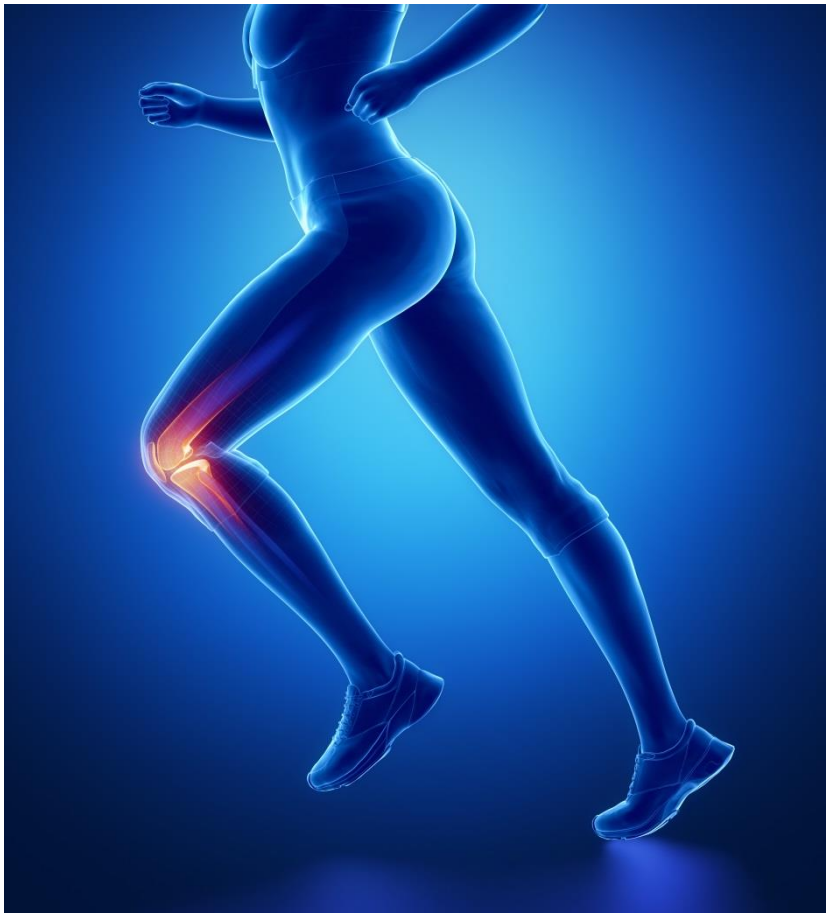
Chelsea and Westminster Hospital
NHS Foundation Trust

ANTERIOR CRUCIATE LIGAMENT (ACL) RECONSTRUCTION:
THE REHABILITATION

Information for patients



SB 2024 update

ANTERIOR CRUCIATE LIGAMENT (ACL) RECONSTRUCTION REHABILIATION GUIDELINES

This booklet is designed to inform you of the rehabilitation following ACL reconstruction surgery. The aim of these guidelines is to prepare you for the rehabilitation to come, to guide you through the process and in turn help you to maximise your outcome and help you achieve your goals.

Each individual will work through the stages of rehabilitation *at their own pace*. Many factors influence the speed at which you move through the phases of rehabilitation and achieve your goals. Examples of different factors which can affect your rehabilitation process include your age, your pre-injury exercise and fitness levels, your post-op exercise frequency, work and life factors, fear of re-injury and your own individual knee surgery and status.

Prior to moving onto the next phase of rehabilitation you will be expected to reach certain milestones and achieve specific goals which your physiotherapist will assess.

The rehabilitation process lasts a minimum of 9-12 months for the average individual who performs their exercise as prescribed. The average time to return to full pivoting, contact sports is between 12-18 months but can take up to 2 years.

We are here to guide you through this process and help you achieve your goals whether that be enabling you to play with your children, to return to the gym or return to social or elite sport!

ACL REHABILITATION: THE PHASES

"Prehab": Injury recovery and preparation for surgery

1. **Recovery from surgery:** swelling management, early motion and basic movement retraining

2. **Progressing limb loading, basic strength training and neuromuscular control (balance and movement)**

3. **Return to running and jump-land control**

4. **Athletic enhancement and return to sport**

"PREHAB" PHASE:

Injury recovery and preparation for surgery.

ACL reconstruction surgery is rarely urgent. Before surgery can be considered there must be a good range of movement, with the knee being able to fully straighten (full active extension), and minimal swelling.

It is also important to maximise the strength of your quadriceps, hamstrings and gluteal muscles prior to your surgery. Recent research suggests that regaining 90%+ strength in the quads and hamstrings compared with the other side, will help optimise your post-operative outcome.

Typical exercise includes acute injury management (rest, ice and elevation), range of movement exercises, progressive strengthening exercises and low impact cardiovascular exercise such as cycling.

Example strengthening exercises include initially double-leg bodyweight squats progressing to single leg exercises such as step-ups, lunges and single leg squats. It is important to work each limb to its capacity so that your non-injured limb does not become weak and de-conditioned. Use this time to also improve your balance and movement control so that your brain has a good reference to what is "normal".

It is recommended you participate in a minimum of 6 weeks strength and conditioning exercise. You will be offered a referral to physiotherapy to help you achieve the goals of this phase.

GOALS:

1. Eliminate Swelling
2. Regain range of movement especially extension (straightening)
3. Maximise strength of your quadriceps, hamstrings and gluteal muscles

PHASE 1: RECOVERY FROM SURGERY

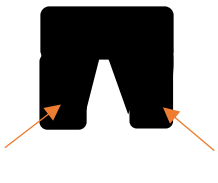
Whilst having an ACL reconstruction is usually a day case procedure, your knee will be painful and swollen following surgery. It is important to relatively rest your knee as much as possible for the first 2 weeks to allow swelling and pain to settle; only doing your basic prescribed exercises. You are typically walking with elbow crutches for between 2 weeks and 4 weeks unless you have also had a meniscal repair when you may be on crutches for at least 6 weeks. You should only wean off the elbow crutches once you are walking normally and following advice from your physiotherapist.

Typical exercises in this phase can be found on the next page but include: Basic quadriceps activation exercises (thigh muscle squeezes), range of movement exercises to regain full extension (straightening) and start flexion (bending).You will begin gait (walking) retraining. Exercises during this phase need to be performed at least 5 times per day.

SWELLING MANAGEMENT

Minimising swelling as soon as possible is a **key factor** to your progress. As swelling improves, so does your mobility, movement, pain and ability to strengthen your muscles. Ways to reduce swelling include:

1) Elevating your operated leg when resting
2) Applying ice, wrapped in a damp tea towel, for 10-15 minutes, 4-5 times per day
3) Performing your ankle pumps and static quadriceps contraction



YOU MAY PROGRESS FROM THIS PHASE WHEN YOU:

- Have minimal Swelling
- Regain full extension (get the knee straight) within 3 weeks maximum
- Regain quadriceps (thigh muscle) activation and be able to straight leg raise
- Wean off elbow crutches once you have a normal walking pattern

PHASE 1: RECOVERY FROM SURGERY:

TYPICAL EXERCISES

Knee extension Stretch

Lie on your back with some pillows under the foot of your operated leg. Ensure there is a gap between your leg and the bed. Try to straighten your knee as much as you can.
Rest for up to 5-10 minutes.
Repeat 3 times per day.

Static Quadriceps Contractions

Sit upright on your bed or on the floor, with your legs straight in front of you. Tighten your thigh muscles on both legs and try to push your knees downwards into the floor or bed. You should see the thigh muscles contracting. Repeat 15 times.
Repeat a minimum of 5 times per day.

Knee range of movement

Lie on your back with your legs straight. Bend your operated knee as much as you can by sliding your heel towards your bottom and then straighten again. * may be restricted if you have had a meniscal repair. Your physio will advise you on this.
Repeat 5 times. Repeat a minimum of 3 times per day.

Calf Stretch

In a standing position, use a wall, table or chair for support. Step your operated leg back behind you. Keep the heel on the floor and toes pointing forwards. Keeping the back heel down and knee straight, move your bodyweight forwards to feel a stretch in your calf.
Hold for 45 seconds, repeat 5 times per day.

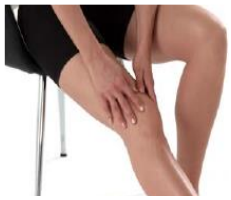
Closed chain quadriceps press into <u>ball / cushion / band</u>

Sit with your legs out in front of you. Place a small ball or cushion against a wall. Put the foot of your operated leg up against the ball or cushion with the knee slightly bent. Push through your heel to straighten your knee. Repeat 10 times, 3 per day

Knee flexion

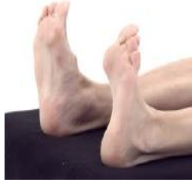
Lying on your tummy, slowly bend your operated knee to bring your heel towards your bottom. Repeat 6 times. 2 times a day.

Patella Mobilisations



Sitting with your knee relaxed, move your kneecap (patella) side to side and up and down.
Repeat 15 times, 3 times a day.

Ankle Pumps



Lie on your bed, move your toes and feet up and down.
Repeat 20 times
Repeat 5 times per day

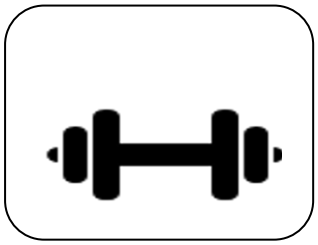
PHASE 2: PROGRESSIVE LIMB LOADING, STRENGTH TRAINING AND NEUROMUSCULAR CONTROL (BALANCE AND MOVEMENT CONTROL)

Once you have a "quiet" knee (minimal swelling and pain) and you have a normal gait (walking) pattern; the next phase of rehabilitation is to regain strength and movement control. This is achieved initially with simple body weight exercises progressing to more gym-type exercises. As in the "prehab" phase, it is important to work each limb to its capacity so that your non-operated limb does not become weak and your brain has a good reference to what is "normal".

You need to monitor your knee during this phase of gradual, progressive loading. Swelling and pain may be signs of "overload" and you should discuss any concerns with your physiotherapist.

Typical exercises in this phase include:

- Body weight squats progressing to split squats, step ups, lunges and then loaded exercises with weights. The aim is to progress to single-leg squats.
- Leg press: progress to single-leg as soon as possible.
- Gluteal muscles: double-leg bridge progressing to single-leg bridge and loaded bridges. Side lying leg raises and sideways walking using resistance bands.
- Calf Complex: Standing double-leg heel raises progressing to single-leg.
- Hamstrings: Hamstring bridges, Hamstring curl, Deadlift. Progress to single-leg when able.
- Quadriceps: progress to single-leg knee extension exercises *(**90-30 degrees for first 3 months)*
- "Core" exercises: plank and side plank variations, Russian Twists and "dead bugs"
- Cardiovascular exercise such as static bike, cross trainer and / or swimming.



YOU MAY PROGRESS FROM THIS PHASE WHEN YOU:

- Regain single leg balance
- Are Strong. You need to regain most of the strength of your:
  - Quadriceps, hamstrings, gluteal and calf muscles.
  - Leg Press: you need to be able to leg press over your body weight on each leg. This will be formally assessed by your physiotherapist.
- Regain cardiovascular fitness.
- Be able to demonstrate a single leg squat with excellent control.

This will be formally assessed by your physiotherapist

PHASE 3: RETURN TO RUNNING AND JUMP LAND CONTROL

This phase of rehabilitation focuses on return to running and being able jump, hop and land with excellent control and confidence. These are the building blocks to facilitate a smooth return to sport (phase 4).

To be able to start this phase, you must have achieved the goals set out in phase 2. It is important to continue to monitor for signs of "overload" (pain and / or swelling) and let your physiotherapist know if you have any concerns.

You will continue to progress your strength training during this phase and optimise your balance and movement control.

Typical exercises include:

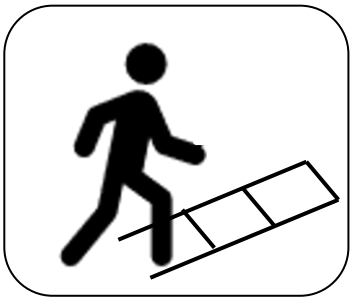
- Continuation and progression of your strength and control exercises.
- "Plyometric" exercises to include: squat jumps progressing to box jumps, jumping lunges, single leg landing and hopping drills.
- You will also start a return to run programme, often commencing with "Couch to 5k"
- Running drills progressing to "ladders" and change of direction manoeuvres depending on your goals and sports.

Exercises during this phase are to be performed 3-4 times per week.

YOU MAY PROGRESS FROM THIS PHASE WHEN YOU:

- Regain full muscle strength, balance and movement control
  - Be able to demonstrate excellent jumping and hopping distance, height, endurance and technique (landing control) which is symmetrical to your non-operated limb.
  - Are able to run for at least 20 minutes

This will be formally assessed by your physiotherapist



PHASE 4: ATHLETIC ENHANCEMENT AND RETURN TO SPORT

This phase of the rehabilitation prepares you for returning to full, unrestricted sporting activities. The rehabilitation during this phase is sport specific and therefore varies depending upon your individual goals.

Typical exercise involves: sports specific drills, progressive agility work and integration back into non-contact, controlled training. Training then gradually becomes more unpredictable to prepare you both physically and mentally for returning to full sport. Time is taken to address any fear of re-injury and confidence difficulties you may experience, which are common following this injury.

YOU MAY RETURN TO SPORT ONCE:

You have passed our return to sport criteria which comprises of:

- Strength measures
- Hop testing
- Movement analysis
- Successful sport-specific drills
- Confidence measured through the "ACL – Return to Sport" questionnaire.

APPROXIMATE GUIDANCE FOR RETURN TO ACTIVITIES

The timescales provided are for guidance purposes but require confirmation by your surgeon and/or physiotherapist.

Activity	Approximate Timescales
Work	Sedentary work: 3-4 weeks Manual jobs: 6-12 weeks
Static Cycling	From 4 weeks
Driving	4-6 weeks as a rough guidance. You need to notify your insurance company of your operation.
Swimming	6 weeks (front crawl leg kicking only with knee locked straight)
Cross trainer/Rowing machine	From 6 weeks
Road cycling	From 3 months
Jogging	From 4 months (after passing return to run criteria)
Golf	From 6 months
Contact sports	From 9 months (after passing return to sport criteria)
Skiing	From 9 months (after passing return to sport criteria)

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Patient Advice & Liaison Service (PALS):

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Alternatively, you can send us your comments or suggestions on one of our comment cards, available at the PALS office, or on a feedback form on our website www.chelwest.nhs.uk/pals.

We value your opinion and invite you to provide us with feedback.

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