
ORIGINAL RESEARCH

CLINICAL RELIABILITY AND DIAGNOSTIC ACCURACY OF VISUAL SCAPULOHUMERAL MOVEMENT EVALUATION IN DETECTING PATIENTS WITH SHOULDER IMPAIRMENT

Craig A. Wassinger, PT, PhD¹

Duane A. Williams, PT, DSc, MA¹

Stephan Milosavljevic, BAappSci(Physio), MPhty(Manips), PhD²

Eric J. Hegedus, PT, DPT, MHSc³

ABSTRACT

Background: Clinical investigation of shoulder injuries commonly utilizes visual evaluation of scapular movement to determine if abnormal or asymmetrical movements are related to the injury. To date, the intrarater reliability and diagnostic accuracy of visual evaluation of scapular movement among physical therapists are not known.

Purpose: The aims of this study were to determine the clinical reliability and diagnostic accuracy of physical therapists visual evaluation of scapulohumeral movements when used to diagnose shoulder impairment.

Study Design: University based laboratory and an internet based survey.

Methods: Thirty-three physical therapists and 12 patient participants participated in this study. Reliability was measured as percent agreement and using the free marginal kappa statistic (κ) and Cronbach's alpha (α) for interrater and intrarater reliability respectively. Diagnostic accuracy variables such as sensitivity, specificity, likelihood ratios were calculated from contingency table analysis.

Results: Visual evaluation yielded the following (95% CI): diagnostic accuracy 49.5%, specificity 60% (56 – 64), and sensitivity 35% (29 – 41), positive and negative likelihood ratios were 0.87 (0.66 – 1.14) and 1.09 (0.92 – 1.27) respectively. Percent agreements of evaluation findings between sessions for static and dynamic symmetry were 69% and 68%, respectively. The alpha statistics for static and dynamic symmetry were both 0.51. Percentage agreement in determining the injured shoulder was 59%, with an alpha statistic of 0.35.

Conclusion: Visual evaluation of scapular movements, without additional clinical information, demonstrated a poor to fair reliability and poor to fair diagnostic accuracy.

Clinical Relevance: The clinical utility of the use of isolated visual scapular evaluation is cautioned. More reliable and valid objective measures are needed for diagnosing shoulder impairment.

Level of Evidence: 2b, Exploratory cohort study

Keywords: Diagnostic accuracy, reliability, scapulohumeral rhythm, shoulder examination

¹ East Tennessee State University, Johnson City, TN, USA

² University of Saskatchewan, Saskatoon, SQ, Canada

³ High Point University, High Point, NC, USA

Financial Disclosures: This study was funded by a grant from the East Tennessee State University Research Development Committee Major Grants Program.

Acknowledgements: The authors would like to recognize Physical Therapy Services in Elizabethton, TN for assistance in enrolling patients for this project. Furthermore, the authors appreciate the support in recruiting physical therapists provided by Results Physiotherapy and the American Society of Shoulder and Elbow Therapists.

CORRESPONDING AUTHOR

Craig Wassinger

PO Box 70624

Johnson City, TN 37614

Phone 423-439-8295

Fax 423-439-8077

E-mail: Wassinger@etsu.edu