

PLICA SYNDROME



■ ■ Description

The plica is a fold of joint lining (synovial tissue) that is a remnant of tissue from embryologic development. During embryologic development, bands of tissue divide the limbs into joints. These bands may persist into adulthood in up to 60% of people, although it infrequently causes symptoms. Several different band types may exist. These bands may become thickened and inflamed, causing varying symptoms.

■ ■ Common Signs and Symptoms

- Pain in the front of the knee, often toward the inside of the knee, especially with kneeling, squatting, sitting for long periods, arising from a sitting position, or walking or running up or down stairs or hills
- Catching, locking, and clicking of the knee
- Pain and tenderness under the kneecap (patella)

■ ■ Causes

Trauma to the knee, either direct or with repetitive knee bending and straightening activity, causes thickening of the plica, and it loses its elasticity (becomes less stretchy). As a result, the plica pinches on the inner knee joint (medial femoral condyle) and inner patella. The pain is felt to be due to pinching or pulling of the plica band, which has many nerve endings.

■ ■ Risk Increases With

- Sports that require repeated, forceful straightening or bending of the knee (such as kicking and jumping)
- Repeated injuries to the knee
- Sports in which the knee may receive direct injury (volleyball, soccer, football) or that require prolonged kneeling

■ ■ Preventive Measures

- Proper padding can reduce direct injury to the fat pad.
- Allow complete recovery before returning to sports.

■ ■ Expected Outcome

Usually there is complete recovery with proper treatment.

■ ■ Possible Complications

- Frequent recurrence of symptoms, resulting in chronically inflamed tissue and eventually a chronic problem
- Disability severe enough to diminish an athlete's competitive ability
- Delayed healing or resolution of symptoms, particularly if activity is resumed too soon
- Risks of surgery, including infection, bleeding, injury to nerves (numbness, weakness, paralysis), continued pain and pinching of the fat pad, and rupture of the patellar tendon

■ ■ General Treatment Considerations

Initial treatment consists of medications and ice to relieve pain and reduce inflammation, stretching and strengthening exercises (of the hamstrings and quadriceps), 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. Occasionally your physician may recommend an injection of cortisone to reduce the inflammation of the plica. Arch supports may also be recommended. Surgery is not usually necessary; it is usually reserved for cases in which symptoms persist despite conservative treatment. Surgery to remove the plica is usually performed arthroscopically on an outpatient basis (you go home the same day).

■ ■ 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.
- Topical ointments may be of benefit.

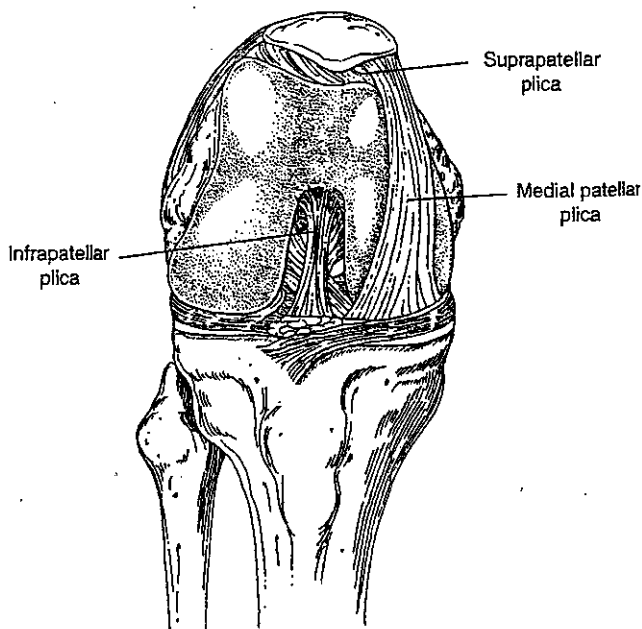


Figure 1

From Scuderi GR, McCann PD, Bruno PJ: Sports Medicine: Principles of Primary Care. St. Louis, Mosby, 1997, p. 370.

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 be given to reduce inflammation, although not usually for acute injuries.

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. Heat may be used before performing stretching and strengthening activities prescribed by your physician, physical therapist, or athletic trainer. Use a heat pack or a warm soak.

Notify Our Office If

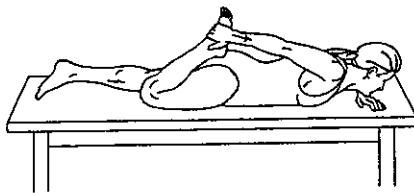
- Symptoms get worse or do not improve in 2 weeks despite treatment
- Any of the following occur after you have surgery:
 - You experience pain, numbness, or coldness in the foot and ankle
 - Blue, gray, or dusky color appears in the toenails
 - You develop increased pain, swelling, redness, drainage or bleeding in the surgical area
 - Signs of infection occur (headache, muscle aches, dizziness, or a general ill feeling with fever)
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

EXERCISES

RANGE OF MOTION AND STRETCHING EXERCISES • Plica Syndrome

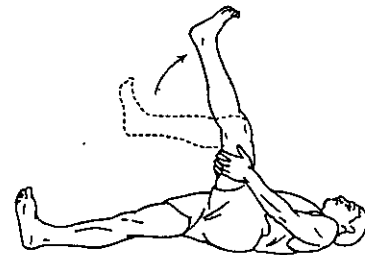
These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- 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.



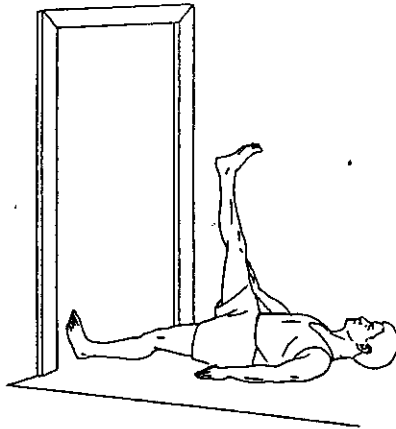
STRETCH • Quadriceps, Prone

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 _____ seconds.
6. Repeat exercise _____ times, _____ times per day.



FLEXIBILITY • Hamstrings

1. Lie on your back with your leg bent and both hands holding on to it behind the thigh as shown.
2. Your hip should be bent to *90 degrees* and the thigh pointing straight at the ceiling.
3. Straighten out your knee as far as you can. Keep your thigh pointing straight toward the ceiling.
4. Keep the other leg flat on the floor.
5. Hold this position for _____ seconds.
6. Repeat exercise _____ times, _____ times per day.



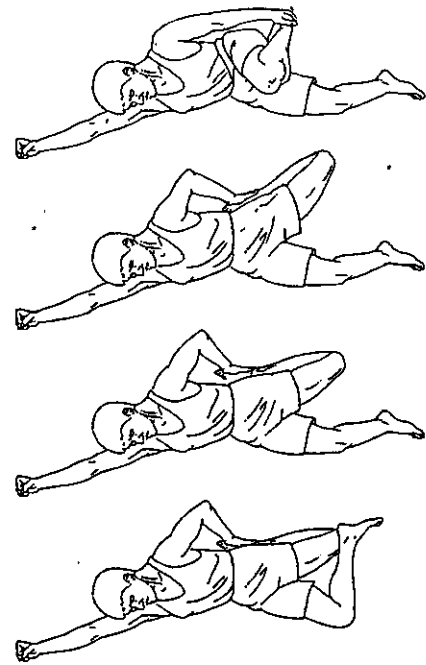
FLEXIBILITY • Hamstrings, Doorway

1. Lie on your back near the edge of a doorway as shown.
2. Place the leg your 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 _____ seconds.
6. Repeat exercise _____ times, _____ times per day.



FLEXIBILITY • Hamstrings, Ballet

1. Stand and prop the leg you are stretching on a chair, table, or other stable object.
2. Place both hands on the outside of the leg you are stretching.
3. Make sure that your hips/pelvis are also facing the leg you are stretching.
4. Slide your hands down the outside of your leg.
5. Lead with your chest/breast bone. Keep your chest upright and back straight. Do not hunch over at the shoulders. Keep your toes pointing up.
6. You should feel a stretch in the back of your thigh.
7. Hold this position for _____ seconds.
8. Repeat exercise _____ times, _____ times per day.



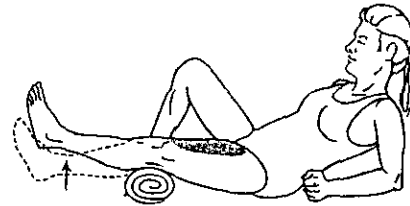
ILIOTIBIAL BAND STRETCH

1. Lie on your side as shown. The muscle/iliotibial band to be stretched should be on top.
2. With your hand, grasp your ankle and pull your heel to your buttocks and bend your hip so that your knee is pointing forward as in the top drawing.
3. Rotate your hip up so that your thigh is away from your body as shown and in line with your body. Keep your heel to your buttocks.
4. Bring the thigh back down and behind your body. Do not bend at the waist. Keep your heel pressed to your buttocks.
5. Place the heel of your opposite foot on top of your knee and pull the knee/thigh down farther. You should feel a stretch on the outside of your thigh near your kneecap.
6. Hold this position for _____ seconds.
7. Repeat exercise _____ times, _____ times per day.

> **STRENGTHENING EXERCISES** • Plica 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.

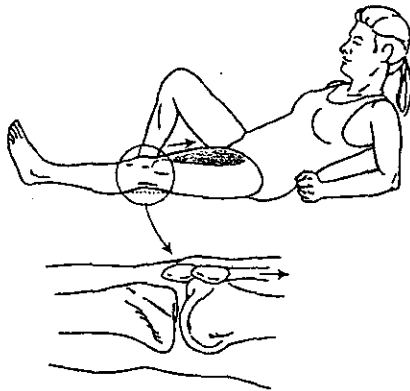


STRENGTH • Quadriceps, Short Arcs

1. Lie flat or sit with your leg straight.
2. Place a _____ inch 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 _____ seconds.
5. Repeat exercise _____ times, _____ times per day.

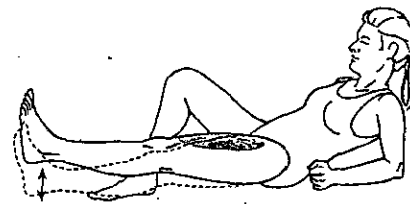
Additional Weights: OK TO USE DO NOT USE!!!

If okay'd by your physician, physical therapist, or athletic trainer, a _____ pound weight may be placed around your ankle for additional weight.



STRENGTH • Quadriceps, Isometrics

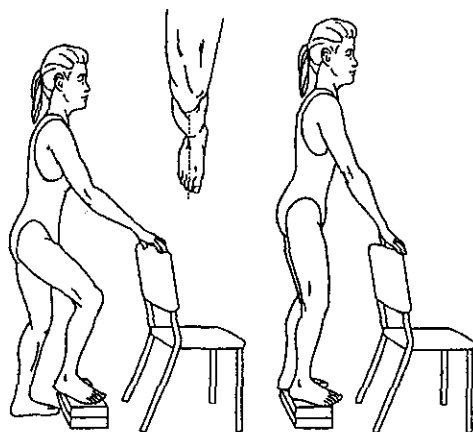
1. Lie flat or sit with your leg straight.
2. Tighten the muscle in the front of your thigh as much as you can, pushing the back of your knee flat against the floor. This will pull your kneecap up your thigh, toward your hip.
3. Hold the muscle tight for _____ seconds.
4. Repeat this exercise _____ times, _____ times per day.



STRENGTH • Quadriceps, 7 Count

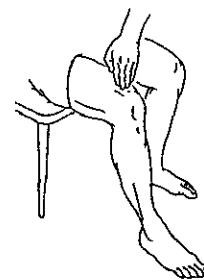
The quality of the muscle contraction in this exercise is what counts the most, not just the ability to lift your leg!

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 _____ times, _____ times per day.



STRENGTH • Quadriceps, Step-Ups

1. Use a step or books.
2. Place your foot on the step or books approximately _____ inches in height. Make sure that your kneecap is in line with the tip of your shoe or your second toe.
3. Hold on to a hand rail, chair, wall, or another object for balance if needed.
4. Slowly step up and down. Make sure that the kneecap is always in line with the tip of your shoe or your second toe. Lightly touch the heel of the opposite leg to the floor and return to the starting position.
5. Repeat exercise _____ times, _____ times per day.



STRENGTH • Isometric Quad/VMO

1. Sit in a chair with your knee bent 75 to 90 degrees as shown in the drawing.
2. With your fingertips, feel the muscle just above the kneecap on the inside half of your thigh. This is the VMO.
3. Push your foot and leg into the floor to cause the thigh muscles to tighten.
4. Concentrate on feeling the VMO tighten. This muscle is important because it helps control the position of your kneecap.
5. Tighten and hold for _____ seconds.
6. Repeat exercise _____ times, _____ times per day.