



# REHABILITATION PROTOCOL

## Patellar Instability Surgery (MPFL reconstruction +/- TTO)

### Instructions for Physiotherapist:

EQUAL ICING AND REST/WORK RATIO IS IMPORTANT. SIGNIFICANT PAIN SHOULD NOT OCCUR WITH ANY ACTIVITY DURING REHAB WORK OR LAST LONGER AFTER REHAB. IF THIS OCCURS, MODIFICATION OR RE-EVALUATION NEEDS TO BE UNDERTAKEN.

### Dressings and sutures:

- The dressings on your leg should be left in place and kept dry when showering for 3 days.
- After 3 days you can remove your dressings and shower normally but do NOT scrub the incisions.
- Apply Band-Aids over the incisions to keep them clean once the initial dressing has been removed.
- If sutures/staples were used, they will be removed at your first post-op visit (approx. 2 weeks post-op).
- Do NOT soak the leg (i.e. hot tub / bath, etc) until 2-4 weeks after your sutures are removed and the incisions are well healed.

### Pain and swelling:

- Local anesthetic has been placed into your knee – this will wear off in 6-8 hours after surgery.
- You have been provided with a prescription for pain medications that when used together will provide the most effective pain relief after your surgery.
- Use an ice pack or cold therapy delivery system for 20 mins every hour while awake to help with pain and swelling.
- It is common to have some spotting through the dressings following surgery. Place an additional dressing over the area if this occurs.
- The incisions may continue to “leak” fluid after removal of the initial dressing – this is common and should not raise concern. Place an additional bandage or Band-Aids over the incisions to help them heal. Keep the incisions clean and dry.
- DO NOT apply any ointments or topical creams to the incisions until they are completely healed – this will risk the incisions becoming infected.
- When sitting or lying, keep your leg elevated with several pillows placed under the ankle (not the knee) to help decrease swelling and relieve pain.

### Red flags:

- Complications after arthroscopic surgery are very rare but can occur. If you develop any of the following symptoms go to your nearest emergency department for assessment:
  - Increasing calf pain / swelling that does not improve with elevation and ice
  - Shortness of breath
  - Chest pain



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### Phase 1 (0-6 weeks)

#### Goals:

- Protect the surgical repair
- Regain active quadriceps contraction/straight leg raise
- Minimize adverse effects of immobilization
- Obtain minimum **0-90 degrees motion by 4 weeks** and full range of motion by 6 weeks
- Control inflammation/swelling
- May sleep without brace as of week 4

#### Weight Bearing:

- **If a tibial tubercle osteotomy was performed:**
  - Foot flat 25% weight bearing with crutches and knee brace (week 0-2)
  - Progress to weight bearing as tolerated in the knee brace (week 2-6)
- If a tibial tubercle osteotomy was NOT performed:
  - Progress to weight bearing as tolerated in the knee brace (week 0)

#### Range of Motion:

- Week 0-2: 0-45°
- Week 3: 0-60°
- Week 4: 0-90°
- Weeks 4-6: 90° and advance as tolerated

#### Suggested Exercises:

- May remove brace for range of motion and muscle activation exercises
- Patella mobilization (superior to inferior only) and scar mobilization
- Straight leg raise in full extension until quad strength prevents extension lag
- Quadriceps sets with biofeedback (Neuromuscular Electrical Stimulation (NMES) may begin at 4-6 weeks)
- Prone quad set with foot/ankle on pillow/foam roll
- Active-assisted heel slides with towel (within ROM guidelines)
- Isotonic hamstrings within ROM guidelines (consider not doing if poor quads recruitment)
- Gastrocs/soleus/hamstring stretches
- 4-way SLR (hip abduction with slight hip ER, adduction, extension, flexion with slight ER): on table or standing with brace if patient does not have sufficient quadriceps control
- Resisted ankle ROM with Theraband
- Stationary Bike: may begin at 4-6 weeks within ROM restrictions: begin with partial revolutions w/o resistance and progress as ROM allows
- Partial Wall Squat (0-45 degrees): may begin at 4-6 weeks with sufficient quad recruitment and good PFJ tracking
- Begin double leg heel raises at 4-6 weeks if patient has sufficient control into terminal knee extension
- Begin Proprioception and Kinesthetic Awareness Training: may begin at 4-6 weeks: start double leg and progress to single leg once patient has sufficient quadriceps control. Unprotected single-leg stance on the operated knee should be avoided until satisfactory proximal limb control has been achieved

- Core training in appropriate positions
- Encourage upper limb strengthening in appropriate positions
- Patellofemoral taping as indicated



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### **Phase 2 (6-8 weeks)**

#### **Criteria for advancement to Phase 2:**

- Full extension and minimum of 90 degrees flexion
- Good quad set, SLR without extension lag
- Minimal swelling/inflammation
- Patellar mobility is near-normal

#### **Goals:**

- Progress towards full flexion ROM
- Avoid over-stressing fixation site (i.e. watch for excessive dynamic valgus, lateral patellar tracking, etc.)
- Improve quadriceps control in order to restore normal patellar tracking

#### **Weight-Bearing:**

- As tolerated – discontinue brace use completely by 6-8 weeks once you have regained normal quads control as determined by physiotherapist/physician

#### **Range of Motion:**

- Full, painless ROM

#### **Suggested Exercises:**

- Patellofemoral taping as needed
- Quadriceps sets with biofeedback, NMES
- Prone quad set with foot/ankle on pillow/foam roll; add weight behind knee as strength allows
- Active-assisted heel slides with towel to improve flexion
- Isotonic hamstrings within ROM guidelines (consider not doing if poor quad recruitment)
- PFJ mobilization (no lateral glides)
- Scar mobilization
- Gastrocs/soleus stretches, and Hamstrings stretches
- 4-way SLR (hip flexion with slight hip ER, extension, abduction with slight hip ER, adduction): on table or standing without brace if patient has sufficient quadriceps control
- Seated Active Knee Extension (if no cartilage pathology), in pain free ranges (90°-40°)
- WB gastroc/soleus strengthening
- Bike: start with high seat; add low resistance
- Total Gym and/or Wall Squat (0-45°): monitor PFJ tracking
- Balance and Proprioception Training; Single limb balance training only if satisfactory proximal limb control has been achieved. Otherwise, progress double leg proprioception and kinaesthetic awareness exercises
- Core training



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### **Phase 3 (8 weeks-4 months)**

#### **Criteria for advancement to Phase 3:**

- Able to perform a supine SLR without extension lag; good quadriceps tone
- Non-antalgic gait pattern
- Good PFJ mobility and control: no lateral tracking or signs and symptoms of instability
- Patient able to perform double leg partial squat to 30-45° of knee flexion with good trunk, hip, and LE control, and without pain
- Near normal knee ROM

#### **Goals:**

- Progress strength, dynamic stability, good single limb stability, full knee ROM
- No lateral patellar tracking or signs and symptoms of patellar instability
- Improve cardiovascular endurance
- Protect surgical site
- Normal patellar and soft tissue mobility
- Normal gait mechanics

#### **Wearing Brace:**

- Discontinue brace

#### **Suggested Exercises:**

- Step Ups: start at 2 inches and progress towards 6-8 inches
- Partial lunges in sagittal plane; start with involved leg in front from 0-45°; monitor PFJ tracking and progress as indicated
- Emphasize functional gluteal control: begin controlled lateral movement if patient has sufficient gluteal strength and leg and trunk control
- Stationary Bike, with moderate resistance; advance resistance as indicated
- 4-way SLR (flexion, extension, adduction, abduction)
- Total Gym, Leg Press, Wall Sit: start at 0-45° of flexion and progress as strength allows; monitor PFJ tracking; use taping as indicated
- Partial Squats with resisted terminal knee extension
- Hamstring Curls, heel Raises
- Continue with balance/proprioception exercises: caution with single leg balance on unstable surfaces prior to 3 months post-operative unless patient demonstrates good proximal postural control
- Continue with flexibility exercises; add quadriceps and ITB stretches as indicated
- Continue with core stability exercises
- Swimming
- Begin jogging program at 12 weeks with physician's clearance (may start in pool and progress to land PRN) - may introduce low impact, agility, and plyometric tasks
  - Running progression:

- Meet Criteria for Return to jogging (ie. good lumbo/pelvic/hip control, good eccentric quadriceps control, etc. during single leg squat and step downs)
- Start with AlterG (anti-gravity treadmill) if available, and progress as tolerated.
- Treadmill walk/jog intervals (self-paced to begin with)
- Treadmill running
- Track: run straight parts, walk the turns
- Track: run straight parts and the turns
- Run on the road: run on the surface specific to the athlete's sport



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### Phase 4 (4-6 months)

#### Criteria for advancement to Phase 4:

- No signs or symptoms of patellar instability
- Normal gait mechanics
- Clearance from the physician before resuming full activity
- Good quadriceps strength

#### Goals:

- Quadriceps strength progression
- Functional strength progression
- Resume appropriate activity level

Rehabilitation during the return-to-sport phase should be criteria-driven:

- a) Advancement to full contact and pivot sports is based on development of confidence, strength, agility, coordination, balance, postural control, endurance, and mechanical and functional stability (SEE SPECIFIC CRITERIA BELOW).
- b) Return to cutting and pivoting sports ONLY after clearance by Dr. Matache/Pickell.
  - a. Start with controlled activities (ie. avoid uneven surfaces, contact situations, and fatigue.
  - b. Avoid high-risk activity to START (ie. jumping, twisting, pivoting, cutting, etc.)
  - c. Use sport-specific drills to determine progression to unrestricted activities.
  - d. Must be able to dynamically stabilize the knee in sport/activity positions before return to sport.
  - e. Patient may be fit with Femoral Strapping Brace (Power Strap, Don Joy).

#### **Therapeutic Exercises:**

- Continue with quadriceps strengthening; Focus on single leg strength.
- Progress closed kinetic chain (CKC) activities
- May begin higher level plyometric and agility activities at 4 months: begin with single-plane activities and progress to multi-planar activities
- Sport specific training
- Sport- and work- specific balance and proprioceptive drills
- Hip and core strengthening
- Stretching for patient specific muscle imbalances

#### **Plyometric and Agility Progression:**

- Double leg jumps → Single leg hops
- Single plane → Multiple planes
- Stable → Unstable surfaces
- Controlled → Uncontrolled situations
- Teach the 3 L's:
  1. Soft Landing following jumps at all times
  2. Stay Low while running at all times
  3. Keep your knees in Line with your feet at all times



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### Phase 5 (6-9 months)

#### Goals:

- Gradual return to sport
- Quads strength at 95-100% vs. contralateral leg
- Continue to improve strength and endurance

#### Return to Sport Criteria:

1. Dynamic neuromuscular control with multi-plane activities, without pain or swelling.
2. Patient tolerates functional progression to sport program without difficulty and without exacerbation of symptoms
3. No effusion
4. Full ROM
5. Before returning to their sport, the athlete **MUST DEMONSTRATE** the confidence, strength, agility, coordination, balance, postural control, endurance, and mechanical and functional stability to the degree necessary for their specific sport.
  - Confidence: Use patient reported outcome measures: IKDC, Tegner-Lysholm Knee Score (Tegner Lysholm Knee Score = "Excellent" if > 90)
  - Strength: (MMT, Isokinetic strength, functional strength)
    - Quadriceps/thigh circumference should be within 1 cm of the uninvolved side (if normal).
    - Quadriceps MVIC (Maximal Voluntary Isometric Contraction) should be within 90% of the uninvolved side
    - Isokinetic Strength tests: Quadriceps and Hamstrings are 85-90% of the uninvolved side (isokinetic, 180 degrees/sec. and 300 degrees/sec.)
    - Functional stability: mimic functional activities specific to their sport to make correlations for readiness for return to sport
    - Testing can guide your treatment: assess for bilateral asymmetries (use timed or measured trials – see below for the specific tests)
    - All hop tests should be within 90% of the uninvolved side before return to sport.