

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

## 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 the 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

### Preventative 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 the 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)

### **Medications**

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take with in 7 days before surgery), or other minor pain relievers, such as acetamino-phen, 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
- 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 physicians, physical therapist, or athletic trainer. Use a heat pack or a warm pack 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
  - Sign of infection occur (headache, muscle aches, dizziness, or a general ill feeling with fever)
  - New, unexpected symptoms develop (drugs used in treatment may produce side effects)

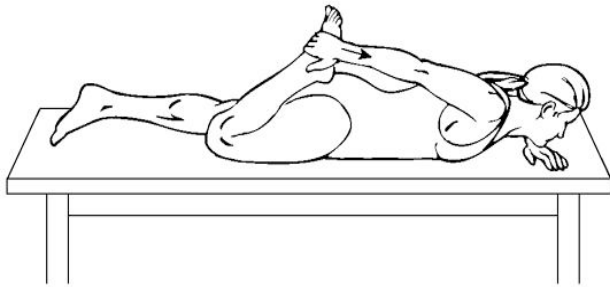
## ➤ RANGE OF MOTION AND STRETCHING EXERCISES • Excessive Lateral Patellar

### 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:

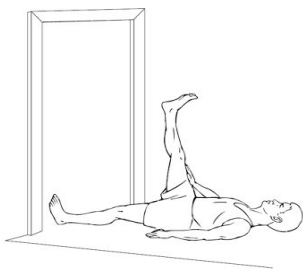
- Flexible tissue is more tolerant of the stresses placed on it during activities.
- Each stretch should be held for 20 to 30 seconds.

A *gentle* stretching sensation should be felt.



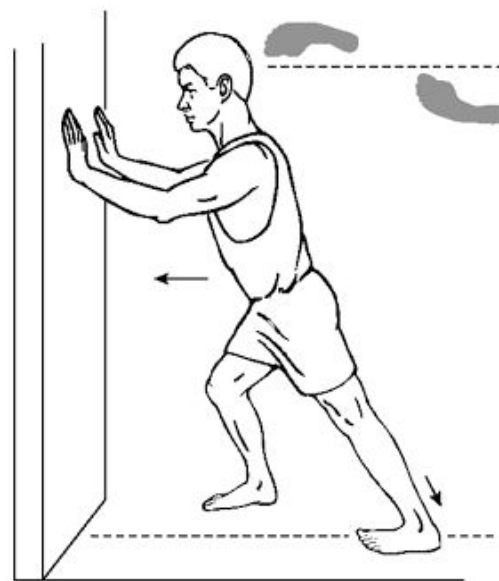
### STRETCH • Quadriceps, Prone

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 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.

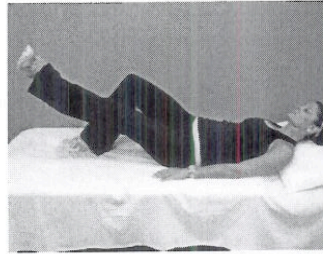
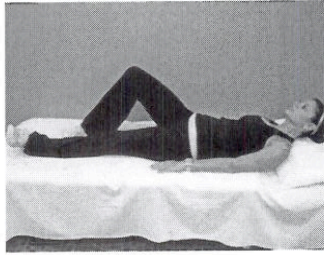


### STRETCH • Gastrocnemius

1. Stand *one* arm length from the wall as shown. Place calf muscle to be stretched behind you as shown.
2. Turn the *toes in* and *heel out* of the leg to be stretched.
3. Lean toward wall leading with your waist, allowing your arms to bend. **Keep your heel on the floor.**
4. First do this exercise with the knee straight, then bend the knee slightly. Keep your heel on the floor at all times.
5. Hold this position for 30 seconds.
6. Repeat exercise 2 times, times per day.

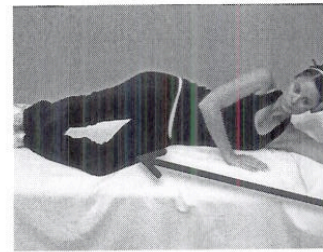
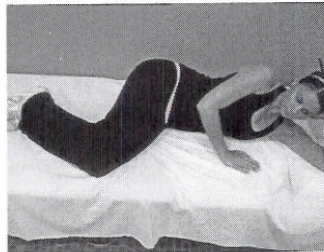
**Straight Leg Raise With Toes Turned Outward:**

Lie on your back and bend your uninjured leg with the foot supported on the ground. Keep your injured leg straight and point your toes away from you. Tighten your thigh muscle and slowly raise your injured leg 10-15 inches. Slowly return to the ground. Perform 3 sets of 10.



**Clamshells:**

Lie on your side with your injured leg on top. Position your hips so one is directly on top of the other. Do not let your top hip slide backward when performing the exercise. Bend your knees to 45 degrees. Open the legs similar to a clamshell and hold the position for 10 seconds. Repeat 10 times. **COUNT SLOWLY!**



To increase difficulty you can place a TheraBand® loop around the knees. Continue to hold for 10 seconds. Repeat 10 times.

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**

