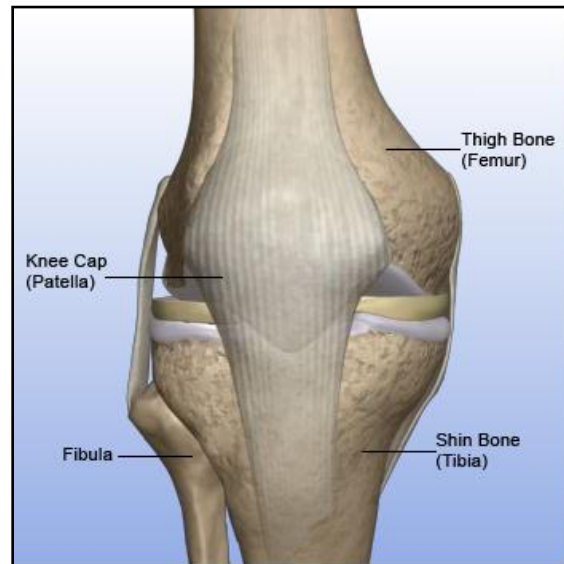


## Patellofemoral Pain

### What is patellofemoral pain?

Patellofemoral pain, also called PF pain or anterior knee pain, is pain in or around the kneecap. The articular cartilage covering the surfaces of the bones in the PF compartment may or may not be damaged. PF pain is very common but the exact cause of the pain is multi-factorial, and it is necessary to do a detailed search to determine the specific cause or causes of pain. Common causes of PF compartment pain are overuse, injury, excess weight, arthritis, and a kneecap that is not properly aligned.



### Is surgery the only option?

No. Surgery is the last option for PF pain. The vast majority of PF pain (over 95%) responds to physical therapy with an exercise and stretching program. Anti-inflammatory medication, rest and activity modification may be all that is needed. In some cases, the most common reason patients do not respond to this nonoperative treatment is failure to use the most current therapy principles designed to help with PF pain.

Non-surgical treatment of PF pain generally starts with the history and physical examination. The hip and feet contribute to balance your PF joint, so an appraisal by your physician, surgeon or physical therapist of these areas is essential in addition to a detailed examination of your knee. Your back can refer pain to the PF area also. How you stand and walk affects your PF function. Even without seeing a doctor, you can try off the shelf orthotics and strengthening of muscles around your knees and hips. Try jumping rope while looking in a mirror, concentrating on keeping your knee caps pointed straight forward. Off the shelf knee sleeves with a hole cut for the knee cap can be helpful. General physical conditioning and weight loss are often helpful. Do not do any exercise or treatment that causes discomfort unless under the care of a skilled therapist.

Weight loss is essential in the treatment of PF pain if you are overweight. Most surgeons will be reluctant to suggest surgery for a painful knee until weight reduction has been achieved. Failure and complications of PF surgery is more common in patients who are overweight. Recovery without surgery is common after weight loss. The goal should be restoration of normal body weight before considering surgery in most cases.

## **What physical therapy techniques help PF pain?**

When choosing a physical therapist, you should seek one who employs techniques that include core lower body strengthening, emphasizing hip and pelvic muscular strength, and lower extremity rotational control. The therapist should also include traditional quadriceps strengthening and footwear/orthotics recommendations (while foot orthotics may be important, they are no longer the main focus of rehabilitation). New design PF braces and taping methods are frequently helpful, particularly in athletes.

## **When is it time to consider surgery as an option?**

Once a therapist, who is skilled at rehabilitation of the PF joint, feels further therapy will not lead to improved comfort and function, then surgical options may be discussed, when quality of life is substantially impaired.

## **How are PF compartment problems confirmed?**

Problems outside the PF joint can cause PF pain, such as referred back pain, hip arthritis or atypical nerve pain. Such referred pain is easily missed. Your physician or orthopedic surgeon may use diagnostic testing such as MRI or CT scans to examine the true source of the pain. Undoubtedly, a thorough physical examination, in which the surgeon carefully evaluates your knee, hip and back, is important. With other sources of pain ruled out, your surgeon will focus on the limb, knee, and PF compartment as each part affects other parts (for example, knock-knee alignment, abnormal hip rotation or flat feet can contribute to PF pain). Once other pain sources have been managed, and the PF compartment is confirmed as the primary source of pain, the goal should be to plan a comprehensive surgical treatment program. In some instances, this may require more than one procedure..

## **Will all patients that have PF pain need to have multiple surgeries?**

The surgery a patient requires to deal with PF pain depends on several factors. Remember that most patients with PF pain do not need surgery. Sometimes surgery may be as simple as releasing or removing a small, painful band of tissue with an arthroscope, or open. Since PF pain is caused by multiple factors, and each patient's situation is unique, individual surgical needs vary. Your surgeon should clarify the overall approach and reason for each surgery. Do not hesitate to ask about the specific mechanical reason for a recommended surgery.

## **How do surgeons categorize treatment needs?**

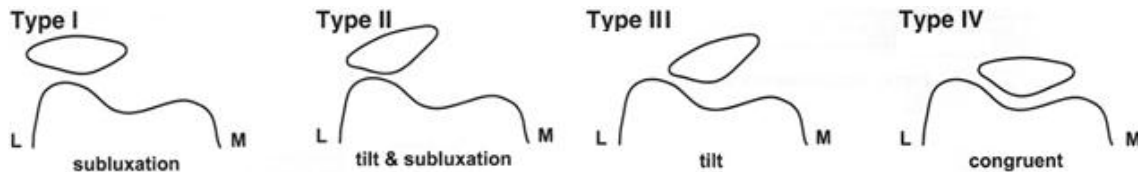
PF treatment needs to address each component of your pain. With PF problems, most patients fall into one of three categories:

1. Instability without pain
2. Pain without instability
3. Pain and instability

Instability without pain will be discussed in a separate document.

## What does pain without instability mean?

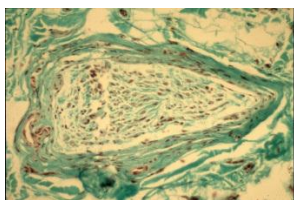
Pain without instability means that you feel pain in the PF compartment, but your patella or kneecap appears and feels stable (stays in place). Some people even have “malalignment” as depicted in Types I-III malalignment, but feel stable. Type IV shows no evidence of malalignment.



- **What causes PF pain without instability?**

A common cause of PF pain without instability is a lack of core muscle control and **overuse** of the knee. It is important to recognize that **the retinacular support structure around the patella and the synovial lining in the joint are potential sources of pain as well as bone underlying defective cartilage of the PF joint.** The following picture shows an injured microscopic nerve in the lateral retinaculum of a patient with a chronically tight, tilted patella

Other possible causes of pain are: **patellar tilt**, which is a change in rotation of the kneecap, **patellar subluxation**, which is when the kneecap is being pulled outside of the groove due to malalignment, or a combination of **tilt plus subluxation**. For each of these subsets, the support structure (retinaculum) around the patella may become chronically strained and painful, sometimes exhibiting actual small nerve injury under a microscope.



Nonetheless, having an abnormality of patella tracking mechanics does not mean that you will have pain, and having pain does not mean that you have an alignment problem.

PF chondrosis may occur related to injury or abnormal pressures on cartilage from malalignment (abnormal patella tracking). Softening of the lower end (distal pole) of the patella related to subtle tracking abnormalities can cause disabling pain with or without malalignment.

Some pain problems may be treated by a simple **arthroscopic** removal of painful damaged or inflamed tissue (chondroplasty or synovectomy may be all that is needed to control some symptoms). In some patients, painful tissue around the joint may be released, denervated (usually by cauterizing the sensory nerves to the painful part of the PF joint) or removed in a relatively minor procedure to give pain relief. A few patients require **cartilage unloading by tibial tubercle transfer** or a **cartilage restoration** procedure.