

The Effects of Chronic Lower Back Pain on Muscle Activation and Range of Motion

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The purpose of this study was twofold: first, to examine the muscle activation of lower back muscles during various trunk positions in persons with and without chronic lower back pain (CLBP); second, to examine the relationship between perceived levels of pain and muscle activation and range of motion. Five subjects with CLBP and five subjects without CLBP volunteered to participate. Using an Electromyogram (EMG) the muscle activity of the ten subjects were recorded during three different trunk positions—standing neutrally, standing with 30 degrees flexion, and standing with maximum hyperextension of the trunk. The subject's perceived pain in each position was recorded. Several hypotheses include: 1) subjects without CLBP would show more muscle activation during each of the three positions; 2) there would be negative correlation of perceived pain to muscle activation; 3) there would be a negative correlation between perceived pain and range of motion; and 4) there would be a positive correlation between muscle activation and range of motion. At this time data collection and analysis continues. From this study the authors hope to gain insight into the relationship among three variables: muscle activation as measured by EMG, the body's responses to pain, and lower back range of motion.

Information about the Authors:

Gina Lange is an exercise science major, with minors in human biology and psychology. She is planning on attending graduate school to earn a doctorate in physical therapy. Laura Richards is a double major in exercise science and nursing. She also has a minor in both human biology and psychology. Both authors became interested in health and wellness throughout their studies at Valparaiso University. The idea for this study came after witnessing new chiropractic equipment, measuring muscle activation, at a local fair. Further research unveiled the prevalence of lower back pain within our population and all the possibilities of study.

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