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### Original Research

## A Clinical Method for Identifying Scapular Dyskinesis, Part 2: Validity

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### Abstract

**Context:** Although clinical methods for detecting scapular dyskinesia have been described, evidence supporting the validity of these methods is lacking.

**Objective:** To determine the validity of the scapular dyskinesia test, a visually based method of identifying abnormal scapular motion. A secondary purpose was to explore the relationship between scapular dyskinesia and shoulder symptoms.

**Design:** Validation study comparing 3-dimensional measures of scapular motion among participants clinically judged as having either normal motion or scapular dyskinesia.

**Setting:** University athletic training facilities.

**Patients or Other Participants:** A sample of 142 collegiate athletes (National Collegiate Athletic Association Division I and Division III) participating in sports requiring overhead use of the arm was rated, and 66 of these underwent 3-dimensional testing.

**Intervention(s):** Volunteers were viewed by 2 raters while performing weighted shoulder flexion and abduction. The right and left sides were rated independently as normal, subtle dyskinesia, or obvious dyskinesia using the scapular dyskinesia test. Symptoms were assessed using the Penn Shoulder Score.

**Main Outcome Measure(s):** Athletes judged as having either normal motion or obvious dyskinesia underwent 3-dimensional electromagnetic kinematic testing while performing the same movements. The kinematic data from both groups were compared via multifactor analysis of variance with post hoc testing using the least significant difference procedure. The relationship between symptoms and

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scapular dyskinesis was evaluated by odds ratios.

**Results:** Differences were found between the normal and obvious dyskinesis groups. Participants with obvious dyskinesis showed less scapular upward rotation ( $P < .001$ ), less clavicular elevation ( $P < .001$ ), and greater clavicular protraction ( $P = .044$ ). The presence of shoulder symptoms was not different between the normal and obvious dyskinesis volunteers (odds ratio = 0.79, 95% confidence interval = 0.33, 1.89).

**Conclusions:** Shoulders visually judged as having dyskinesis showed distinct alterations in 3-dimensional scapular motion. However, the presence of scapular dyskinesis was not related to shoulder symptoms in athletes engaged in overhead sports.

**Keywords:** [shoulder](#), [upper extremity](#), [kinematics](#), [assessment](#)

Angela R. Tate, PhD, PT, and Philip McClure, PhD, PT, contributed to conception and design; acquisition and analysis and interpretation of the data; and drafting, critical revision, and final approval of the article. Stephen Kareha, DPT, PT, ATC, CSCS, and Dominic Irwin, DPT, PT, contributed to acquisition and analysis and interpretation of the data and critical revision and final approval of the article. Mary F. Barbe, PhD, contributed to conception and design, analysis and interpretation of the data, and critical revision and final approval of the article.

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