

**REHAB PROTOCOL: MPFL RECONSTRUCTION WITH TTO/AMZ**

**I. Immediate Postoperative Phase (Day 0-7)**

Brace: Bledsoe brace locked in extension for 2 weeks

Weight bearing: Two crutch weight bearing as tolerated

Exercises: Ankle pumps

Ice and Elevation: Ice 24/7 for the first week and elevate leg with knee in full extension as much as possible

**II. Early Motion Phase (Week 1-4)**

**1<sup>st</sup> Post op appointment within 1 week of surgery**

Goals:

- Start immediate range of motion
- Full passive knee extension
- Diminish swelling and pain
- No loaded knee flexion past 70 degrees for 4 weeks
- Quadriceps activation (straight leg raises, quad set)
- Electrical stimulation
- Exercise bike

Brace: Bledsoe brace locked in extension or 70 degree flexion stop. May transition into lateral stabilization brace at 4 weeks when quadriceps activation is appropriate.

Weight bearing: Without crutches as tolerated with brace on at all times.

Range of motion: Self-ROM (4-5 times daily using the other leg to provide ROM), emphasis on maintaining zero degrees passive extension

- Gradual progression to full range of motion

**III. PROGRESSIVE STRENGTHENING/NEUROMUSCULAR CONTROL PHASE (Week 4-14)**

**2<sup>nd</sup> post op appointment 4 weeks after surgery**

- X-rays

**Week 4:**

Goals: Start strengthening as soon as tolerated

- Gait training
- Hip strengthening
- Single leg squats

Exercises:

- Progress isometric strengthening program
- Leg Press (0-100 degrees) 10-20lbs
- Knee extension 90 to 40 degrees
- Hip Abduction and Adduction
- Hip Flexion and Extension
- Wall Squats
- Vertical Squats
- Standing Toe Calf Raises
- Seated Toe Calf Raises

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Biodex Stability System (Balance, Squats, etc)  
Bicycle  
Stair Stepper Machine  
Pool Program (Backward Running, Hip and Leg Exercises)

### **Week 6**

#### **Exercises:**

Continue all exercises  
Pool running (forward) and agility drills  
Balance on tilt boards  
Progress to balance and ball throws  
Wall slides/squats

### **Week 8**

#### **Exercises:**

Continue all exercises listed in Weeks 4-6  
Leg Press Sets (single leg) 0-100 degrees and 40-100 degrees  
Plyometric Leg Press  
Perturbation Training  
Isokinetic exercises (90 to 40 degrees) (120 to 240 degrees/second)  
Walking Program  
Bicycle for endurance  
Stair Stepper Machine for endurance  
Biodex stability system  
Training on tilt board

### **Week 10**

Isokinetic Test – Concentric Knee Extension/Flexion at 180 and 300 degrees/second

#### **Exercises:**

Continue all exercises listed in Weeks 6, 8 and 10  
Continue Stretching Drills  
Progress strengthening exercises and neuromuscular training

### **3<sup>rd</sup> post op appointment 3 months post op**

- Kajula Score and x-ray

### **IV. ADVANCED ACTIVITY PHASE (Week 10-16)**

#### **Criteria to Enter Phase IV**

- 1) AROM 0-125 degrees or greater
- 2) Quad strength 75% of contralateral side, knee extension flexor: extensor ratio 70% to 75%
- 3) No pain or effusion
- 4) Satisfactory clinical exam by Dr. Coyner
- 5) Satisfactory isokinetic test (values at 180 degrees)

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- Quadriceps bilateral comparison 75%
  - Hamstrings equal bilateral
  - Quadriceps peak torque/body weight 65% at 180°/s (males) 55% at 180°/s (females)
  - Hamstrings/quadriceps ratio 66% to 75%
- 6) Subjective knee scoring (modified Noyes System) 80 points or better

Goals: Normalize lower extremity strength  
Enhance muscular power and endurance  
Improve neuromuscular control  
Perform selected sport-specific drills

- Exercises:
- \*May initiate running program (weeks 10-12) (Physician Decision) with brace
  - \*May initiate light sport program (golf) (Physician Decision) with brace
  - \*Continue all strengthening drills
    - Leg press
    - Wall squats
    - Hip Abd/Adduction
    - Hip Flex/Ext
    - Knee Extension 90-40
    - Hamstring curls
    - Standing toe calf
    - Seated toe calf
    - Step down
    - Lateral step ups
    - Lateral lunges
    - Plyometric leg press
  - \*Neuromuscular training
    - Lateral step-overs cones
    - Lateral lunges
    - Tilt board drills

#### **Week 14-16**

Progress program  
Continue all drills above  
May initiate lateral agility drills  
Backward running

#### **6 Month Follow Up**

X-ray  
Kujala core and girth measurements

### **V. RETURN TO ACTIVITY PHASE (Month 16-22)**

#### **Criteria to Enter Phase V**

- 1) Full Range of Motion
- 2) Isokinetic Test that fulfills criteria
- 3) Quadriceps bilateral comparison (80% or greater)
- 4) Hamstring bilateral comparison (110% or greater)
- 5) Quadriceps torque/body weight ratio (55% or greater)

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- 6) Hamstrings/Quadriceps ratio (70% or greater)
- 7) Proprioceptive Test (100% of contralateral leg)
- 8) Functional Test (85% or greater of contralateral side)
- 9) Satisfactory clinical exam
- 10) Subjective knee scoring (modified Noyes System) (90 points or better)

Goals: Gradual return to full-unrestricted sports  
Achieve maximal strength and endurance  
Normalize neuromuscular control  
Progress skill training

Tests – KT 2000, Isokinetic, and Functional Tests before return

Exercises

- \*Continue strengthening exercises
- \*Continue neuromuscular control drills
- \*Continue plyometric drills
- \*Progress running and agility program
- \*Progress sport specific training
  - Running/cutting/agility drills
  - Gradual return to sport drills

**1 Year follow up**

X-ray  
Kujala core and girth measurements