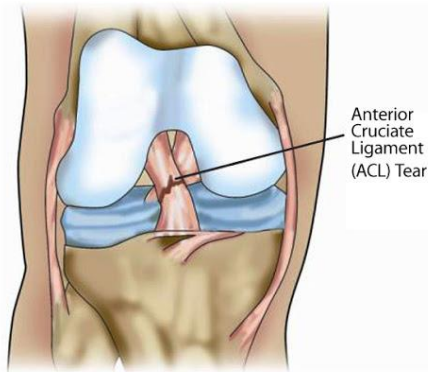


## ACUTE ACL INJURY



### What is the ACL?

The Anterior Cruciate ligament (ACL) is one of the 4 main stabilising ligaments in the knee and makes up 1 of the 2 cruciate ligaments. This ligament provides stability to the knee preventing anterior tibial translation on the femur and excessive rotation through the knee.

### Who tends to present with an ACL injury?

- People of all ages including children
- Pivoting / Change of direction sports
- Females almost 2 x more likely than males
- Non-Contact ~70%, Indirect contact or Contact ~30%

### How will the patient likely present?

The patient is likely to present after an acute episode of knee instability with pain and swelling that occurs quickly, a loss of range of motion and potentially a feeling of instability on weight bearing. They may report that they felt a pop within the knee at the time of injury. They most likely were not able to continue with the game/ activity and may have found weight bearing. This is likely to have occurred playing sports such as football, rugby, netball or skiing and will most commonly occur after a quick change of direction, hyper extension perhaps during landing from a jump or an impact such as a fall or tackle. Be aware of those that mention episodes of instability, these put the other structures of the knee at risk and suggests a higher-grade injury and should be investigated early.

### What else should I look out for?

When a person injures their ACL due to the trauma of the knee instability episode it is likely that other structures of the knee may have been injured. This will commonly include: The medial collateral ligament (MCL), the menisci, chondral surfaces and they will also have suffered an element of bone bruising. Bone bruising occurs in around 80% of injuries and most commonly affects the lateral femoral condyle.

An ACL injury should be suspected if there is the presence of a Segond fracture on radiographs.

## Differential diagnosis

The similar characteristics for an ACL injury can be found with:

- Knee dislocations
- Meniscal injuries
- Collateral ligaments injury
- Posterolateral corner injuries to the knee.

Other problems that must be considered are:

- Patellar dislocation or fracture
- Femoral, tibial or fibular fracture.

## How to test for an ACL injury

The two most used tests are: The Lachman test and the anterior drawer test. In the acute phase of injury, it is common for the patient to have hamstring muscle spasm or guarding increasing the chance of a false negative when applying the anterior drawer test alone. An acute ACL injury should be suspected in combination of these tests, the subjective history mentioned above in the presence of a swollen painful knee.

## How to perform the tests

### The Lachman test:

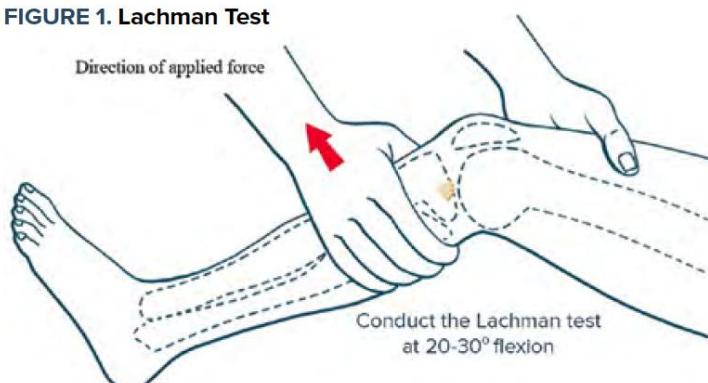
Patient supine with knee bent 15°-30°. The examiner stabilises the patient's femur with one hand and then pulls the tibia anteriorly with the other hand

Anterior translation of more than 2mm of the tibia suggests a ruptured ACL (Often with a soft end feel).

Positive Lachman's Test:

1. Pain with normal anterior translation: ACL sprain
2. Pain with laxity (anterior tibial translation): ACL rupture

**FIGURE 1. Lachman Test**



**Anterior Drawer test:**

1. Patient supine with knee bent 90°
2. Examiner stabilizes foot with hip and places thumbs over the anterior knee joint line and pulls the tibia anteriorly.

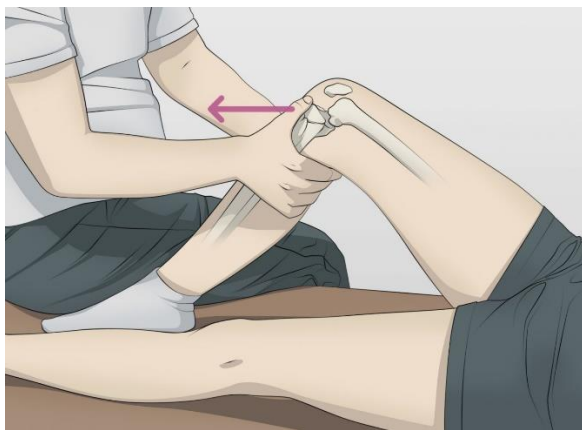
**Positive Anterior Drawer Test:**

Pain & or Laxity: suspect ACL injury

Clinical notes

Degrees of knee joint instability

Grade	Description
I	mild, < 5 mm of translation
II	moderate, 5-10 mm of translation
III	Severe, > 10 mm translation



**I suspect it is an ACL injury, what next?**

Referral to an orthopaedic knee specialist for appropriate imaging (X-ray & MRI) and specialist MSK physiotherapist within the first 2 weeks to begin rehabilitating the knee

It is important to note that not all ACL injuries require reconstruction. There is emerging evidence for non-operative management however to determine this it is best to seek the advice of a knee specialist (Orthopaedic and MSK physio) that sees ACL injuries regularly to begin to plan treatment appropriately

**Acute Injury management: Think P.O.L.I.C.E!**

**Protection:** During the first few days after an injury, you should certainly rest the injured joint. After that start gentle motion while still maintaining some protection of the injured area. During this time, they may require some sort of assistive device, like crutches, to walk especially if they are having instability episodes.

**Optimum Loading:** This describes the gentle motion to start while in the Protection phase. For example, gentle active and active assisted range of motion exercises and quad sets (all shown below in exercise part of leaflet). This progressive loading of your injury can help

promote optimal healing, and it can prevent delays in returning to normal due to joint and muscle tightness or muscle atrophy.

**Ice:** Applying ice may help to manage the swelling around the injured muscle or joint, and ice can help decrease some of the acute pain that they may be experiencing.

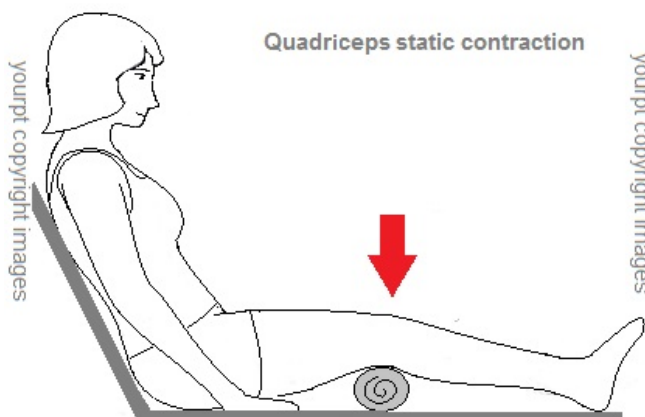
**Compression:** While applying ice, they can add compression with a tubigrip.

**Elevation:** The knee can be placed on a stack of pillows while you are lying down. This will help to reduce the swelling and allow a return to normal range of motion and reduced pain whilst minimising muscle atrophy

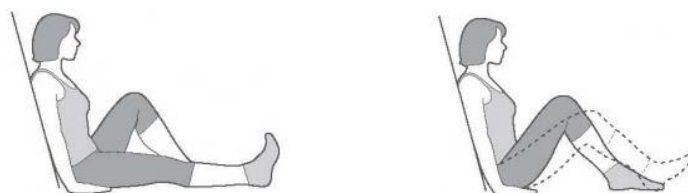
### Early phase exercises prior to seeing a physiotherapist

The primary objective at this point is to reduce swelling and pain and avoid any further instability episodes. The exercises should be performed regularly throughout the day and not through increasing pain and should not flare the knee. If instability episodes are occurring it is essential to reduce the risk of this by using crutches and seeking further assessment

**Static Quads:** This is to start to help the thigh muscle contract correctly again which is inhibited by swelling and pain. Focus on squeezing the thigh muscle tightly so you can see and feel the muscle contract whilst straightening the knee. If this is painful you may find putting a towel under the knee to push down into is less so. Try 2-3 x 10 reps 2-3 x day as pain allows. Adjust the repetitions and frequency depending on the pain.



**Knee range of motion –** This range of motion drill should help with swelling and pain, try to move gently through your available range of motion respecting pain. This may be best done on a sofa if getting on and off the floor is difficult



Straight leg raise – Can be performed in lying or sitting. Tense the thigh muscle and aim to keep the knee completely straight. Raise the leg a few inches off the bed, pause for 2-5s and then lower. Aim to complete 2-3 x 5-12 depending on pain and ability to keep the knee straight during the movement.



Calf pumps – These help to keep the swelling reducing by using the pump mechanism of your calf. These can be nice to do whilst the leg is elevated or throughout the day. 3 x 12 and 2-3 x day.

