



# Patello-Femoral Pain Syndrome

**Treatment includes activity modification, stretching, and strengthening the affected limb. Immediately begin using:**

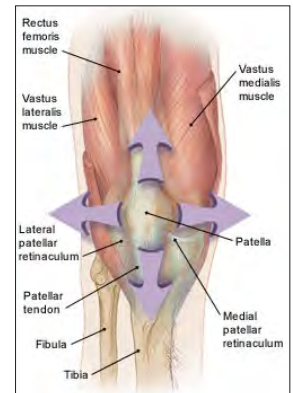
<b>R</b> Rest	<b>I</b> Ice	<b>C</b> Compression	<b>E</b> Elevation
You should rest from all activities that cause pain or limping. Use crutches until you can walk without pain or limping, if available.	Place an ice bag over your knee, or painful area, for 15–20 minutes, 3–5 times a day for the first 24–72 hours. After 72 hours, ice the knee after activity or exercises.	Wrap an elastic bandage from mid-calf to mid-thigh, using even pressure. Wear this if swelling is noticed until it decreases.	Make sure to elevate the knee above heart level until swelling subsides. Always be sure to ice your knee down after you complete your exercises using either immersion in ice bath, or wrapping a bag of ice. Apply ice for 20 minutes each time.

Patello-femoral pain syndrome is an inflammation to the front of the knee joint caused by the patella (knee cap) not tracking properly over the distal femur (thigh bone at the knee). The patella normally rides in a groove on the femur. The patella is like a fulcrum, it gives leverage to the big muscles on the front of the thigh. These thigh muscles are called the quadriceps because they consist of four muscles. With patello-femoral syndrome (PFS), you get an imbalance in these muscles—usually the lateral or outside muscle overpowers the inner medial muscle, and this pulls the patella out of its normal groove. When the patella doesn't track properly, it causes pain under the patella. PFS can have multiple causes, which can include foot problems, such as foot pronation, weak lateral hip muscles, genu valgum (knock-kneed), and a larger Q-angle (the angle from the front hip to middle of the knee cap). These can all affect the biomechanics of the patello-femoral joint.

When experiencing these problems with your knee, it's important to find ways not to keep it irritated. Occasionally, the injuries start with a clear-cut onset, like stepping in a hole or falling on your knee. Usually, though, it feels like it comes out of nowhere. This means that you've been gradually creating the injury over a longer period of time like a few days or weeks. Something that you do during the day sets it off, but it's commonly very hard to figure out

was exactly the aggravating activity. Nonetheless, you've overdone it. Try not to worry if you can't figure out exactly why your knee got sore. That may not be necessary to determine in order to get better.

The more often you make your knee sore, the longer it will take to get better. The inflammation seldom builds up to a level where it keeps you in bed, so it's tempting to keep up and about on it. This may keep it stirred up. Try to avoid all the activities that make it sore, i.e., sitting with your knee bent for a long time, walking a lot, going up and down stairs, or exercising. While it doesn't cause more damage, it does keep the inflammation from going away. You may find it helpful to sit with your knee straight or get up and move around occasionally. Also, try stairs one step at a time using your uninjured leg. These knee injuries can be very stubborn before they get better. The sooner you stop aggravating it, the sooner you can get back to the activities you like.



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As soon as you can walk without pain or limping, begin stretching protocol:

## Hip flexor stretch

Kneel with affected knee on the ground, same side arm goes back causing pelvis to shift forward, and back to extend. Hold for 20–30 seconds. Repeat 3 times.



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### Adductor stretch

Prop the inside of your ankle up on a table, lean into the side you're stretching. Hold for 20–30 seconds. Repeat 3 times.



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### Hamstring stretch

Prop the back of your heel up on a table, keep your back straight, and lean forward at the hips. Hold for 20–30 seconds. Repeat 3 times.



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### Dynamic hamstring stretch

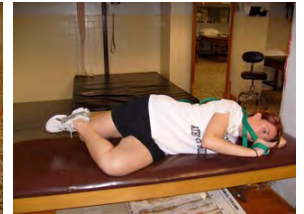
Lie on your back, reach hands behind your knee, keep knee at 90-degree angle, and kick up until you feel stretch. Repeat 15–20 times each side.



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### Sidelying ITBand stretch

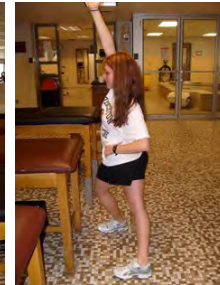
Lie on your side, use a towel, or band and pull foot back as if stretching quadriceps, use opposite foot to push down on distal part of leg. Hold this stretch for 1 minute. Repeat as needed.



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### C stretch for ITBand

Standing, place affected leg behind the good leg, and lean away. Hold for 20–30 seconds. Repeat 3 times.



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### Glute stretch

Prop the outside of your ankle up on a table, make sure your leg is at 90 degrees, keep your back straight, and lean forward at the hips. Hold for 20–30 seconds. Repeat 3 times.



Begin these strengthening exercises in conjunction with the stretches:

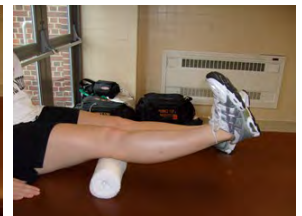
### Straight leg raises all 4 directions

Begin on your back, bring your foot towards you, so quadriceps muscle is contracted and knee is straight. Raise leg into hip flexion. Repeat this on your side for hip abduction, opposite side for hip adduction, and on your stomach for hip extension. Do 3 sets of 15 each direction. As this gets easier, you can add weight, or add repetitions.



### Quad sets

Begin in a seated position, place a small towel or roll behind your knee. Bring your foot toward you and straighten your knee (to contract your quads) so the back of your heel comes off the table. Make sure you are focusing on squeezing your quadriceps as tightly as tolerable. Once your heel is off the table, hold the contraction at the top for 2–3 seconds. Do 3–4 sets of 20 each. You may repeat with a larger roll as well.



Once you have successfully completed the stretching and initial strengthening exercises (performed correctly and without discomfort), try these exercises:

### Seated leg extensions on machine

This exercise is for quadriceps strengthening. Sit on the machine, make sure you begin with knee flexed slightly passed 90 degrees. Extend knee until it is completely straight. Make sure you are controlling the motion on the way down, back into flexion. Begin with a light weight, and work your way up. Do 3 sets of 15–20 reps. The last few reps leading up to 20 should be difficult. *Please be careful with this exercise as it can sometimes re-create symptoms.*



### Seated hamstring curls on machine

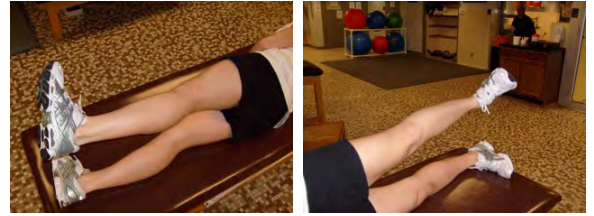
This exercise is for hamstring strengthening. Sit on the machine, make sure you begin with knee fully extended. Flex knee until it is slightly past 90 degrees. Make sure you are controlling the motion on the way up, back into full extension. Begin with a light weight, and work your way up. Do 3 sets of 15–20 reps. The last few reps leading up to 20 should be difficult.



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## Hip abduction with foot externally rotated

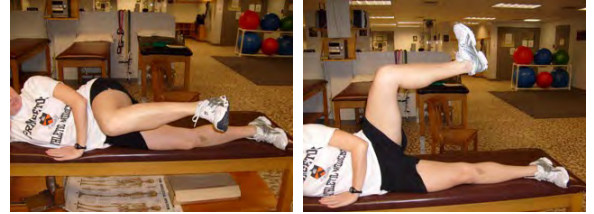
On your side, with knee straight (quadriceps contracted), raise your leg into hip abduction with leg slightly back, and point your foot toward the ceiling. Do 2 sets of 15.



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## Fire hydrant position

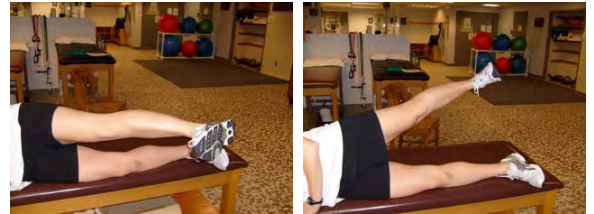
On your side, flex hip, and bend knee to 90 degrees, then lift leg upward towards ceiling. Do 2 sets of 20.



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## Hip circles

On your side, with knee straight (quadriceps contracted), complete 20 circles to the right, and 20 circles to the left.



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## Lateral step-ups

Using a box or stair, stand next to the box and step up with affected leg. Make sure your knee is aligned with your second toe while going up and down on the box. Start with a box that is 2" high and gradually work up to a box that is the height of the pictured exercise. Do 3 sets of 15 reps. *Please be careful with this exercise as it can sometimes re-create symptoms if the box is too high.*



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## Front step-ups

Using a box or stair, stand behind the box and step up with affected leg. Make sure your knee is aligned with your second toe while going up and down on the box. Adjust the height of the box in the same way as for the lateral step up exercise. Do 3 sets of 15 reps. Try not to take a break during reps, try completing all 15, doing continuous step ups. *Please be careful with this exercise as it can sometimes re-create symptoms if the box is too high.*



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## Reverse lunge

Begin in standing position with legs shoulder width apart. Step back in lunge position with right leg, followed by left leg. Do 2 sets of 10 each leg. *Please be careful with this exercise as it can sometimes re-create symptoms if mechanics break down, or proper technique is not emphasized.*

