CENTRAL TEXAS PEDIATRIC ORTHOPEDICS
Sports Medicine

PATELLAR DISLOCATION AND SUBLUXATION

Description

Patellar dislocation and subluxation are injuries to the kneecap (patella) affecting the joint where it forms with the thigh bone (femur). The Patella is a V- shaped convex bone that sits within a V-shaped concave groove of the femur, known as the trochlea. Patella Dislocation is a condition in which the patella is displaced from its normal position and no longer sits in the trochlea. Patella Subluxation is a condition in which the patella is not centered within the trochlea, but the joint surfaces still touch; thus the patella is not in normal relationship to the trochlea. This tends to occur in adolescents and young adults.

Common Signs and Symptoms

- Severe pain when attempting to move the knee and a feeling of the knee giving way
- Tenderness, swelling, bruising of the knee.
- Numbness or paralysis below the dislocation from pinching, cutting, or pressure on the blood vessels or nerves (uncommon).
- Often patellar dislocation occur to the outside of the knee

Causes

This condition usually occurs without injury, although it may follow an injury to the knee. Weakness of the quadriceps muscles (which follows knee swelling or injury) results in poor tracking of the kneecap. Poor tracking also occurs in individuals with poor alignment of the whole thigh and leg. The poor tracking results in pressure being concentrated on the outer part of the kneecap (as opposed to being distributed over the whole kneecap). The retinaculum on the inner part of the knee is stretched while the retinaculum on the outer part of the knee shortens with time. The pain is worse when the knee is bent or when the quadriceps muscle is active or both (each causing force on the patella).

Risk Increases With

- Tight hamstring (back of the thigh), quadriceps (front of thigh), or calf muscles; weak quadriceps (front of the thigh) muscles
- Inadequate warm-up before practice or competition
- Sports that involve running, jumping, or squatting
- Poor alignment of the legs (knock knees, kneecaps that point toward each other when the feet are straight ahead), poorly formed trochlea (something you are born with), flat feet
- Previous injury or surgery to the knee
- Direct injury to the kneecap (falling on the kneecap)

Preventive Measures

- Appropriately warm up and stretch before practice and competition.
- Maintain appropriate conditioning:
    - Thigh, knee, and calf flexibility
    - Muscle strength and endurance
- Use arch supports (orthotics), knee pads.

Expected Outcome

Usually curable with appropriate treatment. Complete healing is quickest with rest from offending activity, although continued sports and aggravating activity does not usually lead to irreversible problems or damage.

Possible Complications

- Frequent recurrence of symptoms and disability severe enough to diminish an athlete's competitive ability
- Arthritis of the kneecap
- Kneecap dislocations
- Risks of surgery, including infection, bleeding, injury to nerves (numbness, weakness, paralysis), knee stiffness, dislocation of the kneecap, weakness, continued pain, compartment syndrome (when surgery is performed to cut the bone of the leg and move it)

General Treatment Considerations

Initial treatment consists of medications and ice to relieve pain and reduce inflammation, stretching and strengthening exercises, and modification of the activity that produces the symptoms. These may be carried out at home, although occasionally referral to a physical therapist or athletic trainer may be indicated. Icing the knee after exercise is helpful. Occasionally your physician may recommend bracing with a knee sleeve to help the kneecap track properly. Arch supports (orthotics) are helpful for those with flat feet. Surgery may be required if symptoms persist despite conservative treatment. This may be done with or without the use of arthroscopy, by cutting the retinaculum on the outer side of the knee (lateral release) with or without tightening the retinaculum on the inner side of the knee. Occasionally surgery to cut the tibial tubercle (insertion of the patellar tendon into bone) and move it may be required.

Medication

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Stronger pain relievers may be prescribed as necessary by your physician, usually only after surgery. Use only as directed and only as much as you need.
- Injections of corticosteroids may uncommonly be given to reduce inflammation.

Heat and Cold

- Cold is used to relieve pain and reduce inflammation for acute and chronic cases. Cold should be applied for 10 to 15 minutes every 2 to 3 hours for inflammation and pain and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage.
- Use heat before performing stretching and strengthening activities prescribed by your physician or physical therapist. Use a heat pack or a warm soak.

Notify Our Office If

- Symptoms get worse or do not improve in 6 to 8 weeks despite treatment
- Any of the following occur after surgery:
  - Pain, numbness, coldness, or discoloration (blue, gray, or dusky) in the foot
  - Fever, increased pain, swelling, redness, drainage, or bleeding in the surgical area
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

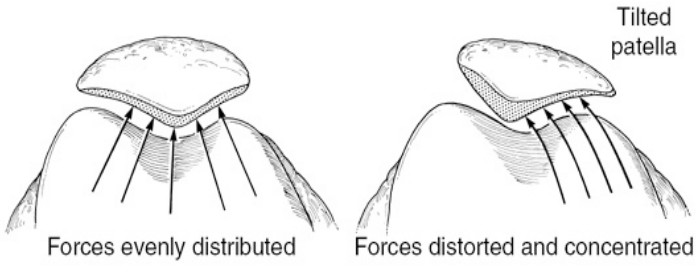


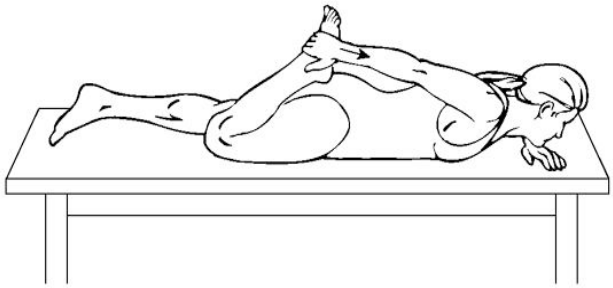
Figure 1

From Scuderi GR, McCann PD, Bruno PJ: Sports Medicine: Principles of Primary Care. St. Louis, Mosby, 1997, p. 368.

RANGE OF MOTION AND STRETCHING EXERCISES • Excessive Lateral Patellar Compression Syndrome

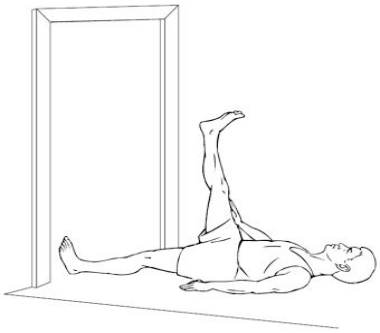
These are some of the ***initial*** exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. If any of these exercises causes pain or discomfort stop them and consult your physician, physical therapist, or athletic trainer. Please remember:

- Flexible tissue is more tolerant of the stresses placed on it during activities.
- Each stretch should be held for 20 to 30 seconds.
- A ***gentle*** stretching sensation should be felt.



STRETCH • Quadriceps, Prone

1. Lie on your stomach as shown.
2. Bend your knee, grasping your toes, foot, or ankle. If you are too "tight" to do this, loop a belt or towel around your ankle and grasp that.
3. Pull your heel toward your buttock until you feel a stretching sensation in the front of your thigh.
4. Keep your knees together.
5. Hold this position for **30** seconds.
6. Repeat exercise **2** times, **2** times per day.



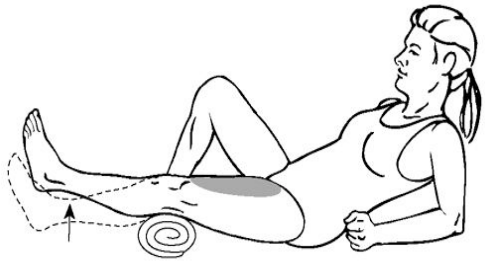
FLEXIBILITY • Hamstrings, Doorway

1. Lie on your back near the edge of a doorway as shown.
2. Place the leg you're are stretching up the wall keeping your knee straight.
3. Your buttock should be as close to the wall as possible and the other leg should be kept flat on the floor.
4. You should feel a stretch in the back of your thigh.
5. Hold this position for **30** seconds.
6. Repeat exercise **2** times, **2** times per day.

STRENGTHENING EXERCISES • Excessive Lateral Patellar Compression Syndrome

These are some of the ***initial*** exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- Strong muscles with good endurance tolerate stress better.
- Do the exercises as ***initially*** prescribed by your physician, physical therapist, or athletic trainer. Progress slowly with each exercise, gradually increasing the number of repetitions and weight used under their guidance.
- *Only do your exercises in a pain-free range of motion. If the exercises that involve bending your knees while bearing weight cause pain, stop them and consult your physician, physical therapist, or athletic trainer.*

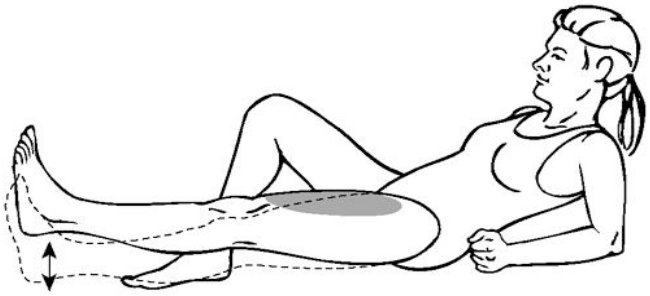


STRENGTH • Quadriceps, Short Arcs

1. Lie flat or sit with your leg straight.
2. Place a roll under your knee, allowing it to bend.
3. Tighten the muscle in the front of your knee as much as you

can, and lift your heel off the floor.

4. Hold this position for **2** seconds.
5. Repeat exercise **10** times, **2** times per day.



STRENGTH • Quadriceps, 7 Count

The quality of the muscle contraction in this exercise is what counts the most, not just the ability to lift your leg!

1. Tighten the muscle in front of your thigh as much as you can, pushing the back of your knee flat against the floor.
2. Tighten this muscle ***harder.***
3. Lift your leg/heel 4 to 6 inches off the floor.
4. Tighten this muscle ***harder again.***
5. Lower your leg/heel back to the floor. Keep the muscle in front of your thigh as tight as possible.
6. Tighten this muscle ***harder again.***
7. Relax.
8. Repeat exercise **10** times, **2** times per day.

Central
1301 Barbara Jordan Blvd.
Suite 300
Austin, TX 78723

Cedar Park
1301 Medical Pkwy.
Suite 330
Cedar Park, TX 78613

Four Points (PT only)
6911 N FM 620
Suite C200
Austin, TX 78732

Westlake (PT only)
3532 Bee Caves Rd.
Suite 110
Austin, TX 78746

South (PT only)
1807 W. Slaughter Lane
Suite 600
Austin, TX 78748

512-478-8116
512-478-9368 (fax)
www.ctpomd.com

CENTRAL TEXAS PEDIATRIC ORTHOPEDICS

Physical Therapy