

# Acl injuries in athletes



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The Anterior Cruciate Ligament (ACL) attaches the femur, which is the thighbone, and the tibia, which is the shin, together (northstar). A torn ACL is one of the most excruciating experiences in an athletes life. It is the first thing that comes to mind when they hurt their knee on the field; for many it is their greatest fear. A torn ACL can sometimes mean the end of an athletes career. It can mean losing the chance to get that scholarship for young athletes, and it can also mean the end of those million dollar paychecks for those who have gone professional. A torn ACL can result in numerous surgeries, months of vigorous exercise and rehabilitation, and a sufficient amount of pain. It requires complete patience, for pushing too hard can result in further, more painful injury. Even after all that, an athlete is not guaranteed he or she will ever be able to play sports again.

The anterior cruciate ligament is the reason that the knee only has one pattern of movement. Instead of moving sideways and up and down, the knee only serves as a pivot for flexion (bending) and extension (straightening); it holds the tibia and femur in place (northstar). In the northstar web page it is stated that, The anterior cruciate ligament is one of the most important ligaments to athletes because of its main function, stabilization of the joint while decelerating. In other words, it is the reason that we can stop abruptly without our leg collapsing. Obviously this asset makes it an essential to have a functioning ACL while playing sports. It is an especially common injury in soccer, which is a game of constant abrupt stops. Not only is soccer a danger to the ACL because of its constant stops and starts, it is also a game of jumps, falls, and slide-tackles, which put a continuous stress on the ACL for the entire 90 minutes of the game. ACL

tears are also more common in women. It is said that the reason for this is because women's bodies were not meant for playing intense sports, and are therefore more likely to endure such injuries. The ACL is the most frequently injured part of the knee when related to sports. As fore-mentioned, the ACL aids us in abrupt stops; it is these abrupt stops that are the most common cause for its injury. ( Figure 1. shows the difference between a normal ACL and a torn one.)

An ACL injury has not been scientifically proven to be linked to weight, size, or strength (Duff 308). The cause can be a violent twist of the knee, or it can simply be caused by standing up too fast. It can be twisted or hyperextended. In any case, if it is concluded that the ACL has been ruptured, the symptoms and treatment remain the same. In any injury, tiny, or large, blood vessels are broken, resulting in bleeding into the area of the injury. This is the cause of swelling. In an ACL tear, the knee swells almost immediately because of the broken blood vessels in the ligament ( Sechrest. com). The initial tear makes a loud pop and, because of the absence of the ligament's reinforcement, there is a feeling of instability in the knee. In some cases, the knee actually subluxes, which is a dislocation that pops back into place on its own. In these cases, there is usually more injured than just the ACL. Often the MCL (medial collateral ligament) is also injured (Sechrest. com). Other common symptoms, according to the northstar website are pain and the athlete falling to the ground as a result of the instability, or buckling, of the knee.

A torn ACL can only truly be determined through a series of tests starting with a physical examination, as in the Lachmans and Anterior Drawer tests. In the Lachmans test (shown in Fig. 2.), the Patient with suspected injury lies

supine on examination table and flexes the knee at 15 degrees. The person examining the patient stands on the affected side of the extremity and holds the patients femur (thigh) immobile with one hand. The other hand is placed on the tibia (shin) and tries to move it forward, without rotation. The movement of this knee is then compared to the normal knee (northstar). The physical examination is also given using the Anterior Drawer test (Fig. 3.). In this test, the Patients knee is placed at 80-90 degrees flexion. The examiner repeats the process of Lachmans test except that he or someone helping him sits on the patients feet to stabilize it and gently pulls the tibia forward with both hands (northstar). Unfortunately, sometimes there is too much swelling in the knee to get accurate results from these tests. The athlete then has the fluid drained from his/her knee, and if this fluid has blood in it, the sechrest site notes that there is a 70% chance that the ACL has been torn. X-rays can then be done to rule out the possibility of fractures or chipping of the knee joint, which can also cause blood in the joint. If there is still doubt, an MRI can be done. MRI is an abbreviation for magnetic reconnaissance image. An MRI allows doctors to choose which layer of the anatomy they wish to see, and show a much clearer view of the area under inspection. In most cases an MRI will always be done if there is a suspected torn ACL. For even more evidence that there is actually a tear an arthroscopy is performed, but usually this procedure is left for surgical, not diagnostic purposes. An arthroscopy entails a small camera being placed in the knee joint to look directly at the ACL.

Once it is determined that the ACL has in fact been torn, the athlete must prepare for reconstructive surgery. Many orthopedic choose to wait for the knee to stop swelling and regain some of the normal range of motion

through light physical therapy for several weeks before going into surgery. The athlete is also fitted with a brace to help maintain some stability that is worn at all times before and up to about six weeks after surgery. The most often performed surgery is arthroscopic surgery. In this surgery, a small incision is made for the tiny camera which will guide the surgeon. To reconstruct the ACL, the surgeon will generally harvest, or take, one third of the patellar tendon. Usually it will be the central third that will be used in order to leave the two ends easily re-attachable. Attached to the graft (the patellar tendon) are pieces of bone which will prevent the tendon from sliding out of place once attached to the tibia and femur. Holes are then drilled into the femur and tibia at the attachment sites. The tendon, which will now be the reconstructed anterior cruciate ligament, is then threaded through the holes and held in place by metal screws. New blood vessels will grow in the tendon enabling it to heal, and the body will accept it as a ligament (Arthroscopy. com). There is little scarring, but still much to recover from. After surgery, the patient is set up with a physical therapist and given a continuous passive motion device. This device is normally used during sleep. The athlete's leg stays in constant motion to keep it from stiffening overnight. For the first few weeks after surgery, the athlete meets with a physical therapist at least three times a week, and then the routine is left up to him/her (sechrest. com). Some common exercises done through rehabilitation are leg lifts, leg curls, riding the stationary bike, swimming, and light jogging with a brace. Because a muscle tends to slightly atrophy, or weaken, from lack of use the athlete at first uses no weight or resistance in the rehab. program. His/her own body weight is sufficient enough to fatigue the muscle. As the athlete progresses, the use of weights and resistance

increases until the injured leg is at the same level as the normal leg. This progress can take up to a year for some athletes, while for others it can be accomplished in six months depending on the routine and the tolerance of the knee. At that point the athlete is allowed to resume his/her sport on a trial basis. He/she is placed back on the roster as a back up, and if everything goes well the athlete will be able to return fully to the sport. He/she will continue to require a knee brace while playing for extra support.

It is a long, hard road of patience and determination for an athlete who sustains a torn ACL. It is quite possible that the injury could cause the athlete to never be able to perform as well again. The star player could be reduced to second string. Although in many cases what really holds the athlete back is not the knee, but instead fear of further injury. Many athletes find themselves almost completely back to normal, but they cannot perform because they are afraid of getting hit. It is understandable then to see tears well up in the eyes of an athlete when he/she realizes that the injury is to the knee. A torn ACL is the first thought that comes to mind. It is their greatest fear.

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