

Scientific Research on Spinal Decompression Therapy

Apfel *et al.*, Restoration of disk height through non-surgical spinal decompression is associated with decreased discogenic low back pain: a retrospective cohort study. *BMC Musculoskeletal Disorders* 2010, 11:155

This recent study examined the records of 30 patients with low back pain who underwent a 6-week protocol of non-surgical spinal decompression, and who had CT scans before and after treatment. The study concluded that non-surgical spinal decompression was associated with reduction of pain and an increase in disc height. A randomized controlled trial is needed to confirm these promising results.

Beattie *et al.*, Short and long term outcomes following treatment with the VAX-D for patients with chronic, activity-limiting low back pain. *Journal of Orthopedic and Sports Physical Therapy* 2005 (Volume 35, Number 1)

This study examined 67 patients with chronic low back pain that had radiologic evidence of a herniated disc. These patients underwent an 8-week course of VAX-D treatment, with measures obtained at discharge, 30, and 180 days after treatment. Significant improvement was seen in pain rating and activity-limitation at every measurement period.

Ramos, G. Efficacy of vertebral axial decompression on chronic low back pain: study of dosage regimen. *Journal of Neurologic Research* 2004 (Volume 26, Number 3)

The purpose of this study was to see if patients responded to two different protocols of VAX-D (Vertebral axial decompression) who failed standard medical physical therapy. Those patients who did 18 sessions achieved a higher percent of remission (76%) than those who did only 9 (43%).

Pembrook. VAX-D reduces chronic discogenic low back pain. *Anaesthesiology News* 2003 (Volume 29, Number 3)

“Of the 23 patients who responded, 52% had a pain level of zero, and 91% were able to resume their normal activities, and 87% were either working or were retired.” None of the patients underwent surgery after receiving VAX-D treatment. In contrast, in a study of 575 patients who underwent surgery, 17 years after their surgery, 70% of patients said they still had back pain. (*Spine* 1988, 13:1418-1422)

Treatment of Patients With Degenerative Cervical Radiculopathy Using a Multimodal Conservative Approach in a Geriatric Population: A Case Series

Steven W. Forbush, Terry Cox, Eric Wilson
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STUDY DESIGN: Retrospective clinical case series.

OBJECTIVE: To describe the management of 10 patients with advanced cervical spondyloarthritis with radiculopathy, using manual therapy, intermittent mechanical cervical traction, and home exercises.

BACKGROUND: Predictors and short-term outcomes of cervical radiculopathy have been published. These predictors have not been developed for, or applied to, geriatric patients with spondylitic radiculopathy.

CASE DESCRIPTION: A series of 10 patients (aged 67 to 82 years) were referred to a physical therapist for medically pre-diagnosed cervical spondyloarthritis and radiculopathy, as determined by magnetic resonance imaging. Neck Disability Index (NDI), numeric pain rating scale (NPRS), upper limb tension testing, Spurling's test, and the cervical distraction test were all completed on each patient at initial examination and at discharge. NDI and NPRS data were also collected at 6 months post treatment. Intervention included manual therapy (including high-velocity low-amplitude thrust manipulation) of the upper thoracic and cervical spine, intermittent mechanical cervical traction, and a home program (including deep cervical flexor strengthening) for 6 to 12 sessions over a period of 3 to 6 weeks.

OUTCOMES: All 10 patients had substantial improvement in NPRS and NDI scores. The mean NPRS score was less than 1/10, and the mean NDI score was 6/50 at discharge, compared to the original mean NPRS and NDI scores of 5.7 and 27.4, respectively. All patients reported maintaining those gains for 6 months.

DISCUSSION: A multimodal approach for patients diagnosed with cervical spondyloarthritis with radicular symptoms was useful in this geriatric population to reduce pain, minimize radicular symptoms, and improve functional outcomes.

LEVEL OF EVIDENCE: Therapy, level 4.

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Computed Tomographic Evaluation of Lumbar Spinal Structures during Traction

2005, Vol. 21, No. 1, Pages 3-11 (doi:10.1080/09593980590911507)

Hidayet Sari, MD¹, Ulku Akarirmak, MD², Ilhan Karacan, MD¹ and Haluk Akman, MD³

¹Department of Physical Medicine and Rehabilitation, Medical Faculty of Cerrahpasa, Istanbul University, Istanbul, Turkey

²Department of Physical Medicine and Rehabilitation, Medical Faculty of Cerrahpasa, Istanbul University, Istanbul, Turkey ilhankaracan@hotmail.com

³Department of Radiodiagnostic, Medical Faculty of Cerrahpasa, Istanbul University, Istanbul, Turkey

In the previous studies, it is reported that traction diminishes the compressive load on intervertebral discs, reduces herniation, stretches lumbar spinal muscle and ligaments, decreases muscle spasm, and widens intervertebral foramina. The aim of this study was to evaluate the effects of horizontal motorized static traction on spinal anatomic structures (herniated area, spinal canal area, intervertebral disc heights, neural foraminal diameter, and psoas muscle diameter) by quantitative measures in patients with lumbar disc herniation (LDH). At the same time, the effect of traction in different localizations (median and posterolateral herniation) and at different levels (L4-L5 and L5-S1) was assessed. Thirty-two patients with acute LDH participated in the study. A special traction system was used to apply horizontally motorized static lumbar traction with the patient in the supine position. Before and during traction a CT- scan was made to observe the changes in the area of spinal canal and herniated disc material, in the width of neural foramina, intervertebral disc heights, and in the thickness of psoas muscle. During traction, the area of protruded disc area, and the thickness of psoas muscle decreased 24.5% ($p = 0.0001$), and 5.7% ($p = 0.0001$), respectively. The area of the spinal canal and the width of the neural foramen increased 21.6% ($p = 0.0001$) and 26.7% ($p = 0.0001$), respectively. The anterior intervertebral disc height remained unchanged with traction however the posterior intervertebral disc height was significantly expanded. This study is the first to evaluate in detail and quantitatively the effect of motorized horizontal lumbar spinal traction on spinal structures and herniated area. According to detailed measures it was concluded that during traction of individuals with acute LDH there was a reduction of the size of the herniation, increased space within the spinal canal, widening of the neural foramina, and decreased thickness of the psoas muscle.