

## The Effect of Footrest Height on Muscle Fatigue and Discomfort in Prolonged Standing Activities

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**Abstract :** Work which requires prolonged standing, especially in a fixed position can cause discomfort and fatigue. The purpose of this study was to compare the effects of height footrest in discomfort and fatigue lower extremities during long-standing activities. This cross-sectional study was carried out on 15 students with a mean (SD) age of  $21.5 \pm (2.3)$  and mean height of  $163 \pm (2.8)$ . Participants attended 3 sessions each lasting one hour. They stood on three different surfaces: ceramic, footrest 10 and 25 cm. Surface electromyography was used to assess muscle fatigue. Body map and visual analog scale were employed to evaluate discomfort ratings of the lower extremities and the back. Data analyses were performed using ANOVA-R. Based on the results of electromyography there was no difference between soleus, anterior tibial and lateral gastrocnemius muscles fatigue and type of surfaces. There was a significant variation between the surfaces ( $p < 0.05$ ) and different areas of the body discomfort level; so that the ceramic had the highest discomfort rating, while the lowest ratings were related to the footrest. Further investigations are recommended on the properties of the footrest.

**Keywords :** electromyography, fatigue, gastrocnemius, lower extremities, soleus, tibial

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