

Introduction: The return-to-sport (RTS) test is used to assess a patient's functional capacity after anterior cruciate ligament (ACL) reconstruction, but its effectiveness in preventing re-injury remains unclear. The objective was to evaluate whether performing the RTS test and stratifying patients by risk is associated with a lower rate of graft re-tear or contralateral ACL rupture.

Methods: Retrospective cohort study with 137 patients undergoing ACL reconstruction between 2020 and 2024. RTS tests included: Repeat Sprint Ability, Dynamic Valgus, Proagility, Unilateral Counter Movement Jump, Isokinetic, Triple Hop Test, and Functional Movement Screen.

Patients were classified into three groups according to a risk score: (1) approved (≤ 12 points), (2) requiring additional training (13–18 points), and (3) unapproved requiring physical therapy (> 18 points). All patients followed a standardized rehabilitation protocol and performed RTS testing at an average of 9 postoperative months. Rerupture and contralateral rupture rates were analyzed, and associations were assessed using multivariate logistic regression.

Results: At a mean follow-up of 3 years, the rerupture and contralateral rerupture rates were 3.3% and 6.7% in the approved RTS test group, 9.8% and 7.3% in the RTS requiring additional training, and 4.0% in the failed group requiring physical therapy. There were no statistically significant differences between groups ($p = 0.40$ and $p = 0.84$). In the RTS + training group, dynamic valgus was associated with a higher re-tear rate (adjusted OR: 1.10; 95% CI: 1.01–1.19) and the muscle balance index with contralateral re-tear (adjusted OR: 1.05; 95% CI: 1.001–1.10).

Conclusion: Passing and risk-stratifying RTS testing was not associated with a lower overall rate of ACL re-injuries. However, certain specific functional parameters could be useful as risk predictors.