

INFLUENCE OF ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION ON DYNAMIC POSTURAL CONTROL

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ABSTRACT

Background: Athletes that have had anterior cruciate ligament (ACL) reconstruction are at a greater risk for reinjury. The relationship between ACL reconstruction and the dynamic postural sway index (DPSI) has not yet been examined.

Hypothesis/Purpose: The purpose of this study was to examine the DPSI in a surgically reconstructed ACL limb compared to the uninjured leg in athletes that had been cleared for sport. It was hypothesized that in a bilateral limb comparison, the leg that underwent ACL reconstruction would demonstrate poorer postural stability measures (greater DPSI) during a single leg landing activity as compared to the non-surgical limb.

Design: Case-control study.

Methods: 14 subjects (7 male, 7 female; age range 16-23 years) with a history of unilateral ACL reconstruction and clearance for return to sport (mean 14 months post-operatively, range 8 to 24 months) performed five single leg hops over a 12 inch hurdle in the anterior direction from a distance corresponding with 40% of their height, onto a force platform. DPSI for the medial-lateral, anterior-posterior, vertical directions and a composite score were calculated for each trial on the surgical and non-surgical legs. A multivariate analysis with repeated measures was used to compare surgical and non-surgical legs for the total DPSI measure as well as for each component.

Results: Significant differences ($p < .05$) in dynamic postural stability were observed in the medial-lateral, anterior-posterior, vertical indices and DPSI total between the surgical and non-surgical limb.

Conclusion: Deficits in dynamic postural control persist in ACL-reconstructed limbs compared to the non-surgical limb after the clearance for full activity. Clinicians should consider assessing single limb dynamic stability prior to releasing the athlete back to full activity.

Level of evidence: Level 3

Keywords: Anterior cruciate ligament, Dynamic postural stability index, kinetics, single limb hop

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