The Nordic Back Pain Subpopulation Program: Can patient reactions to the first chiropractic treatment predict early favorable treatment outcome in nonpersistent low back pain?

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Objective: To investigate the Bournemouth Questionnaire (BQ) as a baseline, monitoring of progress, and prognostic instrument in chiropractic patients with persistent low back pain (LBP).

Study Design: Predictive and concurrent validation study.

Study Participants and Setting: One hundred fifteen Norwegian chiropractors collected prospective data on 875 patients with persistent LBP, defined as LBP for at least 2 weeks at baseline and a minimum of 30 days totaling within the preceding year.

Methods: Data collection took place at first consultation, fourth visit, and 3 months using the BQ, the revised Oswestry questionnaire, and a 10-point pain box scale. Follow-up at 12 months included the BQ, Oswestry questionnaire, and additional questions on the number of days with LBP and the number of days off work in the past year.

Data Analysis: Frequency of reporting of each 7 items in the BQ at baseline was identified as median value with 10th and 90th percentiles. Concurrent analyses of the 2 questionnaires were made at the 4 points in time, with calculation of mean differences with limits of agreement together with Bland-Altman plots. Logistic regression was used to identify and compare the predictive values of the questionnaires and to test the relevance of each individual item in the BQ.

Results: The median baseline values of the 7 items in the BQ ranged from 2 to 5. The 2 questionnaires did not agree on patients’ status, and mean differences between the Oswestry questionnaire and the BQ were largest when patients reported higher scores. The predictive values for the 2 questionnaires were low, with no significant difference between the two. The predictive value of the BQ could be improved by removing most of the 7 items. Certain items can predict specific outcomes.
**Conclusions:** The BQ is not a useful instrument to identify baseline status, monitor progress, or predict the 1-year progress in chiropractic patients having persistent LBP. However, certain individual items are useful to predict specific outcomes.

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**Chronic Disease Self-Management Program for low back pain in the elderly.**

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**Objective:** To evaluate the effectiveness of Stanford’s Chronic Disease Self-Management Program (CDSMP) for chronic low back pain (LBP) in older Americans.

**Design:** Randomized controlled trial.

**Setting:** Community-based program offered at 12 locations.

**Subjects:** Community-dwelling seniors (n = 109) ages 60 and older with chronic LBP of mechanical origin.

**Methods:** Patients were randomly allocated to the CDSMP or to a 6-month, wait-list control group. The program included one 2.5-hour session per week for 6 weeks. Outcomes evaluated at 6 months included 100-point modified Von Korff pain and disability scales; days with pain and disability; SF-36 general health, energy-fatigue, and emotional well-being scales; 2 scales from the Arthritis Self-Efficacy Scale, self-care attitudes/behaviors, and health services utilization.

**Results:** For pain at 6 months, the primary outcome, the adjusted mean difference between the program and control, was _1.0 (P = .835). There was a sizable advantage for the program in disability averaged over the course of the entire 6-month study (_9.2, P = .027), but not at the 6-month follow-up (_5.8, P = .278). There was an interaction between intervention and baseline disability days favoring the program for higher baseline values (P = .007). The CDSMP affected emotional well-being (7.6, P = .037) and energy-fatigue (5.1, P = .274). There were no differences for self-efficacy, pain days, and general health.

**Conclusion:** There was no advantage for the CDSMP over a wait-list control for improving pain, general health, self-efficacy, and self-care attitudes in older Americans with chronic LBP. A benefit was suggested for emotional well-being, fatigue, functional disability, and days with disability.
Measurement of lumbar spine loads and motions during rotational mobilization.

Bonnie Y.S. Tsung, MPhil; John Evans, PhD; Pin Tong, PhD; Raymond Y.W. Lee, PhD

Objectives: To measure the loads acting at the lumbar spine and the resulting motions during rotational mobilization.

Methods: Twenty healthy subjects were subjected to right rotational mobilization of different grades. The magnitude and frequency of mobilization loads were decided by an experienced manipulative therapist to be appropriate for each mobilization grade. Subjects were positioned on a specially constructed plinth capable of measuring forces and moments about 3 axes. The 3-dimensional movements of the lumbar spine were captured by an electromagnetic tracking device.

Results: In the starting positions, the lumbar spines were found to be flexed, axially rotated to the right, and laterally bent to the left. As the mobilization grade increased, the spine was axially rotated further into the range. Rotational mobilization was found to induce oscillatory moments and movements of the spine in all 3 anatomical planes. The twisting moment and movement were generally accompanied by lateral bending moment and movement in the opposite direction. The mean amplitudes of the moment and movement oscillations were small and found to be largest for grade III mobilization.

Conclusion: The mechanical effects of rotational mobilization are not restricted to axial rotation of the spine, as the name may have suggested. Rotational mobilization may be able to restore lost movements of the lumbar spine in any of the 3 planes. The method developed in this study showed good reliability and may be considered to assess treatment outcome and changes in spinal stiffness after therapy.

Supplemental care with medication-assisted manipulation versus spinal manipulation therapy alone for patients with chronic low back pain.

Frank J. Kohlbeck, DC; Scott Haldeman, MD, PhD; Eric L. Hurwitz, DC, PhD; Simon Dagenais, DC, PhD

Objectives: To measure changes in pain and disability for chronic low-back pain patients receiving treatment with medication-assisted manipulation (MAM), and to compare these to changes in a group only receiving spinal manipulation.
Study Design: Prospective cohort study of 68 chronic low-back pain patients.

Methods: Outcomes were measured using the 1998 Version 2.0 American Association of Orthopaedic Surgeons/Council of Musculoskeletal Specialty Societies/Council of Spine Societies Outcomes Data Collection Instruments. The primary outcome variable was change in pain and disability. All patients received an initial 4- to 6-week trial of spinal manipulation therapy (SMT), after which 42 patients received supplemental intervention with MAM and the remaining 26 patients continued with SMT.

Results: Low back pain and disability measures favored the MAM group over the SMT-only group at 3 months (adjusted mean difference of 4.4 points on a 100-point scale, 95% confidence interval [CI] 2.2 to 11.0). This difference attenuated at 1 year (adjusted mean difference of 0.3 points, 95% CI 8.6 to 9.2). The relative odds of experiencing a 10-point improvement in pain and disability favored the MAM group at 3 months (odds ratio 4.1, 95% CI 1.3-13.6) and at 1 year (odds ratio 1.9, 95% CI 0.6-6.5).

Conclusion: Medication-assisted manipulation appears to offer some patients increased improvement in low back pain and disability. Further investigation of these apparent benefits in a randomized clinical trial is warranted.

Pressures generated during spinal manipulation and their association with hand anatomy.

Stephen M. Perle, DC, MS; Gregory N. Kawchuk, DC, PhD

Background Context: The role of the variation in the application manipulation itself is largely unknown. A greater understanding of its input parameters is necessary to better understand spinal manipulation outcomes.

Purpose: The objective of this study is to determine if pressures generated during manipulation are altered by hand configuration.

Design/Setting: Paired comparison of 2 different variable groups.

Methods: Sixteen chiropractors provided 2 manipulations to a rigid surface using 2 hand configurations used commonly in clinical practice: arched and flat. Interposed between the hand and the rigid surface was a pressure sensor array and radiographic cassette. For each manipulation, pressures were recorded and a radiographic image was captured. Two radiologists then located the osseous features of the hand with
Results: In 15 of 16 cases, arched configurations produced peak pressures that corresponded to the radiographic location of the pisiform bone. In flat configurations, peak pressure migrated about the location of the hamate bone. Radiologists’ agreement for bone position was high (k = 0.96). Measures of peak pressure, total pressure, and pressure distribution were statistically different between hand configurations.

Conclusions: The results of this study suggest that hand configuration influences the magnitude, location, and distribution of pressure generated by the hand during manipulation. This knowledge may have importance in understanding the relation among application parameters of manipulation, therapeutic benefit, and patient safety.

Distraction manipulation of the lumbar spine: a review of the literature.

Ralph E. Gay, DC, MD; Gert Bronfort, DC, PhD; Roni L. Evans, DC, MS

Objective: The purpose of this study is to review the literature concerning distraction manipulation of the lumbar spine, particularly regarding physiological effects, clinical efficacy, and safety.

Data Sources: A search of the English language literature was conducted using the MEDLINE, Embase, CINAHL, Chiropractic Research Archives Collection, and Manual, Alternative, and Natural Therapies Information System databases. A secondary hand search of bibliographies was completed to identify older or nonindexed literature.

Data Selection and Extraction: Articles were identified which described the characteristics of distraction manipulation beyond a simple description or the results of treatment with distraction manipulation. Data were extracted on the basis of relevance to the stated objective.

Data Synthesis and Results: Thirty articles were identified. Three were uncontrolled or pilot studies, 3 were basic science studies, and 6 were case series. Most were case reports. Lumbar distraction manipulation is a nonthrust, mechanically assisted manual medicine technique with characteristics of manipulation, mobilization, and traction. It is used for a variety of lumbar conditions and chronic pelvic pain. The primary rationale for its use is on the basis of the biomechanical effects of axial spinal distraction. Little data are available describing the in vivo effect of distraction when used in combination with flexion or other motions.
Conclusions: Despite widespread use, the efficacy of distraction manipulation is not well-established. Further research is needed to establish the efficacy and safety of distraction manipulation and to explore biomechanical, neurological, and biochemical events that may be altered by this treatment.

Unifocal Langerhans cell histiocytosis presenting as an aggressive bone lesion.

Kenneth J. Young, DC; Stephanie George, BSc Hons (Chiro)

Objective: To discuss a case of unifocal Langerhans cell histiocytosis (eosinophilic granuloma) presenting as an aggressive osseous destructive process.

Clinical Features: A 6-year-old girl had thigh pain of insidious onset that would wake her at night. Orthopedic testing reproduced local pain, and imaging revealed an osteolytic process in the femoral diaphysis with laminated periosteal reaction.

Intervention and Outcome: The patient was referred for further evaluation; unifocal Langerhans cell histiocytosis was found at biopsy, and spontaneous healing was subsequently reported.

Conclusions: Unifocal Langerhans cell histiocytosis may present with deceptive clinical and imaging findings, of which clinicians should be aware.

False negative magnetic resonance imaging results: a report of 2 cases.

Michael Schneider, DC; Steven Santolin, DC; Patrick Farrell, DC

Objectives: The purpose of this study is to present 2 clinical case studies in which large herniated disks were not detected on magnetic resonance imaging (MRI), leading to false negative results; and to discuss some issues regarding potential shortcomings of MRI.

Clinical Features: Cases of cervical and lumbar herniated nucleus pulposus (HNP) are presented. Each patient had severe pain and neurological deficit. The patients had positive physical examination findings suggestive of HNP despite the negative MRI scans. Both subsequently underwent myelography and computed tomography to arrive at the final and definitive diagnosis of HNP.

Intervention and Outcome: Both patients failed a course of conservative care that included manual and mechanical traction, manual mobilization, myofascial release techniques, epidural steroid injections, oral
steroid and narcotic medications, and rehabilitative exercises. Both patients eventually required surgical decompression.

**Conclusion:** False negative MRI results in these cases of large HNPs emphasize the importance of case history and physical examination findings as the basis for ordering diagnostic tests. The conclusion of this article is simple: No single diagnostic test should be considered as 100% accurate, as false negative studies may occur that may mislead the patient and clinician.

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A theoretical model for treatment of soft tissue injuries: treatment of an ankle sprain in a college tennis player.

*Hugh Gemmell, DC, EdD; Brad Hayes, DC; Malcolm Conway, DC*

**Objective:** To present theories of manual treatment approaches to soft tissue injuries using an example case report.

**Clinical Features:** A college tennis player with an ankle sprain for 6 weeks, not responding to standard treatment, was unable to play tennis or compete in tournaments.

**Intervention and Outcome:** Soft tissue treatment was applied to the ankle for 2 visits. The patient experienced complete resolution of the problem and returned to play without relapse during a 9-month follow-up period. Theories of myofascial distortion treatment are discussed.

**Conclusion:** This treatment approach may have potential for soft tissue problems that are not amenable to current therapy approaches.

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ONLINE EXCLUSIVE

Symptomatic Arnold-Chiari malformation and cranial nerve dysfunction: a case study of applied kinesiology cranial evaluation and treatment.

*Scott Cuthbert, DC; Charles Blum, DC*

**Objective:** To present an overview of possible effects of Arnold-Chiari malformation (ACM), and to offer chiropractic approaches and theories for treatment of a patient with severe visual dysfunction complicated by ACM.
Clinical Features: A young woman had complex optic nerve neuritis exacerbated by an ACM type I of the brain.

Intervention and Outcome: Applied kinesiology chiropractic treatment was used for treatment of loss of vision and nystagmus. After treatment, the patient’s ability to see, read, and perform smooth eye tracking showed improvement.

Conclusion: Further studies into applied kinesiology and cranial treatments for visual dysfunctions associated with ACM may be helpful to evaluate whether this single case study can be representative of a group of patients who might benefit from this care.

Editor’s note: Due to space constraints, not all abstracts from the May 2005 issue of JMPT are featured in this article. To review the entire table of contents for the May issue, visit www.mosby.com/jmpt.