

# Rehabilitation Protocol for Brostrom Lateral Ankle Ligament Repair

This protocol is intended to guide clinicians through the post-operative course for Brostrom repair. This protocol is time based (dependent on tissue healing) as well as criterion based. Specific intervention should be based on the needs of the individual and should consider exam findings and clinical decision making. The timeframes for expected outcomes contained within this guideline may vary based on surgeon’s preference, additional procedures performed, and/or complications. If a clinician requires assistance in the progression of a post-operative patient, they should consult with the referring surgeon.

The interventions included within this protocol are not intended to be an inclusive list of exercises. Therapeutic interventions should be included and modified based on the progress of the patient and under the discretion of the clinician.

## Considerations for the Post-operative Brostrom Repair

Many different factors influence the post-operative Brostrom rehabilitation outcomes. Consider taking a more conservative approach to range of motion, weight bearing, and rehab progression with tendon augmentation or peroneal tendon repair, revision, patients with hyper-ligamentous laxity, and co-morbidities such as obesity and advanced age. It is recommended that clinicians collaborate closely with the referring physician regarding intra-operative findings and satisfaction with the strength of the repair.

### PHASE I: IMMEDIATE POST-OP (0-2 WEEKS AFTER SURGERY)

<b>Rehabilitation Goals</b>	<ul style="list-style-type: none"> <li>• Protect repair</li> <li>• Edema control/reduction</li> <li>• Minimize muscle atrophy in proximal musculature</li> </ul>
<b>Weight Bearing</b>	<ul style="list-style-type: none"> <li>• Non-weight bearing with crutches</li> </ul>
<b>Interventions</b>	<p><i>Range of motion/Mobility</i></p> <ul style="list-style-type: none"> <li>• <a href="#">Supine passive hamstring stretch</a></li> <li>• <b>Avoid A/PROM into inversion</b></li> <li>• <b>Avoid A/PROM into plantarflexion</b></li> </ul> <p><i>Strengthening</i></p> <ul style="list-style-type: none"> <li>• <a href="#">Quad sets</a></li> <li>• <a href="#">Straight leg raises</a></li> <li>• <a href="#">Hip abduction</a></li> <li>• <a href="#">Prone hamstring curls</a></li> </ul>
<b>Criteria to Progress</b>	<ul style="list-style-type: none"> <li>• Decreased pain and edema</li> <li>• Independent with transfers with appropriate weight bearing precaution</li> </ul>

### PHASE II: INTERMEDIATE POST-OP (3-6 WEEKS AFTER SURGERY)

<b>Rehabilitation Goals</b>	<ul style="list-style-type: none"> <li>• Continue to protect repair</li> <li>• Edema and pain control</li> <li>• Progress weight bearing using appropriate assistive device</li> <li>• Gradually restore ankle dorsiflexion, eversion and plantar flexion</li> </ul>
<b>Weight Bearing</b>	<ul style="list-style-type: none"> <li>• Weight bearing as tolerated in boot</li> </ul>
<b>Additional Interventions</b>	<p><i>Range of motion/Mobility</i></p> <ul style="list-style-type: none"> <li>• PROM/AAROM/AROM: ankle dorsiflexion, plantar flexion, eversion</li> </ul>

<p><i>*Continue with Phase I interventions</i></p>	<ul style="list-style-type: none"> <li>○ <b>Avoid ankle inversion</b></li> <li>● Gentle <a href="#">long-sitting gastroc stretch</a></li> </ul> <p><i>Cardio</i></p> <ul style="list-style-type: none"> <li>● Upper body ergometer</li> </ul> <p><i>Strengthening</i></p> <ul style="list-style-type: none"> <li>● Submax <a href="#">ankle isometrics</a> all direction except inversion</li> <li>● Lumbopelvic strengthening: <a href="#">sidelying clamshells</a>, <a href="#">plank</a></li> </ul> <p><i>Balance/proprioception</i></p> <ul style="list-style-type: none"> <li>● Joint position re-training</li> </ul>
<p><b>Criteria to Progress</b></p>	<ul style="list-style-type: none"> <li>● Decreased pain and edema</li> <li>● Full ROM ankle dorsiflexion, plantar flexion, eversion (inversion to neutral)</li> <li>● Independent with home exercise program (HEP)</li> </ul>

### **PHASE III: LATE POST-OP (7-8 WEEKS AFTER SURGERY)**

<p><b>Rehabilitation Goals</b></p>	<ul style="list-style-type: none"> <li>● Continue to protect repair</li> <li>● Normalize gait pattern</li> <li>● Restore full ROM</li> <li>● Begin controlled ankle strengthening</li> </ul>
<p><b>Weight Bearing</b></p>	<ul style="list-style-type: none"> <li>● Weight bearing as tolerated in shoe with active ankle brace</li> </ul>
<p><b>Additional Interventions</b> <i>*Continue with Phase I-II Interventions</i></p>	<p><i>Range of motion/Mobility</i></p> <ul style="list-style-type: none"> <li>● Gentle stretching of proximal lower extremity muscles: <a href="#">prone quad stretch</a>, <a href="#">standing quad stretch</a>, <a href="#">kneeling hip flexor stretch</a></li> <li>● Gentle <a href="#">standing gastroc stretch</a> and <a href="#">soleus stretch</a></li> <li>● Ankle/foot mobilizations adhering to identified precautions (avoid stress to CFL and ATFL)</li> </ul> <p><i>Cardio</i></p> <ul style="list-style-type: none"> <li>● Stationary bike, flutter kick swimming, pool jogging if patient has access to pool and fully healed incision</li> </ul> <p><i>Strengthening</i></p> <ul style="list-style-type: none"> <li>● <a href="#">4 way ankle theraband</a></li> <li>● <a href="#">Calf raises</a></li> <li>● <a href="#">Seated calf machine</a></li> <li>● Lumbopelvic strength progressions: <a href="#">bridges on physioball</a>, <a href="#">bridge on physioball with hamstring curl</a>, <a href="#">bridge on physioball with alternating march</a></li> <li>● Supplemental gym strengthening: <a href="#">leg press</a>, <a href="#">knee extension machine</a>, <a href="#">hip abductor and adductor machine</a></li> </ul> <p><i>Balance/proprioception</i></p> <ul style="list-style-type: none"> <li>● Double limb standing on uneven surface (wobble/rocker board)</li> <li>● Single limb balance with progression to uneven surface including perturbation training</li> </ul>
<p><b>Criteria to Progress</b></p>	<ul style="list-style-type: none"> <li>● Normalized gait pattern without assistive device</li> <li>● Ankle ROM equal to uninjured</li> <li>● Symmetrical joint position sense (within 5 degree error)</li> </ul>

### **PHASE IV: TRANSITIONAL (9-12 WEEKS AFTER SURGERY)**

<p><b>Rehabilitation Goals</b></p>	<ul style="list-style-type: none"> <li>● Maintain full ankle ROM</li> <li>● Progress ankle and lower extremity strengthening</li> <li>● Avoid post exercise pain/swelling</li> <li>● Normalize function movements</li> </ul>
------------------------------------	--

<b>Additional Interventions</b> <i>*Continue with Phase I-III interventions</i>	<p><i>Strengthening</i></p> <ul style="list-style-type: none"> <li>• <a href="#">Single leg calf raises</a></li> <li>• <a href="#">Squats</a></li> <li>• <a href="#">Dead lifts</a></li> <li>• <a href="#">Resisted stepping</a></li> </ul> <p><i>Balance/proprioception</i></p> <ul style="list-style-type: none"> <li>• <a href="#">Y-balance/Star balance</a></li> <li>• <a href="#">Single leg balance with ball toss</a></li> <li>• <a href="#">Step ups with single leg holds</a></li> </ul>
<b>Criteria to Progress</b>	<ul style="list-style-type: none"> <li>• Able to perform 25 single leg heel raises.</li> <li>• 90 percent performance with Y-balance / Star balance test on involved LE compared to uninvolved side.</li> <li>• No pain or swelling after exercises.</li> </ul>

### **PHASE V: EARLY RETURN TO SPORT (3-4 MONTHS AFTER SURGERY)**

<b>Rehabilitation Goals</b>	<ul style="list-style-type: none"> <li>• Safely progress strengthening</li> <li>• Promote proper movement patterns</li> <li>• Avoid post exercise pain/swelling</li> </ul>
<b>Additional Interventions</b> <i>*Continue with Phase II-IV interventions</i>	<p><i>Cardio</i></p> <ul style="list-style-type: none"> <li>• Elliptical, stair climber</li> </ul> <p><i>Range of Motion/Mobility</i></p> <ul style="list-style-type: none"> <li>• <a href="#">Standing gastroc stretch</a> and <a href="#">standing soleus stretch</a></li> </ul> <p><i>Strengthening</i></p> <ul style="list-style-type: none"> <li>• <a href="#">Squat to chair</a></li> <li>• <a href="#">Hip hike</a></li> <li>• <a href="#">Lateral lunges</a></li> <li>• Single leg progression: <a href="#">partial weight bearing single leg press</a>, <a href="#">slide board lunges</a>, <a href="#">step up/downs progression</a>, <a href="#">single leg wall slides</a></li> </ul>
<b>Criteria to Progress</b>	<ul style="list-style-type: none"> <li>• No swelling/pain after exercise</li> <li>• No swelling/pain with 30 minutes of fast paced walking</li> <li>• 90 percent performance single leg hop test for distance and triple hop for distance</li> <li>• Cumberland Ankle Instability Tool (CAIT) of FAAM</li> </ul>

### **PHASE VI: UNRESTRICTED RETURN TO SPORT (5-6+ MONTHS AFTER SURGERY)**

<b>Rehabilitation Goals</b>	<ul style="list-style-type: none"> <li>• Continue strengthening and proprioceptive exercises</li> <li>• Safely initiate sport specific training program</li> <li>• Symmetrical performance with sport specific drills</li> <li>• Safe progression into full sport</li> </ul>
<b>Additional Interventions</b> <i>*Continue with Phase II-V interventions</i>	<ul style="list-style-type: none"> <li>• Interval running program</li> <li>• Return to Running Program</li> <li>• Agility and Plyometric Program</li> </ul>
<b>Criteria to Progress</b>	<ul style="list-style-type: none"> <li>• Last stage, no additional criteria</li> </ul>

Revised 12/2021

<b>Contact</b>	Please email <a href="mailto:MGHSportsPhysicalTherapy@partners.org">MGHSportsPhysicalTherapy@partners.org</a> with questions specific to this protocol
----------------	--

References:

1. Caffrey E, Docherty CI, et al. The Ability of 4 Single-Limb Hopping Tests to Detect Functional Performance Deficits in Individuals With Functional Ankle Instability. *JOSPT*. 2009; 39:799-806
2. Garrison JC, Bothwell JM, Wolf G, Aryal S, Thigpen CA. Y Balance Test Anterior Reach Symmetry at Three Months is Related to Single Leg Functional Performance at Time of Return to Sports Following Anterior Cruciate Ligament Reconstruction. *Int J Sports Phys Ther*. 2015;10(5):602-11.
3. Lee K, Jegal H, et al. Return to Play After Modified Brostrom Operation for Chronic Ankle Instability in Elite Athletes. *Clinics in Orthopedic Surgery*. 2019; 11:126-130.
4. Mandelbaum BR, Silvers HJ, Watanabe DS, et al. Effectiveness of Neuromuscular and Proprioceptive Training Program in Preventing Anterior Cruciate Ligament Injuries in Female Athletes: 2 year follow-up. *Am J Sports Med*. 2005; 33:1003-1010.
5. Miyamoto W, Takao M, Yamada K, Matsushita T. Accelerated Versus Traditional Rehabilitation After Anterior Talofibular Ligament Reconstruction for Chronic Lateral Instability of the Ankle in Athletes. *Am J Sports Med*. 2014;42(6):1441-7.
6. Pearce CJ, Tourne Y, et al. Rehabilitation After Anatomical Ankle Ligament Repair or Reconstruction. *Knee Surg Sports Traumatol Arthrosc*. 2016; 24:1130-1139