

# Patellar (Kneecap) Subluxation

## What is a subluxing patella?

A subluxing patella (kneecap) is a temporary, partial dislocation of the kneecap from its normal position in the groove in the end of the thigh bone (femur). This groove is located between two bumps at the end of the thigh bone called the femoral condyles.

## How does it occur?

This temporary dislocation of the kneecap usually happens during forced leg straightening, with the kneecap moving out of the groove to the outer side of the knee.

The cause is usually an abnormality in the way your legs are built. You may have an underdevelopment of the inner thigh muscle or an overdevelopment of the outer thigh muscle. Your kneecap may be higher in the leg than usual. You may be knock-kneed or have underdevelopment of the outer (lateral) femoral condyle.

## What are the symptoms?

You may feel the kneecap moving out of position. You may have swelling and pain behind the kneecap. You may have pain when you bend or straighten your leg.

## How is it diagnosed?

Your health care provider will ask about your symptoms and examine your knee. He or she may be able to feel the kneecap slipping to the outside as you bend and straighten your leg. An x-ray may show underdevelopment of the lateral femoral condyle.

## How is it treated?

Treatment may include:

- ▶ putting ice packs on your knee for 20 to 30 minutes every 3 to 4 hours for the first 2 or 3 days or until the pain goes away
- ▶ elevating your knee to help any swelling go away
- ▶ taking an anti-inflammatory medication
- ▶ wearing a brace prescribed by your health care provider to keep your kneecap in place

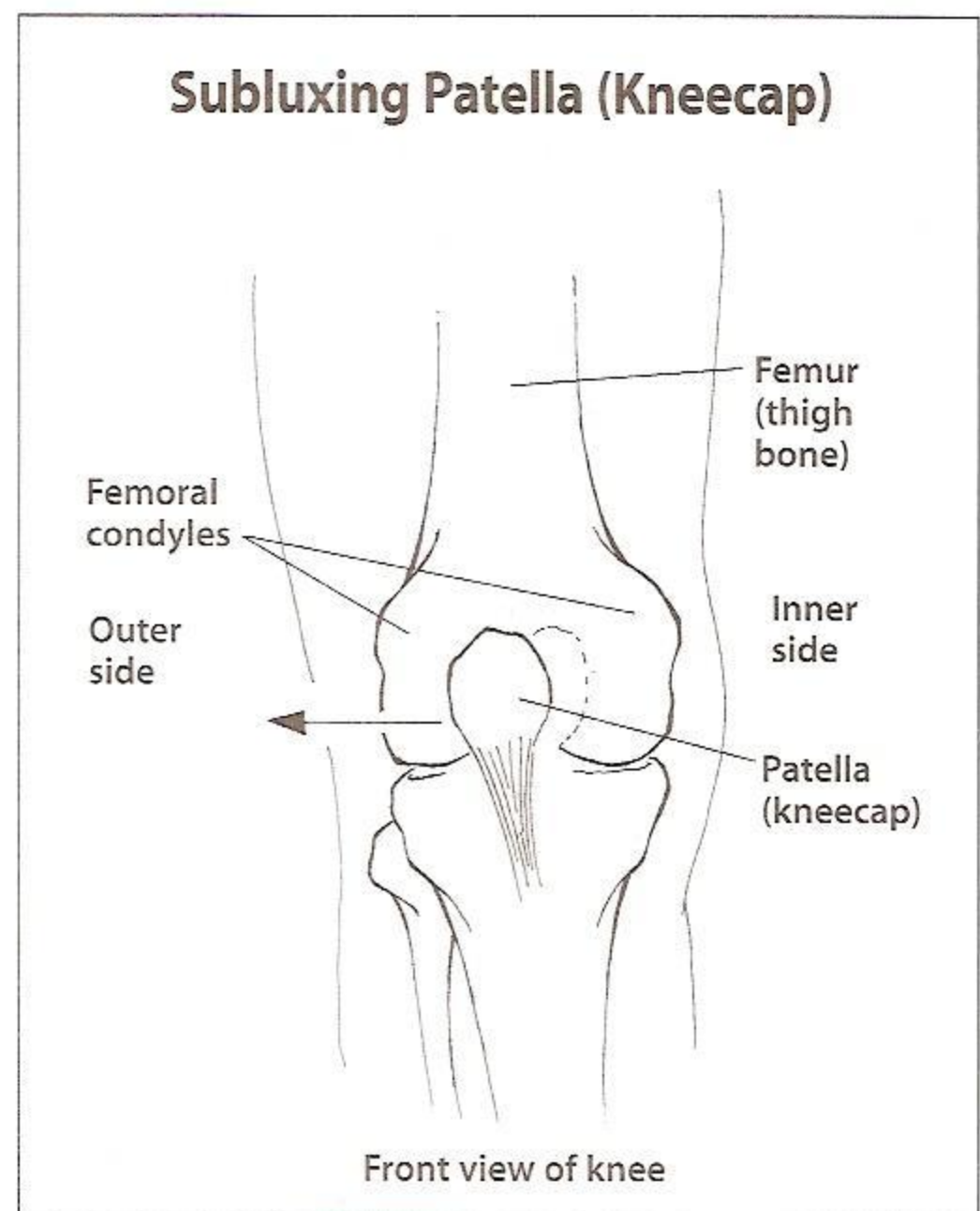
- ▶ doing exercises to strengthen the inner side of the thigh muscle (quadriceps).

Some people need surgery to keep the kneecap from subluxing.

While you are recovering from your injury you will need to change your sport or activity to one that will not make your condition worse. For example, you may need to bicycle instead of run.

## When can I return to my sport or activity?

The goal of rehabilitation is to return you to your sport or activity as soon as is safely possible. If you return too soon you may worsen your injury, which could lead to permanent damage. Everyone recovers from injury at a different rate. Return to your sport or activity will be determined by how soon your knee



recovers, not by how many days or weeks it has been since your injury occurred. In general, the longer you have symptoms before you start treatment, the longer it will take to get better.

You may safely return to your sport or activity when, starting from the top of the list and progressing to the end, each of the following is true:

- ▶ Your injured knee can be fully straightened and bent without pain.
- ▶ Your knee and leg have regained normal strength compared to the uninjured knee and leg.
- ▶ Your knee is not swollen.
- ▶ You are able to jog straight ahead without limping.
- ▶ You are able to sprint straight ahead without limping.

- ▶ You are able to do 45-degree cuts.
- ▶ You are able to do 90-degree cuts.
- ▶ You are able to do 20-yard figure-of-eight runs.
- ▶ You are able to do 10-yard figure-of-eight runs.
- ▶ You are able to jump on both legs without pain and jump on the injured leg without pain.

If you develop pain, swelling, or the feeling that your kneecap is moving out of place again, you need to contact your health care provider.

### **How can I prevent a subluxing kneecap?**

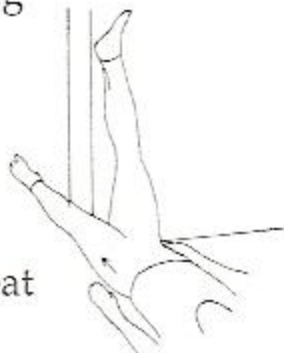
A subluxing kneecap is best prevented by keeping your thigh muscles strong, especially the group of muscles on the inner side of the thigh.

## Patellar (Kneecap) Subluxation Rehabilitation Exercises

You may do all of these exercises right away.

It is important to stretch the muscles in the back of your leg. It is also important to strengthen the muscles on the top of your thigh so your kneecap won't sublux again.

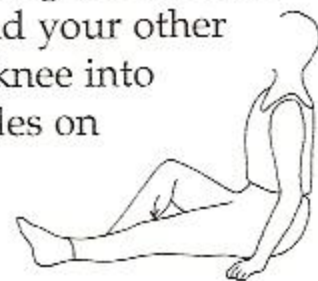
**1. HAMSTRING STRETCH ON WALL:** Lie on your back with your buttocks close to a doorway, and extend your legs straight out in front of you along the floor. Raise the injured leg and rest it against the wall next to the door frame. Your other leg should extend through the doorway. You should feel a stretch in the back of your thigh. Hold this position for 15 to 30 seconds. Repeat 3 times.



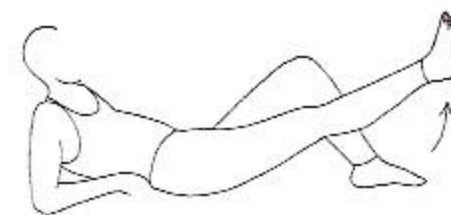
**2. STANDING CALF STRETCH:** Facing a wall, put your hands against the wall at about eye level. Keep the injured leg back, the uninjured leg forward, and the heel of your injured leg on the floor. Turn your injured foot slightly inward (as if you were pigeon-toed) as you slowly lean into the wall until you feel a stretch in the back of your calf. Hold for 15 to 30 seconds. Repeat 3 times. Do this exercise several times each day.



**3. QUADRICEPS ISOMETRICS:** Sitting on the floor with your injured leg straight and your other leg bent, press the back of your knee into the floor by tightening the muscles on the top of your thigh. Hold this position 10 seconds. Relax. Do 3 sets of 10.



**4. STRAIGHT LEG RAISE:** Lie on your back with your legs straight out in front of you. Tighten up the top of your thigh muscle on the injured leg and lift that leg about 8 inches off the floor, keeping the thigh muscle tight throughout. Slowly lower your leg back down to the floor. Do 3 sets of 10.



**5. PRONE HIP EXTENSION:** Lie on your stomach with your legs straight out behind you. Tighten up your buttocks muscles and lift one leg off the floor about 8 inches. Keep your knee straight. Hold for 5 seconds.

Then lower your leg and relax. Do 3 sets of 10.



**6. STEP-UP:** Stand with the foot of your injured leg on a support (like a block of wood) 3 to 5 inches high. Keep your other foot flat on the floor. Shift your weight onto the injured leg and straighten the knee as the uninjured leg comes off the floor. Lower your uninjured leg to the floor slowly. Do 3 sets of 10.



**7. WALL SQUAT WITH A BALL:** Stand with your back, shoulders, and head against a wall and look straight ahead. Keep your shoulders relaxed and your feet 1 foot away from the wall and a shoulder's width apart. Place a rolled up pillow or a soccer-sized ball between your thighs. Keeping your head against the wall, slowly squat while squeezing the pillow or ball at the same time. Squat down until you are almost in a sitting position. Your thighs will not yet be parallel to the floor. Hold this position for 10 seconds and then slowly slide back up the wall. Make sure you keep squeezing the pillow or ball throughout this exercise. Repeat 10 times. Build up to 3 sets of 10.



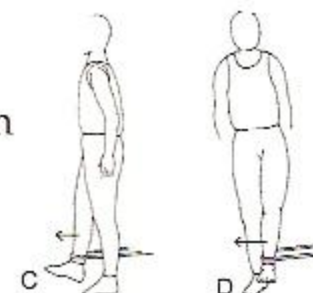
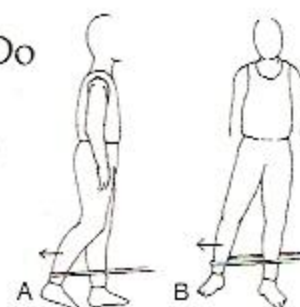
**8. KNEE STABILIZATION:** Wrap a piece of elastic tubing around the ankle of your uninjured leg. Tie the tubing to a table or other fixed object.

A. Stand on your injured leg facing the table and bend your knee slightly, keeping your thigh muscles tight. While maintaining this position, move your uninjured leg straight back behind you. Do 3 sets of 10.

B. Turn 90° so your injured leg is closest to the table. Move your uninjured leg away from your body. Do 3 sets of 10.

C. Turn 90° again so your back is to the table. Move your uninjured leg straight out in front of you. Do 3 sets of 10.

D. Turn your body 90° again so your uninjured leg is closest to the table. Move your uninjured leg across your body. Do 3 sets of 10.



Hold onto a chair if you need help balancing. This exercise can be made even more challenging by standing on a pillow while you move your uninjured leg.

**9. RESISTED KNEE EXTENSION:** Make a loop from a piece of elastic tubing by tying it around the leg of a table or other fixed object. Step into the loop so the tubing is around the back of your injured leg. Lift your uninjured foot off the ground. Hold onto a chair for balance, if needed.

A. Bend your knee about 45 degrees.

B. Slowly straighten your leg, keeping your thigh muscle tight as you do this.

Do this 10 times. Do 3 sets. An easier way to do this is to perform this exercise while standing on both legs.

