

# Preventing and Treating ACL Injuries

## What is the ACL and what does it do?

The anterior cruciate ligament (ACL) is an important ligament in the knee, connecting the femur (thigh) to the tibia (shin). It works together with other knee ligaments to provide stability as the knee rotates. Whether you are casually turning or cutting side-to-side sharply in a game, the ACL is critical to knee performance.

## How does the ACL get injured?

Injury to the ACL can occur during contact or non-contact situations. In both cases, the ACL is usually injured when the foot is planted on the ground and the body rotates. An example of a contact injury would be when your knee joint is hit by another individual. However, the majority of ACL injuries occur in non-contact situations. These generally occur while cutting, pivoting, changing direction, jumping, or stopping suddenly in sports such as soccer, basketball, lacrosse, skiing, field hockey, and volleyball.

You may hear or feel a pop in the knee at the time of the injury. Your knee will swell, and at first it may be difficult to put weight on your leg. As the swelling and pain starts to improve, it may become easier to walk straight ahead. You may feel that your knee is unstable and notice that it gives way when you turn or change direction.

## What types of injuries occur?

The ACL can be partially torn (sprained), or completely torn. When the doctor examines your knee, s/he will test the looseness or “laxity” during certain movements. If the knee is too loose, then the ACL is not functional and is likely injured. A magnetic resonance imaging study (MRI) of the knee will confirm the extent of injury to the ACL and will determine if other structures such as the meniscus or cartilage are also injured.

## What should I do if I have an ACL injury?

As soon as the injury occurs, think RICE. Get in to see a physician as soon as possible, but in the meantime:

- **REST** your knee. If it is difficult to walk, you should walk with the help of crutches.
- **ICE** your knee. Apply ice every hour for 20 minutes at a time. Whether you use a store-bought cold pack or ice from your freezer, place a moist towel between your skin and the ice to protect your skin from ice burn.
- **COMPRESSION** can also decrease swelling. You may apply an elastic bandage to your knee.
- **ELEVATE** your leg to help decrease the swelling. Do NOT put a pillow under your knee. Although this may be more comfortable, it may make it more difficult to straighten your knee in the long run.

## What is the treatment for an ACL injury?

Treatment depends upon the extent of your injury and your physical activity goals. Once your doctor has diagnosed an ACL injury, physical therapy is an important part of your treatment plan. You may go to physical therapy to avoid surgery, prepare you for surgery, recover from surgery, and prepare for return to sports.

- If the ACL is sprained or partially torn, treatment is most often non-operative. This may include wearing a brace, anti-inflammatory medication, icing, and physical therapy. The physical therapist will help you regain the motion in your knee and teach you how to walk normally and control the swelling in your knee. You will begin to strengthen your leg and learn how to balance on it.
- If there is a complete or ‘high-grade’ partial tear and the knee is unstable, then surgery is generally recommended. The ACL usually does not heal by itself; therefore ACL reconstruction surgery is necessary to restore stability to the knee.

## Can ACL injuries be prevented?

Risk of ACL injuries can be reduced by participating in training regimens to strengthen the muscles surrounding the knee and improve movement patterns involved in landing, pivoting, or decelerating (stopping quickly). These programs involve stretching, balance exercises, plyometrics (jump training), agility training for learning optimal ways to pivot and decelerate, and strength training, particularly for the muscles in the thigh, hip, and core.

Physical therapists can evaluate an athlete’s body positioning during activities like squatting, jumping from a box, or changing direction. A training program can then be designed with targeted strength training, balance, agility, and endurance drills.

ACL injury prevention programs based on successful research studies have been developed to facilitate balance, core strengthening, strength training, plyometrics, and agility training.

