QUADRICEPS TENDON TEAR/DISRUPTION

Description

Quadriceps tendon tear or disruption is a partial or complete rupture of the quadriceps tendon. This structure is the tendon attachment of the quadriceps (thigh) muscles to the kneecap (patella). The quadriceps muscles become a tendon above the kneecap (patella), and the tendon attaches into the patella; this is the quadriceps tendon. Then another tendon goes from the patella to the tibial tubercle (the bump on the upper part of the lower leg); this is the patellar tendon. There is loss of continuity between the quadriceps muscles and the patella and thus loss of function of the quadriceps muscles. The function of the quadriceps muscles is to forcefully straighten the knee or slow the knee during bending or squatting. There is pressure on the quadriceps tendon with muscle contraction and with the knee bent.

Common Signs and Symptoms

- Pop or rip at the knee or above the kneecap (patella) at the time of injury
- Pain, tenderness, swelling, warmth, or redness over and around the quadriceps tendon and knee joint
- Pain when trying to forcefully straighten the knee or when the knee is bent
- Pain and weakness or inability to straighten the knee when seated
- Crepitation (a crackling sound) when the tendon is moved or touched
- Bruising at the lower thigh and knee after 48 hours
- Loss of firm fullness when pushing on the area where the tendon ruptured (a defect between the ends of the tendon where they separated from each other)

Causes

- Sudden episode of stressful overactivity, such as with jumping, hurdling, or starting a sprint
- Direct blow or injury to the knee

Risk Increases With

- Sports that require sudden, explosive muscle contraction, such as those involving jumping and quick starts; also, running or contact sports
- Poor physical conditioning (strength and flexibility)
- Previous quadriceps tendon injury
- Untreated quadriceps tendinitis
- Cortisone injection into the quadriceps tendon

Preventive Measures

- Appropriately warm up and stretch before practice or competition.
- Allow time for adequate rest and recovery between practices and competition.
- Maintain appropriate conditioning:
  - Knee and thigh flexibility
  - Quadriceps strength and endurance
  - Cardiovascular fitness
- Taping, protective strapping, or an adhesive bandage may be recommended before practice or competition.

Expected Outcome

This condition is curable with appropriate treatment. Although return to sports may occur after 6 to 9 months, it may be at a reduced level.

Possible Complications

- Weakness of the quadriceps muscles, especially if untreated
- Rerupture of the tendon after treatment
- Prolonged disability
- Risks of surgery, including infection; injury to nerves (numbness, weakness, or paralysis); bleeding; knee stiffness; knee weakness; pain when sitting for long periods, getting up from a seated position, kneeling or squatting, or going up or down stairs or hills; knee giving way or buckling

General Treatment Considerations

Initial treatment consists of not walking on the affected leg, icing the area, applying a compressive elastic bandage,

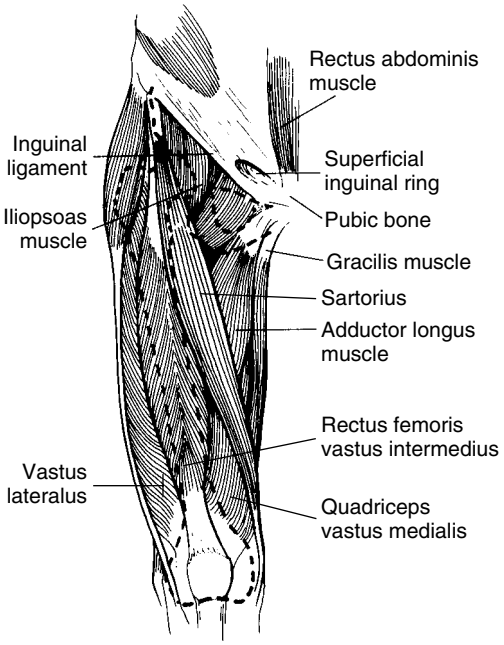


Figure 1

From DeLee JC, Drez D Jr.: Orthopaedic Sports Medicine: Principles and Practice. Philadelphia, WB Saunders, 1994, p. 1103.

and elevating the injured leg to eye level. Small or partial quadriceps tendon injuries may be treated with stretching, strengthening and refraining from sports and often requires physical therapy. A brace, cast, or crutches may also be necessary. When there is a complete tear, quadriceps muscle contraction prevents the tendon ends from healing to each other without surgery. Thus there is no role for nonsurgical treatment for complete tears. Surgical treatment involves sewing the ends of the tendon together or to the patella, followed by immobilization in a long leg cast or brace for varying periods. After surgery and immobilization, physical therapy is usually needed to regain knee motion and strength.

Medication

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Pain relievers may be prescribed as necessary by your physician. Use only as directed and only as much as you need.

Cold Therapy

Cold is used to relieve pain and reduce inflammation. Cold should be applied for 10 to 15 minutes every 2 to 3 hours for inflammation and pain. Use ice packs or ice massage.

Notify Our Office If

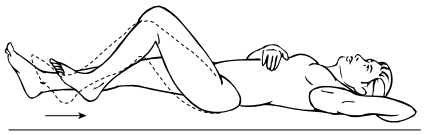
- Pain increases despite treatment
- Cast discomfort develops
- Any of the following occur after surgery: signs of infection, including fever, increased pain, swelling, redness, drainage, or bleeding in the surgical area
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

EXERCISES

➢ **RANGE OF MOTION AND STRETCHING EXERCISES** • Quadriceps Tendon Tear/Disruption

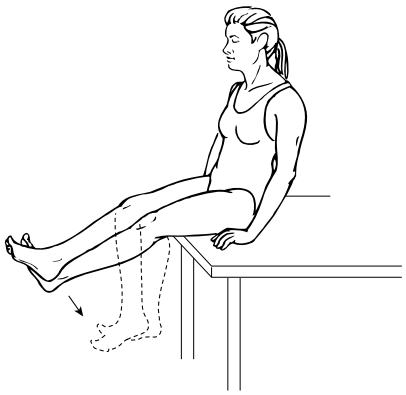
These are some of the ***initial*** exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- Flexible tissue is more tolerant of the stresses placed on it during activities.
- Each stretch should be held for 20 to 30 seconds.
- A ***gentle*** stretching sensation should be felt.



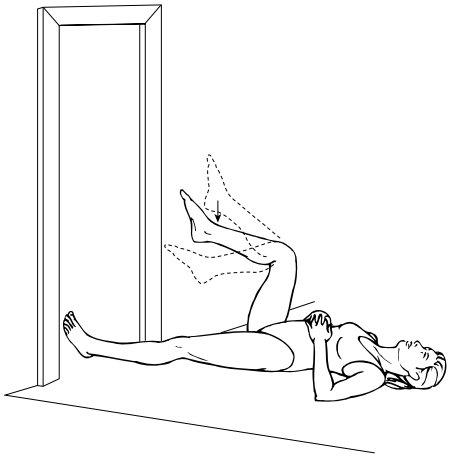
RANGE OF MOTION • Knee Flexion

1. Lie on your back with your legs out straight.
2. Slowly slide your heel toward your buttocks. Bend your knee as far as is comfortable to get a stretching sensation.
3. Hold for _____ seconds.
4. Return your leg to the starting position.
5. Repeat exercise _____ times, _____ times per day.



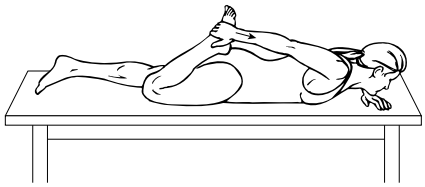
RANGE OF MOTION • Knee Flexion and Extension

1. Sit on the edge of a table or chair.
2. Use the uninjured/unaffected leg to straighten (extend) and bend (flex) the injured/affected leg.
3. ***Flexion—***Cross your ankles, placing the uninjured or unaffected leg on top of the injured/affected leg. Pull your heel(s) backward under the surface you are sitting on to increase the amount you can bend your knee.
4. ***Extension—***Cross your ankles, placing the uninjured or unaffected leg under the injured/affected leg. Pull your heel(s) backward under the surface you are sitting on to increase the how much you can straighten your knee.
5. Repeat exercise _____ times, _____ times per day.



RANGE OF MOTION · Gravity Knee Flexion

1. Lie on the floor as shown with your toes/foot lightly touching the wall.
2. Allow your toes/foot to slide down the wall, allowing gravity to bend your knee for you.
3. Obtain a "comfortable" stretching sensation.
4. Hold this position for _____ seconds. Then return the leg to the starting position.
5. Repeat exercise _____ times, _____ times per day.



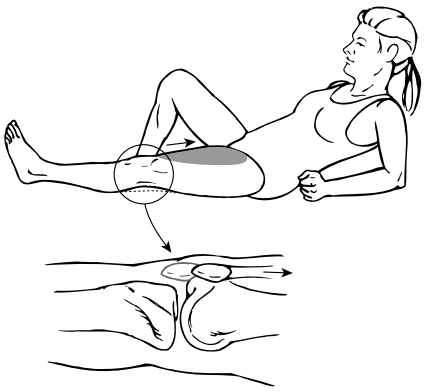
STRETCH · Quadriceps, Prone

1. Lie on your stomach as shown.
2. Bend your knee, grasping your toes, foot, or ankle. If you are too "tight" to do this, loop a belt or towel around your ankle and grasp that.
3. Pull your heel toward your buttock until you feel a stretching sensation in the front of your thigh.
4. Keep your knees together.
5. Hold this position for _____ seconds.
6. Repeat exercise _____ times, _____ times per day.

➢ **STRENGTHENING EXERCISES** · Quadriceps Tendon Tear/Disruption

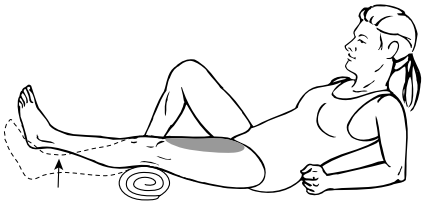
These are some of the ***initial*** exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- Strong muscles with good endurance tolerate stress better.
- Do the exercises as ***initially*** prescribed by your physician, physical therapist, or athletic trainer. Progress slowly with each exercise, gradually increasing the number of repetitions and weight used under their guidance.



STRENGTH · Quadriceps, Isometrics

1. Lie flat or sit with your leg straight.
2. Tighten the muscle in the front of your thigh as much as you can, pushing the back of your knee flat against the floor. This will pull your kneecap up your thigh, toward your hip.
3. Hold the muscle tight for _____ seconds.
4. Repeat this exercise _____ times, _____ times per day.

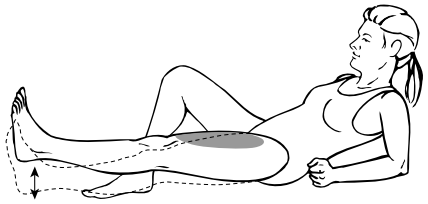


STRENGTH · Quadriceps, Short Arcs

1. Lie flat or sit with your leg straight.
2. Place a _____ inch roll under your knee, allowing it to bend.
3. Tighten the muscle in the front of your knee as much as you can, and lift your heel off the floor.
4. Hold this position for _____ seconds.
5. Repeat exercise _____ times, _____ times per day.

Additional Weights: OK TO USE DO NOT USE!!!

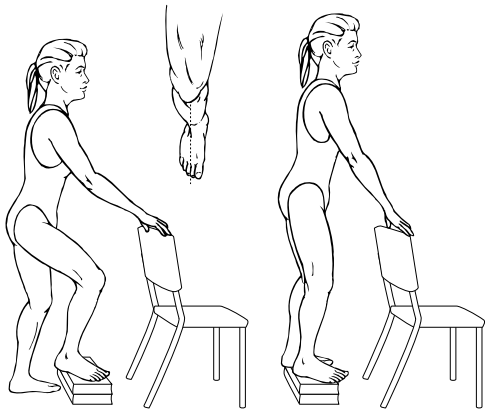
If *okay'd by your physician, physical therapist, or athletic trainer,* a _____ pound weight may be placed around your ankle for additional weight.



STRENGTH · Quadriceps, 7 Count

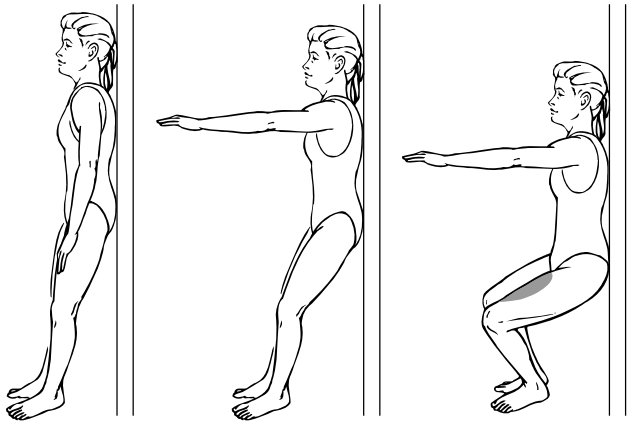
The quality of the muscle contraction in this exercise is what counts the most, not just the ability to lift your leg!

1. Tighten the muscle in front of your thigh as much as you can, pushing the back of your knee flat against the floor.
2. Tighten this muscle ***harder***.
3. Lift your leg/heel 4 to 6 inches off the floor.
4. Tighten this muscle ***harder again***.
5. Lower your leg/heel back to the floor. Keep the muscle in front of your thigh as tight as possible.
6. Tighten this muscle ***harder again***.
7. Relax.
8. Repeat exercise _____ times, _____ times per day.



STRENGTH · Quadriceps, Step-Ups

1. Use a step or books.
2. Place your foot on the step or books approximately _____ inches in height. Make sure that your kneecap is in line with the tip of your shoe or your second toe.
3. Hold on to a hand rail, chair, wall, or another object for balance if needed.
4. Slowly step up and down. Make sure that the kneecap is always in line with the tip of your shoe or your second toe. Lightly touch the heel of the opposite leg to the floor and return to the starting position.
5. Repeat exercise _____ times, _____ times per day.



STRENGTH · Quadriceps, Wall Slide

1. Stand with your back against the wall. Your feet should be shoulder-width apart and approximately 18 to 24 inches away from the wall. Your kneecaps should be in line with the tip of your shoes or your second toe.
2. Slowly slide down the wall so that there is a _____ degree bend in your knees. *(Your physician, physical therapist, or athletic trainer will instruct you how to progress the amount of bend based on your symptoms and diagnosis.)*
3. Hold this position for _____ seconds. Stand up and rest for _____ seconds.
4. Repeat exercise _____ times, _____ times per day.

Notes: (Up to 4400 characters only)

Notes and suggestions