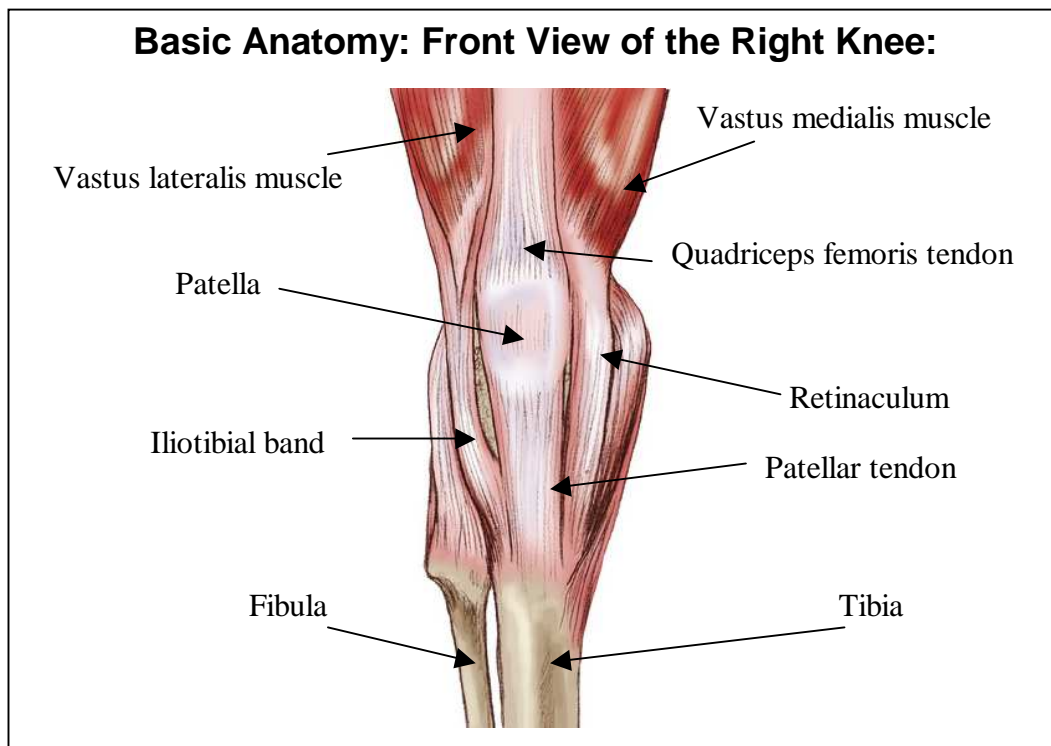


Patellofemoral Pain Syndrome: “Runner’s Knee”

Patellofemoral pain syndrome is one of the most common injuries in runners and is therefore often referred to as “runner’s knee.” It is a condition which involves the femur (the anatomical term for the thigh bone), the patella (the knee cap), its retinaculum, and the quadriceps femoris muscle. The retinaculum is the surrounding connective tissue that holds the patella in place. The quadriceps femoris muscle is at the front of the thigh and has a tendon which attaches to the top of the patella. The quadriceps femoris is named because of its four parts. When these contract it pulls on the patella, which pulls on the patellar tendon. This tendon connects the tibia to the quadriceps femoris, which straightens the knee by extending the leg. Another supporting structure is the iliotibial band (ITB), which supports the lateral aspect of the knee. The ITB has fibers that attach to the lateral side of the patella.

The purpose of the patella is to enhance the mechanics of the knee by lengthening the moment arm of the quadriceps femoris muscle. This in a sense provides leverage for extending the leg, and thus reduces compression inside the joint when the muscle is active. The patella must endure large loads ranging from about 1/2 to 1/3 of a person’s body weight during walking to seven times body weight during squatting.



How does patellofemoral pain syndrome occur?

Patellofemoral pain syndrome often occurs from alterations of the forces of the patella against the femur and the adjacent tissues when the knee extends and flexes. This can be caused by either the connective tissue such as the retinaculum, or by the pull of the different parts of the quadriceps femoris muscle. If the lateral portion (called the “vastus lateralis”) of the quadriceps femoris is stronger than the medial portion (“vastus medialis”), or the vastus medialis is dysfunctional, then the patella does not track properly up-and-down over the end of the femur. This causes more wear-and-tear and thus pain.

Risk factors associated with patellofemoral pain syndrome are trauma (including previous dislocation of the patella or surgery), overuse (eg. sudden increase in running mileage), a tight or loose retinaculum, poor quadriceps femoris flexibility, muscle dysfunction, and improper footwear. Any combination can contribute to the injury.

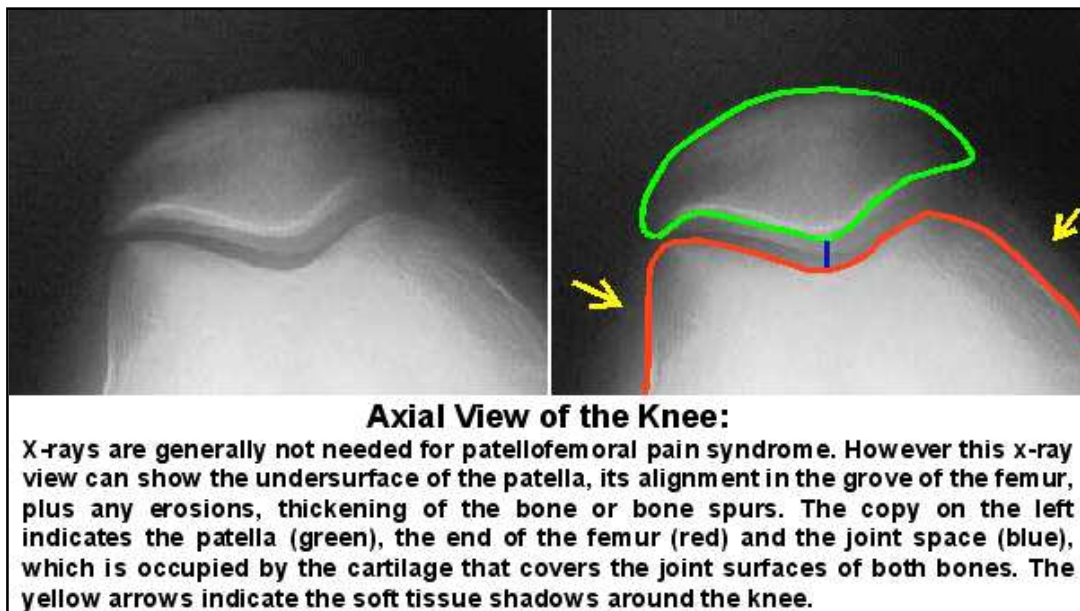
What are the symptoms?

Usually there is pain and/or stiffness under or around the patella. This may occur to both knees simultaneously, and often occurs gradually over time. Pain can be worsened by activities, especially climbing, squatting or running, but can also be worse after prolonged periods of sitting with knees bent. A feeling of giving way can occur which is caused by the inhibition of muscle contraction in response to pain.

A popping sensation may occur in some cases, but the knee usually does not swell or lock with patellofemoral pain syndrome. These symptoms can be an indication of a different knee injury.

Are special tests (like X-rays or MRI) needed?

Imaging tests such as X-ray and MRI are generally not needed for this injury. Only in certain cases when other conditions are suspected, such as arthritis, or if the response to treatment does not go as anticipated.



How is patellofemoral pain syndrome treated?

First an examination with orthopedic tests needs to be done to diagnose the condition and rule out other causes of pain. Non-surgical treatment is usually successful if all the causative factors are addressed, for example correcting a runner's training schedule. A proper examination also assesses the biomechanics of the knee, leg and foot so that a customized treatment can target any of the tight, weak, or imbalanced structures and mal-alignments. Many therapies have been described in the scientific literature including braces, orthotics, taping, manual therapy and rehabilitation exercises. These have varying degrees of scientific evidence that support or refute their effectiveness. The best exercise program usually includes strengthening the oblique fibres of the vastus medialis ("VMO"). Surgery is generally considered if pain persists despite 6-12 months of treatment and other causes of pain are ruled out.

Disclaimer: The information is provided for general knowledge only. As each person is different and other conditions cause knee pain, this information may not apply to you. If you are seeking information, advice or treatment please contact the clinic for an appointment.