

# Deficits in Contralateral Limb Strength Can Overestimate Limb Symmetry Index after Anterior Cruciate Ligament Reconstruction

## Abstract

**Purpose:** To evaluate whether contralateral limb strength represents a dynamic, rather than static, data point after ACL reconstruction (ACL-R).

**Methods:** 144 patients underwent isolated ACL-R at a single institution. Patients completed an institutional Lower-Extremity Assessment Protocol (LEAP) testing protocol at 6- and 9-months postoperatively. Extension strength and flexion strength of the ipsilateral and contralateral limbs and limb symmetry index (LSI) were compared between the 6- and 9-month testing outcomes. Sub-group analysis compared patients demonstrating less than or greater than 10% change in contralateral limb flexion and extension strength between 6- and 9-months postoperatively.

**Results:** On average, contralateral limb flexion and extension strength increased 2-4% between 6- and 9-months postoperatively. However, the contralateral limb increased > 10% from 6- to 9-months in extension strength in 35/144 (24.3%) and flexion strength in 55/144 (38.2%) of patients. The cohort with >10% change between 6- and 9-months had significantly weaker contralateral extension and flexion strength at 6-months compared to the cohort that demonstrated < 10% change (Extension: 2.00 vs. 2.39,  $p < 0.001$ ; Flexion: 0.84 vs. 1.08,  $p < 0.001$ ), but similar ipsilateral limb performance. Therefore, the >10% change cohort had a significantly greater LSI at 6-months compared to the < 10% change cohort (67.3% vs. 59.4%,  $p = 0.006$ ). No demographic or operative factors correlated with which patients demonstrated >10% flexion or extension strength changes of the contralateral limb.

**Conclusion:** A percentage of patients demonstrate significant changes in their contralateral limb flexion and extension strength between six and nine months postoperatively that result from an initial contralateral limb strength deficit. This may limit the utility of the contralateral limb as a control for comparison to the operative extremity during return to sport assessment.