REHABILITATION GUIDELINES AFTER MULTIPLE LIGAMENT KNEE RECONSTRUCTION

The rehabilitation guidelines are presented in a criterion based progression program. General time frames are given for reference to the average, but individual patients will progress at different rates depending on their age, associated injuries, pre-injury health status, rehab compliance, tissue quality and injury severity. Specific time frames, restrictions and precautions may also be given to protect healing tissues and the surgical repair/reconstruction.

General guidelines immediately after surgery:

- WBAT for PCL or ACL/PCL injuries
- NWB for combined MCL reconstruction for 3 weeks, then PWB for 3 weeks, then FWB at 6 weeks
- No active hamstring activity for 8 weeks after PLC reconstruction
- No hamstring strengthening for 16 weeks after PLC reconstruction

**PHASE I (0-2 weeks)**

<table>
<thead>
<tr>
<th>REHAB GOALS</th>
<th>WBAT for PCL or ACL/PCL injuries</th>
<th>NWB for combined MCL reconstruction for 3 weeks, then PWB for 3 weeks, then FWB at 6 weeks</th>
<th>No active hamstring activity for 8 weeks after PLC reconstruction</th>
<th>No hamstring strengthening for 16 weeks after PLC reconstruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRACE</td>
<td>Control inflammation and pain</td>
<td>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</td>
<td>Locked in extension for ambulation for 12 weeks for PCL reconstruction</td>
<td>May remove for ROM exercises</td>
</tr>
<tr>
<td></td>
<td>Full active extension</td>
<td>May remove for ROM exercises</td>
<td>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</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Achieve quadriceps control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WEIGHTBEARING STATUS</td>
<td>WBAT with crutches for ACL/PCL</td>
<td>NWB for 3 weeks, PWB for 3 weeks, then FWB for MCL</td>
<td>NWB for 6 weeks, PWB for 6 weeks, then FWB for PLC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SLR in all planes (brace locked in extension)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUGGESTED THERAPEUTIC EXERCISE</td>
<td>SLR in all planes (brace locked in extension)</td>
<td>Calf pumps, quadriceps sets</td>
<td>Electrical stimulation as needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calf pumps, quadriceps sets</td>
<td></td>
<td>Patellar mobilizations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electrical stimulation as needed</td>
<td></td>
<td>Balancing activities on a stable platform with eyes open and closed</td>
<td></td>
</tr>
</tbody>
</table>
### PHASE II (2-6 weeks)

| CRITERIA | o Good quad set and SL with brace  
o Full extension  
o No active inflammation |
|---|---|
| REHAB GOALS | o Achieve 90 degrees of flexion.  
o Protect graft fixation |
| BRACE AND WEIGHTBEARING STATUS | o As above in Phase I |
| SUGGESTED THERAPEUTIC EXERCISE | o Begin ROM (Prone passive knee flexion to 90 degrees with care to avoid posterior tibial sag)  
o Wall slides then progress to mini squats (0-45 degrees) when quad control is good (AVOID if PLC reconstruction was performed for 8 weeks)  
o Pool walking to restore normal gait pattern  
o Toe raises  
o Gastrocnemius stretches  
o Ankle strengthening with sports tubing (Theraband) |

### Phase III (6-12 weeks)

| CRITERIA | o Knee flexion to 90 degrees  
o No active inflammation  
o Good quadriceps control |
|---|---|
| REHAB GOALS | o Achieve full flexion  
o Establish normal gait  
o Progress with strengthening and endurance |
| BRACE AND WEIGHTBEARING STATUS | o FWB with brace unlocked, may discontinue brace when normal gait is established for ACL/PCL and/or MCL reconstructions  
o PWB with brace locked in extension for PLC reconstruction |
| SUGGESTED THERAPEUTIC EXERCISE | o Begin active knee flexion at 6 weeks for ACL/PCL and/or MCL and at 8 weeks for PLC reconstruction  
o Begin the following at 6 weeks for ACL/PCL and/or MCL and at 8 weeks for PLC reconstruction  
o Stationary bike (low resistance, high seat, with no toe clips---so as to prevent hamstring |
| contraction)  
| o Mini-squats to 45 degrees  
| o Leg press to 60 degrees  
| o Stairmaster  
| o Elliptical trainer  
| o Proprioception  
|   ▪ Mini-tramp standing  
|   ▪ Unstable platform (BAPS) with eyes open and closed  
|   ▪ Standing ball throwing and catching

<table>
<thead>
<tr>
<th>Phase IV (3-6 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRITERIA</td>
</tr>
</tbody>
</table>
| o Full, pain-free range of motion  
| o No patellofemoral irritation  
| o Sufficient strength and proprioception to progress to functional activities  
| o Normal gait  

<table>
<thead>
<tr>
<th>REHAB GOALS</th>
</tr>
</thead>
</table>
| o Improve strength and proprioception  
| o Maintain FROM

<table>
<thead>
<tr>
<th>SUGGESTED THERAPEUTIC EXERCISE</th>
</tr>
</thead>
</table>
| o Progress with flexibility and closed-chain strengthening program  
| o Swimming (no breast stroke)  
| o Stationary bike (may increase resistance)  
| o Box steps (6 and 12 inches)  
| o Jogging, straight ahead, may be started around 4-5 months when quad strength is 90% of contralateral side
## Phase V (6-9 months)

| CRITERIA | o Full, pain-free motion  
o No effusion  
o Sufficient hamstring and quadriceps strength to progress to agility exercises |
|----------|------------------------------------------------------------------------------------------------------------------------|
| REHAB GOALS | o Return to all recreational and sporting activities by 9 months  
o Maintain full, painless motion  
o Progress with strengthening, agility, and endurance |
| SUGGESTED THERAPEUTIC EXERCISE | o Progress with closed chain quadriceps and hamstring strengthening  
o Plyometrics  
o Stair jogging  
o Box jumps (6 to 12-inch heights)  
o Proprioception  
o Mini-tramp bouncing  
o Lateral slide board  
o Ball throwing and catching on unstable surface  
o Functional Training  
o Running  
  ▪ Figure-of-eight pattern  
o Agility  
o Start at slow speed  
o Shuttle run, lateral slides, Carioca cross-overs  
o Plyometrics  
o Stair running  
o Box jumps (1-2 foot heights)  
o At 8 months, may start  
  ▪ Sports specific training (start at 25% speed and increase as tolerated)  
  ▪ Incorporate cutting  
  ▪ Increase heights for plyometric conditioning |
| Release to Sports | o Usually occurs at 9-12 months post-op  
o Full, painless range of motion  
o No effusion  
o Quadriceps and hamstring strength 90% of contralateral side  
o No apprehension with all sports specific drills |