

Grade III MCL Protocol

Weeks one to four	Weeks four to six
Initial Evaluation	Evaluate
<ul style="list-style-type: none"> ➤ Range of motion/Joint instability ➤ Ability to contract quad/vmo ➤ Gait ➤ Patella Mobility ➤ Pain/Joint effusion ➤ Assess RTW and functional expectations 	<ul style="list-style-type: none"> ➤ Range of Motion ➤ Pain/Joint effusion ➤ Ability to contract quad/vmo ➤ Patella mobility ➤ Standing balance
Patient Education	Patient Education
<ul style="list-style-type: none"> ➤ Support Physician prescribed meds ➤ Reinforce use of brace and assistive device ➤ Typically TTWB for 2 weeks, with 30 to 60 degree ROM limitation (WB and ROM will be physician dependent) ➤ Discuss frequency and duration of treatment 2-3 times per week for 8-10 weeks 	<ul style="list-style-type: none"> ➤ Progress to PWB if physician approves ➤ Continue with brace use
Therapeutic Exercise	Therapeutic Exercise
<ul style="list-style-type: none"> ➤ May complete pain free AROM and Isometrics while avoiding varus/valgus stress. (May need to complete exercises with tibia slightly IR or in brace) ➤ Heel slides, quad sets, ankle pumps, SLR, and gentle hamstring/calf stretching ➤ Active hamstring curl no resistance at 3-4 weeks if pain free ➤ Multi-angle isometrics with NMES at 2-3 weeks 	<ul style="list-style-type: none"> ➤ Initiate bicycle (do not force flexion) ➤ Initiate isotonic exercise including multi hip, leg press, heel raises ➤ Resistive hamstring curl if pain free ➤ Add single leg static balance activity ➤ May need to continue multi-angle isometrics with NMES
Aquatics	Aquatics
<p>Initiate when cleared by MD</p> <p>Shallow Water:</p> <ul style="list-style-type: none"> ➤ ROM: Gentle knee flexion/extension in pain free range, hip motion in all planes ➤ Walking forward/backward with a focus on proper gait mechanics and good quad control ➤ Stretching: Gentle hamstring and gastroc <p>Deep Water:</p> <ul style="list-style-type: none"> ➤ Open chain with barbells: Cross country skiing, bicycling: Slow and controlled avoiding valgus stress 	<p>Shallow Water:</p> <ul style="list-style-type: none"> ➤ Walking: Addition of sideways walking. Continued focus on proper gait mechanics and good quad control ➤ Open chain exercises for the knee/hip/ankle avoiding valgus stress on knee. ➤ Closed chain LE exercises: Partial squats, heel raises, step-ups, partial/modified lunges, etc. ➤ Balance/proprioception: Eyes open/closed. Single leg stance <p>Deep Water:</p> <ul style="list-style-type: none"> ➤ Continue as tolerated
Manual Techniques	Manual Techniques
<ul style="list-style-type: none"> ➤ Grade I and II patella mobilizations ➤ PROM as tolerated (focus on extension) 	<ul style="list-style-type: none"> ➤ Grade III-IV patella mobilization ➤ Posterior capsule mobilization (if needed)
Modalities	Modalities
<ul style="list-style-type: none"> ➤ NMES is recommended for quad activity ➤ Interferential / biofeedback as needed ➤ Ice 	<ul style="list-style-type: none"> ➤ NMES is recommended for quad activity ➤ Modalities may be used as needed
Goals	Goals
<ul style="list-style-type: none"> ➤ Control pain ➤ Reduce effusion/inflammation ➤ Restore voluntary quad contraction ➤ Independence with WBAT gait ➤ Physician dependent ROM goals with a typical goal of 0-60 degrees by week four 	<ul style="list-style-type: none"> ➤ Gain full knee extension ➤ Restore voluntary quad contraction ➤ 0-90 degrees ROM ➤ Minimal effusion

Weeks six to eight	Weeks eight to discharge
Evaluate	Evaluate
<ul style="list-style-type: none"> ➤ Gait and brace needs ➤ Quad Contraction ➤ ROM ➤ Balance ➤ Foot and ankle for biomechanical optimization 	<ul style="list-style-type: none"> ➤ Patella mobility / crepitus ➤ Any excessive joint laxity ➤ Isokinetic Strength test and/or functional hop testing for comparison if necessary ➤ Address any deficits that may limit return to work or sport goals ➤ HEP compliance
Patient Education	
<ul style="list-style-type: none"> ➤ D/C brace if no pain and minimal laxity with valgus stress test and good quad contraction ➤ Wean from crutches 	
Therapeutic Exercise	Therapeutic Exercise
<ul style="list-style-type: none"> ➤ Single leg isotonic exercises ➤ Progress resistive hamstring curl ➤ Single leg dynamic balance activity (OTIS/IT IS airex activities) ➤ Progress to closed chain exercises on unstable surfaces <p>Cardiovascular training (bike, swim and elliptical)</p>	<ul style="list-style-type: none"> ➤ Begin agility and sport specific activity ➤ Continue strength and conditioning ➤ Complete agility and running activity with good test results and physician approval ➤ May begin bilateral low level plyometrics with good test results and physician approval ➤ Encourage participation in the CFA
Aquatics	Aquatics
<p>Shallow Water:</p> <ul style="list-style-type: none"> ➤ Open chain: Continue previous exercises with the addition of resistance (cuffs/fins) ➤ Close chain: Squats, step ups to higher step (8”), forward/backward lunges ➤ Balance exercises with push/pull with kickboard/UE resistance. Eyes open and progress to eyes closed for balance <p>Deep Water:</p> <ul style="list-style-type: none"> ➤ Standing on kickboard progressing to squats on kickboard , deep end running 	<p>Shallow Water:</p> <ul style="list-style-type: none"> ➤ Closed chain LE: Increased squat depth, diagonal lunges ➤ Balance: Progression of previous exercises, braided walking ➤ Plyometric: On/off step may be added as tolerated <p>Deep Water:</p> <ul style="list-style-type: none"> ➤ Continue with previous exercises with the addition of resistance(fins) <p>➤ Sport/work specific simulated activities if tolerated</p>
Manual Techniques	
<ul style="list-style-type: none"> ➤ Any techniques as needed 	
Modalities	
<ul style="list-style-type: none"> ➤ Any as Indicated 	
Goals	Goals
<ul style="list-style-type: none"> ➤ 4+/5 strength with manual testing ➤ Normal ROM <p>Normal gait pattern without brace or crutches</p>	<ul style="list-style-type: none"> ➤ Good stability across tibiofemoral joint ➤ No pain with ADL’s ➤ Full strength with manual and functional testing ➤ Discharge with full return to work or sport activity orders

References:

- Kim, Eunkuk & Kim, Taegyu & 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.