



Spinal Manipulation

A Review of the Literature



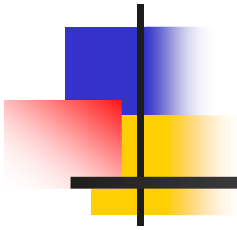
The Process of Selecting Relevant

Research by Dr. John J. Triano

Dynamic Chiropractic May 7, 2005

- “It has been estimated that if an individual attempted to keep up with all the literature related to his or her own discipline by reading one article per day, by the end of one year, they would be 99 years behind.”
- AHCPR located over 10,317 articles, culled to 3,918

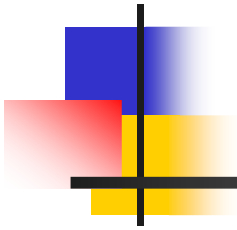
Reversible Subluxation Model



Cramer, et al. ***Degenerative Changes Following Spinal Fixation in a Small Animal Model.*** JMPT 2004;27(3): 141-154,

Cramer et al. ***Zygapophyseal Joint Changes Following Induced Segmental Hypomobility in the Rat.*** 2004 Annual Meeting of the Federation of Associations and Societies of Experimental Biology 68:2, Washington, D.C., 4/17-21/2004

Reversible Subluxation Model (cont'd)

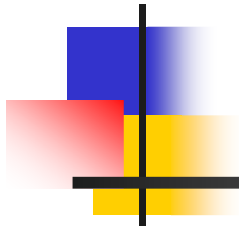


Design: 3 lumbar vertebrae fixed in rat for 1-8 wks.
Subgroup had fixations removed for 1,2,4,8, 12 wks.

Primary Outcome Measures:

- (1) Degenerative changes in the vertebral bodies and IVD,
- (2) Z joint osteophyte formation,
- (3) Z joint articular surface degeneration.

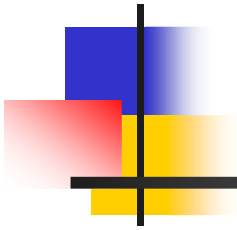
Reversible Subluxation Model (cont'd)



Results: The longer the fixation, the greater numbers and severities of osteophytes were evident. Unlinking the spinal attachment units allowed the osteophytes parameters to return to control levels.

Once the fixations were achieved for 8 weeks, there were no reversals of their effects achieved by unlinking for up to 17 weeks.

Reversible Subluxation Model (cont'd)



Results: Z joints began to show irreversible damage with as little as 1 week of immobilization.

In the animal model, therefore, the concept of subluxation as articulated by the chiropractic community has taken on a noteworthy number of demonstrable attributes. It is neither a figure of speech nor a figment of one's imagination.



**J. David Cassidy and William H. Kirkaldy-Willis, Managing Low Back Pain,
Chapter 17 pg. 287-288, Can. Fam. Physician Vol. 31: March 1985
(cont'd)**

Four zones: (1) active movement (2) passive movement
(3) paraphysiological zone (4) pathological zone

Two barriers : (1) elastic barrier- overcome by the thrust without
damage to the joint structures (2) limit of anatomical integrity-
which cannot be surpassed without injuring ligaments and
capsule

Note: ***Versus mobilization, only manipulation can influence
all joint ranges: active, passive, and paraphysiological
joint play.***

What Are The Negative Effects of Joint Immobilization?

Liebenson C: *Pathogenesis of Chronic Back Pain*. JMPT 15:303, 1992



Joints

- Shrinks joint capsules
- Increases compressive loading
- Leads to joint contracture
- Increases synthesis rate of glycosaminoglycans
- Increase in periarticular fibrosis
- Irreversible changes after 8 weeks of immobilization

Ligament

- Lowers failure or yield point
- Decreased thickness of collagen fibers

What Are The Negative Effects of Joint Immobilization?

Liebenson C: *Pathogenesis of Chronic Back Pain*. JMPT 15:303,
1992
(cont'd)

Disk Biochemistry

- Decreases oxygen
- Decreases glucose
- Decreases sulfate
- Increases lactate concentration
- Decreases proteoglycan content

Bone

- Decreases bone density
- Eburnation

What Are The Negative Effects of Joint Immobilization?

Liebenson C: *Pathogenesis of Chronic Back Pain*. JMPT 15:303,
1992
(cont'd)

Muscle

- Decreased thickening of collagen fibers
- Decreased oxidative potential
- Decreased muscle mass
- Decreased sarcomeres
- Decreased cross-sectional area
- Decreased mitochondrial content
- Increased connective tissue fibrosis
- Type 1 muscle atrophy
- Type 2 muscle atrophy
- 20% loss of muscle strength per week

What Are The Negative Effects of Joint Immobilization?

Liebenson C: *Pathogenesis of Chronic Back Pain*. JMPT 15:303,
1992
(cont'd)

Cardiopulmonary

- Increased maximal heart rate
- Decreased VO₂ max
- Decreased plasma volume

What Are The Positive Effects of Spinal Manipulation and Joint Mobility?

Nelson, DC. Top Clin Chiro 1994;1(4):20-29.

- Stretching of abnormally tight tissues (passive forcing)
- Increased range of motion
- Selective tearing of adhesions without damaging healthy tissue
- Stimulation of wound healing
- Improved edema removal due to pumping action of movement
- Removal of waste products & chemical mediators of pain
- Increased fluid flows, discal & cartilage nutrition

What Are The Positive Effects of Spinal Manipulation and Joint Mobility?

Nelson, DC. Top Clin Chiro 1994;1(4):20-29.

- Reduction of the pain-spasm cycle
- Increase of mechanoreceptive input due to increased motion
- Close the “gate” to the central transmission of pain
- Regeneration of functional tissue & less scarring
- Improved rate & endpoint of tissue healing
- Movement is a specific stimulus for collagen production
- Movement increases cellular metabolism & protein synthesis

What Are The Positive Effects of Spinal Manipulation and Joint Mobility?

Nelson, DC. Top Clin Chiro 1994;1(4):20-29.

- Improved ligament strength
- Improved matrix organization
- Proper alignment of new collagen
- Normalize proprioceptive patterns from joints & muscles
- Normalize coordinated complimentary motor programs

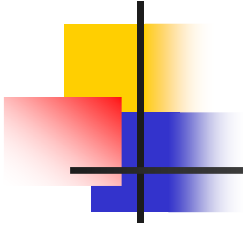


Adjustments Don't Need Audible Sound to Work

- 70 pts with nonradicular LBP
- HVLA SMT in LS region.
- 84% of the procedures produces audible sound.
- Manipulations resulting in an audible sound did not have superior outcomes than those lacking a “pop”.

Source: JMPT Jan 2006;29:40-45

Maintenance and Supportive Care Studies





“Maintenance Care: Health Promotion Services Administered to US Chiropractic Patients Aged 65 and Older, Part II”, Rupert, Manello, Sandefur, JMPT, Vol 23, No. 1, January 2000, pp. 10-19.

Objective: Obtain information regarding multiple health issues of patients age 65 and over who have had a long-term regimen of chiropractic health promotion and preventive care.

Design: 65 years +, “health promotion and prevention services” for at least 5 years @ min. of 4/yr, used SF-36D survey, 73 DCs, tx not just CMT, stretching exercise (68.2%), aerobics (55.6%), dietary advice (45.3%), and a host of other prevention strategies, including vitamins and relaxation.

- o 16.95 visits to DC/yr vs. 4.76 visits/yr to MD.



Maintenance Care (Rupert study), cont'd.

Results:

DC avg. only \$3,106 which is 31% lower of the national average healthcare costs for the same age group.

DC avg is lower than the national avg. for US citizens
Of all ages, which was \$3,510.

Pts. Receiving maintenance DC spent an avg. of \$1,723 for hospitalizations.

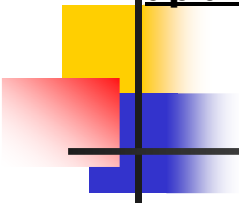
The per capita expenditures for Medicare hospitalization was \$5,121 or 51% of the total cost of health care services.



Maintenance Care (Rupert study), cont'd.

Conclusions:

- DC visits 2x vs. MDs, but 50% reduction in # of MD visits.
- Therefore, DC treatment “replaces”, not compliments, MD care.
- Extreme differences in Hospitalization costs.
- **“Total annual cost of health care services for the patient receiving MC was conservatively 1/3 of the expense made by US citizens of the same age.”**



Chiropractic Patients in a Comprehensive Home-Based Geriatric Assessment, Follow-up and Health Promotion Program, Coulter, Hurwitz, Aronow, Cassata, Beck, Top Clin Chiro
1996; 3(2):46-55, 1996

Purpose: To assess characteristics of older patients who seek chiropractic care.

Methodology: A detailed examination of a database collected during a randomized clinical trial testing the effectiveness of a comprehensive geriatric assessment program was performed. 3 year randomized trial, 75 years of age and older.

Results: Sample size of 414, with 23 receiving chiropractic care. DC users were:

- Less likely to have been hospitalized
- Less likely to have used a nursing home
- More likely to report a better health status,
- More likely to exercise vigorously
- More likely to be mobile in the community
- Less likely to use prescription drugs

Conclusion: Results suggest a need to develop chiropractic models that address the special preventive and rehabilitative needs of the older patient.



Chiropractic maintenance care and quality of life of a patient presenting with chronic low back pain. Wenban AB, Nielsen MK. J Manipulative Physiol Ther. 2005 Feb;28(2):136-42.

Objective To report on a 26-year-old female patient presenting with uncomplicated chronic low back pain who received chiropractic maintenance care using 2 quality of life outcome assessment instruments. Outcome measures Short-form (SF-36) subscales, Quality of Well-Being Scale, Visual Analog Scale, and number of tender vertebral spinous processes.

Conclusion The patient appeared to experience improvement in quality of life while showing signs suggestive of improved spinal function. The relationship between indicators of vertebral subluxation and quality of life deserves further investigation using a research design that allows for exploration of possible causal relationships.



Efficacy of preventive spinal manipulation for chronic low-back pain and related disabilities: a preliminary study.

Descarreaux M, Blouin JS, Drolet M, Papadimitriou S, Teasdale N. J Manipulative Physiol Ther. 2004 Oct;27(8):509-14.

Related Articles, Links

OBJECTIVE: To document the potential role of maintenance chiropractic spinal manipulation to reduce overall pain and disability levels associated with chronic low-back conditions after an initial phase of intensive chiropractic treatments.

METHOD: 2 groups; (1) 12 tx in 1 mo., no tx for 9 mo.
(2) 12 tx in 1 mo., 1 tx every 3 weeks for 9 mo.

RESULTS: Both groups maintained their pain scores at levels similar to the postintensive treatments throughout the follow-up period. For the disability scores, however, only the group that was given spinal manipulations during the follow-up period maintained their postintensive treatment scores. The disability scores of the other group went back to their pretreatment levels.

CONCLUSIONS: Intensive spinal manipulation is effective for the treatment of chronic low back pain. This experiment suggests that maintenance spinal manipulations after intensive manipulative care may be beneficial to patients to maintain subjective postintensive treatment disability levels.

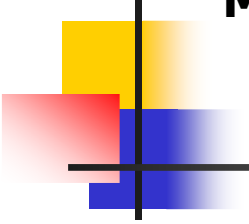
Dose-Response for Chiropractic Care of Chronic Low Back Pain

Hass et al. Spine. Vol. 4, Issue 5, Sept-Oct. 2004, pg. 574-583

Design: RCT with a balanced 4x2 factorial design. 72 patients with chronic, nonspecific LBP of mechanical origin. 1,2,3, or 4 visits per week for 3 weeks. HVLA SMT.

Results: At 4 wks, substantial linear effect favoring larger # of visits.

Conclusions: There was a positive, clinically important effect of the number of chiropractic treatments for chronic LBP on pain intensity and disability at 4 weeks. Relief was substantial for patients receiving care 3 to 4 times per week for 3 weeks.

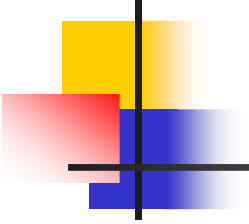


Chronic Spinal Pain: A Randomized Clinical Trial Comparing Medication, Acupuncture, and Spinal Manipulation. Spine July 15, 2003; 28(14):1490-1502

Design: RCT, 115 patients, public hospitals multidisciplinary spinal pain unit. Evaluated at 2, 5, and 9 weeks. Manipulation performed by DCs with 18 adjustments or less. Drugs used; Celebrex, Vioxx, paracetamol. Average duration of spine pain was 8.3 years for the manipulation group.

Results: The highest proportion of early (asymptomatic status) recovery was found for manipulation (27.3%), followed by acupuncture (9.4%) and medication (5%).

Conclusions: **The consistency of the results provides evidence that in patients with chronic spinal pain, manipulation, if not contraindicated, results in greater short-term improvement than acupuncture or medication.**



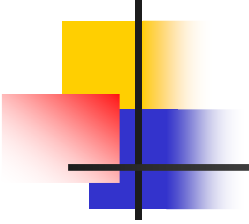
Long-Term Follow-up of a Randomized Clinical Trial Assessing the Efficacy of Medication, Acupuncture, and Spinal Manipulation for Chronic Mechanical Spinal Pain Syndromes. Muller, Giles JMPT, January 2005, Vol. 28 #1, pg 3-11

Objective: To assess the long-term benefits of medication, acupuncture, and SMT as exclusive and standardized tx regimens in pts with chronic spinal pain syndromes.

Designs: Extended follow-up (>1yr) of a RCT, 115 pts, 9 weeks and 1 year.

Results: Only SMT revealed broad-based long-term benefit: 5-7 main outcome measures showed significant improvement compared with only 1 item in each of the acupuncture and the medication groups.

Conclusions: In pts with chronic spinal pain syndromes, SMT, if not contraindicated, may be the only treatment modality of the assessed regimens that provides broad and significant long-term benefit.



**United Kingdom back pain, exercise, and manipulation,
randomized trial: Effectiveness of physical treatments for back
pain in primary care.** UK BEAM Trial Team. BMJ Online First, Nov. 29, 2004

Design: 14 health centers, 1,300 patients who consulted a GP about LBP, but whose pain had not improved. RCT-4 groups,

- Exercise Group: 8 60-minute sessions, 12 week
SMT Group: 8 20-minute sessions, 12 week
Combined Group: 8 sessions of CMT-6 wks. followed by
8 session of exercise-6 wks.
Control Group: No interventions.

Conclusions: Patients given a combination of spinal manipulation and exercise experienced greater improvements in back function and greater reductions in pain compared to those treated with spinal manipulation or exercise only.

The improvements also lasted longer.



United Kingdom back pain, exercise, and manipulation, randomized trial: Cost-Effectiveness of physical treatments for back pain in primary care. UK BEAM Trial Team. BMJ Online First, Nov. 29, 2004

Researchers examined the cost-effectiveness of adding SMT, exercise, or both to the usual “best care” practice for back pain. (Best care: based on the country’s national acute back pain guidelines)

Conclusion: SMT would be “a cost-effective addition to ‘best care’ for back pain in general practice,” and that, “manipulation alone probably gives better value for money than manipulation followed by exercise.”

“The cost-effectiveness of both manipulation and combined treatment may be better than we have reported.”



**J. David Cassidy and William H. Kirkaldy-Willis, Managing
Low Back Pain, Chapter 17 pg. 287-288, Can. Fam.
Physician Vol. 31: March 1985**

“A manipulation or lumbar intervertebral joint adjustment is a passive manual maneuver during which the three-joint complex is suddenly carried beyond the normal physiological range of movement without exceeding the boundaries of anatomical integrity.

The usual characteristic is a thrust—a brief, sudden, and carefully administered “impulsion” that is given at the end of the normal passive range of movement. It is usually accompanied by a cracking noise.”

Exercise? Is it a cure-all?

Several studies compared McKenzie (exercises) protocols with spinal manipulation.



- Wiesel, MD (Cherkin, PhD) McKenzie Protocol versus Chiropractic Care for LBP. Backletter 1995:10(11):121, 130, 131.

And

- Wiesel, MD. (Cherkin, PhD) Mckenzie versus Manipulation. Back letter 1996;11(12)Dec: 133, 139.



Exercise

- *“McKenzie and spinal manipulation were equivalent in symptoms, function, disability, and satisfaction, and were superior to booklet in terms of symptoms and satisfaction. However, McKenzie did not reduce recurrences or long-term utilization of health care.”*
- In other words, exercise is no cure in and of itself for the treatment of low back pain.



Bronfort. DC et al. JMPT 1996; 19(9): 570-582

- This was a randomized controlled study with a one year follow-up in 174 chronic low back pain patients (age 20-60) that compared the efficacy of five weeks of: (1) spinal manipulation (SM) with trunk strengthening exercises (TSE); (2) SM combined with trunk stretching exercises; and (3) NSAIDs with TSE all followed by 6 weeks of supervised exercise alone.

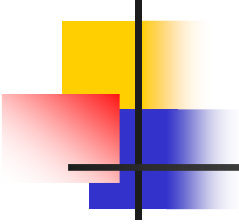
**Bronfort. DC et al. JMPT 1996; 19(9): 570-582
(cont'd)**



- Results: Outcomes at 5 and 11 weeks revealed no significant group differences. Continuance of exercise during the follow-up year, regardless of the type of treatment, was associated with a better outcome.
- Conclusion: All three treatment regimens were associated with similar and clinically important improvement over time and the treatment was considered superior to the expected natural history of long-standing chronic low back pain. For the management of chronic low back pain, trunk exercise in combination with spinal manipulation or NSAIDs seems beneficial and worthwhile.

Osteopathic Methods and the Great Flu Pandemic of 1917-1918

JAOA May 2000 Vol. 100 No. 5 Pg 309

- 
-
- **Killed 10-20 Million**
 - Killed 1.5 x more in 6 months than in the entire WWI.
 - Death Rate 0.5% for pts treated by DOs vs. 6% for pts treated by MDs
 - Pneumonia DO < 10% vs. MD 33%
 - Osteopathic methods highly effective

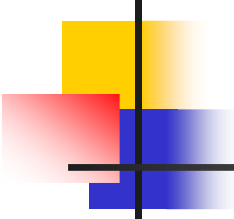


JAOA May 2000
Great Flu Pandemic of 1917-1918

“The best defense against disease and infection remains health.”

“Optimal health is the result of the optimization of function of each individual.”

“Osteopathic care...excellent preventative treatment.”



Dabbs, D.C. and Lauretti, D.C., A Risk Assessment of Cervical Manipulation vs. NSAIDs for the Treatment of Neck Pain. Journal of Manipulative and Physiological Therapeutics. Vol. 18, number 8 Oct. 1995; 18:530-6.

- *“The best evidence indicates that cervical manipulation for neck pain is much safer than the use of NSAIDs, by as much as a factor of several hundred times. There is no evidence that indicates NSAID use is any more effective than cervical manipulation for neck pain.”*
- Death rate for NSAID-associated GI problems at 0.04% per yr among OA patients receiving NSAIDs, or 3,200 deaths in the US per year.
- He (Brandt) also noted that there are several animal studies and human clinical studies that have actually implicated NSAIDs in the acceleration of joint destruction.



Hoving et al. A Randomized Controlled Trial of Manual Therapy. Ann Intern Med. 2002;136:713-722. Manual Therapy, Physical Therapy, or Continue Care by a General Practitioner for Patients with Neck Pain, A Randomized, Controlled Trial., Pages 713-722

Intervention: 6 weeks of manual therapy (specific mobilization techniques) once per week, physical therapy (exercise therapy) twice per week, or continued care by a general practitioner (analgesics, counseling, and education).

“Conclusion: In daily practice, manual therapy is a favorable treatment option for patients with neck pain compared with physical therapy or continued care by a general practitioner.”



Adjustments Don't Have to Make Noise to Work. *Archives of Physical Medicine and Rehabilitation* – July 2003;84:1057-60.

“There is no relationship between an audible pop during SI region manipulation and improvement in ROM, pain, or disability in individuals with non-radicular LBP. Additionally, the occurrence of a pop did not improve the odds of a dramatic improvement with manipulation treatment.”



Doctors of Chiropractic More Qualified Than Osteopaths, PTs and MDs in Spinal Manipulation/Adjustment, According to American Chiropractic Association. Arlington, Va., Nov. 4 /PRNewswire

- * A survey of osteopathic schools found that most schools generally offer spinal manipulation/adjustment only on an elective basis.
 - * No manipulation/adjustment training is given or available for M.D.s in medical school curricula.
 - * One study queried 10 physical therapy schools -- none taught spinal manipulation/adjustment.
- "Individuals with less training and expertise than doctors of chiropractic may provide outcomes that are less than optimal, and can pose unnecessary health and safety risks and possible complications for patients," the policy statement reads.



Osteopathic Manipulation No Better Than Sham Therapy for Chronic Back Pain. *Spine*: July 8, 2003.

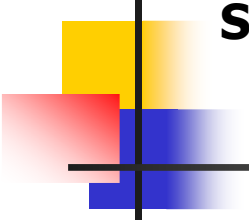
July 8, 2003 — Osteopathic manipulation is no better than sham therapy for chronic nonspecific low back pain, according to the results of a randomized trial published in the July issue of *Spine*.

However, both osteopathic and sham manipulation were more effective than no therapy.



Efficacy of spinal manipulative therapy for low back pain of less than three months' duration. JMPT November/December 2003. Volume 26 . Number 9. Review of the literature. Ferreira et al.

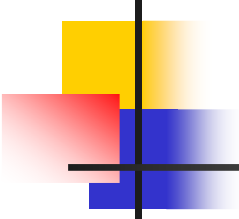
Conclusions: Spinal manipulative therapy produces slightly better outcomes than placebo therapy, no treatment, massage, and short wave therapy for nonspecific low back pain of less than 3 months duration. Spinal manipulative therapy, exercise, usual physiotherapy, and medical care appear to produce similar outcomes in the first 4 weeks of treatment.



**The Journal of Neurological and Orthopaedic Medicine and Surgery. An article entitled, Effective Management of Spinal Pain in 200 Patients Evaluated for Manipulation Under Anesthesia
Volume 17, No 1, 1998.**

"In completing this study, the authors found that a multidisciplinary approach to evaluation and treatment offers patient benefits above and beyond that which can be obtained through the individual providers working alone.

It is our intention to proceed with studies of a more specific design as this present work has demonstrated positive results and no complications."



**The New England Journal of Medicine
1999;341:1426-1431, 1465-1467.**

Osteopaths equal MDs at relieving chronic back pain

NEW YORK, Nov 03 (Reuters Health) -- Manual therapy by an osteopath is as effective at relieving chronic lower back pain as traditional medical care, according to a report in the November 4th issue of The New England Journal of Medicine.

Results of a study from Chicago researchers showed patients who received osteopathic therapy for subacute low back pain received fewer drugs and needed less physical therapy than those treated with standard care.

Reminder: DC's provide 94% of all manipulation performed. RAND.



**Randomized Osteopathic Manipulation Study (ROMANS): Pragmatic
Trial for Spinal Pain in Primary Care. Wilkinson C, et al. Family
Practice 2003. Dec;20(6):662-9**

CONCLUSION: A primary care osteopathy clinic improved short-term physical and longer term psychological outcomes, at little extra cost. Rigorous multicentre studies are now needed to assess the generalizability of this approach.

Reminder: DC's provide 94% of all manipulation performed.
RAND.



Spinal manipulation effective for low back pain. Strickland. The Journal of family practice.; 2003 Dec;52(12) p925 - 929

Spinal manipulation, usual care with analgesics, physical therapy, exercises, and "back school" all provide similar results when used for treatment of both acute and chronic low back pain. Clinicians may wish to treat patients with low back pain themselves or refer them for chiropractic care, physical therapy, or back schools. This decision should be based on patient preferences after reviewing relative risks and benefits.

A recent systematic review of alternative therapies for low back pain reported similar effects from spinal manipulation and massage therapy. The effectiveness of acupuncture in the management of low back pain remains unclear.



Bronfort et al. Trunk Exercise Combined with Spinal Manipulation or NSAID Therapy for Chronic Low Back Pain: A Randomized, Observer-Blinded Trial. JMPT. Vol. 19. Number 9. Nov/Dec. 1996.

Results: There seemed to be a sustained reduction in medication use at the 1-year follow-up in the SMT/TSE group.

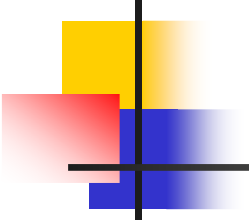
Continuance of exercise during the follow-up year, regardless of type, was associated with a better outcome.

Conclusion: For the management of CLBP, trunk exercise in combination with SMT or NSAID therapy seemed to be beneficial and worthwhile.



Cox et al. Distraction Manipulation Reduction of an L5-S1 Disk Herniation . Journal of Manipulative and Physiological Therapeutics Volume 16, Number 5, June, 1993

Conclusions: Chiropractic distraction manipulation is an effective treatment of lumbar disk herniation, if the chiropractor is observant during its administration for patient tolerance to manipulation under distraction and any signs of neurological deficit demanding other types of care.



BenEliyahou et al. Magnetic Resonance Imaging and Clinical Follow-up: Study of 27 Patients Receiving Chiropractic Care for Cervical and Lumbar Disc Herniations. JMPT. Volume 19, Number 9, November/December, 1996

Results: Clinically, 80% of the patients studied had a good clinical outcome with post-care visual analog scores under 2 and resolution of abnormal clinical examination findings. Anatomically, after repeat MRI scans, 63% of the patients studied revealed a reduced size or completely resorbed disc herniation. There was a statistically significant association ($p, .005$) between the clinical and MRI follow-up results. Seventy-eight percent of the patients were able to return to work in their pre-disability occupations.

Conclusion: This prospective case series suggest that chiropractic care may be a safe and helpful modality for the treatment of cervical and lumbar disc herniations. A random, controlled, clinical trial is called for to further substantiate the role of chiropractic care for the non-operative clinical management of intervertebral disc herniation.



**Cassidy et al. Side Posture Manipulation for Lumbar
Intervertebral Disk Herniation. JMPT. Volume 16, Number 2,
February, 1993**

Conclusions: The treatment of lumbar intervertebral disk herniation by side posture manipulation is both safe and effective.

Cassidy et al. Cont'd

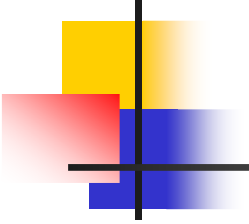
Points of Interest:

- ❑ Normal disks withstood an average of 22.6 degrees of rotation before failure, while the degenerated disks withstood an average of 14.3 degrees.
- ❑ When disk failure occurred, it presented as peripheral annular tears and not herniation or prolapse.
- ❑ Posterior facet joints of the intact lumbar motion segment allow only a small range of rotation at the lower levels.
- ❑ Therefore torsional failure of the lumbar disk first requires fracture of the posterior joints, which can then result in peripheral annular tears.
- ❑ Bottom line: The bony architecture of the lumbar spine prevents excess rotation that would have damaged the peripheral annular fibers. Therefore it remains unlikely that side posture spinal manipulation would damage a disk.



Waagen et al. Short term trial of chiropractic adjustments for the relief of chronic low back pain. Manual Medicine (1986) 2:63-67

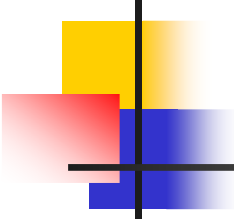
After two weeks of treatments the experimental patients as a group exhibited significant overall pain relief (+2.3), whereas improvement of patients in the control group was not significant (+0.6).



Troyanovich et al. JMPT. Vol. 21, Number 1, January 1998. Structural Rehabilitation of the Spine and Posture: Rationale for Treatment Beyond the Resolution of Symptoms.

Conclusion: Because mechanical loading of the neuromusculoskeletal tissues plays a vital role in influencing proper growth and repair, chiropractic rehabilitative care should focus on the normalization/minimization of aberrant stresses and strains acting on spinal tissues.

Manipulation alone cannot restore body postures or improve an altered sagittal spinal curve. Therefore, postural chiropractic adjustments, active exercises and stretches, resting spinal blocking procedures, extension traction, and ergonomic education are deemed necessary for maximal spinal rehabilitation.



Wiberg et al. The Short-term Effect of Spinal Manipulation in the Treatment of Infantile Colic: A randomized Controlled Clinical Trial with a Blinded Observer. Journal of Manipulative and Physiological Therapeutics Volume 22, Number 8, October 1999.

- **Results:** By trial days 4 to 7, hours of crying were reduced by 1 hour in the dimethicone group compared with 2.4 hours in the manipulation group ($P=.04$). On days 8 through 11, crying was reduced by 1 hour for the dimethicone group, whereas crying in the manipulation group was reduced by 2.7 hours ($P=.004$). From trial day 5 onward the manipulation group did significantly better than the dimethicone group.
- **Conclusion:** Spinal manipulation is effective in relieving infantile colic.



**Reed et al. Chiropractic Management of Primary Nocturnal Enuresis.
JMPT, Volume 17, Number 9, November/December, 1994**

Results: The post-treatment mean wet night frequency of 7.6 nights/2 wk for the treatment group was significantly less than its baseline mean wet night frequency of 9.1 nights/2 wk ($p = 0.05$). For the control group, there was practically no change (12.1 to 12.2 nights/2 wk) in the mean wet night frequency from the baseline to the post-treatment.....

Twenty-five percent of the treatment-group children had 50% or more reduction in the wet night frequency from baseline to post-treatment while none among the control group had such reduction.

Conclusion: Results of the present study strongly suggest the effectiveness of chiropractic treatment for primary nocturnal enuresis.



Croft et al. Outcome of low back pain in general practice: a prospective study. BMJ Volume 316; 2 May 1998.

Conclusions: The results are consistent with the interpretation that 90% of patients with low back pain in primary care will have stopped consulting with symptoms within three months.

However most will still be experiencing low back pain and related disability one year after consultation.



Shekelle et al. Congruence between Decisions To Initiate Chiropractic Spinal Manipulation for Low Back Pain and Appropriateness Criteria in North America. *Annals of Internal Medicine*, 1 July 1998. 129:9-17.

Conclusions: The proportion of chiropractic spinal manipulation judged to be congruent with appropriateness criteria is similar to proportions previously described for medical procedures; thus, the findings provide some reassurance about the appropriate application of chiropractic care.

However, more than one quarter of patients were treated for indications that were judged inappropriate. The number of inappropriate decisions to use chiropractic spinal manipulation should be decreased.



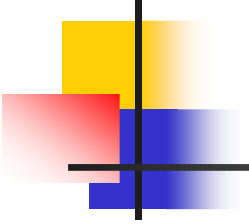
Mooney. Why Exercise for Low Back Pain? Activity Reverses Biochemical Changes Caused by Injury. The Journal of Musculoskeletal Medicine. October 1995.

Selected statements:

There is no evidence that a diagnosis-or even the presence or absence of a neurologic deficit-can predict the duration or outcome of a back problem.

Concerning exercise and AHCPR Guidelines: *The guidelines are nonspecific and contain no rationale.*

In all other soft-tissue injuries, progressive physical activity evacuates extracellular, extravascular fluid. This justifies the recommendation of early mobility for injured tissues. The early motion should be gentle but progressive, with the expectation that gradually increasing stresses will facilitate healing.



Koes, et al. A Randomized Clinical Trial of Manual Therapy and Physiotherapy for Persistent Back and Neck Complaints: Subgroup Analysis and Relationship Between Outcome Measures. JMPT; 16:211-219; 1993.

Results: Greater improvement in the main complaint was associated with manual therapy than with physiotherapy for patients with back problems of 1 year's duration or longer. For patients younger than age 40 years, improvement was also greater with manual therapy than with physiotherapy.

Conclusion: Manual therapy appears to yield better results than physiotherapy in patients with chronic conditions, and in patients younger than age 40 years.



Davis. Chronic Cervical Spine Pain Treated With Manipulation Under Anesthesia.

Journal of the Neuromusculoskeletal System. Fall 1996 Vol. 4, No. 3.

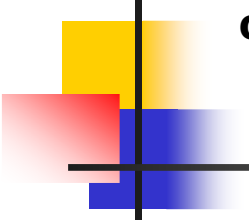
The results suggest that manipulation under anesthesia may be beneficial in patients with chronic pain that effects work or activities of daily living and in patients with cervical segmental dysfunction, fibrosis, myofascitis, or cervicogenic headaches.



Licciardone et al. Osteopathic Manipulative Treatment for Chronic Low Back Pain. Spine. 2003;28:1355-1362.

Conclusion: Osteopathic Manipulative Treatment (OMT) and sham manipulation, both appear to provide some benefits when used in addition to usual care for the treatment of chronic nonspecific LBP.

It remains unclear whether the benefits of OMT can be attributed to the manipulative techniques themselves or whether they are related to other aspects of OMT, such as range of motion activities or time spent interacting with the patient, which may represent placebo effects.



Scholten-Peeters, et al. Clinical Practice Guideline for the Physiotherapy of Patients with Whiplash-Associated Disorders. Spine Vol. 27, Number 4, pp. 412-422, 2002.

Conclusions: Scientific evidence for the diagnosis and physiotherapeutic management of whiplash is sparse; therefore, consensus is used in different parts of the guideline.

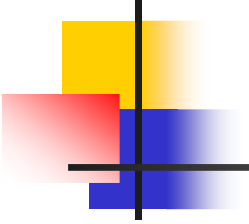
The guideline reflects the current state of knowledge of the effective and appropriate physiotherapy in whiplash patients. More and better research is necessary to validate this guideline in the future.



**Vernon et al. Spinal Manipulation and Headaches of Cervical Origin.
Journal of Manipulative and Physiological Therapeutics, Volume 12,
Number 6, December, 1989.**

ABSTRACT: The role of the cervical spine in headache remains controversial. Often confused as tension or common migraine headache, headaches arising from the neck pose a diagnostic and therapeutic challenge.

Recent writers addressing this issue, including Bogduk (2-4), Edmeads (50), Farina et al. (6) and Sjaastad and his colleagues (7-9), have added much to our current understanding. However, even these authors appear to have included only a small portion of the supportive literature in their reports, leaving a diminished sense of the historical attention and the current clinical importance of this category of headaches.



Quon et al. Lumbar Intervertebral Disc Herniation: Treatment by Rotational Manipulation. Journal of Manipulative and Physiological Therapeutics, Volume 12, Number 3, June, 1989.

Although caution must be exercised in interpreting single case studies, this paper describes a patient who presented with an L4-L5 disc herniation. The size of the lesion revealed by CT examination was so great that one would not expect a favorable response to conservative measures.

However, the patient was rendered pain-free within 2 weeks by daily manipulations.

The enormous size of the disc herniation did not seem to influence the clinical result. Had a trial of conservative therapy not been prescribed, he may well have undergone an unnecessary surgical procedure. Furthermore, a repeat CT scan, 4 months after the initial episode, showed no change in the size or position of the disc herniation.



Maigne et al. Highlighting of Intervertebral Movements and Variations of Intradiskal Pressure During Lumbar Spine Manipulation: A Feasibility Study. JMPT Vol. 23, Number 8, October 2000.

Even though this study was a limited one on cadavers, it has important implications:

- Spinal manipulation is capable of lowering intradiscal pressure, a phenomenon thought to improve related symptoms.
- This pressure change theory is consistent with outcome studies that have examined manipulation in the treatment of symptomatic disc herniation.
- Vertebral movement can be demonstrated during manipulation.
- The effect of this movement is to redistribute or normalize intradiscal pressure, not to result in a different resting position of the vertebra.
- Future work on the motion/position aspect of manipulation should look at temporary positional changes during the manipulation, not before and after position.



Maigne et al. Cont'd

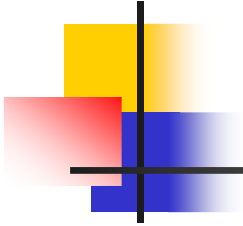
Conclusion: Lumbar spinal manipulations have a biomechanical effect on the IVD, producing a brief but marked change in intradiskal pressure. This effect, which differs slightly with the different types of manipulation studied, is the consequence of movements of the adjacent vertebrae.



Chiropractic Care Staves Off Pregnancy-Related Back Pain

- University of Bridgeport College of Chiropractic
- 17 cases of pregnant women with LBP
- Pain scale: 5.9 reduced to 1.5
- Average time to clinically important pain relief: 4.5 days.
- Average # of visits: 1.8
- 16 of 17 improved.
- No adverse effects.
- Conclusion: DC tx was safe and effective.

Source: Journal of Midwifery and Women's Health. Jan 2006;51:e7-10



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