

MPFL RECONSTRUCTION + TTO

Dr Elrashidy – Webster Orthopedics

OVERVIEW

- Focus on protection of graft and osteotomy fixation in primary phases (Weeks 0 -12)
- Supervised Physical Therapy for 4-6 months
- CPM to help with motion x 4-6 weeks (2-4 hrs/day)
- 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 locked in extension for 4 weeks
- **Motion Goals:**
 - Goal of 0-90° by Week 4
 - Goal of full passive flexion and extension by Week 6-7
 - NO Active extension x 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: 90° by Week 4, 120°-130° by Week 6, Full by Week 8

Brace (Total Length = 9-10 weeks):

- **Week 0 - 4:** Brace locked in full extension for ambulation AND sleeping
- **Weeks 0 - 6:** Brace locked in extension with ambulation. Ok to unlock to appropriate degree of flexion when seated/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 loads on graft

- Week 0-2: TTWB with crutches (with brace on and locked in extension)
- Weeks 3-4: Partial WB (50%). Start with transfers and increase with ambulation

MPFL + TTO PROTOCOL

- 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
- 2) Maintain **full extension** (passive extension only x 4 weeks). **Work on flexion** via passive flexion, AAROM and heel slides (limit to 90°)
 - **Goal:** 90° flexion by Week 4, 120° by Week 6, full motion by Week 8
- 3) Restore **Core, Hip and Knee Flexion Strength and Function**
 - E-Stim
 - NWB exercise targeting hip abductors, external rotators and 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 and SLR in all planes: Begin with brace on (in extension) until quad strength sufficient to prevent extensor lag. Add weight as tolerated to hip abduction, adduction and extension.
- **4) Gait training:**
 - Facilitate normal gait, pay particular attention to quad-avoidance gait (walking extended or hyper-extended)
 - Facilitated by decreasing pain and swelling, 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 and 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

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- Maintain full extension, ok to progress active extension and quad strengthening. Continue to progress to **achieve full flexion**
- Increase hip, quadriceps, and calf strength
- Increase proprioception

Exercises:

- Continue with range of motion/flexibility exercise
- Quad sets and quad isometrics at 60° and 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 and resistance)

PHASE 3: Weeks 13 Through 18-20

Goals:

- Full range of motion
- Begin closed-chain resistance and strengthening
- Begin functional training
 - Focus on maintaining neutral lower extremity alignment
 - Emphasize postural alignment and symmetric strengthening
- 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 and 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 2nd toe, with hip in neutral
 - Patient should begin wearing **PF brace** (Months 3-5) to augment muscular control and proprioception
- Advance partial squats and 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
- 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 and sport specific agility drills
- Single hop and three hop tests 85% of uninvolved leg
- Quadriceps and 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 and crossovers
 - Figure 8 and shuttle running, One and 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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