

Sports Medicine

ACL Anatomy, Injury and Treatment

Anatomy - The Anterior Cruciate Ligament or "ACL" is a principal stabilizer of the knee joint and normally anchors the femur (thigh bone) to the tibia (shin bone) in the central portion of the knee joint. Its primary functions are to resist motion of the tibia in relation to the femur. This allows your knee to remain stable while skiing, avoiding a tackle, walking on uneven terrain, or simply carrying on your normal daily activities. Recent research suggests that this variety of function includes stabilizing against direct forward tibial translation as well as tibial rotation. The ratio of these components may be different in different individuals which helps explain why some people "cope" with an ACL tear and not feel many symptoms of instability or associated cartilage stress.

Injury - The ACL is infamously injured in association with sports including football, soccer, and skiing. It can also be torn when the knee is in hyperextension or similar events which place your knee in an awkward or out of control position. Interestingly, women have a 2-4 fold greater risk of injury to this ligament in comparison to men (similar for boys and girls). The reason for this is not entirely clear to, but contributing factors include poor landing form and weak core musculature. An ACL injury prevention program can be particularly helpful in addressing these deficits.

Injury of the ACL is commonly associated with pain, swelling, and instability. After a week or so of recovery from the acute injury, some people may not notice many residual symptoms. Most, however, will find their knee just continues to be bothersome. Regardless of symptoms, once injured it is apparent

that the ACL does not heal in an anatomic orientation. Thus, ACL injuries left untreated are often associated with a sensation of knee instability and an increased likelihood of further injury, particularly to cartilage.

Treatment - Treatment of ACL tears consists of non-operative rehabilitation or operative reconstruction of the torn ACL. Although non-operative management may be considered, it is known that an ACL deficient knee predisposes one to a higher risk of cartilage and meniscal damage over time. In one study, this risk was 1% per month.

Repair of ACL tears involves a variety of surgical techniques which restore the ligament by "reconstruction." We are very familiar with and have performed all recognized methods of ACL reconstruction that involve using autograft (tissue from your own knee) or allograft (tissue from a donor). In our practice, a choice between autograft or allograft is available to most patients. Which is best will be recommended to you, depending on a variety of factors (your age, your activity level, your immediate versus long term goals, etc). Ultimately the decision for autograft or allograft will be decided by you.

After surgery and rehabilitation, your risk of re-rupturing a reconstructed ACL should be equal to injuring a normal ACL. Exercises to reduce the rupture of both will be part of your post-surgery rehabilitation recommendations and PT prescription.

