Seminar

In-vivo function of human intrinsic foot muscles

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Abstract: The longitudinal arch (LA) provides the human foot the capacity to adapt and conform to variations in environment and loading demand. When encumbered with load, the LA lengthens and lowers, subsequently recoiling as the load is removed. This compression – recoil process has been termed the “foot spring” mechanism and allows mechanical energy to be stored and subsequently released during each foot contact, which may improve the metabolic efficiency of gait. The spring-like function of the foot has traditionally been considered a passive mechanism, with the plantar aponeurosis the primary structure responsible for controlling the stiffness of the LA. In a recent series of experiments incorporating novel neurophysiological and biomechanical techniques, we have explored the concept of the foot as an actively adjustable spring, with the plantar intrinsic foot muscles providing on demand regulation of LA stiffness, in repose to variations in loading demand during running. This presentation will provide an overview of the key findings from this research.

Biography: Luke Kelly is a Podiatrist who gained his PhD Human Movement Studies from The University of Queensland (2014). Luke’s research incorporates neurophysiological and biomechanical techniques to explore how the brain and spinal cord control the mechanical function of the foot during stance and locomotion.