



**Rehabilitation Protocol:
Quad and Patellar Tendon Repair**

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◀ Overview

Quadriceps and patellar tendon tears can be either partial or complete. Partial tears do not completely disrupt the soft tissue. A complete tear will split the tendon into two separate pieces.

The type of treatment required depends on the type and size of tear, as well as, the patient's activity level and age. Most complete tears require surgery. Surgery is also considered for patients with partial tears who have tendon weakness and degeneration.¹

During this surgical procedure, the torn quadriceps and patellar tendon is reattached to the top of the kneecap. Surgical outcome is better if the repair is done early after the injury. This helps prevent scarring and tightening of the tendon in a shortened position, as these tendons rarely heal on their own.¹

Typical tendon healing time is six to eight weeks.² The repair will be protected with a knee immobilizer and patient will be weight bearing as tolerated with the use of the brace and crutches. The patient will likely be locked in this extension brace for the first six weeks post-op. The brace may gradually be unlocked to allow increased range of motion, with flexion no greater than 90 degrees during these first six weeks.

Initial rehab goals will be to restore proper knee range of motion and gait pattern, and begin strength of knee musculature. Care must be taken to avoid exercises such as squats and lunges that create overload on the quadriceps and patellar tendons. Complete recovery takes at least 4 months. Most repairs are nearly healed in 6 months. Many patients have reported that they required 12 months before they reached all their goals.

¹ Quadriceps and Patellar Tendon Tears. In AAOS.org. Retrieved 3/3/14, from <http://orthoinfo.aaos.org/topic.cfm?topic=A00294>

² <http://orthosurg.ucsf.edu/oti/patient-care/divisions/sports-medicine/conditions/knee/quadriceps-and-patella-tendon-rupture/>

◀ Phase I Protective Phase 1–2 Weeks

Goals

- Control pain and swelling
- Initiate knee motion
- Activate Quad

Precautions

- WBAT with crutches and knee immobilizer in full extension
- **No** stairs

Weeks 1–2

- **Exercises:**
- **No** knee ROM exercises...keep knee locked in full extension in brace
- Quad sets
- Ankle pumps

◀ Phase II – Intermediate Phase Weeks 2 – 6

Goals

- Protect tendon repair
- Regain Knee Motion (Use of CPM)
- Activate Quad...begin muscle strengthening

Precautions

- FWB with brace in full extension
- Ice
- **NO** knee flexion beyond 90°

Weeks 2 - 6

Therapeutic Exercise

- Quad set
- Heel Slides
- Ankle pumps
- Sitting knee flex maximum of 90°
- Side-lying hip ABD
- Heel raises

◀ Phase III Weeks 6 - 12

Goals

- Walk normally
- Regain full motion
- Regain full muscle strength

Precautions

- Wean from and D/C immobilizer when safe per MD
- FWB-avoid limp
- Avoid squatting, deep knee bends, lunges

Therapeutic Exercise

- Stationary bike
- Quad set
- Heel slide
- SLR
- SAQ
- Ankle pumps
- Heel raise
- Hip ABD
- Wall Slides

◀ Phase IV

Weeks 12 and on

Goals

- Avoid pain at tendon repair site
- Increase Strength
- **AVOID** these exercises (cause overload at the patella and quad tendon repair):
- Knee extension using a weight lifting machine
- Lunges
- Stairmaster
- Step exercises with impact
- Running
- Jumping
- Pivoting or cutting
- Progressive walk/jog 12-16 weeks
- Progressive run/agility 16-20 weeks return to sport 20-24 weeks

Precautions

- *Walking/stairs without AD or brace*
- *Brace for sport PRN*

Weeks 12 and on

Therapeutic Exercise

- Stationary bike
- Swimming
- Wall Slides
- Squat to chair
- Step up/down
- Single leg heel raise
- HS stretch
- Quad stretch
- Calf Stretch

Additional Exercises to be added at 16 weeks:

- Seated leg press
- HS curls

Interval sports programs can begin per MD

AAROM = active-assisted range of motion, ADL = activity of daily living, AROM = active range of motion,

PROM = passive range of motion, ROM= Range of Motion

Rehabilitation Protocol for Quad and Patellar Tendon Repair

Rehabilitation Guidelines: Summary Table

Post –op Phase/Goals	Therapeutic Exercise	Precautions
<p>Phase I 1 - 2 weeks after surgery Goals:</p> <ul style="list-style-type: none"> • Control pain and swelling • Initiate knee motion • Activate Quad <p>Phase II 2 – 6 weeks after surgery</p> <p><i>Goals:</i></p> <ul style="list-style-type: none"> • Protect tendon repair • Regain Knee Motion (Use of CPM) <p>Activate Quad Begin muscle strengthening</p>	<p>No knee ROM exercises...keep knee locked in full extension in brace</p> <p>Quad sets Ankle pumps</p> <hr/> <p>Quad set Heel Slides Ankle pumps Sitting knee flex maximum of 90° Side-lying hip ABD Heel raises</p>	<p>WBAT with crutches and knee immobilizer in full extension No stairs</p> <p>Phase II FWB with brace in full extension Ice</p> <p>NO knee flexion beyond 90°</p>
<p>Phase III 6 - 12 Goals:</p> <ul style="list-style-type: none"> • Walk normally • Regain full motion • Regain full muscle strength 	<p><u>Therapeutic Exercise</u></p> <ul style="list-style-type: none"> • Stationary bike • Quad set • Heel slide • SLR • SAQ • Ankle pumps • Heel raise • Hip ABD • Wall Slides 	<ul style="list-style-type: none"> • Wean from and D/C immobilizer when safe per MD • FWB-avoid limp • Avoid squatting, deep knee bends, lunges

<p>Phase IV 12 – 24 Goals:</p> <ul style="list-style-type: none"> • Avoid pain at tendon repair site • Increase Strength • AVOID these exercises (cause overload at the patella and quad tendon repair): • Knee extension using a weight lifting machine • Lunges • Stairmaster • Step exercises with impact • Running • Jumping • Pivoting or cutting • Progressive walk/jog 12-16 weeks • Progressive run/agility 16-20 weeks return to sport 20-24 weeks 	<p>Therapeutic Exercise</p> <ul style="list-style-type: none"> • Stationary bike • Swimming • Wall Slides • Squat to chair • Step up/down • Single leg heel raise • HS stretch • Quad stretch • Calf Stretch <p>Additional Exercises to be added at 16 weeks:</p> <ul style="list-style-type: none"> • Seated leg press • HS curls <p>Interval sports programs can begin per MD</p>	<ul style="list-style-type: none"> • <i>Walking/stairs without AD or brace</i> • <i>Brace for sport PRN</i>
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