

ACL Reconstruction

Post-Operative Rehabilitation Protocol

A phase-by-phase guide to protecting your new ligament and earning a confident return to sport.

Zachary Domont, MD · Orthopaedic Surgeon, Adult & Pediatric Sports Medicine

Patient: _____

Surgery date: _____

Operative side: R / L

HOW TO USE THIS GUIDE

Your recovery moves through **five phases**. Progression is **criteria-based** — you advance when your knee shows it's ready (motion, swelling, strength, movement quality), not simply when the calendar says so. The timelines below are typical guidelines; your surgeon's and physical therapist's instructions always come first.

Your graft type and any meniscus work performed change specific rules, especially in the first 6–12 weeks. Follow the addenda checked below **on top of** the base protocol — and when two rules differ, **follow the more conservative one**.

Graft: ■ A — Quadriceps tendon autograft ■ B — Hamstring autograft ■ C — Patellar tendon (BTB) autograft ■ D — Allograft (cadaver)

Meniscus: ■ E — Meniscal repair ■ F — Meniscus root repair ■ None / partial meniscectomy (no addendum needed)

YOUR RECOVERY AT A GLANCE

Phase	Typical timing	Focus	Support
1 · Protect & Activate	Weeks 0–2	Full extension, wake up the quad, control swelling	Crutches
2 · Motion & Gait	Weeks 2–6	Full bend, normal walking, early strength	Wean crutches
3 · Strength Foundation	Weeks 6–12	Build single-leg strength and balance	None
4 · Running & Power	Months 3–6	Return-to-run program, agility, jumping	None
5 · Return to Sport	Months 6–9+	Testing, sport-specific training, clearance	None

THE THREE THINGS THAT MATTER MOST

- **Get the knee fully straight — early.** Full extension equal to your other knee within the first 1–2 weeks is the single most important early goal. A knee that stays bent develops lasting problems.
- **Wake up the quad.** The quadriceps 'shuts off' after knee surgery. Quad sets and straight-leg raises are boring — and they are the foundation of everything that follows.
- **Respect the 9-month rule.** Your graft is weakest around months 2–4 while it remodels, even though the knee feels good. Current evidence shows re-tear risk drops substantially when return to cutting/pivoting sport is delayed to about **9 months** and strength testing is passed.

PHASE 1

Protect & Activate

Full extension · quad activation · swelling control · safe walking

WEEKS

0–2

GOALS

- Full knee extension (fully straight, equal to the other side)
- Knee bend (flexion) to about 90°
- Quadriceps activation — a strong, visible quad set
- Straight-leg raise without the leg sagging ('no lag')
- Control swelling; protect the incisions

DO NOT

- Put a pillow under the knee — it teaches the knee to stay bent
- Twist or pivot on the planted leg
- Soak the incisions (showers OK once cleared; no baths/pools)
- Drive until off narcotics, off crutches, and able to brake hard (right knee: usually 2–4+ weeks)

WHAT YOU'LL DO

- **Walk with crutches, weight-bearing as tolerated** — the crutches are for assistance and balance only, **unless you are specifically told not to bear weight**; wean off them as comfort and quad control allow
- **Heel props and prone hangs** — let the knee sag fully straight several times a day
- **Quad sets** — tighten the thigh, push the knee down flat; **straight-leg raises** once there is no lag
- **Heel slides** for bending; **patellar (kneecap) mobilizations**
- **Ankle pumps** frequently for circulation
- **Ice/compression 20 minutes at a time, several times daily**, especially after exercise
- Electrical stimulation (NMES) of the quad if provided by your therapist

READY FOR PHASE 2 WHEN...

- Extension fully equal to the other knee; flexion ~90° or better
- Straight-leg raise with no lag
- Swelling trending down and pain controlled

PHASE 2

Motion & Gait Restoration

Full bend · walk without a limp · first real strength work

WEEKS

2–6

GOALS

- Full flexion (bending) by week 6
- Normal walking without crutches or a limp
- Minimal swelling
- Growing quad strength and control

DO NOT

- Run, jump, twist, or pivot
- Ditch the crutches before your gait is normal — limping now becomes a habit later
- Do machine knee-extension exercises with weight
- Push through a knee that's hot and swollen — swelling is the knee asking for a lighter day

WHAT YOU'LL DO

- **Wean off crutches** (typically weeks 2–4) once you can walk without a limp
- **Stationary bike** — first for motion (rock the pedals), then full revolutions, then light resistance
- **Closed-chain strengthening** (foot planted): mini-squats, leg press in a comfortable range, step-ups, bridges
- **Hip and core work** — side-lying leg raises, clamshells, planks
- **Balance training** — single-leg stance, progressing to unstable surfaces
- **Continue extension work daily** until it's effortless, plus flexion stretching to full

READY FOR PHASE 3 WHEN...

- Full range of motion, equal to the other knee
- Normal gait with no limp; minimal to no swelling
- Good control with single-leg stance and mini-squats

PHASE 3

Strength Foundation

This is where the work happens — strength now buys you sport later

WEEKS
6–12

GOALS

- Substantial single-leg strength (squats, step-downs with good form)
- Quad strength approaching ~70–80% of the other side by week 12
- Excellent balance and movement quality — knee stays over the foot, no collapse inward

DO NOT

- Run before you're tested and cleared — 12 weeks is the earliest, and only if criteria are met
- Play any cutting or pivoting sport
- Chase soreness — sharp pain or next-day swelling means back off

WHAT YOU'LL DO

- **Progressive lower-body strengthening** — squats, leg press, lunges, step-downs, Romanian deadlifts
- **Hamstring strengthening** — bridges, curls (timing per your graft addendum)
- **Balance and control drills** — single-leg reaches, controlled hops onto a box late in this phase if cleared
- **Cardio:** bike, elliptical, swimming with gentle kick (once incisions fully healed), brisk walking or incline treadmill
- Blood-flow-restriction (BFR) training with your therapist can accelerate quad recovery if available

READY FOR PHASE 4 (RETURN TO RUN) WHEN...

- At least 12 weeks from surgery
- No swelling; full pain-free motion
- Quad strength ~70–80% of the other side on testing
- Single-leg squat to ~60° with good control, pain-free

PHASE 4

Running, Agility & Power

Earn back impact: run, then change direction, then jump and land

MONTHS

3–6

GOALS

- Complete a graded return-to-run program without pain or swelling
- Quad and hamstring strength $\geq$ 80–90% of the other side
- Confident hopping and landing mechanics

DO NOT

- Return to games, scrimmages, or open play — practice drills are not competition
- Progress two variables at once (add distance OR speed OR cutting — not all together)
- Ignore a knee that swells after sessions

WHAT YOU'LL DO

- **Return-to-run progression** — walk/jog intervals on level ground, building gradually to continuous running
- **Heavier strength training** — squats, deadlifts, split squats, calf work; keep building the quad
- **Plyometrics** — double-leg to single-leg hops, landing drills, jump-and-stick
- **Agility** — ladder drills, shuffles, gradual introduction of planned cutting at increasing speed
- **Sport-specific drills** without opponents (dribbling, passing, hitting, throwing progressions)

READY FOR PHASE 5 WHEN...

- Running, jumping, and planned cutting are pain- and swelling-free
- Strength and hop testing $\geq$ 90% of the other side
- You feel ready — hesitation and fear are real risk factors we take seriously

RETURN-TO-SPORT CRITERIA (ALL REQUIRED)

- **At least 9 months from surgery** for cutting/pivoting sports (soccer, basketball, football, skiing, etc.)
- **Quadriceps and hamstring strength** ≥ 90% of the uninjured side on formal testing
- **Hop test battery** ≥ 90% symmetry (single hop, triple hop, crossover, timed hop) with quality landings
- **No swelling, full motion, stable knee** on examination
- **Psychological readiness** — confidence without guarding (your therapist may use the ACL-RSI questionnaire)
- **Surgeon clearance** after reviewing testing

HOW CLEARANCE WORKS

You will not be cleared for cutting/pivoting sport until you have completed the return-to-sport criteria above and your surgeon has cleared you. Testing early or skipping a step doesn't speed things up — it just means repeating the testing later.

Once you have reached **at least 9 months post-op** and feel you have met the criteria above, **call Dr. Domont's office to schedule ACL Clearance Testing** with his physical therapy office (the session takes roughly **1 hour**). After testing, you will follow up with Dr. Domont, who will review the results with you to determine clearance.

THE GRADED RETURN

- **Practice before play:** non-contact practice → full practice → limited minutes → full competition
- Straight-line sports (cycling, jogging, swimming) typically resume earlier — around months 3–5 with criteria met
- Keep strength training **2–3 days per week for at least the first year back** — the strongest predictor of staying healthy
- Re-tear risk is highest in the first 1–2 years and in athletes under 20; maintenance work is not optional

CALL THE OFFICE RIGHT AWAY IF YOU NOTICE

- Calf pain, swelling, or tenderness; chest pain or shortness of breath (call 911 for chest pain/breathing trouble)
- Fever over 101.5°F, spreading redness, warmth, or drainage at the incisions
- A pop with new instability or giving-way, or a sudden loss of motion
- Pain not controlled by medication, or new numbness/tingling in the foot

Your Graft Choice and Meniscus Work Change the Rules

Every graft borrows tissue from somewhere, and that **donor site** needs its own protection while it recovers. These addenda **modify** — they do not replace — the **base protocol**. Where an addendum is stricter, **the stricter rule wins**.

ADDENDUM A | ADDITIONAL PROCEDURE

Quadriceps Tendon Autograft

A portion of your quadriceps tendon (above the kneecap) was used to build the new ACL. It's a strong, reliable graft — the trade-off is that the donor site sits in the tendon of the very muscle we most need to rebuild.

What's different & extra rules by phase

- **Expect more early quad weakness and a lag in extension** if you're not diligent with heel props, prone hangs, and quad sets — normal and temporary, but it makes the Phase 1 quad work even more important
- **Weeks 0–6:** aggressive-feeling quad activation is encouraged (quad sets, SLR, NMES), but no resisted knee extension through range — the donor site is still knitting together
- **Weeks 6–12:** closed-chain quad loading (squats, leg press, step-downs) progresses steadily; NMES and/or BFR strongly encouraged to rebuild quad size
- **Months 3–6:** expect the quad strength benchmarks to take the full window — don't rush the return-to-run test
- **Watch for:** pain or swelling directly above the kneecap with loading — report it rather than pushing through

ADDENDUM B | ADDITIONAL PROCEDURE

Hamstring Tendon Autograft

Tendons from the inner hamstring (semitendinosus ± gracilis) were used to build the new ACL. The knee itself often feels good early — the structure that needs protecting is the hamstring donor site on the back of the thigh.

Extra rules by phase

- **Weeks 0–6:** **no isolated or resisted hamstring work** — no curls, no bridges with the operative leg alone, no dragging the heel against resistance, and avoid forceful hamstring stretching
- **Weeks 6–8:** gentle hamstring activation begins (double-leg bridges, light isometrics)
- **Weeks 8–12:** progressive hamstring curls and Romanian deadlifts with light load
- **Months 3–6:** hamstrings usually remain the lagging muscle — targeted strengthening (including eccentric Nordic curl work) stays a program emphasis through clearance. Watch for a sudden sharp 'pulling' pain in the back of the thigh during weeks 3–8 — small donor-site strains are the classic setback here; report rather than push through

ADDENDUM C | ADDITIONAL PROCEDURE

Patellar Tendon (BTB) Autograft

The central third of your patellar tendon, with a bone plug at each end, was used to build the new ACL. Bone-to-bone healing is fast and secure — the trade-off is the donor site at the front of the knee.

Extra rules by phase

- **Weeks 0–6:** diligent kneecap mobilizations (all four directions, daily) — the donor site loves to stiffen
- **Closed-chain strengthening only** (squats, leg press, step-downs) — this donor site tolerates closed-chain loading far better than isolated knee-extension machine work
- **Weeks 6–12:** progress squats and leg press by **anterior knee comfort** — front-of-knee pain with loading means shorten the range and lighten the load, not push through
- **Months 3–6:** introduce jumping and deceleration gradually — the donor tendon is the most common overload site (patellar tendinopathy). Kneeling discomfort is common too and usually eases with gradual desensitization starting around months 2–3; flag persistent front-of-knee pain with stairs or squatting early

ADDENDUM D | ADDITIONAL PROCEDURE

Allograft (Cadaver Tissue)

Donor tissue was used to build the new ACL, so there is no donor site of your own to protect. Follow the base protocol as written — **no graft-specific restrictions apply.**

Good to know

- Because there is no donor-site healing to protect, early motion and quad activation can proceed exactly per the base protocol's Phase 1–2 timeline
- Allograft tissue incorporates into the joint **more slowly** than autograft tissue, so many surgeons extend timelines for higher-demand strengthening, running, and return-to-sport — **follow your surgeon's specific timeline if it differs from the base protocol**
- Return-to-sport criteria (strength and hop testing, surgeon clearance) still apply in full

ADDENDUM E | ADDITIONAL PROCEDURE

Concomitant Meniscal Repair (Stable)

A torn meniscus was stitched back together rather than trimmed out. Saving the meniscus protects the joint for decades. For a stable repair, weight-bearing is not restricted — the only change from the standard ACL protocol is a temporary limit on how far the knee bends while the stitches heal.

What's different from the base protocol

- **Weight-bearing is not restricted** — follow the standard ACL weight-bearing and crutch-wean progression in Phases 1–2
- **Knee flexion is limited to 0–90°** for the first 4–6 weeks to protect the repair site
- **Avoid weight-bearing on a deeply bent knee** during this window — no squatting, kneeling, or pivoting on the planted foot

Weeks 6 onward

- Flexion progresses to full once the 4–6 week mark is reached
- Resume the standard ACL strengthening progression from Phase 3 onward
- Return-to-sport timing is typically unchanged (~9 months)

Watch for

- New joint-line pain, catching, or locking at any point — report it promptly

ADDENDUM F | ADDITIONAL PROCEDURE

Concomitant Meniscus Root Repair

The meniscus was reattached at its root — the anchor point that lets it absorb load for the whole joint. This is the most protective meniscus pathway: early weight and deep bend both pull directly on the repair, so both are limited on a strict schedule.

Weeks 0–4 — non-weight-bearing

- **Non-weight-bearing (NWB) on crutches** — the operative leg carries no weight at all
- **Range of motion limited to 0–90°**
- Continue extension work (heel props, quad sets) and motion within the 0–90° limit

Weeks 4–6 — partial weight-bearing

- **Advance to 50% weight-bearing** on crutches
- **Range of motion advances to 0–120°**

Week 6 onward

- **Full weight-bearing and full range of motion** — resume the standard ACL progression from this point

- Return-to-run and return-to-sport timing follow the base protocol; expect Phase 3 strength work to start a bit later given the slower start

QUESTIONS ALONG THE WAY?

Bring this packet to every physical therapy visit and follow-up appointment. Your therapist can record your motion, strength testing, and hop testing here so everyone stays on the same page.

Advocate Medical Group — Orthopaedic Surgery & Sports Medicine

Zachary Domont, MD · Libertyville, IL · Office: _____ · Therapy: _____

This protocol is a general guideline based on current evidence and criterion-based rehabilitation principles. It does not replace individualized medical advice; the instructions of your surgeon and physical therapist always take precedence.