

## Grade II MCL Protocol

Week one	Week two to three
<b>Initial Evaluation</b>	<b>Evaluate</b>
<ul style="list-style-type: none"> <li>➤ Range of motion/Joint instability</li> <li>➤ Ability to contract quad/vmo</li> <li>➤ Gait</li> <li>➤ Patella Mobility</li> <li>➤ Pain/Joint effusion</li> <li>➤ Assess RTW and functional expectations</li> </ul>	<ul style="list-style-type: none"> <li>➤ Range of Motion</li> <li>➤ Pain/Joint effusion</li> <li>➤ Ability to contract quad/vmo</li> <li>➤ Patella mobility</li> <li>➤ Standing balance</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 brace and assistive device (Typically WBAT in Bledsoe)</li> <li>➤ Discuss frequency and duration of treatment 2-3 times per week for 6-8 weeks</li> </ul>	<ul style="list-style-type: none"> <li>➤ Progress to FWB continue with brace use</li> </ul>
<b>Therapeutic Exercise</b>	<b>Therapeutic Exercise</b>
<ul style="list-style-type: none"> <li>➤ May complete pain free AROM and Isometrics while avoiding varus/valgus stress. Rom limitations may be determined by the physician</li> <li>➤ May need to complete exercises with tibia slightly IR or in brace</li> <li>➤ Heel slides, quad sets, ankle pumps, SLR, and gentle hamstring/calf stretching</li> </ul>	<ul style="list-style-type: none"> <li>➤ Initiate bicycle (do not force flexion)</li> <li>➤ Initiate isotonic exercise including multi hip, leg press, heel raises, and hamstring curl</li> <li>➤ Add single leg static balance activity</li> <li>➤ May need to continue multi-angle isometrics with NMES</li> </ul>
<b>Manual Techniques</b>	<b>Manual Techniques</b>
<ul style="list-style-type: none"> <li>➤ Grade I and II patella mobilizations</li> <li>➤ PROM as tolerated (focus on extension)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Grade III-IV patella mobilization</li> <li>➤ Posterior capsule mobilization (if needed)</li> </ul>
<b>Modalities</b>	<b>Modalities</b>
<ul style="list-style-type: none"> <li>➤ NMES is recommended for quad activity</li> <li>➤ Interferential / biofeedback as needed</li> <li>➤ Ice</li> </ul>	<ul style="list-style-type: none"> <li>➤ NMES is recommended for quad activity</li> <li>➤ Modalities may be used as needed</li> </ul>
<b>Aquatics</b>	<b>Aquatics</b>
<ul style="list-style-type: none"> <li>➤ Shallow Water: <ul style="list-style-type: none"> <li>➤ Walking forward/backward/sideways with a focus on proper gait mechanics</li> <li>➤ Closed chain LE exercises: All in forward/backward direction - mini squats, toe raises, partial/modified lunges</li> <li>➤ Open chain exercises for the knee/hip/ankle avoiding valgus stress on knee.</li> </ul> </li> <li>➤ Deep Water: <ul style="list-style-type: none"> <li>➤ Bicycling, Splits/Spreads (emphasis on abduction vs. adduction), single knee to chest</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>➤ Shallow Water: (Consider hydrocuff for progression) <ul style="list-style-type: none"> <li>➤ Continues week 1 exercises</li> <li>➤ Balance exercises: Push/pull with kickboard/UE resistance - Start with eyes open and progress to eyes closed</li> </ul> </li> <li>➤ Deep Water: <ul style="list-style-type: none"> <li>➤ Continue week 1 exercises</li> <li>➤ Standing on kickboard progressing to squats on kickboard</li> </ul> </li> </ul>
<b>Goals</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>➤ Control pain</li> <li>➤ Reduce effusion/inflammation</li> <li>➤ Restore voluntary quad contraction</li> <li>➤ Independence with WBAT gait</li> <li>➤ 0-70 degrees ROM (unless restricted by physician)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Gain full knee extension</li> <li>➤ Restore voluntary quad contraction</li> <li>➤ 0-90degrees ROM</li> <li>➤ Minimal effusion</li> </ul>

Weeks four to six	Weeks six to discharge
<b>Evaluate</b>	<b>Evaluate</b>
<ul style="list-style-type: none"> <li>➤ Gait and brace needs</li> <li>➤ Quad Contraction</li> <li>➤ ROM</li> <li>➤ Balance</li> <li>➤ Foot and ankle for biomechanical optimization</li> </ul>	<ul style="list-style-type: none"> <li>➤ Any excessive joint laxity</li> <li>➤ Isokinetic Strength test and/or functional hop testing for comparison if necessary</li> <li>➤ Address any deficits that may limit return to work or sport goals</li> <li>➤ HEP compliance</li> </ul>
<b>Patient Education</b>	
<ul style="list-style-type: none"> <li>➤ D/C brace if no pain and minimal laxity with valgus stress test and good quad contraction</li> </ul>	
<b>Therapeutic Exercise</b>	<b>Therapeutic Exercise</b>
<ul style="list-style-type: none"> <li>➤ Single leg isotonic exercises</li> <li>➤ Progress resistive hamstring curl at 4 weeks if pain free</li> <li>➤ Single leg dynamic balance activity (OTIS/IT IS airex activities)</li> <li>➤ Progress to closed chain exercises on unstable surfaces</li> <li>➤ Cardiovascular training (bike, swim and elliptical)</li> </ul>	<ul style="list-style-type: none"> <li>➤ Begin agility and sport specific activity</li> <li>➤ Continue strength and conditioning</li> <li>➤ Complete agility and running activity with good test results and physician approval</li> <li>➤ May begin bilateral low level plyometrics with good test results and physician approval</li> <li>➤ Encourage participation in the CFA</li> </ul>
<b>Manual Techniques</b>	
<ul style="list-style-type: none"> <li>➤ Any techniques as needed</li> </ul>	
<b>Modalities</b>	
<ul style="list-style-type: none"> <li>➤ Any as Indicated</li> </ul>	
<b>Aquatics</b>	<b>Aquatics</b>
<ul style="list-style-type: none"> <li>➤ Shallow and Deep Water Exercises: <ul style="list-style-type: none"> <li>➤ Progress Week 1 and 2 exercises (fins/cuffs/tethers)</li> <li>➤ Deep end running, barbell teeters, 180/360 squats, etc.</li> <li>➤ Sport/work specific simulated activities</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>➤ Continue and progress exercises as indicated and necessary</li> </ul>
<b>Goals</b>	<b>Goals</b>
<ul style="list-style-type: none"> <li>➤ 4+/5 strength with manual testing</li> <li>➤ Normal ROM</li> <li>➤ Normal gait pattern without brace or crutches</li> <li>➤ 0-120 degrees by week 4</li> </ul>	<ul style="list-style-type: none"> <li>➤ Good stability across tibiofemoral joint</li> <li>➤ No pain with ADL's</li> <li>➤ Full strength with manual and functional testing</li> <li>➤ Discharge with full return to work or sport activity orders</li> <li>➤ Full ROM</li> </ul>



Frisbie Memorial Hospital    Marsh Brook Rehabilitation Service    Wentworth-Douglass Hospital    Durham: Rehab and Sports Therapy Center

References:

- Kim, Eunkuk & Kim, Taegy & Kang, Hyunyong & Lee, Jongha & Childers, Martin. (2010). Aquatic Versus Land-based Exercises as Early Functional Rehabilitation for Elite Athletes with Acute Lower Extremity Ligament Injury: A Pilot Study. *PM & R : The journal of injury, function, and rehabilitation*. 2. 703-12. 10.1016/j.pmrj.2010.03.012. 2009
- Reider, B., Sathy, M. R., Talkington, J., Blyznak, N., & Kollias, S. (1994). Treatment of Isolated Medial Collateral Ligament Injuries in Athletes with Early Functional Rehabilitation: A Five-year Follow-up Study. *The American Journal of Sports Medicine*, 22(4), 470–477.