

Peak Knee Flexion Angle During Gait is Not Related to Quadriceps Strength and Self-Reported Knee Function 6 months Following Anterior Cruciate Ligament Reconstruction.

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Anterior cruciate ligament reconstruction (ACLR) results in quadriceps dysfunction and aberrant gait biomechanics linked to post-traumatic knee osteoarthritis (PTOA) development. The International Knee Documentation Committee (IKDC) questionnaire documents subjective patient perceptions of knee function. The purpose of this study was to determine the associations between changes in peak knee flexion angle during gait from 1 to 6 months post-ACLR, quadriceps strength, and self-reported knee function at 6 months post-ACLR.

Gait biomechanics were assessed in 10 patients to identify the peak knee flexion angle at 1 and 6 months post-ACLR. At the 6-month assessment, quadriceps strength (peak torque) was assessed during maximum voluntary isometric contractions (MVICs). Self-reported function at 6 months was assessed via the IKDC. Pearson correlations (r) were used to evaluate associations between the change in knee flexion from 1 to 6 months post-ACLR, quadriceps peak torque, and IKDC.

The associations between quadriceps peak torque and the change in peak knee flexion angle ($r=0.461$, $p=0.153$) and IKDC ($r=0.408$, $p=0.212$) were not significant. Similarly, the association between the change in peak knee flexion angle and IKDC was not significant ($r=-0.176$, $p=0.604$).

No significant associations were found between peak knee flexion angle, quadriceps strength, and IKDC. These findings suggest that other factors beyond quadriceps function likely explain improvements in patient function over the first 6 months post-ACLR. Future analyses will include a larger sample size and examine patient progress at later stages of the rehabilitation process and could provide more insight regarding effective rehabilitation protocols to prevent PTOA development.