

# Patellar Instability

When everything is in the groove, things will run smoothly. With your knee, you definitely need everything working together to function properly. As long as the patella is nestled securely in the knee groove, you will be able to run, walk, stand, sit and move around with ease. When the kneecap moves from this groove, problems and a great deal of pain are often the direct result.

The kneecap (patella) joins the muscles in the shinbone to the front of the thigh. As you straighten or bend your leg, the patella will be pulled down and up. The femur has a v-shaped notch along the end that accommodates movement in the patella. In normal knees, the patella fits securely in that groove. If the groove becomes shallow or uneven, the patella could end up sliding off, which results in a dislocated patella. Sharp blows to the patella can also cause it to pop from normal position.

However, the thing to remember is that patellar instability is actually a chronic problem. It is very difficult to manage/treat. Once you have subluxed or dislocated your patella, you will be prone to instability and hence the odds of another subluxation increase significantly. This is because the soft tissues around the patella have been stretched or torn, so they don't hold the patella down to the knee as well.

## Patellar Instability Anatomy

The kneecap is known as the patella, meaning "little pan" in Greek. It is a sesamoid bone meaning that muscles attach to the bone, and it is the largest sesamoid in the body. Babies are born with soft cartilage which grows into a patella around three years old. There are two facets (surfaces) under the patella that articulate with the knee joint. There is cartilage covering the surfaces of these facets, and this joint is known as the patella-femoral joint. This is the joint that may become dislocated as the patella moves out of alignment with the knee.

Surrounding the patella is the retinaculum, a sheath that holds the patella in place and allows the quadricep muscle group to blend into the patella.

The unstable patella will tend to deviate laterally (to the outside of the knee). This is often attributed to weakness in the quadricep muscle on the inside, known as the VMO or medial quadricep muscles. The VMO can be specifically strengthened with the correct exercises.

## How to Treat Patellar Instability:

### 1. Reduction

When the patella has been moved from its groove, the first thing that needs to be done is to return it to its original position, which is known as reduction. At times, reduction can happen spontaneously. In other instances, the doctor might have to apply a small amount of force to the patella to get it back into position.

### 2. Exercise

In cases where the patella is only partially dislocated, you might need to use exercise to correct the problem. Exercises work to strengthen the muscles within the thigh and make sure the patella doesn't slip out of alignment.

### 3. Physical Therapy

Manual and physical therapy can be very important for strengthening the leg muscles, especially the medial quadriceps (VMO). This can help to stabilize the patella. Also looking at biomechanics of the leg can improve force distribution through the leg.

#### 4. Exercise

Cycling is often recommended as part of a physical therapy regimen. The goal is to increase flexibility and strength in the affected site. Stabilizing braces or knee supports might have to be worn until you are able to do all of those things that you once did.

#### 5. Surgical Options:

If physical therapy is unsuccessful (usually determined if the patella continues to sublux or dislocate following a rehabilitation program), patella stabilization may be considered. A lateral release is one option, where the outer part of the retinaculum is cut. This stops the patella from subluxing laterally. In addition, the tissues on the inside of the knee may be tightened, which is known as medical imbrication or sometimes called reefing. This may be done by shortening the quadricep attachment to the inside of the patella.

In some cases, ligament reconstruction must be performed. The medial patellofemoral ligament (MPFL) is torn during patella dislocations, and this may be reconstructed. This is usually done from another tendon in the body, or from that of a cadaver.

#### Tips:

- If you are overweight, losing the extra pounds can help to reduce the chance of having your patella dislocate.
- Athletes tend to be more prone to injuries to the knees because of continual impact placed on the joint. Try to limit the amount of activity you do in a single day.
- Wear a protective brace when participating in sporting activities if you are prone to patellar instability and cannot regain the strength you require in the knee.
- Make sure to warm up properly before heading out and playing sports full on.

