

Orthopedic Surgery • Sports Medicine
Neil Kumar, MD

Quad Tendon / Patellar Tendon Repair Protocol

“As tolerated” should be understood to “perform with safety” for the reconstruction/repair. Pain, limp, swelling, or other undesirable factors are indicators that you are doing too much too soon. If any of these should occur, decrease your activity level, elevate the leg, and ice your knee.

Ice should be applied to the knee for 15 to 20 minutes following each exercise, therapy, or training session. While your knee remains swollen, icing should also be done separate from exercise sessions at least three times per day.

All times and exercises are to serve as guidelines only. Progression through the protocol should be based upon criteria as opposed to dates listed and will vary depending on each individual patient. Progress should be agreed upon by the patient and his/her team of providers.

Pre-Operative

- Brace – As directed by your doctor
- Weight Bearing – Full, use crutches as necessary
- ROM (range of motion) – Full, no restrictions
- Therapeutic Exercise - Learn exercises for post op regimen
 - Calf stretching
 - Heel slides
 - ‘Propped’ knee extension
- Modalities - Cryotherapy (Ice) six to eight times per for 15 to 20 minutes each time

- **Goals for Surgery**
 - Minimal to no swelling
 - Full ROM

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Post-Operative Phase I: Weeks 0 to 4

- Weight Bearing - Weight bear as tolerated with brace locked in full extension
- Brace
 - Weeks 0-2 - Locked at 0° all times
 - Week 2 - 0° - 30°
 - *Increase 30° flexion every week starting Week 2*
- Therapeutic Exercise - *All exercises without weight and within ROM limitations*
 - 'Preoperative' exercises
 - Hamstring curls
 - Glute sets
 - Ankle pumps
 - Quad sets at 0° with assistance
 - Straight leg raises with assistance
 - Isometric knee extension
 - Supine heel props
- Modalities
 - Scar and soft tissue massage, patella mobilizations
 - NMES (neuromuscular electrical stimulation) for quadriceps atrophy
 - HVPC (high volt pulsed current) for effusion (swelling) reduction
 - Cryotherapy six to eight times per day for 15 to 20 minutes each
- Proprioception
 - Seated BAPS board
- Cardio - UBE (arm bike)

- **Goals for Phase II:**
 - Full knee extension
 - Knee flexion to 90°
 - Minimal joint effusion

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Post-Operative Phase II: Weeks 4 – 8

*****Include single-leg exercises on non-involved side*****

- Weight Bearing
 - Weight bear as tolerated with brace 0° - 30°
 - Increase weight-bearing flexion by 30° every week
- Brace
 - ***Increase 30° flexion every week***
 - Week 8 – Full ROM
- Therapeutic Exercises – Continue Phase I exercises within ROM limitations
 - Quad sets
 - Straight leg raises
 - OKC knee extension 90° to 40° with 1# weight increase per week
 - Mini squats and leg press
 - Week 6 - $0-40^{\circ}$
 - Week 8 - $0-60^{\circ}$
- Modalities
 - Scar and soft tissue massage, patella mobilizations
 - NMES (neuromuscular electrical stimulation) for quadriceps atrophy
 - HVPC (high volt pulsed current) for effusion (swelling) reduction
 - Cryotherapy six to eight times per day for 15 to 20 minutes each
- Proprioception
 - Seated BAPS board
 - Standing weight shifts
 - Unstable surfaces
 - Joint repositioning
- Cardio
 - UBE
 - Stationary bike without resistance
 - At Week 8 – initiate pool walking and swimming



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- **Goals for Phase III:**

- Normal gait
- No effusion. No pain
- Knee ROM 0°- 120°
- Good eccentric control of involved knee with brace

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Post-Operative Phase III: Weeks 8 – 16

- Weight Bearing - weight bear as tolerated without brace
- ROM - Full active and passive
- Therapeutic Exercises – Continue Phase II exercises
 - Hip and Core strengthening
 - OKC knee extension 90⁰ to 40⁰ with 1# weight increase per week
 - CKC multi-plane activities within pain-free ROM
 - Leg press with increasing knee flexion angles
- Modalities
 - Scar and soft tissue massage, patella mobilizations
 - NMES (neuromuscular electrical stimulation) for quadriceps atrophy
- Proprioception
 - Perturbation training (balance against resistance)
 - Unstable surfaces
 - Joint repositioning
- Cardio
 - UBE
 - Stationary bike with increasing resistance
 - Pool running
 - Elliptical
 - Treadmill running
- **Goals for Phase IV:**
 - Full ROM
 - No effusion, No pain
 - Isometric and isokinetic quad strength 90% of non-involved side
 - Proprioception 100% of non-involved side

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Post-Operative Phase IV: Weeks 16 – 24

- Therapeutic Exercises – Progress Phase III exercise strength and endurance
- Transitional Therapy for return to activities and sports based upon progress through earlier protocol

In addition to ongoing strength, balance, agility, and cardio conditioning, initiate sport specific plyometric activities as tolerated such as:

Soccer/Football: Two foot ankle hop, double-leg hop, front barrier hop, lateral barrier hop, single-leg hop, power skip, backward skip, double arm alternate leg bound, and cycled split squat jump

Basketball/Volleyball: Two foot ankle hop, double-leg hop, squat jump, double-leg vertical jump, single-leg hop, single-leg vertical jump, power skip, backwards skip, double-arm alternate-leg bound, alternate leg push off box drill, and side-to-side push off box drill

Baseball/Softball/Overhead throwing sports: Two foot ankle hops, double-leg hop, front barrier hop, lateral barrier hop, single-leg hop, power skip, backward skip, double arm alternate leg bound, cycled split squat jump, and return to throwing program