

ORTHOPEDIC AND SPORTS MEDICINE CENTER

SPORTS MEDICINE DIVISION
COMBINED REHAB PROTOCOLS



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**Multiple Ligament Reconstruction
Rehab Protocol**

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TIMELINE

GOALS

EXERCISES/METHODS

BRACING

Early Post-operative-
Day 1-week 4

+Control swelling, inflammation
+Obtain terminal knee extension/hyperextension
+Obtain SLR without lag
+Initiate regaining knee flexion
+Restore leg control

PCL:

- Avoid posterior tibial sag, avoid tibial external rotation x 4 months.
- Hold open chain hamstring exercise x 4 months.

Extension: Heel prop, calf (with ext) and GENTLE hamstring and gastroc stretches, Quad sets (electrical stimulation prn), 3 way SLR with brace, superior patellar mobs
Flexion: inferior patellar mobs, passive knee flexion(no activation of HS), wall slides, seated knee flexion stretches passively

No open chain hamstring strengthening or isolated hamstring exercises

Scar mobilization once incision is healed

- Full Ext x 4 weeks
- Progressive Increase to 90 from 4-8
- Full ROM by 8
- If PCL: Ossur PCL dynamic brace for 6 months after immobilizer instead of IROM

ROM RESTRICTIONS

- 0-90 for 6 weeks

Milestones to reach by end of week 2:

Full knee extension
SLR without quad lag

WEIGHT BEARING

- NWB for 6 weeks
- 50% Week 7
- 75-100% week 8

Weeks 4-10

Week 8 can unlock the brace

+Begin to normalize gait weeks 6-8
+Knee flexion 100-125 degrees
+Normalized gait
+Quad control with functional movements including step up/down, squat, partial lunge(not to exceed 60 degrees)

Avoid posterior tibial sag, avoid tibial external rotation x 4 months.
Hold open chain hamstring exercise x 4 months.

Continue as above, avoid hip extension secondary to hamstring restrictions

Ankle dorsiflexion and plantarflexion with manual resistance

Week 8
Closed chain quad strengthening (squats, SAQs, TKEs, step ups and downs)
Gait drills
Balance drills with brace
Hip and core strengthening
Upper body circuit training or UBE

OTHER RESTRICTIONS AND KEY CONSIDERATIONS

LCL: no varus stress 12 wks
MCL: no Valgus Stress 12 wks
PCL: ROM prone for 1st 2 weeks

Milestones to reach by end of week 6:

Normalized gait without assistive device (except PCL–PCL brace during gait until 6 months)
Full knee extension ROM and flexion greater than 125°
Min to no swelling

TIMELINE

GOALS

EXERCISES/METHODS

Weeks 10-16	<ul style="list-style-type: none"> +Good single leg control +Single leg stance >30 seconds 	<ul style="list-style-type: none"> Progression to multiplane quad strengthening and open chain exercises Non-impact balance and proprioceptive drills Stretching for patient specific muscle imbalances Stationary bike
Weeks 16-24	<ul style="list-style-type: none"> +Good dynamic neuromuscular control and no pain with multiplanar activities +Initiation of impact activities when 80% strength is reached compared to uninjured 	<ul style="list-style-type: none"> Single leg mini squat (0-45), static squat holds with RNT/dynamic core training, triple flexion/extension (running prep) progressing toward full WB running, trampoline bounding, slideboard/fitter, plyometric progression Low intensity plyometrics Stairmaster Alter G, straight line jogging
Weeks 24+	<ul style="list-style-type: none"> +Sports specific progression and training +Control when landing from sagittal, frontal, and transverse planes 	<ul style="list-style-type: none"> Initiate running program gravity resisted (may begin at week 20) Movement control exercises Specific balance and proprioceptive drills

SHOWERING

1. May Shower day 1 after surgery
2. Must "waterproof" surgical site for 5 days after surgery
3. No submerging wounds for 4 weeks

WOUND CARE

1. Remove everything except steri strips the day after surgery
2. Place clean gauze or op-site on wounds daily for 5 days

MEDICATIONS

1. Pain medicine only as needed. Wean off as soon as possible
2. Don't over-use NSAIDS
3. Aspirin 325mg daily for 1 month for DVT prophylaxis

RETURN TO PLAY CRITERIA

Pre-RTP Criteria before testing can commence	<p>Full AROM</p> <p>Resolution of pain</p> <p>No/Trace joint effusion present</p> <p>MMT grossly 5/5 strength in LE</p> <p>LEFS: $\geq 75/80$ (95%)</p> <p>Lysholm Knee Rating: $\geq 95\%$</p> <p>1RM SL Leg Press $\geq 90\%$ contralateral side</p> <p>1RM SL Hamstring Curl $\geq 90\%$ contralateral side</p>
Lower Limb Symmetry Index (LSI): LSI % (mean score of 3 trials on injured limb/ mean score of 3 trials on uninjured limb) x 100	<p>SL Hop: $\geq 90\%$</p> <p>SL Triple Hop: $\geq 90\%$</p> <p>SL 6 meter Timed Hop: $\geq 90\%$</p> <p>SL Cross-over Hop: $\geq 90\%$</p> <p>Overall Score: $\geq 90\%$</p>
Vail Sports Tests:	<p>Passing Score $\geq 46/54$ (85%)</p>
Tuck Jump Assessment (TJA):	<p>perfect score on the TJA or improvement of 20 percentage points from the initial score</p>
Single Leg Squat: No Errors in Form (Errors listed right)	<p>Arm strategy: removal of hand off the waist</p> <p>Trunk alignment: leaning in any direction</p> <p>Pelvis plane: loss of horizontal plane</p> <p>Knee position: tibial tuberosity medial to second toe or tibial tuberosity medial to medial border of foot</p> <p>Steady stance: subject stepped down on non-tested limb, or foot wavered from side-to-side</p>
Modified Star Balance Excursion Test (Y Balance Test):	<p>SEBT % = $((\text{mean score of 3 trials in anterior distance} + \text{mean score of 3 trials in posterior lateral distance} + \text{mean score of 3 trials in posterior medial distance}) / \text{leg length of stance limb}) \times 100$. Passing Score $\geq 94\%$</p>
Core Testing: (ongoing research): $\geq 90\%$ of all standard timed tests:	<p>Right Single Leg Bridge: Men 95 seconds; Females 75 seconds</p> <p>Left Single Leg Bridge: Men 99 seconds; Females 78 seconds</p> <p>Flexor Endurance Test: Men 136 seconds; Females 134 seconds</p> <p>Extensor Endurance Test: Males 160 seconds; Females 185 seconds</p> <p>Lower Abdominal Muscle Testing: Males 5/5; Females $\geq 4/5$ $(75 \square = 3/5, 60 \square = 3+/5, 45 \square = 4-/5, 30 \square = 4/5, 15 \square = 4+/5, 0 \square = 5/5)$</p>

RTP INSTRUCTIONS

RTP evaluation can progress throughout treatment as appropriate

PRE-RTP

Complete all testing in Pre-RTP section. Only Continue on when able to pass

SESSION 1

LSI, Vail Sports, TJA

SESSION 2

Single leg squat, Y Balance, Core Testing