

Patellofemoral Pain Syndrome



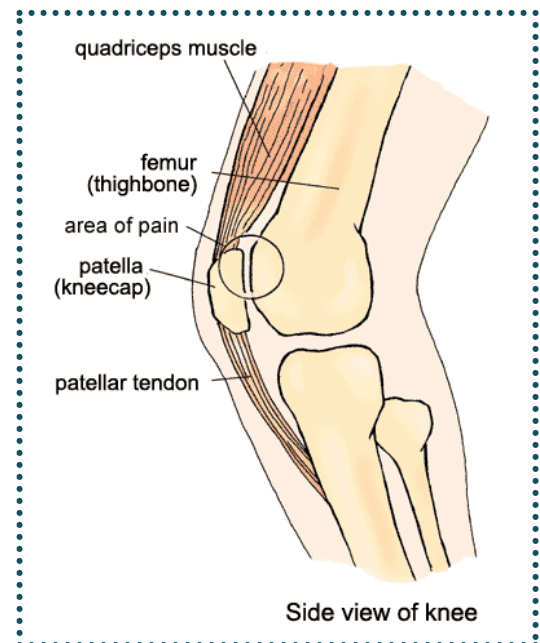
WHAT IS PATELLOFEMORAL PAIN SYNDROME

(CHONDROMALACIA)?

Patellofemoral pain syndrome is pain behind the kneecap. It has many given names, including patellofemoral disorder, patellar malalignment, runner's knee, and chondromalacia.

HOW DOES IT OCCUR?

Patellofemoral pain syndrome can occur from overuse of the knee in sports and activities such as running, walking, jumping, or bicycling. The kneecap (patella) is attached to the large group of muscles in the thigh called the quadriceps. It is also attached to the shin bone by the patellar tendon. The kneecap fits into the grooves in the end of the thigh bone (femur) called the femoral condyle. With repeated bending and straightening of the knee, you can irritate the inside surface of the kneecap and cause pain. Patellofemoral pain syndrome also may result from the way your hips, legs, knees, or feet are aligned. This alignment problem can be caused by you having wide hips or underdeveloped thigh muscles, being knock-kneed, or having feet with arches that collapse when walking or running (a condition called over-pronation).



WHAT ARE THE SYMPTOMS?

The main symptom is pain behind the kneecap. You may have pain when you walk, run, or sit for a long time. The pain is generally worse when walking downhill or down stairs. Your knee may swell at times, and you may hear or feel snapping, popping, or grinding in the knee.

HOW IS IT DIAGNOSED?

Your doctor will review your symptoms, examine your knee, and may also order x-rays to be taken.

TREATMENT FOR PATELLOFEMORAL PAIN SYNDROME

Treatment may include:

- Applying ice to your knee for 20-30 minutes every 3-4 hours for 2-3 days or until the pain and swelling are gone.
- Elevating your knee by placing a pillow underneath your leg.
- Taking anti-inflammatory or pain medication prescribed by your doctor.
- Wearing a brace prescribed by your doctor to keep your kneecap in place.
- Doing exercises to strengthen the inner side of the thigh muscle (quadriceps).

Also, your doctor may recommend that you:

- Wear custom made arch supports (orthotics) for over pronation
- Use an infrapatellar strap, a strap placed beneath the kneecap over the patellar tendon.
- Wear a neoprene sleeve, which will give support to your knee and patella.

WHEN CAN I RETURN TO MY SPORT OR ACTIVITY?

The goal of rehabilitation is to return you to your sport or activity as soon as is safely possible. If you return too soon you may worsen your injury, which could lead to permanent damage. **Everyone recovers from injury at a different rate.** Return to your activity will be determined by how soon your knee recovers, not by how many days or weeks it has been since your injury occurred.

In general, the longer that you have symptoms before you start treatment, the longer it will take you to get better. You may safely return to your sport or activity when, starting from the top of the list and progressing to the end, **each of the following is true:**

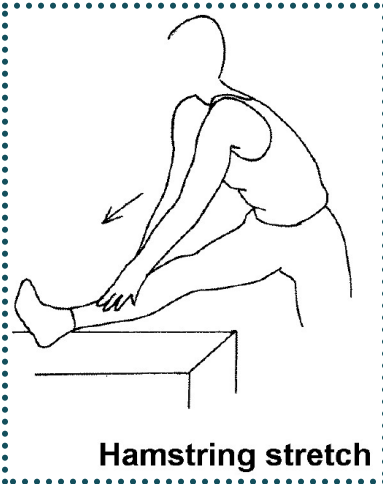
- ☐ Your injured knee can be *fully* straightened and bent without pain.
- ☐ Your knee and leg have regained normal strength compared to the uninjured knee and leg.
- ☐ Your knee is not swollen.
- ☐ You are able to jog straight ahead without limping.
- ☐ You are able to sprint straight ahead without limping.
- ☐ You are able to do 45 degree cuts.
- ☐ You are able to do 90 degree cuts.
- ☐ You are able to do 20 yard figure-eight runs.
- ☐ You are able to do 10 yard figure-eight runs.
- ☐ You are able to jump on both legs without pain, and jump on the injured leg without pain.

HOW CAN I PREVENT PATELLOFEMORAL PAIN SYNDROME?

Patellofemoral pain syndrome is best prevented by keeping your thigh muscles strong, especially the group of muscles on the inner side of the thigh. It is also important to wear shoes that fit well and have good arch supports.

REHABILITATION EXERCISES FOR PATELLOFEMORAL PAIN SYNDROME

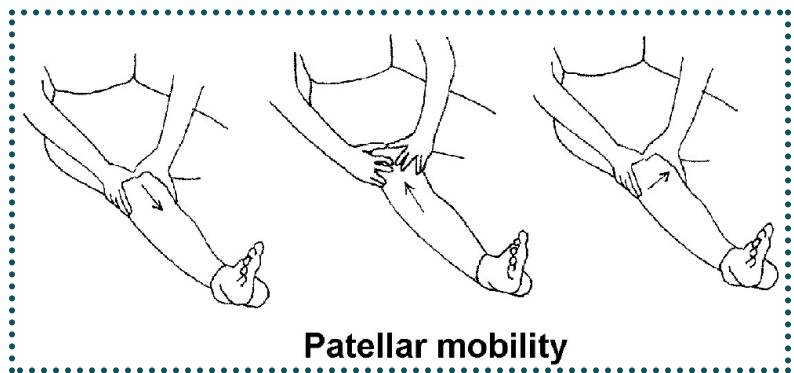
You may start doing exercise 1 right away. You can do the patellar mobility stretch (exercise 2) as soon as it is not too painful to move your kneecap. When the pain in your knee has decreased, you can do the quadriceps stretch and start strengthening the thigh muscles using exercises 4 through 6.



Hamstring stretch

1. **Hamstring Stretch:** Stand with the heel of your injured leg resting on a stool that is about 15 inches high. Keep your knee straight. Gently lean forward from your hips, keeping your shoulders in line with your trunk, until you feel a stretch in the back of your thigh. Hold this position for 30 to 60 seconds. Return to the starting position. Do not round your shoulders or bring your head toward your toe, as this will only stretch your lower back and not your hamstrings. Repeat 3 times.

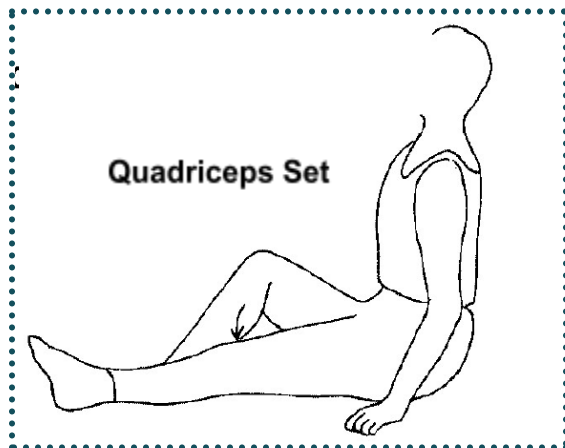
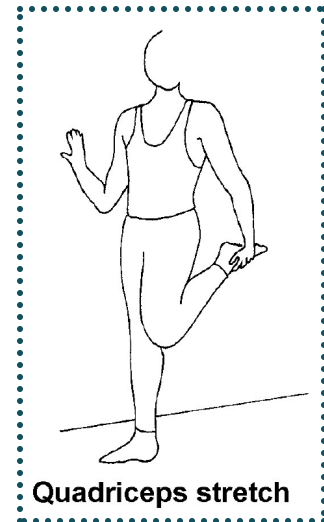
2. **Patellar Mobility:** Sit with your injured leg outstretched in front of you and the muscles on top of your thigh relaxed. Take your index finger and thumb, and gently press your kneecap down toward your foot. Hold this position for 10 seconds.



Patellar mobility

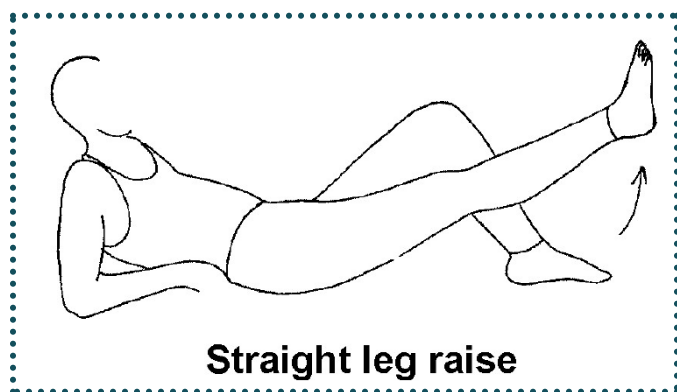
Return to the starting position. Next, pull your kneecap up toward your waist and hold it for 10 seconds. Return to the starting position. Then, try to gently push your kneecap inward toward your other leg, and hold it for 10 seconds. Repeat these for approximately 5 minutes.

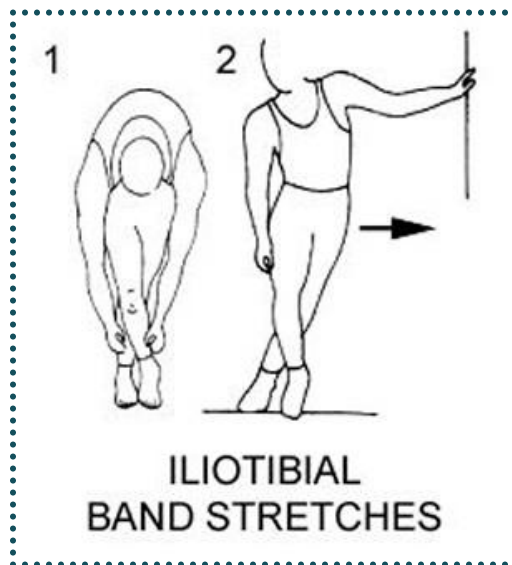
3. **Quadriceps Stretch:** Stand an arm's length from a wall. Brace yourself by keeping the hand on the uninjured side against the wall. With your other hand, grasp the ankle of the injured leg and pull your heel up toward your buttocks. Do not arch or twist your back. Hold this position for 30 seconds and repeat 3 times.



4. **Quadriceps Set:** Sit on the floor with your injured leg straight out in front of you. Try to tighten the muscles at the top of your thigh by pushing the back of your knee down to the floor. Concentrate your contraction on the inside part of your thigh. Hold this position for 5 seconds and repeat 3 times. Do 3 sets of 10.

5. **Straight Leg Raise:** Sit on the floor with your injured leg straight and your other leg bent, with your foot flat on the floor. Move the toes of your injured leg toward you as far as you can, while pressing the back of your knee down and tightening the muscles on the top of your thigh. Raise your leg 6-8 inches off the floor and hold for 5 seconds. Slowly lower it back to the floor, then repeat this 20 times.





6. **Iliotibial Band Stretch (1.Standing)**: Cross your uninjured leg over your injured leg and bend down to touch your toes. Hold this position for 30 seconds. Come up to the starting position. Repeat 3 times.

7. **Iliotibial Band Stretch (2.Side Leaning)**: Stand sideways to a wall, your injured leg toward the inside. Place the hand nearest the wall on the wall for support. Cross your uninjured leg over the injured leg, keeping the foot of the injured leg stable. Lean into the wall. Hold the stretch for ten seconds and repeat. Do 2 sets of 10.