



## PATELLOFEMORAL PAIN

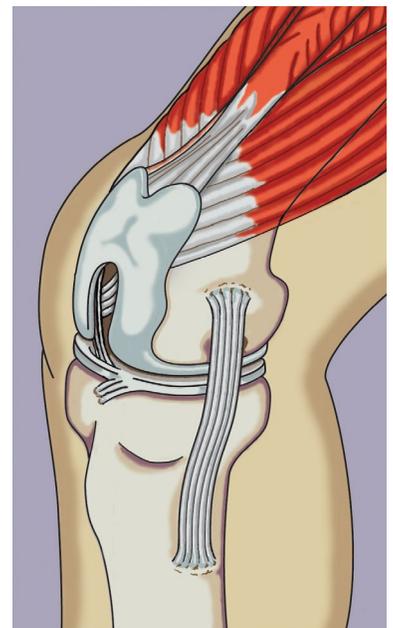
**P**ain around the front of the knee is often referred to as patellofemoral pain. This pain may be caused by soft cartilage under the kneecap (patella), referred pain from another area such as the back or hip, or soft tissues around the front of the knee.

In athletes, soft tissue pain in the retinaculum (tendon tissue) of the anterior knee (front part) is fairly common. This may come from strain of the tendon—which connects the kneecap to the lower leg bone (patellar tendon) or upper leg bone (quadriceps tendon)—or the retinaculum which supports the kneecap on both the inner and outer sides of the knee.

Some patellofemoral pain is a result of the kneecap being abnormally aligned. If the patella is not correctly aligned, it may come under excessive stress, particularly with vigorous activities. This can also cause excessive wear on the cartilage of the kneecap, which can result in chondromalacia, a condition in which the cartilage softens and may cause a painful sensation in the underlying bone or irritation of the synovium (joint lining).

### Controlling or Preventing Patellofemoral Pain

Good general conditioning is important. Stretching, particularly in the prone position, will keep the supporting structures around the front of the knee flexible and less likely to be irritated with exercise. Proper training, without sudden increases of stress to the front of the knee, will help avoid pain. Weight reduction and activity modification may be necessary in some people.



## PATELLOFEMORAL PAIN



### Treatment of Patellofemoral Pain

Treatment depends on the specific problem causing the pain. If the soft tissues (retinaculum, tendon, or muscle) are the source of the pain, then stretching can be very helpful to make the support structures more resilient and flexible. One simple stretch for the quadriceps tendon is to lie prone, grab the ankle of the affected leg with one hand and gently pull the heel towards the buttock to stretch the front of the knee. Hamstring stretching (the muscle on the back of the thigh) can also be very helpful to reduce stress on the patellofemoral joint. It is helpful to warm up before stretching, with light activity such as walking or doing calisthenics for several minutes. Hip strengthening exercises have also been shown to reduce patellofemoral pain when done in addition to a stretching program.

Other treatments may involve exercises to build the quadriceps muscle, taping the patella to help with alignment, or using a specially fitted brace which provides support specific to the problem. Using ice and non-steroidal anti-inflammatory medications can also be helpful. It is often necessary to temporarily modify physical activities until the pain decreases.

In more extreme situations, more invasive treatments may be needed. Injection therapy can provide temporary relief of pain. Corticosteroid injections can relieve the inflammation inside the knee, and allow for improved pain relief during a rehabilitation exercise program of stretching and strengthening. Sometimes a specific surgical procedure may be needed to help relieve the pain. If the cartilage under the kneecap is fragmented and causing mechanical symptoms and swelling, arthroscopic removal of the fragments may be helpful. If the patella is badly aligned, however, a surgical procedure may be needed to place the kneecap back into proper alignment, thereby reducing abnormal pressures on the cartilage and supporting structures around the front of the knee.

In some people, particularly those who have had previous knee surgery, there may be a specific painful area in the soft tissue around the patella which may require resection (removal).

### Expert Consultant

Christopher Tucker, MD