

Diagnostic Accuracy of Scapulohumeral Movement Evaluation for Patients with Shoulder Pathology

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Background: Clinical investigation of shoulder injuries commonly utilizes visual evaluation of scapular movement in an attempt to determine if abnormal or asymmetrical movements are related to the injury. Several prior studies have demonstrated fair to moderate intertester reliability of scapular evaluation findings, yet none of these studies have determined the diagnostic accuracy of scapular visual evaluation in patients with shoulder pathology.

Purpose: To determine the validity (diagnostic accuracy, sensitivity, specificity, and likelihood ratios) of physical therapists' visual evaluation of scapular movements when used to diagnose shoulder pathology.

Design and Setting: Internet-based survey.

Patients or Other Participants: Thirty-three (33) physical therapists performed dynamic visual evaluation of 12 patients' scapulae. Six patients were being treated for shoulder injury and six were uninjured healthy controls. Therapists were informed that not all patients were injured but the proportion in each group was unknown.

Methods: Each patient's concurrent bilateral scapulohumeral movements during unweighted humeral elevation in the scapular plane were video recorded from behind. Physical therapists asked to provide their clinical impressions of the dynamic scapular movement symmetry, if there was a shoulder injury, and if so, define the injured shoulder (right or left) based solely on the visual analysis. Validity measures were determined via contingency table analysis. Shoulder pain during humeral elevation was recorded using the shoulder pain and disability index (SPADI).

Results: Physical therapists averaged 6.8 years of musculoskeletal experience (range 1 - 28). Patient pain scores during humeral elevation were 3.2/10 (range 0 – 6). All control participants denied pain with humeral elevation. Physical therapists visual evaluation findings of scapular movements in determining patients the injured shoulder yielded the following (95% CI): diagnostic accuracy 49.5%, specificity 60% (56 – 64), and sensitivity 35% (29 – 41) positive likelihood ratio 0.867 (0.655 – 1.137) and negative likelihood ratio 1.089 (0.923 – 1.273).

Conclusions: Visual evaluation of scapular movements alone demonstrated a poor ability determine the injured shoulder with video analysis. Moderate ability to determine those without shoulder injury was noted.

Clinical Relevance: The clinical utility of visual scapular evaluation to diagnose shoulder injury is cautioned given the poor sensitivity and likelihood ratios (near 1.0) calculated. The use of more reliable and valid objective measures for diagnosing shoulder injury are recommended.