



THE INJURED ACL

The anterior cruciate ligament (ACL) is a major knee stabilizer that protects against excessive translation and rotation during cutting and pivoting maneuvers. The ACL inserts on the front part of the shin bone (between tibial eminences) and the back part of the thigh bone (lateral femoral condyle). The ACL has two functional bundles ,anteromedial and posterolateral, that work together to resist anterior translation and rotation throughout knee range of motion.

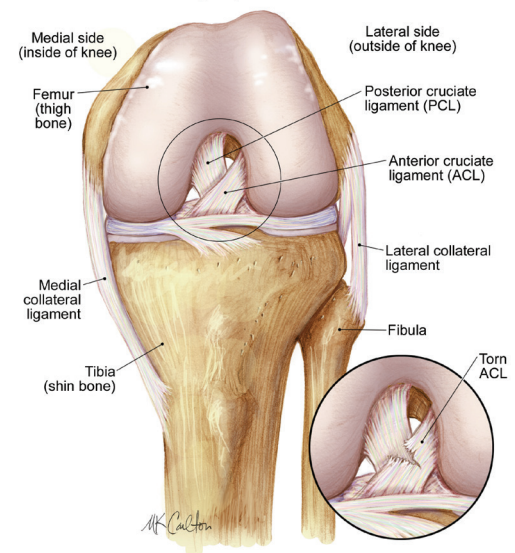
How is the ACL injured?

Seventy percent of ACL injuries are non-contact occurring when an athlete changes direction during a cutting or pivoting maneuver or when they land awkwardly from a jump. Non-contact ACL injuries are more common in females versus males. The remaining ACL injuries occur as a result of contact or collision, often injuring other knee structures as well (i.e., MCL).

What are the signs and symptoms of an ACL tear?

The ACL is often torn during a traumatic injury, either non-contact or contact. The athlete will often hear or feel a “pop”, followed by limitation in weight bearing and range of motion secondary to knee swelling. In the setting of chronic ACL deficiency, the athlete will experience repeat giving way or buckling episodes with sports that require changing direction or repetitive jumping and landing.

Left knee bones in flexion (bent)



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How is an ACL tear diagnosed?

Most athletes seek medical attention after the first traumatic event with the signs/symptoms described above. A careful history and physical examination by a trained clinician will often lead to a high index of suspicion that an ACL tear has occurred. Positive physical exam findings such as increased anterior translation of the tibia (i.e., anterior drawer, Lachman) and increased knee rotation (pivot shift) are diagnostic of ACL injury. The ACL tear and concomitant injuries (i.e., meniscus or other ligament) can be confirmed by MRI.

Will I need surgery?

This question requires a detailed conversation with a trained orthopaedic surgeon. There are many factors to be considered when deciding surgery versus non-surgical treatment and when deciding between different surgical interventions. In general, athletes of all ages who wish to return to higher level cutting/pivoting sports should be considered for surgical intervention. Low demand or recreational athletes who do not routinely change directions, land or jump in their sport (e.g., joggers, bikers) may be considered for a trial of non-surgical treatment. The presence of other injuries (i.e., meniscus or cartilage tears) may influence this decision.

Most complete ACL tears do not heal, and those wishing to return to sports typically undergo ACL reconstruction.

In the majority of cases, athletes undergo a period of pre-rehabilitation prior to surgery. The goal of this phase is to decrease swelling and normalize range of motion and gait to help decrease the risk of post-surgical stiffness.

How are ACL tears treated surgically?

There are many different surgical techniques that have evolved through the years for the treatment of ACL tears. The specific technique chosen depends on surgeon experience and patient specific factors. In general, primary repair of the ACL has been considered for only a small (<10%) subset of patients. Novel technique have brought renewed interest in ACL primary repair. However, the vast majority of ACL injuries are still treated with surgical reconstruction, using a tendon from either your own body (i.e., patella tendon, hamstring, quadriceps) or from a cadaver (allograft) to create a new ligament. There are a variety of fixation strategies (i.e., button, screw) and drilling techniques that can be used to reconstruct the ACL. Regardless of chosen technique, the goal of surgery is to stabilize the knee against excessive anterior translation and rotation. Over time, the tendon graft matures and becomes a new, living ligament in your knee.

What happens after surgery?

Rehabilitation after ACL surgery is intensive and requires commitment and dedication. The rate of recovery varies based on type of surgery and other patient specific factors. Return to heavy work (e.g., construction) is usually limited for at least three months or more. Return to sport timeframe depends on activity type and level of competition. In most cases, return to play is not considered for at least 6 months following surgery. However, this may take longer depending on type of injury, pace of recovery, and specific requirements of that sport. In general, the outcomes of ACL surgery are excellent for return to work and return to most recreational activities. The outcome with respect to return to pre-injury level of sport competition is variable and remains a significant challenge.

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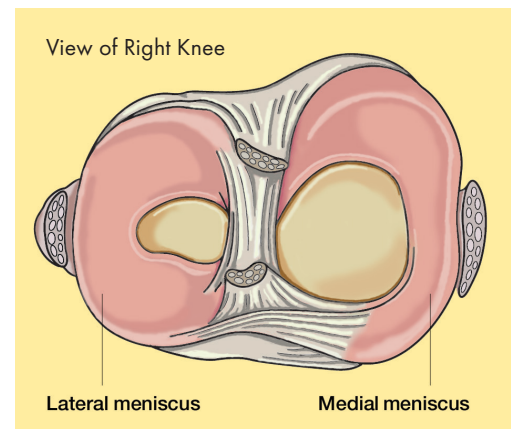
MENISCAL TEARS IN ATHLETES OF ALL AGES

The meniscus is a C-shaped fibrocartilaginous tissue that sits between the femur and tibia bones on the inner and outer parts of your knee. The two knee menisci act as cushions or shock absorbers, shielding load from the smooth cartilage surfaces lining the bones. They also work together with the knee ligaments to stabilize the knee.

How is the meniscus torn or injured?

Traumatic injuries may result in meniscus tears in young athletes. Twisting, pivoting, and forceful compressive maneuvers may cause a tear. It is also common for the meniscus to be injured along with other major knee ligaments such as the ACL.

In older athletes, the meniscus may tear with much less force during routine activities such as repetitive running or squatting. In these cases, the meniscus has been weakened through the degenerative aging process, making it vulnerable to tearing with even low energy maneuvers. These degenerative type tears are often seen in conjunction with osteoarthritis in this patient group.



How is a meniscal tear diagnosed?

Following injury, traumatic meniscus tears often cause acute pain on one side of the joint, swelling, and mechanical symptoms such as catching or locking. Patients will report difficulty with squatting and avoidance of twisting activities. Degenerative meniscal tears may be asymptomatic or have more subtle findings often related to their underlying osteoarthritis (i.e., stiffness, pain with sit to stand). A good history and physical examination will provide the physician with a high index of suspicion that a meniscus tear has occurred. Advanced imaging studies such as MRI (magnetic resonance imaging) can be helpful to confirm the diagnosis and to help plan for non-surgical versus surgical treatment.

MENISCAL TEARS IN ATHLETES OF ALL AGES



How is a meniscal tear treated?

The majority of traumatic meniscal tears in young athletes should be treated with attempted surgical repair. This is typically performed with arthroscopic and/or mini-open surgical techniques. Meniscus healing depends on many factors including tear type, tissue quality and mobility, proximity to the surrounding blood supply, patient factors (e.g., age, BMI), and presence of other injuries (e.g., ACL). Discussion with your surgeon will focus on the healing rates for your specific tear pattern and the risks of recurrent tear following treatment.

In rare cases where the meniscus is noted to be functionally deficient following injury or surgery in the young active patient, salvage treatment options such as meniscus substitution (e.g., CMI) or meniscus allograft transplantation may be indicated. These procedures have the primary goal of joint preservation and improvement in patient quality of life, with less focus on return to sport.

In older patients, degenerative meniscus tears may be asymptomatic and require either no treatment or non-operative treatment for the underlying osteoarthritis. Some degenerative tears cause mechanical symptoms or do not improve despite conservative treatment. These tears may require arthroscopic treatment. The majority of these tears are not repairable and are treated with partial meniscectomy, removing only the damaged portion of the meniscus. While the relative risk of arthritis progression goes up after this procedure, most patients are satisfied with decreased pain and improved function following surgery.

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