

ACL & MCL REHABILITATION PROTOCOL**Post-Operative Weeks 0–2:****Weightbearing:**

Non-weightbearing x 4 weeks.

Brace:

Locked in full extension x 2 weeks except for range of motion exercises.

Ice:

Ice 4–6 times per day for 15–30 minutes per session.

Exercises:

1. Range of motion:
 - a. Patellar mobilizations.
 - b. Extensions: Passive knee extension to 0° in the brace.
 - c. Begin ankle strengthening exercises (plantarflexion/dorsiflexion, inversion/eversion).
 - d. Straight leg raises.

Post-Operative Weeks 2–6:**Weightbearing:**

1. Non-weightbearing x 4 weeks.
2. Begin 25% weightbearing at week 4 and increase 25% per week so that the patient is 100% weightbearing by week 7.

Brace:

1. Unlock brace after 2 weeks. Goal is to achieve 90° of flexion by week 3 and increase by 10° per week and achieve 120° of flexion by week 6.
2. Continue to wear brace x 10 weeks.
3. Sleep in brace for 4 weeks.

Exercises:

1. Continued knee brace at all times.
2. Flexion Exercises (beginning at week 2):
 - Active assisted knee flexion (goal is 130°; try to increase 10° per week).
 - Heel slides.
 - Wall Slides.
 - Biking as tolerated to 30 minutes (zero to low resistance; increase progressively).

- First two weeks of exercise bike backwards (no resistance)
- 3. Extension Exercises:
 - Prone hangs.
 - Passive terminal knee extension with overpressure to tolerance.
- 4. Manual Interventions:
 - Patellar mobilizations.
 - Tibiofemoral mobilization into extension.
 - Soft-tissue as indicated.

*** If any of these exercises seem to aggravate the knee (swelling, pain or tenderness), then that specific exercise which causes the difficulty should be postponed until you have discussed the effects of the exercise with us (952-456-7122).**

Modalities:

Modalities as needed for VMO re-education, pain modulation, control of inflammation, and edema control.

Post-Operative Weeks 7–12:

Weightbearing:

Full weightbearing as tolerated.

Bracing:

Continued hinged knee brace until the end of week 10.

Exercises:

1. Quadriceps – straight leg raises (10 sets of 30 repetitions each), quad setting (10 sets of 30 repetitions each), and short arc quadriceps extension.
2. Hip Muscle Groups – may progress by adding weights above the knee. Hip abductors, flexors, adductors, and extensors (10 repetitions, 4 sets daily). An isometric variation can be performed by pushing down on the hip being worked on and sustaining a contraction for 10 seconds.
3. Hamstring Curls – may add weights around the ankle (10 repetitions, 4 times daily).
4. Calf Raises – 3 sets, 10 repetitions – fast and slow sets (each).
5. Progressive Resistance Exercises – 30–50 repetitions, 0–5 pounds, 3 times per day.
 - Straight leg raises (maintain full extension).
 - Hamstring curls.
 - Hip flexion, extension, abduction, adduction.
 - Heel raises.
 - Leg press with minimal resistance (flexion up to 90°).
 - Trunk stabilization exercises.
6. Swimming. Flutter kick only – gently. No whip kick.

7. May begin outdoor biking program – avoid hills. A good rule of thumb for those interested in returning to athletics is that you need three minutes of biking to substitute for one minute of running.
8. Accelerated program – start with sand bags on tibial tubercle. Perform straight leg raises (10 sets, 10 repetitions each) and progress fulcrum distally one inch per week.
9. Walking (level ground). Build up pace gradually. Feel big toe of affected foot push off as you walk to ensure normal gait pattern. Start off at one mile at brisk pace, increase to three miles. No limping allowed.
10. Sissy squats. Stand facing the edge of a door and place hands on the door knobs on each side of the door. Feet should be shoulder width apart. Perform a half-squat (never past 90°) and slowly raise to a starting position. Build up to 100 repetitions per day.

Post-Operative Weeks 12–16:

Goals:

1. Full knee range of motion. Refer back to surgeon for extension restriction of 5° or if less than 110° flexion.
2. Normal gait pattern.
3. Progressively increasing functional strengthening program.

Exercises:

1. Continue with exercise program from week 7–12.
2. Weight room activities:
 - Leg Press – press body weight as many times as possible on nonsurgical side (to fatigue). Follow same sequence on surgical side.
 - Squat Rack – half squats (not past 70°) at one-half body weight, 10 repetitions; progress to full body weight as tolerated.
3. Continue biking and/or swimming on a daily basis. No whip kicks.
4. Agility workouts:
 - Balancing on a teeter-totter board or disc on a half-croquet ball
 - Figure of 8's (20 to 30 yard diameter circles).

Post-Operative Months 4–6:

Goals:

1. Improve quadriceps strength/function.
2. Improve endurance.
3. Improve coordination/proprioception.

Exercises:

1. Backward jog.
2. Jogging – (level surfaces only) – 15 minutes at 8–10 minutes per mile pace. Add 5 minutes per week. Perform daily.
3. Biking – by now the amount of set resistance should be increasing. Perform daily at 20 minutes per day. Legs should feel drained once off the bike.

4. Step-ups – face the step. Put foot of operative knee on step and step up on the step. Repeat with gradual build up in repetitions until doing 100 step-ups per day. Try to lower from the step twice as long as it takes to raise up on the step.
5. Agility Drills:
 - Figure 8's: 5 minutes daily half-speed. Tighten circle size down.
 - Shuttle runs: 5 minutes daily at half-speed. Repeat 10–12 repetitions.
 - Zig-zag Running: angle across a distance of 10–15 yards, then angle back across field to another boundary 10–15 yards apart. Continue for 100 yards. Tighten up as strength/endurance permits.
6. Educate patient as to use of functional brace.
7. Sports on Own:
 - Basketball – shooting baskets only.
 - Rollerblades – level surfaces – no hills – no quick stops, cutting or operative leg cross-overs (parking lots)
 - Golf – 9 holes, avoid fatigue.

Post-Operative Full Rehabilitation:

1. No competitive or pivot sports until cleared by surgeon. When cleared, patient is to use functional brace for 6 months.
2. Therapists criteria for return to sports:
 - Full and painless A-ROM.
 - No patellofemoral joint pain
 - Gross manual muscle testing strength 90–100% of contralateral side.
 - Patient can pass single leg hop test for distance, single leg squat test, and figure of eight hop test.
3. Quadriceps/thigh circumference should be within 1 cm of non-operative (if normal) side.
4. Weekly strengthening program – independently (2–3 times per week):
 - Full speed jog/run: 20–30 minutes, 6–7 minutes per mile or best pace.
 - Exercise stationary bike: increasing resistance, set bike so low leg is flexed no more than 10–15 degrees – 20 minutes.
 - Agility drills (figure 8's, shuttle runs, turns, teeter-totter balancing): Continue quad sets, SLR's (300 repetitions per day).
 - Hills/Stairs – running up hills and up stairs can be utilized to help build muscle mass and strength. Care should be taken running downhill and down steps. This can irritate the knee and should be one of the last exercises added to the workout program.