Mooney Vert; Gulick, Jennifer; Perlman, Mark; Levy, David; Pozos, Robert; Leggett, Scott; Resnick, Donald
Journal of Spinal Disorders: August 1997
Article: PDF Only

Abstract

Summary

Eight normal individuals and eight patients with chronic back pain were evaluated. They undertook a treatment program lasting 8 weeks, with two exercise sessions each week. Myoelectric activity, lumbar extensor strength, and cross-sectional magnetic resonance imaging appearance of the lumbar paraspinal extensor muscles was assessed at the beginning and end of the program. Initial baseline and final extensor strength measurements were done isometrically at seven points through full range. Surface myoelectric activity was monitored during both flexion and extension exercise. Subsequently, electromyographic (EMG) signals were analyzed for mean frequency (MPF) and amplitude (RMS). An average functional improvement of 65% and reduction of pain complaint of 41% occurred in the eight patients with chronic low back pain. Extensor strength improved an average of 48% contrasted to 6% for the normal subjects. Four patients who showed severe fatty infiltration in the extensors had a decrease in the degree of infiltration and no change in muscle mass. Changes in fatty infiltration did not correlate with strength changes. The dynamic EMG changes documented a decrease in amplitude (RMS) and a smaller decrease in frequency (MPF) for the same resistance when used at the beginning and end of the program. Structural changes in the muscles are not always needed to achieve strength gains or symptomatic improvement.