



# Patellofemoral Pain Syndrome (Runner's Knee)

## What is patellofemoral pain syndrome?

Patellofemoral pain is a common knee problem. People with this condition feel pain under and around the kneecap. The patellofemoral joint is made of the patella (kneecap), femur (thigh bone), and soft tissue supporting structures (patellar ligaments, bursae and tendons). The pain usually comes from these supporting structures.

## How does it occur?

For most people with patellofemoral pain syndrome there are a collection of factors that cause the pain. Anything that increases the strain on the soft tissue supporting structures around the kneecap can lead to a problem with how the patella moves through its groove in the thigh bone as you bend and straighten the knee. Even though it is sometimes called Runner's knee, patellofemoral pain syndrome can also affect people who do not play sports.

Patellofemoral pain syndrome can result from direct trauma such as falling onto the kneecap or hitting the knee on the dashboard in a car accident. It most commonly occurs from overuse of the knee in sports or activities that involve intense and repetitive running and jumping. Activities of daily living such as prolonged sitting or standing and going up and down steps create extra pressure between the patella and the femur causing more stress and irritation. Some variants of normal hip, knee, and foot alignment can put additional strain on the patellofemoral joint and supporting structures. People who are "flat-footed," "knock-kneed," or "pigeon-toed" tend to have higher rates of patellofemoral pain syndrome. Weak hip and thigh muscles are an important cause of patellofemoral pain. These muscles support the patella. When they are weak, the patella will not glide smoothly through its groove. This increases the strain on the patella's supporting structures which causes pain. A tight IT band (a tendon that runs along the outside of your thigh from your hip to your shin bone) is another risk factor for patellofemoral pain, since it also helps to control the movement of the patella in its groove. Finally, tight hamstrings are a frequent cause of patellofemoral pain, especially in growing bodies. Since muscles grow faster than bones, it is common for larger muscles to become relatively tight during growth spurts. Tight hamstrings increase the pressure behind the kneecap, which can lead to pain.

## What are the symptoms?

The most common symptoms are pain during and/or after activity and pain or stiffness after prolonged sitting or standing. There may also be a grinding or popping feeling under the kneecap, and some people may experience mild swelling. The pain is usually dull and achy, and may shift from one side of the kneecap to the other. People may have pain in both knees or only in one knee. The pain is usually worse when kneeling, walking downhill, or going up and down stairs.

## How is it diagnosed?

Your doctor will review your symptoms and examine your knee. X-rays, MRIs, and other imaging studies are not valuable in diagnosing patellofemoral syndrome, but may be helpful to rule out other sources of knee pain.



### **How is it treated?**

Treatment includes temporarily reducing irritating activities until the pain is better controlled. For example, you might want to bike or swim instead of run. The mainstay of treatment is a customized physical therapy program to strengthen and stretch the hip and thigh muscles so that they can help the patella move smoothly through its groove. Ice often helps to reduce the pain. Ice should be applied for no more than 15 minutes at a time, and can be used as often as every hour. Anti-inflammatory medications, such as ibuprofen are typically not very helpful except when there is swelling. Your doctor may recommend shoe inserts if you have flat feet that are contributing to the knee pain. A patellofemoral brace can provide support to the patella, and may reduce pain during activity.

### **When can I return to my sport or activity?**

The goal of treatment is to return to your sport or activity as soon as it is safely possible. Everyone recovers from injury at a different rate. Return to your sport or activity will be determined by how soon your knee recovers, not by how many days or weeks it has been since the pain started. In general, the longer you have symptoms before you start treatment, the longer it will take to get better.

- You may begin to return safely to your activity when each of the following is true:
- You can fully straighten and bend your knee without pain
- Swelling is resolved
- Your knee and leg have normal strength and flexibility
- You are able to walk and perform daily activities without pain.
- You are able to jog straight without limping and without pain.
- 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?**

- Maintain strong and flexible thigh and hip muscles.
- Make sure you wear shoes that fit well, have good support, and are appropriate for the activity.
- Begin any new activity slowly and increase the intensity, duration, and frequency gradually. (Runners should increase their mileage by no more than 10% per week).
- Do not play through significant knee pain. If pain persists despite rest for a few days, see your physician.