# Chiropractic Adjustments Reduced Urinary Incontinence

**John Zhang, MD, PhD, Phillip Haselden, DC,**
**Rodger Tepe, PhD**
Logan College of Chiropractic

Introduction:

Urinary incontinence, inability to control urine while awake or asleep, is a common illness in elderly. The National Association For Continence has sponsored epidemiological surveys of adults across the United States in order to quantify the prevalence of bladder control problems in the community. These studies have identified that urinary incontinence and related symptoms of overactive bladder are important causes of depression and a risk factor for nighttime falls. 6 The causes of urinary incontinence are often attributed to overactive bladder, low bladder capacity, or overproduction of urine at night (nocturnal polyuria), secondary to spinal injury. The treatment for patients with urinary incontinence are usually bladder relaxants for overactive bladder, and urinary pads to absorb urine.

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Several authors have reported the effectiveness of chiropractic adjustments on elderly patients with urinary incontinence. Study et al reported a case study of a fourteen year old female patient recovered completely from traumatically induced urinary incontinence using manual manipulation. Chiropractic adjustment seems to be effective in childhood enuresis and functional enuresis as reported in several studies. 11,12,13 This current study presents a Pro-Adjuster spinal adjustment approach to treat elderly and young patients with urinary incontinence that has not been reported previously. A search in the Pub-Med found no publications using Pro-adjuster for urinary incontinence.

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**Results:**

A total of 13 patients' data (6 female, mean ages of 65.7±12.9 years old) were included in the study. The main reasons for the 13 patients seeking chiropractic care were chronic low back pain, neck pain and leg pains, (11 patients), prostate and macular degeneration (1 patient), and auto accident (1 patient). Nine patients had chronic urinary urgency and frequency where they had to void at least 3 times at night. Before treatment, the average frequency of urination at night was about 3.8±1.17 times for all patients. The average history of urinary incontinence was 5±2.2 years from all subjects. After 1-8 weeks of chiropractic adjustments, the urinary frequency at night was significantly reduced from 3.8±1.17 to once a night ($P<0.001$) (Figure 2). Three patients improved bladder control with only two adjustments. Two female elderly patients regained bladder control and no longer had to use urinary pads. All 13 subjects demonstrated reduction of urination frequency at night.

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## Conclusion:

In conclusion, a Pro-Adjuster treatment program was found to reduce nocturia in some chiropractic patients including elderly men, women and child with urinary incontinence. These reductions in nocturia improved patients' quality of life. With regard to research, large controlled and randomized study should be conducted to confirm the beneficial effect of this type of adjustment in patients with bladder control problems.

**Effect of Instrument Applied Spinal Manipulative Therapy Upon Dual-Task Performance Involving Complex Postural and Cognitive Tasks**

**Kristan Giggey, DC, Rodger Tepe, PhD**
Division of Research, Logan College, St. Louis, MO 63017

## Introduction:

Postural regulation and motor control were once thought to be exclusively automatic processes carried out at a sub-cortical level. A consensus of recent evidence indicates that the neural mechanisms of postural control are intimately joined to cognition (Woollacott & Shumway-Cook). The relationship between postural control and cognition is studied using a dual-task paradigm employing balance as a measure of postural control. With a dual-task methodology, a primary (postural) task will demonstrate degradation with the addition of a secondary, concurrent (cognitive) task. Using a dual-task paradigm, it is possible to show a relationship between the higher cognitive functions and those that were previously thought to be reflexive. The extent to which the two tasks interfere with each other indicates the degree of shared cognitive processing (Woollacott & Shumway-Cook).

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It is important to understand the cognitive implications of postural control because the activities of daily living often involve some degree of cognitive operation during motor tasks such as level walking, stair ascent, or stair descent, or reaching for an object. It has been hypothesized that there may be an attentional component associated with motor accidents such as falls (Shumway-Cook & Woollacott).

Previous studies have demonstrated that sensory and cognitive systems share common neural substrates (Woollacott & Shumway-Cook). The afferent neural impulses of mechanoreception (also known as somatosensation) as produced by joint mechanoreceptors and adjacent muscle spindle cells are necessary for the proper function of supraspinal centers (Seaman & Winterstein). Few studies have been done to determine if spinal manipulative therapy (SMT) can impact the processing that occurs at supra-spinal centers.

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## Results:

Data were analyzed with a one-way ANOVA to examine effects between the simple and complex conditions for each balance assessment. A main effect was found for the type of balance task. The addition of the cognitive component to the simple postural task significantly altered balance at each assessment. For assessments 1 through 3 respectively: $F(1, 22) = 5.8$, $p < .05$; $F(1, 22) = 7.6$, $p < .05$; and $F(1, 22) = 4.11$, $p < .05$. The direction of the main effect was not as predicted. The mean sway velocities decreased with the addition of the cognitive task, on average by 0.62 degrees per second.

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Repeated measures ANOVA were used to examine for differences across each balance assessment within the two task conditions. Significant mean differences were found for the pre, post, and follow-up assessments during the simple and complex postural task conditions. Respective values are: $F(1, 11) = 6.84$, $p < .05$ and $F(1, 11) = 10.4$, $p < .05$. Instrument-applied SMT improved postural control post-therapy with lasting effects one week later at follow-up under both simple and complex postural control conditions.

Kristan Giggey, DC, Rodger Tepe, PhD
Division of Research, Logan College, St. Louis, MO 63017

## Conclusion:

It was hypothesized that use of a mental task would increase the cognitive load associated with the postural task. The use of the serial 7's counting task did significantly change the mean values between the two conditions (quiet standing versus counting) but instead of increasing sway-velocity as hypothesized, sway velocity decreased. Several authors have noted that the use of a cognitive task can demonstrate degradation of a postural task (Shumway-Cook & Woollacott; Woollacott & Shumway-Cook). Adkin et al., found that the use of a cognitive task improved balance and suggested that the improvement was due to a change in arousal levels.

# Effect of Instrument Applied Spinal Manipulative Therapy Upon Dual-Task Performance Involving Complex Postural and Cognitive Tasks

**Kristan Giggey, DC, Rodger Tepe, PhD**
Division of Research, Logan College, St. Louis, MO 63017

The use of instrument applied spinal manipulative therapy was found to significantly improve postural control under both simple and complex conditions. There was a lasting effect upon postural control after one week post-treatment. The improvement in postural control found for the dual-task condition may indicate an improvement in cognition as it is related to postural control. The results of this preliminary study warrant continued investigation with symptomatic and asymptomatic participants i.e., performance athletes and geriatric populations

**Key Indexing Terms:** Sway, SMT, balance, dual-task

**A Randomized Controlled Trial of the Effect of Instrument-Applied Chiropractic Manipulative Therapy on Myofascial Trigger Points**

**Rodger Tepe, PhD & John Zhang MD, PhD**
Logan College of Chiropractic Division of Research, Chesterfield, Missouri

**Introduction:** Myofascial trigger points (MTrPs) are characterized as discrete, focal, hypersensitive spots in a taut band of muscle that are painful to palpation and reproduce the patient's local and referred pain symptoms. (Borg-Stein & Simons, 2002) Other features may include "exquisite" pain on compression, a jump and/or twitch response on compression, muscle weakness, rapid muscle fatigue, restricted range of motion (ROM) with painful stretch limit, motor dysfunction and autonomic dysfunction. (Simons et al. 1999) Incidence of myofascial pain, i.e., pain derived from MTrPs, has been reported to be as high as 93% in patients presenting to specialty pain management centers. (Gerwin 1995) Diagnosis of MTrPs is equivocal in published studies (Hsieh et al. 2000, Njoo et al. 1994) with best reliabilities associated with the combination of upper trapezius + trained examiners + spot tenderness, pain recognition and jump sign. (Gerwin 1997, Sciotti 2001)

# A Randomized Controlled Trial of the Effect of Instrument-Applied Chiropractic Manipulative Therapy on Myofascial Trigger Points

**Rodger Tepe, PhD & John Zhang MD, PhD**
Logan College of Chiropractic Division of Research, Chesterfield, Missouri

**Conclusion:** In this investigation, a single treatment of instrument-applied (Pro-Adjuster System) cervical manipulation combined with instrument applied soft-tissue manipulation significantly reduced upper trapezius MTrPs in the treatment group, while controls had no change. These preliminary results warrant continued study with repeated measures designs and symptomatic participants.

**Key Words:** Trigger Points, Myofascial Trigger Points, Myofascial Pain, Chiropractic Manipulative Therapy, Inter Rater Reliability Reliability,

# A clinical trial comparing the effects of instrument-applied and manual lumbar spinal manipulation on cervical sEMG measures.

**John Zhang, MD, PhD, Dennis Enix, DC, Kris Giggey, DC, Rodger Tepe, PhD**
Division of Research, Logan College of Chiropractic, Chesterfield, Missouri

**Introduction:** Chiropractic Manipulative Therapy (CMT) has been shown to produce beneficial effects for a variety of neuromusculoskeletal (NMS) conditions.1-3  It is not clear whether these effects are due to correction of misalignment or physiological effects of soft tissue stimulation.4 Some studies have found little change in the relative positions of vertebrae This research was designed to study the effects of instrument applied (ProAdjuster) and manual lumbar manipulation technique induced paravertebral cervical surface electromyogram (sEMG) responses.

**METHODS**

All subjects were tested three times using the Biopac sEMG system before and after instrument and manual chiropractic manipulations using the ProAdjuster and Diversified technique. On each day, subjects either received instrument or manual manipulation to the lumbar spine (L1 to L5) as determined by the ProAdjuster system of analysis.  EMGs were recorded before and after each adjustment in both groups.

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Division of Research, Logan College of Chiropractic, Chesterfield, Missouri

## RESULTS

Forty subjects were randomly assigned into the instrument and manual manipulation groups using a random table. Every subject signed an informed consent before beginning the study.

The first pattern was increasing in the EMG amplitude with an increase in adjusting force from 10, 15, to 20 pounds. In each stimulation period with the same force, the height of the EMG spikes was at the same level and less variable. This was seen in 33% of the recordings. The second pattern was showing low EMG amplitude at the start of adjustment and then the EMG amplitude went up and down with greater variation (10% of the recordings). The third pattern was showing a consistent decrease in EMG amplitude as the adjustment strength went up from 10, 15, and 20 pounds (15% of the recordings). The fourth pattern was showing limited or no responses when the adjustment was provided (42% of the recordings).

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Division of Research, Logan College of Chiropractic, Chesterfield, Missouri

## CONCLUSION

It was concluded that the instrument adjustment with varying frequency and forces produced surface EMG spikes from a remote adjustment site. The spikes had four different patterns.

# A Pilot Investigation of Expert and Novice Intraexaminer and Interexaminer Reliability of Durometer Analysis Of The Cervical Spine

**Rodger Tepe PhD & John Zhang MD PhD**
Logan College of Chiropractic Division of Research, Chesterfield, Missouri

**Introduction:** The foundation of chiropractic is based on locating and correcting joint dysfunction, i.e., subluxations and fixations. Chiropractic tests used to determine the need for and site of spinal manipulative therapy (SMT) have been the subject of considerable empirical study. The conclusions of this body of literature are equivocal, with few studies finding acceptable reliability or validity for the methods used to identify joint dysfunction. The consensus of the majority of studies and systematic reviews is that chiropractic tests used to locate joint dysfunction have unacceptable reliability and/or validity, including: Motion palpation, static palpation, diagnostic imaging (x-ray, video fluoroscopy), orthopedic tests, neurological tests, leg length inequality, visual observation, and pain description. The poor to fair reliability of these chiropractic tests creates a number of problems: 1. Chiropractic researchers, educators, practitioners and students lack a scientifically supported means of determining “where to adjust”; 2. Political, economic, and legal concerns

# A Pilot Investigation of Expert and Novice Intraexaminer and Interexaminer Reliability of Durometer Analysis Of The Cervical Spine

**Rodger Tepe PhD & John Zhang MD PhD**
Logan College of Chiropractic Division of Research, Chesterfield, Missouri

**Conclusion:** In this pilot study the reliabilities for the Pro-Adjuster System scans of the cervical spine were in the good to excellent range for all examiners and all combinations of examiners for all cervical vertebrae. These reliabilities are among the highest reliability/agreement/concordance findings reported in the literature for chiropractic tests of joint dysfunction. These results, although encouraging, must be considered preliminary pending further investigation. Continued study is warranted with asymptomatic and symptomatic participants and repeated measures designs.

**Key Words:** Chiropractic, physical examination, reproducibility of results, palpation, motion assessment, reliability, validity, agreement, specificity, sensitivity, observer variation.

# Who else has looked for the Chiropractic Holy Grail?

- Everybody in Chiropractic for over 100 years.
- Over 150 scientific studies, reviews and selective reviews.
- Consensus of empirical opinion is:
  **No scientific evidence supports any chiropractic test for where to adjust.**

# Where have we looked?

- Motion palpation
- Static palpation
- Visual postural analysis
- Pain description of the patient
- Plain static X-ray
- Leg length discrepancy
- Neurologic tests
- Orthopedic tests

# What has been found?

- Specificity = % true positives
- Sensitivity = % true negatives
- Reliability = consistency of measures
- Validity = are you measuring what you think you are measuring
- Responsiveness = ability to measure change

- **ALL UNACCEPTABLE**

# Consensus of all empirical evidence

- Reliability poor to fair
  - Kappas <0.40
  - ICCs <0.40
  - ps >0.05

- Validity unknown, cannot be demonstrated

# Problem 1.

- Chiropractic researchers, educators, students, & practitioners do not have a scientifically supported means of determining **where to adjust.**

# Problem 2.

- Lack of **where to adjust** evidence creates political, economic and legal issues with legislation, reimbursement, and litigation issues.

# Problem 3.

- Lack of scientifically acceptable, **where to adjust**, objective outcome measures means we cannot effectively demonstrate the benefits of chiropractic care.
- Subluxation/Fixation models remain unsupported as theoretical constructs.

# Problem 4.

- If we cannot empirically demonstrate the efficacy of chiropractic diagnosis and treatment, insurers will increasingly deny our claims, our market share will continue to shrink, chiropractic doctors and patients will suffer accordingly.

# Expert and Novice Intraexaminer and Interexaminer Reliability of Pro-Adjuster Fixation Amplitude Scans

Rodger Tepe, PhD
John Zhang, MD, PhD
Kristan Giggey, DC

Division of Research
Logan College of Chiropractic

# Experts

Dr. Jon

Dr. Dave

# Novices

Dr. Rich

Dr. Judd

# Confidence Ranges for Reliability Estimates

- 0.0 - .20 = slight, poor
- .21 - .40 = fair
- .41 - .60 = moderate
- .61 - .80 = substantial
- .81 – 1.0 = nearly perfect

# Results

- Hypothesis 1 was supported: Experts ICCs were significantly higher than novices ICCs ($p > .05$).
- Hypothesis 2 was supported in 220/230 (82 Grand ICCs .61 - .80; 107 Grand ICCs .81 – 1.0) and not supported in 14/230 (Grand ICCs $< .60$).

# Cumulative ICCs by comparison

| | .41 – 6 | .61 – 8 | .81 – 1.0 |
|---|---|---|---|
| **A** | | 3 | 26 |
| **B** | | 19 | 10 |
| **C** | 5 | 15 | 9 |
| **D** | 5 | 20 | 4 |
| **EX** | | 4 | 25 |
| **NOV** | 4 | 20 | 5 |
| **ALL** | | 1 | 28 |

# Conclusion

1. This is a pilot study and results must be considered tentative.
2. Overall, the fixation amplitude scan reliabilities are the highest in chiropractic literature for tests of “where to adjust”.
3. Experts’ reliabilities were significantly ($p < .05$) higher than novices’. This supports the notion that there is a skill dimension in Pro-Adjuster scanning.

# Conclusion Cont'd

4. First and last scans in a series generally have higher amplitudes.
5. The results of this study may have far reaching implications for determining "where to adjust". Accordingly, replications and extensions of this study are needed.