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## **Rehabilitation after Repair of the Quadriceps/Patellar Tendon**

**DISCLAIMER:** The following Physical Therapy protocol is intended to be utilized by the clinician as a guideline in the treatment of this disorder. It is based on current research and has been formulated as a collaborative effort between Physicians and Physical Therapists. It is not intended to serve as a substitute for sound clinical decision making. Every patient is a unique case, and it should be anticipated that not all patients will fit into the timelines set forth in this protocol. If the Physical Therapist has any questions regarding the course of treatment, the referring physician should be contacted for further guidance.

### **Phase 1: Days 0-14 Wound Protection**

#### **Goals:**

- Wound protection
- Control pain and swelling
- Initiate knee motion
- Activate quadriceps muscle

**Contraindications:** NO Knee AROM

#### **Bracing/ Assistive Devices:**

- Immobilizer to be locked in full extension for entire duration.
- Bilateral axillary crutches to be issued post operatively.
- Unless your doctor instructs otherwise, walk with the brace locked, using both crutches, bearing weight as tolerated.
- Walking instructions: Place the crutches one step length ahead of you, then step forward with your operated leg to meet the crutches, lean on that foot as tolerated, and then unloading onto the crutches as needed, bring the uninvolved limb forward and a step ahead of the operated leg.

#### **Exercises:**

- Quad sets
- Ankle pumps
- Hamstring sets
- Glute sets

Revised 2020

- UBE

Manual Therapy:

- Patellar mobilizations

Modalities:

- Cryotherapy for edema control and pain management
- TENs for pain control

Frequency of PT: 1-2x/week

Patient Education:

- Return to see your MD within 10-14 post operatively to have your sutures removed. Protect the wound and avoid getting the wound wet.

## **Phase II: Weeks 2-6 Tendon Protection**

Goals:

- Protect the tendon repair and allow healing
- Regain knee motion
- Begin muscle strengthening

Contraindications: NO A/PROM Flexion >90 degrees or active quad recruitment

Bracing/Assistive Devices:

- Brace remains locked in full extension
- Wean off ACs
- WBAT>FWB

◦ Continuous Passive Motion: Your CPM machine will be delivered to your home. DO not wear your brace while using the CPM machine. The CPM should be used 2-3 hours in duration at least twice daily. Extension on the machine should be set to minus five degrees at all times, it is imperative that your knee straighten fully. Your doctor will instruct you on how much bend, or flexion, you should set your machine to, (usually initiated at 40 degrees).

Exercises:

- Continue Phase I exercises
- Knee extended with heel propped 5 minutes 3x/daily
- Heel slides to 90 degrees
- Seated knee flexion with contralateral limb assistance as needed
- Proximal hip strengthening in locked brace
  - Standing hip abduction, flexion, extension, adduction

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- Heel raises

Manual Therapy:

- PROM to 90 degrees

Modalities:

- NMES for VMO activation

Frequency of PT: 2x/week

Patient Education:

- Return to see MD during week 6 for follow up.
- Avoid flexion >90 degrees
- CPM DC after week 6

### **Phase III: Weeks 6-12 Active Motion and Strength Initiation**

Goals:

- Walk without deviations
- Regain ROM
- Start strengthening

Contraindications: Avoid stairs, inclined surfaces, squatting, lunging, limping, stair stepper machine

Bracing/Assistive Devices:

- Wean from brace to FWB
- 1 crutch may be used when ambulating without brace

Exercises:

- Progress to full AROM
- Bicycle without resistance
- PRE's
  - Add 1 lb in ankle weights per week (as appropriate) progressing to 5 lbs
- SAQ
- Supine SLR (if no extensor lag present)
- Closed chain quadriceps strengthening to 45 degrees
  - Wall squats/leg press/shallow lunges
- Prone knee flexion
- Open hip strengthening
- Core strengthening
- Continue quad sets, heel prop, heel slides

Manual Therapy:

- PROM to 110 degrees

Modalities:

- Ice/heat PRN

Frequency of PT: 2-3x week

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Patient education:

- Avoid knee flexion in WB > 45 degrees
- Avoid stairs reciprocal pattern, inclines and squatting
- MD f/u during week 12

#### **Phase IV: Week 12-17 Strengthen after Biologic Healing**

Goals:

- Strengthen tissue
- Return to normal activities

Contraindications: Excessive quad stretching, avoid pain at tendon repair, leg extension machine, lunges, stair master, step exercises with impact, running, jumping, [pivoting, cutting

Bracing/Assistive Devices:

- DC brace and assistive devices, may wear elastic sleeve for support

Function:

- Confidently walking without aide or without limp
- Initiate walking upstairs, do not go down stairs with operated limb yet

Exercises:

- Bicycle with mild resistance daily
- Swimming
- Exercises 3x/week 3 sets of 15
  - Wall slides to 45 degrees
  - Squat to chair with weekly progressing dumbbells in each hand from 3 lbs to 10 lbs as appropriate
  - Unilateral heel raises
  - Hamstring stretch
  - Quadriceps stretch limit excessive stretching
  - Calf stretch
  - Seated leg press
  - Hamstring curls
  - Hip abd/add machine
  - Calf raise machine
  - Quad setting 3x/daily
- SLS >10s
  - If no gym access 3x/week: SLR, SL hip ABd, standing ham curl, heel raises
- Initiate step down exercise/heel taps (see below)

#### **● Week 12→ 18: STEP DOWN PROGRESSION**

- Weeks 12-14: Initiate step downs 3 inch height, 3 sets of 5 repetitions  
If performed pain free, may progress to 3 sets of 10 reps
- Weeks 14-16: If above exercises are pain free, progress to 6 inches height 3 sets of 5  
If performed pain free, progress above exercise to 3 sets of 10

- Weeks 16-18: If above exercises are pain free, progress step height to 9 inches, 3 sets of 5

If performed pain free, progress above exercise to 3 sets of 10

**\*\*Do not progress height of stair if pain or crepitus is reported during exercise**

Manual: PROM as needed

Modalities: PRN

Frequency of PT: 1-3x/week

Patient Education:

- Follow up with MD near week 16-17
- Patient should be encouraged to seek use of fitness center

### **Phase V: Weeks 17-24 Return to Sport**

Goals:

- Return to Sport
- Reciprocal stair pattern ascending/descending

Contraindications: Having not met requirements to progress through Phase IV, soreness post activity >24 hours, swelling, limping

Function: ADLs WNL, normal gait

Exercise:

- Walk jog progress from weeks 17-20
- Agility ladder introduction
- Sport specific drills and demands
- Balance and proprioceptive drills
- Impact exercises progressing jump from 2 feet to 2 feet to 1 foot

Frequency of PT: 1x/week

Patient Education:

- Pt should be regularly participating in exercise with trainer or at gym

References of adaptation:

Revised 2020

Rehabilitation after repair of the patellar and quadriceps tendon. Massachusetts General Hospital Orthopaedics. Boston, MA: Accessed January 2020; 1-14.

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