

ABSTRACT

DYNAMIC AND ELECTROMYOGRAPHIC ANALYSIS OF LOCOMOTION WEARING FALSIFIED RUNNING SHOES

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The purpose of this study is to analyze the influence of two different types of falsified running shoes (“*indoor*” and “*jogging*”) upon dynamic and electromyographic characteristics during human locomotion. Eight subjects had participated of this study: five of them tested the original and falsified “*indoor*” running shoe, while three of them tested the original and falsified “*jogging*” running shoe. All subjects tested their shoes during walking and running. Data from ground reaction force (GRF) were obtained by a treadmill with force plates (*GAITWAY* System), while electromyographic data was obtained by *EMG-1000* (*LYNX* System). The results show an increase in F_{y1} , Imp_{50} and Imp_{75} during walking and an increase in F_{y1} and $LR1$ during running when wearing the falsified “*indoor*” running shoe, indicating a considerable increment in the mechanical load and a negative influence from this shoe. When wearing the falsified “*indoor*” running shoe, it is possible to observe alterations in the muscular activation pattern for the muscles Tibialis Anterior, Vastus Lateralis, Biceps Femoris and Rectus Femoris during walking; a higher RMS for m. Vastus Lateralis and m. Rectus Femoris during walking; and an increase in RMS for m. Gastrocnemius Lateralis during running. Probably, these alterations occurred in response to the higher external forces. On the other hand, the falsified “*jogging*”

running shoe has not shown any alteration for GRF and muscular activation parameters. It's possible to conclude that different types of falsified running shoe can influence the mechanical load and the muscular behavior in different ways during locomotion.

Keywords: Falsified running shoe, locomotion, ground reaction force, electromyography, biomechanics.