

NEUROMUSCULAR TRAINING IN FOOTBALL

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Serious injuries such as Anterior Cruciate Ligament (ACL) injuries as well as muscle injuries continue to be of concern to athletes in sports that require jumping and pivoting such as football. Current research showed that altered neuromuscular control of the hip and knee during a dynamic landing task and postural stability deficits after ACL reconstruction are predictors of a second ACL injury after an athlete is released to return to sport. Female athletes have an increased rate of ligamentous knee injury, especially of the ACL, in comparison with their male counterparts participating in similar activities. The disparity in rates is even more pronounced when noncontact ACL injuries are isolated (Myklebust et al, Clin J Sport Med 2003; 13: 71-78) (1). Altered neuromuscular strategies during the execution of sports movements, which manifest in resultant lower limb joint mechanics (motions and loads), may increase the risk of injury in football. Knee abduction measures quantified during drop jump tasks, predict ACL injury risk in young female athletes. Such findings have led to the development of specific neuromuscular training interventions designed to reduce risk factors, particularly in females. Recent evidence indicates that these programs likely reduce the potential for ACL injury in female athletes (Waldén et al, Br J Sports Med 2012; 46: 904). One of these programs, the Prevent injury and Enhance Performance (PEP) Program, consisting of specific neuromuscular and proprioceptive training techniques, has been designed specifically to prevent noncontact ACL injuries but also may protect the athlete from some contact ACL injuries, potentially from benefits in strength or agility. In fact, recent research suggests that the PEP Program of neuromuscular and proprioceptive training is effective in preventing ACL injuries and can be accomplished during regular practice time without the need for additional special equipment or training (Soligard et al, Br J Sports Med 2010; 44: 787-793; Sadoghi et al, J Bone Joint Surg Am 2012; 94: 769-776). Decreased trunk (core) neuromuscular control may compromise dynamic knee stability and thus be associated with increased knee injury risk during high-speed athletic maneuvers as in football. High ground-reaction forces directed toward the body's center of mass, coupled with decreased trunk neuromuscular control, may compromise dynamic stability of the knee (3). Neuromuscular training has been demonstrated to be effective in muscle injuries prevention (2). We investigated the effect of a two-tiered injury prevention neuromuscular training on first injury and re-injury incidence in top level male football players. Muscle injuries and re-injuries sustained by a group of 36 football player of an Italian elite football team have been collected during 2010-2011 season. These data have been compared with those collected during the previous season in the same elite football team. Through the implementation of a group and personalized injury prevention neuromuscular training program we were able to reduce the total number of muscle injuries and days absent because of injury, as compared to the previous season. Specifically, muscle injuries accounted for 31% of all injuries, as compared to 59% of all injuries sustained by the team during the previous season. The number of injuries/1,000 hours of exposure was reduced by half (from 5.6 to 2.5) and the days absent/1,000 hours fell from 106 to 37 (2).

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