SWACSM Abstract

Individuals Wearing Cleats Transitioning from Sitting to Standing Demonstrate a Significant Decrease in Blood Flow to the Foot

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ABSTRACT

Plantar fasciopathy is a common foot condition with 10% prevalence in the general population. Plantar fasciosis (a type of fasciopathy) is considered a degenerative condition associated with cell death due to a lack of blood flow. Narrow, tight footwear, such as cleats, have been implicated as a potential contributing factors for the development of plantar fasciopathy and their direct influence on blood flow to the foot is currently unknown. **PURPOSE:** To investigate blood flow change in the anterior and posterior tibial arteries between sitting and standing in a cleated foot. **METHODS:** Eight individuals participated in this pilot study (weight=70.5 kg±12.9, height=1.8m±0.17). The participant put cleats on both feet, with a perceived tightness of 5/10 or greater on a VAS scale. Blood flow volume measurements of the anterior and posterior tibial arteries were taken simultaneously using pulse wave ultrasound, while the participant sat on a platform. These measurements were then repeated in the standing position on the same platform. Blood flow was measured in the dominate shod foot. A paired t-test was used to compare sitting to standing conditions within participants. **RESULTS:** In the anterior tibial artery, average volume flow changed from 6.25 ml/min (sitting) to 2.6 ml/min (standing), a 58% drop in blood flow ($p=0.09$). In the posterior tibial artery, volume flow decreased from an average of 11.25 ml/min to 3.95 ml/min, a decrease of 65% ($p<0.05$). Total reduced blood flow between the two arteries decreased from 8.75 ml/min to 3.28 ml/min, a 63% drop ($p<0.05$). **CONCLUSION:** There appears to be an important alteration of blood flow to the foot in individuals wearing cleats as they transition from a sitting to standing position. If this decrease in blood flow were to persist while wearing cleats, it may help explain the development of plantar fasciopathy observed in individuals wearing narrow, tight footwear.