Comparison of posteroanterior spinal stiffness measures to clinical and demographic findings at baseline in patients enrolled in a clinical study of spinal manipulation for low back pain.

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Objective: A system for measuring posterior-to-anterior spinal stiffness (PAS) was developed for use in clinical trials of manipulation for low back pain (LBP). The current report is an analysis of the baseline PAS data, with particular emphasis on relationships between PAS and clinical and demographic characteristics.

Methods: Posterior-to-anterior spinal stiffness measurements were recorded over the spinous processes of the lumbar spines from patients who had LBP. The system uses electronic sensors to record displacement and force, whereas a human operator provides the force of indentation. Clinical and outcome measures were compared with spinal stiffness.

Results: We recruited 192 patients (89 female and 103 male; average age, 40.0 years; SD, 9.4 years). The average Roland-Morris score was 9.7 (SD, 3.2) on a 24-point scale. The Visual Analog Scale pain scores were 55.7 (SD, 20.9) on a 100-mm scale. Stiffness values ranged from 4.16 to 39.68 N/mm (mean, 10.80 N/mm; SD, 3.72 N/mm). Females’ lumbar spines were, on the average, 2 N/mm more compliant than males (P < .001).
Conclusions: The PAS system of computer-monitored equipment with human operation performed well in this clinical study of LBP. Spinal stiffness was found to be different between males and females, and age and body mass index were related to PAS. We found no significant relationship between the severity or chronicity of the LBP complaint and spinal stiffness. There was little agreement between the stiff or tender segments identified by the clinicians using palpation and the segment that measured most stiff using the PAS device.

The reproducibility of a clinical grading system of motor control in patients with low back pain.

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Objective: Over the past decade, instrument and palpation methods for quantifying the activation and recruitment of the transversus abdominis and lumbar multifidus have been proposed. Palpation methods however have recently been described and therefore have been subjected to little evaluation. One such palpation method is the Wisbey-Roth grading system. The recruitment of the transversus abdominis and lumbar multifidus is assessed in a series of functional body positions and movements. The ability to recruit these muscles is quantified by assigning 1 of 6 defined grades. The purpose of this study was to investigate the reproducibility of this grading system.

Methods: A total of 2 meetings and 3 pilot trials were held with raters before commencement of the study to establish an agreed grading system protocol. Interrater reproducibility was investigated using a Latin square repeated measures design. Thirty-four subjects (62% male and 38% female; age range, 15-70 years) with a history of low back pain participated. A total of 4 practicing physiotherapists and 1 sports medicine physician graded subjects using the Wisbey-Roth grading system protocol.

Results: Pair-wise weighted κ values ranged from −0.01 (95% confidence interval [CI], −0.33 to 0.31) to 0.56 (95% CI, 0.25 to 0.87), with average weighted κ being 0.29. The intraclass correlation coefficient (2,1) was 0.30 (95% CI, 0.15 to 0.48), and the standard error of the measurement was 1.6 units.

Conclusions: The Wisbey-Roth grading system shows fair to poor reproducibility between raters. Therefore, it should not be used to exchange meaningful information between clinicians. Recommendations are made for further research and toward improving its reproducibility.
Objective: The purpose of this study was to perform an interexaminer reliability evaluation of the prone leg length analysis procedure.

Methods: Two chiropractors each examined a series of 45 patients with a history of low back pain. Patients were in the prone position, with the knees in both extended and flexed positions, and with the head rotated right and left. The clinicians were asked to determine the side of the short leg with knees extended and if a change in leg length occurred with head rotation or when the knees were flexed. They were also asked to visually judge the amount of leg length differential by categorizing the difference as either less than 0.25, 0.25 to 0.5, 0.5 to 0.75, or more than 0.75 in. The head rotation portion of the test was performed only with patients (n = 22) in whom the leg length differential was determined to be less than 0.25 in.

Results: $\kappa$ statistics and frequency distributions were calculated for each of the respective observations. Reliability of determining the side of the short leg with knees extended was good at 82% agreement ($\kappa = 0.65$) but fair for determining the amount of leg length difference at 67% agreement ($\kappa = 0.28$). Reliability of the head rotation testing procedure was extremely poor, with only 50% and 45% agreement about the observed change in leg length with the head rotated left and right, respectively ($\kappa = 0, \kappa = -0.195$). There was no significant correlation found between the side of reported pain by the patient and the side of the short leg as noted by either clinician ($\kappa^2 = 0.55, P = .91$, and $\kappa^2 = 1.55, P = .67$). All of the patients (100%) were judged to have a leg length difference by both clinicians. When the knees were flexed, there was 93% agreement that the short leg became longer (43/45 cases), with no reported cases of the short leg getting shorter. Calculation of $\kappa$ statistics was confounded for these last 2 observations because of extremely high prevalence bias.

Conclusions: The results indicate that 2 clinicians show good reliability in determining the side of the short leg in the prone position with knees extended but show poor reliability when determining the precise amount of that leg length difference. The head rotation test for assessing changes in leg length was unreliable in this sample of patients. There does not appear to be any correlation between the side of pain noted by the patient and the side of the short leg as observed by the clinicians; all 45 patients in this sample were found to have a short leg by both clinicians.
Magnetic resonance imaging of the triangular fibrocartilage complex lesions: a comprehensive clinicoradiologic approach and review of the literature.

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Objective: This article illustrates the frequent lesions of the triangular fibrocartilage complex (TFCC) by means of magnetic resonance imaging.

Methods: We performed a retrospective chart review of the magnetic resonance images of 109 patients from our database. All subjects had history of trauma, and all underwent both radiographic and magnetic resonance imaging examination of the wrist. The changes (degeneration, tears) of the TFCC were assessed.

Results: Ten patients were excluded because of incomplete imaging protocol (4 patients) and low-quality images (6 patients). From the 99 wrists remaining, the TFCC was normal in 30 (30.3%). Degenerative changes were found in 40 (40.4%) wrists. Partial and complete tears were present in 17 (17.1%) and 12 (12.1%) wrists, respectively.

Conclusion: The TFCC lesions in acute traumatic wrists should not be overlooked; they may contribute to wrist pain and disability after treatment of existing bone injuries.

The effect of combining manual therapy with exercise on the respiratory function of normal individuals: a randomized control trial.

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Objective: The objective of this study was to explore the effect of combining manual therapy with exercise on respiratory function in normal individuals.

Methods: The study design was a randomized control trial. Forced vital capacity (FVC) and forced expiratory volume in the first second (FEV1) were measured in 20 healthy, nonsmoking individuals before and after 3 interventions: exercise only, chiropractic manual therapy only, and manual therapy followed by exercise. The participants, 18 to 28 years of age, were randomly allocated to a control and 3 intervention groups. Each participant underwent 6 sessions of interventions over a 4-week period.
**Results:** The exercise only group showed a significant decrease in FVC (P = .002, generalized linear model [GLM]) and FEV1 readings (P = .0002, GLM). The manual therapy only group showed a significant increase in FVC (P = .000, GLM) and FEV1 (P = .001, GLM). The group that received both manual therapy and exercise showed increases in FVC and FEV1 immediately after manual therapy followed by an additional increase after exercise. The overall increase in this group was not statistically significant. Participants in the control group showed no change in FVC or FEV1.

**Conclusions:** Manual therapy appears to increase the respiratory function of normal individuals. The potential for this intervention administered before exercise to permit additional tolerance within the respiratory system that could allow an extended exercise program than was previously possible is discussed.

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**Development of an evidence-based application and rubric for evaluating applicants’ qualifications for promotion to professor.**

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**Objective:** Every promotion committee is challenged by the need to make value judgments on the quantity and quality of peer work. Decisions based upon subjective assessments may not do justice to the applicant’s or the institution’s needs. The purpose of this article is to (1) describe the process a college promotion committee used to increase the objectivity brought to this activity, (2) present the tools developed that facilitated the collection and evaluation of faculty work, and (3) describe their usage in a promotion cycle.

**Methods:** The Professor Promotion Committee met weekly for 6 months engaging in lengthy and comprehensive discourse to capture the breadth of scholastic and service activities normally engaged in by faculty.

**Results:** The committee’s work culminated in the development of 4 electronic applications soliciting specific evidence aligned with faculty work and 1 scoring rubric tied directly to the e-applications. More than 55 activities were identified, divided into 4 levels of accomplishment using quantitative and qualitative criteria and weighted according to their centrality to faculty work and relative importance to the institution. Each activity was assigned to one of the following categories: teaching/academic support, scholarship/research, service, and professional development. A consensus score based upon the evidence was used to generate promotion discussions.
Conclusions: The committee believes the online application aids applicants in recognizing the breadth and depth of promotable work. It provides them the opportunity to structure their work in ways that enhance their chances for promotion. The evidence-based rubric helps to reduce subjectivity in the evaluation process.

A case of a potential manipulation responder whose back pain resolved with flexion exercises.

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Objective: Researchers have begun to investigate the value of subgrouping patients with back pain to improve clinical outcomes; one method is the development of clinical prediction rules. To be of clinical value, it is important that subgroups identify distinct categories of patients with an associated optimal treatment. This case study raises the suggestion that subgroups identified in this way may not represent distinct categories.

Clinical Features: A patient with sudden-onset back pain, who had 4 of 5 criteria for a clinical prediction rule said to identify responders to manipulation, was successfully treated using repeated flexion in lying exercises.

Outcomes: Pain numeric score and Roland-Morris Disability Questionnaire were used to measure changes in pain and function. Pain score changed from 9/10 to 0/10 and disability score from 19/24 to 0/24 after 1 week and at 1 and 6 months of follow-up.

Conclusion: We have presented a case study that was positive for 4 of 5 items of the clinical prediction rule for manipulation responders, but this patient was successfully treated with flexion exercises. The clinical prediction rule may not represent a discrete subgroup but may include patients who can be effectively managed in other ways.

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