



Anterior Cruciate Ligament (ACL) Injuries

The anterior cruciate ligament, or ACL, is one of four major knee ligaments and is the primary restraint that limits how far the tibia (shin bone) slides forward in relation to the femur (thigh bone). The ACL is critical to knee stability, and people who injure their ACL often complain of symptoms of their knee giving-out from under them. An ACL tear is often a sports-related injury and about 80% of sports-related ACL tears are "non-contact" injuries, with most ACL tears occurring when pivoting or landing from a jump. Women are three times as likely to suffer an ACL injury than males, and eight times as likely as a female soccer player due to different lower limb biomechanics.

Symptoms of a torn ACL include an audible "pop" at the moment of injury, and the slippage of the knee out of its joint, accompanied by severe swelling and painful movement. Common signs of this injury will be the athlete on the ground grabbing their knee and not being able to lift their leg. Before moving the athlete, a possible fracture must be ruled out. Complete diagnosis and treatment will be outlined by your physician.

Treatment

Treatment may be nonsurgical or surgical, depending on the patient's desired lifestyle. If a patient's goal is to continue an active lifestyle, surgery may be the treatment of choice because the injury will not heal on its own. Nonsurgical therapy consists of a period of protective bracing with progressive return to range of motion and muscle-strengthening exercises. The goal is to create natural stability for the knee by developing the musculature around the knee.

Rehabilitation

The goals of rehabilitation are to restore range of motion and to strengthen the quadriceps and hamstring muscles, which help stabilize the knee. Precautions you can take at home for minor ACL injuries include:

- Reduce activity during the acute phase.
- Ice the injury multiple times per day.
- Compress the knee with a bandage or wrap.
- Elevate the knee above the level of the heart.
- Use anti-inflammatory medications such as ibuprofen to reduce inflammation and speed up recovery.

Rehabilitation Exercises

- Quad sets: Sit with legs extended and fully contract the muscles of the front thighs. Hold contractions for 10 seconds. Repeat 10 times for three sets.

- Straight leg raises (hip flexion): Lie with one leg extended and the other bent at the knee. Lift the entire leg from the hip so that the heel is about five inches above the floor. Hold this position for five to 10 seconds and then slowly lower the leg. Repeat 10 times for three sets.
- Backward leg raise (hip extension): Lie on stomach with legs straight. Lift one leg as high as possible and hold for five to 10 seconds and then slowly lower the leg. Repeat 10 times for three sets.
- Hip abduction: Lie on side of uninjured leg, so that the injured leg is on top of the uninjured leg. Lift the injured leg at the hip away from the body. Lift the leg as high as possible and hold for five to 10 seconds, then slowly lower the leg. Repeat 10 times for three sets.
- Hip adduction: Lie on side of injured leg, with uninjured leg bent at the knee and foot flat on the floor. Lift the injured leg at the hip toward the other leg. Hold for five to 10 seconds and then slowly lower the leg. Repeat 10 times for three sets.
- Half-knee bends: Stand with feet shoulder-width apart. Slowly lower the body weight by bending the knees. Do not perform a full squat, but rather stop at about half of the full squat position and then fully extend the knees. If there is pain before achieving the half-squat position, stop downward travel at that point. Repeat 10 times for three sets.

ACL Injury Prevention Program

Several prevention programs have been developed in an attempt to decrease the incidence of ACL injuries. The focus of current prevention programs is on proper proprioceptive and muscle control of the knee incorporating plyometrics, balance, and strengthening and stability exercises for the lower limbs.

Illinois Bone & Joint's ACL prevention program utilizes a combination of state of the art testing that is hard to find anywhere else. A combination of functional testing, strength testing, Proprio 5000 evaluation, and Sportsmetrics™ comprises our rigorous testing regimen. Sportsmetrics™ is the first ACL injury prevention program scientifically proven to decrease serious knee ligament injuries in female athletes. Starting with testing to identify the baseline jumping/landing knee position, the program incorporates a warm-up, flexibility training, plyometrics, strength training, and agility work. It is best used for offseason or preseason training due to the time commitment.

IBJI's staff has conducted testing for a number of the Chicagoland area Colleges, High Schools, and club soccer teams. Please contact us for more information regarding team or individual testing and analysis.



About the Author

Matt Repa has been a Board Certified Athletic Trainer with Illinois Bone and Joint Institute since 2007. Matt is a graduate of Coe College in Cedar Rapids, Iowa where he earned his bachelor degree in Athletic Training and Physical Education. As a senior he received the prestigious "Wallace Award" for excellence in Athletic Training and Sports Medicine. His soccer work experience includes DIII Collegiate Soccer, Olympic Development Program, Illinois State Cup, US Club, and Great Lakes Soccer Association.