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Information and Resources

What is an Actionset?

Patellar tracking disorder: Exercises



Key points

The thigh muscles (quadriceps) help keep the kneecap (patella) stable and in place. Weak quadriceps increase the risk of patellar tracking disorder.

Ligaments and tendons also help stabilize the patella. If these are too tight or too loose, you have a greater risk of patellar tracking disorder.

The goals of nonsurgical treatment of patellar tracking problems are to decrease symptoms, increase quadriceps strength and endurance, and return to normal function. Exercises for patellar tracking disorder are not complicated and can be done at home in about 20 minutes a day.

Most patellar tracking problems can be treated effectively without surgery. Nonsurgical treatment may include rest, regular stretching and strengthening exercises, taping or bracing the knee, using ice, and short-term use of nonsteroidal anti-inflammatory drugs (NSAIDs).¹

Quadriceps strengthening is the most commonly prescribed treatment for patellar tracking disorder. Exercises to increase flexibility and to strengthen the muscles used for hip rotation can also help.¹

Patience and dedication are essential. The slow progress and improvement can be frustrating, but most people can be spared a surgical procedure by closely following a conservative therapy program.

Patellar Tracking Disorder



What will help treat patellar tracking disorder?

At first, following an injury or a flare-up of symptoms of patellar tracking disorder, knee activity should be reduced. Rest your knee by avoiding activity that increases your symptoms. Exercises should begin as the symptoms resolve.

Steps you can take to help treat patellar tracking disorder include:¹

- Reducing knee activity until pain and other symptoms resolve.
- Strengthening exercises, especially for the quadriceps (muscles in the front of the thigh).
- Flexibility exercises.
- Taping the knee or using a brace.
- Using ice and nonsteroidal anti-inflammatory drugs (NSAIDs).

Test Your Knowledge

Surgery is usually necessary to treat patellar tracking disorder.

- > True
 > False

This answer is incorrect.

In most cases, nonsurgical treatment including rest and quadriceps-strengthening exercises done in combination with taping or bracing the knee and use of ice and nonsteroidal anti-inflammatory drugs (NSAIDs) will resolve a patellar tracking disorder.



Why is it important to do exercises for patellar tracking disorder?

Nonsurgical treatment, especially strength and flexibility exercises, is usually all that is needed for patellar tracking disorder. But it is important to seek diagnosis as soon as you notice symptoms, so that you can begin the right treatment. Generally, the longer you have a patellar tracking disorder, the longer treatment will take.

If a patellar tracking disorder is left untreated or treated without success, it can lead to chondrosis or osteoarthritis of the knee.

Test Your Knowledge

Ignoring the symptoms of a patellar tracking disorder can have severe long-term consequences.

> True

> False

This answer is correct.

If a patellar tracking disorder is left untreated, it can lead to chondrosis, a softening or loss of the cartilage that covers the back of the kneecap, which can cause pain during activities that require bending of the knee. It can also lead to osteoarthritis of the knee, a progressive breaking down of cartilage that is a major cause of disability in older adults.



How do I do exercises for patellar tracking disorder?

Correct diagnosis is of great importance in designing an exercise or rehabilitation program. The treatment you receive and the exercise program you use to rehabilitate your knee should be developed specifically for your condition. Some doctors will recommend using a brace or a taping technique to keep your kneecap in proper alignment in addition to an exercise program. Be sure to closely follow the instructions from your doctor or physical therapist.

At first, following an injury or a flare-up of symptoms of patellar tracking disorder, knee activity should be reduced. Overuse and trauma are common causes of knee pain, and resting your knee will help relieve pain. Exercises should begin as the symptoms resolve.

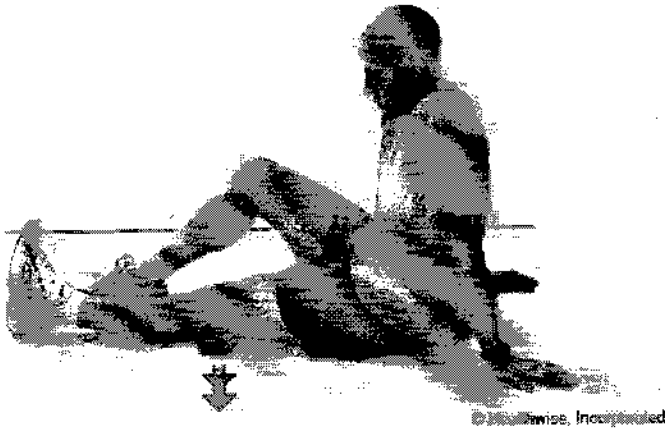
Your doctor or physical therapist should help you decide what exercises to do. He or she will probably have you start with one or two exercises, and add others over time. Your physical therapist may use biofeedback during some exercises to help you learn to contract certain muscles, especially the inner muscle of your quadriceps.

The following exercises may be recommended by your doctor or physical therapist.

Isometric exercises

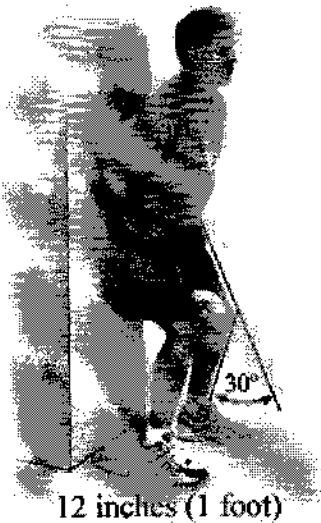
In an isometric exercise, a force is applied against a resistant object, so that even though tension builds in a specific muscle, there is no movement. Isometric exercise for the quadriceps muscles at the front of the thigh are usually done at the beginning of the exercise program for patellar tracking disorder.

For isometric exercise of the quadriceps group, sit with your leg straight and supported (it works well to sit on the floor or a firm bed). Tighten your thigh muscles (quadriceps) for 10 seconds at a time. Then rest the muscles for a few seconds before tightening them again. Do this for 8 to 12 repetitions, several times a day. If this is uncomfortable in the front or back of your knee, try placing a rolled up washcloth or dishtowel under your knee. See the picture below.



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The inner part of the quadriceps muscle group, called the vastus medialis, is often weak compared to the other muscles in the group. This imbalance can contribute to patellar tracking disorder. For isometric exercise of the inner section of the quadriceps, stand with your feet about hip-width apart and 1ft from a wall. Lean against the wall and slide down until your knees are bent about 20 to 30 degrees. Place a ball about the size of a soccer ball between your knees and squeeze your knees against the ball for 10 seconds at a time. Rest a few seconds, then squeeze again. Repeat 8 to 12 times, at least 3 times a day. See the picture below.

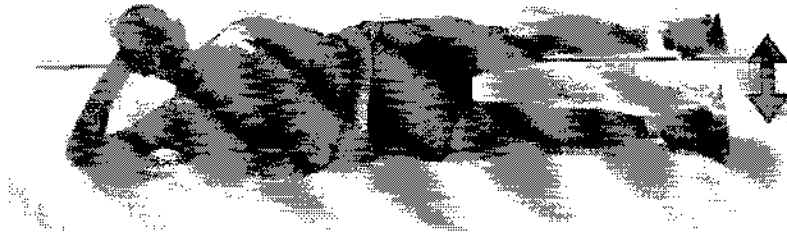


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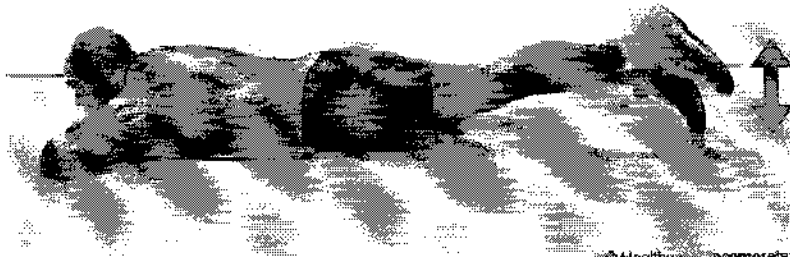
Other strengthening exercises

When your doctor or physical therapist thinks your knee is ready for more intensive exercise, he or she may choose some of the following:

Straight leg raises for your quadriceps. Lie on your back with the leg you are going to exercise straight. Bend your other knee and rest that foot on the floor next to your straight leg. Tighten the quadriceps muscles of your straight leg and lift the leg 12in to 18in off the floor, hold it for 5 seconds, then slowly lower the leg back down and rest a few seconds. Do 8 to 12 repetitions, 3 times a day. Your physical therapist may have you add light ankle weights as you become stronger. See the picture below.

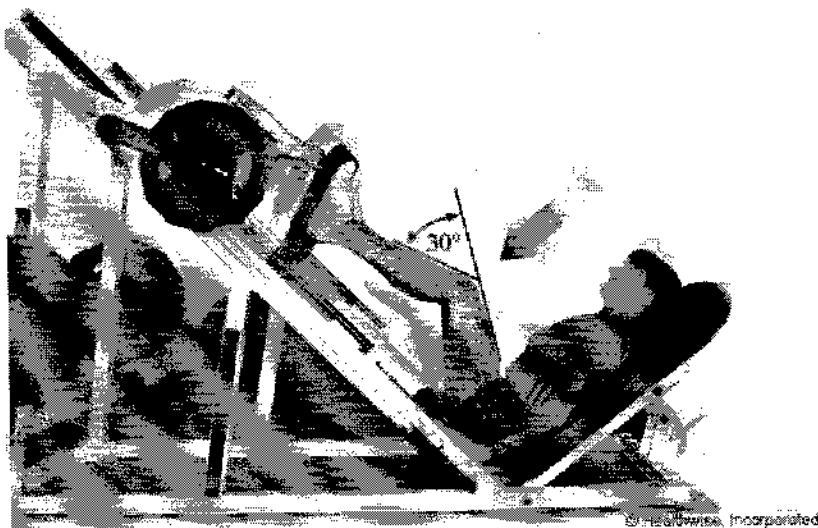


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Other quadriceps exercises. Now you can begin to bend your knee while strengthening your quadriceps. When using weight-lifting equipment, be sure to have someone explain the proper way to use the machines before you start. Remember to limit the bend of your knee to a 30-degree angle at first. When your knee is bent past this point, your kneecap will have more contact with the thighbone, causing more pressure, pain, and possible cartilage damage. Do only "closed-chain exercises," those in which the sole of your foot is pushing against something, such as quarter squats and leg presses. Using your thigh muscles, extend your leg slowly from 30 degrees to 0 degrees (straight leg) and back again, also slowly. Do 8 to 12 repetitions, 3 times a day. Increase the weight only as you become stronger. You can do the same exercise by standing on a step on the leg you want to exercise and letting your other leg hang down off the step. Slowly bend your knee so the foot hanging down moves down toward the floor, then slowly straighten your knee again. See the pictures below.



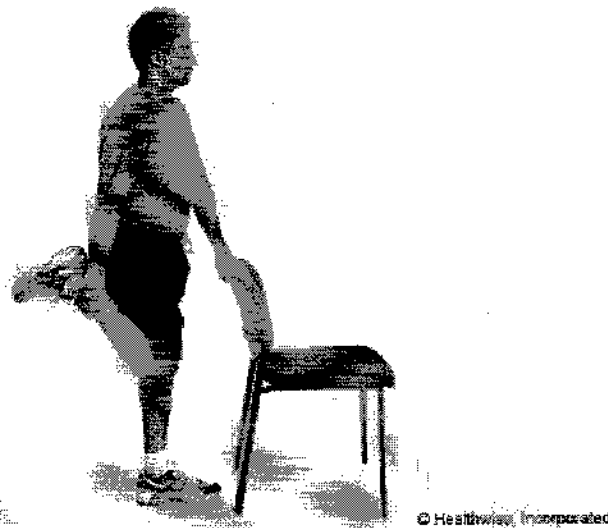
Hip strengthening. The muscles on the outside of your hip lift your leg out to the side, but they also help stabilize your knee. To strengthen these muscles, stand on the leg you want to exercise and raise your other foot slightly off the floor. Hold on to a chair or counter if you feel unsteady. Keeping your hips level, slowly bend the knee of the leg you are standing on, hold 5 seconds, then straighten your knee. Do 8 to 12 repetitions, 3 times a day. See the picture below.



Flexibility exercises

Tight muscles, tendons, and ligaments can be one cause of patellar tracking disorder. Tightness in these structures keeps the patella from moving normally as you bend and straighten your knee, or can keep the patella pressed too tightly against your thighbone.

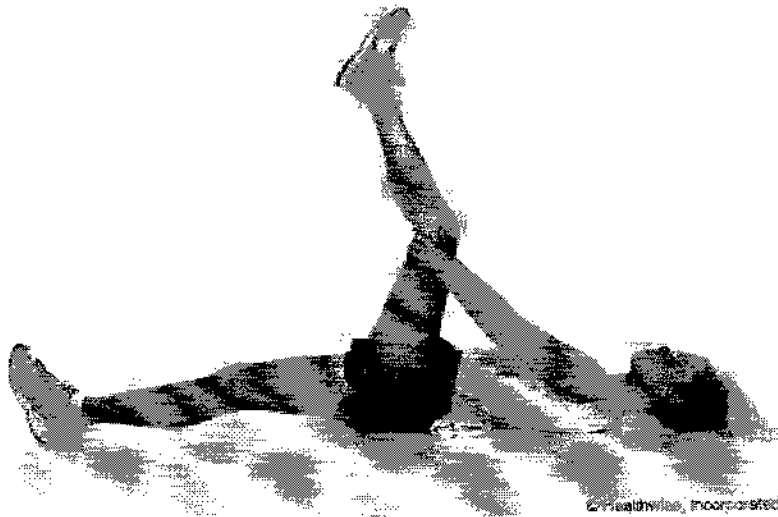
Quadriceps stretch. To stretch the whole group of quadriceps muscles, your hip has to be straight while you stretch. If you are steady on your feet, stand holding a chair, counter, or wall. Bend the knee of the leg you want to stretch and grab the front of your foot with the hand on the same side (for example, if you're stretching the right leg, use the right hand). Keeping your knees next to each other, pull your foot toward your buttocks until you feel a gentle stretch across the front of your hip and down the front of your thigh. Your knee should be pointed directly to the ground, and not out to the side. Hold the stretch for at least 15 to 30 seconds. Repeat 2 to 4 times. You can also lie on your stomach or your side to do this exercise. See the pictures below.



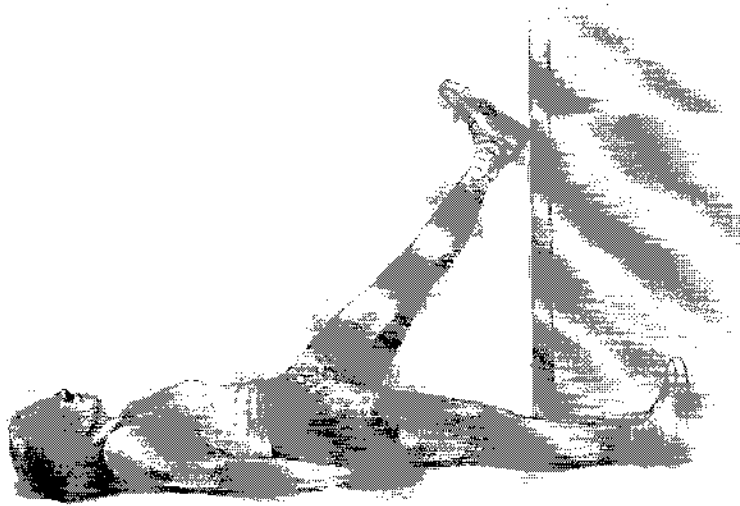


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Hamstring stretch. Your hamstrings are at the back of your thigh. To stretch your hamstrings, lie on the floor on your back and bend the leg you want to stretch. Use both hands to grasp your leg behind your thigh. Slowly straighten your knee to feel a gentle stretch at the back of your leg. Another way to do this exercise is to lie on the floor near a doorway, with your buttocks close to the wall. Let the leg you are not stretching extend through the doorway. Put the leg you want to stretch up on the wall and straighten your knee to feel a gentle stretch at the back of your leg. You can also do this exercise standing up if you are steady on your feet. Stand and lift the leg you want to stretch, then hold it with both hands just above your knee. Your foot will be hanging down. Extend your knee to lift your foot until you feel a gentle stretch behind your knee. Hold the stretch for at least 15 to 30 seconds. Repeat 2 to 4 times. See the pictures below.



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Hip rotator stretch. Lie on your back with both knees bent and your feet on the floor. Put the ankle of the leg you are going to stretch on your opposite thigh near your knee. Push gently on the knee of the leg you are stretching until you feel a gentle stretch around your hip. Hold the stretch for at least 15 to 30 seconds. Repeat 2 to 4 times. See the picture below.



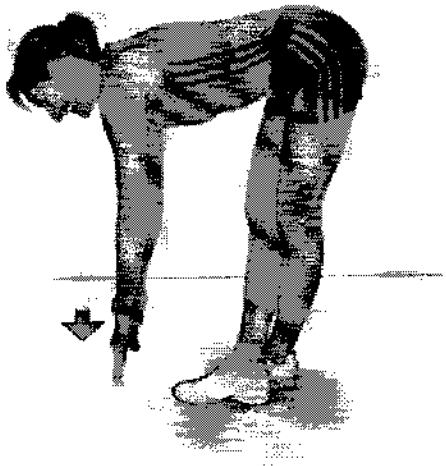
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Iliotibial band and buttock stretch. Sit on the floor with your legs out in front of you. Bend the knee of the leg you want to stretch and put that foot on the floor on the outside of the opposite leg. (Your legs will be crossed.) Twist your shoulders toward your bent leg and put your opposite elbow on that knee. Push your arm against your knee to feel a gentle stretch at the back of your buttocks and around your hip. Hold the stretch for at least 15 to 30 seconds. Repeat 2 to 4 times. See the picture below.



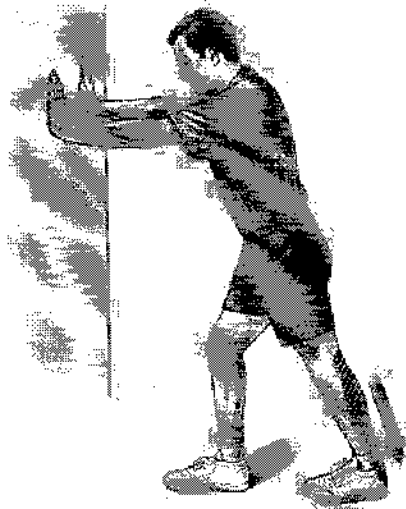
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Iliotibial band stretch. The iliotibial band runs down the outside of your leg and helps stabilize the patella. If it is tight, it can pull the patella toward the outside of your leg. To stretch it, stand with your legs crossed over one another and your feet side by side. The leg you want to stretch should be in back. Bend over and stretch toward your toes until you feel a gentle stretch in the back and outside of your leg. Hold the stretch for at least 15 to 30 seconds. Repeat 2 to 4 times. See the picture below.



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Calf stretch. Stand facing a wall with your hands on the wall at about eye level. Put the leg you want to stretch about a step behind your other leg. Keeping your back heel on the floor, bend your front knee until you feel a stretch in the back leg. Hold the stretch for at least 15 to 30 seconds. Repeat 2 to 4 times. See the picture below.



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Test Your Knowledge

The first phase of strengthening your quadriceps should involve using weight-lifting equipment and bending your knee through a 30-degree angle.

> True

> False

Stretching your hip can help ease a patellar tracking disorder.

> True

> False

This answer is incorrect.

After you have adequately rested your knee and symptoms resolve, the first phase of strengthening your quadriceps focuses on isometric exercise.



Where can I learn more about exercises to treat patellar tracking disorder?

For more information about exercises to treat patellar tracking disorder, talk to:

Your doctor.

A physical therapist.

An occupational therapist for job-related activities.

Citations

1. LaBotz M (2004). Patellofemoral syndrome. Physician and Sportsmedicine. Available online: <http://www.physsportsmed.com/issues/2004/0704/labotz.htm>.

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