

# MPFL RECONSTRUCTION + TTO

## DR. ELRASHIDY – TRI-VALLEY ORTHOPEDICS

### OVERVIEW

- Focus on **protection of graft & osteotomy fixation** in primary phases (Weeks 0 -12)
- Supervised Physical Therapy for 4-6 months
- **CPM** to help restore motion: 3-4 hrs/day for 4-6 weeks
- TROM Brace for 8-10 weeks, WBAT by Week 5-6 (in brace)
- Begin passive ROM & heel slides early on to restore motion & quad control

### GENERAL GUIDELINES

- Ok to shower on post-op day 3. **NO bathing/soaking knee** x 3 weeks
- Sleep with brace on (locked in extension) for **4 weeks**
- **Motion Goals:**
  - Goal of 0-90° by Week 4
  - Goal of full passive flexion & extension by Week 6-7
  - **NO Active extension** in initial 4 weeks
- Discontinue **TROM brace** after Week 9-10. Switch to **PF brace** at Month 3
- Weight-bearing As Tolerated after Week 4

### PHASE 1: Post-Op Through Week 6

#### Goals:

- Protect graft/osteotomy fixation
- Control inflammation + edema (cryocuff, soft tissue modalities)
- Regain **full knee flexion and extension (passive)** by Week 6
- Restore normal gait on level surfaces
- **Motion Goal:** Flexion of 90° by Week 4, 120°-130° by Week 6 and full flexion by Week 8

#### Brace (Total Length = 9-10 weeks):

- **Week 0 - 4:** Locked in **full extension for ambulation & sleeping**
- **Weeks 0 - 6:** Locked in extension with ambulation. Ok to unlock to appropriate degree of flexion when seated or non-weight-bearing.
- **Week 6-9:** Progressively unlock brace **WITH weight-bearing** (once quad control has returned) beginning in Week 6. Add 30° flexion every 3-4 days after Week 6 **with WB**. Goal of unlocked brace by Week 8 and discontinued by Week 9.

#### Weight-Bearing:

\* Many patients with **PF disorders** have **poor proximal control**. During weight-bearing, prevent **dynamic valgus + hip internal rotation** to avoid placing abnormal load on graft

- Week 0-2: TTWB with crutches (with brace on and locked in extension)
- Weeks 3-4: Partial WB (50%). Start with transfers & increase to PWB with ambulation
- Weeks: 5-6: WBAT (with brace in extension)
- **Wean from crutches by Week 5-6.** Begin to unlock TROM brace as noted above after Week 6. **Brace unlocked by Week 8 and discontinued by Week 9** as patient demonstrates normal gait mechanics & quad control (no quadriceps lag)

#### Exercise:

- 1) Begin **patellar mobilization** and patellar glides as soon as tolerated
  - Restore normal passive patellar mobility in all directions

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## MPFL + TTO PROTOCOL

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- 2) Maintain **full extension** (passive extension only x 4 weeks). Work on **flexion** via passive flexion, AAROM and heel slides.
  - **Goal:** 90° flexion by Week 4, 120° by Week 6, full motion by Week 8
- 3) Restore **Core, Hip & Knee Flexion Strength & Function**
  - E-Stim
  - NWB exercise targeting hip abductors, external rotators & extensors
  - Once patient is able to isolate muscles with NWB exercise, progress to WB strengthening as tolerated
  - Begin light resisted hamstring strengthening as pain subsides
  - At **4 weeks**, begin quad sets & SLR in all planes: Begin with brace on until quad strength sufficient to prevent lag. Add weight as tolerated to hip abduction/adduction/extension.
- **4) Gait training:**
  - Facilitate normal gait, pay particular attention to quad-avoidance gait (walking extended or hyper-extended)
  - Facilitated by decreasing pain & swelling, and quad strengthening
  - If available, aquatic therapy (once sutures out) to normalize gait, WB + strength.
  - Hamstring, Gastroc/Soleus stretching

### **PHASE 2: Weeks 7-12**

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

- Full Extension, Flexion to 90°
- Good quad set, SLR without extension lag
- Minimal swelling/inflammation
- Normal gait on level surfaces

#### **Goals:**

- Restore normal gait with stair climbing
- Maintain extension, progress active extension & quad strengthening. Work to **achieve full flexion**
- Increase hip, quadriceps, & calf strength
- Begin proprioception training

#### **Exercises:**

- Continue with range of motion & flexibility exercises
- Quad sets & isometrics at 60° & 90°
- Progressive hip, hamstring & calf strengthening. Gradually add resistance to open chain hamstring exercises at week 12.
- Continue Hamstring, Gastroc/Soleus stretches
- Stationary Bike (progressive time & resistance)

### **PHASE 3: Weeks 13 Through 18-20**

#### **Goals:**

- Full range of motion
- Begin closed-chain resistance & strengthening
- Begin functional training
  - Focus on maintaining neutral lower extremity alignment
  - Emphasize postural alignment & symmetric strengthening

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- Improve strength, endurance & proprioception of extremity to prepare for sports
- Normalize running mechanics
- **Strength goal:** 70% of uninvolved lower extremity per isokinetic evaluation

### Exercises:

- Initiate **CKC quad strengthening** & progress as tolerated (Wall sits, Step-ups, Mini-squats, Leg press 90° – 30°, Lunges)
- **Neutral lower extremity alignment** – Anterior superior iliac spine and knee remain positioned over 2<sup>nd</sup> toe with hip in neutral
  - Patient should begin wearing **PF brace** (from months 3-5) to augment muscular control & proprioception.
- Advance partial squats & incorporate Bosu ball to facilitate proximal control.
- Initiate single-leg activities including single-leg squat, ball toss, etc
- Progress toward full weight-bearing running at about 16 weeks
- Ok to begin swimming if desired
- Progressive hip, quad, hamstring, calf strengthening
- Cardiovascular & endurance training via stairmaster, elliptical, bike & treadmill

### PHASE 4: Month 5 Through Month 6

#### Goals:

- Symmetric performance of basic & sport -specific agility drills
- Single hop & three hop tests 85% of uninvolved leg
- Quad & hamstring strength at least 85% of uninvolved lower extremity

#### Exercises:

- Continue flexibility & strengthening program based on individual deficits
- Initiate plyometric program as appropriate for patient's athletic goals
- **Agility** progression including, but not limited to:
  - Side steps & crossovers
  - Figure 8 & shuttle running, One & two leg jumping
  - Cutting, Acceleration/deceleration/sprints
- Continue progression of running distance based on patient needs
- Initiate sport-specific drills as appropriate for patient

### Phase 5: Post-op Months 6-8 = RETURN TO SPORT

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