

# Journal of Manipulative Physiological Therapeutics

RESEARCH ABSTRACTS, MAY 2000

Editorial Staff

Combined ischemic compression and spinal manipulation in the treatment of fibromyalgia; a preliminary estimate of dose and efficacy. Guy Hains,DC, and Francois Hains,DC.

**Objectives:** To provide preliminary information on whether a regimen of 30 chiropractic treatments, combining ischemic compression and spinal manipulation, effectively reduces the intensity of pain, sleep disturbance and fatigue associated with fibromyalgia; also, to study the dose-response relationship and identify the baseline characteristics that may serve as predictors of outcome.

**Study Design:** A before-after study. Subjects were assessed using self-administered questionnaires at baseline, after 15 and 30 treatments, and one month after the end of the treatment trial.

**Setting:** Private practice.

**Methods:** Participating subjects were adult members of their regional fibromyalgia association who had suffered fibromyalgia for more than three months. They received 30 treatments, including ischemic compression and spinal manipulation. The three outcomes of interest were pain intensity, fatigue level and sleep quality. A minimum of 50% improvement in pain intensity from baseline to the end of the treatment trial was needed to include the patient in the "responder" category.

**Results:** Fifteen women (mean age = 51.1) completed the trial. Nine patients (60% of sample) were classified as responders. A statistically significant lessening of pain intensity, and corresponding improvement in quality of sleep and fatigue level, was observed after 15 and 30 treatments. After 30 treatments, the responders showed an average lessening of 77.2% (SD=12.3) in pain intensity, an improvement of 63.5% (SD=31.6) in sleep quality and a decrease of 74.8% (SD=23.1) in fatigue level. The improvement in the three outcome measures was maintained after one month without treatment. Subjects who showed less than 35% improvement after 15 treatments did not show a satisfactory response after 30 treatments. A nonstatistically significant trend suggested that older subjects with severe and more chronic pain, and a larger number of tender points, responded more poorly to treatment.

**Conclusion:** This study suggests a potential role for chiropractic care in the management of fibromyalgia. A randomized clinical trial should be conducted to test this hypothesis.

**Key Indexing Terms:** clinical trial; fibromyalgia; chiropractic; myofascial therapy; ischemic compression.

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Acceleration/deceleration injury with angular kyphosis. Robert Kessinger,DC, and Dessy Boneva,DC.

**Objective:** To discuss the case of a patient who received upper cervical chiropractic care after suffering trauma-induced arcual kyphosis in the cervical spine. A practical application of conservative management for post-trauma cervical spine injury in the private office setting is described.

**Clinical Features:** A 17-year-old female patient suffered from an unstable C3/4 motor segment following a lateral-impact motor vehicle collision. Additional entrance complaints included vertigo, tinnitus, neck and shoulder pain, and confusion.

**Intervention and Outcome:** Conservative management consisted exclusively of upper cervical specific adjustments guided by x-ray analysis and paraspinal bilateral skin temperature differential analysis of the cervical spine. Over the course of 10 weeks' care and 22 office visits, all symptoms subsided, and the instability of the C3/4 motor segment appeared to be completely resolved.

**Conclusion:** This study provides support for the use of upper cervical chiropractic management in cervical spine trauma cases. The clinical work up consisted of physical examination, x-ray analysis, computer-administered and computer-scored cognitive function testing, and audiometric examination. Following conservative care, these examinations were repeated, demonstrating that objective findings concurred with the subjective improvements reported by the patient.

**Key Indexing Terms:** kyphosis; cervical spine; instability; whiplash; chiropractic.

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Are chiropractic tests for the lumbopelvic spine reliable and valid? A systematic critical literature review. Lise Hestbaek,DC, and Charlotte Leboeuf-Yde,DC,MPH,PhD.

**Objective:** To analyze the peer-reviewed literature regarding the reliability and validity of chiropractic tests used to determine the need for spinal manipulative therapy of the lumbopelvic spine, taking into account the quality of the studies.

**Data Sources:** The ChiroLars database was searched for the years 1976-1995 using the index terms: chiropractic tests, chiropractic adjusting technique, motion palpation, movement palpation, leg length, applied kinesiology and sacro-occipital technique. Furthermore, a manual search was performed at the libraries of the Nordic Institute of Chiropractic and Clinical Biomechanics in Odense, Denmark, and the Anglo-European College of Chiropractic in Bournemouth, England.

**Study Selection:** Studies pertaining to intra-examiner reliability, inter-examiner reliability, and/or validity of chiropractic evaluation of the lumbopelvic spine were included.

**Data Extraction:** Data quality was assessed independently by the two reviewers, using a quality score based on predefined methodological criteria. Results of studies were then evaluated in relation to quality.

**Data Synthesis:** None of the tests studied had been sufficiently evaluated in relation to reliability and validity. Only palpation for pain had consistently acceptable results. Motion palpation of the lumbar spine might be valid but showed poor reliability, whereas motion palpation of the sacroiliac joints seemed to be slightly reliable but was not shown to be valid. Measures of leg length inequality seemed to correlate with x-ray measurements, but consensus on method and interpretation was lacking. Regarding the sacro-occipital technique, there was some evidence in favor of validity of the arm-fossa test, but the rest of the test regimen remains poorly documented. Documentation of applied kinesiology was not available. Palpation for muscle tension, palpation for misalignment, and visual inspection were all either undocumented, unreliable, or not valid.

Conclusion: The detection of the manipulative lesion in the lumbopelvic spine is dependent on valid and reliable tests. Because no such tests have been established, the presence of the manipulative lesion remains hypothetical. A great effort is needed to develop, establish and enforce valid and reliable test procedures.

Key Indexing Terms: lumbar spine; pelvis; reproducibility of results

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Case study: Lumbar intraspinal synovial cyst containing gas as a cause for low back pain. Ronnie Firth,DC.

Objective: To discuss intraspinal synovial cysts secondary to degenerative changes involving the posterior articular facets in the lumbar spine, and to provide differential considerations for patients who suffer from low back pain.

Clinical Features: A 70-year-old male suffered from low back and gluteal pain demonstrating eventual progression of radiating pain into the left thigh, calf, ankle, and foot over a five-month period. Plain films of the lumbar spine revealed mild degenerative disc disease at L5-S1 with associated vacuum phenomena of the L5 disc. Degenerative osteophytes were present at L3, L4, and L5. Moderate posterior joint arthrosis was evident at L4-L5 and L5-S1. CT and MRI studies revealed an intraspinal gas-containing synovial cyst at the left lateral aspect of the central canal at the level of the left L4-L5 facet articulation.

Intervention and Outcome: The patient underwent surgical excision of the synovial cyst with remission of symptoms.

Conclusion: Gas-containing intraspinal synovial cysts can be a significant finding and a causative factor for patients with low back pain and radiating pain into the lower extremities. CT and MRI imaging are both particularly important in defining intraspinal synovial cysts as a causative factor for patients whose low back pain does not respond to chiropractic care.

Key Indexing Terms: computed tomography; magnetic resonance imaging; synovial cyst; lumbar spine; articular facets.s

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The reliability of chiropractic methods commonly used to detect manipulable lesions in patients with chronic low back pain. Simon French,BAS(Chiro),Sally Green, BAS(Physio),GradDip(Manip.Physio), Andrew Forbes,BS(Hons),PhD.

Objective: To assess the intra- and interexaminer reliability of a multidimensional spinal diagnostic method commonly utilized by chiropractors.

Study Design: An intra- and interexaminer Latin square, repeated measures reliability study. The techniques of diagnosis under investigation included visual postural analysis, pain description by the patient, plain static erect x-rays of the lumbar spine, leg length discrepancy, neurological tests, motion palpation, static palpation and orthopedic tests.

Participants: Three experienced chiropractors examined 19 subjects; two experienced chiropractors examined 10 and 9 subjects, respectively, who were suffering from chronic mechanical low back pain.

Results: Intraexaminer reliability of the decision to manipulate a certain spinal segmental level was moderate ( $K = 0.47$ ). The interexaminer agreement pooled across all spinal joints indicated fair agreement ( $K = 0.27$ ). Interexaminer reliability for individual examiner pairs for the L4/L5 segmental level was slight ( $K = 0.09$ ). At the L5/S1 level, the interexaminer reliability was fair ( $K = 0.25$ ). For the sacroiliac joints, interexaminer reliability was slight ( $K = 0.04$  and  $0.14$ ).

Conclusion: This study of commonly-utilized chiropractic diagnostic methods in patients with chronic mechanical low back pain to detect manipulable lesions in the lower thoracic spine, lumbar spine and the sacroiliac joints, has revealed that the measures are not reproducible. The implementation of these examination techniques alone should not be seen by practitioners to provide reliable information concerning where to direct a manipulative procedure in patients with chronic mechanical low back pain.

Key Indexing Terms: observer variation; reproducibility of results; low back pain; lumbar vertebrae; chiropractic.

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Patient characteristics, practice activities, and one-month outcomes for chronic, recurrent low back pain treated by chiropractors and family medicine physician: A practice-based feasibility study. Joanne Nyiendo, PhD, Mitchell Haas, DC, and Peter Goodwin, MD.

Background: Chronic low back pain is a significant public health problem for which few therapies are supported by predictable outcomes. In this report, practice activities and one-month outcome data are presented for 93 chiropractic and 45 medical chronic, recurrent low back pain patients.

Study Design: A prospective, observational, community-based feasibility study, involving chiropractors and family medicine physicians.

Setting: 40 private chiropractic clinics, in addition to the outpatient clinic of the Department of Family Medicine at Oregon Health Sciences University, and five other Portland area family medicine clinics.

Outcomes Measures: The main outcome measures were pain severity (VAS), functional disability (RODQ), sensory and affective pain quality (MPQ) at one month, and patient satisfaction assessed at 7-10 days and at one month.

Results: Although differences were noted in age, gender, education, and employment, the patients were closely matched at baseline with respect to frequency, severity, and type of low back pain, and the psychosocial dimensions of general health. The treatment of choice for chiropractors was spinal manipulation and physical therapy modalities; for medical physicians, anti-inflammatory agents were most frequently used. Chiropractic patients averaged four visits, and medical patients averaged one visit. Overall, chiropractic patients showed improvement across all outcomes: 31% change in pain severity; 29% in functional disability; 36% in sensory pain quality; and 57% in affective pain quality; Medical patients showed minimal improvement in pain severity (6%) and functional disability (1%), and showed deterioration in the sensory (29%) and affective (26%) dimensions of pain quality. Satisfaction scores were higher for chiropractic patients. Outcomes for medical patients were heavily dependent upon psychosocial status at baseline.

Conclusion: Chronic low back patients treated by chiropractors show greater improvement and satisfaction at one month than patients attending family physicians. Nonclinical factors may play an important role in patient progress. Findings from the HRSA-funded project will include a report on

the influence of practice activities, including more frequent visits by chiropractic patients, on the clinical course of low back pain and patient outcomes.

Key Indexing Terms: low back pain; outcome assessment (health care); chiropractic; family practice; feasibility studies.

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The use of a mental rotation reaction time paradigm to measure the effects of upper cervical adjustments on cortical processing: a pilot study. David Kelly,BS,Dip,Pre-Clin Chiro, Bernadette Murphy, DC,PhD, and David Backhouse,DC.

Objectives: 1) to investigate the potential usefulness of a mental rotation paradigm in providing an objective measure of spinal manipulative therapy. 2) To determine if cortical processing, as indicated by response time to a mental rotation reaction time task, is altered by an upper cervical toggle recoil adjustment.

Study Design: Prospective, single blind, randomized, controlled trial.

Setting: Chiropractic college clinical training facility.

Participants: 36 chiropractic student volunteers with clinical evidence of upper cervical joint dysfunction.

Intervention: Participants in the experimental group received a high velocity, low-amplitude upper cervical adjustment. A nonintervention group was used to control for improvement in the mental rotation task due to practice effects.

Outcome measures: Reaction time was measured for randomly varying angular orientations of an object appearing either as normal or mirror-reversed on a computer screen.

Results: The average decrease in mental rotation reaction time for the experimental group was 98 ms, a 14.9% improvement, whereas the average decrease in mental rotation reaction time for the control group was 58 ms, an 8.0% improvement. The difference scores following the intervention time were significantly greater for the experimental group as compared to the control group, as indicated by a one-tailed, two sample, equal variance t-test, ( $p < 0.05$ ).

Conclusion: This study has demonstrated a significant improvement in a complex reaction time task following an upper cervical adjustment. These results provide evidence that upper cervical adjusting may affect cortical processing.

Key Indexing Terms: chiropractic; upper-cervical toggle adjustment; manipulation; mental rotation; reaction time; cerebral dysfunction; cervical spine dysfunction.

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Biomechanical evaluation of the Rola Stretcher as a passive distraction device. James DeVocht,DC,PhD, Malcolm Pope,DrMedSc,PhD,J. Marianne Magnusson,DrMedSc, and Kevin Spratt,PhD.

Introduction: Many devices have been marketed claiming to increase the mobility of the articulations of the spine using active or passive distraction. In this study, the Rola Stretcher, as well as an earlier version of the product, the True Back II, were evaluated to see if they had a

measurable biomechanical effect on the spine.

**Methods:** Two studies were done, each with six males and six females, using a stadiometer to accurately measure a person's sitting height. The increase in sitting height after using the True Back II or Rola Stretcher for 10 minutes was compared with that after laying supine for 10 minutes. A third intervention, a firm foam block cut to the same size and shape as the True Back II, was also used in that study.

**Results:** The Rola Stretcher had a significant greater lengthening effect on the spine compared supine rest ( $p < 0.005$ ). The True Back II had a similar but lesser effect ( $p < 0.0509$ ). Females demonstrated greater height gain than males.

**Conclusion:** The True Back II, and to a greater extent, the Rola Stretcher, both appear to lengthen the spine after a single use of 10 minutes. The observed gender discrepancy may be an experimental artifact due to less effective resetting of the posturing mechanisms in males compared to females. There was a trend for the Rola Stretcher to be more effective than the foam block.

**Key Indexing Terms:** spine; biomechanics; passive distraction.

MAY 2000