



## KNEE QUADRICEPS TENDON REPAIR POST-OPERATIVE GUIDELINES

### Post-Operative Phase 1: Weeks 0-6

#### PRECAUTIONS

- WB status: WBAT with brace locked in extension at all times except with therapist
- ROM
  - **Weeks 0 – 2: 0 – 30°**
  - **Weeks 3 – 4: 0 – 60°**
  - **Weeks 5 – 6: 0 – 90°**
- Avoid active knee extension
- Avoid prone knee flexion

#### TREATMENT RECOMMENDATIONS

- Gait training
- Scar mobilization
- Patellar mobilizations
- LE flexibility (hamstring/gastrocnemius)
- Knee PROM/AAROM within ROM limits listed above
- Seated knee flexion active ROM (AROM)/AAROM within above limits
- Core stabilization
- Hip progressive resisted exercises
- Quadriceps reeducation using modalities
  - Blood Flow Restriction (BFR) program with FDA approved device
- Quadriceps strengthening
  - Multi-angle submaximal isometrics within restricted ROM
  - SLR series (with brace locked in extension if unable to perform without extensor lag)
- Bilateral closed chain weight shifting (brace locked in extension)
- Double leg balance/proprioception training
- Short crank bike when ROM >85 degrees

#### CRITERIA FOR ADVANCEMENT

- Pain and edema controlled
- Good patellar mobility
- PROM full knee extension
- Knee ROM 0-90 degrees
- Quad strength sufficient to perform SLR without extensor lag

#### EMPHASIZE

- Patellar mobilization
- Knee flexion ROM progression
- Quadriceps contraction with SLR



## KNEE QUADRICEPS TENDON REPAIR POST- OPERATIVE GUIDELINES

### Post-Operative Phase 2: Weeks 7-12

#### PRECAUTIONS

- WBAT, unlock brace when ambulating; wean from brace as tolerated
- D/C crutches when ambulating with normalized gait
- Avoid running jumping and sport activity

#### TREATMENT RECOMMENDATIONS

- Gait Training
  - Utilize retrograde ambulation, pool ambulation, underwater treadmill, and gravity-assisted treadmill, if available
- Patellar mobilizations
- LE flexibility (hamstring/gastrocnemius/quadriceps)
  - Late stage: initiate quadriceps (i.e., foam roll, prone stretch)
- Knee flexion AROM progression in hip flexion (i.e., seated, supine, wall slide, or stair stretch)
  - Late stage: progress with hip extension (i.e., prone)
- Core stabilization
- Hip progressive resisted exercises
- Progress quadriceps re-education
- Continue quad strengthening
- Closed chain strengthening
  - Leg press progression: double leg → single leg
  - Eccentric leg press
- Functional strengthening
  - Progress double leg body weight strengthening → Sit to stand → squat progression
  - Step up progression
- Balance and proprioception training, emphasis on good neuromuscular control at the knee
- Cardiovascular conditioning

#### CRITERIA FOR ADVANCEMENT

- Minimal to no joint effusion
- Normal gait mechanics
- Normal patellar mobility
- Quadriceps strength sufficient to ascend a 6-inch step with good control
- Knee flexion at least 125 deg
- No knee extensor lag



## **KNEE QUADRICEPS TENDON REPAIR POST-OPERATIVE GUIDELINES**

### **Post-Operative Phase 3: Weeks 13-18**

#### **PRECAUTIONS**

- Avoid pain with exercise and functional activities
- Avoid stair descent until adequate quadriceps strength and lower extremity mnb vccvbm bvc

#### **TREATMENT RECOMMENDATIONS**

- Soft tissue massage, myofascial release, and contract relax techniques, as needed
- Continue knee flexion ROM exercises and quadriceps flexibility
- Hip progressive resisted exercise (PRE)
- Quadriceps strengthening
  - FSU progression
  - Progress FSD to 8" step as strength allows (dependent on patient height – can be higher than 8")
- Open kinetic chain knee extension exercises (isokinetic/isotonic) as tolerated
- Advance closed chain exercise program o Progressive squat program: double leg, progress to SL with "kickstand"
  - Lunges
- Progress functional strengthening
- Dynamic balance and proprioception training
- Cardiovascular conditioning

#### **CRITERIA FOR ADVANCEMENT**

- Full knee ROM
- Able to ascend 8" step with good control and alignment
- Ability to descend an 8" step (height dependent) with good eccentric control and alignment
- No pain with ADL's, ambulation, reciprocal stair negotiation

#### **EMPHASIZE**

- Pain-free strength of quadriceps
- Eccentric quadriceps control
- Neuromuscular control/movement quality
- Addressing deficits above and below knee to optimize movement patterns



## **KNEE QUADRICEPS TENDON REPAIR POST- OPERATIVE GUIDELINES**

### Post-Operative Phase 4: Weeks 19-24

#### **PRECAUTIONS**

- WBAT without assist
- Avoid sport activity until adequate strength development/neuromuscular control

#### **TREATMENT RECOMMENDATIONS**

- LE flexibility program
- Hip progressive resisted exercise
- Advanced LE strengthening with progressive load
  - Single leg eccentrics
  - Multiplane strengthening
  - Weighted squats
- Advanced balance and proprioception training
  - Perturbation, simple-complex, unstable surface, larger to smaller target, progress dynamic balance exercises
- Begin plyometrics (late stage)
- Initiate agility drills
- Begin return to running progression (late stage)

#### **CRITERIA FOR ADVANCEMENT**

- Unrestricted pain-free running
- Ability to decelerate with good control and alignment on SL
- Strength and flexibility maximized as to meet demands of individual's sport activity

#### **EMPHASIZE**

- LE flexibility and strength
- Neuromuscular control with single leg tasks
- Emphasize proper landing mechanics, load absorption, movement strategy and equal weight bearing with plyometric exercises
- Monitor volume and load