

ACL Rehab Guide

Recovering from an Anterior Cruciate Ligament (ACL) injury and subsequent reconstruction can be a daunting and long period of your life. It is important that a thorough rehabilitation program is completed to help restore optimal function in the knee, and get you back to enjoying your favourite sports and exercise regimes free of pain and further injury. At Thornton Physiotherapy we are proud to help you on your journey of recovery and that is why we have developed this rehabilitation guide.

The aim of this rehabilitation guide is to:

- Guide you step by step from day of injury all the way back to scoring your first goal/ running with the kids again
- To give you a resource of answers to all the common questions that are floating around your head
- Provide you with an expert level rehabilitation, strength and conditioning so that you return a better, stronger fitter version of yourself.
- Educate you about how to reduce your chance of reinjury and empower you to make good sporting choices for the future.

Contents:

| | |
|----------------------------------|-------|
| Phase 1a. Pre Surgery Rehab | 3 |
| Phase 1b. Post Op Recovery | 4-5 |
| Phase 2. Restoring Function | 6-7 |
| Phase 3. Building Strength | 8-9 |
| Phase 4. Running | 10-11 |
| Phase 5. Change of Direction | 12-13 |
| Phase 6. Return to Team Training | 14-15 |
| Phase 7. Return to Play | 16-17 |
| Running Drills | 18 |
| Change of Direction Drills | 19 |

Online ACL Rehab Guide & Exercise Videos -

www.thorntonphysiotherapy.com.au/acl-rehab-guide

Phase 1a: Pre Surgery Rehab

Typical Timeframe: **6-8 weeks pre-surgery** – remember everyone is different and you will progress at your own pace. But as your pain decreases and function improves, we will progress your rehab to suit you

Goals:

- Restore pain-free full knee range of movement- knee bend and straightening
- Achieve no swelling in the knee
- Maximise muscle strength and function in your legs, hips and trunk
- Introduce you to your exercises for the early days after your surgery

What to expect:

- Gentle exercises aimed at improving knee movement
- Strategies and advice to help you manage your knee swelling and any ongoing pain
- Exercises aimed at maximising leg strength
- Exercises aimed at reducing the feeling of instability (balance exercises)
- Low impact aerobic exercise such as swimming or cycling

Exercises goals:

- Bodyweight exercises to begin to restore strength
- Simple exercises such as squats and bridges and hamstring bridges will help reduce swelling, improve strength, control and confidence
- Aerobic exercises as low aerobic fitness is a key contributor to reinjury
- Basic balance exercises
- After your surgery your knee needs some time to heal and get stronger, so it is important to avoid running, jumping and fast twisting movements until your physiotherapist includes these in your rehab program.

Anticipated number of physio sessions: 2-3

FOCUS POINT:

An inability to straighten your knee can mean a slow recovery after surgery. If you are struggling to do this please make sure you speak with your therapist.

Phase 1b: Post Op Recovery

Typical Timeframe: 1-2 weeks after surgery

Goals:

- Reduce your knee swelling
- Walking without using crutches as soon as you feel comfortable
- Start getting your thigh muscles activating so we can begin your strengthening exercises in the coming weeks
- Developing your knee movement – our aim is for you to be able to fully straighten your knee within 2-4 weeks after your surgery

What to expect:

- This early stage after surgery will be different for everyone in terms of pain, swelling and function of your knee. It is normal to feel like your knee is full and weak. It can be normal to feel pain behind your knee, in your calf, behind your thigh or on the inside of your knee. It is normal to not be able to cycle normally on the exercise bike when you first start. This is all because your knee is healing from your surgery. If you are unsure about whether what you are feeling is normal for this stage, make sure you speak to your physiotherapist
- Your physiotherapist will provide you with advice around how to best manage your knee swelling and/or pain
- Progress to walking without using crutches and then work on restoring your walking pattern
- Lots of bending and straightening your knee
- Start getting your leg muscles contracting and working again so you can start feeling stronger and more confident moving around

Exercises goals:

- Restore muscle activation patterns
- Exercises to promote maximal knee range
- Gentle hamstring stretches to promote scar tissue mobility from ACL graft (if hamstring has been used for graft)

Requirements for progression to next phase:

- Be able to fully straighten your knee similar to your other leg
- Be able to bend your knee to >110 degrees, but don't be worried if you're not there yet – it's something we will continue to work on with you
- Controlled knee swelling, a little bit at the end of the day is normal
- Seen your specialist within a couple of weeks after surgery to have your stitches and dressings removed, wound checked
- Good thigh muscle control so you're able to keep your leg straight when you lift it



Anticipated number of physio sessions: 2-3

FOCUS POINT:

An inability to straighten your knee can mean a slow recovery after surgery. If you are struggling to do this please make sure you speak with your therapist.

Phase 2: Restoring Function

Typical Timeframe: 2-4 weeks

Goals:

- Developing good muscle control, strength and endurance
- Improve your balance and single leg control
- Good management of any ongoing swelling
- Developing your aerobic fitness

What to expect:

- Introduction to and progression of a home or gym based exercise program with a focus on leg, hip and core strength – please let us know what equipment you have access to or if you have a gym membership, and we will factor this into your program. You are also welcome to use the gym at Thornton Physiotherapy throughout the course of your rehabilitation for FREE!
- Some swelling after activity can be expected, particularly when a new exercise has been added or progressed. It is important that you and your physiotherapist monitor any such responses and adjust your program if needed
- During this period your physiotherapist will identify any movement weakness that may place you at risk of reinjury long term and implement ways to fix these and incorporate this into your program

Exercises goals:

- Squats, calf raises, glute and hamstring bridging, step ups, groin bridges
– progressing reps, moving to single leg and resistance
- Aerobic exercise- stationary cycling, rowing machine
- Basic proprioceptive/balance exercises - Bosu, wobble board, Star Excursion Balance

Phase 2: Restoring Function (cont.)

Requirements for progression to next phase:

- Full knee movement
- No Swelling (although a small amount post exercise is fine)
- >20 single leg calf raises
- >20 squats to a good depth (or repetitions greater than 85% compared to the other side for each test)
- Balance: Single leg stance with arms crossed - Eyes open >40 secs, Eyes closed >8 secs

Anticipated number of physio sessions: 2-3

FOCUS POINT:

After surgery your new ACL graft is going through phases of healing and strengthening (called remodelling), which continues even after you've returned to running, training and play. During the first couple of months after surgery your graft is in a weaker state so we need to be mindful of the type and amount of loading and stress we place upon it, so we don't interfere with this early remodelling process. This is why we advise against performing running, high speed and jumping/landing actions until advised by your physiotherapist.

Phase 3: Building Strength

Typical Timeframe: 4-20+ weeks

Goals:

- Maximise leg and core strength and control
- This stage prepares you for the next phase of returning to running and jumping based movements.
- This phase is very important for ensuring you are strong and confident to literally hit the ground running!

What to expect:

- Building the challenge and range of strength exercises, such as single leg control, reps/sets, resistance/weight
- Increased volume of work – it is during these months that you will begin working hardest
- Typically by the end of this period it is often normal for the knee to feel 'fine.'
Please do not consider running or impact exercises until consulting with your physio.

Exercises goals:

- More challenging variations of squats, lunges, steps, groin bridges by adding weight/changing sets and reps and adding elements to increase balance demands
- Typically gym performed twice a week (this can be done in the clinic Free of charge)
- Exercises to develop speed and change of direction control to lower injury risk once you are running and preparing for team training

Phase 3: Building Strength (cont.)

Requirements for progression to next phase:

- Single leg squat: >10 reps each leg or >85% compared to the other side + control
- No side to side difference for single leg bridge and single leg calf raises: >20 rep threshold or >85% compared to other side
- Strength with hand held dynamometry: >90% knee extension (quadriceps) and knee flexion (hamstrings) strength compared to the other side
- No Swelling

Anticipated number of physio sessions: 2-3

FOCUS POINT:

A strong relationship has been found between repeat ACL injuries and the strength around your hip and knee and its ability to resist that 'classic' ACL injury position of knee twisted inwards. Paterno et al. (2010)

It is because of this that we place such a big focus on developing your strength and control for this position right from get go. Mastering this position and practicing perfect position will be your saviour when you return to sport.

Phase 4: Running

Typical Timeframe: **usually from 12 weeks after surgery** but also based on you achieving the criteria from previous phases. Again, everyone is different and it is important we get you strong before you return to running!

Goals:

- Increase running capacity and confidence
- Be swelling and pain free

What to expect:

- Continue your strengthening program
- A lot of straight line running. It is important in this phase that great care is taken to not do high speed, change of direction, sudden stopping or random running.
- This phase is about rebuilding your fitness and improving any technical issues that we may see.
- Come prepared to run on this consult as we will spend a fair bit of time around technique. Let your physio know if you are experiencing any pain around the front of the knee or niggles. These are quite common in this phase but easily dealt with.
- Your gym program will be modified later in this phase to begin to prepare you for change of direction work

Exercises goals:

- Straight line running initially focusing on volume and stopping control
- Varied running programs including pace running, volume, fartlek
- How much will depend on your sport, fitness and goals

Phase 4: Running (cont.)

Requirements for progression to next phase:

- Maintaining swelling free, full knee movement and strength
- Even running pattern – stride length, cadence (steps per minute)
- Good control slowing down
- Dual leg landing with high quality knee control
- Single leg landing with high quality knee control
- Skater Jump technique done with high quality
- Single leg Squat endurance > 18

Anticipated number
of physio sessions:
Once every 3-4 weeks



Phase 5: Change of Direction

Typical Timeframe: **starting this around 12+ weeks** after inclusion of running into your program and you've had time to develop your fitness and running capacity

Goals:

- Confidence with changing direction, hopping/jumping, landing, pivoting and cutting

What to expect:

- Increasing your confidence and control with jumping type exercises, as well as increasing speed of change of direction and landings
- Preparing you for your return to team training by including movements, positions and exercises specific to your sport or goal
- Come prepared to run and begin change of direction skill work during this session (eg. no jeans!)

Exercises goals:

- Jumping and landing drills designed to improve your ability to land, change direction safely and with a secure knee
- Sport specific movements aimed at getting you ready to return to the fun part of rehab
- These drills will often include how you injured yourself broken down into its simplest elements designed to build your control, skill and confidence
- Continuing your strength programs with a focus towards more power and change of direction control

Phase 5: Change of Direction (cont.)

Requirements for progression to next phase:

- Completion of this level without episodes of pain, instability or low confidence including the high end demanding drills
- Single Hop test: >95% distance compared to other side
- Triple Hop Test: >95% distance compared to other side
- Triple Cross Over Hop Test: >95% distance compared to other side
- Side Hop Test 30secs: >95% compared to other side
- Star Excursion Balance Test: >95% distance compared to other side
- ACL-RSI and IKDC
- Maintaining swelling free, full knee movement and strength



Anticipated number of physio sessions:
Once every 3-4 weeks

Phase 6: Return to Team Training

Typical Timeframe: 8 months post op

Goals:

- Successful completion of previous phases
- You should be feeling comfortable and confident to return to training – understanding this isn't return to competitive games
- Continue ACL rehab and transferring of this to ACL prevention programs.

What to expect:

- Gradual re-introduction into team training environment. Certain components such as intensity and contact will be modified initially and then gradually re-introduced to help build confidence and give your body time to adapt to the new demands
- Improving both your fitness and skills relevant to your sport
- Continue with strengthening and running drills
- Learning ACL prevention programs and how to implement these into your regular training.

Exercises goals:

- Maintaining strength and gym work
- Learning injury reduction warm ups such as Fifa 11+ / Netball Knee / Footy First program or modification of these to your appropriate sport.

Our Instagram has these warm ups saved in our story

- These warm ups have three critical components:
 - General running warm up
 - Strength - something you will be excellent at by now
 - Landing and jumping drills - something you will have mastered by now

Phase 6: Return to Team Training (cont.)

Requirements for progression to next phase:

- Stable knee on physical exam
- We use some questionnaires that test your readiness for play (ACL-RSI, TSK-11)
- >95% quads strength compared to the opposite limb
- >95% hop distances and high degree of control compared to the opposite limb (single, triple and crossover hop tests)
- Good control on drop vertical jump (symmetrical landing, good knee flexion and no valgus)
- Successful completion of sports specific training program and return to team training and consultation with coach regarding readiness
- Ongoing injury prevention program in place and patient understanding and adherence

DID YOU KNOW?

Those who successfully complete specific return to sport criteria have a 4x lower risk of injury, i.e. completing this rehabilitation program and meeting all its criteria!

You are 50% less likely to reinjure for every month after 6 months you delay returning to competitive fixtures e.g. 300% less likely to injure between 6 - 12 month return to sport.

Phase 7: Return to Play

Typical Timeframe: 9+ months post op

Goals:

- Successful completion of previous phases

What to expect:

- Feeling confident and comfortable before returning to sport
- Continuation of ACL prevention program before training and games to lower your chance of reinjuring
- We find typically your first few games – your performance is terrible typically due to hesitation, fear, and just generally been out of the game for 12 months. This is normal and each game your confidence will improve. Most athletes then go on to have a very enjoyable season. Sometime athletes struggle with a bit of fatigue near the end of the season as you have been working hard for >12 months. It is important to remember that sometimes a little break can be just as effective as training sometimes.

Exercises goals:

- Continue gym based strength program at least once a week
- Ongoing completion of injury prevention program before training and games

FOCUS POINT:


There is evidence to show that returning to competitive ball sports within 12 months of ACL reconstruction is associated with a significant risk of repeat ACL injury

There is a 51% decrease in ACL reinjury rate for each month return to sport is delayed until 12 months post-surgery (Grindem 2016)

There is a growing body of evidence to support that the exercises and rehab performed during reconstruction and in the years following are more successful at lowering knee complications such as reinjury and arthritis than the type of surgical intervention.

You will hear a lot of people talk about 'how this is my bad knee, it will get arthritis.' This is not always the case.

We know those at high risk of knee arthritis are those that lack knee strength, knee control and have higher body mass. This is why our rehab is so comprehensive – we are trying to help prevent any further insult to that knee as well as protect it as best we can from the effects of age and obesity.



Congrats you have
done the hard work -
Don't let it go to waste!

Running Programs

This stage is focusing on developing your running capacity, fitness and deceleration control

- Ensure all straight line, no sudden stopping, minimise distractions around you, no studs, no jumping, no sprinting (running a gentle curve that is the road is fine)
- Ensure when slowing down, decelerate to a walk first then focus on stopping into a lunge position (eg. give yourself time to slow down before crossing the road)
- Monitor you knee for any swelling or increased stiffness- let you physiotherapist know if any of these develop/persist
- Always complete a warm up and running drills prior (high knees, leg swings, but kicks, hip mobility)
- Please vary the programs based on YOUR fitness - the below are guidelines and suggestions – but if it says 4km run and that is more than you would run in a year, talk to us to help guide you

Do not commence any of the below programs without guidance and consultation from your physiotherapist

| Volume | Interval | Speed |
|---|--|---|
| <p>1. 4 minute jog, 1 minute walk <i>Repeat 3 times</i> You can progress this each running session by adding another 1- 2 repeats</p> <p>2. Run 3 - 8 km Keep track of your times.</p> <p>3. Run 1km - aiming for hard pace that keeps heart rate high, walk rest for 2 min, repeat 3 - 6 times</p> <p>4. 400m run at submax pace (60%) 200m walk/light jog recovery 4 - 8 reps</p> | <p>1. Box to box runs - 30 - 40 sec repeat 8 - 14 reps</p> <p>2. Shuttles a) Forward to 6 yard line, then backwards to goal line (focus on landing into lunge position when transitioning to backwards) <i>Complete x 12</i> b) Forward to 18yard, backwards to the goal line (focus on landing into lunge position when transitioning to backwards) <i>Complete x 8</i> c) Forward to half way, backwards to the goal line (focus on landing into lunge position when transitioning to backwards) <i>Complete x 4</i></p> <p>3. Fartlek Run</p> <p>4. Run fast 10 sec, easy 50 sec, fast 20 sec easy 40... run fast 60 walk 60 sec and repeat 2 - 8 times</p> | <p>1. Acceleration - run over a 60 - 100m straight line - build speed every 5 steps building up to 70 - 80% and then slow down. <i>Repeat 10 - 15 times</i></p> <p>2. Football specific speed - Side - 18 side 30 – 45 sec repeat efforts, sets of 6 - 10</p> <p>3. Sprint ladder (speed dependent on recovery level - start @ 70% and build throughout rehab weeks) - 20m sprint walk recovery x 5 - 40 m sprint walk recovery x 4 - 60 m sprint walk recover x 3 - 80 m sprint walk recovery x 2 - 100 m sprint walk recover</p> |

COD Drills

This stage is focusing on change of direction

- This stage is focusing on change of direction drills
- Change of direction drills always begin at low speed, low intensity but HIGH FOCUS
- These drills form the building blocks of movement patterns in sport and are designed to teach safe movement practices
- When you stop you should be replicating a lunge style pattern
- When you are pivoting you should be replicating the knee control elements from single leg squats
- While the below have videos on a football field – these can be performed on YOUR SPORT court and the exercises modified to suit the return to your chosen sport
- Prior to commencing any of the below exercise please ensure your physio has advised to do so

Beginner

Planned

Emphasis on planting/lunge control with slow COD

1. Weave with change of direction plant.

- Set up a 50m (ish) course of a gentle weave - Run from cone to cone with each time stopping at each cone in perfect knee alignment as discussed in session
- Gradually increase the speed, distance and angle of direction change over the coming weeks

2. Figure 8 walk -> jog

- Start with this figure 8 been 10m in length
- As you get better make it longer and run faster to increase the difficulty

3. Squares

- Set up a 5m square
- Run each length taking time to stop/focus on how you change direction at each corner
- As you progress in confidence and control increase size of square, speed of run, more laps prior to resting

Intermediate

Fast agility

Ladder Drills with various foot patterns (your physio will show you these)

Hopping change to sprint

- 5 single leg hops forward into a 50m jog
- 5 single leg hops around in a circle into a 50m jog
- 5 lateral hops into a 50m jog

Dribbling a football in 10m square

30 sec work, 30 sec juggling x 4 - 5

Agility weave around cones

- to increase difficulty make cones/poles sharper course and perform faster

Advanced

Unplanned

(A friend/physio may be required to help)

TAG - trying to lose a team mate who has to stay within 5m of you

T drill - Running forward and then friend calls left/right and sprinting to corresponding cone

Square reaction drill

- Standing in middle of 10m square
- A friend calls out a number
- Sprint to cone and return to centre and repeat

Dribbling football through agility course

Passing drills with friends

- the more people involved, the better
- 1 v 1 with and without a ball

