



Quadriceps Tendon Repair Post-Operative Care

This protocol was developed to provide the physical therapist with guidelines for treatment of a patient who has undergone quadriceps tendon repair. These guidelines are not a substitute for appropriate clinical decision making. It is essential that the therapist take into consideration the patient's general health, integrity of associated joints and any post-op complications. The protocol is divided into 4 phases. Patients will typically continue with formal physical therapy in some capacity until they are in late Phase II or early Phase III. Anticipated number of visits range from 18 to 28 formal PT sessions. Progression from phases should not occur prior to the appropriate post-op timeframes; however, phase progression should be delayed if the patient does not meet the progression criteria. Tolerance to exercise should be closely monitored. Patients should not have a significant increase in pain after treatment or exercise. If this occurs, treatment is too vigorous and should be modified accordingly.

Phase I: Maximum Protection Phase **Weeks 0-6**

Immobilization:

- Knee brace locked at 0° extension for ambulation and sleep for 4-6 weeks
- TTWB immediately post-op, WBAT beginning POD 4
- Unlock brace for ambulation weeks 6-8.
 - Discontinue brace thereafter with physician approval.
- Discontinue crutch use at week 6 as tolerated
- Discontinue sleeping in brace at week 7

Formal Physical Therapy:

- Most patients will be seen 2 times a week during Phase I
- If patient has met Phase II criteria progression prior to 6 weeks, formal treatment can be decreased to 1 time a week for the remainder of Phase I

Goals:

- Restore full knee extension PROM
- Diminish pain and joint swelling
- Restore patellar mobility
- Initiate early, controlled motion
- Controlled forces on repair site
- Gradually increase knee flexion
- Minimize muscular atrophy

Precautions:

- Monitor wound healing closely
- Avoid knee extension AROM
- Avoid prone knee flexion
- Avoid aggressive flexion, adhere to ROM limits

Physical Therapy Treatment:POD 1 to 4

- ROM: 0-30°
 - Knee extension PROM
 - Knee flexion AROM/AAROM
- Patellar mobilizations (gentle – especially superior/inferior glides)
- Ankle pumps
- Sub-max quad sets
- SLR (abduction, adduction, extension)
 - No flexion

POD 4 to 7

- PROM: 0-45°
- Continue above exercises
- Initiate gravity-eliminated SLR flexion (assisted)

Week 2

- PROM: 0-60°
- Continue above exercises

Week 3

- PROM: 0-75°
- Continue above exercises
- Scar mobilizations once incision is fully healed

Week 4

- PROM 0-75 °
- Continue above exercises
- Mini squats in brace (0-45°)
- Weight shifting in brace

Weeks 5 to 6

- PROM:
 - Week 5: 0-80°
 - Week 6: 0-90°
- Continue above exercises
- Knee extension AROM: 90-30°
- Sub-max, multi-angle knee extension isometrics
- SLR flexion against gravity

Recommended HEP:

- Knee flexion AROM/AAROM in brace 3 times daily (within ROM limits)
- Sub-max quad sets
- SLR (abduction, adduction, extension)
 - No flexion
- Ankle pumps

Criteria for Progression to Phase II:

- ROM: 0-90°
- Good patellar mobility
- SLR flexion without quad lag
- Minimal effusion
- Satisfactory clinical exam

Phase II: Intermediate Phase**Weeks 7 to 16****Formal Physical Therapy:**

- The majority of patients will be treated 2 times per week

Goals:

- Control forces during ambulation and ADL's
- Progress knee flexion ROM
- Improve lower extremity strength
- Restore limb confidence and function

Precautions:

- Avoid exercises or activities that cause or increase knee/surgical-site pain
- Resistance for exercises should increase gradually
- No sports activities should be initiated

Physical Therapy Treatment:**Weeks 7 to 11**

- PROM:
 - Week 7: 0-100°
 - Week 8: 0-105°
 - Week 10: 0-115°
- Gait training
- SLR (flexion, abduction, adduction)
 - No flexion
- Knee extension AROM: 90-0°
- Half squats
- Leg press
 - Start bilateral. Progress to unilateral and eccentric
- Wall squats
- Forward/lateral lunges
- Forward step ups
- Heel raises
- Hamstring curls (with ROM restrictions as above)
- Proprioceptive drills
- Bicycle (if ROM allows)

Weeks 12 to 16

- Full AROM
- Continue with above exercises as appropriate
- Lateral step ups
- Front step downs
- Backward lunges
- Retro ambulation
- Address general LE flexibility as needed
- Initiate walking program

Recommended HEP:

- Phase I and II exercises as appropriate 2-3 times a day

Criteria for Progression to Phase III:

- Minimal/no effusion
- Normal patellar mobility
- Full AROM
- 8" forward step up
- Normal, symmetrical gait pattern
- Reciprocal stair negotiation
- Satisfactory clinical exam

Phase III: Light Activity Phase**Months 4 to 6****Formal Physical Therapy:**

- Most patients will be discharged in late Phase II or early Phase III. Patients will be seen 1 time a week for 2-4 visits to assure independence with a long-term program
- General guidelines of discharge are as follows:
 - Non-antalgic, independent gait
 - Independent, reciprocal stair negotiation
 - Normal age-appropriate balance and proprioception
 - Achievement of patient-specific goals

Goals:

- Enhancement of strength and endurance
- Initiate functional activities
- Improve tensile strength properties of tendon
- Lack of apprehension with sport- or activity-specific movements

Precautions:

- Avoid activities/exercises that cause or increase knee/surgical-site pain

Physical Therapy Treatment:

- Continue above exercises and treatment as appropriate
- Emphasize eccentric and functional exercises
- If appropriate, initiate:
 - Plyometrics (month 5)
 - Agility drills (month 5)
 - Light running (months 5-6)

Recommended HEP:

- Phase I, II, and III exercises as appropriate

Criteria for Progression to Phase IV:

- Proprioception test: ≥80% of contralateral side
- Functional test: ≥85% of contralateral side
- Satisfactory clinical exam

Phase IV: Return to Sport Phase

Month 7 onward

Formal Physical Therapy:

- Formal physical therapy has been completed
- The patient will be instructed on which exercises need to be continued and how to progress

Goals:

- Gradual return to full, unrestricted sports participation

Precautions:

- Avoid exercises/activities that cause or increase knee/surgical-site pain

Recommended HEP:

- Progress strength, agility, and sport-specific training