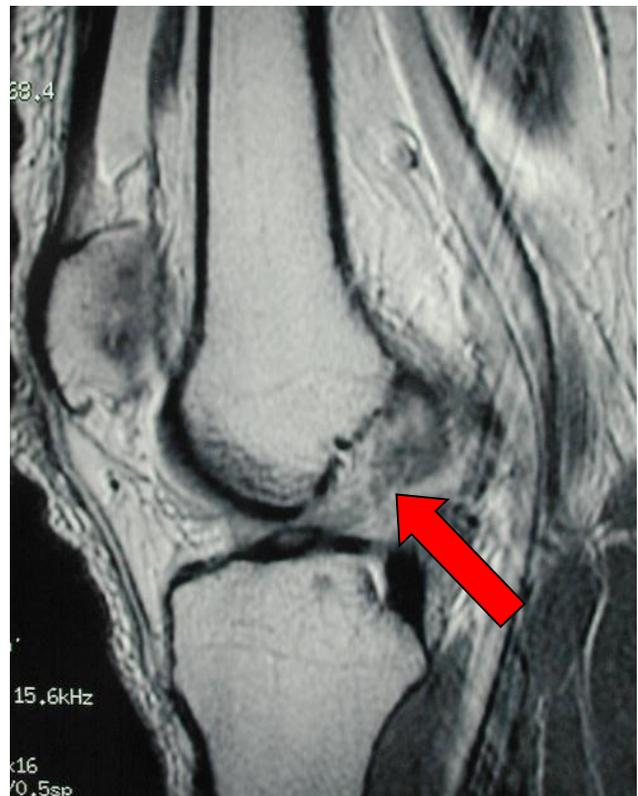
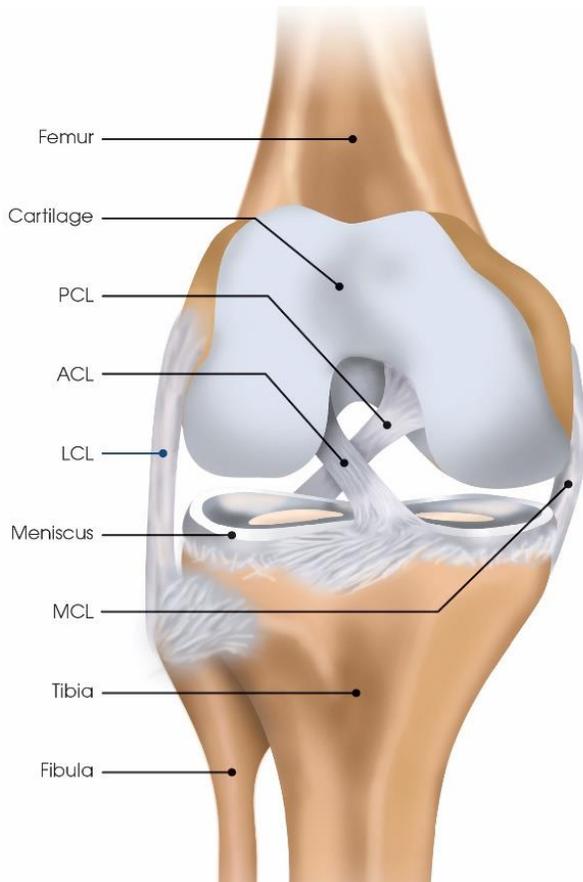


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Anterior Cruciate Ligament (ACL) Tear

An anterior cruciate ligament (ACL) sprain is a tear of one of the four major ligaments of the knee. The ACL is a ropelike structure in the center of the knee that helps maintain the normal relationship of the femur (thigh bone) and the tibia (leg bone). When torn, the ACL does not heal and the knee can be unstable (shifts or gives way) during sports that require pivoting, changing direction (cutting), jumping, or landing. About half the people who tear their ACL also tear their meniscus in their knee.



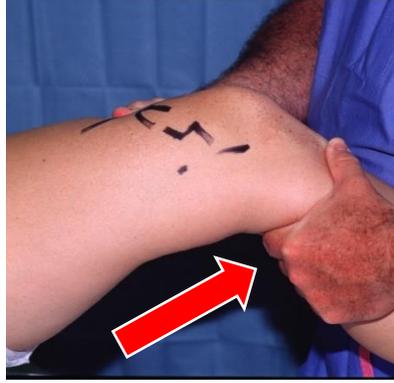
Sagittal (side) view of a torn ACL on an MRI

The diagnosis of an ACL tear is usually made on physical examination but MRI can be helpful, especially when the patient is too swollen or guarded to allow a thorough examination. The MRI is also needed to diagnose any associated meniscal or cartilage damage.



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These photos show a Lachman maneuver on a knee before (left) and after (right) that reveals abnormal anterior (forward) shifting of the tibia (shinbone) on the femur (thigh bone) as depicted by the red arrow. This movement indicates a tear of the ACL.

Frequent Signs and Symptoms

- Pop or tear heard or felt at the time of injury
- An inability to continue playing after the injury
- Large amount of swelling in the knee noticed within six to eight hours after the injury (often within three hours)
- Inability to straighten knee after an injury
- Knee instability, (shifting or giving way), particularly when trying to pivot, cut (rapidly change direction), or jump
- Swelling with repeated giving way
- Occasionally, locking (knee gets stuck intermittently) when there is concurrent injury to the meniscus.

Etiology (Causes)

- 70 to 80 percent result from non-contact injury (landing awkwardly or cutting)
- Contact injury where the knee sustains a direct hit from another player such as getting tackled at the knee

Risk Factors

- Sports that require pivoting, jumping, cutting, or changing direction (basketball, soccer, volleyball) or contact sports (football, rugby)
- Poor physical conditioning (strength and flexibility)
- Female gender (women have two and one-half to ten times higher risk than men)
- High playing surface to shoe friction coefficient or traction



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Prevention

- Appropriately warm up and stretch before practice and competition.
- Maintain appropriate conditioning:
 - Thigh, leg, and knee flexibility
 - Muscle strength and endurance
 - Cardiovascular fitness
- Train to use proper technique when cutting and landing.
 - There are specific ACL prevention programs that can lower the risk for injury.
- Use proper equipment (appropriate length of cleats for surface).

Outcomes

The ACL will not heal on its own but, most people can return to normal daily activities after an appropriate rehabilitation program. Despite this return of normal daily function, ACL deficient knees are at risk for progressive meniscus and cartilage damage from abnormal knee mechanics. For those who want to return to sports that require pivoting, cutting, and jumping and landing, surgery is usually required. Surgery is also recommended for ACL injuries combined with other ligament, meniscus, or cartilage injuries.

Potential Complications

- Recurrent instability episodes of instability (shifting or giving way)
- Further injury to the meniscus resulting from recurrent instability episodes (shifting or giving way) which can change the loading of the articular cartilage of the knee and cause premature arthritis.
- Injury to other structures of the knee, including the articular cartilage, resulting in arthritis of the knee
- Injury to other ligaments of the knee
- Knee stiffness (loss of knee motion)

Treatment Considerations

Initial treatment is focused on returning the knee back to its pre-injury status by reducing the pain and swelling and restoring the range of motion, strength, and gait. Walking with crutches until you walk without a limp is often recommended. Range-of-motion, stretching, and strengthening exercises may be carried out at home, although a referral to a physical therapist or athletic trainer is often recommended. If other ligaments are injured along with the ACL, Dr. Chudik may recommend a brace to help hold the knee stable.



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For those patients who do not perform sports that require frequent pivoting, cutting, jumping and landing, surgery is not required and rehabilitation is recommended. Individuals usually can continue to jog, cycle, lift weights and swim without ACL surgery; however, they are at a greater risk for progressive damage to their meniscus and cartilage from abnormal knee mechanics. Rehabilitation of ACL tears usually concentrates on reducing knee swelling, regaining knee range of motion, regaining muscle control and strength, functional training and education to avoid sports/activities that require pivoting, cutting, changing direction, jumping and landing.

For those who perform sports that require frequent pivoting, cutting, jumping and landing, surgery to reconstruct the ACL is usually recommended to allow return to these sports. Surgery is also appropriate for ACL injuries in young active children and in people who have combined injuries to other ligaments, the meniscus, or the articular cartilage.

Possible Medications

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within seven days before surgery), or other minor pain relievers, such as acetaminophen, are sometimes recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Pain relievers are usually not prescribed for this condition.

Modalities

- Cold is used to relieve pain and reduce inflammation. Cold should be applied for 10 to 15 minutes every two to three hours for inflammation and pain and immediately after any activity that aggravates your symptoms. Use ice packs or an ice massage with a cloth between the ice and your skin to prevent burning /freezing your skin.

Notify My Office If:

- The knee continues to shift or give way and swell
- The knee locks (gets stuck intermittently)
- New, unexplained symptoms develop

