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**MULTI-LIGAMENTOUS KNEE RECONSTRUCTION**  
**PHYSICAL THERAPY PROTOCOL**

The intent of this protocol is to provide guidelines for progression of rehabilitation and is not intended to serve as a substitution for clinical decision-making. Progression through each phase of rehabilitation should take into account tissue-healing time frames, clinical objective findings, and MD approval to ensure structural stability. There will be variability between patients in terms of time frames and it is crucial not to progress through phases until the individual meets the appropriate requirements.

**INITIAL PRECAUTIONS**

**Weight Bearing:**

- 0-6 weeks → Touchdown Weightbearing
- 6-8 weeks → Progress to WBAT with 2 crutches
- Crutch weaning and D/C is dependent walking without a limp (after 8 weeks)

**Initial ROM Related Restrictions:**

- 0-2 Weeks: 0-45 degrees in hinged knee brace
- 3-4 Weeks: 0-90 degrees in hinged knee brace, progress slowly
- Progress to ROM as tolerated after 4 weeks
- Work on regaining terminal extension
- Hinged knee brace locked in extension, except when doing ROM exercises for first 2 weeks
- Weeks 3-6 brace unlocked during the day but locked in extension at night
- At 6 weeks transition to PCL Jack brace if PCL reconstructed
- Hamstring avoidance for 12 weeks post-operatively, if PCL reconstructed

**PHASE 1 – PROTECTION PHASE (1-6 weeks)**

**Goals:**

- Optimize bone and tissue healing and limit scar formation
- Protect surgical repair
- Reduce effusion, swelling and pain
- Restore knee ROM within restrictions
- Promote normal proprioceptive and neuromuscular control

**Tissue Healing**

- PRICE – Protection, Rest, Ice, Compression, Elevation
- Scar massage after incision is healed

#### Gait

- 2 crutches at all times

#### POW 1-6

- Patella, patella tendon and quadriceps tendon mobilization
- Quad activation working on terminal extension
- Quad/Glute sets
- Straight leg raises (if no lag, in brace)
- Open chain quad exercises
- Hamstring and Calf stretching without weight bearing
- Hip and Core strengthening as tolerated
- Heel slides with ROM restrictions
- No active hamstring exercises if PCL reconstructed

### **PHASE 2 – EARLY STRENGTHENING (7-12 weeks)**

#### **Criteria for advancement to Phase 2:**

- No extensor lag
- Normal joint temperature
- Minimal to no joint effusion

#### **Goals:**

- Restore near symmetric ROM
- Normalize gait pattern on flat ground
- Maintain trace to no joint effusion
- Tolerate standing and walking activity

#### Precautions

- Progression of weight bearing and normal gait
- Closed kinetic chain activity preferred
- Closed chain strengthening limited to 0-70 degrees of knee flexion, 0-90 degrees if no PCL reconstruction/repair
- No cutting/pivoting/plyometrics
- No isolated hamstring work if PCL reconstructed
- Brace discontinued, transitioned to PCL Jack brace if PCL reconstructed

#### Strength, Proprioception and Neuromuscular Re-education

- Progressive balance training
- Calf raises
- Mini squats
- Step-ups
- Leg presses
- Double leg squats
- Core, hip and upper body strengthening as appropriate

#### Cardio

- Stationary Bike no resistance weeks 6-8, need 115 degrees range of motion
- Stationary Bike with resistance weeks 8+

### **PHASE 3 – PROGRESSIVE STRENGTHENING (12-24 weeks)**

#### **Criteria for Advancement to Phase 3:**

- Full weight bearing
- Normalize gait pattern on flat ground
- Maintain trace to no joint effusion
- Tolerate standing and walking activity

#### **Goals:**

- Build lower extremity strength, endurance, and balance.
- Quad strength 90% of contralateral side
- Normal gait/form with straight line running

#### **Precautions**

- No cutting/pivoting activities
- PCL jack brace at all times if PCL reconstructed

#### **Strengthening, Proprioception and Neuromuscular Re-education**

- Double leg squats
- Leg press
- Static lunges
- Dynamic lunges
- Balance training
- Core, hip and upper body strengthening as appropriate

#### **Cardio**

- Stationary bike
- Elliptical use and treadmill walking
- Swimming
- Progression from treadmill walking to straight line running

## **PHASE 4 – RETURN TO SPORT (WEEKS 24+)**

### **Criteria for advancement to Phase 4**

- Good form on Phase 3 exercises
- Progressive strength/endurance development
- No joint effusion after phase 3 activities

### **Goals:**

- Build lower extremity muscular strength
- Train balance and power
- Progress to sport specific activities as tolerated

### **Precautions**

- None, can discontinue all bracing

### **Strengthening, Proprioception and Neuromuscular Re-education**

- Same as above:
  - Single leg squats
  - Single leg dead-lifts
  - Step ups/downs
  - Multidirectional lunges
- Plyometric and cutting and pivoting exercises
  - Progression as tolerated with good form/control

### **Return to Sport Criteria**

- Full active range range of motion
- No effusion
- Vertical jump, single leg hop distance, and timed single leg hop over 20 feet >85% contralateral side
- Quadriceps strength: Single leg press >90% contralateral side

### **General Guideline**

- Return to sport normally after 8 months in these complex injuries