



## ***Rehabilitation of Isolated MCL Knee Sprains***

### *Rehabilitation Guideline*

This rehabilitation program is designed to return the individual to their activities as quickly and safely as possible. It is designed for rehabilitation following isolated MCL knee sprains. Modifications to this guideline may be necessary dependent on physician specific instruction, specific tissue healing timeline, chronicity of injury and other contributing impairments that need to be addressed. This evidence-based rehabilitation of isolated MCL knee sprains guideline is criterion-based; time frames and visits in each phase will vary depending on many factors including patient demographics, goals, and individual progress. This guideline is designed to progress the individual through rehabilitation to full sport/ activity participation. The therapist may modify the program appropriately depending on the individual's goals for activity following isolated MCL knee sprains.

This guideline is intended to provide the treating clinician a frame of reference for rehabilitation. It is not intended to substitute clinical judgment regarding the patient's post injury care, based on exam/ treatment findings, individual progress, and/or the presence of concomitant injuries or complications. If the clinician should have questions regarding progressions, they should contact the referring physician.

# General Guidelines/Precautions:

- General healing timeline expected depending on severity of injury/tissue /ligament damage/tearing
- Return to activity
  - Grade I to I+ 2-4 weeks
  - Grade 2 6-8 weeks
  - Grade 2+-3 8-12 weeks
- Precautions to certain exercises for this injury-gradual progression of ROM as Grade of Injury increases motion takes a bit longer to gain, AVOID valgus load to knee initially
  - Grade I to I+ Full motion 1-4 weeks
  - Grade 2 Full motion 6 weeks
  - Grade 2+-3 Full motion 8 weeks
- Severity/ Irritability/ Nature/ Chronicity of symptoms that may affect progressions as noted above

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PHASE	SUGGESTED INTERVENTIONS	GOALS/MILESTONES FOR PROGRESSION
<p><b>Phase I</b> Acute Phase</p> <p>Weeks: 0-2</p> <p>Expected Visits: 2-4</p>	<p><i>Discuss:</i> mechanism of injury typically involves valgus loading, tibial external rotation or a combined force of the two. Anatomically there is the <b>superficial MCL</b> attaching to femur and 2 attachments on tibia. (need to be aware as injury to anteromedial rotatory instability can occur). Proximal division is important for valgus stability and the distal division is more important for external rotational stability.</p> <p><b>Deep MCL</b> is thickening of joint capsule deeper to superficial MCL, this has stout meniscal attachment – menisiofemoral and menisiotibial divisions.</p> <p><i>Specific Instructions:</i></p> <p><b>Grade 1:</b> tenderness, possible medial swelling and possible antalgic gait, no instability (0-5mm)</p> <p><b>Grade 2:</b> greater area of tenderness, swelling and antalgic gait, some gapping with ligament testing (6-10mm), defined end point</p> <p><b>Grade 3:</b> greater medial knee pain versus Grade 2, moderate swelling, knee gives way into valgus, instability/no end point with valgus stress at 20° (&gt;10mm), most of isolated injuries are at femoral site. AVOID applying significant stresses with side-to-side activities until 3-4 weeks after injury</p> <p>Bracing for protection possibly for Grade 1 and most often for Grade 2-3</p> <p><i>Suggested Treatments:</i></p> <p><b>Modalities as indicated:</b> swelling/Edema controlling treatments</p> <p><b>ROM:</b></p> <p>For <b>Grade 1</b> FWB and no ROM restrictions to patient tolerance</p> <p>For <b>Grade 2</b> WBAT to possibly some limitation to gradual full x 4 weeks and 0-2 weeks 10°-135°</p> <p>For <b>Grade 2+-3</b> possibly NWB 0-1 week, progress to FWB x 4 weeks;</p> <p>ROM 0-2 weeks, 30°-90°</p> <p><b>Manual Therapy:</b> Patellar mobilizations</p> <p><b>Neuromuscular</b> stimulation to the quadriceps</p> <p><i>Exercise Examples:</i></p> <p><b>Grade 1</b></p> <ul style="list-style-type: none"> <li>• Bike, elliptical, stair stepper</li> <li>• Prone leg curls, per ROM limits for Grade 2</li> <li>• OKC leg extension, per ROM limits for Grade 2</li> <li>• 4 way hip SLR</li> <li>• Calf strengthening</li> <li>• CKC-leg press, step-ups, forward lunges, squats</li> <li>• Balance/proprioceptive exercises, double to single leg balance use of unstable surfaces</li> <li>• Progression with return to running /plyometrics/ agility exercises/sport specific</li> </ul>	<p><b>Goals of Phase:</b></p> <ol style="list-style-type: none"> <li>1. Diminished pain and inflammation/effusion</li> <li>2. Improved flexibility/range of motion</li> <li>3. Prevent quad atrophy-initiate strength and proprioceptive exercises</li> <li>4. Minimize valgus stress, with grade 2+-3, protect ends of ligaments for proper healing with ROM restraints</li> </ol> <p><b>Criteria to Advance to Next Phase:</b></p> <p><b>Grade 1</b></p> <ol style="list-style-type: none"> <li>1. 75% strength</li> <li>2. Full ROM</li> <li>3. No pain or swelling</li> </ol> <p><b>Grade 2</b></p> <ol style="list-style-type: none"> <li>1. Control of pain and swelling</li> <li>2. ROM 10°-135° x week 2</li> <li>3. Good quad activation</li> </ol> <p><b>Grade 2+-3</b></p> <ol style="list-style-type: none"> <li>1. Good quadriceps activation</li> <li>2. Continue with diminished pain with increasing exercises</li> <li>3. No increase in instability with increased exercises</li> <li>4. ROM 30°-90°</li> </ol>

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<p><b>Phase I (continued)</b></p>	<p><b>Grade 2</b></p> <ul style="list-style-type: none"> <li>• Bike, elliptical, stair stepper</li> <li>• Prone leg curls, per ROM limits for Grade 2</li> <li>• OKC leg extension, per ROM limits for Grade 2</li> <li>• 4 way hip SLR</li> <li>• Calf strengthening</li> <li>• CKC-leg press, step-ups, forward lunges, squats</li> <li>• Balance/proprioceptive exercises, double to single leg balance use of unstable surfaces</li> </ul> <p><b>Grade 2+-3</b></p> <ul style="list-style-type: none"> <li>• Bike</li> <li>• Prone leg curls, per ROM limits</li> <li>• OKC leg extension, per ROM limits</li> <li>• 4 way hip SLR</li> <li>• Calf strengthening</li> <li>• CKC-leg press, step-ups, forward lunges, squats per WB/ROM restrictions</li> </ul>	
<p><b>Phase II</b> Intermediate Phase Weeks: 2-4 Expected visits: 2-4</p>	<p><i>Suggested Treatments:</i></p> <p><b>Modalities as indicated:</b> Edema controlling treatments</p> <p><b>ROM:</b> <b>Grade 1</b> full no restrictions <b>Grade 2;</b> 2-4 weeks 0°-135° <b>Grade 2+-3;</b> 2-3 weeks, 20°-110°; 3-4 weeks, 10°-110°</p> <p><b>Manual Therapy:</b> Patellar mobilizations <b>Neuromuscular</b> stimulation to the quadriceps</p> <p><i>Exercise Examples:</i></p> <p><b>Grade 1</b></p> <ul style="list-style-type: none"> <li>• Bike, elliptical, stair stepper</li> <li>• Running program if 75%</li> <li>• Prone leg curls</li> <li>• OKC leg extension</li> <li>• Heel raises</li> <li>• 4 way hip SLR</li> <li>• Calf strengthening</li> <li>• CKC-leg press, step-ups, forward lunges, lateral lunges, squats</li> <li>• Lateral movements- side shuffles, etc...</li> <li>• Balance/proprioceptive exercises, double to single leg balance use of unstable surfaces</li> <li>• Progression with return to running /plyometrics/ agility exercises/sport specific movement patterns</li> </ul> <p><b>Grade 2</b></p> <ul style="list-style-type: none"> <li>• Progression with hamstring isotonic with increased motion</li> <li>• Progression with quadriceps isotonic with increased motion</li> <li>• Can use isokinetics</li> <li>• CKC-leg press, step-ups, forward lunges, lateral lunges, squats</li> <li>• Heel raises</li> <li>• Balance and proprioceptive training</li> </ul> <p><b>Grade 2+-3</b></p> <ul style="list-style-type: none"> <li>• Continue strength progressions with cautious to side-to-side movements</li> <li>• Total leg strengthening for hamstrings, quadriceps and calf</li> </ul>	<p><b>Goals of Phase:</b></p> <p><b>Grade 1:</b> 1-3 weeks</p> <ol style="list-style-type: none"> <li>1. &gt;90% strength</li> <li>2. Sport specific exercises</li> <li>3. Progress to full active and passive ROM</li> <li>4. Prepare the entire body for return to sport activity</li> </ol> <p><b>Grade 2</b></p> <ol style="list-style-type: none"> <li>1. ROM 0°-135°</li> <li>2. NO increase in instability</li> <li>3. NO increase in swelling over medial knee</li> <li>4. Strength 75%</li> <li>5. Return to running if strength 75%</li> </ol> <p><b>Grade 2+-3</b></p> <ol style="list-style-type: none"> <li>1. ROM 10°-110°</li> <li>2. NO increase in instability</li> <li>3. NO increase in swelling over medial knee</li> <li>4. AVOID side-to-side activities</li> </ol> <p><b>Criteria to Advance to Next Phase:</b></p> <p><b>Grade 1</b></p> <ol style="list-style-type: none"> <li>1. ROM 0°-135° x week 4</li> <li>2. Lower extremity strength 90%</li> <li>3. &lt;1/10 pain with increased activity</li> <li>4. Running without limp</li> </ol> <p><b>Grade 2</b></p> <ol style="list-style-type: none"> <li>1. ROM 0°-135° x week 4</li> <li>2. Minimal tenderness over MCL</li> <li>3. &lt;1-2/10 pain with increased activity</li> <li>4. NO increased swelling to medial knee</li> </ol> <p><b>Grade 2+-3</b></p> <ol style="list-style-type: none"> <li>1. ROM 10°-110° x week 4</li> <li>2. NO increase in tenderness over MCL</li> <li>3. &lt;3/10 pain with increased activity</li> <li>4. NO increase in medial knee swelling</li> </ol>

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<p><b>Phase III</b> Return to Sport Advanced Strengthening</p> <p>Weeks 4-6</p> <p>Expected visits: 2-4</p>	<p><b>Suggested Treatments:</b> <b>Modalities as indicated:</b> Edema controlling treatments <b>ROM:</b> <b>Grade 2+-3</b> Week 4-5: 0° to 120° Week 5 6:0° to 130°</p> <p><i>Exercise Examples:</i></p> <p><b>Grade 1</b></p> <ul style="list-style-type: none"> <li>• Total leg strengthening</li> <li>• CKC exercises</li> <li>• Increase speed with lateral movements.</li> </ul> <p><b>Grade 2</b></p> <ul style="list-style-type: none"> <li>• Progression of strengthening, balance and proprioception</li> <li>• 3 weeks return to running if 75% strength of quadriceps, hamstrings, hip girdle</li> <li>• 4 weeks plyometrics/agility and sport specific exercises</li> </ul> <p><b>Grade 2+-3</b></p> <ul style="list-style-type: none"> <li>• Calf strengthening</li> <li>• Closed chain exercises-leg press, step ups, squats, partial forward lunges</li> <li>• Hamstring isotonics for range of motion</li> <li>• Quadriceps isotonics per range of motion</li> <li>• Balance/proprioception with gradual frontal plane stresses</li> </ul> <p><b>Other Activities:</b> <b>Grade 1</b> functional test if not ready before to return back to sport specific activity</p>	<p><b>Goals of Phase:</b></p> <p><b>Grade 1</b></p> <ol style="list-style-type: none"> <li>1. Full pain free ROM</li> <li>2. Strength &gt;90% with lower extremity</li> <li>3. Functional tests &gt;90%</li> <li>4. Running without limp</li> <li>5. MD approval</li> </ol> <p><b>Grade 2</b></p> <ol style="list-style-type: none"> <li>1. ROM full with no limitations</li> <li>2. Normal gait on level and un-level surfaces at full speed</li> <li>3. NO instability with exercise</li> <li>4. NO increase in swelling with increased activity</li> </ol> <p><b>Grade 2+-3</b></p> <ol style="list-style-type: none"> <li>1. &gt; 130° ROM</li> <li>2. Normal gait pattern</li> <li>3. Ability to perform lateral movements</li> </ol> <p><b>Criteria to Advance to the Next Phase:</b></p> <p><b>Grade 2</b></p> <ol style="list-style-type: none"> <li>1. &lt;1-2/10 pain to medial knee with activity</li> <li>2. Normal gait pattern</li> <li>3. No effusion with increased activity</li> <li>4. 75% strength</li> </ol> <p><b>Grade 2+-3</b></p> <ol style="list-style-type: none"> <li>1. Pain &lt;2/10 with activity</li> <li>2. Normal gait pattern</li> <li>3. Greater than 130° range of motion</li> <li>4. No effusion with increased activity</li> </ol>
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<p><b>Phase IV</b> Return to Performance Phase</p> <p>Weeks 6-12+</p> <p>Expected visits: 2-4</p>	<p><b>Suggested Treatments:</b>  <b>Modalities:</b> May utilize modalities as appropriate for pain relief  <b>ROM:</b>  <b>Grade 2</b> full range of motion x 6 weeks  <b>Grade 2+-3</b> full range of motion with no limitations x 6-8 weeks</p> <p><i>Exercise Examples:</i>  <b>Grade 2</b></p> <ul style="list-style-type: none"> <li>• Progression of total body strength training program</li> <li>• Functional testing when appropriate</li> <li>• Sport specific/position specific drills or appropriate Sport Specific Interval Program</li> </ul> <p><b>Grade 2+-3</b></p> <ul style="list-style-type: none"> <li>• Isotonic quadriceps/hamstrings</li> <li>• Hip girdle strengthening</li> <li>• CKC exercises</li> <li>• Balance/proprioception exercises</li> <li>• 6 weeks add side shuffles, lateral movement</li> <li>• 8 weeks return to running if 75% strength of quadriceps, hamstrings, hip girdle</li> <li>• 10 weeks plyometrics/agility and sport specific exercises, 75% at least strength required</li> </ul> <p><b>Other Activities:</b>  <b>Grade 2</b> functional test 6-8 weeks post injury  <b>Grade 2+-3</b> functional test 8-12 weeks post injury</p>	<p><b>Goals of Phase:</b></p> <ol style="list-style-type: none"> <li>1. Full ROM</li> <li>2. Ready Grade 2 and Grade 2+-3 for return to sport activity</li> <li>3. 0/10 pain</li> <li>4. NO swelling with increased activity</li> <li>5. &gt;90% strength of quadriceps, hamstring and hip girdle</li> <li>6. &gt;90% with functional tests</li> </ol> <p><b>Criteria for Return to Sport:</b></p> <ol style="list-style-type: none"> <li>1. No pain with increased sport specific activity and exercise</li> <li>2. No swelling with increased sport specific activity and exercise</li> <li>3. Functional and strength tests &gt;90%</li> <li>4. MD approval</li> <li>5. Possible bracing for athletic activity</li> </ol>
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**REFERENCES:**

1. Knee Ligament Sprain Guidelines: Revision 2017: Using the Evidence to Guide Physical Therapist Practice. Journal of Orthopedic & Sports Physical Therapy 2017 47:11, 822-823
2. Medial Collateral Ligament Injury of the Knee. (2020, February 13). Physiopedia, . Retrieved 16:07, July 17, 2020 from [https://www.physiopeia.com/index.php?title=Medial\\_Collateral\\_Ligament\\_Injury\\_of\\_the\\_Knee&oldid=230688](https://www.physiopeia.com/index.php?title=Medial_Collateral_Ligament_Injury_of_the_Knee&oldid=230688).
3. LaPrade, RF, Wijdicks CA. The Management of Injuries to the Medial Side of the Knee. JOSPT 2012 42:3, 221-233.
4. Wilk KE, Clancy WG, Andrews JR, Fox GM. Assessment and treatment of medial capsular injuries, in Knee Ligament Rehabilitation, Ellenbecker, 2000, 89-105.

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