

Alta View Sports Medicine



Dr. James R. Meadows, MD
Orthopedic Surgery & Sports Medicine
74 Kimballs Ln Ste 230, Draper, UT 84020
9844 S. 1300 E. Ste 100, Sandy, UT 84094
(801) 571-9433
www.MeadowsMD.com

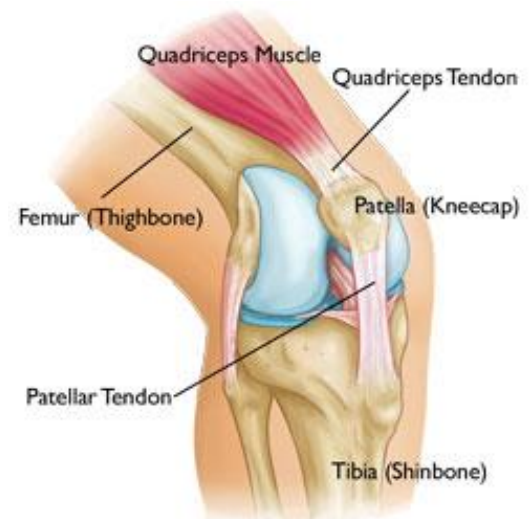
Quadriceps Tendon Repair

What to Expect

The patella is embedded in the quadriceps and patella tendons and acts as a pulley to increase the amount of force that can be generated by the quadriceps muscles to extend the knee. The quadriceps tendon attaches the quadriceps muscles to the patella and the patella tendon connects the patella to the tibial tubercle. These strong tendons can be torn by forceful contraction of the quadriceps muscles during sports, jumping, a fall, or a direct blow to the knee. Surgery is indicated to restore motion and stability to the knee and restore normal gait.

The torn tendon is repaired using various techniques involving strong sutures, drill tunnels through the patella, or suture anchors to reattach the tendon to the patella. Chronic tears may be reconstructed using a tendon graft to augment the repair. Appropriate tension is applied to the repair and the repair must be protected to allow the tendon to heal in the first few weeks after surgery. A hinged knee brace is used to control your knee motion to avoid re-tearing the repair before it has completely healed.

Appropriate rehabilitation is critical to the success of the procedure.



Phase 1 (0 – 2 weeks postop)

Goals: Control pain, Diminish swelling, Begin regaining knee motion – achieve full knee extension, Protect the tendon repair

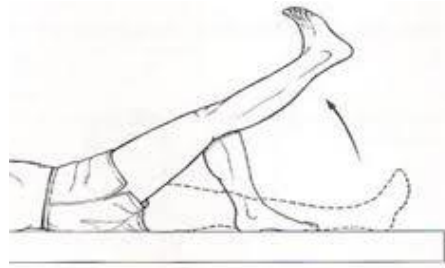
- Pain: You will be prescribed pain medication to use after surgery. Use as directed and wean use to as needed. You may begin taking an anti-inflammatory medication (i.e. ibuprofen, naproxen) unless medically contraindicated. Do not drive or use alcohol while taking narcotic pain medication.
- Brace: You will be placed in a hinged knee brace after surgery. It will be set during surgery for motion based on the repair (usually 0 to 30-60°). You may remove it when resting at home with your leg straight and when icing. You are to lock your brace in full extension (out straight) when walking. Sleep with brace on.
- Weight bearing:
 - Weight bear as tolerated with knee brace on locked in full extension using crutches
 - Stairs: step up leading with nonoperative leg, step down on operative leg first
- Ice: Place a bag of ice or cryocuff on the knee for 30 minutes a few times each day and after therapy or home exercises.
- Dressing: Keep your surgical dressing in place until your first follow up with Dr. Meadows.
 - You may shower, but keep your knee dry until sutures are removed
 - Do not submerge knee until suture removal (no baths, pools, hot tubs)
 - Keep incision covered by wrapping with an ace wrap to protect incisions during the day
- Schedule your postoperative visit for 10-14 days after surgery. At this visit:
 - Suture removal
 - Review of your surgery and rehab plan
 - Prescription for physical therapy if needed or desired

Exercises

- All exercises to be performed with hinged knee brace on

- Straight leg raises

- Keep knee brace locked in extension



- Ankle Pumps (10 reps/hour)

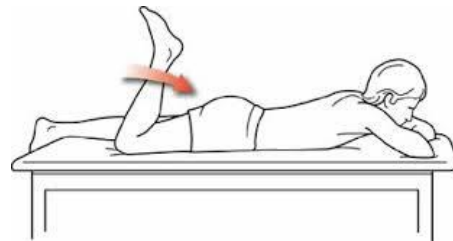


- Patella mobilization (medial and lateral)

- With leg resting out straight, shift patella side to side (not up and down) to prevent it from scarring down

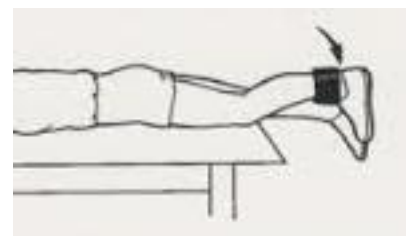
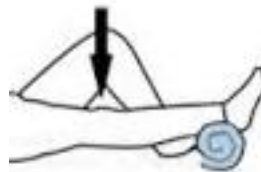
- Knee Flexion:

- Prone hamstring curls (brace unlocked to settings placed after surgery)
 - Gently flex (bend) knee and let gravity gently straighten leg, or may assist leg back down using other leg



- Knee Extension:

- Heel Prop
- Prone Leg Hang



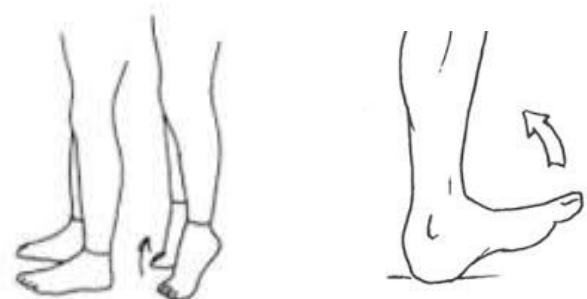
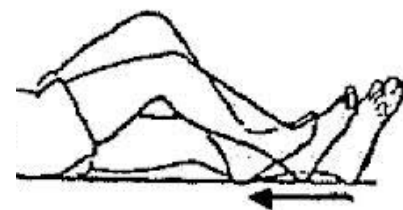
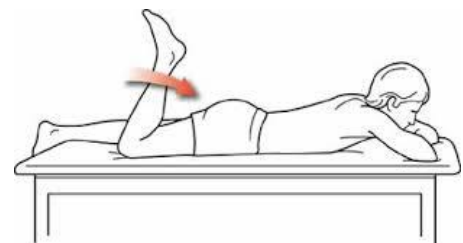
Phase 2 (2 - 6 weeks postop)

Goals: Improve range of motion, Regain leg control, Gentle Quad/Hamstring strengthening, Protect the tendon repair

- Brace: Continue to use during exercises, sleep, and lock in extension during ambulation. Increase flexion settings based on your initial postop settings:
 - Week 2: no change, Week 3: + 20°, Week 4: + 40°, Week 5+: + 60°
- Weight bearing:
 - Weight bear as tolerated with knee brace on locked in full extension using crutches.
- Make a clinic visit for about 6 weeks from surgery date

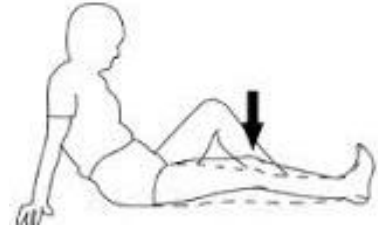
Exercises

- Continue exercises from Phase 1
 - Focus on gaining full leg extension if not already achieved
- Knee Flexion (with above brace settings)
 - Prone hamstring curls (brace unlocked to designated setting)
 - Active-Assisted Heel Slides (brace unlocked to designated setting)
 - Gently flex (bend) knee using assistance from your nonoperative leg and also assist leg back down out straight
- Standing heel/toe raises



Phase 2 Exercises continued

- Quad sets (with leg out straight)
 - Flex and hold quad muscles for 5 sec
- Stationary Bike:
 - Goal 20 min without resistance with brace on
 - Set the seat so leg is straight when pedal is at the lowest point
- Balance/Coordination
 - Single leg stork balance (with brace locked in extension)



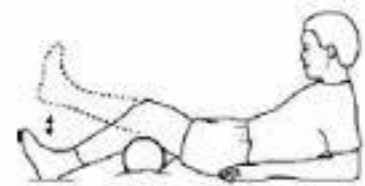
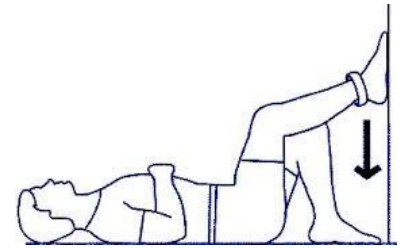
Phase 3 (6-12 weeks postop)

Goals: Regain full range of motion, Restore normal gait, Quad/Hamstring strengthening, Return to functional daily activities

- The tendon is still in the healing phase and is weak. Be careful using stairs, walking on uneven surfaces, and avoid deep squats, deep knee bends/lunges, leg extension machines, and stair-stepper machines.
- Brace: Continue to use the brace until 3 months. You may unlock brace when walking when you can perform a straight leg raise without any extensor lag
- Weightbearing: as tolerated in knee brace. Transition off crutches by using a single crutch in the arm opposite your surgical leg side.
 - Stairs: continue to step up leading with nonoperative leg, step down with operative leg first
- Schedule a clinic visit about 3 months from surgery date

Exercises

- Continue exercises from Phase 1 & 2
- Knee Flexion
 - Continue exercises from Phase 1 & 2
 - Wall Slides: Lie on back with foot on wall, allow gravity and nonoperative leg to assist pushing back operative leg
- Short Arc Leg Raise
 - Straight leg over a roll of towels under the knee, hold for 5 sec
- Standing mini squats (avoid knee flexion $> 45^\circ$)
- Endurance Program
 - Stationary Bike: increased duration and resistance
 - Core strengthening



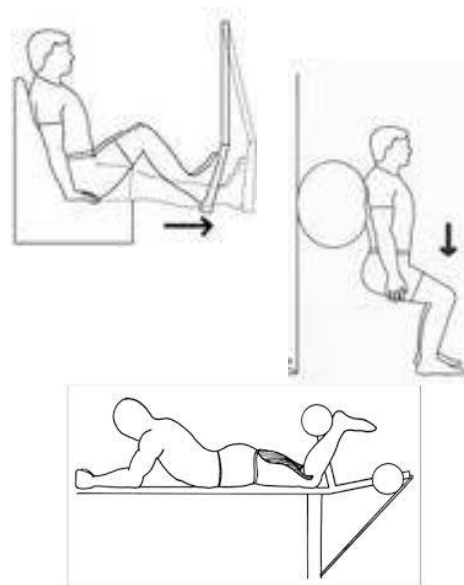
Phase 4 (3-4 months postop)

Goals: Maintain full range of motion, Increased leg strength and endurance

- You should be walking without the aid of crutches or a brace
- Progression to exercises that increase tension on your repaired tendon. Progress only as you remain without pain about the kneecap and continue to be able to perform a straight leg raise without any extension lag
- Brace: you may discontinue your brace if you can maintain a straight leg raise without any extensor lag for > 10 sec
- Continue to avoid deep squats, deep knee bends/lunges, leg extension machines, and stair-stepper machines.

Exercises

- Continue exercises from Phases 1, 2 & 3
- Resisted knee flexion/extension
 - Front and Lateral Step-Ups (~ 3 in height)
 - Seated leg press (avoid knee flexion > 45°)
 - Wall squats (may use gym ball behind back against wall)
 - Resisted hamstring curls
- Endurance Program
 - Pool program—pool walking/running, swimming (straight-leg kicks only)
 - Stationary Bike: increased duration and resistance
 - Elliptical: may begin use, 15 min daily
 - Treadmill: may begin walking program (no jogging until 4 months)
- Balance/Coordination/Proprioception Training
 - Single leg stork balance/heel raises
 - Backward walking
 - Wobble board/BOSU balance trainer



Phase 5 (4-6 months postop)

Goals: Maintain full range of motion, Increased leg strength and endurance, Return to skill activities and full sport participation

- Progression to exercises that increase tension on your repaired tendon. Progress only as you remain without pain about the kneecap and continue to be able to perform a straight leg raise without any extension lag
- Continue to avoid deep squats, deep knee bends/lunges, jumping, leg extension machines, and stair-stepper machines.

Exercises

- Continue exercises from Phases 3 & 4
- At 4 months:
 - Begin treadmill jogging or on soft track (goal of 20 min at mild pace)
 - Step Ups/Downs: Increase step height to normal stair height
 - Single leg wall squats
- At 5 months:
 - May begin outdoor running on level surface, road biking
 - Plyometric exercises/single leg hops/hop ups and downs from single stair height
- At 6 months:
 - Agility drills: backward running, figure of eight drills, box runs
 - Sport specific drills
 - May begin trail and stair running
 - May begin skiing groomers, tennis

 - Criteria for return to full sport activity: full range of motion, full leg strength, pain free all strengthening activities, good neuromuscular control/agility, satisfactory clinical exam
 - > 85% functional hop testing operative leg vs nonoperative leg