

## When Talking ACL Injury, It's Girls vs. Boys

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Female participation in sporting activities has steadily grown through the years. With this increase in participation has come an increase in injuries, including those of the ACL. The anterior cruciate ligament, ACL, is the main ligament that connects the thigh bone and the shin bone. Injuries to the ACL in girls tend to occur when least expected, often during non-contact activities and while slowing down, cutting, and/or jumping. The International Olympic Committee found that the risk factor of injury to the ACL in soccer was twice as high for females as opposed to males<sup>1</sup>. Factors that seem to separate the girls from the boys include: body movement, hormonal influences, and anatomical differences.

- **Body movement**, also known as **biomechanics** include such things as cutting, landing and jumping. It has been found that girls are more erect or upright in their hip and trunk when cutting and landing, have less bend in their knees, and their quadriceps (muscles in the front of the thigh) are significantly stronger than their hamstrings (muscles in the back of the thigh). Females also experience a higher rate of muscle fatigue that can lead to instability or loss of muscular support of their lower limbs.
- **Hormonal influences** continue to be a researched subject. Females are generally looser in their joints, and their muscles are not as stiff as those of their male counterparts.
- **Anatomical differences** also contribute to ACL injury in girls. The wider female pelvis means muscles from the hip to the knee pull at an angle more stressful to the ACL.

Female athletes who suffer an injury to their ACL learn quickly that it is a serious injury; however, the prognosis is typically very good. A number of studies have found that athletes are, in fact, able to return to competitive sports at their pre-injury level<sup>2</sup>.

Injuring the ACL will typically fall under two categories. The injury will be either a sprain or abnormal stretch to the ligament, or a tear which can be complete or incomplete. When athletes describe their injury to their physician they often say (1) how they were injured, (2) that there was a sensation of or audible "pop" in the affected knee, and (3) there was a sensation that the knee gave way. There will be noticeable swelling and tenderness around the injured knee. The medical professional will perform special tests to determine the integrity of the ligament. The goals in treating ACL injuries are:

1. Prevent the giving way, which can cause further injury to the cartilage and
2. Return to previous level of activity in a safe manner. Initial treatment options from the point an athlete experiences these symptoms include rest, ice, elevation, and compression (RICE) along with an evaluation by a trained physician.

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Treatment options for an injury to the ACL rely directly on whether it was sprained or torn. Sprained ligaments require rest, formal physical therapy, and may require the use of a fitted brace once the athlete is cleared to participate again. Tears to the ligament require a more in-depth course of treatment. Following a thorough discussion between the surgeon, athlete, and the parents of the athlete, surgical intervention may be required to achieve the goals of treatment. There are various procedures for fixing ACL's, which should be discussed prior to deciding on any operative treatments. Following surgical intervention, a formal physical therapy program will be followed, along with certain activity restrictions for the first six months. Use of a personally fitted brace may also be required upon return to play.

Prevention of athletic injuries is an area that medical professionals are continually trying to improve. Many programs have been developed to reduce the risk of an ACL injury. Good programs include at least one of the following components: stretching, strengthening, education of high-risk positions, technique modifications, aerobic conditioning, sports-specific agilities, proprioceptive or balance training and proper plyometrics/jumping<sup>1</sup>. Education on proper techniques, such as focusing on the "knee over toe" positioning in cutting maneuvers, will also help reduce the risk of injury.

Injuries in sporting activities are inevitable, but that should not be a reason to avoid sports. All athletes should be well educated in their event in regard to technique, rules, and possible positions that will make them vulnerable to injury. The predisposed higher risk of injury for female athletes makes it slightly more difficult to prevent injury due to the number of influences that cannot be changed. Again, this does not mean females should not participate in sports. It does however, necessitate the need to be more aware of proper training, stretching, strengthening and technique.

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References:

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