

QUADRICEPS TENDON REPAIR

Physical Therapy & Strength and Conditioning

Chad Broering, M.D.

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.