

Medial Patella-Femoral Ligament (MPFL) post-operative protocol

The Medial Patellofemoral Ligament (MPFL) attaches the kneecap (patella) to the inner part of the knee. It helps stabilize the kneecap as the knee moves, preventing it from moving or dislocating outward (lateral).

The MFPL is most commonly injured when the kneecap is dislocated. Patients with an underlying abnormality of the knee, ligament laxity or weak leg muscles are at an increased risk for patella dislocations. Individuals who play sports or are involved in activities that involve pivoting are also at high risk.

Early phase of rehabilitation surgery to 6 weeks

Appointments – Appointments should start immediately after surgery and should be once every week following that.

Post-surgical management (Hospital based management)

- You will be encouraged to practice full active extension of your operated leg.
- Your physiotherapist will show you static quadriceps exercises, proceeding on to straight leg raises (you may need to help lift your leg with a towel/belt so that your knee is kept straight when lifting your leg).
- You will be encouraged to mobilise so that you are full weight bearing - in full extension with crutches (you may have a brace only if you have poor quadriceps control).

- **IMPORTANT: Monitor wound**
 - **If you have any concerns about your wound immediately contact us on:
OS group: 0203 397 7779**

 - This would include any of the below symptoms or observations;
 - wound leakage – blood or discharge
 - redness around the area
 - excessive or worsening pain
 - raised temperature

- **IMPORTANT: DVT awareness**
 - If you have any concerns that you may have developed a DVT (deep vein thrombosis) immediately contact us on this number:
 - WARD (please insert):
 - OS group: 0203 397 7779

 - This would include any of the below symptoms or observations;
 - sudden calf pain and swelling
 - pain, swelling and tenderness in one of your legs (usually your calf)
 - a heavy ache in the affected area.
 - warm skin in the area of the clot.
 - red skin, particularly at the back of your leg below the knee.
 - shortness of breath and chest pain (very rare)

- **Manage swelling**
 - Cryotherapy is advised
 - **PHYSIOLAB portable S1 device** is the preferred cryo-pneumatic device of OS group. See Appendix B for contact details.

Rehabilitation Goals

Week 1 –

- Protect the fixation and surrounding tissues
- Education of the rehabilitation outline to the patient
- Decrease inflammation around the joint
- Regain active quadricep and VMO contraction
- Maintain full knee extension
- At least 45degrees knee flexion

Weeks 2-4 (Stich removal) –

- Continue to manage and control inflammation at the knee
- Continuation/progression of quadricep strengthening work (VMO particularly)
- Gradually progress range of motion within limits of pain
- Minimum 90 degrees knee flexion by end of week 3 post-surgery
- Closed kinetic chain quadriceps activation only

- Full weight bearing with mobility aid/s

Weeks 5-6 –

- Full knee flexion
- Good activation of quadriceps and straight leg raise with no lag (knee bend)
- Protection of the post-surgical knee
- Normalize gait (tolerable with pain limits)
- Eliminate inflammation
- Restore leg control

Precautions

- Brace locked in extension for gait and activities of daily living
- Use axillary crutches for gait as needed with brace on, weight bearing as tolerate
- Mobilise fully weight-bearing with elbow crutches.
- Hinged knee brace 0-90 degrees for 4 weeks
- If sedentary employment, may be able to return to work from 2-4 weeks post-operatively, as long as provisions are made to elevate leg, and no complications with pain levels.
- No open kinetic chain quads work for 4 weeks
- All exercises should be pain free

Rehabilitation exercises

- ❖ Gait re-education + mobility to ensure safely and independently mobile with walking aid/s
- ❖ Stretches of tight structures as appropriate

Example Exercises:

- ❖ Knee range of movement exercises to ensure achieving full range of extension and progressing range of movement into flexion up to 90 degrees
- ❖ Strengthening of muscles stabilizing the knee i.e. closed kinetic chain quadriceps exercises in prone, open kinetic chain hamstring exercises
- ❖ Four-way leg lifts with brace on in supine for hip strengthening
- ❖ Ankle pumps
- ❖ Strengthening exercises of other muscle groups as appropriate
- ❖ Core stability work
- ❖ Teach patient to find and maintain neutral extension in standing, avoiding hyper extension, with good control

Manual therapy:

- Soft tissue techniques as appropriate to relieve hypertension or address inflammation

- Cryotherapy for effusion control

Criteria to progress to next stage of Rehabilitation

- ✓ Achieving full range of knee extension to 90° flexion
- ✓ Minimum of 6 weeks post-surgery
- ✓ Minimal joint effusion (particularly am)
- ✓ Full quadriceps activation
- ✓ Full weight bearing with mobility aid/s

Early to mid-phase rehabilitation 6-12 weeks

Appointments – Continue to be 1-2 sessions every 10 days

Rehabilitation goals

- ❖ Single leg stand control
- ❖ Good control and no pain with short arc functional movements, including steps and partial squats
- ❖ Good quad control
- ❖ Increase quadriceps and VMO control for restoration of proper patella tracking.
- ❖ Improve muscular strength and control / endurance without symptoms becoming worse
- ❖ Avoid overstressing fixation site
- ❖ No altered walking patterns

Precautions

- Avoid over-stressing fixation - begin movement control and gentle strengthening with closed chain movements with un-weighting techniques (such as the pool or double leg support)
- Avoid post-activity swelling
- Period of vulnerability: Avoid impact (i.e. jogging, aerobics) as well as excessive loading and shearing forces
- All exercises should be pain free

Rehabilitation exercises

- ❖ Gait drills (begin with pool work)
- ❖ Functional single plane closed chain movements (hydrotherapy)

- ❖ Continued gradual progression of range of motion
- ❖ Gradual progress of lower extremity strengthening with precautions to avoid valgus
- ❖ Balance and proprioception exercise

Example exercises

- ❖ Stretches of tight structures as appropriate, ensuring normal flexibility of quadriceps hamstrings and calf muscles
- ❖ Resistance work with TheraBand/weights and duration
- ❖ Progressive quadriceps in closed chain
- ❖ Strengthening of muscles stabilising the knee

Manual therapy:

- Soft tissue techniques as appropriate
- Joint mobilisations as appropriate
- Ensure mobility of patellofemoral joint respecting graft location, grade and angle of technique

Criteria to progress to the next stage of Rehabilitation

- ✓ Normal gait on level surfaces
- ✓ Good leg control without extensor lag, pain or apprehension
- ✓ Single leg balance greater than 15 seconds
- ✓ At least 12 weeks after surgery
- ✓ Pain free all exercises and full range of motion

Middle to late stage rehabilitation 12 weeks-6 months

Appointments- should be once every 2 weeks

Rehabilitation Goals

- Optimise normal movement and control of the lower limb
- Hopping and changes of direction with good control
- Good control with balance and proprioception exercises
- Knee extension strength at least 70% other knee
- Work towards achieving maximum strength and endurance of leg musculature
- Functional activity drills

- Good active patella control with no evidence of lateral tracking or instability
- All exercises must be pain free
- Good eccentric and concentric multi-plane dynamic neuromuscular control (including impact) to allow for return to work/sport

Precautions

- No contact sport training until 6 months post op and only if there is sufficient dynamic stability
- Post-activity soreness should resolve within 24 hours
- Avoid post-activity swelling

Rehabilitation exercise

- ❖ Advice/education
- ❖ Mobility: progression of mobility and function
- ❖ Gait re-education
- ❖ Return to gym based late stage activities
- ❖ Sport specific activities

Example exercises

- ❖ Assessment of lower limb biomechanics and movement analysis (treat any issues as appropriate)
- ❖ Functional dynamic working progressing the running and hopping
- ❖ Introduction of sport and or work specific rehabilitation and Involvement of core and stability work
- ❖ Gradual progress and return to plyometric exercises and balance/proprioception - introduction of unstable base including use of multidirectional wobble boards, trampette, gym balls
- ❖ Progress from static to dynamic exercises as appropriate (e.g. lunging)
- ❖ Introduce gym work including unrestricted static cycling, rowing, stepper
- ❖ Jogging can start if there is suitable dynamic stability and is pain free.

Manual therapy

- Continuation of soft tissue techniques as appropriate
- Hydrotherapy when appropriate

Criteria to Progress to return to participation

- ✓ Good dynamic, proprioceptive control
- ✓ Return to normal functional level
- ✓ Return to sports if set as patient goal
- ✓ Maximise confidence in returning to appropriate activity level
- ✓ Functional return to work / sport
- ✓ Return to sports dictated by particular sport, ability, fitness and confidence – minimum 4 months (with guidance from surgeon)

Return to sport

The return to play criteria should include a 3-tier system to allow the player to safely return to full sport physically and psychologically if sport is the level of activity they require to return to.

Return to participation – Modified sessions lower than the RTS level allowing the patient to regain fitness and psychological confidence in returning to training

Return to sport – The athlete has returned to sport but not at the required performance level progression and training adaptation to reach the same levels as pre injury fitness.

Return to performance– Extending the RTS element the athlete had gradually returned to sport and his performing inline or above the preinjury performance level.

Suggested outcome measures tests to be used to monitor progression throughout the
rehabilitation

Bilateral Drop Jump Test

- Participant stands on a 30cm box
- Jump two footed off the box landing with feet either side of a line 30cm from the box
- Immediately attempt to undertake a maximum vertical jump reaching up to touch a target held above the line
- Score a zero if the appropriate strategy is used and one for inappropriate movements. (Best overall score is 0 and worse is 10 points)

Qualitative Analysis of Drop Jump Landing

Date: _____ Patient: _____ Condition: _____

Left Right Bilateral

		Left	Right
Trunk Alignment	Leaning in any direction from midline		
Foot on Landing	Initial foot contact not symmetrical (timing)		
	Initial foot contact not symmetrical (foot landing away from mark)		
	Significant ground contact time		
	Foot not neutrally aligned (facing forwards)		
	Failure to land on mid foot		
Limb on Landing	Thigh pelvis angle <90deg		
	Stiff upright landing		
	Patella pointing towards 2 nd toe (noticeable valgus)		
	Patella pointing past inside of foot (significant valgus)		
	Total		

Tuck Jump Test

- Subjects stand in a 30cm box marked on floor
- Undertake tuck jump continuously for 10 seconds
- Must attempt to raise the knees above the hips each time and land and take off within the box
- Score a zero if the appropriate strategy is used and one for inappropriate movements. (Best overall score is 0 and worse is 10 points)

Tuck Jump Test Score Sheet

Date:

Patient:

Condition:

Left:

Right:

Bilateral:

	Score
Knee and Thigh Motion	
1. Knee valgus on landing	
2. Thighs not reaching parallel (peak of jump)	
3. Thighs not equal side to side (during flight)	
Foot position during landing	
4. Foot placement not shoulder width apart	
5. Foot placement not parallel (front to back)	
6. Foot contact timing not equal	
7. Does not land in same foot print	
8. Excessive landing contact noise	
Plyometric technique	
9. Pause between jumps	
10. Technique declines prior to 10 seconds	

Qualitative Analysis of Single Leg Loading

(Single leg squat)

(Single leg step down)

(Single leg hop for distance)

- See page 14 for test descriptions
- Score a zero if the appropriate strategy is used and one for inappropriate movements. (Best overall score is 0 and worse is 10 points)

Date: Patient: Condition:

Left Right Bilateral

QASLS		Left	Right
Arm strategy	Excessive arm movement to balance		
Trunk alignment	Leaning in any direction		
Pelvic plane	Loss of horizontal plane		
Thigh motion	WB thigh moves into hip adduction		
Knee position	Patella pointing towards 2 nd toe (noticeable valgus)		
	Patella pointing past inside of foot (significant valgus)		
Steady stance	Touches down with NWB foot		
	Stance leg wobbles noticeably		
	Total		

Qualitative Analysis of Single Leg Loading - Test Descriptions

Single leg step down

- Participant stands on a 30cm box
- Instructed to step off the box onto a mark, 30cm from the box and 5cm on the contra-lateral side to the mid line

Single leg hop for distance

- Participant stands on mark at side of standard tape measure
- Hands resting on iliac crests
- Attempts to hop as far as possible staying parallel to the tape.

Cross Over Hop Test

- Subject stands by two parallel lines 20cm apart extending at least 5m
- Undertakes four consecutive hops without pause crossing the grid lines each time.

Star Excursion Balance Test

- Subject stands on leg to be tested in centre of star. Keep heel down.
- Instructed to reach as far as possible down the line without taking undue support from the reaching leg or stepping over onto that leg
- 4 practices then test 5 repetitions

General notes

- All landings for single leg step down and single leg hop for distance must be held for 3 seconds, emphasis during task instruction must be placed on this
- Evaluate all landings using the QASLS scoring system
- For single leg hop for distance also include the distance hopped and the leg length
- Position camera a minimum of 2m from the landing position, zoom in to maximise the size of the subject within the frame
- Allow the subject a minimum of two practice attempts (continuing until they are able to do tasks appropriately) then record a single attempt.

Appendix A - Crutches

- When standing up and sitting down, make sure you take your arms out of the crutches and hold them in one hand. This will help to avoid any shoulder injuries.
- When walking with the crutches, keep the handles pointing forwards and your arms close to your sides.
- Place both crutches forwards together with enough space in between them to step into.
- If you are advised that you are not allowed to put any weight through your injured leg (non-weight bearing), place your crutches forwards together. Now lean through your arms as you hop your uninjured leg up to the same level as the crutches. The foot on your injured leg must stay off the floor at all times when walking.
- If you are advised that you are allowed to weight bear, place the crutches forwards together and then step your injured leg up to the crutches. Now lean through your arms as you step your uninjured leg forwards to the same level.
- When climbing stairs, try to use a banister or rail in one hand and a crutch in the other (you can also carry the extra crutch in this hand):
 - GOING UP: Good leg, bad leg, crutch
 - GOING DOWN: Crutch, bad leg, good leg.
- Check the rubber stoppers regularly. If they are worn down, bring them back to the Physiotherapist will replace them.

Appendix B - Physiolab

Link for hire <https://physiolab.com/products/to-rent/s1-portable.html>

Website www.physiolab.com