

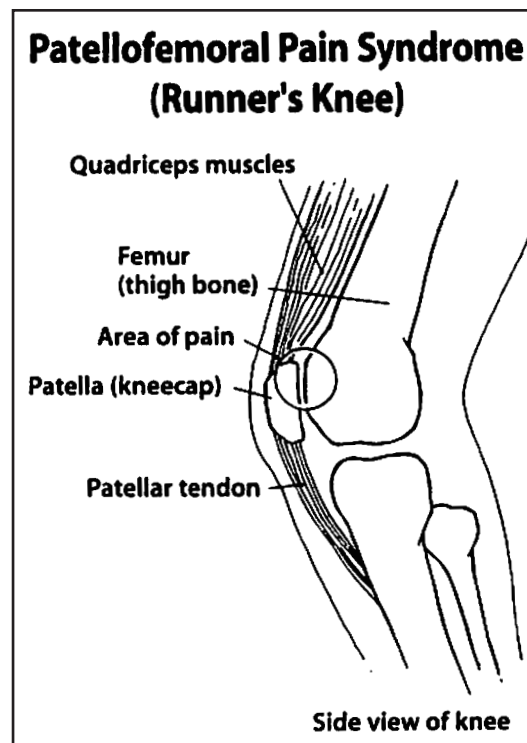


Patellofemoral (knee cap) Pain

Patellofemoral Pain Syndrome (PFPS) is a very common cause of knee cap pain that develops due to overuse or a previous injury. Patellofemoral pain often occurs with growth spurts. As children mature, it takes a period of time before the patellofemoral joint gets stronger to support the added height and weight. Similarly, patellofemoral pain can occur after increasing one's intensity of exercise.

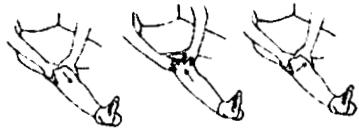
Anatomy: The patella (knee cap) is a small bone in front of the knee that glides up and down a groove in the femur called the femoral groove. A ropelike structure called the patellar tendon connects the patella to the tibia, or lower leg. The quadriceps muscle, a powerful muscle in front of the thigh, straightens the leg by pulling at the patellar tendon via the patella (see diagram).

The vastus medialis (inner thigh) muscles are considerably weaker than the vastus lateralis (outer thigh) muscles in PFPS patients. As a result, the patella shifts laterally and prevents it from tracking properly. (Straight leg lifts help strengthen the vastus medialis muscles.



Treatment: consists of stretching exercises, relative rest, anti-inflammatory medication, and bracing. (Suggested stretches outlined below.)

1. PATELLAR MOBILITY: Sit with your injured leg outstretched in front of you and the muscles on the 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. 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 for 10 seconds. Repeat these for approximately 5 minutes.



2. STANDING HAMSTRING STRETCH: Place the heel of your leg on a stool about 15 inches high. Keep your knee straight. Lean forward, bending at the hips until you feel a mild stretch in the back of your thigh. Make sure you do not roll your shoulders and bend at the waist when doing this or you will stretch your lower back instead. Hold the stretch for 15 to 30 seconds. Repeat 3 times.



3. QUADRICEPS STRETCH: Stand an arm's length away from the wall, facing straight ahead. 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 toward your buttocks. Don't arch or twist your back and keep your knees together. Hold this stretch for 15 to 30 seconds. Repeat 3 times.



4. QUADRICEPS ISOMETRICS: Sitting on the floor with your injured leg straight and your other leg bent, press the back of your knee into the floor by tightening the muscles on the top of your thigh. Hold this position 10 seconds. Relax. Do 3 sets of 10.



5. STRAIGHT LEG RAISE: Lie on your back with your legs straight out in front of you. Tighten up the top of your thigh muscle on the injured leg and lift that leg about 8 inches off the floor, keeping the thigh muscle tight throughout. Slowly lower your leg back down to the floor. Do 3 sets of 10.



6. STEP-UP: Stand with the foot of your injured leg on a support (like a block of wood) 3 to 5 inches high. Keep your other foot flat on the floor. Shift your weight onto the injured leg and straighten the knee as the uninjured leg comes off the floor. Lower your uninjured leg to the floor slowly. Do 3 sets of 10.



7. WALL SQUAT WITH A BALL: Stand with your back, shoulders, and head against a wall and look straight ahead. Keep your shoulders relaxed and your feet 1 foot away from the wall and a shoulder's width apart. Place a rolled up pillow or a soccer-sized ball between your thighs. Keeping your head against the wall, slowly squat while squeezing the pillow or ball at the same time. Squat down until you are almost in a sitting position. Your thighs will not yet be parallel to the floor. Hold this position for 10 seconds and then slowly slide back up the wall. Make sure you keep squeezing the pillow or ball throughout this exercise. Repeat 10 times. Build up to 3 sets of 10.



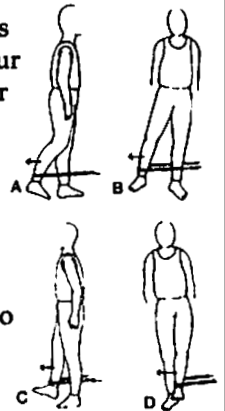
8. KNEE STABILIZATION: Wrap a piece of elastic tubing around the ankle of your uninjured leg. Tie the tubing to a table or other fixed object.

A. Stand on your injured leg facing the table and bend your knee slightly, keeping your thigh muscles tight. While maintaining this position, move your uninjured leg straight back behind you. Do 3 sets of 10.

B. Turn 90° so your injured leg is closest to the table. Move your uninjured leg away from your body. Do 3 sets of 10.

C. Turn 90° again so your back is to the table. Move your uninjured leg straight out in front of you. Do 3 sets of 10.

D. Turn your body 90° again so your uninjured leg is closest to the table. Move your uninjured leg across your body. Do 3 sets of 10.



Hold onto a chair if you need help balancing. This exercise can be made even more challenging by standing on a pillow while you move your uninjured leg.