

# Do Chronic Low Back Pain Patients Estimate Loads Differently?

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**BACKGROUND** This study was designed to test the primary null hypothesis  $H_{01}$ : *There are no significant differences of estimated gun-belt weight between control and low back pain subjects.*

Proprioception depends upon proper peripheral mechanoreceptor and central somatosensory function. Mechanoreceptors may be found in most low back structures [e.g., 1], and can be affected by tissue injury or degeneration [e.g., 2]. Both processes may cause inflammation, which has been shown to the mechanical sensitivity of nociceptor axons [e.g., 3]. These processes may also cause chronic low back pain, which has been linked with somatosensory evoked potential decrease [4] and primary somatosensory cortical organization [e.g., 5].

**METHODS** Volunteer police officers for this prospective study were randomly selected from an occupational clinic, assigned to either low back pain (n = 24) or control groups (n = 20), and matched according to age, gender, and body habitus. Each provided their gun-belt weight estimate, age, height, weight, and length of employment. Body Mass Indices were also calculated. ANOVA, regression analysis, and t-tests were used to analyze the data.

**RESULTS** With no between-group, significant mean differences of age, height, weight, employment time, or body mass index, the chronic back pain group's mean belt weight estimate was significantly larger (p=0.000) than that of the control group [16.7 ( $\pm$  5.9) pounds versus 8.2 ( $\pm$  3.3) pounds]. The actual belt weight was 7.8 pounds.

**CONCLUSIONS** Police officers having low back pain for more than six months overestimated gun-belt weight by about twice that of pain-free controls. The low back pain group also tended to be heavier, with "overweight" body mass indices. While it is speculation, it is likely that both proprioception and nociception are altered in those having chronic low back pain, and that fascial tonus [e.g., 6] may have also played a role in the between-group differences in perception. Weight loss, flexibility and strength training, and a manual medicine program aimed at normalizing fascial and musculoskeletal function would likely be of benefit.

## REFERENCES

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