Connecticut Orthopaedics

Megan R. Wolf, MD
Sports Medicine/Foot & Ankle

MCL Sprain
Non-Operative Protocol

Phase 1:
Weeks 0-6 (grade 2 and 3)
Weeks 0-3 (grade 1)

Protection:

- The knee should be protected with a short-hinged brace for 3 to 6 weeks depending on the severity of the injury.
- Crutches and restricted weight bearing may be needed, as instructed by the doctor.

Swelling

- Ice the knee if there is pain and swelling.
    - Place a towel or cloth between the skin and the ice to prevent skin injury.
    - Ice for 20 minutes, 3 times per day.
    - At about 2- or 3-weeks following injury, the pain is usually subsiding and the swelling is lessened.
- Elevate the leg and use elastic stockings if the leg is swollen.

Activities

- As the pain lessens and the swelling decreases, try to gradually regain knee motion.
- Avoid pivoting or twisting the knee because it might be unstable and give out. Be careful getting out of cars or catching your toe on a rug. When walking, bear weight according to your doctor's instructions.
- Progress to no crutch(es) or brace when you can walk without a limp and there is no pain (per doctor instructions).
    - You can now try to stretch the knee to regain motion.
    - Stationary cycle, swimming (flutter kick only) and the following exercise program are recommended.

Exercise Program

Stationary Bicycle

- Days per week: 5-7
- Times per day: 1-2
- Time per ride: 10-15 minutes
- No resistance

Set the seat height so that when you are sitting on the bicycle seat, your knee if fully extended with the heel resting on the pedal in the fully bottom position. You should then actually ride the bicycle with your forefoot resting on the pedal. Utilize a stationary bicycle to move the knee joint and increase knee flexion. If you cannot pedal all the way around, then keep the foot of your injured leg on the pedal, and pedal back and forth until your knee will bend far enough to allow a full cycle. Most people are able to achieve a full cycle revolution backwards first, followed by forward.

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Range of Motion and Strengthening Exercises (Brace off)

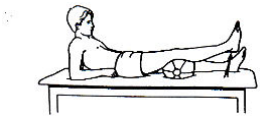
- ☐ Days per week: 5-7
- ☐ Times per day: 1-2

Quadriceps setting	1-2 sets of 15-20 reps
Heel prop	5 minutes
Heel slides with towel assist	1 set of 5 to 15 minutes
Straight leg raises	3 sets of 10 reps
Short-Arc Lift	3 sets of 10 reps
Standing hamstring curl	3 sets of 10 reps
Standing toe-raises	3 sets of 10 reps
Hip abduction	3 sets of 10 reps
Partial squats	3 sets of 15 reps
Wall slides	3 sets of 15 reps

Straight leg raises



Short-Arc lift



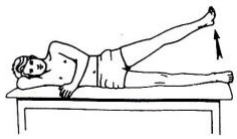
Standing hamstring curl



Standing toe raises



Hip abduction



Wall slide



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Phase 2:
Weeks 6+ (grade 2 and 3)
Weeks 3+ (grade 1)

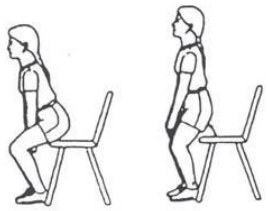
This handout is to help you rebuild the strength of the knee muscles after injury to the MCL of the knee. It is intended as a guideline to help you organize a structured approach to strengthen the knee.

Exercise Program

Range of Motion and Strengthening Exercises
Days per week: 3
Times per day: 1

Quadriceps setting	1-2 sets of 15-20 reps
Heel prop	5 minutes
Prone hang	5 minutes
Heel slides with towel assist	1 set of 5 to 15 minutes
Straight leg raises	3 sets of 10 reps
Short-Arc Lift	3 sets of 10 reps
Standing hamstring curl	3 sets of 10 reps
Standing toe-raises (single leg)	3 sets of 10 reps
Hip abduction	3 sets of 10 reps
Squat to chair	3 sets of 15 reps
Wall slides	3 sets of 15 reps

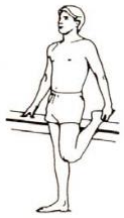
Single leg strengthening progression (see timeline)
Squat to chair



Stretching Exercises
Days per week: 5-7
Times per day: 1-2

Hamstring stretch	3-5 reps holding 15 to 30 seconds
Quadriceps stretch	3-5 reps holding 15 to 30 seconds
Calf stretch	3-5 reps holding 15 to 30 seconds



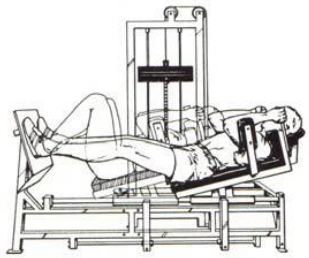
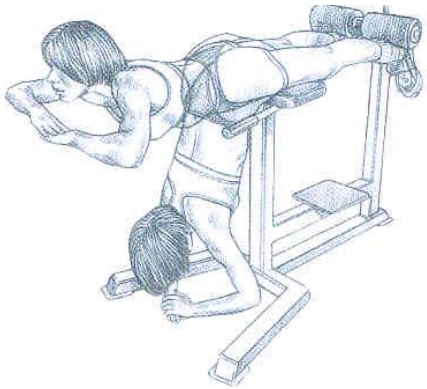
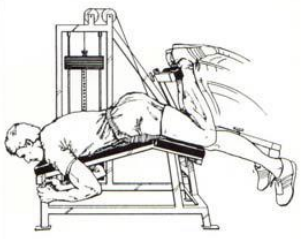


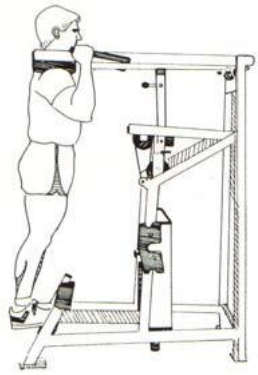
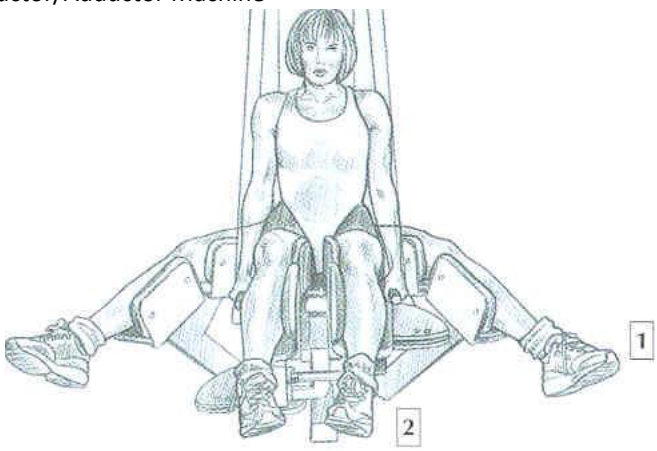


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Optional Additional Weight Training
Days per week: 2-3
Times per day: 1
3 sets of 20 repetitions
These exercises may be added to your exercise program about 6 weeks after injury:

- ☐ Seated leg press (short-arc)
  - 
- ☐ Roman Chair
  - 
- ☐ Knee Extension Machine
  - 
- ☐ Hamstring curl
  - 

- Calf Raise machine
  - 
- Hip flexor Machine
- Hip Abductor/Adductor Machine
  - 

Cardiovascular Conditioning
Days per week: 1-2
Times per day: 1
Duration: 20-30 min

The following can be performed for conditioning

- Stationary bicycle
- Walking
- Rowing
- Elliptical training
- Water workout

Straight-Leg Strengthening Progression
At this time, it is important to begin the development of single-leg strength. Begin to follow the "Progression for Single Leg Strengthening" included in this packet

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Phase 2 Exercise Program Summary
Frequency: 3 times per week
3 set of 10-15 repetitions

- Leg press
- Hamstring curl
- Wall slides
- Roman Chair
- Chair squat
- Calf raises or Calf raise machine
- Knee Extension machine (short-arc)
- Hip Abductor/Adductor machine
- Hip Flexor machine
- Single leg strengthening progression
- Hamstring, Calf, and Quadriceps stretching
- Quadriceps setting 20 repetitions, 3 times a day with heel prop

If you do not have access to gym equipment, the following exercises from Phase 1 can be substituted using ankle weights (Start with one pound and add one pound a wee until 5 pounds.). Straight leg raise, Short-arc lift, Side lying abduction, and Standing hamstring curl

Precautions When Exercising
- Avoid pain at the patellar tendon site
- Avoid pain and/or crepitus at the patella
- Build up resistance and repetitions gradually
- Perform exercises slowly avoiding quick direction change and impact loading
- Exercise frequency should be 2-3 times a week for strength building
- Be consistent and regular with the exercise schedule

Principles of Strength Training
- Warm-up prior to exercising by stationary cycling or other means
- You are “warmed up” when you have started sweating
- Gently stretch all muscle groups next
- Do exercises involving multiple muscle groups first and individual muscle groups last
- Do aerobic workouts ***after*** strength workouts
- Cool-down by stretching after finishing exercise

Precautions
The following exercises can cause injury to the knee and should be done with caution:
- Leg extension machine (quadriceps extensions)
- Stairmaster or stair climber machines
- Lunges
- Squats past 90 degrees of knee flexion
- High Impact and plyometric exercises

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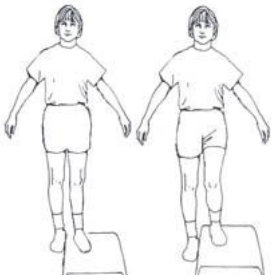
Instructions for Single Leg Exercises

Step Up-Down Exercise

Place one foot on the step. Maintain balance, if necessary, by holding onto the wall or chair. Standing **sideways** to the step, slowly step up onto the step and slowly straighten the knee using the quadriceps muscles. Slowly lower the opposite foot to touch the floor. Do not land on the floor, just touch gently and repeat the step up.

Start with a step of 2 or 3 inches in height. Start with 3 sets of 5 repetitions. Add one repetition per set, per workout, until you can do 3 sets of 10. If pain free, progress the height of step. Repeat progression at new step height, starting with 3 sets of 5 repetitions.

To avoid overstressing the kneecap, limit exercise to step height no greater than the height of a normal stair (8-9 inches). At this point, you can begin to add the single leg wall slide exercise. The strength workouts should be practices 3 times a week (every other day).



Single Leg Wall Slide Exercise

Stand on the single leg with your back and buttocks touching a wall. Place the foot about 6 inches from the wall. Slowly lower your body by bending the knee and slide down the wall until the knee is flexed about 45 degrees (see illustration). Pause five seconds and then slowly slide back up to the upright starting position. Keep the hips level and be sure you are using your knee muscles to perform the exercise.

Start with 3 sets of 5 repetitions. Add one repetition per set, per workout, until you can do 3 sets of 10. At this point, you can begin to add the single leg squat exercise.

The strength workouts should continue every other day at the most, with more time between workouts if the knee gets sore after a session. Continue doing the step-up exercise each workout. Alternate the workouts between the single leg wall slide and the single leg squat.



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Single Leg Squat Exercise

Stand on one leg and lower your buttocks toward the chair. Slowly return to the standing and starting position. Remember to keep your head over your feet and bend at the waist as you descend. You do not have to squat all the way to the chair, instead, try to stay in a comfortable range of motion where there is no kne pain. As you gain strength, try to do the exercise without holding onto anything.

Start with 3 sets of 5 repetitions. Add one repetition per set, per workout until you can do 3 sets of 10.

After working up to the point where you can do 3 sets of ten of all three drills, you can hold dumbbells to add resistance. Start with 3 points in each hand and add 1-2 points a week until you reach 10 pounds in each hand. When you return to sports or recreational activities, decrease the strength workouts to 2 times a week and do 1 set of 10 of each of the three drills only, as a maintenance workout.



Revised ***