**Meniscus Transplant / Large Meniscal Repair**

**Rehabilitation Protocol**

**Phase I – Maximum Protection (Weeks 0 to 4):**

**0 to 1 Week:**

* Brace locked in full extension for 4 weeks
* Use crutches for PWB (50%) in brace for 4 weeks
* Ice and modalities to reduce inflammation and pain

 **Range of Motion**

 -0° of knee extension

 -50° of knee flexion for weeks 0 to 3

 -Advance as tolerated to 90° of knee flexion starting week 4

 **Exercises**

 -Patella mobility in all planes

 -Passive/active knee range of motion with 50° flexion limit

 -Quadriceps setting emphasize VMO function

 -Multi-plane straight leg raising

 -Gait training

**Weeks 1 to 4:**

* Continue with program as outlined in weeks 0 to 1

### Range of Motion

**-**0° to 50° limitation for weeks 0 to 3; starting week 4 advance as tolerated to 90°

**Exercises**

**-**Initiate open kinetic chain multi-plane hip strengthening; progress to closed kinetic chain as swelling and pain permit

**-**Begin proprioceptive training, avoiding rotation

**-**Manual PNF hip and ankle strengthening

**Phase II – Progressive Stretching and Early Strengthening (Weeks 4 to 6):**

**Weeks 4 to 6:**

* Continue with modalities to control pain and inflammation
* Open brace 0° to 30° for 2 weeks and begin weight bearing as tolerated in brace, then open brace 0° to 90° for 2 weeks

### Range of Motion

**-**Fullkneeextension/hyperextension

**-**Gradual progression to 90° flexion

**Exercises**

-Continue with phase I program

-Continue to emphasize patella mobility and quality VMO function

**-**Begin pool program working on ROM and light strengthening once incisions are healed

-Begin bilateral closed kinetic chain strengthening, gradually progressing to unilateral as swelling, pain, and neuromuscular function allow

-Begin stationary cycle- low resistance emphasizing endurance

-Gait training- normalize gait pattern

-Advance proprioception program

**Phase III – Advanced Strengthening and Proprioceptive Phase (Weeks 6 to 10):**

**Weeks 6 to 8:**

* Continue with exercises in phase I and II
* Wean out of brace over a 7 to 10 day period

### Range of Motion

**-**Increase beyond 90° flexion, slowly advance as tolerated

**Exercises**

-Patellar mobility

-Terminal stretching in flexion and extension

-Begin stationary biking program

-Begin pool program with higher intensity strengthening

**Weeks 8 to 10:**

* Continue with program as outlined in weeks 6 to 8

### Range of Motion

**-**Continue slow advance to full range of motion

**Exercises**

**-**Advance unilateral closed kinetic chain program

**-**Advance pool program

**-**Introduce treadmill walking and elliptical trainer

**-**Begin pool running program, no bounding or jumping

**-**Begin multi-directional functional cord program avoiding rotation (carioca)

**-**Increase intensity on stationary bike, elliptical trainer, and treadmill walking program, may begin interval programs

**-**Begin gym strengthening; squats, leg press, partial walk lunge, hamstring curls, ab/adduction, calf raises, and leg extensions (30° to 0° gradually increasing to full range of motion as patello-femoral arthrokinematics normalize

**Phase IV – Advanced Strengthening and Plyometric Drills (Weeks 10 to 14):**

**Weeks 10 to 14:**

* Continue to advance overall strength and conditioning program, emphasize unilateral work with gym program
* Begin straight plane running; emphasize distance and endurance
* Begin bilateral plyometrics

**Phase V – Return to Sport Phase (Weeks 14 to 16):**

**Weeks 14 to 16:**

* Begin sprinting program
* Begin multi-directional drills
* Advance plyometric drills from bilateral to unilateral
* Follow-up examination with the physician
* Sports test for return to play