Prevention of Anterior Cruciate Ligament Injuries

Q: ARE THERE PREVENTIVE MEASURES FOR ANTERIOR CRUCIATE LIGAMENT INJURY?
A: Yes. There are many different anterior cruciate ligament (ACL) prevention training programs that have been developed to address the growing numbers of adolescents (girls, in particular) who sustain sports-related ACL injuries.

The idea of implementing training programs as a means of reducing sports-related injuries in young athletes is not new. As early as 1978, Cahill and Griffith examined the effect of preseason conditioning on the incidence and severity of American football injuries in high school players.

These authors reported a significant decrease in the occurrence of sports-related injuries in the trained group compared with the untrained controls. They believed that increasing the strength of the bone, muscle, and supporting connective tissue in preseason training increased the relative resistance of these tissues to mechanical stresses experienced during practice and competition, thus protecting against injury.

These ideas have been applied to the recent epidemic of noncontact ACL injuries in adolescent female athletes. Researchers have identified potentially modifiable factors that place young women at risk for ACL injury: extended hip and knee-joint postures upon landing from a jump; decreased hamstring-to-quadriceps strength ratios; overall poor physical conditioning; poor core, trunk, and hip strength; and increased valgus (“knock-kneed”) postures with landing and squatting.

The majority of ACL injury prevention programs have utilized a combination of plyometrics (explosive motions like skipping), proprioceptive training (retraining the muscles to position the limbs in a more flexed, less knock-kneed alignment), strength training, stretching, aerobic training, and risk-awareness training to affect changes in these modifiable risk factors and ultimately decrease the rate of non-contact ACL injuries in the target population. Many have been quite effective.

In the Prevent Injury and Enhance Performance (PEP) Program, athletes received videotaped instruction on the performance of three basic warm-up activities, five stretches, three strengthening exercises, five plyometric exercises, and three soccer-specific agility drills, with an emphasis on proper biomechanical technique. These activities were incorporated into the athletes’ normal training routine. When compared with a group of athletes who had not participated in the program, they found over time an average decrease in ACL injury rate of more than 70%. The lesson is that successful ACL injury prevention requires dedication from the athlete.

REFERENCES