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Knee functional recovery and limb-to-limb symmetry restoration after anterior cruciate ligament (ACL) rupture and ACL reconstruction

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Abstract: Abstract: Anterior cruciate ligament (ACL) rupture is a common sport injury of young athletes who participate in jumping, cutting, and pivoting activities. Although ACL reconstruction (ACLR) surgery has the goal of enabling athletes to return to preinjury activity levels, treatment results often fall short of this goal. The outcomes after ACLR are variable and less than optimal with low rate of return to preinjury activity level and high risk for second ACL injury. Factors related to the knee functional limitations, strength deficits, and limb-to-limb movement asymmetry may be associated with poor outcomes after ACLR. Additionally, the criteria that are used to determine a patient's readiness to return to the preinjury activity level are undefined which may also be associated with poor outcomes after ACLR. The clinical decision-making to clear patients' for safe and successful return to high physical activities should be based on a universal comprehensive set of objective criteria that ensure normal knee function and limb-to-limb symmetry. A battery of return to activity criteria (RTAC) that emphases normal knee function and limb-to-limb movement symmetry has been constituted to better ensure safe and successful return to preinjury activity level. Yet, only variables related to patients' demographics, concomitant injuries, and treatment measures have been used to predict return to preinjury activity levels after ACLR. However, the ability of RTAC variables that ensure normal knee function and limb movement symmetry to predict the return to participate in the same preinjury activity level after ACLR has not been investigated. In light of this background, the first aim of the present study was to compare functional knee performance-based and patient-reported measures of those who PASS and who FAIL on RTAC at 6 months (6-M) following ACLR with those at 12 months (12-M) and 24 months (24-M) following ACLR and to determine how performance-based and patient-reported