Prediction of Core and Lower Extremity Sprain/Strain in College Football Players

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Research has identified numerous risk factors for sport-related injury, including injury history, high body mass index, muscle weakness, postural misalignment, and deficient neuromuscular control. However, there is very little information in the literature that supports specific pre-participation screening procedures for identification of individual athletes at high risk for sport-related musculoskeletal injury. The results of simple functional tests can be combined with information derived from various survey instruments, anthropometric measurements, and recorded exposures to risk to quantitatively differentiate the pre-season profiles of injured athletes from those of non-injured athletes. Such research can provide an evidence-based rationale for implementation of injury prevention programs that specifically target modifiable risk factors. For example, baseline data collected at the University of Tennessee at Chattanooga prior to the beginning of 2009 football practice sessions and subsequent injury data for the 2009 football season demonstrated that the risk for lost participation attributable to a core or lower extremity sprain or strain was 3X greater for those players who had ≥ 3 of the following characteristics: 1) trunk flexion hold time ≤ 161 seconds, 2) bilateral wall-sit hold time ≤ 88 seconds, 3) Oswestry Disability Index score ≥ 6, and 4) starting in ≥ 3 games or playing in all 11 games. With game exposure removed from the analysis, players with ≥ 2 of the 3 potentially modifiable risk factors were found to have 2X greater risk for injury. For 2010 baseline testing, the core muscle endurance tests were modified to increase their difficulty, and thereby shorten hold time. Analysis of core and lower extremity sprains and strains sustained during the 20-day pre-season practice period revealed 5X more injuries among players who had ≥ 2 of the following characteristics: 1) trunk flexion hold time ≤ 96 seconds, 3) unilateral wall-sit hold time ≤ 44 seconds, and 4) Oswestry Disability Index score ≥ 8. Collaboration for the development of a large electronic dataset could undoubtedly provide a robust source of evidence for specific injury risk-reduction strategies.