

Training Techniques, And Their Effect on Frequency of ACL Injuries in Female Soccer Players?

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Anterior Cruciate Ligament injuries are among the most common of all sports-related knee injuries, affect the lives of more than 250,000 people in the United States each year.

Studies conducted during the past three decades have indicated that female athletes sustain non-contact injuries to the ACL of the knee more frequently than their male counterparts. In a study conducted at Duke University, Drs. Bing Yu and William E. Garrett, Jr. found that female recreational athletes incur non-contact ACL injuries 7.3 times more often than that of male recreational athletes.

ACL injuries are often season-ending and require reconstructive surgery and four to six months of rehabilitation. Players who opt to delay an ACL surgery often suffer secondary injuries such as meniscal tears, articular cartilage injury, or medial and lateral collateral ligament injury.

Possible prevention strategies for ACL injuries were discussed at a panel briefing during the American Academy of Orthopaedic Surgeons Annual Meeting in San Francisco, Calif. earlier this year.

According to research presented, four risk factors have been studied in order to understand the causes of ACL injury: anatomy, hormones, environmental factors and biomechanics. The studies, including the one conducted at Duke University, indicate that by intervening just within biomechanics, there can be a decrease in the number of significant knee injuries in the female athletic population.

The Santa Monica Orthopaedic and Sports Medicine Research Foundation has collaborated with U.S. Soccer, FIFA, University of Southern California and the Centers for Disease Control to better understand the mechanism of injury of non-contact ACL injuries and has worked diligently to develop an effective prevention program.

These researchers completed a randomized controlled trial with sixty-one Division I NCAA women's soccer teams in the 2002 season. Each team was randomized to one of two groups: those performing the program (intervention group) and those who continued to do what they were doing in previous seasons (control group).

The study was conducted for 14 weeks over the course of the fall season. The athletes in the intervention group performed a twenty-minute alternative warm-up called the PEP Program (Prevent Injury and Enhance Performance). This intervention group demonstrated a 100-percent decrease in non-contact ACL injuries during practice and an overall 45-percent decrease in non-contact ACL injury (game and practice) compared to the control group.

Additionally, the rate for ACL injury was reduced even further – a 72-percent reduction, when analyzing the last six weeks of the season. This is because muscle adaptation and neuromuscular training takes approximately four to six weeks to make an effective change in an athlete.

This research indicates that a program that addresses landing technique, core stability, balance and proprioception (joint awareness) can effectively decrease the incidence of ACL injuries in the

soccer athlete.

Dr. Timothy E. Hewett of the Cincinnati Children's Hospital and the University of Cincinnati College of Medicine, noted at the conference that sports programs commonly use training programs for athletes in order to reduce significant injuries.

Hewett and his colleagues initiated a study to examine the effects of a comprehensive training program in order to analyze injury rates, performance and biomechanics in female athletes. The athletes trained three days a week for 90 minutes followed by 15 minutes of stretching exercises. The results demonstrated that females increased speed during timed sprints after training.

The study also demonstrated significant desirable biomechanical changes during a landing maneuver following the training. In contrast, the control group demonstrated no significant increase in any of the above measured parameters.

Overall, these studies and the research that was presented show that by focusing on a player's movement patterns, individual performance deficits can be determined. By giving all players a comprehensive intervention or a warm-up program, such as the PEP Program, these deficits can be addressed. As the research shows, with the use of a program, that the players are more likely to continue performing at a high level without incurring season ending injuries.

For information on the research presented in this article and the PEP Program including a downloadable .pdf describing its components, visit the Web site at www.aclprevent.com or e-mail the author of this article, Holly Silvers, at HollySilversPT@aol.com.

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