

# MPFL Reconstruction / Tibial Tubercle Osteotomy (TTO) / Cartilage Restoration

## Physical Therapy Protocol

### Phase I – Maximum Protection (Weeks 0–4)

#### Goals:

- Protect surgical repair and cartilage graft
- Minimize pain and swelling
- Prevent quadriceps atrophy
- Maintain early ROM within safe limits

#### Restrictions:

- **ROM:** 0°–90° PROM only for first 6 weeks
- **Brace:**
  - Locked in full extension (0–0°) for Weeks 0–4
  - 0°–90° range allowed between Weeks 4–6
  - Unlocked at Week 6
- **Weight Bearing:** Non-weight bearing (NWB) for 8 weeks

#### Exercises:

- Flexion/Extension – wall slides
- Flexion/Extension – seated
- Patella/Tendon mobilization
- Extension mobilization
- Quad sets

- Ankle pumps
- Sit and reach for hamstrings (towel)
- Balance series

**Cardiovascular:**

- Bike/Rowing with well leg only

**Phase II – Protected Progression (Weeks 5–8)**

**Goals:**

- Controlled advancement of ROM beyond 90°
- Begin isometric strength and neuromuscular control
- Maintain cardiovascular fitness

**Restrictions:**

- Continue PROM limit if <6 weeks
- Still NWB through Week 8
- Brace at 0–90° range

**Exercises:**

- Toe and heel raises
- Continue previous exercises
- Hamstring sets
- Double knee bends
- Bike with both legs – no resistance (from Week 6)
- Balance drills

**Cardiovascular:**

- Continue rowing and bike (no resistance)
- Aquajogging (Week 7+)

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- Begin treadmill walking at 7% incline

### **Phase III – Strength & Reintroduction (Weeks 9–12)**

#### **Goals:**

- Transition to weight-bearing
- Strengthen key lower extremity groups
- Initiate light dynamic activity

#### **Restrictions:**

- Weight-bearing begins at Week 9 as tolerated
- Progress slowly from brace as cleared

#### **Exercises:**

- Double leg bridges
- Reverse lunges – static hold
- Resistance cord work
- Balance squats
- Single leg deadlifts
- Leg press
- Begin elliptical and stair stepper
- Rowing machine
- Swimming with fins

### **Phase IV – Functional Strengthening & Sport Prep (Weeks 13–20)**

#### **Goals:**

- Enhance neuromuscular control

- Normalize strength for higher-level function
- Begin agility and linear running

**Exercises:**

- Continue all previous strength work
- Running progression (Week 12–16)
- Initial: single-plane jogging
- Advance: multi-directional movements (Week 16–20)
- Begin sports test prep
- Outdoor biking, hiking, snowshoeing

**Phase V – Return to Sport and High-Level Activity (Weeks 20–24+)**

**Goals:**

- Return to full strength, endurance, and coordination
- Resume high-impact and sport-specific activity

**Exercises:**

- Complete functional sports testing
- High-level agility work
- Initiate return to sport:
  - Golf
  - Skiing
  - Basketball
  - Tennis
  - Football
  - Soccer