

## Basin Orthopedic Surgical Specialists

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Orthopaedics &  
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### Quadriceps Tendon Rupture Repair Protocol

**Brace:** locked at 0 degrees for ambulation for 8 weeks. May be unlocked for sitting at 6 weeks.

#### Week 1-4 (Days 1-28):

No active ROM knee extension. No electrical stimulation for quad re-education for 3-4 weeks.

- PROM knee extension to 0 degrees
- AROM/AAROM knee flexion-very gently-start with 60 degrees and work to 90 degrees by 6 weeks.

#### **Exercises:**

- Ankle pumps
- Patellar mobilizations
- Hamstring stretch sitting
- Gastroc stretch with towel
- Heelslides
- Quad sets-may add in electrical stimulation for re-education when 3 weeks post-op are complete.
- Patellar mobilization (if tear at patellar tendon avoid superior mobs for 2-3 weeks. If tear is a quad tendon above patella-mobilize patella all directions).
- SLR all directions, active assistive flexion-start at 3<sup>rd</sup> week post-op (do not allow lag). Use e-stim after 3 weeks as needed.
- Prone knee flexion in acquired ROM (active hamstrings)

#### Week 5:

Add Aquatic therapy if available. Move slowly so the water is assistive, not resistive

#### **Exercises:**

- With knee submerged in water, knee dangling at 80-90 degrees-slowly actively extend knee to 0 degrees.
- Water walking in chest deep water

- SLR-4 ways in water with knee straight
- Knee flexion in water
- Submaximal multi-angle isometrics (30-50% only-no more!)
- Continue knee flexion ROM-rocking chair at home
- Active SLR 4 ways-no weight for flexion (watch for lag)

### **Weeks 6-8:**

Brace-unlock for sitting to 90 degrees at 6 weeks. If quad control sufficient at 8 weeks unlock brace 0-30 degrees for ambulation (they will be unable to flex knee more than 30 degrees to sit, since flexion stop was changed to 30 degrees. Emphasize frequent Rom exercises)

### **Exercise:**

- Total gym semi-squats (level 3-4)
- Gradually increase weight on all SLR, if no lag present
- Week 7-active/assistive extension-assist with opposite leg
- Week 9-active extension
- Week 8-increase intensity of multi angle isometrics to 60%
- Week 8-weight shifts
- Week 8-balance master and/or BAPS-with bilateral LE weight bearing

### **Weeks 9-10:**

Open brace 0-50 degrees for ambulation

### **Exercise:**

- Initiate light resistive exercise with extension-start with midrange, progress to full ROM
- Total gym level 5-6
- Leg press-concentric only-no significant load work until 12 weeks. Start 0-60 degrees ROM
- Weight shift on minitramp
- Closes chain terminal knee extension with theraband
- Toe raises

### **Week 11-12:**

Out of crutches based on quad control, with braces unlocked between 0-60 week 11, and 0-90 at week 12.

#### **Exercise:**

- Leg press-progress to 90 degrees. Add eccentric active assistive at 11 weeks, then eccentric active at 12 weeks. Gradually increase weight
- Wall squats
- Balance activities: unilateral stance eyes open and closed, cones, balance master
- Standing minisquats
- Step-ups: start concentrically with 2 inch step and progress as tolerated

### **Weeks 13-15:**

#### **Exercise:**

- Cycling
- Backward walking on treadmill
- Resistive forward, backward, lateral, semi-circular walking with theraband
- Step-ups: concentric and eccentric

### **Week 16:**

#### **Quadriceps and hamstring isometric test**

#### **Exercise:**

- Lunges
- Stairclimber/elliptical machine
- Smith press
- Unilateral leg press
- Unilateral wall squat

**PRECAUTIONS:** avoid impact loads/sudden activation (eccentric load)

**GOALS:**

- 90-100 degrees by 6 weeks
- Knee flexion 20 degrees less than contralateral knee by week 12
- At 6 months-quads less than 20% weaker than hamstrings

**CRITERIA TO START RUNNING PROGRAM:**

- Patient is able to walk with a normal gait pattern for at least 20 minutes without symptoms and performs ADL's painfree
- ROM is equal to the uninvolved side, or at least 0-125 degrees
- Hamstring and quadriceps strength is 70% of the uninvolved side isokinetically
- Patient without pain, edema, crepitus or giving-way

**CRITERIA TO RETURN TO SPORTS:**

- Completion of running and agility program
- Quadriceps strength is 85-90%
- Hamstring to quadriceps ratio is 65%
- Proprioception is 100%
- Functional tests (single hop test for time, single leg hop test for distance, single leg triple crossover hop) is 85%