Abstract

BACKGROUND: Changes in activation of the trunk and hip extensor muscles can result in excessive stress on the lumbar spinal structures, predisposing them to lesions and pain. OBJECTIVES: To compare electromyographic activity of the gluteus maximus, semitendinosus and the erector spinae muscles between asymptomatic and individuals with low back pain during active prone hip extension exercises. METHODS: Fifty individuals were recruited and divided into two groups: 30 asymptomatic (24.5±3.47 years) and 20 with mechanical low back pain (28.75±5.52 years). They performed active prone hip extension exercises, while the activation parameters (latency, duration and quantity of activation) of the investigated muscles were recorded by electromyography. The beginnings of the movements were detected by a motion capture system. Differences between the groups were investigated employing Student t-tests or Mann-Whitney-U tests, according to the data distribution. RESULTS: No significant differences were found between the groups for any of the investigated muscles. Muscular activation patterns were similar for both groups, starting with the semitendinosus, followed by the erector spinae, and then, by the gluteus maximus. For both groups, significant delays in the onset of the gluteus maximus were observed. CONCLUSIONS: The assessment of the electromyographic activity was not capable of discriminating individuals with and without low back pain, suggesting an overlap in the studied populations.

Keywords

Gluteus maximus, low back pain, activation patterns, electromyography, prone hip extension.