

The Effect of Posture Correction on Back and Neck Pain

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INTRODUCTION

Musculoskeletal pain, especially in the back and neck, is a leading cause of health-related expenses and loss of work productivity worldwide and its prevalence is increasing^{1,2}. The clinical symptoms are typically defined per anatomical region with the lumbar spine (also known as LBP for low back pain) being the most common with 80% of adults experiencing it during their lifetime³⁻⁶ and cervical pain in second place with 70% lifetime prevalence in adults^{2,6,7}. Thoracic, or upper back, pain is most often encountered in children with up to 10% of cases where the symptoms interfere with school or leisure activities⁶.

Low back pain is generally related to the occupational environment with increased risks associated to vibrations of the whole body (such as in helicopters, construction vehicles, etc.), awkward postures (particularly when flexion or twisting of the trunk is involved) and lifting heavy weights (such as for hospital staff and other physical occupations)⁸⁻¹⁴. LBP leads to 19 million visits to the doctor's office and is reported to engender 10-40% of insurance claims annually in the US^{2,15}, and up to 60% of occupational disease reports in Japan¹⁶. Cervical, or neck, pain has been reported more in occupations requiring long-term seated positions such as during computer work¹⁷ with disabling conditions in approximately 5% of patients⁷.

Posture is directly related to musculoskeletal pain¹⁸ and posture correction is a technique frequently used by health practitioners such as physical therapists and

chiropractors to reduce pain symptoms¹⁹⁻²². A significant component of posture treatment is the prescription of corrective exercises²²⁻²⁴ which have been reported to successfully treat low back pain²⁵⁻²⁷ as well as neck pain^{28,29}. The goal of this study was to demonstrate the effectiveness of the Biotonix system to reduce musculoskeletal pain in both of these anatomic regions.

METHOD

This study included 15 employees from an aluminum processing plant presenting musculoskeletal pain sufficiently severe to warrant absence from work (11 neck pain and 10 LBP). Following informed consent, all workers were evaluated with the BioPrint posture evaluation software (Biotonix, Canada). The process began by identifying key anatomical landmarks on the subject with hypoallergenic reflective markers. Frontal and lateral digital pictures were then taken using a digital Kodak DC240 camera. The digital photographs were processed through the software, which measures and analyzes the data from the anatomical markers placed on the subject. The data consists of distance and angles of different body segments in three views and two planes, along with the positioning of the body's center of gravity. For each worker, a specific 10 week exercise program was assembled by the software to target these misalignments.

Following the treatment, each worker was asked to describe their neck and back pain level as worse than pre-treatment, comparable, better or disappeared. A

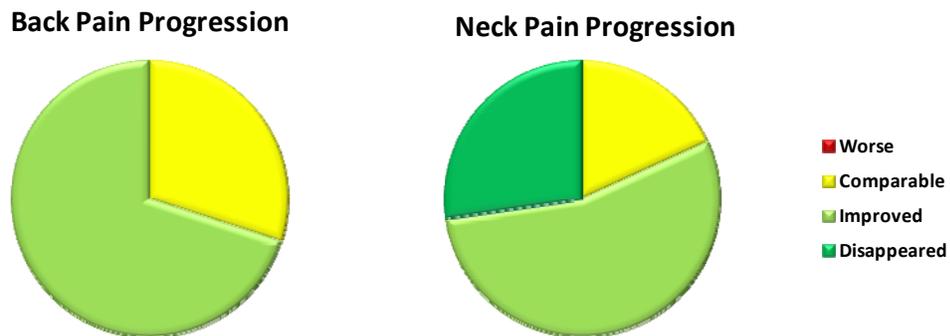


Figure 1: Pain progression following the 10-week exercise program

6 month follow-up was performed to evaluate the impact of the program on the employee return to work.

RESULTS

Of the 15 participants, four experienced health improvements but had to leave the program prior to completion due to unrelated accidents. Another participant stopped doing the exercises from lack of motivation. The status of the workers' musculoskeletal pain following the treatment program is presented in figure 1. Of the 15 workers, 9 returned to work immediately after the treatment program (with 2 on lighter load functions than before the onset of the musculoskeletal pain), another 4 returned after 3 months and 2 workers were still on leave of absence after 6 months.

DISCUSSION

Low back and neck pain are very common afflictions in the modern workplace. While in some instances these conditions can be attributed in part to societal issues such as rampant obesity and physical inactivity³⁰, the occupational environment is a significant contributing factor and the annual economic burden of nearly 20\$ billion imposed to employers (US only) by these musculoskeletal conditions is staggering².

Since this simple half-hour program comprises both stretching and strengthening exercises on a daily basis without requiring expensive equipment, the main constraints of time and costs have been minimized for the user. The challenge remains the integration to the typical work day that could be facilitated with the introduction into the standard practices of industrial entities, which would in turn benefit from lower absenteeism and workers compensation costs.

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