ABSTRACT

TITLE:	The Influence of Mid Foot Cleat Placement on Anterior Femoral Muscle Recruitment in Cyclists
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ABSTRACT: This study was designed to compare the traditional Fore-Foot cleat placement in a road cycling shoe with a new Mid-Foot cleat placement theory on vastus laterals recruitment. Eight subjects participated in three trials. The subjects consisted of 7 men, 1 woman (mean age: 22 3 years, weight: 150 35 lbs, height 69 6 in.). All subjects were trained cyclists with a minimum of 1 year road racing experience. All trials were done using a Velotron Cycling Ergometer and an EMG Bio-Pac BSL Pro 3.7 system. The first trial was a GXT to determine maximum wattage and heart rate. For trials experimental two and three the subjects cycled at 60% of their maximum wattage. The experimental trials were randomized with one trial conducted with fore-foot cleat placement, and the other trial being conducted with mid-foot cleat placement. In both trials the subjects were connected with surface electrodes on their vastus laterales muscle to the EMG Bio-Pac BSL Pro 3.7 system, which measured their motor recruitment units (mV). The results indicated a mean decrease of 5mV ($P < 0.00063$) in vastus lateralis recruitment at the same intensity while using the mid-foot cleat placement. The findings of this study suggest that mid-foot cleat placement could be a more efficient position for the usage of the vastus laterales muscle during a pedal stroke.