

# JMPT Abstracts for July-August 2006 Volume 29 Issue 6

Editorial Staff

*Editor's note:* Due to space constraints, we are unable to reprint all abstracts from the July-August 2006 issue of *JMPT*. To review the complete table of contents from this issue, please visit [www.mosby.com/jmpt](http://www.mosby.com/jmpt).

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Chiropractic patients in Denmark 2002: an expanded description and comparison with 1999 survey.

*Line Press Sorenson, DC, Mette Jensen Stochkendahl, DC, Jan Hartvigsen, DC, PhD, Niels Grunnet Nilsson, DC, MD, PhD*

**Objective:** The purpose of this study is to provide an expanded description of Danish chiropractic patients and to compare characteristics seen in a survey from 1999 with those seen in 2002.

**Methods:** All chiropractic clinics in Denmark were asked to collect information on new patients during one randomly assigned week in 2002 using a survey questionnaire. All 52 weeks of the year 2002 were represented with an even dispersion of weeks (182 clinics participated). Outcome measures included age, sex, education, occupation, location and duration of chief complaint, pain intensity, limitation of activities of daily living, mode of referral, duration of sick leave, previous treatments, comorbidity, SF-12, smoking habits, and use of X-ray.

**Results:** Eighty-five percent of all chiropractic clinics in Denmark participated in the study, and 1,595 patients (81%) filled out a self-administered questionnaire. As in 1999, the most frequent area of complaint was pain related to the lower back and pelvis (49%). Contrary to the 1999 survey, most of the patients (64%) had complaints of less than four weeks of duration. Twenty-nine percent of the patients had been off work because of their symptoms; most of these for less than one week. Fifty-one percent of all patients were referred to chiropractors in 2002 (doubling since 1999). Referrals from general medical practitioners rose from 11% in 1999 to 17% in 2002. Sixty percent of all patients had similar symptoms in the past, and approximately half previously had received treatment of the same or a similar problem. Thirty percent of first-time chiropractic patients were X-rayed. Compared with general population measures, Danish chiropractic patients had significantly worse physical health status measured by the SF-12.

**Conclusions:** Most Danish chiropractic patients complain of pain related to the spine, especially the lower back, with duration of symptoms of less than four weeks, and many with recurrent back pain. Referrals from general medical practitioners have increased since 1999.

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The electromyographic activity of thoracic paraspinal muscles identified as abnormal with palpation.

*Gary Fryer, BAppSc, Tony Morris, PhD, Peter Gibbons, MB, DO, Andrew Briggs, BSc*

**Objective:** The aim of this study was to compare the electromyographic (EMG) activity of deep muscles in the thoracic paravertebral gutter (PVG), detected as abnormal to palpation (AbPT) and reported as tender by the subject, with muscles underlying nontender (NT), normal-to-palpation sites under various experimental conditions.

**Methods:** Twelve subjects (mean age, 25.42 years; range, 22-43 years) participated in this study. Fine-wire, bipolar intramuscular electrodes were inserted, under real-time ultrasonic guidance, into the deep paravertebral muscle mass underlying one AbPT and two NT sites (one segment above and below the AbPT site) in the thoracic PVG regions. Electromyographic activity was recorded under the following conditions: resting prone, prone active trunk extension, application of pressure (300 kPa) to adjacent spinous processes, resting seated, passive and active seated trunk rotation, and supporting 2-kg weights in outstretched arms.

**Results:** Mean EMG activity was highest at the AbPT site relative to NT sites, under all conditions, with a significant between-group effect of site ( $F_{2,31} = 4.13$ ,  $P = .03$ ) and large between-group effect size ( $\eta^2 = 0.21$ ). There was also a trend for lower percentage change from baseline resting at the AbPT sites, relative to the NT sites, in response to the demand of other conditions. There were large variations in EMG activity within and between individuals, and large SDs accompanied the mean values of EMG activity in all cases.

**Conclusion:** Increased motor activity may be a contributing factor to tissue changes in the PVG detected with palpation. However, caution must be used when interpreting these results because of the large variations, small sample size, and issues associated with EMG normalization.

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Chiropractic consultation requests in the Veterans Affairs Health Care System: demographic characteristics of the initial 100 patients at the Western New York Medical Center.

*Andrew S. Dunn, DC, MEd, MS, Jamie J. Towle, DC, Patrick McBrearty, DC, Suzanne M. Fleeson*

**Objectives:** The objectives of this study were to review the demographic characteristics of Veterans Affairs (VA) chiropractic patients and to determine the level of appropriateness of chiropractic consultation requests within a VA chiropractic clinic. Information regarding the volume of requests and wait times for appointments were obtained to provide insight on the demand for and access to VA chiropractic services.

**Methods:** A purposive sample of the first 100 chiropractic consultation requests received through the Computerized Patient Record System at the VA of Western New York Health Care System was selected for data collection and analysis.

**Results:** The VA chiropractic patients in this study were primarily older men with chronic low-back pain who had not responded to medical management and other treatment modalities. More than half of the patients had service-connected disabilities. Consultation requests came largely from primary care, and most requests were for patients for whom chiropractic was clinically indicated and requested pre-consultation diagnostic studies had been performed.

**Conclusions:** The VA chiropractic patients in this study differed from traditional non-VA chiropractic patients with regard to age and sex. A review of the chiropractic consultation requests that were considered inappropriate resulted in a revision of the instructions for requesting providers within the Computerized Patient Record System. Additional health systems research is indicated to evaluate chiropractic implementation on a larger scale within the VA Health Care System.

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Applying generalizability theory to high-stakes, objective, structured clinical examinations in a naturalistic environment.

*Douglas M. Lawson, DC, MSc*

**Objective:** The purpose of this project was to determine if generalizability theory could be applied successfully to a high-stakes licensure objective, structured clinical examination as part of its normal administrative procedures; and whether the analysis could yield useful information with regard to sources of variance.

**Methods:** The anonymized data received from the Canadian Chiropractic Examining Board for its June 2005 Clinical Skills Examination were analyzed with generalizability theory. Variance components were estimated with SPSS 11.5 (SPSS Inc, Chicago, Ill) as partially nested data. The data included 182 candidates, 43 raters, 40 standardized patient actors, and 18 individual cases.

**Results:** Internal consistency estimates (Cronbach  $\alpha$ ) were .86 for day 1 and .91 for day 2. The  $\alpha$  estimates for stations averaged .68 for day 1 and .74 for day 2. The generalizability-coefficient for the day 1 exam was .65 and for the day 2 was .42. G-coefficients for stations averaged .63 for day 1 and .74 for day 2. On day 1, the raters contributed 7% of the variance, and on day 2, the raters contributed 8%.

**Conclusions:** Generalizability theory can contribute to the understanding of sources of variance and provide direction for the improvement of individual stations. The size of the rater variance in a station also may indicate the need for increased training in that station or the need to make the scoring checklist more clear and definitive. Generalizability theory, however, must be cautiously applied, and it requires careful selection of the floating raters and vigorous training of the raters in each station.

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Digitized infrared segmental thermometry: time requirements for stable recordings.

*Richard A. Roy, DC, MSc, Jean P. Boucher, PhD, Alain S. Comtois, PhD*

**Objectives:** Digitized infrared segmental thermometry (DIST) is a method for measuring and recording skin surface body temperatures. This project evaluated the required length of time for patients to acclimatize their core body temperature to ambient conditions to obtain stable DIST readings.

**Methods:** Seventeen subjects were allowed a 20-minute acclimatizing period in a temperature-controlled room. The bilateral DIST temperature was measured with thermistors in combination with infrared cameras (IRCs) at the C4 and L4 levels. All IRC temperatures were recorded after a 20-minute stabilization period. The room temperature and relative humidity were recorded throughout all trials. The acclimatization trend was computed from the 20- to 24-minute period for the IRCs, and the acclimatization trend was computed continuously for a total of 30 minutes (at two-minute intervals) for five days.

**Results:** We discovered a stabilization trend in the early trial stages, with the thermistor recordings between eight and 16 minutes. The IRC trend also was conclusive for the core temperature requirements.

**Conclusions:** This study determined a core body temperature acclimatization trend tested among patients using thermistor recordings in a controlled environment. Based on these findings, we recommend acclimatization in a temperature- and humidity-controlled environment for a minimum

eight-minute period, followed by an eight-minute maximum recording period with the patient in a prone position to obtain accurate DIST recordings.

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Chiropractic management of cow's milk protein intolerance in infants with sleep dysfunction syndrome: a therapeutic trial.

*Jennifer R. Jamison, MBBCh, PhD, EdD, Neil J. Davies, DC*

**Objective:** In addition to the more usual cutaneous, gastrointestinal and respiratory problems, infants with cow's milk intolerance (CMI) may present with a disturbed sleep pattern. Frustrated mothers may turn to their doctor of chiropractic for assistance. This pilot study shows how a therapeutic trial may offer a realistic, noninvasive approach to the chiropractic management of infants with this clinical problem.

**Methods:** A pilot study to describe the presentation and treatment of infants presenting with disturbed sleep patterns to a chiropractic clinic was undertaken. Infants fulfilling a clinical screening protocol for CMI were selected for a therapeutic trial. The sleep behavior of subjects was monitored over a four-week period during which they were managed by dietary change and a high-impulse, low-amplitude, whole-of-body chiropractic management protocol.

**Results:** Fifty-nine infants presented with disturbed sleep. Of these, 19 met the clinical criteria used to establish the diagnosis CMI. The mothers of breast-fed infants were counseled on how to implement a dairy-free diet, and those infants who were artificially fed were changed from cow's milk-based formulae to either a partially or wholly hydrolyzed formula. Fourteen achieved a stable sleep pattern within the study period. In five instances, the sleep pattern remained problematic, but other clinical evidence of hypersensitivity reactions attributable to CMI disappeared. By the end of the study, no subject had demonstrable evidence of either biomechanical derangement or functional neurologic imbalance.

**Conclusion:** CMI should be considered as a possibility in infants with disturbed sleep patterns who present for chiropractic care. This study describes how a therapeutic trial involving dietary modification, parental counseling, and comprehensive chiropractic care may offer a noninvasive approach to excluding and/or managing this condition. Further research is required before definitive recommendations can be made.

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Diagnosis and management of posttraumatic piriformis syndrome: a case study.

*Nancy Mayrand, Joel Fortin, Martin Descarreaux, DC, PhD, Martin C. Normand, DC, PhD*

**Objective:** The aim of this study is to describe the clinical management of a young male patient with sciatica symptoms that developed after an avulsion of the ischial tuberosity. This is a rare injury, but complications may occur.

**Clinical Feature:** A 19-year-old patient developed sciatica six months after a football injury. The patient described his symptoms as a shooting pain from the buttock to the lateral part of the foot, along the back of his thigh and calf, sometimes accompanied by paresthesia. Physical examination showed restricted hip range of motion and a positive Bonnet's test. X-ray analysis revealed a bony overgrowth of the right ischial tuberosity.

**Intervention and Outcome:** A treatment plan was designed to decrease the pain level, increase sacroiliac and lumbar joint mobility, and augment muscular extensibility. The patient received 20 treatments over a period of approximately three months. Complete recovery was observed five

months later.

Conclusion: Although many differential diagnoses were contemplated, it is most likely that changes in muscular tension and gait pattern, resulting from the ischial tuberosity avulsion, contributed to overuse of the piriformis muscle leading to a piriformis syndrome.

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Cauda equina syndrome after epidural steroid injection: a case report.

*Ayten Bilir, MD, Sacit Gulec, MD*

Objective: Conventional treatment methods of lumbosacral radiculopathy are physical therapy, epidural steroid injections, oral medications, and spinal manipulative therapy. Cauda equina syndrome is a rare complication of epidural anesthesia. The following case is a report of cauda equina syndrome possibly caused by epidural injection of triamcinolone and bupivacaine.

Clinical Features: A 50-year-old woman with low back and right leg pain was scheduled for epidural steroid injection.

Intervention and Outcome: An 18-gauge Touhy needle was inserted until loss of resistance occurred at the L4-5 level. Spread of the contrast medium within the epidural space was determined by radiographic imaging. After verifying the epidural space, bupivacaine and triamcinolone diacetate were injected. After the injection, there was a reduction in radicular symptoms. Three hours later, she complained of perineal numbness and lower extremity weakness. The neurologic evaluation revealed loss of sensation in the saddle area and medial aspect of her right leg. There was a decrease in the perception of pinprick test. Deep-tendon reflexes were decreased especially in the right leg. She was unable to urinate. The patient's symptoms improved slightly over the next few hours. She had a gradual return of motor function and ability of feeling Foley catheter. All of the symptoms were completely resolved over the next eight hours.

Conclusion: Complications associated with epidural steroid injections are rare. Clinical examination and continued vigilance for neurologic deterioration after epidural steroid injections is important.

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