

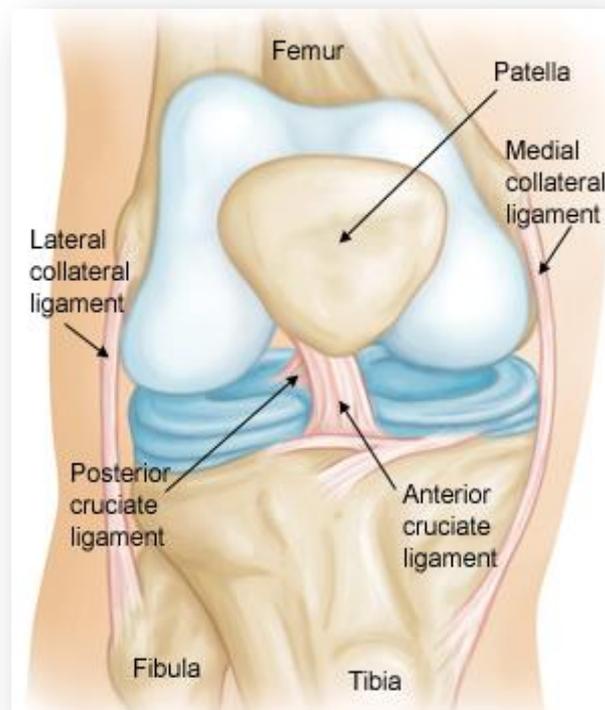
## ANTERIOR CRUCIATE LIGAMENT (ACL) INJURY

### **ANATOMY**

The knee is made up of three bones, the thigh bone, shin bone and the kneecap. They move with the help of the surrounding muscles and are stabilised by 4 main ligaments.

At the sides of the knee are the 2 collateral ligament (medial and lateral collateral), and inside the knee are two ligaments which cross each other called the cruciate ligaments (anterior and posterior). You may often hear sports commentators say a player has torn her 'medial' (collateral ligament), or done his ACL (anterior cruciate ligament).

The collateral ligaments provide protection from sideways forces, and the cruciate ligaments provide rotational stability as well as stopping the thigh and shin bones sliding back and forwards against each other.



## LIGAMENT INJURY

Damage to a muscle is usually called a strain whereas ligament injuries are called sprains.

Sprains are graded I, II or III depending on their severity.

Grade I, is where some of the fibres of the ligament are torn or stretched but the knee is still quite stable.

Grade II, is where the ligament is stretched or torn so that there is a big compromise to the stability of the knee.

Grade III tears are often called ruptures. This is where all the fibres of a ligament are torn and for people who play sports, surgery is necessary to repair the ligament.

Most injuries to the ACL are complete tears, and often, because the injury is due to a big force, the meniscus (cartilage) and medial collateral ligaments are damaged too.

ACL injuries are usually caused by changing direction too quickly, particularly with a twist. Often a footballer or rugby player may go down injured when their studs have stuck in the ground whilst they tried to change direction.

In netball, many participants can damage their ACL due to an incorrect landing from a jump. Women are also at more risk of this injury as they generally have a wider pelvis than men causing a change in leg alignment. This means there is more of a rotational and lateral force travelling through the knees when jumping or twisting. Oestrogen in women also effects ligament properties. (It can make them more lax).

A direct kick or trauma to the side of a fixed leg is also a major cause for ACL ruptures. This type of injury occurs in contact sports like football and particularly in American Football.

## SIGNS AND SYMPTOMS OF ACL INJURY

Following an ACL injury, people often report hearing or feeling a 'pop' sensation inside the knee joint, and most people report feeling the knee give way underneath them. Often people cannot stand straight away, and if they do the knee feels like it will give way again. The knee will often be painful with gross swelling within the first 6 hours. Over the next 24 hours they will notice a loss in the range of movement, discomfort when walking and tenderness at the joint. The knee may continue to feel unstable and if there is associated damage to the **meniscus** there may be some clicking at the knee, and the joint may feel 'locked' at times.

## DIAGNOSIS

It is important to get an accurate diagnosis in order to get appropriate treatment or surgery. Often it can take up to 18 months to get an accurate diagnosis. As stated above, if there is a gross swelling within the first 6 hours of the injury it is important for the medical staff to investigate the injury further.

The injury is usually diagnosed by an Orthopaedic Consultant, GP or **physiotherapist** taking a thorough medical history from the patient. MRI scans may be conducted if a rupture is suspected. These are much more accurate as this will show images of soft tissues like **ligaments**, **muscles** and **cartilages** whereas X-Rays will only show broken bones that may be associated with the injury.

## PARTIAL LIGAMENT TEAR

If the **ligament** is damaged but not ruptured, it is possible to return to sport. However there will be a period of rest initially to reduce the swelling. This may be complemented

with a knee brace and elbow crutches. The **physiotherapists** will be keen to get you off the crutches and walking normally as soon as possible. As the swelling settles you will be able to do more with the aim being to regain the full range of movement and to strengthen the knee to prevent a future recurrence of the injury. Obviously the more rehabilitation and strengthening someone does, the quicker they will return to pre-injury activity levels. This however shouldn't be rushed, but generally most people will return to sport within 3-6 months provided there is no future re-injury.

## **COMPLETE LIGAMENT TEAR**

For some people if they are not active, the consultant may decide that it is not worth having surgery. If this is the case then your **rehabilitation** will be the same as for a **partial ligament tear**.

## **SURGERY**

If surgery is required, the old **ligament** will be removed and a new ligament will have to be rebuilt from other tissues within the body. Occasionally, surgeons will use part of the **patella tendon**, but generally they will use tissue from the hamstring tendons at the back of the leg. The tissues from the **tendons** are bound together (graft) and attached inside the knee. The new ligament grows on to the graft giving the knee stability.

The surgery is done with an arthroscope which means you will have only small incisions at the knee, and this procedure is much less invasive than it was many years ago. This leads to less infection risk, less pain, less time in hospital and ultimately a quicker healing time.

## **REHABILITATION**

Following surgery, your **physiotherapist** will help you regain full movement at the knee and look to help you strengthen the joint as before. You need to remember that the **physiotherapist** can teach you the exercises but it is up to you to do them!

Immediately after the operation, if all goes well you may be allowed home on the same evening or the following morning. You are likely to be given elbow crutches to use for a couple of weeks.

In the early stages your **rehabilitation** will consist of gentle range of motion stretches and simple **strengthening exercises**. After 8-12 weeks you may find your physiotherapist will allow you to start running. It is important not to run with a limp though as this will have implications for your long term movement patterns.

Over the following weeks and months, your rehabilitation will now start to incorporate more dynamic exercises, including some hopping, and jumping movements, in straight lines and with changes of direction. You will still be required to continue strengthening exercises.

The final stages of **rehabilitation** involve '**functional rehab**' which refers to returning to your normal function. For example to return to football you would need to be able to jump, head, twist, turn, do short and long passes as well as tackle. Your **physiotherapist** should be able to provide you with a rehabilitation programme to replicate all these movements. When you can do all of these with no problems then you may be allowed back into training with your team.

For professional athletes a realistic time frame after surgery would be 6-9 months before returning to sport. For more casual or semi-professional participants 9-12 months is more realistic. Due to the nature of the injury and surgery it is advised not to rush a return to play as many people will re-injure if the **knee** is not sufficiently stable.

**FACT** - After an ACL injury, up to 15% of people **injure** their opposite **knee!** BOTH **quadriceps** weaken post-injury. #Strength #Training #Rehab #Physio

**FACT** - Around 2/3 of people with ACL injury won't be back to pre-injury levels of performance 12 months after injury. This increases the importance of good #**Rehab**

Lastly, and mainly to see if you are still reading, arguably the greatest footballer of all time (Mark Roe) suffered an ACL injury and in his first game back suffered the same injury to his other knee. Poor diagnosis and rehabilitation options back in the day ruined Mark's career and was his entire inspiration to become a **physiotherapist** to help others avoid that fate.

**We offer ACL rehabilitation – call 0114 2390022 to book yours.**

**Mark Roe – Physiotherapist, Sheffield Therapy Centre**