

HOW TO PREVENT AND TREAT ACL INJURIES

Mention an anterior cruciate ligament (ACL) injury to any professional athlete, and he or she is likely to shudder. Athletes with such injuries often spend months on the bench and in the physical therapy room. Tom Brady suffered a torn ACL during the first game of the 2008 NFL season, knocking him out for the year, and the University of Florida football team lost an amazing five players to ACL injuries during the first few weeks of the 2008 season, all of whom underwent season-ending surgeries.

The ACL is one of four ligaments that serve as main stabilizers of the knee. It is located between the bottom of the femur, or thigh bone, and attaches to the top of the tibia, or shin. While you use the ACL for any activity involving your lower extremities, it's most essential for starting, turning and stopping quickly. Squash, basketball, tennis, football, racquetball and downhill skiing all require such movements.

Because the ACL is made of slightly elastic, fibrous tissue, part of this ligament can tear—or completely rupture—if it's overstressed. Generally speaking, you can injure your ACL in one of two ways. Direct trauma to the ligament from a hard fall, a car accident or a tackle in football can cause a serious tear or rupture. You can also injure the ACL in the course of playing a sport or even during day-to-day activities if you rotate your body and twist while your foot is still planted on the ground. For example, you can twist quickly to catch a pass in basketball or grab a child darting out into the street—and injure your ACL in the process.

Females at Greater Risk

National Collegiate Athletic Association (NCAA) injury data show that female athletes injure the ACL more frequently than male athletes. The injury rate for female soccer players, for example, is more than twice as high as that for men. Women basketball players are five to seven times more likely to sustain ACL injuries as men, as many players in the WNBA can attest.

Some studies suggest that hormonal factors may be involved in the higher rate of ACL injury among women. When estrogen levels are higher, the ligaments may be looser and offer less protection.

Additionally, a woman's ACL may be smaller than a man's, which may make it more susceptible to fraying or becoming injured. Some experts suggest that relatively weak hamstrings may also pose problems for women. When the

hamstrings contract, they help stabilize the knee, so if the hamstrings are weaker or don't activate fast enough, injury may result.

Anatomic alignment differences, especially the quadriceps angle (Q-angle), have been cited as the cause of the higher ACL injury rate in women, but this has not yet been confirmed by the research. Other findings have shown a difference in neuromuscular control in women when landing jumps, as women appear to have less hip and knee flexion than men.

Prevention

Unfortunately, no single exercise can prevent injury to the ACL. The good news is that you can give yourself some protection by developing and maintaining strength and endurance in your lower extremities. To promote stability in the knee, perform closed-chain exercises (for example, leg presses, squats, lunges) as part of your strength-training program. Also, do some cross-training in your cardiovascular workout using the stairclimber, stationary bike, elliptical trainer or ski machine.

You can also avoid an ACL injury by preparing for your favorite sport in the preseason. Plan for at least four weeks of endurance training before your basketball, tennis, or racquetball league begins, or prior to ski season.

Have fun, but be sensible when playing your sport. Whenever you find that you must stay away from your regular routine for two or three weeks due to travel or illness, ease up for several workouts to give your body time to recondition.

RICE Is Key to Treatment

Should you injure your ACL, you'll know it without question. Both the discomfort and the swelling in your knee will be significant. Your knee will also feel unstable, as if it can't hold your weight. The pain you feel is guaranteed to stop you from continuing your activity.

Follow the RICE procedure immediately—Rest the muscle, apply Ice, use a bandage for



Compression and Elevate the leg above your heart to prevent or minimize swelling. See your doctor as soon as possible for a diagnosis and proper treatment. In most cases, he or she will be likely to prescribe anti-inflammatory medication to reduce swelling. If you have suffered a serious tear or a rupture, rehabilitation may take several months, especially if surgery is indicated.

Additional Resource

Renstrom, P. et al. (2008) Non-contact ACL injuries in female athletes: An International Olympic Committee current concepts statement. *British Journal of Sports Medicine*, 42, 394–412.

If you are interested in information on other health and fitness topics, contact: American Council on Exercise, 4851 Paramount Drive, San Diego, CA 92123, 800-825-3636; or, go online at www.acefitness.org/GetFit and access the complete list of ACE Fit Facts!™



©2009 American Council on Exercise®

To obtain reprint permission contact the American Council on Exercise®