IS THERE EVIDENCE THAT NEUROMUSCULAR AND PROPRIOCEPTIVE TRAINING CAN PREVENT NONCONTACT ANTERIOR CRUCIATE LIGAMENT (ACL) INJURIES IN FEMALE ATHLETES?

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No Funding

BACKGROUND AND PURPOSE:

The prevalence of ACL injury in female athletes has been shown to be 4 to 6 times greater than their male counterparts. The reason for this increase is not clear, but one hypothesis is decreased neuromuscular control. Inadequate neuromuscular control of the athlete's lumbo-pelvic-hip complex may compromise the dynamic stability of the knee resulting in increased genu valgus torque at the knee and possibly increased strain on the ligaments leading to injury. Subsequently, many researchers have developed neuromuscular and proprioceptive training programs to prevent ACL injuries. The purpose of this literature review was to investigate the clinical question, "Is there evidence that neuromuscular and proprioceptive training can prevent noncontact ACL injuries in female athletes?"

METHODS AND MATERIALS:

The PubMed electronic database was searched for the terms knee injuries, female athletes, and ACL. There were 127 results that were then further limited to current articles published within the last 5 years and those regarding neuromuscular and proprioceptive training. Articles were included for review if they were a randomized, controlled trial or prospective cohort study. Seven articles were identified that met the criteria.

RESULTS/CONCLUSION:

The results of the reviewed studies suggest that neuromuscular training programs may have a role in the prevention of lower extremity injuries, particularly noncontact ACL injuries. The main predictors of noncontact knee injury include deficits in neuromuscular control and kinematics and kinetics of the lower extremity. These factors have been considered when developing the neuromuscular and proprioceptive training programs. All literature reviewed demonstrated positive outcomes with the training programs reducing the overall rate of ACL injury.

IMPLICATIONS:

The results of this study can be utilized in community education programs, athletic arenas, and in physical therapy settings in the prevention and rehabilitation of ACL injuries in female athletes. Physical therapists can help assess athlete's neuromuscular control during pre-athletic screening. In addition, physical therapists can help athletic teams implement a neuromuscular control program focusing on trunk, pelvic, and lower extremity stability.