

# SPINAL AND KNEE KINEMATICS PREDICT LOWER BACK AND LOWER LIMB INJURY IN CRICKET FAST BOWLERS

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## Introduction

Cricket fast bowlers are especially prone to sustain lower quarter (low back and lower limb) injuries (Orchard et al 2002; Stretch and Raffan 2011). The kinematics of the spine and front knee influence the whole kinetic chain and may be associated with lower quarter injuries (Putnam 1993). The association between low back and knee kinematics and low back injuries has been established, but no studies have been done on its association with lower quarter injuries. The objective of this study was to compare pre-season and post-season spinal and knee kinematics and between injured and non-injured bowlers.

## Methods

This was a longitudinal observational study. Kinematic and injury related data of thirty-one injury free, premier league (amateur) pace bowlers were obtained. Injuries were monitored monthly. Pre-and post-season as well as injured and non-injured groups were compared using Student's t-tests.

## Results

Sixteen (51.6%) bowlers sustained one or more lower quarter injuries during the course of the eight month cricket season. A difference was found between lumbar spine lateral flexion positioning ( $p=0.021$ ) as well as the range of movement between front foot placement and ball release ( $p=0.021$ ) at the start compared to at the end of the season in injured fast bowlers. No difference was found in non-injured bowlers. The shoulder girdles in relation to the pelvis of the injured bowlers were in a position of extension while the shoulder girdles of the non-injured bowlers were in a position of flexion at the start of the season ( $p=0.0093$ ). The range of flexion between front foot placement and ball release at L1 is much greater in the non-injured group than in the injured group as measured at the end of the season ( $p=0.031$ ).

## Conclusions

The association between kinematics and lower quarter injuries may exist as a result of altered sensory-motor control strategies (protective mechanisms) (Borghuis et al 2008; Wilkerson et al 2012), reflect an attempt to increase ball release speeds or may indicate altered trunk load adaptation strategies (Kulas et al 2010). This study shows that low back and knee kinematics is associated with and may predict lower quarter injuries in cricket fast bowlers.

## References

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