

[Eur J Appl Physiol](#). 2007 Apr;99(6):659-64. Epub 2007 Jan 17.

**Effect of pedaling technique on muscle activity and cycling efficiency.**

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The purpose of this study was to examine the acute effect of talocrural joint position on muscle activity and gross mechanical efficiency (GE). Eleven trained cyclists participated in three randomized 6-min cycling bouts at approximately 80% of maximal aerobic capacity on an electromagnetically braked cycle ergometer while oxygen consumption and muscle activity (EMG) were monitored during the subject's self-selected pedaling technique (control) and while using a dorsi- and plantarflexed pedaling technique. The mean differences in range of motion of the dorsi- and plantarflexed technique from the control position were 7.1 +/- 4.4 and 6.9 +/- 5.4 degrees, respectively. Gastrocnemius EMG activity was higher with the dorsiflexion technique than when using the self-selected control position (33.2 +/- 13.0 and 24.2 +/- 8.4 microV s, respectively;  $P < 0.05$ ). Moreover, GE was 2.6% lower while riding with the dorsiflexion technique than the control position (19.0 +/- 1.2 and 19.5 +/- 1.3%, respectively;  $P < 0.05$ ). The data suggested that introducing more dorsiflexion into the pedal stroke of a trained cyclist increases muscle activity of the gastrocnemius lateralis and decreased GE when compared to the self-selected pedal stroke.