

**AN ELECTROMYOGRAPHIC STUDY OF LOWER BACK AND UPPER EXTREMITY
MUSCLE ACTIVITY IN PUSH AND PULL TASKS**

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Abstract

The objective of this study was to measure lower back and upper extremity muscle activity during push and pull force exertions. Ten male industrial workers performed two-handed maximum exertions in 32 positions. Muscle activities in erector spinae, middle deltoid, and trapezius during force exertions were recorded using surface electromyography (EMG). The results showed that as height increased, the normalized EMG values for erector spinae, middle deltoid, and trapezius increased when pulling, but they decreased with an increase in height when pushing. The knowledge of muscular effort will provide a quantitative basis for a better design of industrial tasks and workstations.

Keywords: push strength, pull strength, muscle activity, maximal voluntary contraction

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