

Accelerated rehabilitation for Anterior Cruciate Ligament(ACL) reconstruction

Therapy department



01935 475 122
yeovilhospital.nhs.uk

This booklet is designed to provide information and advice regarding the injury, operation and rehabilitation of your knee following the damage to your Anterior Cruciate Ligament (ACL).

The information in this leaflet is based on current research and the clinical experience of those involved in your care. Close communication between patients and staff is key to the success of an ACL reconstruction and we would encourage you to discuss your goals and aims together with any difficulties and variations with those helping in your care. This leaflet is designed to guide you through your rehabilitation but please be aware you may be given advice for your individual needs.

Contact numbers

Main hospital switchboard	01935 475122
Outpatient orthopaedic department	01935 384319
Outpatient physiotherapy department	01935 384358
Pre-assessment clinic	01935 384863
Mr Lankester's secretary	01935 384405

Useful information

Although we cannot vouch for the accurate content of any of the following, you will find useful further information on many websites, including:

www.kneeguru.co.uk

www.csp.org.uk (Chartered Society of Physiotherapy)

www.uknlr.co.uk (National Ligament Registry)

For further information about Yeovil Hospital please visit the website at yeovilhospital.nhs.uk

Introduction

Rupture of the Anterior Cruciate Ligament is one of the most common knee injuries. It usually occurs when the knee is twisted under load (sidestepping or landing), often without direct contact, but can also occur with knee over extension and deceleration.

It is more common in female than male athletes (for same sport exposure), although the reason for this has not been fully determined.

At the time of injury, you will often feel a pop, snap or tear. There will usually be significant pain, a rapid onset of swelling and inability to continue playing sport. Diagnosis is made by a combination of appreciating the mechanism of injury and subsequent events and by careful clinical examination. Sometimes an MRI scan may be used to confirm diagnosis.

Over the last decade there has been a significant increase in the understanding of the role of the ACL in normal knee function, as well as the consequences of injury including the development of the knee instability and the potential damage to other structures within the joint. If left untreated, the knee swelling will settle and a gradual return of normal movement and improved function will follow, usually over several weeks.

Return to sporting activities, in particular straight line sports such as running and rowing may be achieved, but attempts to twist or pivot under load usually result in a sensation of instability - the knee "gives way" or moves abnormally "out of joint".

The rationale of surgical treatment to reconstruct the ACL is to prevent instability (or "giving way" of the joint) under load. Ligament reconstruction has been shown to decrease the future risk of damage to articular cartilage and the menisci (shock-absorbing cartilage pads) and therefore potentially reduce the incidence and severity of future joint degeneration (osteoarthritis).

ACL surgery and rehabilitation have undergone significant changes over the last few years due to improved surgical techniques and better understanding of rehabilitation. Surgery can be performed using a minimally-invasive arthroscopic (keyhole surgery) technique, which combined with the use of local anaesthetic makes it possible to perform ACL reconstruction surgery in the day surgery unit, although staying one night in hospital is more typical.

We will normally arrange (with your permission) for your details to be added to the UK National Ligament Registry. This is a national database that is collecting evidence about outcome after ACL reconstruction surgery to help guide future changes in surgical practice. It also helps your surgeon track your progress after surgery.

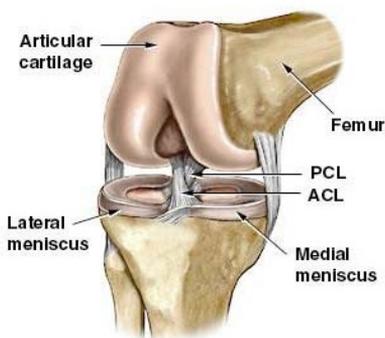
The website uknlr.co.uk explains more about the database, and also has useful information about ACL surgery and rehabilitation that complements the information in this booklet. Once we have registered your details (normally done in the out-patient clinic when you are seen by the knee surgeon), you will be able to log into the website via the “patient portal” button on the homepage.

Anatomy

The knee joint is formed by the articulation between the thigh bone (femur), the shin bone (tibia) and the knee cap (patella). Much of the stability of the knee arises from its ligaments.

The Anterior Cruciate Ligament (ACL) is one of the four main ligaments that stabilise the

knee, passing from the lower end of the femur (thigh bone) to the upper end of the tibia (shin bone). The position of the ACL, lying at an angle in the centre of the knee, allows it to resist the tibia sliding forwards or rotating abnormally on the femur.



The muscles around the knee include the quadriceps on the front of the thigh and the hamstrings on the back. The quadriceps are used to straighten the knee and the hamstrings to bend it. Both these muscle groups have a role in the stability and balance of a knee and will be heavily involved during the rehabilitation of your knee.

Pre-op rehabilitation

ACL reconstruction is not an emergency operation and surgery is not normally performed until several weeks or months after injury. This is to allow the swelling and pain from the initial trauma to settle. Following damage to the ACL your balance, range of movement and strength are all affected.

The goals of pre-operative rehabilitation

The return of:

- Full range of movement
- Reduction in swelling
- Improved muscle-strength
- Improved joint stability
- Preparation for the operation and the accelerated post-operative rehabilitation.

The length of this pre-op rehabilitation varies but it is an important phase that influences the success of the final outcome.

Prior to surgery a patient should have:

- Any wounds or abrasions fully healed
- A good range of movement, in particular full extension
- Reduced swelling
- A good return of strength in leg muscles
- A clear understanding of nature of operation and commitment to post-operative rehabilitation.

You will be guided through pre-op rehabilitation by your physiotherapist. The following pages detail some of the input to your knee and provide you with an opportunity to record your exercise sessions and progress.

Pre-op rehabilitation Exercises

Listed below are exercises we consider safe to try preoperatively

Bike	Conventional Single leg cycling	Balance	Trampet Wobble board
Running	Straight lines Straight lines with fast turn at end Round cones Dribbling ball rounds cones Pick up weight whilst running Side to side Side stepping Cross leg stepping Box hops	Squats	
Hopping	Trampet Backward	Cross trainer	Forward Backward
Sit to stand	Single leg from low stool	Weights	Leg press Calf press Hamstring curls Glutes
Gym Ball	Abdominals Inner range Quadriceps	Treadmill	Progressive inclines
Rowing	Single leg Double leg	Swimming	Front crawl Backstroke

The ACL reconstruction operation

Unlike many ligament injuries, a ruptured ACL is not able to heal itself properly. Most patients will undergo ACL reconstruction using two of their hamstring tendons from the same knee (gracilis and semitendinosus). Occasionally it will be necessary to use the patellar tendon (tendon below the kneecap). This choice will not affect the post-op rehabilitation.

The operation is performed under general anaesthetic (when you are put to sleep) and takes approximately 45 minutes. Firstly, the knee is examined to assess the full extent of instability. The structures of the knee are then checked with a camera (arthroscope) and probe that is put inside the knee through two one centimeter cuts below the knee cap. At this stage, some of the damaged stump of the ACL is removed (leaving tissue where possible to help the new graft attach) and any other procedures such as trimming of torn cartilage are performed.

The tendon graft is then harvested. The hamstring tendons are reached through a diagonal cut approximately three centimeters long over the upper part of the shin bone. Or, if required the patellar tendon is harvested via two vertical cuts directly below the knee cap.

The graft is tidied up, and then positioned into the knee joint via tunnels of suitable size drilled through the tibia (shin bone) and femur (thigh bone) to reconstruct the missing ACL.

After careful checks to confirm correct placement, the graft is then fixed.

The stability of the knee is then tested, and the cuts are closed. Local anaesthetic is injected around the area and into the knee to improve post-operative pain relief. Dressings are applied and the knee is wrapped in a padded bandage. No brace or plaster cast or brace is required.

Post operative x-rays demonstrate the positions of the tunnels with screws in:



Potential complications of surgery

- Bruising around the knee or even appearing at the ankle is common.
- Bleeding (two per cent) into the knee joint.
- Infection (one per cent) may result in excessive redness/heat in the skin or knee joint. If you are concerned, please see your GP urgently or contact the hospital.
- Deep vein thrombosis is very rare after ACL reconstruction surgery. The risk is minimised by early mobilisation. Anyone with a previous history or familial tendency of DVT should discuss this prior to surgery.
- Numbness or a tingling sensation just next to your scar is fairly common and is usually temporary.
- Joint line pain: ACL injury is associated with injury to other structures including the knee cartilages.
- Chronic ACL definitely commonly results in cartilage wear which may cause persisting pain after ACL reconstruction.
- Return to activities: 85 per cent of patients will achieve a return to their pre-injury level of sporting activity and 95 per cent to full activities of daily living and fitness training.
- Re-rupture: Patients who return to sports have approximately a five per cent risk of re-rupture of the reconstructed ligament, and a similar risk of rupturing the ACL in the other knee.
- This risk is higher in those who sustain their first injury at a young age, particularly in teenagers. ACL injury prevention is possible with appropriate warming up and specific exercise drills - visit <http://smsmf.org/smsf-programs/pep-program>

0-2 weeks exercises

Heel slides

Lying or sitting, bend your hip and knee.



Heel props

Lying or sitting, rest your ankle on a rolled up towel or pillow and push your knee as flat as it will go.



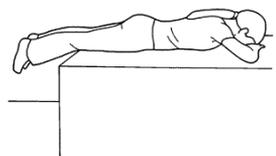
Static quads

Sitting or lying, squeeze your knee down into extension as flat as it will go to work the quadricep muscles at the front of the thigh. Hold for 10 seconds.



Prone hangs

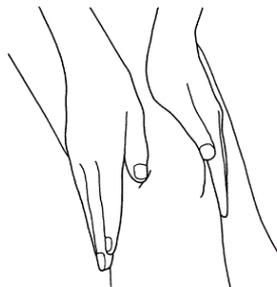
Lying on your tummy gently allow your leg to stretch over the edge of the bed. Gravity will stretch the knee into extension.



0-2 weeks exercises continued

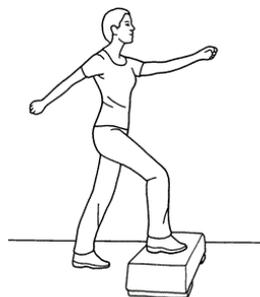
Patella mobilisations

Place your index finger and thumb either side of the patella (knee cap) and gently push the bone from side to side. You will need to relax your thigh muscle to allow the patella to move.



Step ups

Using a small step or bottom of the stairs step both feet on to the step and then step back down. Repeat leading with both legs.



Balance exercises

Stand, holding onto something stable for support if required. Slowly lift one leg to balance on the opposite leg.



Shoulder bridge

Lying with your feet flat on the floor and arms by your side. Gently push your hips up to the ceiling until your shoulders, hips and knees are in a straight diagonal line.



Further rehabilitation

Stage 6-12 Weeks

Aims

- Continue progress
- Increase gym workouts and their intensity
- Include running on a treadmill, shuttle runs and ball dribbling
- Progress dynamic balance and confidence
- Introduce open chain exercise e.g. quads, curls
- Swimming (no breaststroke)

Your physiotherapist will give you detailed exercises to perform at this stage.

Stage 3-6 months

Aims

- Introduce sports specific exercise and skills
- Progression of strength training include leg curls, leg press etc.
- Agility work
- Plyometric

Your physiotherapist will give you detailed exercises to perform at this stage.

Earliest return to contact sports is at six months allowing for full strength and range of movement as well as good balance.

Contact details

The therapy department is open
Monday to Friday, 8am-5pm.

**If you have any questions or require further
information or advice, please contact:**

Therapy department: 01935 384 358

Therapy fax: 01935 384 266

**If you would like this leaflet in another
format or in a different language,
please ask a member of staff.**

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