

MENISCUS ROOT OR RADIAL REPAIR

Physical Therapy Protocol · Non-Weight-Bearing

PATIENT

SURGEON

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DATE OF SURGERY

PT START DATE

For the patient

Your meniscus root or radial tear was repaired. These repairs are fragile at first: even putting your foot down briefly pulls on the repair before it has healed. **For 6 weeks, you must keep all weight off your leg.** Your crutches carry all your weight, all the time. This is the most important rule of your recovery. Your knee also **must not bend past 90°** for those 6 weeks. Electrical stimulation at PT and special exercises keep your quad working without stressing the repair. After 6 weeks, you will build up steadily.

PROTOCOL AT A GLANCE

WEIGHT BEARING	None for 6 weeks: crutches at all times, no toe-touch. Then gradual weight from week 6; off crutches by weeks 8 to 10
BRACE	Hinged, unlocked 0–90° , for walking and sleep; off is fine for bending exercises and resting in bed. Weaned as you start walking, usually by 8 to 10 weeks
MOTION GOALS	Full straightening (0°) by week 1. Bending to 90° by weeks 2–3. No bending past 90° until 6 weeks , then 120°+ by weeks 10–12
PHYSICAL THERAPY	Starts 5 to 7 days after surgery, 2 times a week at first
KEY PRECAUTIONS	No weight and no pool walking for 6 weeks. No squatting or kneeling past 90°, and no impact or cutting, until 5 months
RUNNING · SPORT	Run-walk program no earlier than weeks 18 to 20 , with clearance. Full sport at 6 months , after testing

Recovery Timeline

Phase	When	PT visits	Focus
1	Weeks 0–6	2× a week	Strict non-weight-bearing, 0–90°, quad activation (NMES, BFR)
2	Weeks 6–12	2× a week	Gradual weight bearing, motion past 90°, bike, pool walking, low-impact strength
3	Weeks 12–20	1× a week + home program	Strength, 3-month symmetry testing, run-walk from weeks 18–20
4	Months 5–6+	As needed	Deep flexion, cutting and pivoting, testing, sport at 6 months

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

- **Why NWB is mandatory.** The roots anchor the meniscus to the tibial plateau and are the endpoints of its hoop-stress mechanism. Weight bearing generates hoop tension that is transmitted to the root footprint. A repaired root cannot withstand this early; even partial weight bearing substantially raises repair stress and risks non-union or pull-through.
- **Enthesis healing.** Root repairs heal fibrocartilage to bone at the tibial footprint, similar to ACL graft-tunnel healing. Early callus needs 6–8 weeks and full remodeling 4–6 months. NWB for 6 weeks protects the most vulnerable window.
- **Same late-phase limits as the standard repair.** After week 6: no squats or kneeling past 90° until 5 months, no impact or cutting until 5 months, full sport at 6 months.
- **Motion:** 0–90° for 6 weeks, as in the standard repair.
- **Brace (weeks 0–6):** hinged, unlocked 0–90°, on for walking and sleep. The patient may take it off for home bending exercises and resting in bed, never past 90°. Wean from week 6 as weight bearing and quad control progress, usually by weeks 8–10.
- **Stationary bike:** from week 6. Rocking or partial revolutions first; full revolutions once flexion is $\geq 100^\circ$. Never full revolutions under the 90° cap.
- **NMES** is provided by the therapist at PT visits from the first visit. No home unit is needed.
- **Icing:** 20 minutes on, 20 minutes off, after each session and as needed.
- **Criterion-based.** Advance on the goals for each phase, not on the date alone.

PHASE

1

Non-Weight-Bearing Protection

Weeks 0–6

For the patient: what to expect

You must stay completely off your leg for 6 weeks. Even putting your foot down briefly pulls on the repair before it has healed. Use crutches for everything: walking, standing, and getting in and out of chairs, bed, and the car. No pool walking yet. Do your exercises lying down or sitting. Wear the brace for walking and sleep. You can take it off for your bending exercises and for resting in bed, but never bend past 90°. Electrical stimulation and special exercises start at your first PT visits to protect your muscle strength.

WEIGHT BEARING	Non-weight-bearing for 6 weeks. Crutches at all times for walking and all standing transfers. No toe-touch, no foot-flat contact, no partial loading of any kind while upright. No pool walking before 6 weeks
MOTION	Strict 0–90° through week 6. Full extension (0°) by week 1; flexion to 90° by weeks 2–3. All motion work supine or seated
BRACE	Hinged, unlocked 0–90°, for 6 weeks. On for walking and sleep; may be off for home bending exercises and resting in bed, never past 90°

Goals

- Strict NWB: zero axial loading through the operated leg
- 0–90° by the end of Phase 1
- Quad and hip activation with NMES and BFR
- Swelling and pain controlled
- Limit quad atrophy during the NWB period

Move on when

- ☐ Full NWB compliance through week 6
- ☐ 0–90° without pain or reactive effusion
- ☐ SLR without extensor lag
- ☐ Adequate quad contraction with NMES and BFR
- ☐ Using crutches safely and independently

Exercises

Exercise	How
NMES	To VMO and quadriceps, 20–30 min each PT visit, from the first visit (provided by the therapist; no home unit). Key to keeping quad activation during NWB
BFR quad sets	Isometric quad contraction with the BFR cuff, 4 sets of 30/15/15/15. Hypertrophy stimulus with zero joint loading
Quad sets	3 × 15, every waking hour
Straight-leg raise	Supine hip flexion only at first, 3 × 10; no hip-extension SLR until quad lag resolves
Hip abduction	Supine, 3 × 15
Ankle pumps	Every hour
Heel slides	Active-assisted, supine, to the 90° limit, 3 × 15
Upper body · core	Conditioning as tolerated
Other leg	Strengthening to maintain conditioning
Ice and elevation	After each session: 20 min on, 20 min off

Precautions

- Absolute NWB for 6 weeks: no toe-touch, no partial weight. Any axial load risks hoop-stress failure at the root repair
- No heel strike on the operated leg, even briefly, during transfers or crutch use
- No pool walking before 6 weeks
- No supine bridges: hip extension through a loaded limb transmits force to the tibial plateau and stresses the root repair
- No prone hip extension (creates an extension moment at the knee)
- No standing or kneeling exercises; motion work only supine or seated

Why: Root and radial repairs restore the hoop-stress mechanism of the meniscus. Any axial load, even partial, concentrates hoop tension at the root footprint. Until fibrocartilage-to-bone healing is established at the tibial attachment (6+ weeks), loading risks mechanical failure. NWB is a biological requirement, not a preference.

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2

Weight-Bearing Transition and Motion Progression

Weeks 6–12

For the patient: what to expect

Six weeks is a big milestone: you can start putting weight on your leg. This is gradual. Start with 2 crutches, then 1, then none as your strength and comfort allow, usually by weeks 8 to 10. Pool walking can start now that you are putting weight on the leg. The bending limit is lifted, and you'll work toward full bending. You'll wean off the brace as you start walking. One rule stays: **do not squat or kneel past 90° until 5 months.**

WEIGHT BEARING	Gradual from week 6. Weeks 6–7: 2 crutches, 25–50% weight. Weeks 7–8: 1 crutch or cane, 50–75%. Weeks 8–10: wean off the device as gait and quad control return
MOTION	Limit lifted after week 6: progress flexion 5–10° a week toward full. Goal 0–120°+ by weeks 10–12. Still no squatting past 90° with weight and no kneeling past 90° until 5 months (week 20)
BRACE	Wean as weight bearing and quad control progress, usually by weeks 8–10

Goals

- From NWB to full weight bearing by weeks 8–10
- Motion from 90° to 120°+ by weeks 10–12
- Quad strength 50–60% of the other side by week 12
- Normal gait on level surfaces
- Low-load closed-chain strengthening

Move on when

- ☐ Full weight bearing without a device, with acceptable gait, by week 10
- ☐ Motion 0–120°+ by weeks 10–12
- ☐ Mini squat (0–60°) × 12 without pain
- ☐ Stationary bike 20 min without pain or reactive effusion
- ☐ Quad strength ≥55% of the other side

Exercises

Exercise	How
NMES · BFR	Continue at PT visits as needed; taper as voluntary activation returns
Gait training	Progressive weight-bearing transitions with crutches
Standing quad sets	With wall support, 3 × 15
Standing hip abduction	With wall support, 3 × 15
Stationary bike	Rocking or partial revolutions first; full revolutions once flexion ≥100°. Low resistance, 10–15 min, progress to 20–25 min
Pool walking	If available, once partial weight bearing starts (week 6+). Buoyancy eases the weight-bearing transition
Mini squats	Wall-supported, 0–30° at first, progress to 0–60° by week 10; 3 × 10–12
Leg press	Seated, both legs, 0–60° arc, very light load; 3 × 12
Hamstring curls	Light resistance, 3 × 12
Calf raises	3 × 15
Hip strengthening	Abduction, external rotation, clamshells

Precautions

- No squatting past 90° while weight bearing through week 20 (5 months)
- No kneeling past 90° through week 20
- Weight-bearing progression must be gradual, as pain and quad control allow
- No step-ups or standing lunges until week 10+ and adequate quad control
- No impact in Phase 2

Why: The root repair has initial stability at 6 weeks, enough for protected weight bearing, but the enthesis keeps remodeling through 4–6 months. Gradual loading stimulates organized healing without overwhelming the repair. Loaded deep flexion is avoided for the same reasons as in the standard repair.

PHASE

3

Strengthening

Weeks 12–20

For the patient: what to expect

You should be walking normally now and building real strength. This phase follows the standard meniscus repair plan: squats, step training, and steadily more load, while the deep-bending and impact limits stay in place until 5 months. A run-walk program can start at weeks 18 to 20 at the earliest, once Dr. Merritt clears you.

WEIGHT BEARING	Full, unrestricted
MOTION	Full active motion. Still no loaded flexion past 90° until week 20 (5 months)
RUNNING	Run-walk intervals no earlier than weeks 18–20, with surgeon clearance

Goals

- Full motion (0–130°+)
- Quad strength ≥75–80% of the other side
- Single-leg squat and step-down without pain
- Run-walk program at weeks 18–20 with surgeon clearance

Move on when

- ☐ Full motion (0–130°+)
- ☐ Quad strength ≥80% of the other side
- ☐ Single-leg squat (0–60°) × 15 without pain
- ☐ Running 5 min continuously without pain

Exercises

Exercise	How
Squats	To 90°, 3 × 12–15; progress load
Single-leg squats	0–60°, 3 × 10
Leg press	Single-leg progression; progress load
Step-ups	6–8-inch step, 3 × 10
Step-downs	Eccentric control, 3 × 10
Reverse lunges	3 × 10 each side
Leg-extension machine	With surgeon clearance; light to moderate resistance
Hamstring curls	Progressive resistance
Stationary bike	High resistance, 30 min
Elliptical	Progress duration and resistance
Walking	Varied terrain, including hills
Run-walk intervals	From weeks 18–20 at the earliest, with clearance

Precautions

- No squatting past 90° under load through week 20
- No kneeling past 90° through week 20
- No impact, cutting, or twisting through week 20
- Running no earlier than weeks 18–20, with surgeon clearance

Why: Root enthesis remodeling continues through 4–6 months. These limits protect the healing root attachment from high-stress loading while the collagen matures.

PHASE

4

Return to Sport

Months 5–6+

For the patient: what to expect

The 5-month limits are lifted. You'll now build up to full sport, including impact, cutting, and pivoting. Full return to sport is expected at 6 months, once you pass strength and function tests.

WEIGHT BEARING	Full, unrestricted
MOTION	Full. Deep flexion restriction lifted at 5 months

Goals

- Quad strength $\geq 90\%$ of the other side
- Hop tests $\geq 90\%$ LSI
- Full return to sport and recreational activity

Move on when

- ☐ Quad strength $\geq 90\%$ of the other side
- ☐ Single-leg hop $\geq 90\%$ LSI
- ☐ Running 20 min continuously without pain
- ☐ Full sport movements without pain or hesitation
- ☐ Surgeon clearance at the 6-month visit

Exercises

Exercise	How
Squats	To full depth; progress load
Agility · cutting	Sport-specific agility, cutting, and deceleration drills
Plyometrics	Double-leg, then single-leg
Running progression	Intervals, then continuous, then acceleration and deceleration
Hop testing	Single-leg hop, triple hop, crossover hop
Sport simulation	At full intensity

Precautions

- Full sport at 6 months minimum; strength and hop criteria must be met
- Contact sport requires specific surgeon clearance
- A root repair restores hoop-stress function; long-term quad strength and neuromuscular control protect that investment

Why: Root repair restores the mechanical function of the meniscus and deserves a complete rehabilitation program. Returning early risks re-tear at the repair and loses the joint-preserving benefit of the surgery.

Return to Sport

All criteria must be met before clearance.

Measure	Target
Time from surgery	At least 6 months
Quadriceps strength	≥90% of the other side (isokinetic or functional testing)
Single-leg hop	≥90% LSI (single, triple, crossover hop)
Motion	Full and pain-free, including deep flexion
Effusion	None after sport-specific activity
Running	20 min continuous without pain
Clearance	Surgeon clearance

Functional testing

- Strength: isokinetic or functional testing
- Hop battery: single hop, triple hop, crossover hop

Activity timeline summary: NWB for 6 weeks. Motion 0–90° for 6 weeks. No pool walking before 6 weeks. No squatting or kneeling past 90° until 5 months. No impact, cutting, or twisting until 5 months. Full sport expected at 6 months.