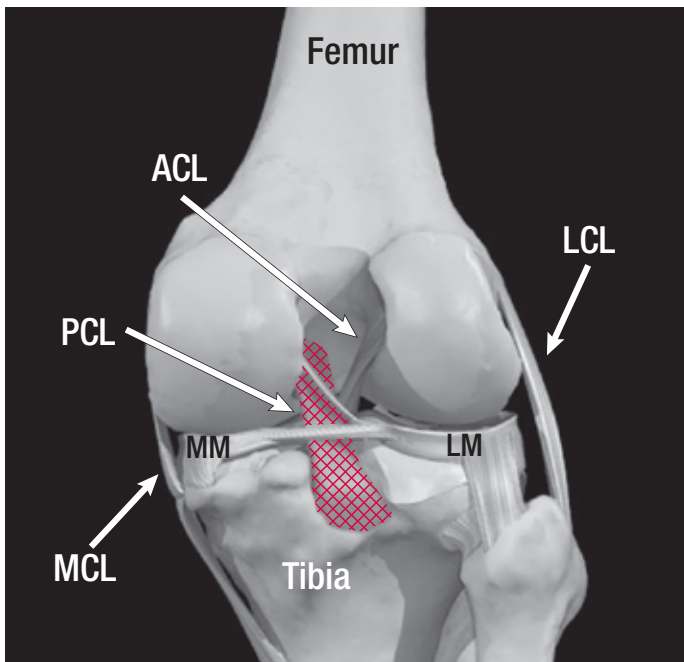


## Posterior Cruciate Ligament Ruptures



The posterior cruciate ligament (PCL) and accompanying anterior cruciate ligament (ACL), medial collateral ligament (MCL), medial meniscus (MM), lateral collateral ligament (LCL) and lateral meniscus (LM)

The posterior cruciate ligament (PCL) is one of the four major stabilizing ligaments in the knee. It is the strongest of the four. The PCL's primary functions are to prevent anterior displacement of the femur and posterior displacement of the tibia. It also works to prevent hyperflexion of the knee joint. The PCL can be injured in a number of ways if the motions mentioned above are allowed to occur.

### Causes

- Dashboard injury—A force applied to the front of a flexed knee
- Severe hyperextension of the knee
- Forced hyperflexion of the knee

Injuries to the PCL are far less common than injuries to the ACL. Because of this, treatment options and advancements for this type of injury have been slower to develop.

### Anatomy

The PCL lies deep within the knee joint between the tibia and the femur. It crosses behind the anterior cruciate ligament (ACL), which is also located in this area. The other two stabilizing ligaments, the medial collateral and lateral collateral ligaments, are located on the sides of the knee joint. The lateral meniscus and medial meniscus are two semicircular pieces of cartilage that sit between the femur and tibia. Their function is to act as shock absorbers, and to “deepen” the joint between the rounded surface of the femur and the flat surface of the tibia.

*continued*

## Symptoms

An athlete with a PCL injury experiences symptoms similar to most ligament injuries. Pain and swelling will usually resolve in 2–4 weeks if cared for appropriately. Unlike the ACL, which is inside the knee joint, the PCL is outside the joint capsule and subsequently may not fill the joint space with blood and swelling. Following the resolution of the initial symptoms, individuals may begin to notice a lack of stability in their injured knee. This most commonly occurs when the individual pivots or changes directions.

Symptoms of instability vary widely among those sustaining PCL injuries. Factors affecting knee instability usually depend on whether or not other injuries occurred. Individuals sustaining injuries to other ligaments or cartilage risk have less favorable outcomes.

## Treatment

Initial treatment is focused on relieving the swelling and pain associated with the injury. This is done with rest, ice, compression and elevation. Early immobilization may be necessary to avoid further injury.

Once the pain and swelling decrease, the second phase of treatment includes a therapy program to regain range

of motion and strength. This is a progressive program that focuses on restoring normal knee movement and continues to emphasize strength and muscular control.

Individuals who can control swelling, pain and instability of their injured knee will not need surgery. It may however be necessary for these individuals to avoid high demand activities for best results.

If instability, pain and swelling persist, surgery may be recommended. As with the ACL, the PCL is reconstructed by replacing the torn ligament with either the middle third of the patellar tendon or a portion of the hamstring tendon.

At the time of surgery, an arthroscope is used to inspect the knee joint and to repair or remove any meniscal damage. Tunnels are then made in the femur and tibia. If the patellar tendon is used, the central third of the tendon, with a portion of bone on each end, is used for the graft. The bone ends of the replacement graft are placed in the tunnels at the location of the original PCL. The bone ends are then secured with screws.

## Rehabilitation

After surgery, patients begin exercises for strength and range of motion (ROM). The rate of the rehab progression

will depend upon a variety of factors including: the extent of additional injury repairs that may be needed, other surgery performed, wound healing rate, swelling, muscle tone and ROM. A removable knee brace that locks the knee in a fully extended position is worn for 2–4 weeks.

Initial rehabilitation includes exercises such as straight leg raises, quad sets and ROM exercises. Advanced strengthening exercises such as biking and swimming usually begin at around 6–8 weeks; light jogging at 3–4 months. A full return to high demand sports such as soccer, football, basketball, skiing, etc. may take 6–9 months, depending on how quickly the rehabilitation progresses. The physician, physical therapist and/or licensed athletic trainer will supervise your rehabilitation and work with you to safely increase your activity level.

The goal of the surgery and rehabilitation is to eliminate instability of the knee, decrease the potential for cartilage injuries and safely return the individual to the highest level of activity they desire.