

RELATIONSHIP BETWEEN THE LOWER QUARTER Y-BALANCE TEST SCORES AND ISOKINETIC STRENGTH TESTING IN PATIENTS STATUS POST ACL RECONSTRUCTION

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ABSTRACT

Background: ACL injuries are common among sports populations and achieving adequate lower extremity strength is important prior to return to play. Access to isokinetic testing equipment that measures lower extremity strength is limited. Screening tools that measure functional criteria are accessible to clinicians, however the tools' relationship to strength constructs have not been investigated in an ACL reconstructed (ACLR) population.

Purpose: The primary objective was to determine if relationships exist between isokinetic peak knee extension torque (PKET), peak knee flexion torque (PKFT), hamstring to quadriceps (HQ) ratios, and YBT-LQ performance following ACLR. The secondary objective was to observe differences in isokinetic strength ability between high and low performers on the YBT-LQ.

Study Design: Retrospective Chart Review

Methods: Medical records of forty-five ACL-reconstructed subjects, between five-12 months post-surgery were queried for functional assessment data collected during the institution's standard outcome testing battery. Variables of interest included: demographic and anthropomorphic measures, YBT-LQ performance, and involved limb isokinetic PKET, PKFT, and HQ ratios. Performance on each measure, as well as asymmetry between sides, was analyzed using a correlation matrix.

Results: Statistically significant ($p < 0.01$) relationships were identified between YBT-LQ anterior reach asymmetry and the PKET deficit ($r = 0.264$). PKET and PKFT on the involved limb correlated to performance of anterior reach ($r = 0.591$, $p < 0.01$)($r = 0.493$, $p < 0.01$), posteromedial reach ($r = 0.498$, $p < 0.01$)($r = 0.577$, $p < 0.01$), and posterolateral reach ($r = 0.294$, $p < 0.05$)($r = 0.445$, $p < 0.01$) respectively. Similar relationships existed on the uninvolved side, but to a lesser extent. High and low performers on the YBT-LQ demonstrated lower and higher extension torque deficits, respectively.

Conclusion: While each test measures unique constructs, there are associations between components of the tests. In the ACLR population, both the YBT-LQ and isokinetic strength testing can expose asymmetries and impact return to play decision making.

Level of evidence: 2b

Key words: ACL, Y-Balance test lower quarter, isokinetic testing, return to sports

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