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Volume 5, Issue 5, Pages 347-354  
(September 1996)

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## Dynamic stability of the elbow: Electromyographic analysis of the flexor pronator group and the extensor group in pitchers with valgus instability

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The medial collateral ligaments is a common site of injury in baseball pitchers, causing substantial morbidity and loss of pitching time. Twenty-six skilled baseball pitchers with medial collateral ligament insufficiency were studied before surgery with high-speed cinematography and fine-wire electromyography of eight muscles around the elbow. Data from the pitchers with injured elbows were compared with data obtained from uninjured pitchers. The flexor carpi radialis muscle in the pitchers with medial collateral ligament deficiencies revealed significantly decreased firing during the acceleration and deceleration phase of the fastball when compared with that of the pitchers with normal elbows, and the flexor carpi radialis muscle was significantly depressed during the early cocking and deceleration phases. The extensor muscles revealed slightly increased activity in the injured elbows; however, this was not statistically significant. Although the muscles of the flexor pronator group (especially the flexor carpi ulnaris muscle and the flexor digitorum superficialis muscles) are anatomically positioned to provide dynamic stability of the elbow, they did not demonstrate increased electrical activity in pitchers with medial collateral ligament deficiencies. This finding suggests that the muscles on the medial side of the elbow do not supplant the role of the medial collateral ligament during the fastball pitch.

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PII: S1058-2746(96)80065-6

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