

## Predictors of Revision Surgery After Primary Anterior Cruciate Ligament Reconstruction

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**Abstract:** Background: Revision anterior cruciate ligament (ACL) reconstruction surgery occurs in 5% to 15% of individuals undergoing ACL reconstruction. Identifying predictors for revision ACL surgery is of essence in the pursuit of creating adequate prevention programs and to identify individuals at risk for reinjury and revision. Purpose: To determine predictors of revision ACL surgery after failed primary ACL reconstruction. Study Design: Case-control study; Level of evidence, 3. Methods: A total of 251 participants (mean age  $\pm$  SD, 26.1  $\pm$  9.9 years) who had undergone primary ACL reconstruction 1 to 5 years earlier completed a comprehensive survey to determine predictors of revision ACL surgery at a mean 3.4  $\pm$  1.3 years after the primary ACL reconstruction. Potential predictors that were assessed included subject characteristics (age at the time of surgery, time from injury to surgery, sex, body mass index, preinjury activity level, return to sport status), details of the initial injury (mechanism; concomitant injury to other ligaments, menisci, and cartilage), surgical details of the primary reconstruction (Lachman and pivot shift tests under anesthesia, graft type, femoral drilling technique, reconstruction technique), and postoperative course (length of rehabilitation, complications). Univariate and multivariate logistic regression analyses were performed to identify factors that predicted the need for revision ACL surgery. Results: Overall, 21 (8.4%) subjects underwent revision ACL surgery. Univariate analysis showed that younger age at the time of surgery ( $P = .003$ ), participation in sports at a competitive level ( $P = .023$ ), and double-bundle ACL reconstruction ( $P = .024$ ) predicted increased risk of revision ACL surgery. Allograft reconstructions also demonstrated a trend toward greater risk of revision ACL surgery ( $P = .076$ ). No other variables were significantly associated with revision ACL surgery. Multivariate analysis revealed that revision ACL surgery was onl