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Using the Science to Improve Movement In The Athlete

Every year there are over 250,000 anterior cruciate ligament injuries (ACL) in high school athletics. The abnormal movement patterns of the lower limbs that put athletes at risk for these injuries are well known and documented in the research. Boling et al and Coppack et al have shown that these same abnormal movement patterns associated with ACL injury risk in athletics also lead to increased injury rates among military recruits. DeHaven et al showed that it is these same movement patterns among recruits that leads patellofemoral pain syndrome (PFPS), one of the most common lower extremity injuries suffered among recruits. Firestone et al showed that insufficient training among recruits leads to these movement patterns and increases risk of lower limb injury with high impact activities such as running, cutting and jumping. Although the movement patterns have been well documented in the biomechanical literature, little is still understood on how to assess this in a clinical or physical setting. Many have speculated that these movement patterns are primarily driven by decreased maximal volitional contraction (MVC) and altered muscle sequencing between the quadriceps and hamstrings. However, Stearns et al and Pullen et al showed that decreased MVC of the gluteus medius and gluteus maximus and poor core strength contribute to these abnormal movement patterns that put athletes and recruits at risk. Although it is well understood and documented on how to address these weaknesses, there has still been little blending of the knowledge gained from the biomechanical literature with the rehabilitation sciences. In this workshop, the presenter will provide participants with how to assess these movements in athletic populations and we can apply rehabilitation science and techniques to improve. This will be an active workshop so be prepared to move!

Key words: Biomechanics, injury prevention, rehabilitation

Biography

Trent Nessler, PT, DPT, MPT is an Author, Innovator in Movement Science and Technology. He is the CEO/Founder of Accelerated Conditioning and Learning, LLC, developer of the Dynamic Movement Assessment® (DMA®), Fatigue Dynamic Movement Assessment® (FDMA®) and 3D-DMA®. He has lectured in the area of movement assessment for over 15 years and is the author of the e-textbook Dynamic Movement Assessment: Reduce Injuries and Improve Performance. He holds a Bachelor's degree in Exercise Physiology, a Master's in Physical Therapy and a Doctorate in Physical Therapy with a focus on biomechanics and motor learning. He has been a physical therapist for over 17 years and has treated high school, collegiate, Olympic and professional athletes for over a decade. He has also worked with police departments, fire departments and military institutions to assist in injury prevention and improved performance in the tactical athlete. He has been an invited speaker to present nationally and internationally on movement assessment in the elite athlete. He has also been used as a nationally recognized resource for Advance PT, The Washington Post, as well as Web MD. He currently sits on the USA Cheer Safety Council, is Associate Editor of The International Journal of Athletic Therapy and Training and currently serves as an injury consultant to the Brazilian Navy.

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