

**MPFL RECONSTRUCTION WITH
TIBIAL TUBERCLE OSTEOTOMY/TRANSFER (TTO)**
Post-Operative Protocol

Phase I – Maximum Protection

Weeks 0 to 2:

- Brace – locked in full extension during all ambulation and partial weight bearing (25-50%) with two axillary crutches
 - Can unlock brace to allow for 0-30 degrees for unloaded range of motion only.
- Limit knee flexion to 0-30 degrees for 2 weeks.

Goals

- Reduce inflammation
- Normalize superior/inferior patella mobility with manual mobilizations
- Full extension
- Passive/active ROM with 30 degree flexion limit

Exercise progression

- Quadriceps setting, emphasize VMO, using NMES as needed
- Emphasize patellofemoral mobilizations
- Passive/active knee range of motion with 30 degree flexion limit
- Multi-plane straight leg raising
- Open chain hip strengthening
- Gait training

Weeks 2 to 4:

- Brace- locked in full extension during all ambulation and PWB (25-50%) with two axillary crutches
- Progress ROM to 0-60 degrees

Goals

- Reduce inflammation
- Maintain full knee extension

Exercise progression

- Full knee extension/hyperextension

Weeks 4 to 6:

- Brace- locked in full extension during ambulation and WBAT pending MD approval for weight bearing progression after imaging
 - Gradual progression with WB from two crutches to no assistive device
- Progress ROM to 0-90 degrees

Goals

- Reduce inflammation and pain
- Maintain full knee extension

Phase II – Progressive Range of Motion and Early Strengthening

Weeks 6 to 8:

- Discontinue Brace
- Progress to full ROM as tolerated
- Initiate bike with light resistance
- Initiate loaded flexion 0-90 degrees

Goals

- Full knee extension/hyperextension

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- Progress to full knee flexion ROM
- No swelling
- Normalize gait mechanics
- Normalize patellofemoral joint and scar mobility

Exercise progression

- Continue to emphasize patella mobility
- Gait training—normalize gait pattern
- Proprioception drills
- Begin unilateral closed kinetic chain program
- Multi-plane open and closed kinetic chain hip strengthening
- Step-up progression
- Stationary biking and treadmill/outdoor walking
- Deep water pool program when incisions healed. Focus on range of motion

Phase III – Advanced Strengthening and Endurance Training

Weeks 8 to 10:

- Full ROM

Goals

- Reduce inflammation
- Full range of motion
- Normal gait

Exercise progression

- Advance stationary biking program (increase intensity)
- Introduce treadmill walking and elliptical trainer
- Gym strengthening progression
- Begin closed chain squat progression (mini-squat, etc)
- Advance intensity of deep water pool program; focus on endurance training

Weeks 10 to 12:

Exercise progression

- Squat progression: progress as tolerated with focus on swelling and pain
- Lunge progression (retro, walk, and split) as indicated
- Swimming freestyle
- Controlled movement series
- Focus on increased lower extremity flexibility
- Gym strengthening progression

Phase IV – Advance Strengthening and Running Progression

Weeks 12 to 14:

- Administer Preliminary functional test for physician to review
- Initiate straight line jogging at 12 weeks if proper biomechanics are demonstrated

Exercise progression

- Basic ladder series
- Lateral lunge progression
- Linear jogging progression
- Basic plyometric box progression

Weeks 14 to 20:

- Advance training in preparation for functional testing
- Progress plyometric training from double to single leg activities
- Advance ladder, hurdle, and plyometrics
- Sport specific field/court drills

Criteria to progress to Phase V

- Pass Return to Sport Test at >90% (involved vs. uninvolved limb)

- See testing protocol—perform at 16-20 weeks

Phase V- Return to Sport

Weeks 20 to 24:

- Return to Sport and Functional Drills Phase
 - Follow-up examination with the physician
 - Sports test for return to competition at 6 months
- Exercise progression
- Advance ladder, hurdle and plyometrics
 - Sport specific field/court drills
 - Non-contact drills

Criteria to be released for return to sport

- Follow-up examination with the physician
- Pass return to sport functional test at >90% (involved vs. uninvolved limb)
- Display symmetry and confidence in high-speed cutting, multi-plane plyometric drills, sprinting and decelerating

Revised ***