

REHABILITATION GUIDELINES AFTER MULTIPLE LIGAMENT KNEE RECONSTRUCTION

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Please send progress notes

The intent of this protocol is to provide the physical therapist with guidelines of the post-operative rehabilitation course after multi-ligament reconstruction surgery. It should not be a substitute for one's clinical decision making regarding the progression of a patient's post-operative course based on their physical exam findings, individual progress, and/or the presence of post-operative complications. The physical therapist should consult the referring physician with any questions or concerns.

INDIVIDUAL CONSIDERATIONS:

GENERAL CONSIDERATIONS

- WBAT for PCL/or ACL/PCL injuries
- NWB for combined MCL reconstruction for 5 weeks, then PWB for 1 week, then FWB at 6 weeks
- NWB for combined PLC reconstruction or repair for 6 weeks, then PWB for 6 weeks, then FWB at 12 weeks postop.
- No active hamstring activity for 8 weeks after PLC reconstruction
- No hamstring strengthening for 16 weeks after PLC reconstruction

PHASE I (0-2 weeks)

Goals

- Control inflammation and pain
- Full active extension
- Achieve quadriceps control

Brace

- Locked in extension for ambulation for 4 weeks for ACL/PCL and/or MCL reconstructions, then unlocked for ambulation for 2-4 weeks until normal gait is established.

- Locked in extension for ambulation for 12 weeks for PLC reconstruction
- May remove for ROM exercises
- Keep brace locked in extension for SLRs for 6 weeks to prevent posterior sag, may remove when quad control is good enough to prevent extension lag

Weight-Bearing Status

- WBAT with crutches for ACL/PCL
- NWB for 5 weeks, PWB for 1 weeks, then FWB for MCL
- NWB for 6 weeks, PWB for 6 weeks, then FWB for PLC
- **NWB for all ambulatory activities and use a long leg brace locked in full extension at all times.**
- **Allowed to bear weight equally on both legs when standing stationary.**
- **Begin PWB gait of approximately 20% of body weight and increase incrementally by 20% each week.**

Therapeutic Exercises

- SLR in all planes (with brace locked in extension)
- Calf pumps, quadriceps sets
- Electrical stimulation
- Patellar mobilization
- Cryotherapy, elevation, TENS/NMES, ankle pumps and elevation
- Balancing activities on a stable platform with eyes open and closed

PHASE II (2- 6 weeks)

Criteria

- Good quad set and SLR with brace
- Full extension
- No active inflammation

Goals

- Achieve 90 degrees of flexion
- Protect graft fixation

Brace/Weight-bearing status

- As above in Phase I
- **Starting at 5 weeks, long leg brace is opened for full flexion for ROM exercises and patient is encouraged to begin passive or active-assisted flexion WITHOUT active hamstring activity. Brace can be discontinued at night. Stationary bicycling permitted.**

Therapeutic Exercises

- Begin ROM
- Prone passive knee flexion to 90 degrees with care to avoid posterior tibial sag

- Wall slides then progress to mini-squats (0-45 degrees) when quad control is good
 - AVOID if PLC reconstruction was performed for 8 weeks
- Pool walking to restore normal gait pattern
- Toe raises
- Gastroc stretches
- Ankle strengthening with sports tubing (Theraband)
- **Continue quadriceps strengthening and patellar mobilization.**
- **Starting at 5 weeks, can begin short and long arc quadriceps strengthening. Hip strengthening can be initiated but should avoid motions that promote increased knee varus or valgus stress depending on involved structures.**

PHASE III (6-12 weeks)

Criteria

- Knee flexion to 90 degrees
- No active inflammation
- Good quadriceps control

Goals

- Achieve full flexion
- Establish normal gait
- Progress with strengthening and endurance

Brace/Weight-Bearing Status

- FWB with brace unlocked, may discontinue brace when normal gait is established for ACL/PCL and/or MCL reconstructions
- PWB with brace locked in extension for PLC reconstruction
- **Starting at week 10, long-leg brace is discontinued and patient is fitted for a functional brace for ADL that may stress the reconstruction.**

Therapeutic Exercise

- Begin active knee flexion at 6 weeks for ACL/PCL and/or MCL and at 8 weeks for PLC reconstruction
- Begin the following at 6 weeks for ACL/PCL and/or MCL and at 8 weeks for PLC reconstruction
 - Stationary bike (low resistance, high seat, with no toe clips---so as to prevent hamstring contraction)
 - Mini-squats to 45 degrees
 - Leg press to 60 degrees
 - Stairmaster
 - Elliptical trainer
 - **Proper gait mechanics**
 - *Proprioception*
 - Mini-tramp standing
 - Unstable platform (BAPS) with eyes open and closed

- Standing ball throwing and catching

Postop weeks 10-16.

-long leg brace discontinued and patient fitted for a functional brace for ACL that may stress the reconstruction.

- **Starting at week 10, closed chain exercises initiated in a 0-60 degrees range. ROM exercises are continued and patient should be able to flex to 110 degrees or greater by the end of postop month 4.**

PHASE IV (3-6 months)

Criteria

- Full, pain-free active range of motion
- No patellofemoral irritation
- Sufficient strength and proprioception to progress to functional activities
- Normal gait

Goals

- Improve strength and proprioception
- Maintain FROM

Therapeutic Exercises

- Progress with flexibility and closed-chain strengthening program
- Swimming (no breast stroke)
- Stationary bike (may increase resistance)
- Box steps (6 and 12 inches)
- Jogging, straight ahead, may be started around 4-5 months when quad strength is 90% of contralateral side
- **Isolated hamstring strengthening against gravity without weight is initiated at end of postop month 5 and resistive hamstrings can be introduced at end of postop month 6. ROM of 120 degrees is desirable at this point. A 10-15 degree terminal flexion deficit is typical.**
- **Aggressive quadriceps strengthening is implemented. Can begin low-intensity plyometric program at the end of postop month 5. In addition low-intensity sport-specific activities.**

PHASE V (6-9 months)

Criteria

- Full, pain-free motion
- No effusion
- Sufficient hamstring and quadriceps strength to progress to agility exercises

Goals

- Return to all recreational and sporting activities by 9 months
- Maintain full, painless motion
- Progress with strengthening, agility, and endurance
- **Symmetrical strength and proprioception before returning to unrestricted activity**

Therapeutic Exercises

- Progress with closed chain quadriceps and hamstring strengthening
- *Plyometrics*
 - Stair jogging
 - Box jumps (6 to 12-inch heights)
- *Proprioception*
 - Mini-tramp bouncing
 - Lateral slide board
 - Ball throwing and catching on unstable surface
- *Functional Training*
 - Running
 - Figure-of-eight pattern
- *Agility*
 - Start at slow speed
 - Shuttle run, lateral slides, Carioca cross-overs
 - Plyometrics
 - Stair running
 - Box jumps (1-2 foot heights)
 - At 8 months, may start
 - Sports specific training (start at 25% speed and increase as tolerated)
 - Incorporate cutting
 - Increase heights for plyometric conditioning

Months 6-12

- Continue with above program for anticipated return to sports or very heavy labor.

Criteria for Return to Sports

- Usually occurs at 9-12 months post-op
- Full, painless range of motion
- No effusion
- Quadriceps and hamstring strength 90% of contralateral side
- No apprehension with all sports specific drills
- **Functional bracing is used for sports or work activities that put the reconstruction at risk until the patient reaches 18 months postop.**
- Cleared by doctor.