Clinical Assessments of Posterior Shoulder Tightness: Accuracy, Reliability, Precision, and Validity

Introduction

Posterior shoulder tightness (PST) is linked to shoulder pathology in overhead athletes. It is assessed by measuring the amount of humeral horizontal adduction on a stabilized, retracted scapula, while the patient is side-lying or supine. The purpose of this study was to evaluate and compare the accuracy, reliability, precision, and construct validity of the two different PST (side-lying or supine) measurement techniques.

Methods

Clinician accuracy, reliability, and precision were established using 16 healthy males. Construct validity was established by comparing PST between 15 collegiate baseball players with limited internal humeral rotation (IHR) and 15 non-overhead collegiate athletes. Clinical accuracy of both methods was obtained using an electromagnetic tracking device. Intra and intersession intraclass correlations (ICC) and standard error of measurement (SEM) were established for each method.

Results

In side-lying, the average difference between the clinical and electromagnetic tracking measurement was 0.89 ± 0.63 cm. In supine, the average difference was $3.5\pm2.8^{\circ}$. The side-lying intrasession ICC (SEM) and intersession ICC (SEM) were 0.87 (0.37 cm) and 0.23 (.74 cm) respectively. The supine intrasession ICC (SEM) and intersession ICC (SEM) was $0.93 (1.1^{\circ})$ and $0.64 (2.2^{\circ})$ respectively. Between groups, baseball players had significantly less IHR (p<.001) and greater PST (p=.007) when measured in supine, but not in side-lying (p=.170).

Discussion and Conclusions

Low clinician error and good precision suggests good clinical accuracy for both methods. The supine method is more reliable and demonstrates greater sensitivity for PST in overhead athletes. Clinicians might consider utilizing the supine method given the higher reliability, validity, and similar clinician accuracy.