

## **Knee Multi-ligament Reconstruction**

### **Phase I (1 – 5 days post-op)**

- Wound care: Observe for signs of infection
- Modalities: Cryotherapy for pain and edema control
- Brace: Locked in extension 24 hours/day
- Gait: NWB until 6 weeks post-op
- ROM:
  - AROM for hip and ankle
  - Maintain full passive knee extension
  - Gentle stretching of hamstrings and gastroc/soleus
- Exercises: Quad sets

### **Phase II (5 days – 6 weeks post-op)**

- Wound care: Continue to monitor for signs of infection and begin scar management techniques when incision is closed
- Modalities:
  - Cryotherapy for pain and edema control
  - Enhance quad sets with low intensity NMES or biofeedback
- Brace: Locked in extension 24 hours/day
- Gait: NWB until 6 weeks post-op
- ROM: Continue Phase I
  - Begin patellar mobilizations when incision is closed
- Strengthening: Continue Phase I

### **Phase III (6 weeks – 10 weeks post-op)**

- Wound care: Continue to monitor for signs of infection and continue scar mobilization
- Modalities: High intensity NMES at 60 degrees of knee flexion
- Brace: Open brace to full flexion
  - PCL: continue to wear at night
- Gait: At 6 weeks, begin PWB of 25%, increase by 25% weekly
- ROM:
  - Passive flexion exercises (consider CPM if no PCL involvement)
  - Prone hangs
  - Continue patellar mobilizations
  - Stationary bike for ROM assist

- Strengthening:
  - Begin hip strengthening- NO adduction if PCL involvement
  - Proprioceptive and weight shifting activities

**Phase IV (10+ weeks post-op)**

- Brace: D/C brace at 12 weeks
- Strengthening:
  - Initiate closed chain strengthening once FWB has been achieved and quad strength is greater than or equal to 3+/5
- Testing: Initial Lower Extremity Function Tests between weeks 10-16

**4 months (16 weeks)**

- ROM: Aggressive flexion- contact physician if <90 degrees by 20 weeks
- Strengthening:
  - Closed chain and Hip PREs: avoid flexion beyond 70 degrees
  - Isolated quad and hamstring exercises: NO resistance
  - Closed chain conditioning exercises: stair climbing, stationary bike, etc
  - Single leg proprioception exercises (BAPS, mini trampoline)
  - Straight line jogging at end of post-op month 4

**5 months (20 weeks)**

- Brace: Contact physician regarding fitting for ACL/PCL functional brace
- Strengthening
  - Closed chain and Hip PREs
  - Initiate resisted quad and hamstring exercises
  - Initiate low intensity plyometrics
  - Progress jogging and initiate sprints
  - Advance proprioception training

**6 months (24 weeks)**

- Progression of all strengthening exercises
- Begin agility and sport-specific drills with functional brace

**7 – 12 months**

- Testing: Final lower extremity functional tests less than 25% for non-athlete and less than 20% for athlete
  
- Return to Sports if the following criteria are met:
  - Minimal or no pain and swelling
  - Function tests within 10-15% of uninvolved side
  - Successful completion of sport-specific drills
  - ACL/PCL functional brace

Adapted From:

- 1) Fanelli G. *The Multiple Ligament Injured Knee: A Practical Guide to Management*. New York: Springer; 2003.
- 2) Brotzman SB, Wilk KE. *Clinical Orthopedic Rehabilitation Second Edition*. Philadelphia: Mosby; 2003.