

QUADRICEPS TENDON REPAIR

Physical Therapy, Strength and Conditioning

PHASE I: MAXIMUM PROTECTION (WEEKS 0 TO 6)

Weeks 0-2

- Brace locked in full extension during ambulation for 6 weeks
- Weight bearing as tolerated with crutches for 2 weeks
- Ice, compression and modalities to reduce pain and inflammation
- Patellofemoral mobilizations
- **No knee range of motion**
- Begin gentle submaximal quadriceps setting
- Recommended loading
 - *Short but frequent bouts of quadriceps activation 3-5x/day*

Weeks 2 to 4

- Weight bearing as tolerated with brace locked in extension, wean off of crutches
- Continue with inflammation control
- Continue with patella mobility
- **Range of motion – 0° to 45°**
 - *Exercise progression*
 - *Gait training*
 - *Flexion—off table to 45°*
 - *Quadriceps setting*
 - *Multi-plane straight leg raises*
 - *Bilateral calf raises*
 - *Hamstring isometrics*
 - *Ball bridges*

Weeks 4 to 6

- Weight bearing as tolerated with brace locked in extension
- **Range of motion—0° to 90°**
- Exercise progression
 - *Open and closed multiplane hip strengthening*
 - *Proprioception drills*

PHASE II: PROGRESSIVE STRETCHING AND EARLY STRENGTHENING (WEEKS 6 TO 12)

Goals

- Full knee extension/hyperextension
- Knee flexion—progress gradually to full
- Normalize gait mechanics
- Normalize patellofemoral joint and scar mobility

Exercise Progression

- Extension—heel props and prone hangs as needed
- Flexion—end range heel slides and progressive quadriceps stretching
- Bilateral squat / leg press progression—focus on proper alignment with gradually increasing depth
- Multi-plane open and closed kinetic chain hip strengthening
- Step-up progression—focus on proper alignment and eccentric control
- Controlled movement series
- Hamstring activation with bridge on floor, ball or box
- Hamstring curls on machine or single leg RDL's
- Progress to unilateral heel raise off the floor then off a step
- Proprioception drills

Cardiovascular Exercise

- Stationary biking
- Treadmill/outdoor walking with focus on proper gait mechanics
- Arc trainer
- Elliptical
- Swimming—light flutter kick

Recommended Loading

- ROM: 2-3x/day
- Strength: 5x/week on straight leg raises and cord kicks. 3x/week on closed chain progression
- Cardiovascular: 20-30 minutes 5x/week with low to moderate intensity

PHASE III: ADVANCED STRENGTHENING AND ENDURANCE TRAINING (3 – 4 MONTHS)**Goals**

- Control inflammation with increasing loads
- Full knee flexion and extension with terminal stretch
- Progressive strengthening
- Increase muscular endurance

Movement Prep

- Foam roller
- Controlled movement series

Exercise Progression

- Weighted squat progression
- Single leg squat/lunge progression (dips, retro, walk and split), focus on eccentric control and alignment.
- Lateral band walk

Core Program

- Integrate with LE program

Cardiovascular Exercise

- Stationary biking
- Treadmill/outdoor walking with focus on proper gait mechanics
- Arc trainer or elliptical

Activity Progression

- Outdoor biking—week 12
- Shallow water pool running—week 16
- Higher intensity interval work with CV program—week 12-16

Recommended Loading

- ROM: 1-2x/day
- Strength: 3x/week on closed chain loading
- Cardiovascular: 20-45 minutes 5x/week with moderate intensity and intervals.

PHASE IV: ADVANCE STRENGTHENING AND RUNNING PROGRESSION (4- 6/9 MONTHS)**Goals**

- Control inflammation with increasing loads
- Progressive strengthening
- Increase muscular strength, power and endurance

Movement Prep

- Foam roller
- Controlled movement series

Exercise Progression

- Increasing loads from phase III

Core Program

- Increasing loads from phase III

Non-impact Cardiovascular Exercise

- Stationary biking
- Arc trainer or elliptical
- Swimming

Running Progression

- Basic ladder series—16 weeks
- Skipping—16 weeks
- Walk/jog interval—16-20 weeks
- Linear acceleration/deceleration—20-24 weeks
- Sprinting—20 weeks
- Change of direction and lateral agility—20-24 weeks

Jumping Progression (*gradual progression)

- Low amplitude bilateral single response jumps—20 weeks
- Bilateral multiple response jumps—20-24 weeks
- Unilateral single response jumps—24 weeks

Sport Specific Activity Progression

- Interval golf program—20 weeks
- Non-contact and non-reactive field/court progression—20-24 weeks
- Reactive and contact field court progression—6-9 months

Sports Test and Follow-up with Physician

- Follow-up examination with the physician
- Sports test for return to competition at 6-9 months

Recommended Loading

- ROM: global stretching
- Strength: 2-3x/week with increasing resistance
- Cardiovascular: 20-45 minutes 5x/week. Alternate impact and non-impact days using sound recovery principles.