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Determinants of Costs and Pain Improvement for Medical and Chiropractic Care of Low Back Pain
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Objective: The purpose of this study was to identify short-term and long-term determinants of costs and pain improvement for care of low back pain (LBP) provided by medical doctors and chiropractors.

Methods: Determinants of office-based costs and pain improvement were modeled for 2,872 patients with a primary complaint of acute or chronic LBP of mechanical origin enrolled from practices of 111 MDs and 60 DCs using multiple regression analysis. The independent variables were baseline pain intensity (10 cm visual analog scale), chronicity (current episode > or <7 weeks), referred pain above/below the knee, history of LBP, physical health, depression screen, comorbidity, and stress index; age, sex, marital status and smoker status; pay variables including out-of-pocket, health insurance, auto insurance, workers' compensation, and Oregon Health Plan/Medicaid; and a choice of provider indicator based on relative confidence in DC and MD care.

Results: Determinants of increased office-based costs for MD care were workers' compensation, pain below the knee, and chronic LBP with comorbidity. Predictors of increased cost for DC care were workers' compensation, auto and health insurance, LBP chronicity, and baseline pain. Predictors of decreased DC cost were Medicaid and better physical health. Pain improvement was predicted consistently across groups by baseline pain, pain radiating below the knee, physical health, LBP chronicity, and chronicity by baseline pain interaction. There was also a large chronicity by comorbidity interaction at 12 months for both provider types.

Conclusions: Cost predictors were driven by insurance type and pain improvement was driven by LBP complaint characteristics.

Immediate Effects of the Suboccipital Muscle Inhibition Technique in Subjects With Short Hamstring Syndrome
Erika Quintana Aparicio, DO, Luis Borrallo Quirante, PT, Cleofas Rodriguez Blanco, DO, et al.

Objective: The purpose of this study is to identify the effects of the suboccipital muscle inhibition technique in patients with short hamstring syndrome by means of tests designed to evaluate the elasticity of the hamstring muscles and pressure algometry of myofascial trigger points.

Methods: Randomized clinical trial (pre and postintervention). The study population comprised young adult students following their studies at the Physiotherapy School at the University of Extremadura (Spain) and footballers from an Extremadura Football Club with short hamstring syndrome. The sample (70 subjects; 47 male and 23 female) was randomly divided into a control group (n=34) and an intervention group (n=36). Mean sample age was 23.40 +/- 3.82 years. The control group was subjected to a placebo technique, whereas the intervention group was subjected

to the suboccipital muscle inhibition technique. Pre and postintervention evaluation was used for the assessment of hamstring elasticity, and pressure algometry was also used (myofascial trigger points). Statistical analyses were performed using the SPSS 14.5 package, comparing the sample between groups (Kolmorogov-Smirnov test, Student t test, 2-way analysis of variance [ANOVA], the X2 test).

Results: The distribution of the quantitative variables was normal, and the mean time doing physical activity per week was 2.82 +/- 4.03 hours. Two-way ANOVA afforded statistically significant results for the finger-floor test, straight leg raise test - left, straight leg raise test - right, left popliteal angle test (P values < .001), and right popliteal angle test (P = .005). For pressure algometry, only the right semimembranosus muscle afforded statistically significant differences (P = .021).

Conclusions: According to the finger-floor distance test, the straight leg raise test, and the popliteal angle test, the suboccipital muscle inhibition technique modified the elasticity of the hamstring muscles for this group of subjects. The suboccipital muscle inhibition technique modifies the pressure algometry of the semimembranosus muscle but does not modify that of the semitendinosus muscle or biceps femoris.

Heart Rate Variability Modulation After Manipulation in Pain-Free Patients vs. Patients in Pain
Richard Roy, DC, Jean Boucher, PhD, Alain Comtois, PhD

Background: The purpose of this study was to examine heart rate variability (HRV) in the presence or the absence of pain in the lower back, while receiving one chiropractic treatment at L5 from either a manually assisted mechanical force (Activator) or a traditional diversified technique spinal manipulation.

Methods: A total of 51 participants were randomly assigned to a control (n=11), 2 treatment, or 2 sham groups (n=10 per group). Participants underwent an 8-minute acclimatizing period. The HRV tachygram (RR interval) data were recorded directly into a Suunto watch. We analyzed the 5-minute pretreatment and posttreatment intervals. The spectral analysis of the tachygram was performed with Kubios software.

Results: All groups decreased in value except the control group, which reacted in the opposite direction, when comparing the pretests and posttests for the high-frequency component. The very low frequency increased in all groups except the control group. The low frequency decreased in all groups except the sham pain-free group. The low frequency-high frequency ratio decreased in the treatment pain group by 0.46 and in the sham pain-free group by 0.26. The low frequency-high frequency ratio increase was 0.13 for the sham pain group, 0.04 for the control group, and 0.34 for the treatment pain-free group. The mean RR increased by 11.89 milliseconds in the sham pain-free group, 18.65 milliseconds in the treatment pain group, and 13.14 milliseconds in the control group. The mean RR decreased in the treatment pain-free group by 1.75 milliseconds and by 0.01 milliseconds in the sham pain group.

Conclusion: Adjusting the lumbar vertebrae affected the lumbar parasympathetic nervous system output for this group of participants. Adaptation in the parasympathetic output, reflected by changes in high frequency, low frequency, and very low frequency, may be independent of type of adjustment. Therefore, the group differences found in the modulation of the HRV would seem to be related to the presence or absence of pain. The autonomic nervous system response may be specific and sensitive to its effectors organ.

Intrarater and Interrater Reliability of 22 Clinical Measures Associated With Lower Quarter Malalignment

John Leard, EdD, Barbara Crane, PhD, Kevin Ball, PhD

Objective: The purpose of this study was to assess the intrarater and interrater reliability of a broad range of techniques commonly used to assess the lower quarter.

Methods: A test-retest single group design was used to investigate the intrarater and interrater reliability of 22 lower quarter evaluation measures. Two raters conducted each measure twice on a total of 18 unimpaired subjects with an average age of 23.7 years. This study was conducted in the Human Performance Research laboratory in a university setting. Intraclass correlation coefficients were used to assess reliability of continuous variables, and weighted k was used to assess nominal or ordinal results.

Results: Side differences were not found (P > .05); thus, data for right and left legs were pooled (n = 36) where applicable. Intraclass correlation coefficient and weighted k results ranged from a low of 0.06 to a high of 0.99. Intrarater reliability results were generally higher than interrater reliability results.

Conclusion: Many of the clinical measures demonstrated good overall reliability. For those tests where acceptable intrarater and interrater reliability cannot be demonstrated, additional training of raters, modification of the technique, or elimination of the technique's use should be considered.

Impact of Collaborative Testing on Student Performance and Satisfaction in a Chiropractic Science Course

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Objective: The purpose of this study is to examine student performance and attitudes within both collaborative testing and traditional (solo) testing environments in an upper-level chiropractic technique course.

Methods: Students in the experimental group (n=43) were randomly assigned to 1 of 10 teams (each team typically containing 4-5 students), with teams differing for each of the 3-unit examinations. The control group (n=46) received the same unit examinations but completed them as individuals. Each examination consisted of 15 multiple choice questions related to spinal evaluation. All students took the comprehensive final examination as individuals. A survey was administered to all students regarding their attitudes on their testing experience after the third examination. Multivariate analysis of covariance was used for statistical comparisons.

Results: Although the collaborative group scored significantly higher than the control group on all unit examinations (P < .01), no significant difference was noted relative to final examination performance between the 2 groups (P > .05). Students involved in collaborative testing had a more positive attitude regarding their testing experience than students in solo testing (P < .05) and believed this form of assessment helped to reduce test anxiety and improve critical thinking and confidence (P < .01, respectively). No significant difference was identified in preassessment study habits (P > .05).

Conclusion: These results confirm and extend previous studies of collaborative testing at chiropractic colleges. Statistically significant increases in unit examination scores and statistically significant differences in survey item scores may be interpreted as students involved in

collaborative testing having an increase in course performance and student attitudes.

Conflict-of-Interest Policies Among Institutions and Organizations Offering Chiropractic Continuing Education

Matthew Funk, DC, and Anthony J. Lisi, DC

Objective: The purpose of this study is to document and describe the policies governing conflict of interest (COI) among select organizations and institutions offering chiropractic continuing education.

Methods: Surveys were sent to the following: all North American chiropractic colleges; major national chiropractic organizations; and state chiropractic organizations in states with more than 3,500 licensed doctors of chiropractic. Each organization or institution was surveyed regarding written and verbal COI policies.

Results: Half of the respondents in this survey indicated that they had written policies for management of COI, whereas half did not. None included most of the common elements typically outlined in continuing medical education COI policies. Content varied among the policies available for review. Relevant financial interest is the issue most often defined, and respondents generally prohibit presenters from selling products or services directly during presentations.

Conclusions: Overall, these results suggest that processes for managing COI in chiropractic CE are less robust than those previously described for continuing medical education. This study provides preliminary insight into the status of COI management in chiropractic CE.

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