CAN FOREFOOT VARUS WEDGES ENHANCE ANAEROBIC CYCLING PERFORMANCE IN UNTRAINED MALES WITH FOREFOOT VARUS?

Abstract

There is limited research relating to cycling biomechanics, and more specifically, the use of foot orthotics to enhance cycling performance. Therefore, this study investigated the effect of forefoot varus wedges (foot orthotics) on cycling performance, as measured by anaerobic power output in a population of untrained males presenting with forefoot varus. Six untrained males (forefoot varus mean ± SD; 6.1 ± 1.7°) completed two separate 30 s Wingate Anaerobic tests (WAnT) on a Monark 824E cycle ergometer, one with and one without varus wedges, in a counterbalanced order. Although paired-sample t-tests revealed no significant difference $P > .05$ in mean power, peak power, and anaerobic fatigue between the two conditions, a Pearson's product-moment correlation coefficient ($r = .957$, $n = 6$, $P = .003$) demonstrated that varus wedges offer greater performance benefits to riders with greater forefoot varus. These preliminary data suggest that correcting forefoot varus using wedges may improve short-term power output during cycling for individuals possessing high levels of forefoot varus.

Key words: Cycling biomechanics; foot orthotics; foot pronation; WAnT