A HOME-BASED BIOMECHANICAL TREATMENT REDUCES PAIN AND IMPROVES FUNCTION AND GAIT PATTERN IN PATIENTS WITH CHRONIC NON-SPECIFIC LOW BACK PAIN

Yair Barzilay1, Amit Mor2, Ganit Segal2, Raphael Lotan3, Gilad Regev4, Yiftah Beer5, Baron S. Lonner6 and Avi Elbaz2

1Orthopedic Surgery, Hadassah Medical Center, Jerusalem, 2AposTherapy Research Group, Herzliya, 3Orthopedic Surgery, Edith Wolfson Medical Center, Holon, 4Orthopedic Surgery, Sourasky Medical Center, Tel Aviv, 5Orthopedic Surgery, Assaf Haroeh Medical Center, Zerifin, Israel and 6Spine Division, Orthopaedic Surgery, Mount Sinai Medical Center Beth Israel Hospital, New York, NY, USA

Background: Chronic non-specific low back pain (CNSLBP) accounts for the consumption of major portions of health care funds and financial compensation for temporary or permanent inability to work. Patients with CNSLBP alter their gait pattern and suffer from diminished physical function and increased pain. Rehabilitation programs aim to reduce the disability of CNSLBP patients. The purpose of the current study was to assess the changes in pain, function and gait pattern in patients suffering from CNSLBP following 6 months of home-based biomechanical treatment.

Methods: Sixty patients with CNSLBP underwent a spatio-temporal gait evaluation using an electronic walkway mat and completed the Oswestry Disability Index (ODI) and the 36-item Short Form Health Survey (SF-36) at three time points: pre-treatment and after 3 and 6 months of home-based biomechanical treatment (AposTherapy). The treatment consists of a foot-worn biomechanical device that is individually calibrated to each patient based on his gait pattern and symptoms. Patients were instructed to walk with the device during their daily routine for a specified amount of time over 6 months. Twenty-four healthy, age-matched individuals served as a reference group.

Results: Significant differences were found in all gait parameters between CNSLBP patients and healthy people at baseline (P < 0.01 for all). There were no significant differences between groups in the gait parameters following therapy. Significant improvements were found in all gait parameters following 3 months of therapy, including an increase in gait velocity (10.6%), step length (5.6%), cadence (5%) and single limb support phase (2.1%) and a decrease in stance phase (1.5%). These improvements were maintained following 6 months of therapy (P < 0.01 for all). A significant reduction of 3.7 points was found in the ODI score (a decrease of 13.5%; P = 0.03) and also in the SF-36 physical score (an increase of 15.9%; P < 0.02) and SF-36 mental score (an increase of 10.5%; P = 0.05) following 6 months of therapy. There were significant differences between CNSLBP patients and healthy people in the ODI score and in the SF-36 physical and mental scores both pre-treatment and following 6 months of therapy (P < 0.007).

Conclusion: The examined home-based biomechanical treatment led to significant improvements in spatio-temporal gait pattern, reduction in pain, improved function and increased quality of life. Furthermore, after 6 months of therapy CNSLBP patients had a gait pattern similar to healthy age-matched people. The level of pain, function and quality of life, however, did not reach those of healthy people.

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