ABSTRACT

TITLE:	The Role of Deep Pressure Sensory Feedback During Gait
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ABSTRACT: It is known that patients with diabetic peripheral neuropathy (DPN) have an altered gait due to sensory deficits in the feet. Footwear is also known to alter gait due to the difference in sensory input. This study attempted to confirm that DPN patients experience a gait change due to an afferent proprioceptor deficit and provide further evidence that footwear will alter gait. Subjects (n=11) participated in two testing sessions that included a baseline testing and testing with a lidocaine induced tibial nerve block to mimic DPN. Sixteen repeated-measure ANOVA tests were conducted comparing shod and barefoot, in both the normal (BF, SHOD) and anesthetized conditions (BF_ANEST, SHOD_ANEST). Separate analyses were conducted for walking and running. Dependent variables consisted of 3D kinematics and kinetics. Significant differences were found between shod and barefoot conditions in terms of velocity during run, GRF in the vertical plane during run, and GRF in the anterior-posterior plane during walk and run. These findings are consistent with previous research comparing barefoot and shod running and support the notion that shoes influence gait and can worsen the position awareness and stability of a person's body. Significant differences within footwear conditions (e.g. between barefoot and barefoot anesthetized) were not observed, which indicates that sensory feedback from deep pressure receptors does not play a major role in influencing gait. These results conclude that there is a significant change between barefoot and shod, but cannot support that it is the afferent proprioception deficit that causes patients with DPN to alter their gait.