

**DISTAL FEMORAL OSTEOTOMY (DFO)/PROXIMAL TIBIAL OSTEOTOMY (HTO) AND  
ARTICULAR CARTILAGE RESTORATION/MENISCAL TRANSPLANT**  
Post-Operative Protocol

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**Phase I - Maximum Protection**

**Weeks 0-6:**

- Brace- wear at all times unlocked
- Toe touch weight bearing (TTWB) for 6 weeks
- CPM use 6 hours a day for cartilage transplant

Goals

- Reduce inflammation and pain
- Protect surgical repair
- Range of motion
  - Meniscal transplant: limit knee flexion to 90 degrees for 4 weeks, then progress to full
  - Cartilage transplant: no restrictions
    - Use of CPM starting at 0-30 degrees progressing as tolerated to 0-90 degrees for 6 hours/day

Exercise progression

- PROM, AAROM, and AROM
- Quad and glute isometric activation
- Patellofemoral mobilizations
- Open chain hip strengthening
- Able to perform bike with no resistance
- Local core stabilization exercises within weight bearing restrictions

**Phase II- Progressive Stretching and Early Strengthening**

**Weeks 6 to 8:**

- Brace- wear at all times unlocked
- Progress to weight bearing as tolerated (WBAT)
- Progress range of motion

Goals

- Reduce inflammation and pain
- Protect surgical repair
- Full range of motion by 8 weeks
- Gait training

Exercise progression

- PROM/AROM/AAROM to achieve full range of motion
- Initiate closed kinetic chain exercises to progress weight bearing status and facilitate muscle activation
- Core stabilization exercises

**Phase II- Progressive Strengthening**

**Weeks 8 to 12:**

- Discontinue brace
- Full weight bearing
- Progress closed chain strengthening from double limb to single limb
- Initiate balance/proprioceptive exercises

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Goals

- Full range of motion
- Normal gait pattern
- No swelling
- Progress limb strength

Exercise progression

- Initiate elliptical trainer
- Progress closed kinetic chain strengthening from double limb to single limb
- Proprioception drills

**Phase IV- Advanced Strengthening and Endurance Training**

**Weeks 12 to 16:**

- Advance strengthening program
- Prepare for Preliminary functional test to perform at 16 weeks
- Progress balance and proprioception

Goals

- Full range of motion
- Protect repair
- Normal gait pattern
- Increase single leg strength

Exercise progression

- Single limb closed chain exercises
- Proprioception drills

**Phase V- Running Progression and Plyometric Progression**

**Weeks 16 to 20:**

- Administer Preliminary functional test at 16 weeks for physician to review
- Initiate straight line jogging at 18 weeks if proper biomechanics are demonstrated
- Initiate plyometric training at 18 weeks progressing from double limb to single limb
- Advance strengthening program

Goals

- No swelling
- Full range of motion
- Symmetrical strength and power

Exercise progression

- Basic ladder series
- Linear jogging progression
- Plyometric progression

**Phase V- Return to Sport**

**Weeks 20 to 24:**

- Progress plyometric training to multi-direction, change of direction, and deceleration
- Administer Return To Sport functional test prior to 6 month follow up appointment with MD

Goals

- No swelling
- Full range of motion
- Symmetrical strength and power

Exercise progression

- Advance ladder, hurdle, and plyometrics
- Sport specific field/court drills
- Non-contact drills

## DFO/HTO with Articular Cartilage/Meniscus Transplant

### 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

### Anticipated return to sport:

- 6-9 months for contact and non-contact athletes

Revised \*\*\*