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Original Research

Reliability Limits Of The Modified Thomas Test For Assessing Rectus Femoris Muscle Flexibility About The Knee Joint

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Abstract

Context: The modified Thomas test is commonly used in the clinical setting to assess flexibility about the thigh region.

Objective: To evaluate the clinical reliability of the modified Thomas test for evaluating the flexibility of the rectus femoris muscle about the knee joint.

Design: Descriptive laboratory study using a test-retest design.

Setting: Institution-based clinical orthopaedic setting.

Patients Or Other Participants: Fifty-seven individuals between the ages of 18 and 45 years with no history of trauma participated. Of those, 54 completed the study.

Intervention(s): Three Board-certified athletic therapists with an average of 12.67 years of sport medicine expertise assessed rectus femoris flexibility using pass/fail and goniometer scoring systems. A retest session was completed 7 to 10 days later.

Main Outcome Measure(s): Parametric and nonparametric tests were used to compare participants' test-retest results.

Results: Chance-corrected κ values (intrarater $\bar{x}$ = 0.40, 95% confidence interval [CI] = 0.30, 0.54; interrater $\bar{x}$ = 0.33, 95% CI = 0.23, 0.41) indicated generally poor levels of reliability for pass/fail scoring. Intraclass correlation coefficient (ICC) values (intrarater $\bar{x}$ = 0.67, 95% CI = 0.55, 0.76; interrater $\bar{x}$ = 0.50, 95% CI = 0.40, 0.60) indicated fair to moderate levels of reliability for goniometer data. Measurement error values (standard error of measurement = 7°, method error = 6°, and coefficient of variation = 13%) and Bland-Altman plots (with 95% limits of agreement) further demonstrated the degree of intrarater variance for each examiner when conducting the test.

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Conclusions: These results call into question the statistical reliability of the modified Thomas test and provide clinicians with important information regarding its reliability limits when used to clinically assess flexibility of the rectus femoris muscle about the knee joint in a physically active population. More research is needed to ascertain the variables that may confound the statistical reliability of this orthopaedic technique.

Keywords: Kendall test, contraction test, quadriceps flexibility

Jason D. Peeler, PhD, CAT(C), contributed to conception and design; acquisition and analysis and interpretation of the data; and drafting, critical revision, and final approval of the article. Judy E. Anderson, PhD, contributed to conception and design; analysis and interpretation of the data; and drafting, critical revision; and final approval of the article.

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