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ACL Injury in Female Athletes

Guest Column by Dr. Hany Elrashidy, MD

Across the country, there is a rising incidence of sports injury in female athletes. In an increasingly active population, several factors are responsible. It is partly due to an increasing specialization of athletes in one sport and year-round play in that sport. They may participate in high school soccer, and continue on to play club or travel seasons. Coupled with increasing expectations on talented young athletes, this puts a large, repetitive stress on a female athlete's developing body. In response, a cycle of breakdown occurs, followed by recovery. But when this balance gets altered, as happens with the repetitive stress of year-round, same sport participation, the cycle shifts towards breakdown. Without recovery time, injuries are more likely to occur. Females are at particular risk of knee injury in planting and cutting sports like soccer, where they are 4–6 times more likely than males to suffer an anterior cruciate ligament (ACL) tear.

The ACL is a key structure in the knee, both for stability and cartilage protection. This is very important for athletes involved in planting and pivoting sports. An ACL tear can abruptly end a season and, more importantly, can have long-term consequences. If not addressed, ACL deficiency places athletes at risk of recurrent cartilage injury and early arthritis. Most ACL tears occur from noncontact mechanisms, such as a sudden change of direction or a quick plant and cut. They also result from improper landing from a jump. When torn, athletes may feel a pop in their knee, with swelling and immediate pain. Research shows that female soccer players in particular, perform these maneuvers in a more knock-kneed position, with reduced hip and knee motion, and decreased hamstring strength. It is these factors that place female adolescent athletes at higher risk of knee injuries like ACL tears and kneecap instability.

Many theories have been proposed to explain this increased risk and the most studied is the neuromuscular theory. This is an attractive topic for research, as it is one that is modifiable and improved with preventive training. Neuromuscular research shows that females land and change direction in a more erect posture than males, with knees and hips nearly straight. These abnormal mechanics, combined with a trend for female's quadriceps to be stronger than their hamstrings (called quad dominance) alters the balance and places increased stress across ligaments and other structures in the knee.

The most effective treatment strategy, being implemented across the nation, is preventing these injuries by modifying risk factors. Extensive research has been conducted on injury prevention. This has helped physicians, therapists, and trainers identify and target muscle groups, especially core and hip (e.g., weak hip strength leads to knock-kneed landing) to improve strength and prevent injury. Factors like decreased hamstring strength and joint motion are addressed. Specific training, such as plyometrics (jump routines) and teaching proper landing help prevent injury. These strategies are the cornerstone of new injury prevention programs, with the goal of preventing injuries like ACL tears in at-risk athletes. And they are proving very effective. The plyometric, strengthening, and balancing components are all critical to increase muscle power, strength and knee stability. These injury prevention programs are working and we are seeing excellent results. The proper prevention training is getting us back to the goal: An exciting and injury-free season.

Dr. Elrashidy practices in Lake Forest and Glenview. Call 847-735-8550 (Lake Forest) or (847) 724-4536 (Glenview) to schedule an appointment.