

## Tibial Tubercle Osteotomy with MPFL Reconstruction

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The surgeon may specify on the referral any specific requests or deviations that fall outside the scope of this protocol, including if *deceleration* of these time frames is desired.

| Phase I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Phase II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Phase III                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Phase IV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| (Weeks 0 – 2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | (Weeks 2 – 6)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | (Weeks 6 – 12)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | (Weeks 12 – 24+)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>PRECAUTIONS</b></p> <ul style="list-style-type: none"> <li>NWB with crutches</li> <li>Wear brace at all times except when bathing or doing therapy exercises</li> <li>No open-chain quad at any point</li> </ul> <p><b>CLINICAL CARE</b></p> <ul style="list-style-type: none"> <li>Swelling/Wound Management</li> <li>NMES</li> <li>Gait Training</li> </ul> <p><b>EXERCISES</b></p> <ul style="list-style-type: none"> <li>ROM 0-90°</li> <li>Passive extension stretching (emphasize full extension)</li> <li>Ankle pumps</li> <li>Quad sets</li> <li>Upright SLR (in brace)</li> <li>NMES is strongly recommended to improve quad strength</li> </ul> <p><b>CRITERIA</b> to advance...</p> <ul style="list-style-type: none"> <li>ROM <ul style="list-style-type: none"> <li>Extension: 0°</li> <li>Flexion: 90°</li> </ul> </li> </ul> | <p><b>PRECAUTIONS</b></p> <ul style="list-style-type: none"> <li>TDWB with crutches until sufficient quad control</li> <li>Continue knee immobilizer for ambulation</li> <li>CKC (0-60°) for strength training</li> </ul> <p><b>CLINICAL CARE</b></p> <ul style="list-style-type: none"> <li>Swelling Management</li> <li>Work on normalizing gait</li> <li>NMES</li> <li>Manual knee flexion/extension stretching</li> <li>Light scar mobilization when wound closed</li> <li>Blood Flow Restriction Training</li> <li>Pool therapy when OK'ed by MD</li> </ul> <p><b>EXERCISES</b></p> <ul style="list-style-type: none"> <li>Gentle AAROM/PROM 0-120°</li> <li>Bike for ROM</li> <li>CKC hip strengthening</li> <li>Basic proprioceptive activities</li> <li>Continue NMES</li> <li>Hamstring ISOs</li> </ul> <p><b>CRITERIA</b> to advance...</p> <ul style="list-style-type: none"> <li>Single leg stance control w/o UE support</li> <li>Effusion managed</li> <li>ROM <ul style="list-style-type: none"> <li>Flexion: &gt;120°</li> </ul> </li> </ul> | <p><b>PRECAUTIONS</b></p> <ul style="list-style-type: none"> <li>Progress WBAT to FWB with crutches when sufficient quad control</li> <li>Watch for patellofemoral pain</li> <li>Possible lateral support brace until good quad control</li> <li>Watch hip/knee alignment with single leg stance</li> </ul> <p><b>CLINICAL CARE</b></p> <ul style="list-style-type: none"> <li>Blood Flow Restriction Training</li> <li>Manual Therapy PRN</li> <li>Eccentric Training (CKC)</li> </ul> <p><b>EXERCISES</b></p> <ul style="list-style-type: none"> <li>Stationary biking for ROM</li> <li>Advance CKC strengthening single leg without dynamic valgus</li> <li>Seated knee extension (90-45°)</li> <li>Core exercises</li> <li>Hamstring strengthening</li> <li>Forward and lateral step ups</li> <li>Step downs</li> <li>Leg press (double progress to single)</li> <li>Lunges</li> </ul> <p><b>CRITERIA</b> to advance...</p> <ul style="list-style-type: none"> <li>Normal gait mechanics</li> <li>Negotiate stairs normally</li> <li>Restore limb confidence</li> <li>ROM</li> </ul> | <p><b>PRECAUTIONS</b></p> <ul style="list-style-type: none"> <li>Watch hip/knee alignment with single leg squatting</li> <li>No jumping, cutting, or sprinting until cleared</li> <li>Hold on return to run or hop testing until quad limb symmetry index (LSI) is &gt;70% and there is trace or less joint effusion</li> </ul> <p><b>CLINICAL CARE</b></p> <ul style="list-style-type: none"> <li>Blood Flow Restriction Training for atrophy as needed</li> </ul> <p><b>EXERCISES</b><br/><b>12-16 weeks</b></p> <ul style="list-style-type: none"> <li>Stairmaster, elliptical, moderate biking</li> <li>Running: initiate walk-jog program when the following criteria are met: <ul style="list-style-type: none"> <li>≥ 16 weeks</li> <li>70% quad LSI</li> <li>Effusion - trace or less</li> </ul> </li> <li>Jumping: double progress to single leg</li> <li>High level strengthening: single leg on unstable surfaces</li> </ul> <p><b>16+ weeks</b></p> <ul style="list-style-type: none"> <li>Agility drills/plyometrics</li> <li>Sports specific activities</li> </ul> <p><b>24+ weeks</b></p> <ul style="list-style-type: none"> <li>Cutting/sport specific activities if cleared</li> </ul> <p><b>CRITERIA</b> to advance...</p> <ul style="list-style-type: none"> <li>Return to sport or heavy work cleared by MD</li> <li>&gt;90% of limb symmetry on Functional Testing</li> <li>Within 1 cm quad girth difference side to side</li> </ul> |

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|--|--|-----------------------------------------------------------------------------------------------------------------|--|
|  |  | <ul style="list-style-type: none"><li>○ Full extension</li><li>○ Flexion within 5° of uninvolved side</li></ul> |  |
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