

## **POST-OPERATIVE MEDIAL PATELLOFEMORAL LIGAMENT (MPFL) RECONSTRUCTION PROTOCOL**

- **Ensure patient achieves milestone prior to progression**
- **Timings are a guideline only and progression should be individual to the patient**
- **No return to contact sports prior to 3 months post-op – return to sport dictated by particular sport, ability, fitness, confidence, and completion of Phase 4 of the protocol**
- **Any problems during rehabilitation please contact your physiotherapist or your Consultant Secretary.**

## PHASE 1: EARLY POST-OPERATIVE PHASE. Day 1 to 2 weeks post-op

Goal	Treatment	Milestone to Progress
Minimise swelling and pain	<ul style="list-style-type: none"> <li>• Use of ice</li> <li>• Ensure adequate pain relief</li> <li>• Elevate leg</li> <li>• Use of crutches</li> <li>• Cricket pad splint for mobilizing for 48 hours</li> </ul>	<ul style="list-style-type: none"> <li>• Minimal or no effusion</li> <li>• Pain levels managed to enable exercise progression</li> <li>• Full or nearing full extension</li> <li>• Knee flexion 70° - 90°</li> <li>• Ability to activate quads</li> <li>• Symmetrical gait pattern with crutches</li> </ul>
Regain full range of extension/hyperextension	<ul style="list-style-type: none"> <li>• Extension exercises: static quads, heel props, prone hanging</li> <li>• Passive stretching</li> </ul>	
Increase knee flexion as pain allows	<ul style="list-style-type: none"> <li>• Passive, active assisted and active flexion exercises</li> </ul>	
Activate quadriceps	<ul style="list-style-type: none"> <li>• Static quads hourly</li> <li>• Use of EMS if available</li> <li>• VMO</li> <li>• SLR if possible</li> </ul>	
Early hip/gluteal strengthening	<ul style="list-style-type: none"> <li>• Hip abduction/extension/ER strengthening</li> </ul>	
Restoration of normal gait pattern	<ul style="list-style-type: none"> <li>• Gait re-ed with elbow crutches, WB as pain and control allows</li> </ul>	

## PHASE 2: QUADS ACTIVATION AND CORE STRENGTH. Weeks 2-6 post-op.

Goal	Treatment	Milestone to Progress
Minimise swelling and pain	<ul style="list-style-type: none"> <li>Continue as above</li> </ul>	<ul style="list-style-type: none"> <li>Minimal/no effusion</li> <li>Full range extension</li> <li>Full or nearing full range flexion</li> <li>SLR with no lag</li> <li>Bilateral squat to 60° with even, symmetrical WB</li> <li>FWB</li> <li>Single leg stand for at least 5 seconds</li> </ul>
Regain full range of extension/hyperextension	<ul style="list-style-type: none"> <li>Extension exercises as above</li> <li>Passive stretching</li> </ul>	
Increase knee flexion as pain allows	<ul style="list-style-type: none"> <li>Active flexion exercises</li> <li>Progress to quads stretch</li> </ul>	
Improve quads strength	<ul style="list-style-type: none"> <li>Static quads</li> <li>SLRs - <b>ensure no lag</b></li> <li>VMO</li> </ul>	
Improve gluteal strength and general lower limb strength	<ul style="list-style-type: none"> <li>Continue hip abduction/extension/ER/bridging</li> <li>Hamstring curls and calf raises</li> <li>Exs bike</li> <li>Begin mini squats once adequate strength and control</li> </ul>	
Restoration of normal gait pattern	<ul style="list-style-type: none"> <li>Ensure FWB without crutches once adequate quads control</li> </ul>	
Commence proprioceptive work/balance work	<ul style="list-style-type: none"> <li>Weight transfer</li> <li>Progress to single leg stands once adequate quads control</li> <li>Wobble board/sit fit</li> </ul>	
Improve core strength	<ul style="list-style-type: none"> <li>Core stability strengthening</li> </ul>	

## PHASE 3: STRENGTH AND CONTROL. Weeks 6-12 post-op.

Goal	Treatment	Milestone to Progress
Minimise swelling and pain	<ul style="list-style-type: none"> <li>Continue cryotherapy and elevation as necessary</li> </ul>	<ul style="list-style-type: none"> <li>Minimal/no activity related effusion</li> <li>Full ROM</li> <li>No instability/patellar apprehension</li> <li>Normal, symmetrical gait/jogging pattern</li> <li>10 x single leg squats to 60° with good alignment and control (i.e. no valgus &amp; good hip/knee/ankle alignment)</li> <li>Single leg stand with eyes shut over 80% of unaffected leg</li> </ul>
Regain/maintain full range of flexion and extension	<ul style="list-style-type: none"> <li>Continue stretching regime</li> </ul>	
Improve quads, hamstrings, gluteal and general lower limb strength	<ul style="list-style-type: none"> <li>Squats to 90°, lunges, leg press, VMO</li> <li>Hamstring curls</li> <li>Continue hip abduction/extension/ER with increased resistance</li> <li>Exs bike, step ups, cross trainer</li> </ul>	
Improve neuromuscular control	<ul style="list-style-type: none"> <li>Knee alignment/prevent valgus - single leg squats, lunges (+/- trunk rotation), step ups/downs (ensure good hip/knee/ankle alignment)</li> </ul>	
Restoration of normal gait pattern	<ul style="list-style-type: none"> <li>Treadmill walking - forwards/backwards/incline</li> <li>Progress to straight line jogging only when good load acceptance and neuromuscular control</li> </ul>	
Improve proprioception	<ul style="list-style-type: none"> <li>Single leg stands eyes shut</li> <li>Wobble board/sitfit/BOSU/trampette</li> </ul>	
Improve core strength	<ul style="list-style-type: none"> <li>Progress core stability strengthening</li> </ul>	
Commence bilateral load acceptance/early plyometrics if returning to sport	<ul style="list-style-type: none"> <li>Bilateral drop jumps</li> <li>Jumps with symmetrical squat landing</li> </ul>	

## PHASE 4: RETURN TO SPORTS PREPARATION. Upon achievement of phase 3 goals. Over 12 weeks post-op.

Goal	Treatment	Milestone to Progress to Return to Sport
Minimise activity related swelling and pain	<ul style="list-style-type: none"> <li>Continue cryotherapy and elevation as necessary post exercising</li> </ul>	Dynamic neuromuscular control with multi-plane activities – without instability or pain
Increase lower limb muscle strength and endurance	<ul style="list-style-type: none"> <li>Continue strengthening all muscle groups using increased loads for resistance</li> <li>Continue core stability strengthening</li> </ul>	
Improve neuromuscular control following fatigue	<ul style="list-style-type: none"> <li>Ensure ability to control alignment after fatigue and during sports specific drills</li> </ul>	
Normal straight line running pattern in full control	<ul style="list-style-type: none"> <li>Progress jogging to running</li> <li>Increase speed/distance</li> <li>Change surface/incline</li> <li>Forward running/backward running</li> </ul>	
Improve proprioception	<ul style="list-style-type: none"> <li>Progress to dynamic proprioception exercises</li> </ul>	
Progress bilateral load acceptance to unilateral load acceptance/plyometrics and work to fatigue	<ul style="list-style-type: none"> <li>Tuck jumps</li> <li>Squat jumps - forward/back/rotational</li> <li>Bilateral plyometric static and multi-plane exs</li> <li>Single leg hop</li> <li>Forward, side hops/drop from step with controlled single leg landing</li> <li>Unilateral plyometric static and multi-plane activities</li> <li>Increasing speed and intensity to fatigue</li> </ul>	
Commence sports specific running agility drills	<ul style="list-style-type: none"> <li>Sprinting</li> <li>Cutting and pivoting</li> <li>Acceleration and deceleration</li> </ul>	

Commence sports specific skills	<ul style="list-style-type: none"> <li>• One on one practice drills, ball skills, kicking, boxing, racquet sports</li> </ul>	
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## References:

Ahmad, C, Brown, G, Shubin Stein, B (2009) The Docking Technique for Medial Patellofemoral Ligament Reconstruction: Surgical Technique and Clinical Outcome. *The American Journal of Sports Medicine*, 37(10), 2021-2027

Andrish, J (2008) The Management of Recurrent Patellar Dislocation. *Orthop Clin N Am*, 39, 313-327

Buckens, C, Saris, D (2010) Reconstruction of the Medial Patellofemoral Ligament for Treatment of Patellofemoral Instability: A Systematic Review. *American Journal of Sports Medicine*, 38, 181-188

Chichanowski, H, Schmitt, J, Johnson, R, Niemuth, P (2007) Hip Strength in Collegiate Female Athletes with Patellofemoral Pain. *Medicine & Science in Sports & Exercise*

Ellera Gomes, J, Marczyk, L, Cesar de Cesar, P, Jungblut, F (2004) Medial Patellofemoral Ligament Reconstruction with Semitendinosus Autograft for Chronic Patellar Instability: A Follow-up Study. *Arthroscopy: The Journal of Arthroscopic and Related Surgery*, 20 (2) 147-151

Fisher, B, Nyland, J, Brand, E, Curtin, B (2010) Medial Patellofemoral Ligament Reconstruction for Recurrent Patellar Dislocation: A Systematic Review Including Rehabilitation and Return-to-Sports Efficacy. *The Journal of Arthroscopic and Related Surgery*, 26 (10), 1384-1394

Fithian, D Powers, C, Khan, N (2010) Rehabilitation of the Knee after Medial Patellofemoral Ligament Reconstruction. *Clin Sports Med*, 29, 283-290

Hinton, R, Sharma, K (2003) Acute and Recurrent Patellar Instability in the Young Athlete. *Orthop Clin N Am*, 34, 385-396

Howells, N, Eldridge, J (2012) Medial Patellofemoral Ligament Reconstruction for Patellar Instability in Patients with Hypermobility. *The Journal of Bone and Joint Surgery*, 94-B (12) 1655-1659

McGinty, G, Irrgang, J, Pezzullo, D (2000) Biomechanical Considerations for Rehabilitation of the Knee. *Clinical Biomechanics*, 15, 160-166

Matthews, J, Schranz, P (2010) Reconstruction of the Medial Patellofemoral Ligament using a Longitudinal Patellar Tunnel Technique. *International Orthopaedics (SICOT)*, 34 1321-1325

Minkowiitz, R, Inzerillo, C, Sherman, O (2007) Patella Instability. *Bulletin of the NYU Hospital for Joint Diseases*, 65 (4), 280-293

Ronga, M, Oliva, F, Longo, UG, Testa, V, Capasso, G, Maffulli, N (2009) Isolated Medial Patellofemoral Ligament Reconstruction for Recurrent Patellar Dislocation. *American Journal of Sports Medicine*, 37, 1735-1742

Smith, T, Russell, N, Walker, J (2007) A Systematic Review Investigating the Early Rehabilitation of Patients Following Medial Patellofemoral Ligament Reconstruction for Patellar Instability. *Critical Reviews in Physical and Rehabilitation Medicine*, 19 (2), 79-95

Souza, R, Powers, C (2009) Differences in Hip Kinematics, Muscle Strength, and Muscle Activation Between Subjects With and Without Patellofemoral Pain. *Journal of Orthopaedic & Sports Physical Therapy*, 39 (1), 12-21