



The effect of a selected exercise protocol on timing of electromyography activity of trunk and lower limb muscles in older adults with both low back pain and pronated feet during walking

Poster Presentation

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Abstract

Introduction: Low back pain is one of the most common health problems of today's society leading to a significant amount of professional and social disability. It is one of the most common reasons bringing patients to visit physicians. Low back pain is almost associated with some degree of foot pronation. The aim of this study was to investigate whether excessive feet pronation alters the timing of activity of trunk and lower limb muscles during gait in low back pain patients.

Methods: The sample of this study included 32 men with low back pain and pronated feet. Participants were divided into control (n=15) and experimental (n=17) groups. The experimental group did resistance training with Thera-band for 12 weeks, 3 sessions per week. A wireless electromyography system with 9 pairs of bipolar surface electrodes used to record the electromyography activity of back and lower limb muscles (sample rate: 2000 Hz). Two-way ANOVA was used for statistical analysis.

Results: Significant between-group differences were found at baseline onset of EMG activity for Gastrocnemius Medialis ($p < 0.001$), Gluteus Medius ($p < 0.001$) and 3rd Lumbar Vertebral level ($p = 0.001$) muscles. The statistical analyses indicated significant main effects of "Time" for 3rd Lumbar Vertebral level muscle offset ($p = 0.023$; $d = 0.873$). The statistical analysis indicated significant main effects of "group" for Tibialis Anterior muscle offset ($p = 0.039$; $d = 0.773$) and for 3rd Lumbar Vertebral level muscle offset ($p = 0.010$; $d = 1.000$).

Conclusion: Special training programs change timing of 3rd lumbar vertebral level muscle in older adults with both low back pain and pronated feet during walking.

Keywords

Electromyography; Low Back Pain; Pronated feet; exercise; gait

