The short graft ACL reconstruction technique used by Dr. Macgroarty has been developed over the last 10 years in Europe and there have been over 40,000 operations of it’s kind across the globe. It has been used in Australia for over a year and Dr. Macgroarty was one of the first people to adopt the innovative technique.

In traditional ACL reconstructions 2 Hamstring tendons are harvested and used to create a long, slim graft that is secure in place in large bone tunnels by either a direct screw into the graft or by a suspension device that sits on the outside of the bone. The graft diameter is often 7mm or less and the these types of fixation have a similar strength to the forces that go through the ACL in normal walking.

With the short graft technique only 1 Hamstring is taken (in 90% of cases) and wrapped 4 times to create a shorter, much larger diameter graft averaging 9mm. It is then fixed in place inside the bone with a screw-tape interface which is 3 times stronger than the traditional fixation.

The larger graft diameter has been shown in studies to reduce the chance of re-rupturing the graft in the future and the superior graft fixation allows for early walking and strengthening to begin, which in turn has a multitude of benefits.

The Short Graft Technique provides the following benefits for most patients compared to a traditional technique:

- Use of only 1 Hamstring tendon rather than 2
- Larger graft size which reduces chance of re-injury
- Stronger fixation allowing for Rehabilitation and walking to begin earlier
- Less traumatic surgical technique leading to less bony bruising and therefore less pain
- Earlier return to work and / or sports training
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Having received the hamstring sparing short graft ACL reconstruction you can participate in an accelerated rehabilitation protocol guided by your Physiotherapist. It has been developed by reviewing the current scientific evidence of the mechanical strength of the graft that we have used along with current ACL rehabilitation techniques.

The guidelines are designed to service a full range of patients from office workers to elite athletes, and as such, the exercises and suggestions are not prescriptive. They should be used as suggestions by your Physiotherapist to tailor a personalised rehabilitation program for you. Each patient is different as is everybody’s recovery journey.

Progression through each stage is based on functional criteria, not by time elapsed since surgery. The time-frames quoted are approximate and will differ from one patient to another. Some patients will be ready to progress sooner while some may take longer.

**General Information**

- Post-Operative exercises need to be done regularly to preserve muscle bulk and activation which leads to decreased pain and improved strength. This is why you will see your Physio 2 to 3 times each week in the initial few weeks post surgery. At home your exercises should be performed 4-5 times each day to improve your chances of a quicker recovery and return to work.

- The primary aim is to get the patient back to walking normally. The Physiotherapist will help you to do this as early as 4 hours post-operatively. This early mobility again helps to maintain normal activation of the muscles in your leg which in term preserves muscle bulk.

- The milestones and goals in this protocol are the key to your successful recovery. There are many different exercises that will help you achieve them and your Physiotherapist will help formulate the best exercises for you at each stage using this guide.
Accelerated Rehabilitation Guidelines ACL Reconstruction (Short Graft)

Phase 0 - Day of Surgery

**Recovery and Initial Rehabilitation**

- Your rehabilitation will begin in the day surgery recovery area where the hospital Physiotherapists will see you at around 4 hours post operatively.
- The Physio will explain how to use the Ice Compression Brace and how often to use it.
- The Physio will take you through some basic exercises including a Straight Leg Raise, Co-Contraction, “Drop and Dangle”, Calf raises, Foot Slides, Mini Squat and a 3-way leg swing.
- As discussed, one of the main aims is to walk normally without crutches soon after surgery. The Physiotherapist will assist you to achieve this goal.
- The Brisbane Knee and Shoulder clinic team will discuss the need to see a Physiotherapist within the first 3–4 days post surgery.
- A member of the Brisbane Knee and Shoulder clinic team will come and see you after the Physiotherapist has finished. If all has gone well, you should be able to go home the same day. BKSC staff will also help organize an appointment with your local Physiotherapist to ensure you are seen quickly after hospital discharge.

**General Comments**

- Pain is normal and can fluctuate after surgery, particularly when associated with an increase in activity or exercise. This is why we use the Ice Compression Brace regularly in the initial stages and after exercise. It is important that you use regular analgesia and anti-inflammatory medication as prescribed by your surgeon. It is important for you to understand this concept. If pain is sharp, severe or associated with a large increase in swelling and does not respond to the above treatments, contact your Physio to discuss as soon as possible.
- Return to work and Sport is highly variable and should be discussed with your Physio and at your follow-up appointments. Most office workers can return to work after a few days, depending on their ability to drive. More active professions often require a few weeks, but ultimately with the Short Graft Technique and accelerated rehabilitation protocol, it is anticipated you could return to work sooner than with a standard ACL graft.
Accelerated Rehabilitation Guidelines ACL Reconstruction (Short Graft)

Phase 1 (Day 1 - 14 Post Op)

Goals
- ROM Full Extension—120° Flexion
- Good Quads / Hamstring Activation
- Normal Gait (Walking Pattern)
- Minimize Pain / Swelling
- Return to Office Employment

Suggested Exercises

Strength
- Static Quads with medial and lateral bias
- Straight Leg Raise
- Mini Squats—Wall or Free-standing
- Hip External rotation, abduction, and extension in side-lying / prone Hip
- Exercise Bike
- Theraband CKC Extension
- Calf raises (2 Leg)

Stretches
- Knee extension stretches
- Calf stretches
- Flexion ROM Stretches

Other Things to do
- Regular Pain Relief
- Regular Ice and Compression

Criteria to move on to Phase 2

ROM measured at 0-120°
Able to co-contract HS and Quads to 1 leg stand
20 x SLR with No Lag
Normal Gait
Phase 2 (Weeks 2–6 Post Op)

Goals
- Full ROM
- Improving leg strength to be able to step down
- 1 leg balance Knee Unlocked
- Minimal pain on Walking with Normal Gait

Suggested Exercises

Strength
- Mini Lunges
- Step Ups
- Step Down
- Bilateral Leg Press
- Increase Squat depth
- Resisted Hip / Calf Strengthening

Balance / Proprioception
- Single leg balance
- Wobble Board

Cardiovascular
- Bike
- Elliptical Trainer

Other Things to do
- Regular Pain Relief
- Regular Ice and compression
- Increase general walking without pain

Criteria to move on to Phase 3

- Full ROM
- Minimal Effusion / Pain
- Step-Down to 45°
- IKDC Global Rating of >7
Phase 3 (Weeks 6-12 Post Op)

Goals
- Maintain Full ROM
- Improving leg strength compared to other side
- Return to active duties / job
- Equal Balance with un-operated leg
- Start running with minimal Pain

Suggested Exercises

Strength
- Leg Press—1 Leg with control
- Wobble Board
- 1 Leg Deadlift
- Step-Ups / Step-Downs
- Light resisted Hamstring exercises
- Resisted Knee Extension 90-45°
- Side / Clock Lunges

Cardiovascular
- Treadmill Running
- Any other Cardio Equipment

Other Things to do
- Regular Ice and Compression after Exercise
- Using stairs regularly
- Normal Duties at work

Balance / Proprioception
- Wobble Board
- Walking uneven surfaces
- Balance Beam

Criteria to move on to Phase 4
Balance L=R
Strength 70% compared to other side
Running straight line without pain
Hopping Without Pain
Accelerated Rehabilitation Guidelines ACL Reconstruction (Short Graft)

Phase 4 Weeks (Weeks 12-18 Post-Op)

Goals
- Full Squat with minimal pain
- Increase resistance training
- Begin Jumping and Hopping

Suggested Exercises

Strength
- Single leg Press—no support
- Full Squat
- Resisted Squat / Lunge / Deadlift
- Side Lunges with resistance

Dynamic
- Plyometric strength—cleans / jerks etc
- Shuffling / Running patterns
- Vertical Jumps
- Jump Downs
- Single Leg Hops

Other Things to do
- Regular Ice and Compression after exercise
- Increase cardiovascular training as pain allows (Bike, Swim, Run)

Criteria to move on to Phase 5
Strength 80% compared to other side
Running patterns without pain
Leg Symmetry of 75% on Hop tests
IKDC Global Rating <9
**Phase 5 Weeks (18-26 Weeks Post Op)**

**Goals**
- Return of near full strength in the leg muscles
- Return to Sports Training
- Dynamic training without pain

**Suggested Exercises**

**Strength**
- Continue increasing single and double leg resistance training
- Plyometrics

**Sport Specific**
- Interval Training
- Running drills at moderate pace—change in direction
- Sport Specific Skill training
- Shuttle Running

**Criteria to move on to Phase 6**
- Strength 90% compared to other side
- Leg Symmetry of 90% on Hop tests
- Full Sports Training without pain
Accelerated Rehabilitation Guidelines ACL Reconstruction (Short Graft)

**Phase 6 (Week 26 Onwards)**

**Goals**

- Full Strength in Leg Muscles
- Return to Competitive Sports

YOU MUST HAVE MET THE NECESSARY CRITERIA BEFORE RETURNING TO COMPETITIVE SPORTS. Although with your muscle testing, balance and dynamic training you may feel normal it is known that most grafts do not fully heal until at least 6 months and some studies suggest up to 2 years. This protocol is designed to help you recover quickly but it will not speed up this biological process.

Return to competitive sport should be carefully considered and is dependent on the level at which you play and your commitment to it. Contact sports in particular should be resumed with care as there are many forces outside of your control which can affect the graft.

Discuss with your Physio and consult with your surgeon prior to returning to sport.

**Criteria to Return to Competitive Sport**

- Strength 95% compared to other side
- Leg Symmetry of 95% on Hop tests
- Full Sports Training without pain
- NFL Combine Testing—Club Specific Testing
- Vertical Jump
- MOON Outcome Measure pack