**Mr Rob Gilbert**

**POST-OPERATIVE MEDIAL PATELLOFEMORAL LIGAMENT 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 Mr Gilbert**

**PHASE 1 EARLY POST-OPERATIVE PHASE (day 1 - 2 weeks)**

|  |  |  |
| --- | --- | --- |
| **Goal** | **Treatment** | **Milestone to Progress to Phase 2** |
| Minimise swelling and pain | * Use of ice
* Ensure adequate pain relief
* Elevate leg
* Use of crutches
* Cricket pad splint for mobilizing for 48 hours
 | * Minimal or no effusion
* Pain levels managed to enable exercise progression
* Full or nearing full extension
* Knee flexion 70˚- 90˚
* Ability to activate quads
* Symmetrical gait pattern with crutches
 |
| Regain full range of extension/hyperextension | * Extension exercises: static quads, heel props, prone hanging
* Passive stretching
 |
| Increase knee flexion as pain allows | * Passive, active assisted and active flexion exercises
 |
| Activate quadriceps | * Static quads hourly
* Use of EMS if available
* VMO
* SLR if possible
 |
| Early hip/gluteal strengthening | * Hip abduction/extension/ER strengthening
 |
| Restoration of normal gait pattern | * Gait re-ed with elbow crutches, WB as pain and control allows
 |

**PHASE 2 - QUADS ACTIVATION AND CORE STRENGTH (approximately 2 weeks - 6 weeks)**

|  |  |  |
| --- | --- | --- |
| **Goal** | **Treatment** | **Milestone to Progress to Phase 3** |
| Minimise swelling and pain | * Continue as above
 | * Minimal/no effusion
* Full range extension
* Full or nearing full range flexion
* SLR with no lag
* Bilateral squat to 60˚ with even, symmetrical WB
* FWB
* Single leg stand for at least 5 seconds
 |
| Regain full range of extension/hyperextension | * Extension exercises as above
* Passive stretching
 |
| Increase knee flexion as pain allows | * Active flexion exercises
* Progress to quads stretch
 |
| Improve quads strength | * Static quads
* SLRs - **ensure no lag**
* VMO
 |
| Improve gluteal strength and general lower limb strength | * Continue hip abduction/extension/ER/bridging
* Hamstring curls and calf raises
* Exs bike
* Begin mini squats once adequate strength and control
 |
| Restoration of normal gait pattern | * Ensure FWB without crutches once adequate quads control
 |
| Commence proprioceptive work/balance work | * Weight transfer
* Progress to single leg stands once adequate quads control
* Wobble board/sit fit
 |
| Improve core strength | * Core stability strengthening
 |

**PHASE 3 - STRENGTH AND CONTROL (approximately 6 weeks - 12 weeks)**

|  |  |  |
| --- | --- | --- |
| **Goal** | **Treatment** | **Milestone to Progress to Phase 4** |
| Minimise swelling and pain | * Continue cryotherapy and elevation as necessary
 | * Minimal/no activity related effusion
* Full ROM
* No instability/patellar apprehension
* Normal, symmetrical gait/jogging pattern
* 10 x single leg squats to 60˚ with good alignment and control (i.e. no valgus & good hip/knee/ankle alignment)
* Single leg stand with eyes shut over 80% of unaffected leg
 |
| Regain/maintain full range of flexion and extension | * Continue stretching regime
 |
| Improve quads, hamstrings, gluteal and general lower limb strength | * Squats to 90˚, lunges, leg press, VMO
* Hamstring curls
* Continue hip abduction/extension/ER with increased resistance
* Exs bike, step ups, cross trainer
 |
| Improve neuromuscular control  | * Knee alignment/prevent valgus - single leg squats, lunges (+/- trunk rotation), step ups/downs (ensure good hip/knee/ankle alignment)
 |
| Restoration of normal gait pattern | * Treadmill walking - forwards/backwards/incline
* Progress to straight line jogging only when good load acceptance and neuromuscular control
 |
| Improve proprioception | * Single leg stands eyes shut
* Wobble board/sitfit/BOSU/trampette
 |
| Improve core strength | * Progress core stability strengthening
 |
| Commence bilateral load acceptance/early plyometrics if returning to sport | * Bilateral drop jumps
* Jumps with symmetrical squat landing
 |

**PHASE 4 - RETURN TO SPORTS PREPARATION (from 12 weeks approximately)**

|  |  |  |
| --- | --- | --- |
| **Goal** | **Treatment** | **Milestone to Progress to Return to Sport** |
| Minimise activity related swelling and pain | * Continue cryotherapy and elevation as necessary post exercising
 | Dynamic neuromuscular control with multi-plane activities – without instability or pain |
| Increase lower limb muscle strength and endurance | * Continue strengthening all muscle groups using increased loads for resistance
* Continue core stability strengthening
 |
| Improve neuromuscular control following fatigue | * Ensure ability to control alignment after fatigue and during sports specific drills
 |
| Normal straight line running pattern in full control | * Progress jogging to running
* Increase speed/distance
* Change surface/incline
* Forward running/backward running
 |
| Improve proprioception | * Progress to dynamic proprioception exercises
 |
| Progress bilateral load acceptance to unilateral load acceptance/plyometrics and work to fatigue | * Tuck jumps
* Squat jumps - forward/back/rotational
* Bilateral plyometric static and multi-plane exs
* Single leg hop
* Forward, side hops/drop from step with controlled single leg landing
* Unilateral plyometric static and multi-plane activities
* Increasing speed and intensity to fatigue
 |
| Commence sports specific running agility drills | * Sprinting
* Cutting and pivoting
* Acceleration and deceleration
 |
| Commence sports specific skills | * One on one practice drills, ball skills, kicking, boxing, racquet sports
 |

**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