

Patellar Instability

What is it? Patellar Instability can be seen with dislocation, subluxation or maltracking. **Acute dislocation** is a traumatic event when the knee cap slips laterally and locks out of place. Usually this results in a trip to the ER where it is put back into place.

Subluxation of the knee cap is when the bone slips in and out of place but does not lock out. **Maltracking** is when the knee cap is not in the correct anatomical alignment causing increased wearing of one side of the knee cap.

How does it occur? Some patients have a shallow trochlear groove which allows the knee cap to slide out of position easily. Other patients have flexible tissue that can predispose them to patellar instability. Weak quadriceps muscles can also result in a knee cap that is not tracking correctly.

What are the symptoms?

Patients may have acute dislocation or subluxation episodes or they may present with anterior knee pain.

What is the treatment? After an acute episode, the patient may be initially treated with a brace and crutches, and possibly X-rays or an MRI. X-rays are useful to determine that the patella is back in the correct position. An MRI is useful to evaluate damage to the surrounding tissues and surface cartilage as a result from the chronic condition or acute event. Based on examination, history, and radiology studies benefits of surgical and non-surgical treatment can be determined.

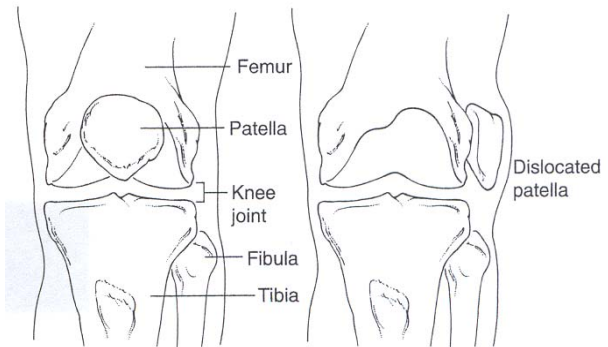


Fig 1: Normal patellar alignment and dislocated patella.

Non-surgical treatment focuses on strengthening of the quadriceps muscles. Strengthening is key in preventing further dislocation or subluxation episodes, as the quadriceps act to pull the knee cap medially. Rehabilitation can be started with a physical therapist but the patient must be prepared to continue the exercises most days of the week on their own as well.

Knee braces with a patellar buttress or taping may also help. For patients with knee pain from increased wearing or early osteoarthritis of the surface cartilage behind the knee cap viscosupplementation injections can be used. Viscosupplementation injection or lubrication injections help about 50% of patients. They increase and supplement the viscosity of the natural joint fluid allowing for a decrease in symptoms and increased tolerance of strengthening exercises. Injections are once a week for three weeks.

Surgical treatment choices for patellar instability include a knee arthroscopy, proximal patellar realignment, and distal patellar realignment. A knee arthroscopy or 'scope' could smooth rough surface cartilage or remove loose bodies.

A **proximal patellar realignment** involves tightening the tissues on the medial (inside) of the knee cap and releasing the tissues on the lateral (outside) of the knee cap. This helps the knee cap track correctly and prevents it from sliding out of position.

Distal patellar realignment involves shifting the bony insertion of the patellar tendon medially (inward) on the tibia or shin bone. This adds further support to keeping the knee cap shifted inward and in correct anatomical alignment.

It is important to remember that with any surgical intervention strengthening after the surgery plays an important role in the success of the procedure.

What are the strengthening exercises? All exercises should not cause increased pain or swelling. Work up to at least 3 sets of 20 repetitions, at least 4 days a week. See Fig 2-7.

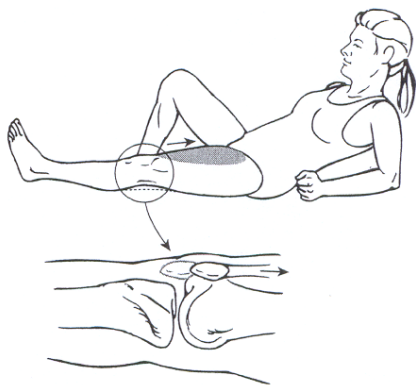


Fig 2: Quadriceps Isometrics. Lie with leg straight, tighten quad as you push the back of the knee flat on the ground. Hold and repeat.



Fig 3: Short Arc Quadriceps. Place a roll or bolster under the knee, and tighten the front of the thigh while lifting the heel off the floor. Hold and repeat.

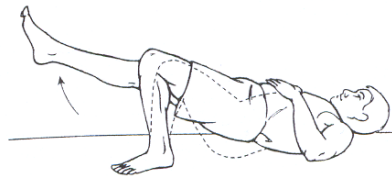


Fig 4: Hip Extension. Lie on your back with knees bent. Raise hips/buttocks off the floor, keeping the pelvis straight. Start with two feet on the floor progress to one on the floor.

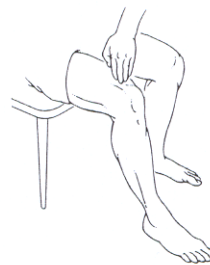


Fig 5: Isometric Quadriceps Strengthening. Sit with knee bent 75- 90 degrees. Palpate the muscle just above the kneecap on the inside of the thigh (VMO). Push foot into the floor, tightening the thigh, concentrate on the VMO. Hold and repeat.

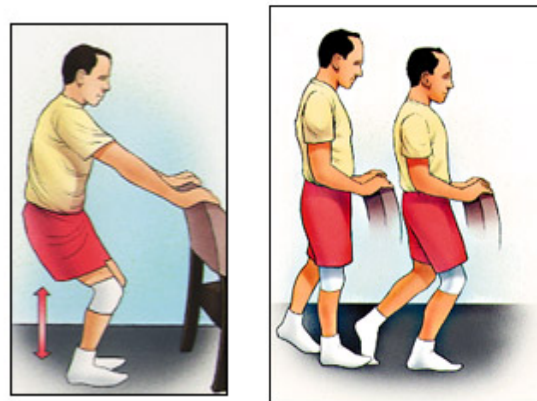


Fig 6: Standing Quarter Squats. Start standing with weight on both legs, then progress to weight on the affected leg. Do not bend more that 45 degrees.

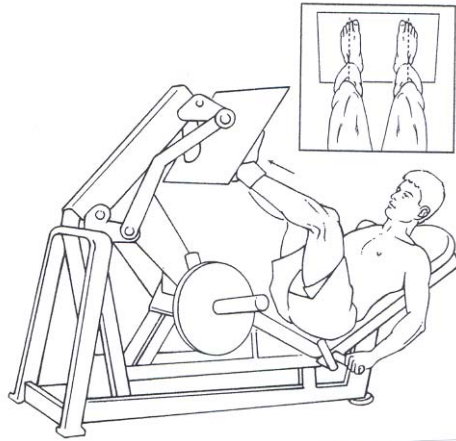


Fig 7: Leg Press. These are best done with one leg at a time always with a low weight and high repetitions. Do not bend the knees further than 45 degrees.

Stationary bike and elliptical are also recommended.