



Main Line Health[®]

Orthopaedics & Spine

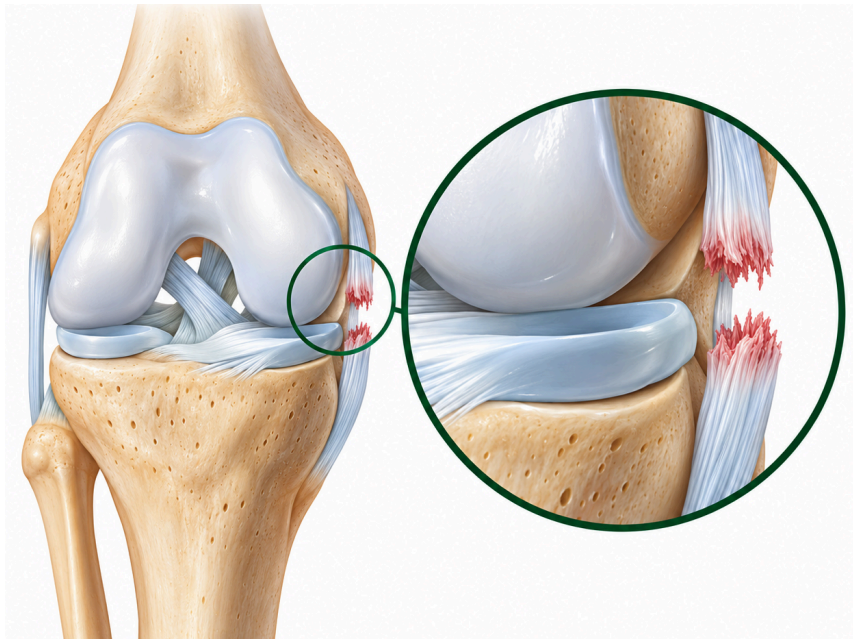
Brian E. Fliegel, DO
255 W Lancaster Ave
Paoli, PA 19301
(484) 565-8080
www.drbrianfliegel.com

MEDIAL COLLATERAL LIGAMENT (MCL) INJURY

Understanding the Injury

The medial collateral ligament (MCL) is a strong band of tissue on the inner side of the knee that connects the femur (thighbone) to the tibia (shinbone). It resists forces that push the knee inward and helps stabilize the knee during cutting, pivoting, and contact.

The MCL is the most commonly injured ligament of the knee. Injuries usually result from a blow to the outside of the knee or a twisting fall, and are common in football, soccer, hockey, and skiing.



MCL injuries are graded by severity: Grade 1 is a mild sprain with stretching of the ligament fibers, Grade 2 is a partial tear, and Grade 3 is a complete tear. Patients typically have pain and tenderness along the inner knee, swelling, and sometimes a feeling of instability.

Unlike the ACL, the MCL has an excellent blood supply and heals well on its own in the large majority of cases. Grade 3 injuries, however, are frequently associated with other injuries, such as an ACL or meniscus tear.

Diagnosis of an MCL Injury

Diagnosis is made through your history and physical examination, including gentle stress testing of the knee to determine the grade of injury. X-rays rule out a fracture (and, in adolescents, a growth plate injury), and an MRI may be obtained to confirm the grade and check for associated injuries to the ACL, meniscus, or other structures. Dr. Fliegel will review all findings with you before recommending a treatment plan.

Do You Need Surgery?

Rarely. Nearly all isolated MCL injuries, including most complete (Grade 3) tears, heal well with a hinged brace and a structured rehabilitation program.

Surgery may be considered when the MCL is injured together with other ligaments (such as the ACL), when the torn ligament is displaced in a way that prevents healing, or when instability persists despite appropriate treatment. Dr. Fliegel will discuss whether any of these apply to you.

Healing and Recovery Time

The MCL heals by forming new tissue that gradually matures and strengthens. A hinged brace protects the healing ligament from side-to-side stress while still allowing the knee to bend and straighten.

Grade 1 injuries often allow a return to sport within a few weeks, while Grade 2 and 3 injuries typically take 6 weeks to 3 months. Timelines vary, and progression is based on meeting the criteria in this guide rather than the calendar alone.

Stiffness, rather than instability, is one of the more common problems after an MCL injury, so regaining full motion early is an important part of recovery.

What to Expect

Most patients walk without crutches within days to a few weeks and regain full motion within several weeks. How quickly you progress depends on the grade of injury and any associated injury to the meniscus, cartilage, or other ligaments.

Contact our office promptly if you experience:

- Repeated episodes of the knee giving way
- Locking or catching, or a sudden inability to fully straighten the knee
- Swelling that is increasing rather than improving
- Calf pain, tenderness, or swelling
- Numbness, tingling, or color change in the foot

A knee that locks or will not straighten may have a displaced meniscus tear, which can require earlier surgery. This is one reason close follow-up in the first weeks after injury is important.

INITIAL INJURY CARE

The First Few Weeks After Injury

How you care for the knee in the first few weeks sets the stage for everything that follows. Please review the guidelines below carefully.

Protect the Knee

(As directed by Dr. Fliegel)

- Wear your hinged knee brace as instructed, typically for 3 to 6 weeks depending on the grade of injury, and avoid pivoting or twisting on the knee.
- Bear weight as instructed. As pain improves, wean from 2 crutches to 1, held in the hand opposite the injured knee.
- Stop using crutches once you can walk without a limp; discontinue the brace when directed by Dr. Fliegel. Take care getting in and out of cars and watch for tripping hazards such as rugs.

Establish care with a physical therapist early if possible; most patients benefit from formal therapy in addition to this home program.

Control Swelling

- Ice for 15 to 20 minutes, 3 to 4 times a day and after exercise, with a towel or cloth between the ice and your skin.
- Elevate the leg above the level of your heart, and use an elastic wrap or compression stocking if the leg is swollen.

Prevent Stiffness

- Do not place a pillow under the knee for comfort; this allows the knee to stiffen in a bent position.
- When resting, support the leg under the heel rather than the knee, so the knee relaxes into full extension.

Stay Active Safely

- Stationary cycling and swimming (flutter kick only) are encouraged as pain allows.
- Avoid breaststroke (whip) kick, stair-stepper machines, deep knee bends, running, jumping, and pivoting sports until cleared.
- Bring any MRI or X-ray studies performed outside our system to your visit.

MCL INJURY REHABILITATION PROGRAM

This program is a guideline for both patients and physical therapists. Timelines depend on the grade of injury: Grade 1 injuries typically complete Phase I in about 3 weeks, and Grade 2 and 3 injuries in about 6 weeks. Progression from one phase to the next is determined by meeting criteria, not calendar time alone. Please provide your physical therapist with a copy of this program.

The primary goals are to:

Protect the healing ligament

Restore full knee extension and progressive flexion

Reduce swelling and restore quadriceps control

Rebuild strength, balance, and neuromuscular control

Safely return to work, recreational, and sport activity

PHASE I: PROTECTION AND EARLY MOTION (0–3 Weeks Grade 1; 0–6 Weeks Grade 2–3)

Goals

- Protect the healing MCL — avoid pivoting, twisting, and side-to-side stress
- Reduce pain and swelling
- Restore full knee extension equal to the uninjured side
- Re-establish quadriceps activation
- Gradually regain knee bend (flexion) as swelling allows

Brace and Weight Bearing

- Hinged knee brace as directed by Dr. Fliegel, typically for 3 to 6 weeks
- Weight bearing as tolerated in the brace; wean from crutches as your limp resolves
- No pillow under the knee

Range of Motion

- Heel prop: sit or lie with a rolled towel under the heel and let the knee relax straight for 5 minutes, 3 times a day; if the knee will not fully straighten, a 2 to 5 pound weight may be placed just above the kneecap
- Heel slides: lying on your back, slide the heel toward the buttock until you feel a stretch, hold 5 seconds, then straighten; use a towel around the foot to assist as needed — 20 repetitions, 3 times a day
- Regaining full motion early helps prevent stiffness, one of the more common problems after an MCL injury

Exercises

- Quadriceps sets: with the knee straight, tighten the front thigh muscle to press the back of the knee down so the kneecap glides upward; hold 5 seconds — 20 repetitions, 3 to 4 times a day
- Perform quadriceps sets while in the heel prop position
- Short arc lift: with a rolled towel under the knee, straighten the knee fully and hold 5 seconds, then lower slowly — 20 repetitions
- Ice 15–20 minutes, 3 to 4 times a day and after exercise

Advancement Criteria

- Pain and swelling decreasing
- Full knee extension, or steadily improving toward full
- Knee flexion 90° or greater
- Good quadriceps set with the kneecap gliding upward

PHASE II: RESTORE MOTION AND BASIC STRENGTH (Once Phase I Criteria Are Met)

Goals

- Continue to protect the knee — avoid pivoting, twisting, and cutting
- Maintain full extension; progress flexion toward equal to the uninjured side
- Walk normally without crutches or brace; begin strengthening

Brace and Weight Bearing

- Full weight bearing; discontinue crutches once you walk without a limp or pain
- Discontinue the hinged brace when directed by Dr. Fliegel; a brace may be recommended for contact sports on return

Range of Motion

- Continue heel props and heel slides until motion equals the uninjured side
- Stationary bicycle with no resistance, 10–20 minutes daily: set the seat so the knee is fully straight with the heel on the pedal at the bottom of the stroke, then ride with the ball of the foot on the pedal; if a full revolution is not yet possible, rock back and forth until it is (backward is often easier first)
- Begin gentle hamstring, quadriceps, and calf stretching

Strengthening

- Straight leg raise: tighten the quadriceps fully, lift the heel 4 to 6 inches, then lower slowly while keeping the muscle tight — the quality of the contraction matters more than the lift; if the knee bends during the lift, return to quadriceps sets until it does not
- Side-lying hip abduction: lying on the uninjured side with the knees straight, raise the injured leg to about 45°, hold 1 second, lower slowly — 20 repetitions
- Standing hamstring curl: holding a wall for balance, bend the knee to bring the heel toward the buttock with the thighs aligned, hold 1 second — 20 repetitions
- Standing toe raise: holding a table with the knees straight, rise onto the toes, hold 1 second, lower slowly — 20 repetitions
- Once these are easy, add an ankle weight starting at 1 pound and increasing 1 pound per week up to 5 pounds; when using weights, exercise every other day

Precautions

- Avoid pivoting, twisting, running, and jumping
- Avoid stair-stepper machines, deep knee bends, squats, and any exercise that causes crunching, clicking, or pain at the kneecap

Advancement Criteria

- Normal gait without crutches or brace
- Full extension; flexion greater than 120°
- Straight leg raise without the knee bending (no extension lag)
- Minimal swelling with activity

PHASE III: PROGRESSIVE STRENGTHENING (3+ Weeks Grade 1; 6+ Weeks Grade 2–3)

Goals

- Maintain full motion equal to the uninjured side
- Safely progress closed-chain (foot-on-the-ground) strengthening
- Improve balance and neuromuscular control

Range of Motion

- Continue daily stretching and stationary cycling, adding light resistance as tolerated
- Walk with a normal heel-to-toe gait; no running, jumping, or pivoting yet

Strengthening

- Frequency: 2 to 3 times per week, 3 sets of 10 to 15 repetitions, using both legs
- Leg press, hamstring curl machine, Roman chair, calf raises, and hip abductor/adductor machine
- Wall slides: with your back against a wall, feet about 12 inches apart and 6 inches from the wall, slide down until the knees bend about 45°, pause 5 seconds, then slide back up; progress to chair squats
- Step-up/down: standing sideways to a 3-inch step, step up slowly using the thigh muscles and lightly touch the other foot down; start with 3 sets of 5 and add 1 repetition per set each workout until 3 sets of 10, then progress to a 6-inch and then a 9-inch step
- Without gym access: straight leg raise, short arc lift, side-lying hip abduction, standing hamstring curl, and toe raises with ankle weights
- Increase resistance gradually, by about 5% to 10% every 10 to 14 days, and avoid excessive weight

Precautions

- Avoid the leg extension machine, stair-stepper, lunges, squats past 90°, running, jumping, and pivoting until cleared
- Stop any exercise that causes pain at the inner knee, kneecap, or patellar tendon, and avoid quick direction changes

Advancement Criteria

- Full motion equal to the uninjured side
- No swelling after activity
- Step-ups on a 9-inch step, 3 sets of 10, without pain

PHASE IV: ADVANCED STRENGTHENING (Running and Jumping Sports)

Goals

- Build the higher level of strength needed for running and jumping sports
- Progress to single-leg strength and control
- Meet the criteria to begin running

Strengthening

- Single-leg wall slide: standing on one leg with your back against a wall and the foot about 6 inches out, slide down to about 45°, pause 5 seconds, then slide back up, keeping the hips level
- Single-leg squat to a chair, using less support for balance as control improves
- For each new single-leg drill, start with 3 sets of 5 and add 1 repetition per set each workout until 3 sets of 10; continue step-ups every workout and alternate single-leg wall slides and single-leg squats, with workouts every other day at most
- Once 3 sets of 10 are easy, hold dumbbells, starting at 3 pounds per hand and adding 1 to 2 pounds per week up to 10 pounds

Criteria to Begin Running

- Full, pain-free range of motion and symmetric quadriceps and hamstring flexibility
- Strength at least 80% of the uninjured side
- Hop forward on both legs at least 2 feet, hop to either side at least 1 foot, and hop in place on both feet 10 times without pain
- Jog 100 feet without a limp

Avoid

- Lunges, squats past 90°, the leg extension machine, and high-impact or plyometric exercise until cleared

PHASE V: RUNNING, AGILITY, AND RETURN TO SPORT

Goals

- Safely recondition the knee for the demands of sport
- Progress through a structured running and agility sequence
- Meet objective criteria before returning to sport

Progression

- Straight-ahead running (about 4 weeks): 100-yard runs at $\frac{1}{2}$ speed, then $\frac{3}{4}$ speed, then add 50-yard full-speed runs until you can complete 10, 2 to 3 sessions per week
- Direction-change running (about 2 weeks): add zig-zag, forward-backward, circle, and figure-8 runs, then carioca
- Unrestricted agility (about 3 weeks): add shuttle runs, box drills, and agility runs, alternating starting side; before starting, you should be able to hop forward and to either side on the injured leg at least 80% of the distance of the uninjured side, and hop in place 10 times without pain

- Do not advance until the current step is pain-free and without swelling; warm up before each session, stretch after, and ice for 20 minutes

Return-to-Sport Criteria

- Completion of the running and agility progression without pain or swelling
- Strength and hop testing comparable to the uninjured side
- Return to practice first, using the agility drills as a warm-up, then to competition
- Cleared by Dr. Fliegel

Key Rehabilitation Principles

- Most MCL injuries heal very well without surgery when the knee is protected early and strength is rebuilt gradually. After returning to sport, continue strength work 2 times per week for maintenance.
- Avoid pivoting, cutting, and side-to-side stress on the knee until cleared, and progress each phase based on meeting the criteria rather than the calendar alone.
- Contact our office for repeated giving way, locking, increasing swelling, calf pain or swelling, or inability to straighten the knee.
- Continue this program until you are re-examined by Dr. Fliegel at your next appointment. If you have questions about your exercises, please call our office.