

Physical Therapy Protocol: Quadriceps Tendon Repair

Phase 1: Weeks 0 through 6 – Reduce Inflammation & Protect the Repair

Physician Goals: Decrease postoperative inflammation and pain, protect the quadriceps tendon repair which is at its most vulnerable during this phase of healing

Restrictions: Flat foot weight bearing, brace on at all times, brace locked in full extension when ambulating for the full 6 weeks, locked in full extension when sleeping for full 6 weeks, ROM restrictions during PT/HEP: 0 degrees weeks 0-2, 0 to 30 degrees weeks 2-4, ROM 0 to 60 degrees weeks 4-6

Exercises: Patella mobilization, prone lying, supine with logroll under heel, gentle stretching to achieve full extension – prone lying with heel off bed or supine with logroll under heel, straight leg raises with brace locked in full extension, quad and hamstring isometrics, gastroc and hamstring stretching, floor-based body weight glute, hip, and core strengthening

Total Visits: 12 – once to twice per week with daily at home range of motion exercises, quad sets, ankle pumps

Phase 2: Weeks 6 through 12 – Regain Range of Motion

Physician Goals: Regain full range of motion, continue to work on volitional quad activation, normalize gait

Restrictions: Progress to weight bearing as tolerated in brace locked in full extension until good quad control and able to straight leg raise without leg, gradually increase PROM without restrictions

Exercises: Heel slides, full arc active quad extension without resistance once full ROM restored, begin stationary bike, swimming/aquatic therapy OK, advance hip/core/glute strengthening, double leg quad strengthening with mini-squats/weight shifts, passive BFR at 100% LOP, 5-minute occlusion, 3-minute reperfusion cycles No exercise required during this phase. Focus on mitigating muscle atrophy

Total Visits: 12 – once to twice per week depending on patient's ability to perform HEP independent of PT sessions

Phase 3: Weeks 12+ – Regain Strength and Return to Recreation

Physician Goals: Build lower extremity strength and endurance in anticipation of returning to recreational activities and/or sports, transition from formal PT to home exercise program alone

Restrictions: Wean from brace, return to running, cutting/agility work, and sports per criteria below

Exercises: Progress lower extremity strengthening without restrictions, initiate plyometric program based on patient needs, begin single leg balance/strengthening exercises, begin endurance training with elliptical, continue to advance hip/core/glute strengthening, BFR with OKC exercises at 80% LOP, 30-15-15-15 rep scheme with gradual progression to 20-30% 1 rep max resistance

Total Visits: 12 – once to twice per week depending on patient's ability to perform HEP independent of PT sessions

Return to Running Criteria:

- Trace effusion, flexion within 5° of contralateral side
- Limb symmetric index (LSI) on anterior reach Y balance test $\geq 90\%$
- LSI on quadriceps torque output on isometric measurement $\geq 75\%$
- 12" single leg squat tolerance with good hip control
- Able to walk > 1 mile with no limping or pain
- Able to "hop" with upper extremity assistance on operative leg 5 times without pain or compensation
- Single leg balance with eyes closed ≥ 30 seconds

Return to Cutting / Agility Training Criteria:

- Return to running criteria met above
- No effusion
- Full range of motion
- Quad LSI on isokinetic $\geq 85\%$
- Hamstring LSI on isokinetic $\geq 85\%$
- LSI on anterior reach Y-balance $\geq 95\%$
- Single leg hopping pain free

Return to Sport Criteria:

- LSI $\geq 95\%$ hamstring curl and leg press
- Able to perform single leg squat to 75° with correct form
- Single leg hop LSI $\geq 95\%$
- Y-balance $\geq 95\%$ (mean of 3 trials in anterior, posterolateral and posteromedial $\div 100$)
- Vertical jump test, single leg hop distance, and timed single leg hop over 20 feet $\geq 90\%$ contralateral side