

## JMPT Abstracts for May 2001: Volume 24 - Number 4

Editorial Staff

The effects of orthotic intervention and nine holes of simulated golf on gait in experienced golfers.  
David Stude,DC, and Jeff Gullickson,DC

**Objective:** This investigation evaluated the effects of orthotic intervention on gait patterns and fatigue associated with nine holes of simulated golf, among a group of experienced golfers.

**Setting:** Northwestern Health Sciences University, Bloomington, MN.

**Participants:** Twelve experienced golfers were included in the study.

**Method:** Gait was assessed before and after nine holes of simulated golf, utilizing video freeze-frame analysis. Subjects wore custom-made, flexible orthotics daily for six weeks, and then gait was reassessed using the same objective measurement parameters. Fatigue was introduced by having participants complete a nine-hole round of golf before and after wearing custom-made, flexible orthotics for six weeks.

**Outcome Measure:** Parameters associated with gait (i.e., stride length and pelvic rotation) were measured in all subjects before and after wearing custom-fit, flexible orthotics for six weeks and before and after completing nine holes of simulated golf.

**Results:** The data indicate that the custom-fit, flexible orthotics used in this study, influenced the parameters associated with gait and reduced the effect(s) of fatigue associated with nine holes of simulated golf.

**Conclusion:** The use of custom-fit, flexible orthotics had a significant influence on the elements of gait measured in this study, specifically, pelvic rotation and stride length. There was an average increase in pelvic rotation of between 29% and 36%, and concomitant changes in stride length in subjects after they had worn orthotics for six weeks. Additionally, the use of these custom orthotics reduced the effects of fatigue associated with playing nine holes of golf, and so could potentially improve the likelihood for more consistent performance, possibly as a result of a more efficient gait pattern.

**Key Indexing Terms:** Biomechanics; Gait; Golf; Sports; Fatigue; Orthotic Devices

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A pilot randomized clinical trial on the relative effect of instrumental (MFMA) versus manual (HVLA) manipulation in the treatment of cervical spine dysfunction.

*Timothy G. Wood, M.Tech.Chiroa, Christopher J. Colloca, DC, and Rob Matthews, M.Tech.Chiroa.*

**Objective:** To determine the relative effect of instrument-delivered as compared to traditional manual-delivered thrust cervical manipulations in the treatment of cervical spine dysfunction.

Design: Prospective, randomized, comparative clinical trial.

Setting: Outpatient chiropractic clinic, Technikon Natal, South Africa.

Patients: Thirty patients diagnosed with neck pain and restricted cervical spine range of motion, without complicating pathology for at least one month, were included in the study.

Interventions: The patients were randomized into two groups. Group A received mechanical force, manually-assisted (MFMA) manipulation to the cervical spine delivered by a hand-held instrument, the Activator II Adjusting Instrument (AAI). Group B received specific contact high-velocity, low amplitude (HVLA) manipulation consisting of standard Diversified rotatory/lateral break techniques to the cervical spine. Both groups received only the specific therapeutic intervention, with no other treatment modalities or interventions utilized (including medication use) until asymptomatic status was achieved, or a maximum of eight treatments.

Main Outcome Measures: Both treatment groups were assessed using subjective (Numerical Pain Rating Scale 101, McGill Short-Form Pain Questionnaire, and Neck Disability Index) and objective (goniometer cervical range of motion) measurement parameters at specific intervals during the treatment period, and at one month follow-up. The data was assessed using two-tailed non-parametric paired and unpaired analysis, descriptive statistics, and power analysis of the data.

Results: Both treatment methods had a positive effect on the subjective and objective clinical outcome measures, with no significant difference observed between the two groups ( $p < 0.025$ ). The subjective data from all three questionnaires showed statistically significant changes from initial to final, and from initial to one-month follow-up. ( $p < 0.025$ ). The objective range of motion measures showed statistically significant changes in group A (instrumental) for left and right rotation, left and right lateral flexion from initial to final consultations, and right rotation and right lateral flexion from initial to one-month follow-up. Group B (manual) showed only left rotation as statistically significant from first to final, and first to one-month follow-up.

Conclusions: The results of this clinical trial indicate that both instrumental (MFMA) and manual (HVLA) manipulation had a beneficial effect associated with reducing pain and disability and improving cervical range of motion in this patient population. A randomized, controlled, clinical trial in a similar patient base with a larger sample size is necessary to verify the clinical relevance of these findings.

Key Indexing Terms: Biomechanics; Cervical Spine; Chiropractic Manipulation; Instrument; Pain; Range of Motion.

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Which chronic reflex sympathetic dystrophy patients are most likely to benefit from physical therapy?

*Marius A. Kemler, MD, Coen PM, Rijks PT, and Henrica CW de Vet, PhDc*

Background: Chronic reflex sympathetic dystrophy (RSD) is a painful and disabling disorder for which no treatment with proven effect exists. Physical therapy (PT) has been demonstrated to be effective for recently diagnosed RSD, but its value in chronic RSD has not yet been studied.

Purpose: To find predictors for successful use of physical therapy in reflex sympathetic dystrophy with regard to function, strength and mobility, and for patient satisfaction.

Subjects: Fifty-four chronic RSD patients, age range 21-65 years.

**Methods:** All patients were treated in accordance with a standardized PT protocol with a duration of at least six months. The effects of treatment (functional status, strength, ROM) and patient satisfaction measures (grade for result, would repeat, global effect) were evaluated at 12 months. Subgroup analyses were performed to find predictors for success of PT.

**Results:** The subgroup analyses revealed that patients with better baseline function (especially of the hands) obtained better results and higher satisfaction. Greater satisfaction was also associated with less baseline pain and higher baseline ROM and strength (of leg) values. In general, PT did not show large improvements on effect measures, and the patients' mean grade for the result was 3.8 (on a 10-point scale).

**Conclusion:** Overall, in this study, PT did not influence functional parameters or give patients with chronic RSD satisfaction. A randomized trial is required to prove or exclude the actual value of PT for these patients.

**Key Indexing Terms:** Reflex Sympathetic Dystrophy; Complex Regional Pain Syndrome; Physical Therapy; Treatment

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Recovery pattern of patients treated with chiropractic spinal manipulative therapy for long-lasting or recurrent low back pain

*Lars-Christian Stig,DC, Yvind Nilsson,DC, Charlotte Leboeuf-Yde,DC, MPH, PhD*

**Objective:** To investigate the recovery pattern in chiropractic patients being treated for long-lasting or recurrent low back pain, and in particular to identify the required minimum number of treatments and the minimum number of days since treatment started before improvement occurs.

**Design:** Prospective, uncontrolled multi-center study.

**Setting:** Private practice.

**Participants:** Nineteen selected Norwegian chiropractors included 10 consecutive patients each, who fulfilled a set of criteria (low back pain, present episode of more than two-week duration, altogether more than four weeks of low back pain in the preceding year, not treated by chiropractor the preceding six months, and suitable for manipulation).

**Response Rate:** Data were collected on 164 patients (86% of optimal study sample). Six were excluded, leaving 158 patients for analysis. **Main Outcome Measures:** Information was collected on each visit for a maximum of 12 times on low back pain status, using a 10-point numeric pain rating scale and a global improvement scale ("Do you feel that you have improved after you have started having chiropractic treatment?" with five possible answers, ranging from: "Yes, definite improvement" to: "No, I am worse now than when the treatment started"). Improvement was defined, according to the numeric pain rating scale, as when the score for the first time reached 2 (or if the initial score was 2, as the first time it reached 1). Improvement was defined, according to the global improvement scale as when the patient first answered: "Yes, definite improvement."

**Results:** Approximately 50% of patients reported that they had "improved" at the fourth visit and within two weeks. After this, fewer new cases of "improvement" occurred for every visit or day since the first treatment. At the 12th visit (or earlier if treatment was concluded before the 12th visit), approximately 75% of the patients reported that "improvement" had occurred.

**Conclusion:** There is a large group of chiropractic patients with relatively long-lasting or recurrent

LBP who report "improvement" early in the course of treatment.

Key Indexing Terms: Low Back Pain; Chiropractic Manipulation; Health Services Research.

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Fractured heterotopic bone in myositis ossificans traumatica  
*Michael A. Mestan,DC and John M. Bassano,DC*

**Objective:** To discuss the case of a patient who suffered an acute fracture occurring through pre-existing, quiescent post-traumatic heterotopic bone formation of the gastrocnemius muscle. This lesion demonstrated a previously unreported pattern of healing. This case serves to demonstrate an infrequent event with a rare and heretofore unreported sequella.

**Clinical Features:** A 54-year-old male with pre-existing, mature heterotopic bone within the left gastrocnemius muscle suffered re-injury to the site. The pre-existing heterotopic bone was a result of a sporting injury 32 years previously. At the time of the new injury, the patient experienced immediate, severe pain. Radiographs demonstrated a nondisplaced oblique fracture through the pre-existing heterotopic bone.

**Intervention and Outcome:** The patient was treated with protective wrapping and physiotherapy modalities. Because only the heterotopic bone was involved, the patient was not casted. Follow-up radiographs obtained 14 weeks later demonstrated callus formation about the fractured site with evidence of union.

**Conclusion:** Fractures occurring through mature heterotopic bone formation such as that seen in myositis ossificans traumatica are infrequent, and the likelihood of callus formation with union of the fractured fragments is an even rarer occurrence.

Key Indexing Terms: *Myositis Ossificans*; Fracture; Radiography

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Chiropractic management of a patient with lumbar spinal stenosis  
*Gregory J. Snow,DC*

**Objective:** To discuss the case of a patient who suffered severe, multi-level, central canal stenosis and who was managed conservatively with flexion-distraction manipulation; to introduce a cautious approach to the application of treatment which may reduce the risk of adverse effect and potentially make an apprehensive doctor more comfortable treating this condition; and to propose a theoretical mechanism for relief of symptoms via chiropractic manipulation.

**Clinical Features:** A 78-year-old man suffered from low back pain and severe, bilateral leg pains. Objective findings were minimal, yet MRI demonstrated severe, degenerative, lumbar stenosis at L3-4, L4-5 and to a lesser degree at L2-3.

**Intervention and Outcome:** Flexion-distraction manipulation of the lumbar spine was performed. Incremental increases in traction forces were applied as the patient responded positively to care. He experienced a decrease in the frequency and intensity of his leg symptoms, and a resolution of his low back pain. These improvements were maintained at a five-month follow-up visit.

**Conclusion:** Successful management of symptoms either caused or complicated by lumbar spinal stenosis is presented. Manipulation of the spine shows promise for relief of symptoms through

improving spinal biomechanics. Further study, in the form of a randomized, clinical trial, is warranted.

Key Indexing Terms: Spinal Stenosis; Lumbar Vertebrae; Chiropractic Manipulation.

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## The Predictive Values of Physical Examination Findings in Chronic Low Back Pain Patients Treated Conservatively: A Systematic Literature Review

*Jan Arve Borge,DC, Charlotte Leboeuf-Yde,DC, MPH, PHD, and Jakob Lothe,DC,PhD*

**Background:** Most patients undergo physical examination. However, low back pain can only rarely clearly be diagnosed as having an irrefutable pathoanatomical cause, on the basis of the classical battery of non-invasive physical examination procedures. Physical examination findings are, however, also used to predict the prognosis of treatment of chronic LBP. A systematic review of the clinical literature is needed to gain an understanding of the literature in this area.

**Objectives:** To establish whether various physical examination procedures can be used to predict the treatment outcome in the conservative (non-invasive) treatment of chronic low back pain.

**Data Sources:** Ten original research reports were selected out of 910 titles, published between 1986 and 1998, obtained after a computerized Medline search using various combinations of the key words: low back pain; treatment; physical findings; predictors; prognosis; prognostic factors; prognostic indicators; predictors and outcome(s), in addition to manual search strategies.

**Data Synthesis:** Articles that fitted the objectives of this review were retained and systematically reviewed for the prognostic value of the relevant tests/observations. In addition, results were studied in relation to the type of outcome variable and type of treatment.

**Results:** The most commonly investigated tests were the lumbar ranges of motion, which were found to have a clear-cut significant predictive value in three out of nine studies. Further analyses in relation to definition of outcome (back-to-work or reduction of symptoms) were not possible because study results were not usually clearly reported for each definition and because therapies were multimodal rather than distinctly well-defined.

**Conclusions:** This area has not been fully investigated. Therefore there is no satisfactory answer to the question of whether some physical examination tests have a prognostic value in the conservative treatment of chronic low back pain.

Key Indexing Terms: Low Back Pain; Physical Findings; Predictors; Prognosis; Outcomes.

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## Chiropractic and a new taxonomy of primary care activities

Gary L. Gaumer,PhDa, Allison Walker, and Sabrina Sue

**Objective:** To enumerate the procedural and cognitive content of "primary care" and to discuss potential chiropractic primary care roles.

**Data Collection:** Data were collected through the use of two expert panels and a consensus process to create a list of primary care activities. The first panel included an interdisciplinary mix of mainly allopathic physicians, and the second panel included mainly chiropractic physicians. Each panel rated primary care activities across a number of dimensions such as importance for good health;

frequency in a typical office-based practice; necessity for MD involvement in the activity; competency of the majority of chiropractic physicians; and interest among chiropractors in performing the activity.

Results: There was no real difference between the panels in terms of taxonomy scope or importance of the activities for good health. Many of the activities are performed more frequently in a typical medical office than in a typical chiropractic office. Among a set of daily occurring primary care activities in a medical office, chiropractors are able to make diagnoses in 92% of these activities, and make therapeutic contributions in more than 50% of the activities. Medical doctor involvement was perceived as required more frequently by the chiropractic panel than by the interdisciplinary panel. Chiropractor self-assessed competency and interests showed some limits for assuming total care of some frequently occurring primary care activities.

Conclusions: The most important finding of this activity is the overriding sense of agreement between allopathic and chiropractic physicians on the scope of primary care activities, suggesting there is opportunity for chiropractors and allopaths to work together on patient care and organizational strategy. However, the levels of self-assessed competency and interest by chiropractors for many frequently occurring primary care activities reveals some important limits for assumption of total primary care.

Key Indexing Terms: Chiropractic; Primary Care Activities; Alternative Provider(s).

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