

Women's knee injuries in Athletics

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As many local coaches and athletes are gearing up for the fall sporting season and looking forward to much success, healthcare professionals are also gearing up for the multitude of injuries fall sports will bring with it. One of the more common "serious" injuries sustained by women athletes is a tear of the anterior cruciate ligament (ACL) in the knee. The ACL is responsible for providing anterior stability of the knee by assisting the tibia from moving forward on the femur when the foot is on the ground. Most people used to view this type of injury as "career ending", but with the advancement in surgical and rehabilitation techniques in the past 15 years, this is no longer the case. Some healthcare providers claim that following successful surgical and rehabilitation intervention following an ACL surgery, that the "repaired" knee can actually be stronger and perform better than before the injury.

Statistics show that there are more than 75,000 ACL repairs performed in the United States each year, and the majority of these surgeries are performed on athletes between 15-25 years of age. Most of these injuries occur during athletic participation, 70 percent of these injuries occur in non-contact situations, and women are reported to incur tears up to 10 times more often than men. Sources document two-thirds of women's tears happen between participation in basketball and soccer alone.

Most experts agree that non-contact ACL injuries occur mostly with one or more of three mechanisms: the one-step stop, the straight-knee landing, and the plant and cut. Although there is no clear-cut understanding of why women tear with such greater incidence than men, Leigh Ann Curl, MD from Johns Hopkins Sports Medicine and the team physician for the Baltimore Ravens states that some intrinsic factors that are either associated or cause this increased rate are: 1) joint biomechanic differences and increased joint laxity, 2) femoral notch dimension, and 3) hormonal influence. Some extrinsic factors are: 1) shoe/surface contact changes, 2) decreased muscular strength, and 3) decreased neuromuscular control. Neuromuscular control is the area of most active research into cause and prevention of ACL tears among sports medicine authorities.

Neuromuscular control is the ability of an athlete's joint to respond to the activity induced stress around/upon it, and occurs through activity of the joints muscles, tendons, and ligaments surrounding it. The amount of activity and reaction time of this control can be influenced and improved through sport specific training and is best performed in the off-season prior to participation in a sport in order to "prepare" the joint to tolerate the stress applied to it.

Off-season training programs should emphasize balance, strength, agility, and flexibility. Many programs use plyometric (jumping) activities and speed training along with a multitude of other activities to influence the knee to improve neuromuscular control and flexibility. Although off-season training does not prevent all ACL tears, it has been shown through many studies to reduce

the incidence of injury, and in one 3-year study done on division I basketball players, by as much as 89%.

Off-season training is important in improving an athletes ability to perform as well as preventing injuries in fall sports, especially in the initial two weeks of participation when the body is becoming acclimated to the stresses applied to it. If appropriately prepared for these stresses, the joint involved can properly adjust, but if not, undue stress can cause it to fail.

The time to worry about an ACL tear is not after it happens, but during the off-season when prevention is the goal. When more and more women are becoming involved in more aggressive sporting events, the need for improved care and training will continue to rise. If the improvements in speed, agility, and acceleration are not a good enough reason to train in the off-season, than preventing a painful, and costly surgery should be.