling and fielding, the three elements that make up the game of cricket, each carry their own injury risks, as can be seen from the table below.

The mean time spent off work by amateur cricketers is 1.4 weeks, but among professional cricketers this rises to 6.5 weeks. Clearly, the severity of the injury will determine how long the player must stay away from the field, but it is also important for therapists to take stock of the mode of injury, as a quarter of all injuries (25.4%) are 'acute on chronic' (flare-up of a pre-existing chronic problem). Chronic injuries by themselves account for 16.6% of total injuries, and acute injuries are 58%.

Incidence of injury to different parts of the body (Stretch, 1993 & 2003)				
	Head and neck	Upper limb	Lower limb	Trunk
% of total injuries occurring in this area	9.1	34.1	37.5	19.3
Injury Type	Muscle spasm and strain: cervical spine	Fractures: phalanges and metacarpal; joint injuries: shoulder	Muscle strains, tears (quadriceps, hamstring); joint injuries: knee, ankle, patella	Mainly muscle strain, spasm and stress fractures: lumbar spine, abdominal muscles, ribs

Bowling:

Bowling, not surprisingly, is the most risky activity, accounting for 41.3% of all injuries. The action of fast bowling places immense stresses on the spine and many fast bowlers are lost to the game because of low-back problems. The movements of hyperextension, lateral flexion and thoraco-lumbar rotation in combination with a jerk force occurring when the fast bowler lands during his delivery, can all contribute to the development of spondylosis and spondylolisthesis.

In both fast and spin bowling, technique problems and over-use have been implicated in stress fractures of the pars interarticularis (the arch at the bony bridge that holds together the superior and inferior articular processes of a vertebral body). Hard castle et al reported an incidence of 54% of pars interarticularis defects in their study (Hard castle, et al., 1966).

The diagnosis of pars interarticularis fracture can often be made clinically in fast bowlers who present with back pain causing loss of significant playing time (two weeks or more). On examination there is spasm of the back muscles with tenderness present in the line of the facet joints on the opposite side of the bowling arm with no loss of movement. Plain radiographs are often normal and the diagnosis of a pars interarticularis fracture is confirmed by CT scan.

For conservative management of pars defects, the initial treatment will be rest, supervised rehabilitation and re-education. It is vital to complement physiotherapy with analysis of the player's bowling action and appropriate modifications to technique. The main aim here should be to develop a style that places less stress on the lumbar area, without decreasing performance.

If pain persists, temporary re-deployment may be advisable (getting an all-rounder, for example, to concentrate solely on batting). Surgery becomes an option if conservative methods are unsuccessful. In surgery, a screw is passed across the fracture with additional bone graft (Buck's repair). In the study by Ranawat et al. (2007) of 18 cricketers with stress-related pars interarticularis fracture, eight responded to conservative treatment and returned to active sport; and all 10 who required surgery returned to the professional game.

Shoulder injuries in cricket tend to result from throwing but can be aggravated by bowling, because of the repetitive forces involved. In a good bowling action, the shoulder should not be subjected to forces that lead to instability. The arm should not get into the position of 'apprehension' (abduction and forced external rotation), as this is the mechanism that subjects the capsular ligaments to forces that threaten instability.

Even with a good bowling action though, over-use injuries can weaken the rotator cuff and allow increased translational movement of the humeral head, resulting in instability and shoulder pain. With increased translation of the humerus, the long head of biceps is recruited to help stabilize the joint. This in turn can lead to traction on the long head of biceps tendon, predisposing the shoulder to tendonitis and superior labral anterior posterior (SLAP) lesions. Slow leg-spin bowlers develop internal rotation force at the end of their delivery and are therefore especially prone to these over-use injuries.

Fielding:

Fielding injuries comprise 28.6% of the total. Outfield players have to throw the ball accurately and at speed into the wicket, subjecting the shoulder of their throwing arm to the same forces and injuries that occur in baseball.

The later phases of throwing produce large 'distraction' forces (a force directed along the upper arm towards the elbow joint, in effect wrenching the arm away from the shoulder joint). The eccentric loading of rotator cuff muscles needed to resist these forces can stretch the muscles beyond their tensile limit, leading to both macroscopic and microscopic trauma, most commonly from the mid-supraspinatus posterior to the mid-infraspinatus area.

Injured outfield players tend to use a bowling action to return the ball when fielding (powerful throwing is impossible with a significant shoulder injury). This is less painful, can develop similar power to a throw and is very accurate. It does, however, take rather longer to prepare and deliver the ball.

The acute phase of a shoulder injury requires an accurate diagnosis, time for tissue healing, and reduction of pain and inflammation. This is followed by pain-free range-of-motion exercises, isometric exercises to prevent muscle atrophy, and efforts to regain scapular control. The acute phase ends when tissue healing, minimal pain and passive movements of 66% to 75% of the opposite side are achieved.

The recovery phase aims to regain normal active and passive shoulder movements, continued improvement in scapular control, and further improvements in upper extremity strength. Finally, the functional phase promotes increased power and endurance of the upper

limb, continued increase in multi-plane neuromuscular control, and introduction of sports-specific activity before return to active play.

If out-fielders suffer with shoulder problems, close fielding carries a high risk of injury to the eyes, and facial or soft tissue injuries. Moreover, the role of the close-in fielders in stopping fast traveling balls and rapidly returning them to the wicket predisposes them to injury to all parts of the body.

The speed of the ball, and the fact that fielders tend to keep their eyes on it rather than on other fielders means they occasionally collide with each other or the boundary fence, causing head, neck, and facial injuries.

Fielding injuries also reflect the vulnerability of the bare hands when struck by a cricket ball. (Belliappa and Barton, 1991) reviewed 64 cricketing injuries of the hand and found that most occurred during fielding. The peripheral digits were most frequently involved and joint injuries predominated. These included soft tissue injuries with minor avulsion fractures, fracture dislocation at the base of the middle phalanx with dislocation of the proximal interphalangeal (PIP) joints, mallet finger, recurrent collateral ligament injuries of the distal interphalangeal (DIP) and PIP joints, and thumb injuries – mainly fractures of the condyle of the proximal phalanx, with or without dislocation.

All the players on the fielding side are unprotected except for the occasional close-in fielder who uses shin-pads and a safety helmet (but who is not allowed to wear gloves) and the wicket keeper, who routinely wears leg pads, lower abdominal guards and inner and outer gloves. Despite this protection, wicket keepers frequently injure their hands. Repeated impact of the ball on their fingers causes recurrent collateral ligament damage leading to symptomatic degeneration of the DIP joints of the index and the little finger (Belliappa & Barton, 1991):

Finger injuries are usually treated by neighbor (buddy) strapping. If there is rotational deformity or the fracture fragments are not reduced properly, surgical intervention is required. Thumb fractures are mainly treated by open reduction and fixation of the fracture with either a wire or a screw.

Batting:

Batsmen incur 17.1% of the injury toll, mainly from the direct impact of the ball or from over-use injuries because of long hours at the crease.

Although batsmen always wear knee and shin pads, they do not always wear other protective clothing. It is common to wear a 'box' over the scrotal area, some use thigh pads, and most batsmen will wear a helmet when facing a fast bowler. A direct blow to the shoulder and upper arm area by a rising delivery is legal and bowlers use it tactically to unsettle a batsman. The rising ball can cause injury to the eye, face, hand and wrist or soft tissue injury to shoulder and upper arm. Simple soft-tissue treatment, including ice, non-steroidal anti-inflammatory medication, and early active mobilization, can help to reduce the effect of these injuries.

Batting can also cause stress fractures of the pars interarticularis. It usually responds to conservative management and may require a change of batting style.

Other common injuries

Both batting and bowling involve running cumulatively long distances during a game, so over-use injuries of the legs can arise, such as stress fractures, shin pain, patellar tendonitis

and muscle tears. Treatment consists of initial rest, non-steroidal anti-inflammatory medication and later, active mobilization. Exercises to maintain lower-limb fitness and lumbar flexibility and strength should continue throughout the rehabilitation phase.

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