

ACL RECONSTRUCTION WITH MENISCUS REPAIR

Physical Therapy Protocol

PATIENT

SURGEON

Andrew L. Merritt, MD

DATE OF SURGERY

PT START DATE

For the patient

You had an **ACL reconstruction** and a **meniscus repair**. The meniscus repair sets the pace for 5 months. You can walk on your leg right away, but **never bend your knee past 90° for 6 weeks**, and no deep squats, lunges, or kneeling until 5 months. You move to the next phase when your knee meets the goals, not just when weeks pass.

PROTOCOL AT A GLANCE

WEIGHT BEARING	As tolerated from day 1, with 2 crutches. Most people are off crutches by 4 to 6 weeks
BRACE	Locked straight to walk until good quad control (no lag on a straight-leg raise), then 0–90°. On for sleep, 0–90° . Fully unlocked at 6 weeks
MOTION GOALS	Full straightening (0°) by the end of week 1 . Bending never past 90° for 6 weeks , then 125° by week 8
PHYSICAL THERAPY	Starts 5 to 7 days after surgery, 2 times a week at first
KEY PRECAUTIONS	No squatting, lunging, or kneeling past 90° for 5 months . No open-chain knee extension from 0° to 40° until week 8
RUNNING · SPORT	Running 5 months at the earliest. Cutting sports no sooner than 9 months

Recovery Timeline

Phase	When	PT visits	Focus
1	Weeks 0–6	2× a week	Full straightening, wake up the quad, never past 90°
2	Weeks 6–12	2× a week	Bend past 90°, off crutches, bike and early strength
3	Months 3–5	1× a week + home program	Strength and balance; no loaded bending past 90°
4	Months 5–7	Every 1–2 weeks	Standard ACL track: jogging, jumping and landing
5	Months 7–9+	Weekly or more	Sport drills, testing, return to sport

For the Therapist

Check the surgeon notes first. They override anything else in this protocol. Questions or setbacks: call (425) 656-5060.

Surgeon notes and special instructions

General principles

- **Criterion-based.** Time ranges are minimums, not automatic advancement gates. Pain, swelling, and quad control govern progression. Please contact us about setbacks or significant delays.
- **The meniscus repair sets the limits through month 5;** ACL graft considerations are secondary. Weight bearing as tolerated from day 1; motion 0–90° for 6 weeks; no weight-bearing squats, lunges, or kneeling past 90° for 5 months.
- **At month 5,** move to the standard ACL protocol (Phase 4 onward) once Dr. Merritt clears it.
- **Extension first.** Full passive extension (0°) by the end of week 1; do not trade extension for flexion.
- **Blood flow restriction (BFR)** is approved and encouraged throughout, especially while loading is restricted.
- **Cold compression:** a compression cryotherapy unit is preferred. 20 minutes on, 20 minutes off, after exercise and as needed.
- **Train the other leg** for overall strength and accurate LSI comparisons.
- **Scheduled testing:** baseline LSI at month 3 and pre-return screening at month 6. Do not wait for the patient to ask.
- **NMES** is provided at PT visits when volitional quad activation is poor. No home unit is needed.

About this repair

Peripheral meniscus repair (vertical longitudinal, bucket-handle, or red-red / red-white zone). These repairs sit in the vascular outer zone and tolerate axial load, unlike root or radial repairs. Flexion past 90° still tensions the posterior horn repair, whatever the zone.

Procedures done at the same time

ACL + LET (lateral extra-articular tenodesis)

- Added in higher-risk patients to lower the re-tear rate. The standard ACL protocol applies, with no timeline changes.
- Avoid aggressive resisted internal tibial rotation in Phase 1.

PHASE

1

Protection and Early Recovery

Weeks 0–6

For the patient: what to expect

You can walk on your leg right away; your repair handles the pressure. What you cannot do is **bend your knee past 90°** (a right angle) for 6 weeks, because bending pulls on the repair. Get your knee fully straight, control the swelling, and wake up your quad. The brace stays locked straight for walking until your quad is strong, then bends 0–90°. Wear it to sleep, set to 0–90°.

WEIGHT BEARING	As tolerated with 2 crutches. 1 crutch by weeks 2–3 if quad control and pain allow; off crutches by weeks 4–6
BRACE	Locked at 0° for walking until the SLR has no lag, then 0–90°. On for sleep, 0–90°. Not needed for resting or PT, but never past 90°
MOTION	Hard limit 0–90° through week 6. Heel props and prone hangs 10–15 min, 2–3× a day. Heel slides and wall slides; stop at 90°. Patellar mobilization (4 directions) from day 1

Goals

- Full passive extension (0°) by the end of week 1
- Flexion 90° by weeks 2–3; 90° cap through week 6
- Visible VMO contraction with a quad set
- Normal gait on crutches; pain and effusion controlled

Move on when

- ☐ Full passive extension (0°)
- ☐ Flexion to 90° without an effusion flare
- ☐ VMO contraction with a quad set; SLR without a lag
- ☐ Walking on crutches with minimal pain and effusion

Exercises

Exercise	How
Quad sets	Against a rolled towel, every waking hour
Straight-leg raise	3 × 15, once there is no extension lag
BFR	Quad sets and SLR with the cuff; high priority if quad inhibition is significant
Hip strengthening	SLR in 4 planes, clamshells, side-lying abduction
Mini squats · step-ups	Mini squats 0–45° and partial 4-inch step-ups, once walking with good quad control
NMES · cold compression	NMES at PT if volitional activation is poor. Cold compression 20 min on, 20 min off after exercise

Precautions

- Hard limit: no flexion past 90°, including deep squats and kneeling to the floor
- No isolated open-chain knee extension (ACL graft shear); hamstring graft: no aggressive stretching or resisted curls through week 6
- Do not force flexion: 90° is a ceiling, not a target. If swelling increases after activity, reduce the intensity

Why: Peripheral repairs have a blood supply, so walking compresses them without gapping them. Flexion past 90° pulls on the posterior horn and can disrupt the fibrin clot before collagen ingrowth. Only the weight-bearing rule differs from a root repair.

PHASE

2

Protected Strengthening

Weeks 6–12

For the patient: what to expect

The 90° limit lifts, so you can bend as far as comfort allows, and you should be off crutches. The stationary bike is your best tool now. One rule does not change: **no squatting, lunging, or kneeling past 90° while standing, for 5 full months.** If your knee swells after exercise, you did too much, so back off and ice. You can stop the brace once your quad is strong and you walk normally.

WEIGHT BEARING	Full, without a device, by week 6 at the latest. No loaded flexion past 90° through month 5
BRACE	Fully unlocked at week 6; keep it for uneven ground until quad control is good. Stop it with full extension, good quad control, and a normal gait (no set timeframe)
MOTION	The 90° limit lifts at week 6. 0–125° by week 8; full (135°+) by week 12. Keep up prone hangs and patellar mobilization

Goals

- Motion 0–125° by week 8; full by week 12
- Full weight bearing without a device by week 6
- Normal gait on level ground
- Closed-chain quad and hip strength within the limits

Move on when

- ☐ Motion 0–125° without pain
- ☐ Walking without a limp
- ☐ Squats and step-ups without more swelling
- ☐ Single-leg stance ≥30 sec

Exercises

Exercise	How
Stationary bike	From week 6: rock or pedal partial revolutions until motion allows a full revolution. Low resistance. Key tool for motion and conditioning
Mini squats · leg press	Squats 0–60°, leg press 0–70°, both legs; never past 90° under load
Step-ups	4–6-inch step, forward and lateral
Balance · hips	Single-leg balance 30–60 sec; lateral band walks and hip work
BFR	Leg press and squats with the cuff, for quad loading at shallow depths
Pool walking	From weeks 6–7, if available
Elliptical	From weeks 8–10
Hamstring curls	Light resistance; hamstring graft: none resisted until week 6

Precautions

- No weight-bearing squat, lunge, step-down, or kneeling past 90° through month 5; this does not lift at week 12
- No open-chain knee extension from 0° to 40° through week 8 (ACL graft shear)
- No running, jumping, or pivoting. Hamstring graft: no resisted curls through week 6

Why: The repair has early strength but immature collagen. Low-angle weight bearing helps healing; loaded flexion past 90° concentrates posterior horn stress until month 5.

PHASE

3

Strengthening with Ongoing Meniscus Protection

Months 3–5

For the patient: what to expect

You're building real strength. The repair is still healing, so **no squatting below 90°, no deep lunges, and no kneeling to the floor until 5 months**. The gym, elliptical, and bike are fine within those limits. No running, jumping, cutting, or twisting yet. At 5 months, Dr. Merritt will clear you for the standard ACL return-to-sport track.

WEIGHT BEARING	Full. No weight-bearing squat, lunge, or step-down past 90° through month 5
BRACE	Hinged brace off by month 3 with adequate quad control; may continue for confidence
MOTION	Full by month 3; deficits now are usually from effusion. Non-weight-bearing flexion past 90° is allowed

Goals

- Full, pain-free motion (0–135°+)
- Quad and hamstring strength toward 70% LSI
- Normal stairs; start neuromuscular training
- Ready for ACL Phase 4 at month 5

Move on when

- ☐ Full motion (0–135°+)
- ☐ Stairs reciprocally without pain
- ☐ Single-leg stance 60 sec, stable
- ☐ No effusion at rest
- ☐ Cleared by Dr. Merritt at month 5

Exercises

Exercise	How
Bike · elliptical	Bike and elliptical with progressive resistance
Squats · leg press	0–90° only under load until month 5
Step-ups · stairs	4–6-inch step; reciprocal stairs without the rail; step-over, no deep step-down
Open-chain knee extension	From week 8, 90–40° arc only
Hamstring curls	Seated or prone, light to moderate; past 90° is fine here
Balance · BFR	Eyes closed, perturbation, balance board. BFR for exercises limited by the 90° rule

Precautions

- No weight-bearing flexion past 90° through month 5; non-weight-bearing flexion (supine, seated) is allowed
- No outdoor running, jumping, impact, cutting, pivoting, or lateral agility before month 5
- Open-chain extension: 90–40° arc only through month 3

Why: Peripheral repairs need 4–6 months of collagen maturation to tolerate load, and the graft is about 50% of native strength at month 3.

PHASE

4

Advanced Strengthening and Neuromuscular Training

Months 5–7

For the patient: what to expect

The meniscus limits are lifted. You now follow the standard ACL track: jogging, learning to jump and land safely, and sport-type movements. **The 9-month minimum for full return to sport still applies.** Build carefully and watch how your knee responds to each new activity.

WEIGHT BEARING	Full; all meniscus flexion limits lifted at month 5
RUNNING	Return-to-run program from month 5 at the earliest, once strength and mechanics criteria are met
CUTTING	Controlled change-of-direction and deceleration drills late in this phase

Goals

- Quad and hamstring strength 80–90% LSI
- Start and progress plyometrics
- Return to run after a mechanics screen
- Sport-specific movement; psychological readiness

Move on when

- ☐ Running without pain, swelling, or gait change
- ☐ Single-leg hop for distance $\geq 70\%$ LSI
- ☐ Quad and hamstring strength $\geq 80\%$ LSI
- ☐ No effusion with high-demand activity

Exercises

Exercise	How
Heavy compound lifts	Barbell squat (full depth now allowed), leg press, hip hinge
Single-leg strength	Single-leg squats and lunges; Nordic hamstring curls (eccentric)
Running	Screen first for pelvic drop, knee valgus, and trunk lean; then walk-run intervals on flat ground
Plyometrics	Double-leg vertical, broad, and box jumps; single-leg hops once double-leg testing is symmetric
Agility	Cones, ladder, figure-8 at increasing speed
Change of direction	Late Phase 4: controlled cutting and deceleration

Precautions

- Full-depth squats and impact allowed from month 5 once the strength base is adequate
- No pivoting sport before return-to-sport criteria are met
- Plyometrics only at $\geq 70\%$ LSI; poor landing loads the graft and the repaired meniscus
- Assess psychological readiness: fear of re-injury predicts not returning

Why: Meniscus collagen is mature enough for unrestricted loading by month 5; ACL ligamentization continues through month 12. Watch for late meniscal symptoms under high training loads.

PHASE

5

Return to Sport

Months 7–9+

For the patient: what to expect

The 9-month minimum from your surgery date is firm. Your ACL graft keeps maturing until 9 to 12 months, even if your knee feels normal. You'll pass strength and hop tests before Dr. Merritt clears you. Once you're back, do the FIFA 11+ warm-up (or one like it) before every practice and game, and keep lifting.

ACTIVITY	Full sport once criteria are met; 9 months minimum from surgery
STRENGTH WORK	2–3 sessions a week; do not stop at return to sport
Goals	Move on when
• Quad and hamstring strength $\geq 90\%$ LSI • Pass the single-leg hop battery • Full sport movements at speed, no symptoms • ACL-RSI ≥ 65; clearance from Dr. Merritt	☐ Quad $\geq 90\%$ LSI; hamstring-to-quad ratio $\geq 60\%$ ☐ Single-leg hop and triple hop $\geq 90\%$ LSI ☐ Y-balance composite $\geq 94\%$ ☐ No pain, effusion, instability, or meniscal symptoms ☐ ACL-RSI ≥ 65

Exercises

Exercise	How
Phase 4 program	Continue at progressive intensity
Sport practice	Positional drills, scrimmage, game simulation
Strength maintenance	2–3 sessions a week with a hamstring emphasis (the main dynamic restraint of the ACL)
Injury prevention	After clearance: FIFA 11+ (or equivalent) warm-up before every practice and game

Precautions

- Minimum 9 months from surgery regardless of strength testing
- Psychological readiness required: ACL-RSI ≥ 65
- Hamstring graft: confirm hamstring strength recovery before clearance

Why: Graft ligamentization continues through month 12. Late meniscal symptoms can appear at return to high-demand sport and need prompt evaluation.

Return to Sport

All criteria must be met before clearance.

Measure	Target
Time from surgery	At least 9 months
Quadriceps strength	≥90% LSI (consider ≥100% for pivoting or contact sport)
Hamstring strength	≥90% LSI; hamstring-to-quad ratio ≥60%
Single-leg hop · triple hop	≥90% LSI
Y-balance composite	≥94%
ACL-RSI	≥65
Symptoms	No pain, effusion, instability, or meniscal symptoms with high-demand activity
Clearance	Formal clearance from Dr. Merritt

Functional testing

- Strength: isokinetic preferred, handheld acceptable. Hops: single, triple, crossover, 6-meter timed
- Y-balance or SEBT; ACL-RSI; meniscal exam (joint line tenderness, McMurray, effusion)

LSI can overestimate function (the other leg often deconditions); compare with age-matched norms.

Graft-Specific Considerations

Hamstring autograft (semitendinosus ± gracilis)

- No aggressive hamstring stretching or resisted curls through week 6; BFR hamstring loading is preferred in Phases 1–2. Weakness can last 6–12 months: emphasize hamstring strength in every phase and confirm recovery before clearance (a deficit is a leading re-tear risk)

Patellar tendon (BTB) autograft

- Anterior knee pain and kneeling discomfort are expected for 6–12 months; counsel the patient. Pain with quad work is common at months 4–7 and needs no referral back to Dr. Merritt
- Bone-to-bone healing allows slightly faster early closed-chain progression, within the meniscus limits. Patellofemoral pain may limit step-downs and deep squats in Phase 3; modify to pain
- Make sure full extension is reached; an extension lag raises the risk of a cyclops lesion

Quadriceps tendon autograft

- Thigh soreness for 4–6 weeks; early quad work is safe. Less anterior knee pain than BTB, no kneeling limit. Progression mirrors BTB, but quad recovery is often slower; BFR is encouraged