

Medial Patello-Femoral Ligament Reconstruction

Introduction

Surgery: Medial proximal tibial incision for graft harvest, usually two strand hamstrings.

Indications for surgery: Unstable patello-femoral joint.

Expected length of Stay: Day case

Surgeons: Mr G Lawson, Mr T White, Mr J Keating

Scope of practice

These guidelines are designed to guide physiotherapists when treating patients following a medial patello-femoral ligament reconstruction. They were produced by a process of systematic review of the current evidence based literature and medical and peer consultation. They were correct at the time of writing. The guidelines should be used in conjunction with the clinical reasoning skills of the physiotherapist and patients should always be treated on a case-by-case basis.

Aim

The aim of these guidelines is to provide physiotherapy staff with a series of recommendations from the current evidence base to assist them in the management of patients who have undergone Medial Patello-Femoral Ligament Reconstruction (MPFL-R)

Literature review question

What is a safe and effective rehabilitation programme following MPFL-R from day of surgery to return to function and sport in order to maximise outcome?

Search Process

Appraisal process: the databases below were searched between December 2012 and December 2021. Medline, SPORT Discuss, CINAHL, PUBMED, PEDro were searched in the first instance. AMED, EMBASE, Cochrane, and Google were also searched. The titles and abstracts of all identified studies were assessed to determine whether they were pertinent to the research question. The initial searches were then carried out on the other databases and the results combined to ensure articles were not duplicated.

Total number of articles selected from 2012-2021: 5

Total number of papers included in previous review from 2000-2012: 17

CASPs used: 0

Databases:

Database	Dates	Limitations
Medline	Dec 2012 – Dec 2021	English
PEDro	Dec 2012 – Dec 2021	English
PUBMED	Dec 2012 – Dec 2021	English

Author: Vanessa Puzzuoli, Husam Khammash (Student PT)

Date: May 2022

Date for review: May 2027

LOTHIAN PHYSIOTHERAPY ORTHOPAEDIC GUIDELINES

AMED	Dec 2012 – Dec 2021	English
SPORT Discus	Dec 2012 – Dec 2021	English
CINAHL	Dec 2012 – Dec 2021	English
Cochrane	Dec 2012 – Dec 2021	English
EMBASE	Dec 2012 – Dec 2021	English
Google	Dec 2012 – Dec 2021	English

Key Words:

Medial Patello-femoral Ligament Reconstruction OR MPFL Reconstruction	AND/OR	
	Physiotherapy	Physical Therapy
	Rehabilitation	Post-operative
	Post-surgical	Weight bearing
	Hamstrings	Patellar Tendon
	Ice	Cryotherapy
	Bracing	Immobilisation
	Movement	Strengthening
	Exercise Therapy	Isometric
	Isotonic	Isokinetic
	Closed-chain	Open-chain
	Proprioception	Neuromuscular control
	Plyometrics	Sports-specific
	Training	Functional assessment
Outcome	Hop testing	

Results

The literature review revealed one randomised controlled trial (RCTs) on physiotherapy management following an MPFL-R. This RCT looked to compare the effects of open-chain exercise (OKC) and closed-chain exercise (CKC) for patients after medial patella-femoral ligament (MPFL) reconstruction. This study showed that CKC is better than OKC for both short- and long-term outcomes of patients after MPFL reconstruction. One systematic review reported that there is substantial variability in content and timing across rehabilitation protocols following MPFL reconstruction. There is no clear consensus in rehabilitation guidelines following MPFL guidelines, therefore this is a guideline based on limited evidence and expert opinion. Therefore, continued research is needed to create an objective guide for safe return to sport. Two case series were also reported on. One of these studies reported on adolescent athletes undergoing MPFL reconstruction and concluded that athletes may need prolonged rehabilitation programs beyond 8 months to allow the adequate recovery of muscle strength for safe return to sport. This study stated that there is a significant deficit in isometric quadriceps strength in the surgical limb after surgery. Due to the lack of RCTs in the current literature, the recommendations above are

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LOTHIAN PHYSIOTHERAPY ORTHOPAEDIC GUIDELINES

supported by expert opinion of the surgeons mentioned in the introduction section. Additionally, the studies from the previous MPFL guidelines were also utilised for this guideline.

Key Points

- Please note that timescales are approximate, and rehabilitation should be guided, at each stage, by minimal swelling, resolution of pain, good muscle recruitment.
- These patients are likely to be very sore and swollen initially and will be slow to progress and regain quadriceps function;
- The benefits of cryotherapy have been positively reviewed in the early post operative period for other knee procedures (ACLR).
- One type of exercise programme has not been shown to be more effective, but it should incorporate a combination of strength and balance retraining.
- Eccentric quadriceps exercises are of benefit to the quadriceps and other lower limb muscle groups;
- The use of two functional outcome measures along with isokinetic testing is the ideal outcome assessment for return to sport but isokinetic assessment alone does not reflect functional improvement.
- Once the outcome criteria have been met patients can return to realistic sporting activities at approximately nine to twelve months postoperatively.

Recommendations

Phase 1

Immediate post-op to 2 weeks

Precautions: Timescales are approximate and rehabilitation progress, at each stage, is guided by pain, minimal swelling, and good muscle recruitment.

Goals

Recommendations

Decrease inflammation

Ice 20 minutes, 2 hourly ⁽¹⁾
Compress when active
Elevate when resting

Increase ROM

Commence gentle active ROM exercises as pain allows

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LOTHIAN PHYSIOTHERAPY ORTHOPAEDIC GUIDELINES

Progress mobility	Gait re-education. A canvas back splint may be required for comfort for up to 2 weeks primarily for pain relief, and until patient regains quadriceps control. Can be weaned off as appropriate. Mobilise weight bearing as tolerated
Increase muscle strength	Commence heel slides, early static quadriceps sets/isometrics, hip abduction, hip extension & ankle pumps

Phase 2

2 weeks to 12 weeks approximately

Precautions: Timescales are approximate and rehabilitation progress, at each stage, is guided by pain, minimal swelling, good muscle recruitment, altered postures to complete an exercise, fatigue on one side compared to the other and no changes in ligament laxity on testing. To perform proprioceptive exercises, adequate ROM, strength, low pain with activity, appropriate weight bearing status, and acceptable postural ability is required.

Goals	Recommendations
Increase ROM	Gradually increase ROM to achieve full hyper extension and full flexion
Progress mobility	Discontinue knee brace when quadriceps control is regained
Progress weight-bearing	Progress to FWB as pain and strength allow, if not achieved already
Progress strength of key lower limb muscle groups both isolated and combined	OKC quadriceps exercises should be progressed as able All muscle groups. quadriceps (concentric & eccentric), calf, gluteal, adductor and hamstring exercises e.g., mini squats, leg press, heel raises, step ups, static bike, TheraBand® exercises, adductor exercises such as adductor ball squeeze. Commence Lower Limb Motor Control Screening assessment.

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Date: May 2022

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LOTHIAN PHYSIOTHERAPY ORTHOPAEDIC GUIDELINES

Increase proprioception, neuromuscular control and stability

Commence stability and balance exercises e.g., trunk and pelvic stability exercises, balance board, single legged balance, and TheraBand control

Phase 3

12 weeks to discharge

Precautions: Timescales are approximate and rehabilitation progress, at each stage, is guided by pain, minimal swelling, good muscle recruitment, altered postures to complete an exercise, fatigue on one side compared to the other and no changes in ligament laxity on testing.

Encourage independence with a maintenance programme and strength training of unaffected lower limb.

Goals

Restore functional strength, endurance, neuromuscular control and confidence

Recommendations

Consolidate strengthening of all appropriate muscle groups e.g., isotonic and isokinetic exercise progression from medium to fast speeds (where available)

Progress to functional rehabilitation relative to work, functional activity or sport

Strength should be 90% of the unaffected side prior to commencing plyometric and jogging/running drills and prior to functional hop testing

Progress sports specific rehabilitation and plyometrics e.g., acceleration/deceleration drills, straight line running, figure of eight running, cutting drills

Objective measures of ROM, and strength and dynamic balance should be recorded

Continued Lower Limb Motor Control Screening Assessment.

Return to functional activities should be guided by:

Author: Vanessa Puzzuoli, Husam Khammash (Student PT)

Date: May 2022

Date for review: May 2027

LOTHIAN PHYSIOTHERAPY ORTHOPAEDIC GUIDELINES

Non-irritable, stable knee with full ROM

Return to sporting activities and high demands on knee:

Affected lower limb should be > 90% strength of unaffected limb – using isokinetic testing if available (quads and hamstrings)

Two functional hop tests e.g., quadruple cross over hop, triple hop, single hop for distance should be > 90% of unaffected limb

Dynamic balance can be assessed utilising the Y-Balance test (YBT-LQ) which measures single-limb stance excursion distances while performing lower extremity dynamic balance testing.

Return to Activities/Sports – Approximate Timescales

Please note that these timescales should only be used for **GUIDANCE** and all individuals **MUST** fulfil the appropriate criteria in Phase 3 prior to starting these activities.

Driving	Once brace has been removed the patient may return to driving if strength, pain and ROM allow, and their insurance company agree
Swimming	As symptoms allow Consider appropriateness of individual strokes Commence with flutter kick
Golf	Approx. 4/12
Racquet sports	Approx. 6/12
Contact sports	Approx. 9-12/12

Contact details for further information/advice

Royal Infirmary of Edinburgh, Outpatient Physiotherapy Department 0131 242 1940
Western General Hospital, Outpatient Physiotherapy Department 0131 537 1288
St John's Hospital, Outpatient Physiotherapy Department 01506 522063

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LOTHIAN PHYSIOTHERAPY ORTHOPAEDIC GUIDELINES

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LOTHIAN PHYSIOTHERAPY ORTHOPAEDIC GUIDELINES

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