

The Effects of Self-Reported Kinesiophobia on Peak Knee Flexion Angle, Vertical Ground Reaction Force, and Knee Extension Moment 6- and 12-months Post ACL Reconstruction

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Anterior cruciate ligament reconstruction (ACLR) leads to aberrant sagittal plane biomechanics linked to an increased risk of a second ACL injury. Individuals with ACLR, who score ≥ 19 on the Tampa Scale for Kinesiophobia (TSK-11) face a 13 times greater risk of a second ACL injury. Cross-sectional studies show a relationship between kinesiophobia (fear of movement) and stiff landing biomechanics consistent with ACL injury risk. However, there is limited longitudinal data documenting the influence of kinesiophobia on landing biomechanics. Therefore, the purpose of this study was to assess the effects of kinesiophobia on sagittal plane landing biomechanics at 6 and 12-months post-ACLR.

Landing biomechanics and self-reported kinesiophobia were assessed in 12 patients at 6 and 12-months post-ACLR. Participants were dichotomized based on their TSK-11 score. Separate repeated measures ANOVA with partial η^2 effect sizes were used to assess differences in peak knee flexion angle (pKFA), vertical ground reaction (vGRF), and peak knee extension moment (pKEM), while TSK-11 group (high vs. low fear) was used as a between-subjects factor. A Tukey Post Hoc analysis was used to evaluate significant interaction terms.

There was no main effect for time in pKFA ($p=0.107$, partial $\eta^2=0.239$) or pKEM ($p=0.394$, partial $\eta^2=0.074$), however, there was a main effect for time in vGRF ($p=0.011$, partial $\eta^2=0.488$).

The moderate to large effect sizes imply kinesiophobia may affect sagittal plane landing biomechanics but our study may have been underpowered to detect it. Clinicians should consider assessing kinesiophobia when working with individuals with ACLR.