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Editorial

Return to Sport After ACL Reconstruction: Is It Time to Add Lateral Extra-Articular Tenodesis?

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Anterior cruciate ligament (ACL) reconstruction is a standard surgical procedure in sports traumatology. However, a key question remains unanswered: who truly returns to sport, at what level, and at what cost? In young pivoting athletes, graft re-rupture and failure to return to pre-injury performance levels remain a significant challenge. Over the past decade, the focus has shifted from isolated ACL reconstruction toward combined procedures that also address injuries of the anterolateral complex and incorporate lateral extra-articular tenodesis (LET).[1] Concurrently, the notion of return to sport (RTS) has evolved from a rudimentary milestone to a multifaceted process.[2]

RTS decisions are no longer made based solely on time, such as six months, nine months, or one season. Contemporary clinical protocols encompass a range of assessments, including quadriceps and hamstring strength testing, hop tests, patient-reported outcome measures, clinical examinations, and radiological evaluations.[2, 3] Despite this evolution, real-world practice remains highly variable, and a reexamination of pivot-shift, graft laxity, and rotational control underscores the fact that intra-articular reconstruction alone does not invariably restore the native mechanics of the knee. This discrepancy is most apparent in younger, high-demand pivoting athletes, where the incidence of second ACL injuries within the first two years after RTS can approach unacceptably high rates.[4] In this conceptual framework, the central question shifts from the feasibility of ACL reconstruction to the development of strategies that ensure the safety and sustainability of the reconstruction process, facilitating a secure and feasible return to high-risk sports.

The STABILITY randomized trial provided the first high-quality clinical evidence that adding an LET to a hamstring autograft ACL reconstruction in young, high-risk patients can meaningfully change failure patterns. In 15–25-year-old pivoting athletes with high-grade pivot shift or generalized laxity, combining ACL reconstruction with a modified Lemaire LET reduced graft failure and persistent rotatory laxity from about 40% to roughly 25% at two years, and isolated graft ruptures from around 11% to 4%. Importantly, these mechanical gains did not come at the cost of inferior patient-reported outcomes. Functional scores were broadly similar across groups, although the LET group had slightly more lateral tenderness and hardware-related irritation, which were typically managed with minor secondary procedures.[5] For the high-risk athlete, this is an attractive trade-off: fewer ACL failures and better pivot-shift control, in exchange for a modest rise in lateral-side symptoms.

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Outside of STABILITY, several cohort studies in elite and recreational athletes have reported lower revision rates and improved rotational stability when LET is added to ACL reconstruction. Together, these data suggest that for selected high-risk patients, LET is not an experimental embellishment but a rational biomechanical adjunct.[6, 7] More recently, systematic reviews and meta-analyses have allowed us to look beyond pure failure rates and examine what really matters to athletes: returning to their previous level of sport. A large meta-analysis of lateral extra-articular procedures (LEAP) combined with ACL reconstruction, including over 30,000 patients, found that those receiving a LEAP achieved higher postoperative activity levels and were more likely to return to their pre-injury level of sport than those undergoing isolated ACL reconstruction. In a subset of nine studies, 62% of patients in the ACLR+LEAP group returned to their pre-injury level, compared with only 40% in the isolated ACLR group.[6] Another systematic review focusing on LET and anterolateral ligament procedures reported that most patients treated with LEAP returned to their pre-injury level of function after approximately 6 months. Interestingly, LET-augmented ACL reconstructions tended to have slightly better clinical outcomes than ALL-based reconstructions but also a higher reoperation rate, often related to lateral hardware or local irritation.[1] These findings reinforce a key message: adding a lateral extra-articular procedure can improve not only mechanical stability and graft survival, but also the likelihood of regaining pre-injury sporting performance. However, the price may be a modest increase in lateral-side complaints and occasional secondary procedures.

One practical concern is whether LET might delay rehabilitation or make RTS testing "worse" at 6–9 months. Emerging evidence suggests this is not the case. Case–control data indicate that when modern rehabilitation is used, the addition of LEAP to quadriceps or bone–patellar tendon-bone ACL reconstruction is non-inferior to isolated ACLR with respect to RTS test batteries and psychological readiness at 6 and 9 months post-operatively.[8] In other words, LET does not seem to lock the knee, slow down early functional recovery, or prevent athletes from meeting standard strength and hop-test criteria. From a rehabilitation standpoint, this allows clinicians to embed LET within existing, criteria-based RTS frameworks, rather than designing entirely separate protocols.

The temptation, when confronted with strong data in high-risk cohorts, is to extend the indication to everyone. At present, the evidence does not support a universal "LET for all" strategy. The most robust benefits are seen in young athletes (often <25 years) participating in pivoting or contact sports, with high-grade pivot shift or generalized laxity, and frequently with additional risk factors such as meniscal deficiency or revision surgery. In these patients, the combination of lower graft failure, better rotational control, and a higher likelihood of returning to the pre-injury level is compelling. For older, lower-demand patients, or for those in straight-line sports, the incremental benefit of LET is far less clear, and any additional risk or cost is harder to justify.[9]

We must also acknowledge the unknowns. Long-term data beyond 10–15 years remains limited. Concerns about over-constraint, increased lateral compartment loading, and potential acceleration of osteoarthritis are biologically plausible, but not yet fully quantified.[10] Moreover, the heterogeneity of LET techniques (modified Lemaire, MacIntosh variants, fixation methods, graft choices) complicates generalizing outcomes.

Should we accept the hypothesis that LET can reduce graft failure and improve the chances of high-level RTS in selected patients? If so, how should this influence our day-to-day decisions? Firstly, it is imperative to conceptualize LET as biomechanical protection rather than a license for earlier or more aggressive RTS. The fundamental principles of safe RTS remain consistent, emphasizing the temporal aspect of the recovery period following surgery, particularly the avoidance of premature RTS before 9–12 months in young pivoting athletes. The objective strength criteria encompass two fundamental components: limb symmetry and minimum torque/body-weight thresholds. The implementation of functional hop tests and movement-quality assessment further substantiates these criteria. The absence of effusion, pain, or instability, psychological readiness, and realistic risk perception are all factors that must be considered. In cases of elevated baseline risk, the application of LET has been shown to increase the likelihood of achieving sustained, long-term engagement without recurrence of ligament failure.[5, 6]

Second, we should move toward structured risk stratification. Age, sport type, pivot-shift grade, laxity, ligamentous hypermobility, meniscal status, and previous surgery can all be integrated into clinical risk scores to guide the indication for LET.[9] High-risk athletes might routinely be counselled about LET as part of shared decision-making, while low-risk individuals could reasonably undergo isolated ACL reconstruction with standard follow-up.

Adding a lateral extra-articular tenodesis will not, by itself, solve the complex problem of returning athletes safely to sport. But for the young, high-risk pivoting athlete, it may finally align what we see in the operating room and on the pivot-shift test with what the athlete feels on the field. Our challenge now is to define who truly needs this additional protection, how to integrate it into robust, criteria-based RTS algorithms, and

whether the short-term gains we observe today will stand the test of time in the decades to come.

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