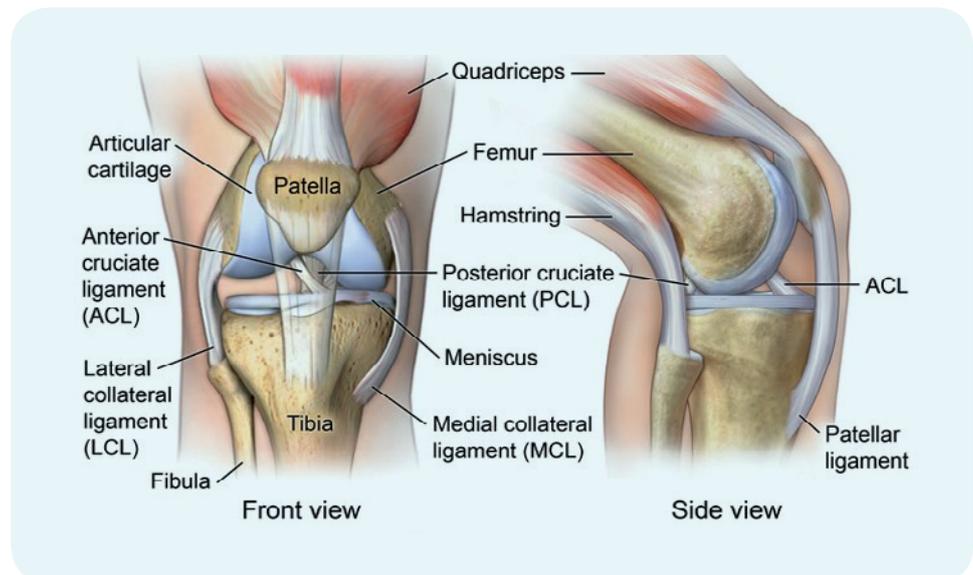


# Posterior Cruciate Ligament Injury (PCL)

## What is it?

The posterior cruciate ligament is one of four important ligaments in the knee. The ligaments act like ropes to hold the knee in place. There are two collateral ligaments, one sits on either side of the knee, while the two cruciate ligaments sit inside the knee. The posterior cruciate ligament (PCL) is important for preventing the shin sliding backwards on the thigh bone. See figure 1.



**Figure 1** The four ligaments are clearly indicated which support the knee and its subsequent movements.

## What are the symptoms?

The first sensation felt when the posterior cruciate ligament is injured is a deep pain within the knee or at the back of the knee. There may also be an audible snap, crack or tear. Depending on the severity of the injury, the knee may swell and you may have difficulty walking due to pain. Swelling may be immediate or occur over a period of hours. The knee may also feel weak and 'unstable'.

## How did I get it?

The PCL is most commonly injured when the knee is hyperextended (bent backwards). This can happen when you land from jumping with the knee straight or when a fellow participant hits the front of your knee joint. It also occurs when the knee is bent at about 90 degrees and there is a direct force applied on the top of the shin such as when landing heavily on your knees or a direct knee vs knee collision similar to that seen in the AFL when the player takes a mark. See figure 2.



**Figure 2**

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## What should I do?

To limit the severity of the symptoms it is advisable you cease your activity immediately and start initial treatment. The most important time in the treatment of any injury is the first 48 hours.

Swelling is a necessary step in the healing process however too much swelling can delay healing and cause further tissue damage. To control the amount of swelling and limit the degree of damage to the knee the RICE regime should be commenced (Rest, Ice, Compression, Elevation). This will help to reduce blood flow to the injured area, thereby reducing the extent of swelling and tissue damage.

**Rest** involves ceasing your activity or sport, and limiting the amount of weight you put through your leg. Crutches may be required if you are having difficulty walking. Ice should be applied to the injured site for 15—20 minutes every 1—2 hours. Ideally, it should be applied using crushed ice wrapped in a moist cloth or towel. **Compression** involves the application of a firm elastic bandage around your knee. It should be firm but not enough to cause pain.

**Elevation** involves lying with your knee resting comfortably on a chair or pillows so that it is above the level



of your heart. You should continue the RICE regime until you consult a medical professional, preferably within two days of the initial injury.

If you have or suspect you have injured your PCL you shouldn't continue to participate. This may cause your knee to give way or collapse, potentially injuring other knee structures. In addition you shouldn't undertake activities which increase blood flow to the injured knee. These include hot showers, heat rubs, the consumption of alcohol and excessive activity. These may increase the bleeding and swelling around the injured ligament and potentially

prolong your recovery. Although PCL injuries do not heal by themselves, with a comprehensive rehabilitation program you can usually return to sport within a matter of months. However, this may be prolonged if at the time of your injury you also injured surrounding structures. These include the menisci inside the knee and the cartilage lining the joint surfaces. Injury to these structures may result in prolonged swelling and pain and a slow recovery. In some instances when the PCL is injured, surgery may be required to reconstruct the ligament or to clean up any damage to surrounding structures.

## How is a diagnosis made?

Diagnosis is usually made with history and examination. Usually an x-ray is ordered to rule out any bone damage associated with the PCL injury. If the symptoms and examination findings are not clear an MRI will sometimes be required. If there is a lot of pain and swelling it can make the examination tests difficult to interpret, so you may need to return in two weeks to re-evaluate the knee when the swelling has reduced.

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## What does rehab involve?

Initially there is likely to be a lot of swelling and pain. Early stage management involves symptom relief. While complete rest is not necessary for most injuries the degree of trauma that occurs in the knee during a PCL rupture usually does require complete rest. This may mean mobilising with crutches or with a leg brace. RICE should be performed to help manage swelling. Anti-inflammatory medications may also help with swelling and pain.

## Rehab exercises and graded return to activity

Once pain and swelling have reduced to an acceptable level it will be important to re-learn how to use the knee. The swelling and pain present after the injury causes the thigh musculature to waste away. The loss of strength and size of the thigh muscles can be very rapid and quite severe. It is important to strengthen the thigh musculature prior to returning to sport. It is also important to remember that a major supporting structure of the knee is now absent so it will be necessary to learn to control the knee again. Co-ordination exercises performed with a physiotherapist will be extremely important to recovery. Having great thigh musculature is useless if the muscles contract one fraction of a second too late allowing the knee to become injured.

## Surgery

Surgery can be performed for PCL injuries but it rarely is required. The knee usually is stable enough to return to high level sport without needing reconstruction.



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