CONWAY ORTHOPEDIC & SPORTS MEDICINE CENTER

Austin Cole, MD

The average time to return to sport after an ACL reconstruction (with or without meniscus surgery) is 9-12 months.

As per Dr. Cole's physical therapy protocol, if you are an athlete returning to sport you will complete a preliminary functional test to assess progress at around 3.5 months, and a full functional test at around 6 months (examples below). These help provide information regarding therapy, recovery, and reinjury risk.

If appropriate parameters are met, you will be allowed to progress slowly back into sport specific activities. This may be anywhere from 6-9 months. A return to play protocol directed to your specific sport may be provided.

No full return to play will be allowed until <u>at least</u> 9 months post operatively.

Preliminary Functional Test *Week 12 (Prior to 12-week follow-up appointment)*

Test		Dynamic Valgus * (Y/N)	R	L	%
Hand-Held Dynamometer	Quadriceps	N/A			
	Hamstrings	N/A			
	Hip Abduction	N/A			
Y-Balance (Anterior only) Leg Length (ASIS to medial malleolus): _____ cm					
Leg Press Percentage of Body Weight: ☐ 50% _____ ☐ 75% _____	Body weight:_____ Seat setting:_____				

Return to Sport Test *Weeks 20-24 (Prior to 6-month follow-up appointment)*

Test		Dynamic Valgus * (Y/N)	R	L	%
Hand-Held Dynamometer	Quadriceps	N/A			
	Hamstrings	N/A			
	Hip Abduction	N/A			
Y-Balance Leg Length (ASIS to medial malleolus): _____ cm	Anterior:				
	Posterolateral:				
	Posteromedial:				
	Composite:	N/A			N/A
Single Leg Vertical					
Single Leg Hop with Fatigue Protocol					
Single Leg Backwards Hop					
Cross-Over Hop					
Figure 8 Hop					
Drop Landing Knee Excursion**					
Leg Press Percentage of Body Weight: ☐ 75%_____ ☐ 100% _____ other % _____	Body weight:____ Seat setting:_____				
Additional Comments:					

* **Dynamic Valgus** is defined as the kneecap being medial to the great toe during the test

** **Only perform Drop Landing if patient passes ALL hops tests – SL Hop, SL Backwards Hop, Cross-Over Hop, and Figure 8 Hop.**

CONWAY ORTHOPEDIC & SPORTS MEDICINE CENTER
Austin Cole, MD

Why We Suggest Return to Sport 9 Months After ACL Repair

(Originally published by the Mobility Fit Team)

To understand this, let's dig into a simplified explanation about what happens at the cellular level after an ACL reconstruction.

But First – Acronyms you may not be familiar with

- ACL = Anterior cruciate ligament
- ACLR = Anterior cruciate ligament reconstruction

Day 0: Surgery

Weeks 1-4 Inflammatory stage: Following surgery the joint and its components are irritated from the controlled damage that occurs during surgery. The new ACL is flooded with inflammatory cells that drive the healing process. At this point the new ACL has not vascularized meaning there is no blood flow to the graft.

Weeks 4-12 Proliferative stage: The graft re-vascularizes, gaining a supply of blood, and type III collagen is formed from its components into a disorganized matrix (think a knitted blanket with larger openings – i.e. relatively weak)

Weeks 12+ Ligamentization: The disorganized matrix of type III collagen continues to strengthen, forming type I collagen (think of a tightly stitched blanket that is resistant to stretch). This gradually strengthens to become MUCH stronger than during the proliferative stage.

Reading the above stages makes it clear that return to sport is not appropriate in the first 3 months. Not only are people usually still dealing with swelling, reduced strength, and decreased control, but the ACL graft is in a stage prior ligamentization, meaning that the strength of the ACL itself is significantly reduced. Since we can rule out the first 3 months, then we should look at what happens from months 4-9.

Typically, jogging is initiated at 12 weeks or after following therapy (depending on progress). It is typically very awkward and takes time (and strength) to improve mechanics to the point of increasing speed. After jogging would come jumping and cutting. Not only do we need the ligamentization process to be underway by this point, but we also need to see clients demonstrating sufficient strength and control to initiate jumping and cutting. I am sure we can agree that someone must be able to squat and significantly flex their knees with good control before they undergo the rapid knee flexion and high forces associated with initiating a change of direction.

For these reasons, nobody attempts to return from an ACL repair until at least 6 months post-operative. Now the question becomes, when is the right time to return from an ACL repair?

Typically we look for several benchmarks:

1. Full and pain-free active range of motion of the knee
2. Strength of the surgical side greater or equal to 90% of the non-surgical side
3. Even weight distribution during activities on 2 legs (such as a squat)
4. Passing score on return to sport testing (there are many of these, but we typically use single leg hop for distance, triple hop, and crossover triple hop)
5. Good dynamic control of the knee during running and jumping activities

So, how long should it take to achieve these?

That varies greatly from person to person, so it does not provide us with a timeline, but based on much research and personal experience, it is *extremely rare* that someone achieves all of these by 6 months. Now, why do we make the jump from *6ish* months to 9 months?

THE RESEARCH

- "Returning to knee-strenuous sport before 9 months after ACL reconstruction was associated with an approximately 7 fold increased rate of sustaining a second ACL injury."
    - Beischer, Susanne, et al. "Young Athletes Who Return to Sport Before 9 Months After Anterior Cruciate Ligament Reconstruction Have a Rate of New Injury 7 Times That of Those Who Delay Return." *journal of orthopaedic & sports physical therapy* 50.2 (2020): 83-90.
- "The reinjury rate was significantly reduced by 51 % for each month RTS (Return To Sport) was delayed until 9 months after surgery, after which no further risk reduction was observed."
    - Grindem, H., L. Snyder-Mackler, and H. Moksnes. "Simple decision rules reduce reinjury risk after anterior cruciate ligament reconstruction: the Delaware–Oslo cohort study." *Br J Sports Med Published Online First* 9 (2016).
- Athletes who returned to competition within the first 7 months were nearly three times more likely to sustain a second ACL injury than those who returned after 7 months, with the majority of the injuries occurring within the first month of returning to sport.
    - Capin, Jacob J., et al. "Gait mechanics and second ACL rupture: Implications for delaying return-to-sport." *Journal of Orthopaedic Research* 35.9 (2017): 1894-1901.
- Six to 9 months following ACLR (ACL Reconstruction), patients continue to demonstrate functional hop and isokinetic knee extension deficits, as well as kinematic differences, during the propulsion and landing phases of the hop tests.
    - Xergia, Sofia A., et al. "Asymmetries in functional hop tests, lower extremity kinematics, and isokinetic strength persist 6 to 9 months following anterior cruciate ligament reconstruction." *Journal of Orthopaedic & Sports Physical Therapy* 43.3 (2013): 154-162.

- Relatively large unloading of the ACLR limb (but not differences in contact times) are seen during running for athletes <9 months post-ACLR despite having completed functional criteria required to permit RTS training. These asymmetries appear to slightly increase with increasing speed, and the reverse is true for healthy controls and those ≥9 months after ACLR surgery.
    - Thomson, Athol, et al. "Marked asymmetry in vertical force (but not contact times) during running in ACL reconstructed athletes< 9 months post-surgery despite meeting functional criteria for return to sport." *Journal of science and medicine in sport* 21.9 (2018): 890-893.
- At 6 months, two patients (3.2%) passed all criteria. At 9 months, seven patients (11.3%) passed all criteria.
    - Welling, Wouter, et al. "Low rates of patients meeting return to sport criteria 9 months after anterior cruciate ligament reconstruction: a prospective longitudinal study." *Knee Surgery, Sports Traumatology, Arthroscopy* 26.12 (2018): 3636-3644.
- Athletes passed return to sport criteria 232 ± 99 days after ACLR. One year after ACL reconstruction 95% had returned to sport, 78% at their preinjury level. Two years after ACL reconstruction all athletes had returned to sport, 95% at their preinjury level and only one athlete had a second ACL injury.
    - Arundale, Amelia JH, et al. "Two year ACL reinjury rate of 2.5%: outcomes report of the men in a secondary ACL injury prevention program (ACL-SPORTS)." *International journal of sports physical therapy* 13.3 (2018): 422.

Even in a relatively small sample size of the research is clear – reinjury risk is dramatically higher in the 6-9 month range than it is after 9 months. We now have enough data to make an educated decision.

Final verdict: Return to sport after ACL reconstruction should occur after passing all return to sport testing AND greater than 9 months following surgery. For some, this means return is delayed well beyond 9 months as they work to meet objective criteria for return to sport.

CONWAY ORTHOPEDIC & SPORTS MEDICINE CENTER

Why Waiting to Return to Sport After ACL Reconstruction Is Wise

Evidence for athletes and families — especially in cutting, pivoting, and contact sports

Six months can be a rehabilitation milestone — but it is usually not the finish line for unrestricted competition.

1. The graft is still biologically remodeling

ACL reconstruction uses a tendon graft that must incorporate and remodel inside the knee — a process often called **ligamentization**. Changes in cells, blood supply, collagen organization, and tissue structure continue after pain improves and strength returns. A knee can feel good before the graft and athlete are ready for repeated, unpredictable competition demands.

2. MRI and tissue studies support a gradual maturation process

Systematic reviews of MRI and biopsy research report that graft remodeling continues over many months and remains ongoing at one year. MRI graft signal often changes substantially during the first postoperative year and can continue changing into the second year. This supports gradual biological maturation, but does not prove every graft is weak at a particular month.

Important: MRI signal is an indirect marker of remodeling, not a direct measurement of graft strength. MRI does not independently determine an individual athlete's safe return date and is not a stand-alone clearance test.

3. Why six months may be too early

Football, basketball, soccer, and other pivoting sports require rapid deceleration, cutting, landing, and reacting to other players. These demands are far greater than jogging or controlled drills. Fatigue and unexpected contact can expose deficits that are not obvious during routine rehabilitation.

4. What does the evidence say about timing and reinjury?

A landmark prospective study of young athletes found that returning to knee-strenuous sport before nine months was associated with a higher rate of a second ACL injury (hazard ratio 6.7). A systematic review/meta-analysis found second ACL injury is common, but the certainty around a precise time threshold is limited. A 2025 cohort of athletes who met discharge criteria found no increased risk before nine months. The evidence therefore supports avoiding an automatic six-month clearance — not claiming that nine months guarantees safety.

The goal is not simply to return sooner. It is to return prepared for the full demands of sport — and to stay there.

Elite athletes: real-world return timelines

These examples show how even world-class athletes with elite medical, rehabilitation, and performance resources often need around nine months or longer to return to competition. Timelines depend on the exact injury, associated ligament damage, surgery, sport, and the meaning of “return.”

ATHLETE / SPORT	DOCUMENTED TIMELINE	CONTEXT
Patrick Mahomes NFL football	ACL + LCL surgery: Dec. 15, 2025. Cleared to start Week 1 on Sept. 14, 2026 — about 9 months.	Multi-ligament injury; team medical staff described roughly nine months as the expected recovery window. Source
Joe Burrow NFL football	Injury Nov. 22, 2020; returned in Week 1 on Sept. 12, 2021 — about 9½ months after injury.	ACL and MCL injury. NFL reporting
Carson Wentz NFL football	ACL/LCL injury Dec. 10, 2017; first game back Sept. 23, 2018 — over 9 months after surgery.	Contact clearance and game return followed a staged progression. Team report
Virgil van Dijk Premier League soccer	ACL injury Oct. 17, 2020; returned to Liverpool preseason action July 2021 and competitive play Aug. 2021 — roughly 9½–10 months.	Elite football/soccer defender. BBC surgery report
Zach LaVine NBA basketball	ACL reconstruction Feb. 14, 2017; returned to NBA game action Jan. 2018 — about 11 months.	NBA guard; return came the following season. Timberwolves update
Elite football/rugby cohort 394 athletes	95% returned to competition at an average of 10.3 months; rugby average 9.6 months and football 10.6 months.	Group data are more informative than a single celebrity example. Study
Elite/pro athletes meta-analysis 49 studies, 4,463 knees	Pooled mean return to play: 292 days (~9.6 months); pooled graft failure estimate 7%.	Across 11 sports; evidence level IV. 2025 systematic review

These are some of the best athletes in the world, supported by elite surgeons, rehabilitation teams, performance staff, facilities, and financial resources. Their full-time job is to perform at the highest level — yet their documented return timelines commonly cluster around nine to ten months or longer. Professional and collegiate sports generate enormous revenue and have powerful incentives to find safe ways to return athletes sooner. If there were a proven, reliable shortcut that consistently restored readiness earlier without added risk, elite sports medicine would have strong reasons to identify and use it. The fact that no universally reliable shortcut has emerged is a reason for humility and caution — not proof that earlier return is always unsafe.

Practical takeaways & selected evidence

What should clearance include?

• No effusion and full range of motion; stable clinical examination.
• Strength and power testing, with attention to absolute strength as well as limb symmetry.
• High-quality single-leg landing, deceleration, jumping, and change-of-direction mechanics.
• Psychological readiness and progressive sport-specific exposure, including fatigue and reactive drills.
• Shared decision-making among athlete, surgeon, athletic trainer, physical therapist, and sports staff.

Bottom line: For high-demand pivoting/contact sports, six months is generally early for unrestricted competition. Many athletes need at least nine months — sometimes longer — and comprehensive, individualized testing. Nine months is not a guarantee of safety, and time alone does not replace objective readiness. This handout is educational, not personal medical clearance.

Selected peer-reviewed evidence

1. Van Dyck P, et al. Assessment of ACL Graft Maturity With Conventional MRI: A Systematic Literature Review. *Orthop J Sports Med.* 2019;7(6):2325967119849012. PubMed.

2. Grassi A, et al. Assessment of Graft Maturity After ACL Reconstruction Using Autografts: A Systematic Review of Biopsy and MRI Studies. 2020. PubMed.

3. Beischer S, et al. Young Athletes Who Return to Sport Before 9 Months After ACL Reconstruction Have a Rate of New Injury 7 Times That of Those Who Delay Return. *J Orthop Sports Phys Ther.* 2020;50(2):83–90. PubMed.

4. Grondin J, et al. Is 9 months the sweet spot for male athletes to return to sport after ACL reconstruction? *Br J Sports Med.* 2025. Full text.

5. Elite/professional athlete return-to-play systematic review and meta-analysis. *Knee Surg Sports Traumatol Arthrosc.* 2025/2026; pooled mean 292 days, graft failure estimate 7%. PubMed.

6. NFL head team physician survey: average return to sport 9 months; none allowed return before 7 months; 31/32 used functional testing. Full text.

7. Elite football/rugby cohort: 394 athletes, 95% returned at mean 10.3 months. PubMed.

8. NFL.com reporting on Mahomes' nine-month return after ACL/LCL injury. Report.

Evidence note: Athlete examples are illustrative and do not prove a minimum safe timeline. Some elite athletes return earlier, and some take longer. Injury pattern, associated procedures, testing criteria, and the definition of return vary. The best-supported message is to avoid automatic clearance at six months and use criteria-based progression with appropriate time for recovery.