

## Distal Realignment (Tibial Tubercle Osteotomy)

Weeks One To Four	Weeks Four To Six
<b>Initial Evaluation</b>	<b>Evaluate</b>
<ul style="list-style-type: none"> <li>➤ Range of motion</li> <li>➤ Joint hemarthrosis</li> <li>➤ Ability to contract quad/vmo</li> <li>➤ Gait (PWB in long leg immobilizer)</li> <li>➤ Inspect for infection/signs of DVT</li> <li>➤ Assess RTW and sport expectations</li> </ul>	<ul style="list-style-type: none"> <li>➤ Range of Motion</li> <li>➤ Joint Hemarthrosis</li> <li>➤ Ability to contract quad/vmo</li> <li>➤ Signs of infection or DVT</li> <li>➤ Patella mobility</li> </ul>
<b>Patient Education</b>	<b>Patient Education</b>
<ul style="list-style-type: none"> <li>➤ Support Physician prescribed meds</li> <li>➤ Reinforce use of immobilizer and assistive device</li> <li>➤ Restate surgical precautions</li> <li>➤ Discuss frequency and duration of treatment (2-3x/wk is expected for the first 8 weeks, followed by intermittent appointments over another 6-8 weeks)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Progress flexion ROM to 90 degrees as tolerated</li> <li>➤ Continue use of brace and crutches until week 6</li> <li>➤ Reinforce precautions (WBAT continues in extension only, caution with uneven surfaces)</li> <li>➤ Consider core stability based exercises as appropriate</li> </ul>
<b>Therapeutic Exercise</b>	<b>Therapeutic Exercise</b>
<ul style="list-style-type: none"> <li>➤ Review HEP (heel slides, ankle pumps, quad sets, multi plane leg raises in immobilizer, and hamstring/gastroc stretching)</li> <li>➤ No quad PRE's with exception of quad sets and multi plane leg raise in brace</li> <li>➤ No self quad stretching</li> </ul>	<ul style="list-style-type: none"> <li>➤ Continue with quad sets and SLR activity</li> <li>➤ Multi-angle, sub-maximal isometrics (If pain free)</li> <li>➤ AROM to 90 degrees as tolerated</li> <li>➤ Weight shifting, heel raises in brace.</li> <li>➤ HS and gastroc stretching</li> </ul>
<b>Manual Techniques</b>	<b>Manual Techniques</b>
<ul style="list-style-type: none"> <li>➤ Initiate superior and inferior patella mobilization</li> <li>➤ No medial and lateral patella mobilization</li> <li>➤ Initiate gentle mobilization of incision when appropriate</li> </ul>	<ul style="list-style-type: none"> <li>➤ No medial and lateral patella mobilization</li> <li>➤ Posterior capsule mobilization (if needed)</li> <li>➤ Incision mobilization</li> </ul>
<b>Modalities</b>	<b>Modalities</b>
<ul style="list-style-type: none"> <li>➤ Interferential / biofeedback</li> <li>➤ Ice</li> </ul>	<ul style="list-style-type: none"> <li>➤ Initiate use of NMES</li> <li>➤ Other modalities may be used as needed</li> </ul>
<b>Goals</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>➤ Control pain</li> <li>➤ Reduce joint hemarthrosis</li> <li>➤ Gain full knee extension</li> <li>➤ Restore voluntary quad contraction</li> <li>➤ Independence with post-op precautions</li> <li>➤ 0-60 degrees ROM</li> </ul>	<ul style="list-style-type: none"> <li>➤ Restore voluntary quad contraction</li> <li>➤ Decrease Hemarthrosis</li> <li>➤ Prevent adherence of incision</li> <li>➤ 0-90 degrees ROM</li> <li>➤ Gait with single crutch and d/c brace at 6 weeks</li> </ul>

Weeks Six To Eight	Weeks Eight To Ten
Evaluate	Evaluate
<ul style="list-style-type: none"> <li>➤ Gait and brace needs</li> <li>➤ Quad Contraction</li> <li>➤ ROM</li> <li>➤ Balance</li> </ul>	<ul style="list-style-type: none"> <li>➤ Any ROM restrictions</li> <li>➤ HEP compliance</li> <li>➤ Balance</li> </ul>
Patient Education	
<ul style="list-style-type: none"> <li>➤ D/C brace if good quad contraction</li> <li>➤ May need single axillary crutch to normalize gait</li> </ul>	
Therapeutic Exercise	Therapeutic Exercise
<ul style="list-style-type: none"> <li>➤ Progress to light closed chain exercises for quad contraction and proprioception (partial wallslide and leg press) at 8 weeks</li> <li>➤ Bilateral dynamic balance activity</li> </ul>	<ul style="list-style-type: none"> <li>➤ Initiate squatting, lunging, and step-up progressions as tolerated through this timeframe</li> <li>➤ Progress to closed chain exercises on unstable surfaces at week 10</li> </ul>
Manual Techniques	Manual Techniques
<ul style="list-style-type: none"> <li>➤ Patella mobilizations as indicated</li> <li>➤ PROM and joint mobilization as indicated</li> </ul>	<ul style="list-style-type: none"> <li>➤ Patella mobilizations as indicated</li> <li>➤ PROM and posterior capsule stretch as indicated</li> </ul>
Modalities	Modalities
<ul style="list-style-type: none"> <li>➤ Any as Indicated</li> </ul>	<ul style="list-style-type: none"> <li>➤ Any as Indicated</li> </ul>
Goals	Goals
<ul style="list-style-type: none"> <li>➤ Normal gait without crutches or immobilizer by week 8</li> <li>➤ Single leg stance with eyes closed for at least 10 seconds</li> <li>➤ 0-125 degrees ROM</li> <li>➤ Quad strength 4/5 by week 8</li> </ul>	<ul style="list-style-type: none"> <li>➤ No pain with ADL's</li> <li>➤ Quad strength at least 4+/5</li> <li>➤ Normal ROM</li> </ul>

<b>Weeks Ten To Sixteen</b>	<b>Weeks Sixteen To Discharge</b>
<b>Evaluate</b>	<b>Evaluate</b>
<ul style="list-style-type: none"> <li>➤ Any excessive joint laxity</li> <li>➤ HEP compliance</li> <li>➤ Patella mobility / crepitus</li> <li>➤ Balance / single leg stance</li> </ul>	<ul style="list-style-type: none"> <li>➤ Isokinetic Strength testing per physician request at 16 weeks</li> <li>➤ Address any deficits that may limit return to work or sport goals</li> </ul>
<b>Therapeutic Exercise</b>	<b>Therapeutic Exercise</b>
<ul style="list-style-type: none"> <li>➤ Progress Isotonic strength training to include movement in multiple planes at 10 weeks</li> <li>➤ Progress balance activity to single leg dynamic activity and unstable surfaces at 14 weeks</li> <li>➤ Cardiovascular training at 12 weeks (bike, swim and elliptical) with physician approval</li> <li>➤ May begin CFA at 12 weeks (with physician approval)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Sports specific exercises</li> <li>➤ Encourage participation in the CFA</li> <li>➤ Complete agility/ running activity with good isokinetic/FMS test results and physician approval at 16 weeks</li> </ul>
<b>Goals</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>➤ 5-/5 strength with manual testing by week twelve</li> <li>➤ Good stability across tibiofemoral joint</li> <li>➤ May complete exercise independently with intermittent follow up appointments when above criteria is met (Typically 10 to 12 weeks)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Strength of quadriceps and hamstrings no less than 85% per isokinetic test at 16 weeks</li> <li>➤ Discharge with full return to work or sport activity</li> </ul>