

ICA Best Practices Statistics

Current entries in database: 1,942

Intentional duplicate paper assessments for quality control: 24

Papers considered to be original research: 1,716

Treatment Outcome was positive in 1,690 papers

Treatment Outcome not positive in 54 papers.

Of these 54, Papers showing no statistical significance in refuting the null hypothesis (making predicted change): 1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1+1 = 18

Papers where no progress resulted in patient having surgery: 1, = 1

Papers simply showing no progress: 1+No change in blood in urine after adjustment+ No white blood cell count improvement after adjustment+ No change in extremity palsy+No disc herniation resorption after chiro care+Ankylosing spondylitis mobility+No increase in mouth opening dimension+ Abducens palsy+Head repositioning accuracy no changes+No improvement when adding axial traction+ Chronic recurrent multifocal osteomyelitis+ Infantile colic+ Knee strength after manipulation + Postural sway + No significant EMG changes after manipulation = 15

Papers Designating referral to specialist rather than chiro treatment: Heart attack+ Cancer+Occluded Bassilar artery then co-managed with chiropractic+Sleep apnea c-managed with chiropractic+Renal cell carcinoma+Sacroccygeal coccyxadynia comanaged+Fractured Odontoid co-Managed+Intracranial hypotension after manipulation causing headache = 8

Papers accusing chiropractic of damage: Dural Tear U Penn speculated caused by manipulation of neck, source unknown+Cauda Equina syndrome at approximately 70th adjustment with weak medical accusatory link+ Brain stem stroke, details not clear+ Neurologic adverse events possibly related to manipulations = 4

Papers Citing Mechanism of injury with no treatment: 1

Papers showing inaccurate mensuration: 1

Papers Where physical therapy failed: 1

Papers on better understanding mechanism's of clinical efficacy: 1

Total: 18+1+15+8+1+1+1+1 = 46

3 With no write up, 2 blanks, 1 inappropriately labeled. = 6

Total = 52

1. Barbuto, L.. Coccygodynia: Report Of A Case. *Journal Of The Canadian Chiropractic Association* 1977; 21:123-124. In 1977, Barbuto reported a case study of a 14 year old female with a chief complaint of left sided lumbo-sacral pain. On bidigital examination the distal tip of the coccyx felt anteriorly displaced and produced pain on movement. X-ray and urinalysis were unremarkable. Elevated erythrocyte sedimentation rate was demonstrated on blood work. It was concluded that the abnormal blood work was of no conclusive significance. Treatment consisted of sacral and coccygeal manipulation, soft tissue therapy and the application of a sojo pillow. The patient's medical doctor was said to be appalled at the thought of the patient seeing a chiropractor and a surgical consultation was arranged leading to a diagnosis of sacrococcygeal coccygodynia. The surgeon recommended a six week course of cortisone injections. the author concluded that the diagnosis and treatment becomes a quagmire when certain members of the health professions destroy the credibility of others. ; Sacral And Coccygeal Manipulation; Musculoskeletal; Coccyx; Lower Back; Case Study; Adjustment Only; Coccygodynia; Radiographs; Adolescent Pediatric
2. Bockenbauer, Susan E., DO; Julliard, Kell N., MA, MFA; Lo, Kim S., DO; Huang,Emily, BS; Sheth, Alpa M., BS. Quantifiable Effects Of Osteopathic Manipulative Techniques On Patients With Chronic Asthma.. *Journal Of The American Osteopathic Association* 2002; 12:371-375. In 2002, Bockenbauer et al reported on a cross-over trial of 10 women with chronic asthma, who served as their own control. Each patient received one OMT (Osteopathic Manipulative Treatment) and one sham. There were no significant changes in the outcome variables ; Osteopathic Manipulative Treatment (Omt); Neurologic; Cervical Spine; Upper Back; Cross-Over Cohort Control; 4 Tretament Omt: Ligamentous Tension, 1st Rib Upward Displacement, Lower Rib Restriction, Diaphragmatic Release; Asthma; Chronic; Adult; Controlled
3. Brownson, RJ MD; Zollinger, William K MD, FACS; Madeira T, MD; Fell, David MD. Sudden Sensorineural Hearing Loss Following Manipulation Of The Cervical Spine. *Laryngoscope* 1986; 96:166-170. In 1986, Brownson et al present a case of 29 female who went to an osteopathic physician for a sprained shoulder, headaches, and tension. It is stated that he "popped" her neck by rotating the head first in one direction and then rapidly in the other. The following day she looked over her right shoulder backing out of the driveway and felt a right sided neck pain, after which "everything went black" and she "went numb". The local told her it was "nerves" and she receivd no treatment. Nausea, vertigo, and tinnitus increasing got worse and she consulted an ENT physician who performed audiometry. Significant deficit was found on the left. Radiographs and angiograms found nothing significant. Treatment with blood thinning medications was successful and hearing test at the end of six weeks was found to be near normal. The 2nd case presented is a 45 year old male suffering from pain in the left shoulder and neck. He visited an osteopathic physician and the patient states the manipulation was "unusually rough." He then visited a chiropractor who place the patient in the prone position with his neck extended and then his head was rotated briskly to the left and then to the right. The patient reported that he immediately had the onset of vertigo with nausea and vomiting and his vision dimmed. The symptoms persisted and the chiropractor visited the patient in his house where it is reported that the same manipulation was performed. Two weeks after the first manipulation, the patient's symptoms persisted and he consulted the MD authors of this study. Right ear audiological tests demonstrated deficits while

the left ear tested normal. Angiogram found the caudal half of the basilar artery was occluded. Another abnormality was found near the foramen magnum, but the abnormality is not detailed. He was treated with blood thinners and little improvement was found following six months of treatment. It is stated that the patient continued chiropractic treatment but extreme motion of the neck was not allowed. ; Unknown; Neurologic; Cervical Spine; Head; Retrospective Analysis; Adjustment Only; Sprained Shoulder; Osteopathic Manipulation; Chiropractic Adjustment; Adult; Negative Paper; Headache; Hearing Loss

4. Childs, John D; Flynn, Timothy W; Fritz, Julie M. A Perspective For Considering The Risks And Benefits Of Spinal Manipulation In Patients With Low Back Pain. *Manual Therapy* 2006; 1:316-320. 131 patients between the ages of 18 and 60 with primary complaint of LBP and who did not display "red flags" for serious spinal condition were enrolled. Patients were randomly assigned to receive spinal manipulation plus exercise intervention or an exercise intervention without manipulation. Treatment received by the manipulation group differed from the exercise group only during the first two sessions, during which time the patients received a standardized manipulative technique (performed by a physical therapist) and a range of motion exercise only. All sessions after were the same for both the manipulation group and exercise group.

To examine the risk of worsening disability, all patients were classified as to whether they experienced a worsening in disability. Patients whose Oswestry disability score increase 6 points or more, were classified as having a worsening of disability.

No differences were observed between treatment groups for any baseline variables. Among patients in the exercise group, 11% experienced a worsening in disability at the 1-week follow-up compared to only 1% in the manipulation group. A similar pattern was observed at a 4 week follow-up. Among patients in the exercise group 11% were classified as having experienced a worsening in disability after 4 weeks compared to 3% of patients who received manipulation. For every 100 patients with LBP who receive manipulation, approximately 1-2 patients will experience a worsening in disability, compared to 11-12 patients that will worsen if they do not receive manipulation.

The number needed to treat suggests that only 10 patients need to be treated with manipulation to prevent 1 patient from experiencing a worsening in disability after 1 week.

This data provide preliminary evidence suggesting that a health benefit that does not routinely offer spinal manipulation for patients with LBP may actually increase the likelihood for patients to experience a worsening in disability. ; Spinal Manipulative Therapy; Lumbar Spine; Lower Back; Exercise; Controlled; Exercise And Manipulation; Low Back Pain

5. Clark, Brian C; Goss, David A; Walkowski, Stevan; Hoffman, Richard L; Ross, Andrew; Thomas, James S. Neurophysiologic Effects Of Spinal Manipulation In Patients With Chronic Low Back Pain. *Bmc Musculoskeletal Disorders* 2011; 12:1-10. The authors attempted to gather scientific evidence to explain the effects and mechanisms supporting the clinical efficacy and effectiveness of manipulative therapy in treating LBP. They measured the amplitude of the motor evoked potential (MEP) and short-lacency stretch reflex of the erector spinae muscles pre and post manipulation using EMG to determine if any change was observed that would validate the efficacy of the treatment. Results did not show any statistically significant change in either outcome measure in patients with LBP or asymptomatic controls after a single manipulation was performed. Spinal manipulation that produced an audible response did show a significant

decrease in the short-latency stretch reflex compared with treatment in which there was no audible joint sound. ; Unknown; Musculoskeletal; Lumbar Spine; Lower Back; Case-Control Study; Spinal Manipulation; Low Back Pain; Ohio University; Osteopathic; Transcranial Magnetic Stimulation; Electromechanical Tapping; Motor Evoked Potential (Mep); Chronic Low Back Pain; Manual Therapies; Muscle; Stretch Reflex; Chiropractic; Audible Release

6. Diamond, Michael R MS, DC. Suspicious Lower Back Pain- A Case Report. *International Review Of Chiropractic* 1994; July/August:48-50. In 1994, Diamond reported a case of a 40 year old female with severe sharp bilateral neck pain and low back pain. The patient was placed on a trial of 3 visits per week for 8 weeks. Due to persistent pain and frequent aggravation, the patient was referred to a neurologist. Ultimately, the low back pain was due to right renal cell carcinoma. ; Spinal Manipulative Therapy; Urinary; Lumbar Spine; Lower Back; Case Study; Kidney - Renal Cell Carcinoma; Chiropractic; Whiplash; Neck Pain; Adult; Low Back Pain; Back Pain; Shortness Of Breath; Occipital Headaches; Kidney Stones

7. Donovan, J S PT PHD; Kerber, Charles W MD; Donovan, William H MD; Marshall, Lawrence F MD. Development Of Spontaneous Intracranial Hypotension Concurrent With Grade Iv Mobilization Of The Cervical And Thoracic Spine: A Case Report. *Archives Of Physical Medicine And Rehabilitation* 2007; 88:1472-1473. Spontaneous Intracranial Hypotension (SIH) is defined as the development of severe orthostatic headaches, caused by an acute cerebrospinal fluid (CSF) leak. This study shows an episode of SIH after experiencing a Grade IV Mobilization by a physical therapist.

A 32 year old woman presented with a 2 week history of severe occipital and posterior headache alleviated by lying supine. The onset of the headaches were directly correlated with a cervical and thoracic spine mobilization. With the patient prone, the physical therapist performed a grade IV mobilization to the thoracic and lower cervical spine with the ulnar aspects of the hands, with audible cavitation. Immediately following, the patient experienced lightheadedness, and severe headache hours later. The patient was initially diagnosed with viral meningitis and given an injection of Toradol with Reglan and intravenous hydration with minimal improvement. The patient continued to have severe headaches, nausea and photophobia when standing. She also developed neck stiffness and left C8 radiculitis with associated supination and finger flexion and extension weakness with standing longer than one hour, as well as hearing loss in the left ear. All of these symptoms resolved when supine. Cranial CT was unremarkable. MRI showed meningeal thickening. Radionuclide cisternogram was performed and lumbar puncture opening pressure was less than 5cm H₂O, but indicated no CSF leak. Thoracic and cervical MRI revealed abnormal epidural and subdural collection of CSF, epidural venous engorgement and dural enhancement. CT myelogram showed large leak from C8-T5 mostly on the left.

Patient did not respond to bedrest, hydration and caffeine intake. The patient underwent 2 epidural blood patches 1 week apart specifically at C7 and T5 and was advised to take Amicar to aid in clotting. The patients symptoms resolved within 2 weeks and has not had any of these symptoms 1 year after the procedure.

In conclusion, the purpose of this study is to make practitioners aware that SIH can occur post mobilization and patient should be referred to a neurologist for examination if they complain of the symptoms described in the study. ; Grade Iv Mobilization; Neurologic; Cervical Spine; Fingers; Head; Case Study; Mobilization Only; Chapman University; Musculoskeletal;

Headaches; Radiculopathy; Intracranial Hypotension; Rehabilitation; Spine; Cerebrospinal Fluid; Csf; Thoracic Spine; Epidural; Dural; Meningeal; Sih

8. Drover, Janice M DC; Forand, Dominique R; Herzog, Walter PhD. Influence Of Active Release Technique On Quadriceps Inhibition And Strength: A Pilot Study. *Journal Of Manipulative And Physiologic Therapeutics* 2004; 27:408-413. In 2004, Drover, Forand and Herzog reported a pilot clinical outcome study of 9 athletes suffering from unilateral anterior knee pain. Treatment consisted of Active Release technique for anterior knee pain. The experimental leg and contralateral leg were tested pretreatment and post treatment and the experimental leg was tested a third time approximately 20 minutes post treatment. A repeated measures analysis of variance (ANOVA) was used to compare pretreatment and posttreatment values for strength and muscle inhibition for the experimental and contralateral knee. The results showed no statistical significance. ; Active Release Technique; Musculoskeletal; Knee; Case Study; Functional Rehabilitation; Knee Pain; University Of Calgary; Young Adult; Muscle Inhibition; Muscle Inhibition
9. Ellis, Bruce W. Olfactory Whiplash: A Case Study. *Chiropractic Journal Of Australia* 1993; 23:64-65. In 1993, Ellis reported a case study of a 31 year old male with neck pain. The patient explained that he was a butcher who injured his neck while violently withdrawing his nose from a bag containing a rotten chicken. This is actually an anecdotal account of a mechanism of injury. Chiropractic; Wit And Humour; Unknown; Musculoskeletal; Cervical Spine; Neck; Case Study; Neck Pain; Adult
10. Erfanian, Parham DC FCCRS(c). Patient With Signs And Symptoms Of Myocardial Infarction Presenting To A Chiropractic Office: A Case Report. *Aca Journal Of Chiropractic* 2002; :32-39. A 53-year-old female presented to a chiropractic office with signs and symptoms of heart attack (myocardial infarction). Although she was complaining of neck and upper-back pain, the cause of her condition was due to an incident of acute myocardial infarction(MI). Other than anterior chest pain, patients with MI could experience pain over lower jaw and teeth, both arms, shoulders, neck, upper back, and epigastrium. Due to the fact that heart attacks are underestimated in women within a certain age group, their detection is also less frequent. To emphasize this fact, this study presents epidemiology, examination, laboratory findings, and risk factors for the myocardial infarction.

Women are more likely to experience vague pain or discomfort in the chest, neck, back, and arms, which tends to come and go for months or even years before it is diagnosed. Combining the incidence of heart disease in women with its possible musculoskeletal presentation increases the likelihood of a patient presenting with neck and upper-back pain secondary to underlying heart disease in chiropractic settings.

The patient was experiencing insidious neck and upper-back pain for two days. There was no particular trauma noted. She appeared tired and fatigued with complaints of dull and achy pain over the neck, upper back and both shoulders. She also complained of stomach flu, abdominal pain and loss of appetite. However, she had been able to consume copious amounts of water. The treating chiropractor informed the patient of possible internal problems aside from her musculoskeletal pain. She was unable to go to her family doctor so she went to the emergency room after her chiropractic visit. Upon admission, laboratory assessment indicated

that she had experienced a heart attack 36 hours prior to her admission.

Insidious onset of neck and upper back pain secondary to heart problems creates a possible clinical complication of patients seeking chiropractic care. Understanding the signs and symptoms of MI allows the chiropractic clinician to recognize the underlying cause of the patient's symptoms and make appropriate referrals.

; Cardiac; Cervical Spine; Chest; Neck; Case Study; Myocardial Infarction; Myocardial Infarctions; Heart Attack; Adult; Neck Pain; Chest Pain; Shoulder Pain

11. Fisher, Alison R M OSt; Bacon, Catherine J MSc, PhD; Mannion, Jamie VH PGDipSci, MSc. The Effect Of Cervical Spine Manipulation On Postural Sway In Patients With Nonspecific Neck Pain. *Journal Of Manipulative And Physiologic Therapeutics* 2015; 38:65-73. This study attempted to determine whether or not HVLA manipulation of the cervical spine in individuals with neck pain would also impact postural sway. The same individuals acted as the control group by receiving a "passive head movement". Results showed a slight, but not clinically significant, positive change in reported pain levels as compared to the control, but revealed no notable improvement in postural sway. ; Spinal Manipulative Therapy; Musculoskeletal; Cervical Spine; Neck; Rct; Spinal Manipulation; Postural Sway; Unitec Institute Of Technology; Neck Pain; Central Nervous System; Cervical Manipulation; Neuronal Plasticity; Posture
12. George, James W.. The Effect Of Cervical Spine Manual Therapy On Normal Mouth Opening In Asymptomatic Subjects. *Journal Of Chiropractic Medicine* 2007; 6:141-145. A randomized control study of Active Release technique (ART) and High velocity low amplitude (HVLA) on normal mouth opening. Cervico-cranial joint manipulation and cervico-cranial soft tissue manipulation was applied to two groups and were compared to a control group where no intervention was applied. Results show that neither ART or HVLA had an impact on increasing mouth opening dimensions. ; Active Release; Musculoskeletal; Cervical Spine; Mouth; Rct; High Velocity; Low Amplitude; Musculoskeletal; Temporomandibular; Range Of Motion; Articular; Chiropractic; Manual; Masticatory; Mouth; Therabite; Art; Hvla; Tmd
13. Grant D. Sanders DC; Arthur J. Nitz PT, PhD; Mark G. Abel PhD; T. Brock Symons PhD; Robert Shapiro PhD; W. Scott Black MD, MS; James W. Yates PhD. Effects Of Lumbosacral Manipulation On Isokinetic Strength Of The Knee Extensors And Flexors In Healthy Subjects:: A Randomized, Controlled, Single-Blind Crossover Trial. *Journal Of Chiropractic Medicine* 2015; :240-248. This study measured the strength differences (both isometric and isokinetic) of knee extension and flexion after manipulation and sham-manipulation. The differences were not statistically significant for either group. The study was limited by a number of factors which could have adversely affected the outcome. These were: too small of a study population (21 when 52 were estimated to be needed) no control and real knowledge of subjects activities between session which could have affected performance. A third limitation is that the number, side, and combinations of manipulations received were not documented each time the manipulations were performed. ; Diversified; Musculoskeletal; Lumbar Spine; Lower Back; Rct; Adjustment Only; None

14. Grant D. Sanders DC; Arthur J. Nitz PT, PhD; Mark G. Abel PhD; T. Brock Symons PhD; Robert Shapiro PhD; W. Scott Black MD, MS; James W. Yates PhD. Effects Of Lumbosacral Manipulation On Isokinetic Strength Of The Knee Extensors And Flexors In Healthy Subjects:: A Randomized, Controlled, Single-Blind Crossover Trial. *Journal Of Chiropractic Medicine* . ; Diversified; Musculoskeletal; Lumbar Spine; Lower Back
15. Hancock, Mark J MD; Maher, Christopher G; Latimer, Jane; Herbert, Robert D; McAuley, James H. Independent Evaluation Of A Clinical Prediction Rule For Spinal Manipulative Therapy: A Randomised Controlled Trial. *European Spine Journal* 2008; 17:936-943. The following randomized controlled trial was conducted to test the validity of a recent clinical prediction rule that identifies patients most likely to respond to spinal manipulation. The efficacy of spinal manipulative therapy was tested in 239 patients presenting with acute low back pain. The patients were checked against the prediction rule and randomized to receive spinal manipulative therapy or placebo 2 to 3 times per week for up to 4 weeks. Treatment was delivered by 15 physiotherapists in 13 private clinics across Sydney. All patients also received either an active or placebo version of diclofenac (a known NSAID). Outcomes included pain and disability measured at 1, 2, 4 and 12 weeks. Findings showed that the clinical prediction rule performed no better than chance in identifying patients with acute, non-specific low back pain most likely to respond to spinal manipulative therapy. ; Spinal Manipulative Therapy; Musculoskeletal; Lumbar Spine; Hip; Lower Back; Rct; Adjustment And Diclofenac; Sacroiliac Joint; Pelvis; Low Back Pain; Nsaid; Smt
16. Hancock, Mark J.; Maher, Chris G.; Latimer, Jane; McLachlan, Andrew J.; Cooper, Chris W.; Day, Richard O.; Spindler, Megan F.; McAuley, James H.. Assessment Of Diclofenac Or Spinal Manipulative Therapy, Or Both, In Addition To Recommended First-Line Treatment For Acute Low Back Pain: A Randomised Controlled Trial. *The Lancet* 2007; 370:1638-1643. In 2007, Hancock et al. evaluated the effect of SMT, diclofenac, or both on patients with acute low back pain. Four groups of 60 patients were randomly allocated to one of four groups: SMT with placebo drug, diclofenac with placebo SMT, SMT and diclofenac, or double placebo. SMT frequency was 2-3/ week for 4 weeks. Duration of current symptoms, disability, function, NRS, pain-related self-statement scale for pain and catastrophising, and the fear-avoidance beliefs questionnaire for work and activity were the outcome measures. There was no significant effect of diclofenac or SMT on recovery time, and neither SMT or diclofenac had significant effects on the rest of the outcome measures. ; Musculoskeletal; Lumbar Spine; Lower Back; Rct; Functional Rehabilitation; Low Back Pain; Diclofenac; Smt; Adverse Reactions
17. Hawk, Cheryl DC PHD; Jerrilyn Cambron Dc PhD. Chiropractic Care For Older Adults: Effects On Balance, Dizziness, And Chronic Pain. *Journal Of Manipulative And Physiologic Therapeutics* 2009; 32:431-437. Falls are an important public Health Concern in older adults. Few studies on manipulation have looked at effects on gait and balance. The author reviews a study using a 7 item short form Berg Balance Scale (BBS) in adults 65 years or older with impaired balance. A single group pretest/posttest design was used because subjects were given a choice for 2 groups and all of them chose the chiropractic SMT group and not the exercise group. The study was done at the Cleveland Chiropractic college clinic. Appropriate channels were followed in terms of approval from an institutional review board. Subjects signed

documents of informed consent and information was kept private and secure. Thorough examination determined appropriateness for study inclusion which in part mandated the subject could stand for 5 seconds on one leg and was age 65 or older. Subjects were excluded if they were wheelchair bound, reported manual care in the past month, were on an exercise program specific to balance or lower body strength, contraindications to spinal manipulation such as signs of vertebrobasilar insufficiency, unstable severe medical condition, severe osteoporosis, fracture, other osseous abnormalities, known severe cardiovascular, pulmonary or metabolic disease or signs of such; absence of SMT indications (indications include abnormal spinal joint mobility with tenderness or muscle tension or spasm).

Volunteers were screened by means of questionnaire and One Leg Standing Test. Eligible people were examined and screened and then if appropriate enrolled in the study.

16 Subjects were treated with diversified technique and or other manipulative techniques like soft tissue treatment, myofascial release, and hot packs for 2 visits per week for 8 weeks for 10-15 minutes per treatment. Subjects indicating the needed to be treated as frail elderly were treated with modifications including instrument adjusting, flexion distraction and mobilization. HVLA adjustments were performed on 3 subjects and the rest were treated as frail adults. The cervical spine was adjusted in 8 of 16 subjects. None fell during treatment.

Patients were sent questionnaires regarding meds taken, history of falls, fluid and alcohol intake.

Outcome measure questionnaires were administered at baseline, visit 8 (1 month), and visit 16 (2 months) at the studies endpoint.

The modified BBS - Berg Balance Scale for falling, used here has a maximum score of 28 (7*4) where higher scores indicate better balance. The short form remained fairly stable throughout the study for most subjects. Subjects without dizziness (n=8) were less likely to show improvement. 4 increased their score and 3 decreased.

OLST - 0 score if could not lift the leg, 2 if could lift for less than 10 seconds and 4 if could lift the leg for more than 10 seconds. Little change occurred here with only 2 subjects improving 5 seconds or more.

PDI - Pain disability index questionnaire was used. 6 point change is significant. Subjects scored 14 at baseline, patients with dizziness (n=6) scored median baseline pain score of 19 where 4 of the 6 showed significant improvement over the course of treatment. Patients without dizziness (n=8) had a median baseline score of 6.5 and 2 showed improvement, 3 no change and 3 worsened over the course of treatment.

DHI - Dizziness Handicap Inventory questionnaire was used; maximum score of 100 indicates maximum perceived handicap. 18 point change is significant. 6 subjects had baseline positive dizziness scores, 3 showed significant reduction to no dizziness at all, 2 improved less than 18

points and 1 did not improve. One of the subjects not starting with dizziness developed it over the course of treatment and also reported an increase in pain.

GDS - Geriatric Depression Scale 15 item short form was used. 5 points indicates presence of depression. One subject tested positive on this measure and his score dropped/improved 7 points over the course of treatment.

33 people were screened, 16 accepted, 2 dropped out because of scheduling conflict (13%), Median number of medications taken was 5-6.

One adverse event occurred from treatment (symptoms lasting 24 hours) which self resolved within 72 hours.

Study limitations included no comparison group, small sample size, bias could be a factor because there was no blinding, self report bias may have been present in PDI, GDS and DHI measures. The sample was also healthy and exercised on a regular basis. Reported levels of physical activity were above average.

Results were insignificant for the most part. It was projected limitations should be overcome in future research. No discussion of additional treatment was entered but a discussion of additional assessment was discussed. ; Spinal Manipulative Therapy; Neurologic; Cohort Study; Adjustment Only; Dizziness; Cleveland Chiropractic College; Diversified; Geriatric; Balance; Gait

18. Jamison, Jennifer. *Insomnia: Does Chiropractic Help?*. *Journal Of Manipulative And Physiological Therapeutics* 2005; 28:180-187. In 2005, Jamison reported a study involving 221 patients and 15 chiropractors. The patients completed an expectation study tended to believe that they had experienced improvements in sleeping problems as a result of chiropractic care. 154 patients were then directly interviewed. 2 of the interviewed patients reported immediate benefit after their chiropractic adjustment. 51 of that 52 reported improvement in their sleep difficulties. A prospective study involving 20 subjects was undertaken with sleep records being kept by the patients. 16 subjects completed the study. The author concluded that the pilot study failed to produce convincing objective evidence that chiropractic care improves sleep behavior. ; Chiropractic; Diversified; Cervical Spine; Neck; Cohort Study; Adjustment Only; Insomnia; Adult; Subluxation; 3 Dimensional Study
19. King, Laurie BSc DC FCCS; Mior, Silvano A., D.C., FCCS(C); Devonshire-Zielonka, Kim, BSc, D.C.. *Adolescent Lumbar Disc Herniation: A Case Report*. *Journal Of The Canadian Chiropractic Association* 1996; 40:15-18. In 1996, King, Laurie, BSc, DC, FCCS(C), et al published an article regarding a 14 year-old female who presented with complaints of bilateral low back , right buttock and lateral thigh pain. Treatment consisted of side posture spinal manipulation, soft tissue therapy to the lumbosacral region, with interferential current therapy to the lumbar spine and right hamstring. Over the next week the pain worsened so she was referred to a neurosurgeon and received a CT scan. The scan revealed a L5-S1 disc herniation.

She was referred back to the chiropractor for further treatment. Two weeks following further treatment the patient underwent surgery for removal of a large right sided lateral herniated disc at the L5-S1 level. After four week follow-up she was pain free with no restrictions in activities. ; Spinal Manipulative Therapy; Neurologic; Lumbar Spine; Knee; Lower Back; Interferential Current; Case Study; Functional Rehabilitation; Low Back Pain; Canadian Memorial Chiropractic College; Disc Herniation; Adolescent; Surgery; Soft Tissue Therapy; Low Back Pain; Buttock Pain; Thigh Pain; Side Posture Manipulation

20. Kuhn, Daniel. A Descriptive Report Of Change In Cervical Curve In A Sleep Apnea Patient:: The Importance Of Monitoring Possible Predisposing Factors In The Application Of Chiropractic Care.. *Journal Of Vertebral Subluxation Research* 1999; 3:1-9. In 1999, Kuhn reported on a 51 year-old male patient suffering from sleep apnea. This study was more of a descriptive study than a report on outcomes from chiropractic treatment. The patient weighed 195 lbs at the onset of care. He was seen 123 times over 21 years (approximately 6 visits per year). He developed severe obstructive sleep apnea during this time as his weight increased to 455 lbs. His sagittal cervical spine alignment worsened to a kyphotic alignment over this time as well. The relationship between the kyphotic alignment, body weight and development of sleep apnea was discussed. Mid Back Pain; Thoracic Spine; Lumbar Spine; Blair; Thompson; Low Back Pain; Eent; Cervical Spine; Head; Case Study; Apnea - Sleep; Adult; Sleep Apnea; Cervical Lordosis; Cervical Kyphosis; Body Weight; X-Ray; Radiograph; Subluxation; Sleep; Obesity; Headaches
21. Lantz, Charles A., DC, PhD; Chen, Jasper, DC. Effect Of Chiropractic Intervention On Small Scoliotic Curves In Younger Subjects: A Time-Series Cohort Design.. *Journal Of Manipulative And Physiological Therapeutics* 2001; 24:385-393. In 2001, Lantz and Chen reported on 42 children with scoliotic curves of 6-20 degrees, of ages 6-17 years. A year of care of diversified, Gonstead, and heel lifts did not result in any changes in the scoliotic curves. ; Gonstead; Musculoskeletal; Thoracic Spine; Lower Back; Heel Lift; Cohort Study; Adjustment Only; Scoliosis; Diversified
22. Ottenbacher, Kenneth PHD, OTR; DiFabio, Richard P PT. Efficacy Of Spinal Manipulation/Mobilization Therapy : A Meta-Analysis. *Spine* 1985; 10:833-837. In 1985, Ottenbacher and DiFabio reported a quantitative Review (Meta-Analysis) to synthesize existing evidence on the efficacy of joint mobilization and to expose consumers of rehabilitation research to the methods and procedures of quantitative reviewing. A review by computer assisted bibliographic search of the Index Medicus data base retrieved 57 titles that were considered potentially relevant to manipulation/mobilization, but only 9 met the prespecified criteria for inclusion in the quantitative review. The authors reported that the results provided only limited empirical support for spinal mobilization and manipulation when used to treat pain, flexibility limitations and impairment in physical activity. ; Unknown; Musculoskeletal; Manipulation; Meta-Analysis; Adult
23. Packer, Amanda Carine PT; Pires, Paulo Fernandes PT; Dibai-Filho, Almir Vieira PT; Rodrigues-Bigaton, Delaine PT PhD. Effect Of Upper Thoracic Manipulation On Mouth Opening And Electromyographic Activity Of Masticatory Muscles In Women With Temporomandibular Disorder: A Randomized Clinical Trial. *Journal Of Manipulative And Physiologic Therapeutics* 2015; 38:253-261. This study was to evaluate the effects of upper thoracic manipulation on vertical mouth opening (VMO) and electromyographic (EMG) activity of the

masseter and temporomandibular muscles in women with temporomandibular disorder.

The volunteers were women between 18 and 40 years old who complained of myofascial pain or myofascial pain with limited mouth opening based on the research diagnostic criteria for temporomandibular disorders (RDC/TMD). Simultaneous conditions could also be disc displacement without reduction, disc displacement without reduction but with limited opening, disc displacement without reduction and without limited opening and arthralgia. Masticatory muscle pain and/ or fatigue during functional activities for the past 6 months, at least mild neck pain diagnosed by the neck disability index, body mass index less than 25kg/m, and average baseline pain rating for the masticatory muscles greater than 3 cm on a visual analog scale were also inclusion factors for this study.

Study exclusions were missing teeth (except for the third molars), use of partial or complete dentures, systemic neurological disease, current use of orthodontic and/or pharmaceutical treatment, red flags such as malignant tumor, or inflammatory or infectious diseases that contraindicate the use of manual therapy, previous history of whiplash, cervical surgery, or fibromyalgia, having undergone manipulation in the previous month, or osteoarthritis per RDC/TMD.

This was a blind, randomized clinical trial with a randomization of 1:1. Each participant was allocated to one of two groups (experimental and placebo). EMG and VMO readings were taken before and after the manipulation or the sham. And the researcher was blind as to which group the participant was assigned.

Assessment of VMO was done with the participant seated and with mouth opened as much as possible without pain as well as maximum pain tolerance. This measurement was taken once with a ruler between the maximally central incisor and the basal extremity mandibular incisors. EMG measurements were also taken in the seated position using a BIO-EMG 1000 electromyograph with 16-bit resolution and sampling frequency of 2000 Hz per channel. This device was connected to a standard Pentium 200-MHz computer, which ran Aqdados 7.2 (Lynx) as the data acquisition software. Readings were

performed under 3 conditions: at rest, during isometric contraction of mandibular depressors (suprahyoid muscles), and during isometric contraction of mandibular elevators (bilateral temporal and masseter muscles).

The participant was placed supine with instruction to interlace their fingers behind the neck and as the therapist placed their hand in a pistol grip just below the segment to be manipulated as the participant arms were brought caudally down to induce flexion in the upper thoracic spine with breathing instructions and a high-velocity, low amplitude thrust was administered in a posterior to superior direction. If audible cavitation was heard, they were immediately re-assessed. If no audible, a second thrust was done. If no audible heard after second attempt, it was assumed the segment was manipulated. Cavitation occurred first attempt in 10 people, second attempt in 3 people and did not in 3 people.

In the placebo group, participants were placed in the same position and the therapists hand was in the open position not in the pistol grip. The same breathing instructions were given, the sham application was given and no cavitation was heard.

Immediate increase in the EMG was found in the left masseter and superhyoid muscles in the experimental group, but no significant differences were seen between the two groups. The changes in the two listed muscles remain unclear. Due to the fact that the participants were not evaluated for vertebral dysfunction is a huge limiting factor to this study. ; Diversified; Musculoskeletal; Thoracic Spine; Head; Randomized; Adjustment Only; Tmd; Temporomandibular; Muscle; Skeletal; Manipulation; Articular; Electromyography; Range Of Motion; Supine; Seated

24. Page, Isabelle; Nougrou, Francois; Descarreaux, Martin. Neuromuscular Response Amplitude To Mechanical Stimulation Using Large-Array Surface Electromyography In Participants With And Without Chronic Low Back Pain. *Journal Of Electromyography And Kinesiology* 2016; 01:24-29. This study evaluated neuromuscular response amplitude in both participants suffering with chronic low back pain and healthy participants. The mechanical stimulation was applied in four different 75 N, 125 N, 175 N or 225 N forces. Outcome measurements were used before the experiment began. There were 26 participants who suffer with chronic low back pain and 25 health subjects and they were similar in age, weight, height and BMI.

The first analysis was performed to assess if the neuromuscular response amplitude (meanRMS) differs between groups, lumbar region sides, time-windows and forces and respective interaction. And a second conducted independently for each time-window to assess the response amplitude behavior as distance from the contact point increases using the 225 N peak force trials.

The results of this study did not find a significant difference between the two groups in response amplitude to lumbar mechanical stimulation. It did find that even with mechanical stimulation with a specific contact a neurological response was observed, even though rapidly decreasing, distal from the point of stimulation. ; Activator; Musculoskeletal; Lumbar Spine; Lower Back; Case Series; Adjustment Only; Trois-Rivieres; Neuophysiology; Spine; Muscle; Skeletal; Electromyography; Stretch Reflex; Dose-Response Relationship; Spinal Manipulation; Adjustment

25. Palmer, Bj DC, PhC. *The Hour Has Arrived*. 1930; :53-71. In 1930 BJ Palmer, DC, PhC published a case study in the book *The Hour Has Arrived* about a female patient, exact age unknown, who suffered from crossed eyes (strabismus) and far-sightedness (hyperopia) since 2 and ½ years of age. The etiology was unknown. Failed past medical and treatment history were disclosed. The patient was evaluated by a chiropractor and adjusted for upper cervical subluxation (Axis PL) as determined by spinography evaluation. At the time of publication the doctor reported that the symptoms had not improved. Palmer, BJ DC, PhC. *The Hour Has Arrived-Case 23*. Davenport, IA: Palmer College of Chiropractic, 1930: 53-71

; Upper Cervical; Eent; Cervical Spine; Eyes; Case Study; Adjustment Only;

Strabismus; Palmer College; Spinography; Crossed Eyes; Far-Sightedness; Hyperopia; Strabismus; Vision; Pediatric

26. Palmer, B.J. DC, PhC. The Hour Has Arrived. 1930; :53-71. In 1930 B.J. Palmer, DC, PhC published a case study in the book The Hour Has Arrived about a male patient, age unknown, who suffered from blood in the urine, frequent urination, burning sensation in the penis, and blood clots. The exact duration of the conditions was unknown. Etiology was unknown. Failed past medical and treatment history were disclosed. The patient was evaluated by a chiropractor and adjusted for upper cervical subluxation (Axis P1) as determined by spinography evaluation. At the time of publication the patient wrote that his symptoms had not changed, but he felt like if he were able to remain under care for a solid 2 months the condition would improve.

Palmer, B.J. DC, PhC. The Hour Has Arrived-Case 29. Davenport, IA: Palmer College of Chiropractic, 1930: 53-71

; Upper Cervical; Urinary; Cervical Spine; Case Study; Adjustment Only; Hematuria; Palmer College; Spinography; Blood In The Urine; Frequent Urination; Burning Sensation In The Penis; Blood Clots; Hematuria; Reproductive; Adult

27. Palmer, B.J. DC, PhC. The Hour Has Arrived. 1930; :53-71. In 1930 B.J. Palmer, DC, PhC published a case study in the book The Hour has Arrived about a patient who suffered from myeloid leukemia with an elevated white blood cell count. Past medical and treatment history was disclosed. The patient was evaluated by a chiropractor and adjusted for subluxation (Atlas L1) as determined by spinography. The patient reported no improvement in his white blood count and discontinued care. At the time of publication the patient could not be reached for an update on his condition.

Palmer, B.J. DC, PhC. The Hour has Arrived-Case 5. Davenport, IA: Palmer College of Chiropractic, 1930: 53-71

; Hio; Case Study; Adjustment Only; Myeloid Leukemia; Palmer College; Elevated White Blood Cell Count; Neurologic; Neurocalometer; Spinography

28. Palmer, B.J. DC, PhC. The Hour Has Arrived. 1930; :53-71. In 1930 B.J. Palmer, DC, PhC published a case study in the book The Hour has Arrived about a patient who suffered from bilateral upper extremity palsy of 3 ½ years duration. Etiology unknown. Past medical and treatment history was disclosed. The patient was evaluated by a chiropractor and adjusted for subluxation (C6 PLS) as determined by spinography. The patient reported no improvement in the condition. At the time of publication the patient wrote that they appreciated the efforts of the chiropractor and realized that some conditions were too far progressed to overcome, but that "the Chiropractic principle is correct".

Palmer, B.J. DC, PhC. The Hour has Arrived-Case 7. Davenport, IA: Palmer College of Chiropractic, 1930: 53-71

; Hio; Muscular; Upper Extremity; Case Study; Adjustment Only; Upper Extremity Palsy; Palmer College; Neurologic; Neurocalometer; Spinography

29. Pedersen, Palle L. A Prospective Pilot Study Of The Shape Of The Cervical Hypolordosis.. *European Journal Of Chiropractic* 1990; 38:148-166. This was a pilot study looking at the cervical curve in a small sample size versus a control group. Leach's measurement was used and the shape of the lordosis was measured. Results show cervical hypolordosis is an observation not necessarily related to trauma. No- short term change was seen as a result of manipulation. Initial x-rays were taken and a second one taken before the fifth visit in a period of 14 days. Treatment group had nine people and the control group had 17 people. In the control group, the cervical curve reduced further even without cervical manipulation.

Leach's method of measurement has been questioned as accurate in the literature. ; Spinal Manipulative Therapy; Musculoskeletal; Cervical Spine; Neck; Case Study; Adjustment Only; Skeletal; Hypodordosis; Radiographs; Leachs

30. Pires, Paulo Fernandes PT; Packer, Amanda Carine PT; Dibai-Filho, Almir Vierira PT; Rodrigues-Bigaton, Delaine PT, PhD. Immediate And Short-Term Effects Of Upper Thoracic Manipulation On Myoelectric Activity Of Sternocleidomastoid Muscles In Young Women With Chronic Neck Pain: A Randomized Blind Clinical Trial. *Journal Of Manipulative And Physiologic Therapeutics* 2015; 38:555-563. This blinded, randomized clinical trial was done to see if manual manipulation of the upper thoracic spine, performed on young females with chronic neck pain, would reduce pain levels and myoelectric activity of the SCM muscles. Results showed no statistically significant improvement in EMG activity or neck pain at either the immediate post-intervention or short-term intervention evaluation. ; Unknown; Musculoskeletal; Thoracic Spine; Neck; Rct; Spinal Manipulation; Neck Pain; Methodist University Of Piracicaba; Neck Pain; Musculoskeletal Manipulations; Electromyography

31. Postacchini, F; Facchini, M; Palieri, P. Efficacy Of Various Forms Of Conservative Treatment In Low Back Pain.: A Comarative Study. *Neuro Orthopedics* 1988; 6:28-35. In 1988, Postacchini et al report a comparative study of conservative management of low back pain. A prospective study of 459 low back pain subjects aged 17 to 58 were randomly selected among those who presented at two low back pain clinics. Exclusion was pain related to neoplasm or infection, as were pregnant or nursing patients with serious general diseases, psychiatric disturbances or medico-legal issues. Patients were allocated to one of two groups, those with low back pain only and those with low back and radiating pain. Patients in group one has one of three subtypes, Acute, chronic, or acute in a chronic history of pain. Group two included two subgroups acute and chronic. Treatment consisted of manipulation, drug therapy, physiotherapy, placebo, bed rest (only acute), Low Back School (chronic only). There was no control. Outcomes were patient perception of pain (VAS, 1-4 scale), ADL questionnaire. Objective measurese were: ability to forward flex, strength of abdominal muscles, isometric endurance of back muscles, and pain upon palpation of lumbar spinous processes. The final results were based upon a scoring system which weighed the responses from both of the subjective and objective responses. History was presented, lost patients were accounted for, and the treatment groups were matched . The greatest mean improvement was highest at 3-weeks for acute low back pain. The highest mean, both subjective and objective were obtained in the manipulation group, whereas the lowest mean subjective score was found in the placebo group. At two months follow-up, the best results were found in the drug therapy

group followed by the manipulation group. At 6 month follow-up, differences in statistical analysis was minimal. For chronic low back pain, the greatest mean improvement was observed in the physiotherapy group. The Low back School had the lowest score. At the last follow-up, the lowest score was found in the drug-therapy group. The low back pain with radiating symptoms was found in the manipulation group at three weeks, the 6 month follow-up found the highest score in the physiotherapy group and Low back School group was found to be statistically similar. ; Spinal Manipulative Therapy; Musculoskeletal; Lumbar Spine; Lower Back; Massage; Randomized; Functional Rehabilitation; Low Back Pain; Adl Measurement; Palpation; Manipulation; Adult; Low Back School

32. Prasad, Sashank MD; El-Haddad, Ghassan; Zhuang, Hongming; Khella, Sami. Intracranial Hypotension Following Chiropractic Spinal Manipulation.. *Headache* 2006; 46:1456-1460. In 2006, Prasad et al report a case of a 37 year old female complaining of a positional headache which only abated in the supine position. It is reported that she was suffering from chronic intermittent neck pain and visited a chiropractor one month prior to presenting to the Hospital of the University of Pennsylvania. It is reported that while on the table following a cervical manipulation consisting of axial tension and head rotation she suffered a severe acute headache. The headache increased in severity over the next two days. After 1 week, head CT demonstrated bilateral subdural hygromas and descent of the cerebellar tonsils. A diagnosis of intracranial hypotension was made. The authors speculate that the cervical manipulation caused a dural tear in the lumbar spine. ; Unknown; Neurologic; Cervical Spine; Lower Back; Case Study; Adjustment Only; Intracranial Hypotension; Negative Paper; Spontaneous Intracranial Hypotension; Adult; Dural Tear
33. Reed, William R MD; Beavers, Scott DC; Reddy, Saroja K. PHD DC; Kern, Greg DC. Chiropractic Management Of Primary Nocturnal Enuresis. *Journal Of Manipulative And Physiologic Therapeutics* 1994; 17. CHIROPRACTIC MANAGEMENT OF NOCTURNAL ENEURESIS

It has been documented since 1500 BC. In the US 5 to 7 million children are affected. It is defined as involuntary voiding of urine in children 5 yr or older who would normally have control. It can be primary or secondary. Children by age 4 can urinate on command. Spinal Joint dysfunction (subluxation) may disrupt somatic, spinal, parasympathetic and sympathetic nerve pathways contributing to this condition.

METHODS

Subjects

Advertisement on local press presented potential subjects and completed an initial questionnaire. The subject was randomly assigned to control group or treatment group. Initial visit included case history, information of wetting frequency, wetting time period if known and pain or difficulty upon urination, family history of enuresis and previous treatments. Exclusion criteria was diurnal enuretic activity, recurrent urinary tract infection, anatomical/physiological abnormalities, surgical intervention related to urinary tract function, infrequent bed wetting and contraindication to manipulation, taken medication for enuresis 4 weeks prior, spinal adjustment within the previous 4 week period. A total of 57 children between 5 and 13 years met criteria. Time of study was 14 weeks.

Study design

Parents should continue their discipline but should not use other therapies. They were given a dry/wet calendar. A 2 weeks dry/wet pretreatment baseline was recorded. Every 10 days an evaluation for spinal subluxation was scheduled. Patients with spinal subluxations were adjusted using Palmer package. Control group received sham adjustment with activator. Duration was 10 weeks and continued recording dry/wet measurements for 2 more weeks. Upon completion an exit interview questionnaire was completed.

Statistical Analysis

2 sample test were used for comparison between control and treatment groups.

Results

Eleven of 57 did not complete. 31 in treatment and 15 in control. 41 male and 5 female in both groups. Age range from 5 to 13. Percentagewise, improvement of 17.9% in treatment group and decrease in 1% of control group. Primary pattern of segmental dysfunction in treatment group was 43% pelvic, 24% atlas, 8.7% L5, 6.5% L4, 4.3% L4, 4.3% axis and 9.5% other areas.

Discussion

Usual approach is Imipramine successful in 30 to 70% of cases, however it has a relapse rate of 40 to 60% as side effects like nausea, headaches, skin eruption and even death from overdose. 50% reduction would have been success, 25% of treatment group experienced success. None of the subjects in control group experienced success. It does not have the initial positive effect but it has no associated toxicity nor potential of overdosing. Factors that contribute to etiology form the data collected form exit interview, 44% to deepness of sleep, 23% heredity and 23% unknown cause. 66% immediate family history of enuresis, 23% experienced divorce, 21% reported allergies and 81% had a vaginal birth.

At conclusion 48% of parents felt childs anxiety decreased, 12% felt it increase, 40% no change.

Conclusion

No statistical significance, study does suggest trend toward effectiveness of chiropractic for primary nocturnal enuresis. 25% experienced a 50% reduction of wet nights while no subject of control group did. ; Diversified; Urinary; Randomized; Structural Rehabilitation; Primary Nocturnal Enuresis; Chiropractic; Spinal Manipulation ; Bed Wetting

34. Romero, Cristina L MSc; Lacomba Maria T PhD; Montoro, Yurema C BSc; Merino, David P PhD; da Costa, Soraya P PhD; Marchante, Maria JV MSc; Pardo, Gema B MSc. Mobilization With Movement For Shoulder Dysfunction In Older Adults: A Pilot Trial. *Journal Of Chiropractic Medicine* 2015; 14:249-258. This pilot, randomized, single-blinded clinical trial was done to learn whether or not a larger-scale study of mobilization with movement as a treatment for elderly people with shoulder dysfunction would be appropriate. 44 elderly adults living in 3 nursing homes were evenly randomized into a control group or experimental group. The control group received a standard (Spanish) physiotherapy protocol including postural advice and active exercises. The experimental group received the same standard physiotherapy protocol

plus mobilization with movement of the shoulder. Data was collected at 4 different stages from baseline to 3 months and results showed no statistically significant difference between treatment groups for any of the variables, except flexion AROM. However, analysis showed clinical outcome improvement in both groups, with more functional progress in the experimental group than the control group. This validated the need for a full RCT. ; Unknown; Musculoskeletal; Shoulder; Shoulder; Exercise; Rct Pilot Trial; Mobilization + Exercise; Shoulder Dysfunction; Disability Evaluation; Physical Therapy Modalities; Frail Elderly

35. Rose KA; Kim WS. The Effect Of Chiropractic Care For A 30-Year-Old Male With Advanced Anklosing Spondylitis: A Time Series Case Report. *Jmpt* 2003; 26:1-9. Case Report

Rose et al in 2003 wrote in a case report of a 30- year old Asian male who was diagnosed with anklosing spondilitis at age 12. Numerous medical interventions and a series of exacerbations had resulted in a complete fusion of of his sacroiliac and the facet joints in his lumbar and cervical spine. Objective measurements were taken throughout the 14 week study. Subjective changes using the SF-36 health status questionnaire were used. Flexibility was measured using a tape measure around the spine and chest and the following measurements were used: 1) Fingertip to Floor, 2)modified Schober method 3) Thoracic flexinbility in forward flexion and extension, and 4) Measurements of chest expansion at the same level of the 4th and 10th intercostals spaces. The intervention used in this article was grade 5 manipulation of his thoracic spine and grade 3 mobilization of his lumbar and cervical spine. Physical therapy consisting of Electrical stimulation, diversified chiropractic adjustments, mechanical massage with an analgesic cream, and prone McKenzie extension exercises for the low back, 1 set of 10 repetitions. Recommendations of lifestyle, exercise, and dietary changes were offered. Following a 12 week course of care, minimal changes were found in both quality of life via the sf-36 and flexibility using the measurement methods described above.

Rose KA, Kim, WS. The effect of chiropractic care for a 30-year-old male with advanced anklosing spondilitis: A time series case report. *JMPT* 2003; 26(8) 1-9.

Anklosing; Spondylitis; Chiropractic; Manipulation; Radiography; Electric Stim; Massage; Adult; Diversified; Musculoskeletal; Thoracic Spine; Upper Back; Exercise; Functional Rehabilitation; Ankylosing Spondylitis; Asian; Adult; Male; As; Si Fusion; Physical Therapy

36. Wiberg, Karin R MSC; Wiberg, Jesper MM DC. A Retrospective Study Of Chiropractic Treatment Of 276 Danish Infants With Infantile Colic. *Journal Of Manipulative And Physiologic Therapeutics* 2010; :536-541. Retrospective study where 749 files over an 11 year span (1997-2007) of healthy and thriving full term infants between the ages of 0-3 months from a chiropractic clinic were evaluated for inclusion in the study group.

Criteria for inclusion was unexplained and uncontrollable crying for more than 3+ hours per day and more than 3 days a week for 3 weeks or more according to Wessel's criterion of 1954.

The inclusion group consisted of 276 infants 131 female and 145 males who parents had brought them to the Chiropractor for treatment of Colic. The average age at first treatment was 42 days.

The treatment rendered was determined by the DC and consisted of 2-5 visits over an 8-10 day period.

The study group was broken into 3 groups. Group 1 Improved - distinct improvement as reported by the parents. Group 2 Non-recovered- No evident change or worsening of the condition. Group 3- Uncertain recovery- for missing data or no evident treatment course.

Age distribution was 88 within the first month of life, 139 in the 2nd month of life and 49 in the third month of life.

The results showed 67% of parents of the final case study sample reported perceived improvement in behavior compared to their first visit. 59% in youngest age group, 68% in the middle age group and 78% in the oldest age group. These results were then matched to the normal crying curve for cessation of infantile colic and were found to be not statistically significant against the natural cessation rate for each age group.

Therefore the study concluded that Chiropractic care for infantile colic had no positive outcome when compared to the normal cessation of this disorder. ; Unknown; Musculoskeletal; Retrospective Analysis; Adjustment Only; Infantile Colic; Chiropractic; Infant; Crying; Treatment Outcome; Colic

37. Wolcott, Christopher C DC. An Atypical Case Of Nephrolithiasis With Transient Remission Of Symptoms Following Spinal Manipulation. *Journal Of Chiropractic Medicine* 2010; 02:69-72. This is an atypical case of nephrolithiasis with transient remission of symptoms follow spinal manipulation. A 41 year old obese male returned to a chiropractor's office with complaints of mild pain over the left posterior SI joint, penile paresthesia, and penile sensation of urgency. Based on subjective history and objective findings, including recent physical examination findings from his primary care physician, a trial of chiropractic care for sacroiliac joint dysfunction that included drop table and flexion distraction for possible disc lesion at a frequency of twice a week for three weeks. Relief lasted anywhere from 4 hours to 2 days. At the end of the three weeks, the patient was sent for visceral etiology. A dipstick revealed blood and elevated specific gravity and a CT scan revealed a 7mm by 4mm calculus lodged in the left distal ureter.

This case highlights somatic and visceral overlap in both presentation and response to care. And maybe a deeper look into a need for spinal manipulation as a possible adjunct for visceral pain management. ; Diversified; Urinary; Lumbar Spine; Lower Back; Case Study; Adjustment Only; Nephrolithiasis; Skeletal; Spinal Manipulation; Renal Calucli; Chiropractic; Flexion Distraction

38. Young, Ian A.; Michener, Lori A; Cleland, Joshua A; Aguilera, Arnold J.; Snyder, Alison R. Manual Therapy, Exercise, Andtraction For Patients With Cervicalradiculopathy: A Randomized Clinical Trial. *Pepperdine University School Of Law* 2009; 89:632-642. This study is a randomized clinical trial evaluating the affect of cervical manipulation, exercises and traction for cervical radiculopathies versus cervical manipulation, exercises and no traction. The participants were treated on average twice a week for a period of 4 weeks by physical therapists

across three different states.

Outcome measurements were performed at baseline, at two weeks and at four weeks. The outcome measures were numerical pain scale, neck disability index, and patient specific functional scale.

Results were that there was no significant differences between groups at 2weeks or 4 week follow ups. ; Spinal Manipulative Therapy; Musculoskeletal; Cervical Spine; Neck; Randomized; Structural Rehabilitation; Manual Therapy; Exercise; Cervical Radiculopathy; Traction; Spine; Skeletal

39. Young, Ian PT; Michener, Lori PT; Cleveland, Joshua PT; Aguilera, Arnold MD; Snyder, Alison PhD. Manual Therapy, Exercise, And Traction For Patients With Cervical Radiculopathy: A Randomized Clinical Trial. *Physical Therapy* 2009; 89:632-642. This study was done to find out if there was a benefit to doing traction with manual therapy and exercise in helping with neck pain function and disability.

Treatments were done 2 times per week for 4 weeks and subjects were divided into a treatment group who got manual therapy, exercise and traction. A control group only received manual therapy and exercise.

The results showed that the addition of mechanical cervical traction to exercises and manual therapy showed no significant benefit to pain, function and disability. ; Spinal Manipulative Therapy; Musculoskeletal; Cervical Spine; Neck; Exercise; Cohort Study; Functional Rehabilitation; Mechanical Traction; Manual Therapy; Traction; Cervical Radiculopathy; Cervical; Neck Pain; Physical Therapy

40. Zachman, Zachary J DC; Triana, Alfred D. DC; Bergmann, Thomas F. DC. A Comparison Of Contained Versus Non-Contained Disc Lesions: A Case Report. *Journal Of The Australian Chiropractic Association* 1988; 18:57-59. In 1988, Zachman, reported a case of a 36 yr. old male complaining of chronic episodes, 2-3x / year, of LBP and intermittent leg pain for 5 years. Patient experienced a work related injury from pulling backwards on a fully-loaded hand cart. Symptoms progressed in 24 hrs. to an extreme amount. The DC evaluated patient and referred to MD for consultation and CT scan that confirmed a L4-5 CONTAINED disc lesion. Conservative chiropractic care returned the worker to full work activity. After 2.5 months of returning to work, an exacerbation occurred that conservative care was unable to render the patient back to full work status. This article demonstrates the same management to a worsened condition did not correct a non-contained disc herniation. ; Spinal Manipulative Therapy; Disc Herniation; Lumbar Spine; Leg; Foot; Galvanic; Functional Rehabilitation; Low Back Pain; Leg Pain; Radicular Pain; Non-Contained Disc; Calf; Physiotherapy; Side Posture; Radiating; Contained Disc; Chiropractic; Treatment; Prognosis; Work Injuries; Low Back Pain; Middle Adult