

# **New Beginnings**

## **2013**

Dan Murphy, DC

# **The Wave 2011**

**Life Chiropractic College West**

## **A One Hour Look At Mechanics and Health**

Dan Murphy, DC

- **Mechanics as whole body non-neurological communication network**
- **Mechanics as it influences body chemistry**
- **Mechanics as neurological controls to the muscle system**
- **Mechanics as influences to visceral neurology**

# **An immunohistochemical study of mechanoreceptors in lumbar spine intervertebral discs**

**Journal of Clinical Neuroscience**  
**Volume 17, Issue 6, June 2010, Pages 742-745**

A. Dimitroulias, C. Tsonidis, K. Natsis, I. Venizelos, S.N. Djau, P. Tsitsopoulos and P. Tsitsopoulos

## FROM ABSTRACT

The aim of our study was to determine the types of mechanoreceptors in the two lower intervertebral discs in normal adult cadaveric donors and to review the literature.

Twenty-five lumbar (L4–5 and L5–S1) intervertebral discs were retrieved from 15 fresh cadavers.

We utilized immunoreactivity against the S-100 protein to localize specialized nerve endings. Immunoreactivity showed receptors in 92% of discs.

The most frequent type had morphology resembling the Ruffini type receptor (88%), followed by the Golgi type.

Free nerve fibers were frequently present.

All neural structures were found in the superficial layers of the annulus fibrosus, in longitudinal ligaments, or between these two.

The anterior part of the L5–S1 disc had a greater frequency of encapsulated receptors than the other parts, which may be correlated with the high shear forces to which the lumbosacral junction is subjected.

## KEY POINTS FROM THIS STUDY:

1) “The presence of nerve structures in intervertebral discs is well documented” since 1932.

2) “These receptors have a key role in the perception of joint position and adjustment of the muscle tone of the vertebral column.”

**[Important: these nerves are responsive to changes in joint position and alignment, and they control vertebral column muscle tone].**

3) “An important component of low back pain is an intense muscle spasm of the vertebral musculature, elicited through reflex arches mediated by specialized nerve endings.”

- 4) There are four categories of joint receptors:
  - A)) type I: encapsulated mechanoreceptors similar to Ruffini endings
  - B)) type II: encapsulated mechanoreceptors similar to Pacinian corpuscles
  - C)) type III: encapsulated mechanoreceptors similar to Golgi endings
  - D)) type IV: unmyelinated free nerve endings and unencapsulated plexuses that have nociceptive function.
- 5) The 25 discs used in this study were harvested from 15 human cadavers with the mean age of 45.4 years (range, 15–66 years). “None had any history of chronic low back pain.”
- 6) Nerves were not found in 2 out of 25 discs (8%).
- 7) The receptors most frequently encountered showed Ruffini receptor morphology [mechanoreceptors]. Ruffini receptors help maintain muscle tone (low threshold, slow adaptation).
- 8) The second most common receptors found had Golgi tendon organ morphologically [mechanoreceptors]. Golgi receptors are activated at extremes of joint motion (high threshold, slow adaptation).
- 9) Free nerve fibers [pain afferents] were a frequent finding. In 16 of the 25 discs [64%], free nerve fibers were found. “It is assumed that those close to blood vessels have a vasomotor role [sympathetic] while those away from vessels may have a nociceptive (small caliber) or a proprioceptive role (large caliber).”
- 10) The neural elements were found in the longitudinal ligaments, the space between the longitudinal ligaments and the annulus fibrosus, and in the outer third of the annulus fibrosus.
- 11) The greatest amount of mechanoreceptors were found at the anterior part of the L5–S1 disc “which may be correlated with the high shear forces to which the lumbosacral junction is subjected.”
- 12) “All neural structures detected were located either in the longitudinal ligaments, or the superficial lamellae of the annulus fibrosus, which are the areas sustaining the greatest pressure or tension during extremes of movement.”
- 13) “During axial loading of a motion segment, compressive stresses in the nucleus will generate tensile stresses in the peripheral annulus, which is rich in neural receptors.”

14) "In conclusion, this study confirms the existence of an abundant network of encapsulated and non-encapsulated receptors in the intervertebral discs of the lower lumbar spine in normal human subjects. The principal role of encapsulated structures is assumed to be the continuous monitoring of position, velocity and acceleration (kinesthesia). Free nerve fibers are likely to be involved in nociception or regulation of vessel tone (autonomic fibers)."

#### COMMENTS FROM DAN MURPHY

It is chiropractically important to understand that the intervertebral disc is innervated with nerves that communicate with the central nervous system. These nerves tell the CNS about the mechanical status of spinal function and alignment of the spine.

Undoubtedly, chiropractic adjustments influence these nerves both during an adjustment and afterwards as a consequence of improved biomechanical function and posture.

**Sensory and Autonomic Innervation of the Cervical Intervertebral Disc  
The Pathomechanics of Chronic Discogenic Neck Pain**

**Spine**

**July 15, 2012 Volume 37, Number 16, pp. 1357–1362**

Kazuki Fujimoto, MD; Masayuki Miyagi, MD; Tetsuhiro Ishikawa, MD; Gen Inoue, MD, PhD; and 16 more; Primary authors from the Department of Orthopaedic Surgery, Graduate School of Medicine, Chiba University, Chiba, Japan

**KEY POINTS FROM DAN MURPHY**

1) This study used rats. The authors note that prior studies have shown that rats and humans have similar spinal innervation patterns. However, they also note that these findings should be reaffirmed on human specimens.

2) This study is an immunohistological analysis of the cervical intervertebral disc (IVD) to investigate its sensory and autonomic innervation. The authors used the neuro-tracer Fluoro-gold (FG) to stain ten C5–C6 IVDs. They stained for the following neurons:

- Dorsal root ganglions (DRG) from level C1–C8 [sensory {afferents} cell bodies; this would include pain afferents]
- Stellate ganglion (SG) [inferior cervical sympathetic efferent ganglion]
- Nodose ganglion (NG) [Vagus nerve parasympathetic sensory ganglion to the nucleus tractus solitarius].

3) Several studies have reported that sympathetic nerves participate in chronic pain; sympathectomy procedures can effectively treat chronic pain.

The DRGs, SG, and NG neurons were immune-stained for:

- Calcitonin gene-related peptide (CGRP); found in inflammatory pain neurons.
- Isolectin B4 (IB4); found in neuropathic (nerve injury) neurons.

4) Findings for the innervation of the C5-C6 IVD:

- The neurons innervating the C5–C6 IVD were derived from the C2–C8 DRGs, but not from the C1 DRG.
- 3% of the neurons were for neuropathic (nerve injury) pain: Isolectin B4 (IB4); [therefore pain afferents]
- 21% of the neurons were for inflammatory pain: Calcitonin gene-related peptide (CGRP); [therefore pain afferents]

THEREFORE, 24% of the neurons were pain afferents [3% + 21% = 24%]

- 9% of the neurons were from the stellate (inferior cervical) ganglion: [therefore sympathetic efferents]
- 11% of the neurons went to the nodose ganglion: [these are parasympathetic afferents that synapse in the nucleus tractus solitarius]

THEREFORE, 20% of the neurons were from the autonomic nervous system [9% + 11% = 20%]

- 56% of the neurons were non-pain afferents [the authors imply that these are large diameter afferents for proprioception, therefore they are mechanoreceptors]

THEREFORE, neurons innervating cervical IVDs are be divided into 3 groups:

- )) Sensory neurons (DRG cell body neurons)
- )) Sympathetic autonomic neurons
- )) Parasympathetic autonomic neurons

5) Overall, 80% of the nerve fibers innervating the IVD were sensory nerves [24% pain afferents and 56% other afferents {probably mechanoreceptors}] and 20% were autonomic nerves.

6) "Chronic neck pain is a significant public health problem."

7) Multiple studies indicate that the cervical intervertebral disc (IVD) is a source of neck pain.

8) Patients with painful cervical IVDs experience wide-ranging neck pain, suggesting that the sensory innervation of the cervical IVD is not segmental.

9) Discogenic neck pain "often becomes chronic, and many clinicians are challenged with treating this chronic pain."

10) It is known that the cervical facet joints are innervated from multiple segmental levels which "may explain the wide-ranging nature of some neck pain."

11) There is increasing interest in the involvement of the "sympathetic nervous system in the maintenance of chronic muscle pain syndromes."

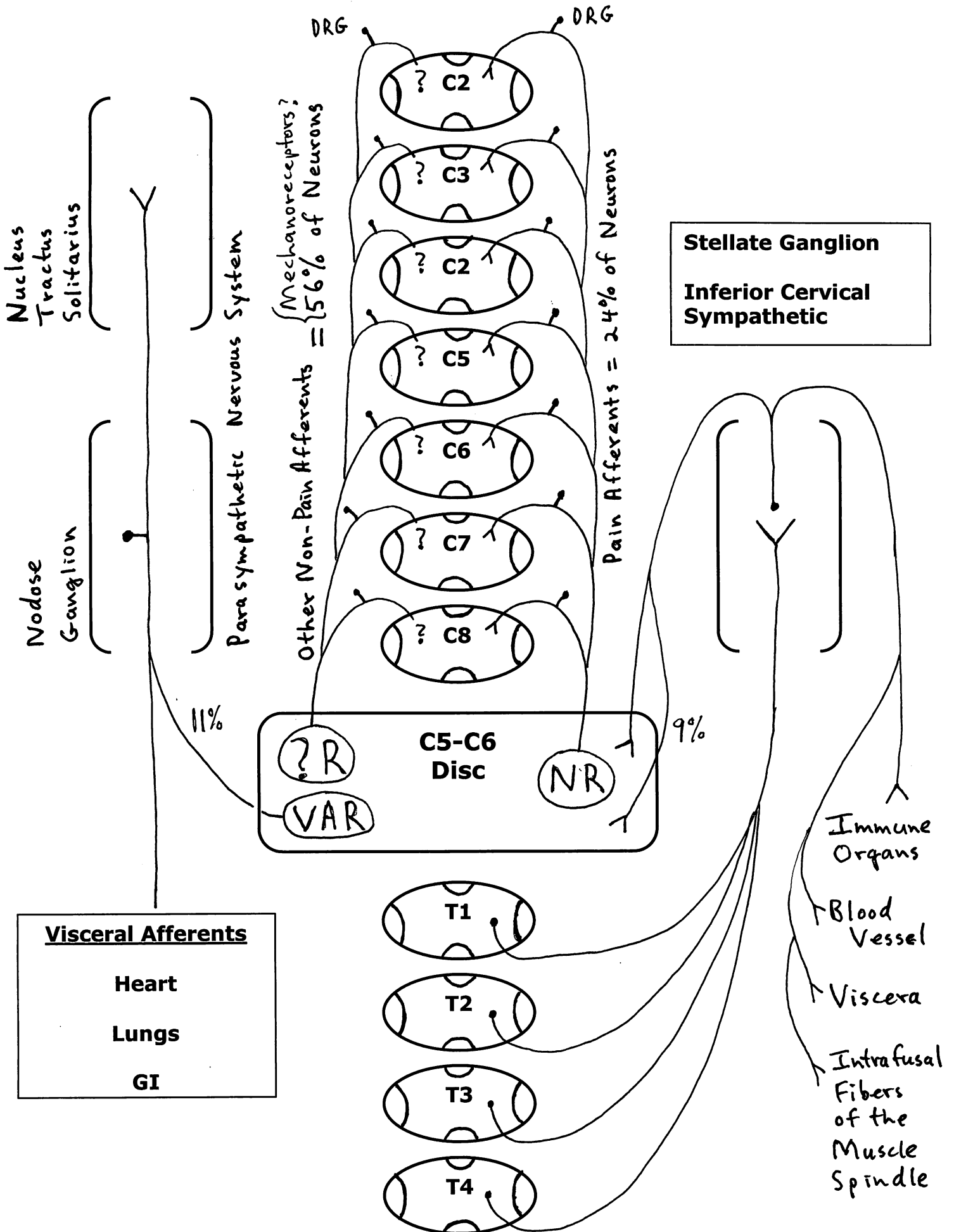
- 12) "Various sympathectomy procedures as well as sympathetic nerve blockage have been reported to be effective for the treatment of chronic pain in multiple studies."
- 13) This study suggests that the neurons that have the overriding responsibility for discogenic lower back pain are the inflammatory sensing pain afferents.
- 14) The authors also present evidence that facet joints are also innervated by several segmental levels, further explaining the wide-ranging nature of neck pain.
- 15) This study "confirmed the presence of efferent sympathetic and parasympathetic neurons innervating the cervical IVDs."
- 16) "Sympathetic activation is correlated with chronic pain of various etiologies."
- 17) Patients experiencing various forms of chronic pain are effectively treated by blocking sympathetic nerves, including the blockage of SGs.
- 18) "The C5–C6 IVD receives multisegmental innervation from the C2–C8 DRG, SG, and NG neurons."
- 19) These findings help explain the wide-ranging and chronic discogenic pain that occurs *via* the somatosensory and autonomic nervous system.

#### COMMENTS FROM DAN MURPHY

For more than a century, chiropractors have observed and documented changes in visceral function occurring as a consequence of spinal adjusting. As David Goldstein notes in his 2001 book The Autonomic Nervous System in Health and Disease (2001), it is the balance of the sympathetic and parasympathetic nervous system functions that are primarily responsible for whole body homeostasis (health). Over the years I have posted a number of articles showing how spinal mechanics (adjusting) influences both the sympathetic and parasympathetic nervous systems. This study adds to the biologic plausibility of chiropractic spinal adjusting influencing visceral function (health) by noting the intervertebral disc is innervated with nociceptors, mechanoreceptors, sympathetic and parasympathetic neurons. Importantly, since these discogenic parasympathetic neurons fire to the nucleus tractus solitarius (a major relay for neuroimmunology), it adds to the biological plausibility for both the osteopathic and chiropractic documented increased survivability of the most sick patients during the 1918 flu pandemic (see Rhodes in FREE STUFF). As Dr. Kirkaldy-Willis notes in his books Managing Low Back Pain (Churchill Livingstone), every spinal adjustment to the facet joint affects the IVD.

Additionally, it appears that discogenic back pain is conveyed primarily by inflammation sensing nociceptors. We should balance the innate omega-6/omega-3 fatty acid inflammatory profile ratios [to 1.5-4/1].





## Is It Time to Rethink the Typical Course of Low Back Pain?

### Physical Medicine and Rehabilitation (PM&R) Volume 4, Issue 6, June 2012, Pages 394–401

Ronald Donelson MD, Greg McIntosh MS; Hamilton Hall MD

The purpose of this study was to determine the frequency and the characteristics of low back pain (LBP) recurrences by asking these questions:

- 1) Are low back pain (LBP) recurrences common?
- 2) Do episodes worsen with multiple recurrences?
- 3) Does pain change location in any recognizable pattern during an episode?

The questionnaire was given to 589 LBP patients from 30 clinical practices (primary care [7%], physical therapy [67%], chiropractic [19%], and surgical spine [7%]) in North America and Europe. There were no exclusions based on type of LBP, history of onset, or comorbidities.

Results:

**1) Are low back pain (LBP) recurrences common?:** [rounded]

- 73% had suffered a previous episode of LBP
- 54% had experienced  $\geq 10$  episodes of prior LBP in their lifetime
- 20% had experienced  $> 50$  episodes of prior LBP in their lifetime
- 27% with a previous episode of LBP had 5 or more episodes of LBP per year

**2) Do LBP episodes worsen with multiple recurrences?** [rounded]

- 61% reported that at least one of the survey domains was worse
- 37% reported that recent LBP episode was not worse
- 21% were worse in all domains
- 9% were better or the same in all domains

**3) Does LBP pain change location in any recognizable pattern during an episode?** [rounded]

- 76% yes
- 63% reported that their pain first spread distally then retreated proximally during recovery; "there was a strong trend toward those reporting worsening episodes also reporting proximal-to-distal-to-proximal changes in pain location during their episodes."

## KEY POINTS FROM THIS ARTICLE:

- 1) "Recurrent LBP episodes were common and numerous. Recurrences often worsened over time. It seems inappropriate to characterize the typical course of LBP as benign and favorable." **[KEY POINT]**
- 2) Sadly, "LBP clinical guidelines are unequivocal in their position that the natural history is highly favorable."
- 3) "It is often stated that LBP is normal; has an excellent prognosis, with 90% of individuals recovering within 3 months of onset in most cases; and is not debilitating over the long term. One guideline states that recovery usually takes place within as little as 6 weeks."
- 4) "Acute LBP is perceived as largely self-limiting and requiring little if any formal treatment. This benign view justifies what has become the standard clinical guideline recommendation that clinicians often need do nothing more than simply reassure patients that they will likely recover."
- 5) Few clinicians **[or insurance companies and their representatives]** realize that this positive recovery prognosis was derived from a 1966 UK study that never collected data on the natural history of LBP; and that "when patients with LBP did not return for follow-up, the researchers assumed that the patients had recovered."
- 6) It is known that the failure of a patient with acute LBP to return to the same doctor "does not necessarily indicate recovery." "A patient's disappearance from the practice is a poor proxy for recovery." When persistent LBP does not respond to a doctor's care, the patient tends to drop out of care.
- 7) These authors cite a handful of studies that showed these numbers:
  - 69% of patients with **recent** LBP were still experiencing LBP pain 1 year later.
  - 82% of patients with **non-recent** onset of back pain were still experiencing LBP pain 1 year later.
  - 20-25% of recent LBP patients were still reporting substantial activity limitations 1 year later.
  - Only 21% of LBP patients reported complete recovery at 3 months. **[Key Point: note 33%, not 90% as often stated]**
  - 90% of LBP patients "had stopped consulting with their doctor within 3 months, further discrediting the termination of care seeking from a single source as a surrogate for recovery;" yet **75% had not returned to their pre-episode level of function or achieved symptom-free status a year later.**

- LBP and “disability often persist beyond the often-quoted 6-week mark.”
- 8) “A review of 36 articles about the long-term course of LBP concluded that the overall picture is clearly that LBP is not a self-limiting condition.”
  - 9) There is no evidence supporting the claim that “80%-90% of patients with LBP become pain free within 1 month.”
  - 10) “Recurrences of back pain are widely recognized as common, reported as occurring in 60%-73% of individuals within 1 year after recovery from an acute episode.”
  - 11) “In any one year, recurrences, exacerbations, and persistence dominate the experience of low back pain in the community. This clinical picture is very different from what is typically portrayed as the natural history of LBP in most clinical guidelines.”
  - 12) Considerable clinical experience, contemporary research, and published data indicate that recurrences of LBP “often worsen over time.”
  - 13) “Most persistent disabling back pain is preceded by episodes that, although they may resolve completely, may also increase in severity and duration over time.”
  - 14) 84% of total medical costs for patients with LBP are related to a recurrence.
  - 15) “Many persons with back pain that extends into the buttock or leg report that their episode begins with only axial LBP that subsequently spreads distally.”
  - 16) “Many patients report that, before complete pain abolition, their buttock or leg pain retreats or returns to their low back and centralizes, which may represent an important element of the natural history of LBP in a substantial subset of individuals.”
  - 17) In this study, 83% had back and/or buttock pain, 17% had leg pain only.
  - 18) “The conventional view of the natural history of acute LBP is that it is self-limiting and that 90% of patients experiencing LBP recover within 90 days or less, but there is no evidence to suggest that either of these statements is accurate. In reality, the recovery rates reported in population studies and in our survey data are far less optimistic.”
  - 19) “Consistent with many other published studies, the recurrence rate among our respondents with LBP was 73%.”
  - 20) “Many respondents had numerous recurrences, with 27% reporting 5 or more episodes per year and [20%] having had more than 50 episodes in their lifetime.”

- 21) Patients whose recurrences are worsening, “their underlying condition may be deteriorating over multiple recurrences.” **[Important]**
- 22) Recurrent episodes of LBP should **not** be routinely viewed as independent events. It appears, as a rule, that LBP recurrences grow “progressively worse.”
- 23) “Many patients with chronic LBP had prior recurrent episodes that had become longer and more severe until the most recent episode did not resolve and thus became chronic.” **[Important]**
- 24) “Most disabling back pain episodes increase in severity and duration over time.”
- 25) “Could the underlying pain generator(s) responsible for episodic acute LBP progressively deteriorate over multiple recurrences, finally reaching the point where reversal is impossible and the pain becomes chronic? If so, then any pain-free period between acute episodes would indicate that the underlying problem is still capable of recovery and would accentuate the need for effective preventive measures. Alternatively, worsening recurrent pain would suggest that the repeated insults on the underlying pain generator carry an increasing risk of non-recovery.”
- 26) “When considering the multitude of studies, including our own, that indicate that many patients experience LBP episodes that worsen over time, guideline panels should begin to incorporate these data and acknowledge the impact of recurrence on the true natural history of LBP.”
- 27) These authors cite evidence that implicates the intervertebral disk as the primary low back pain generator. **[Important]**
- 28) “We hypothesize that the specific pattern of change in pain location within each episode reflects pain arising from a particular physical structure that is usually able to recover but that also progressively deteriorates over many episodes to the point that it can no longer recover.” **[like the disc]**
- 29) “Collectively, our findings, and those of other studies, indicate that it may be inaccurate to characterize LBP as having an excellent prognosis. Recurrences are frequent and are often progressively worse over time. Recovery from acute LBP is not as favorable as is routinely portrayed.”
- 30) “Eventually, there may be no recovery, and the underlying condition may become chronically painful. In light of these characteristics, it seems inappropriate to characterize the natural history of LBP as benign and favorable.”

These authors specifically “bad-mouth” two practice guidelines as being incorrect and “overly optimistic” in their view of the natural history of LBP:

- Practice guidelines low back disorders K. Hegmann, J. Talmage (Eds.), Occupational Medicine Practice Guidelines (Revised ed.), American College of Occupational and Environmental Medicine, Elk Grove Village, IL (2007), p. 368.
- M. van Tulder, A. Becker, T. Bekkering et al.; European guidelines for the management of acute non-specific low back pain in primary care; 2004.

#### COMMENTS FROM DAN MURPHY:

These authors suggest that the generators of LBP (primarily the intervertebral disc) deteriorate with successive recurrences of LBP until the patient suffers from constant chronic LBP. Consequently, they stress the importance to “accentuate the need for effective preventive measures.” Remember the Cifuentes study (**Journal of Occupational and Environmental Medicine, 2011**) clearly showed that LBP patients who remained under chiropractic maintenance care after an episode of acute LBP incurred significantly fewer (and significantly delayed) episodes of LBP recurrences (**Article Review #16-12**). Also recall that David Taylor presented an excellent academic and case review article suggesting that the frequency of such chiropractic maintenance care should be once every 2 to 4 weeks (**Article Review #23-23**).

Practice guidelines, insurance companies and their representatives that indicate the natural history of acute LBP is 6-12 weeks with good clinical outcomes are bogus and should be challenged as being bogus. This study is excellent for that purpose.

A number of years ago I investigated the 90% recovery rate for acute LBP and authored an article on the topic; it is also an excellent review. I have been asked for thousands of reprints of that article. If anyone wants a copy, email my professional assistant, Michelle Schaer, DC, at [drmschaer@cox.net](mailto:drmschaer@cox.net) and ask for the 90% article.

# **Health Maintenance Care in Work-Related Low Back Pain and Its Association With Disability Recurrence**

**Journal of Occupational and Environmental Medicine**  
**March 14, 2011; Vol. 197 [epub]**

Manuel Cifuentes, MD, PhD, Joanna Willetts, MS, Radoslaw Wasiak, PhD, MA, MSc

BACKGROUND FROM DAN MURPHY:

This study used Hazard Ratios. Hazard ratios compare two treatments. A Hazard Ratio of 2.0 means the rate is twice the rate of the other group.

FROM ABSTRACT:

**Objectives:** To compare occurrence of repeated disability episodes across types of health care providers who treat claimants with new episodes of work-related low back pain (LBP).

**Method:** A total of 894 cases followed 1-year using workers' compensation claims data. Provider types were defined for the initial episode of disability and subsequent episode of health maintenance care.

**Results:** Controlling for demographics and severity, the hazard ratio [HR] of disability recurrence for patients of physical therapists (HR = 2.0) or physicians (HR = 1.6) was higher than that of chiropractor (referent, HR = 1.0), which was similar to that of the patients non-treated after return to work (HR = 1.2).

**Conclusions:** In work-related nonspecific LBP, the use of health maintenance care provided by physical therapist or physician services was associated with a higher disability recurrence than in chiropractic services or no treatment.

KEY POINTS FROM THIS STUDY:

- 1) Low back pain (LBP) is "one of the costliest work-related injuries in the United States in terms of disability and treatment costs." "An additional, important component of the human and economic costs is the recurrence of LBP."
- 2) There has been little success in preventing recurrent LBP.
- 3) "Health maintenance care is a clinical intervention approach thought to prevent recurrent episodes of LBP. It conceptually refers to the utilization of health care services with the aim of improving health status and preventing recurrences of a previous health condition." Health maintenance care is defined as "treatment. . . after optimum recorded benefit was reached."
- 4) "Health maintenance care can include providing advice, information, counseling, and specific physical procedures. Health maintenance care is

predominantly and explicitly recommended by chiropractors” who advocate health maintenance procedures to prevent recurrences.

5) Chiropractors focus more on return to work while physicians focus more on pain control.

6) “An association between specific type(s) of treatment or providers and significant recurrence of a condition (measured as recurrent work disability) could imply an important advancement in the treatment of work-related back injuries.”

#### IN THIS STUDY

7) This study consisted of 894 cases, median age of 41 years, 32% women.

8) Temporary total disability was defined as the worker completely unable to work on a temporary basis due to health related impairment.

9) The health maintenance care was defined as the period after the initial disability episode had ended and the person had returned to work for at least 14 days.

10) Recurrent disability was defined as resumption of temporary total disability after a period of health maintenance care.

11) Recurrent disability was defined as the resumption of at least 15 consecutive days of temporary total disability payments following the health maintenance care period.

12) Chiropractic patients had “less expensive medical services and shorter initial periods of disability than cases treated by other providers.”

13) Taking opiate pain drugs during the period of health maintenance care was significantly associated with recurrent disability (more than doubled the risk).

14) “Provider type during the health maintenance care period was significantly associated with recurrent disability with the only or mostly physical therapy group having the highest proportion of recurrent disability (16.9%) and the only or mostly chiropractor (6.5%) and the no (5.5%) health maintenance care groups having the lowest proportion of recurrent disability.”

15) Chiropractic patients who did suffer a recurrence did so 29 days later than the physical therapy or physician patients who suffered a recurrence.

16) “Compared with the only or mostly chiropractor (referent), the groups of only or mostly physical therapy and only or mostly physician had significantly higher HRs (2.0 and 2.7 respectively).” USING ALTERNATIVE ANALYSIS



- 17) "Compared with receiving treatment only or mostly by chiropractors during the health maintenance care period, receiving treatment by physical therapists, physicians, or a combination of both tended to result in significantly higher HRs of recurrent disability."
- 18) "After controlling for demographics and severity indicators, the likelihood of recurrent disability due to LBP for recipients of services during the health maintenance care period by all other provider groups was consistently worse when compared with recipients of health maintenance care by chiropractors."
- 19) "Care from chiropractors during the disability episode ("curative"), during the health maintenance care period (main exposure variable, "preventive"), and the combination of both (curative and preventive) was associated with lower disability recurrence HRs."
- 20) "This clear trend deserves some attention considering that chiropractors are the only group of providers who explicitly state that they have an effective treatment approach to maintain health."
- 21) "Our results, which seem to suggest a benefit of chiropractic treatment to reduce disability recurrence, imply that if the benefit is truly coming from the chiropractic treatment, there is a mechanism through which care provided by chiropractors improves the outcome." **[Very Important]**
- 22) These authors speculate that "the main advantage of chiropractors could be based on the dual nature of their practice." **[regular care + maintenance care]**
- 23) "After controlling for severity and demographics, no health maintenance care is generally as good as chiropractor care." **[Key Point]**
- 24) As a "hypothesis, chiropractors might be preventing some of their patients from receiving procedures of unproven cost utility value or dubious efficacy."
- 25) Chiropractors argue that they provide treatment to the "whole patient." This approach may provide "more opportunities for a provider-patient relationship that improves communication, and likely emphasizes the importance of return to work over symptom control, and focuses on psychosocial issues that have been demonstrated to be important in the evolution of LBP disability."
- 26) Chiropractic patients had "fewer surgeries, used fewer opioids, and had lower costs for medical care than the other provider groups."
- 27) "After controlling for demographic factors and multiple severity indicators, patients suffering nonspecific work-related LBP who received health services mostly or only from a chiropractor had a lower risk of recurrent disability than the risk of any other provider type."

28) "Our findings seem to support the use of chiropractor services, as chiropractor services generally cost less than services from other providers."

COMMENTS FROM DAN MURPHY:

This is a great study. It shows that in the treatment of Workers Compensation low back injury that:

- 1) Chiropractically managed patients are significantly less likely to have a recurrence of low back pain.
- 2) Chiropractically managed patients that do have a recurrence of low back pain do so an average of 29 days later than those treated by a physical therapist or medical doctor.
- 3) Chiropractically managed patients have shorter periods of disability, meaning they returned to work earlier.
- 4) Chiropractic patients had "fewer surgeries, used fewer opioids, and had lower costs for medical care than the other provider groups."
- 5) Chiropractors treat the "whole patient," providing "more opportunities for a provider-patient relationship that improves communication, and likely emphasizes the importance of return to work over symptom control, and focuses on psychosocial issues that have been demonstrated to be important in the evolution of LBP disability."
- 6) The reduced recurrence of low back disability is the consequence of "chiropractic treatment."
- 7) No health maintenance care is generally as good as chiropractor care.
- 8) "Chiropractors are the only group of providers who explicitly state that they have an effective treatment approach to maintain health."
- 9) Chiropractic appears to be an "important advancement" in the treatment of work-related back injuries.
- 10) This study certainly supports the concept and value of chiropractic maintenance care.

<b>Provider Type</b>	<b>Increased Risk Compared to Chiropractic Analysis #1</b>	<b>Increased Risk Compared to Chiropractic Analysis #2</b>	<b>% of Patients with Recurrent Disability During Entire Period (curative + prevention)</b>	<b>% of Patients with Recurrent Disability During Maintenance (prevention)</b>
<b>Chiropractor</b>	None	None	5.7%	6.5%
<b>No Treatment</b>	20%	?	5.5%	5.5%
<b>Medical Doctor</b>	60%	170%	16.7%	?
<b>Physical Therapist</b>	100%	100%	?	16.9%

# **A theoretical basis for maintenance spinal manipulative therapy for the chiropractic profession**

**Journal of Chiropractic Humanities  
December 2011; Vol. 1; No. 1; pp.74-85**

David N. Taylor DC, DABCN

## KEY POINTS FROM THIS ARTICLE:

- 1) The purpose of this article is to discuss a theoretical basis for wellness chiropractic manipulative care.
- 2) A search of PubMed and of the Manual, Alternative, and Natural Therapy Index System was performed with a combination of key words: chiropractic, maintenance and wellness care, maintenance manipulative care, preventive spinal manipulation, hypomobility, immobility, adhesions, joint degeneration, and neuronal degeneration, 1970-2011.
- 3) The search revealed surveys of doctors and patients, an initial clinical pilot study, randomized control trials, and laboratory studies that provided correlative information to provide a framework for development of a hypothesis for the basis of maintenance spinal manipulative therapy.
- 4) "Maintenance care optimizes the levels of function and provides a process of achieving the best possible health. It is proposed that this may be accomplished by including chiropractic manipulative therapy in addition to exercise therapy, diet and nutritional counseling, and lifestyle coaching."
- 5) "It is hypothesized that because spinal manipulative therapy brings a joint to the end of the parapsychological joint space to encourage normal range of motion, routine manipulation of asymptomatic patients may retard the progression of joint degeneration, neuronal changes, changes in muscular strength, and recruitment patterns, which may result in improved function, decreased episodes of injuries, and improved sense of well-being."
- 6) "This article considers the scientific basis of the commonly practiced procedure of chiropractic maintenance care and whether a hypothesis of a physiological basis can be generated to explain findings and practice."  
Dr. Taylor cites studies to support these concepts:
  - A)) Acute chiropractic care for the management of acute conditions.
  - B)) "Care for chronic/recurrent conditions is defined as medically necessary care for conditions that are not expected to completely resolve, but in which one can provide documented improvement."

[Chronic/recurrent care is **medically necessary**, even though the condition is not expected to completely resolve]

[Use **measurement outcomes** to document improvements]

C)) “Wellness or maintenance care may not be defined as being ‘medically necessary’ for a current condition.”

“However, this type of care optimizes the levels of function and provides a process of achieving the best possible function and health. This care includes chiropractic manipulative therapy in addition to exercise therapy, diet and nutritional counseling, and lifestyle coaching.”

[Use measurement outcomes to show **functional improvement** which may qualify such care as being **medically necessary**]

7) The purpose of chiropractic maintenance care is to optimize spinal function and decrease the frequency of future episodes of back pain.

8) Other definitions for chiropractic maintenance care include:

A)) “Appropriate treatment directed toward maintaining optimal body function. This is treatment of the symptomatic patient who has reached pre-clinical status or maximum medical improvement, where condition is resolved or stable.”

B)) “A regimen designed to provide for the patient's continued wellbeing or for maintaining the optimum state of health while minimizing recurrences of the clinical status.”

9) The medical profession uses “wellness” as providing diagnostic tests for “early detection of disease processes.”

10) For this article, “maintenance care and wellness care are used synonymously to represent the process of spinal manipulative therapy for an asymptomatic patient or a patient that has reached maximum therapeutic improvement.”

11) Some insurance companies have defined maintenance care as “care provided for a stable condition without any functional improvement of the patient net health outcome over a 4-week period and further determine it as not being medically necessary.”

12) In published surveys, 90+% of chiropractors opined that the purpose of maintenance care was to minimize recurrences or exacerbations; 80+% of chiropractors responded that it would optimize the patients' health.

13) 97% of American and 85% of the Australian chiropractors use manipulative therapy as a component of the maintenance care.

- 14) "95% of chiropractors recommended maintenance care to minimize recurrences or exacerbations of conditions and 90% recommended the care to optimize the health of the patient."
- 15) In a study 96% of elderly patients who received maintenance care believed that it was "either considerably or extremely valuable."
- 16) "It has been reported that 79% of patients in chiropractic offices are recommended maintenance care and nearly half of those patients elect to receive these services."
- 17) In animal studies, fixation of facet joints for 4-8 weeks causes degenerative changes and osteophyte formation of the articular surfaces. "These findings may provide an explanation to the anecdotal findings reported in clinical practice in which patients report increased well-being and decreased incidence of spinal complaints with once per month preventive wellness manipulation."
- 18) Sadly, facet articular surface degeneration began at less than 1 week. The "common clinical treatment frequency at every 4 weeks correlates with the findings of the threshold of 4 weeks for irreversible degenerative osteophyte formation." "This finding correlates with the common practice pattern of progressive decreasing of the frequency of manipulation as the patients progress in recovery from an acute incident. It also indicates that even when patients present for once per month asymptomatic preventive manipulation, the process of degeneration of the articular surfaces may have already begun."
- 19) Facet joint fixation also resulted in synovial fold fibrotic adhesions that "progressed to mild adhesions in 4 weeks, moderate adhesions in 8 weeks, and severe adhesions after 12 weeks." In humans, "it can be hypothesized that there is a period where the adhesions are forming without clinical symptoms. This would also support the common once per month maintenance spinal manipulation."
- 20) It has also been demonstrated that lumbar spinal manipulation gaps the facet joints which may break up adhesions. This "would lend additional support for the once per month clinically recommended spinal manipulative therapy."
- 21) Four weeks of joint immobilization has been found to cause a time dependent loss of neurons that becomes progressively worse thereafter. An increase in neurons occurs after release of the fixation.
- 22) Such immobilization also causes time dependent muscle weakness, atrophy and fatty deposition of the multifidi muscles. The time-dependent factor progressed from normal muscles to mild, moderate, and severe muscular atrophy.
- 23) "There may also be a possibility of reversal of the neuronal degeneration and muscular weakness through manipulation and remobilization of the joint."

24) These progressive adverse physiological consequences of joint immobility, create a "line of reasoning arises that generates a theoretical framework for a physiological hypothesis of the basis of maintenance manipulative therapy."

25) Evidence "clearly demonstrates that the clinical consensus of dosage of maintenance manipulative therapy has been found to be most beneficial at an average of once every 2 to 4 weeks. We also see here that it closely correlates with the studies that show onset of facet joint degeneration, neural degeneration, neuroplastic changes, and muscular atrophy and weakness at an average of 2 to 4 weeks."

26) "Taking into account the neurological and biomechanical consequences of manipulative therapy, it is plausible to hypothesize that monthly manipulative therapy retards the progression of adhesion formation, joint degeneration, neuronal changes, and changes in muscular strength and recruitment patterns. This could result in improved function, decreased episodes of injuries, and improved sense of well-being."

27) A 2004 chiropractic study of chronic low back pain showed that the group of patients who received 9 months of maintenance manipulation at the frequency of once per every 3 weeks maintained their initial clinical improvement while the control group returned to their previous levels of disability. The authors "concluded that there were positive effects of preventive maintenance chiropractic spinal manipulation in maintaining functional capacities and reducing the number and intensity of pain episodes after the acute phase of treatment of low back pain patients."

28) Swedish surveys of chiropractors find consensus on providing maintenance care to prevent disability relapses.

29) "There is a common thread of the time dependency noted in all the laboratory and clinical studies. The periods of onset of the anatomical and physiological changes ranged from 2 to 4 weeks. The clinical studies also provided MMT every 4 weeks and noted positive changes in the pain and disability measures. This time interval also correlates with the common recommendations found in the surveys of chiropractic physicians."

# Chronic Spinal Pain: A Randomized Clinical Trial Comparing Medication, Acupuncture, and Spinal Manipulation

**Spine, July 15, 2003; 28(14): 1490-1502**

<b>Treatment</b>	<b>Drugs (Celebrex or Vioxx)</b>	<b>Acupuncture</b>	<b>Chiropractic Adjustments</b>
<b>Years Of Chronic Spinal Pain</b>	<b>4.5 or 6.4</b>	<b>4.5 or 6.4</b>	<b>8.3</b>
<b>% Asymptomatic within 9 weeks</b>	<b>5%</b>	<b>9.4%</b>	<b>27.3%</b>
<b>% That suffered an adverse event</b>	<b>6.1%</b>	<b>0%</b>	<b>0%</b>
<b>% Improvement In General Health Status</b>	<b>18%</b>	<b>15%</b>	<b>47%</b>







## Did You Know?

- Spinal stiffness was linked to visceral pathology with nearly 100% accuracy based upon sympathetic innervation. (*Medical Times*, 1921)
- 1,000 capsules of Tylenol in a lifetime doubles the risk of end stage renal disease. (*New England Journal of Medicine*, 1994)
- The average time for a whiplash-injured patient to achieve maximum improvement is 7 months 1 week. (*Spine*, 1994)
- 93% of patients with chronic whiplash pain who have failed medical and physical therapy care improve with chiropractic adjustments. (*Injury*, 1996)
- Taking the correct drug for the correct diagnoses in the correct dose will kill about 106,000 Americans per year, making it the 4<sup>th</sup> most common cause of death in the US. (*Journal of the American Medical Association*, 1998)
- Nonsteroidal anti-inflammatory drugs for rheumatoid and/or osteoarthritis conservatively cause 16,500 Americans to bleed to death each year, making that the 15<sup>th</sup> most common cause of death in the US. (*New England Journal of Medicine*, 1999)
- Glutamate and aspartame can cause chronic pain sensitization, and removing them from the diet for 4 consecutive months can eliminate all chronic pain symptoms. (*Annals of Pharmacotherapy*, 2002)
- Chiropractic spinal adjusting has been shown to be better than 5 times more effective than the NSAIDs pain drugs Celebrex and Vioxx in the treatment of chronic neck and low back pain. (*Spine*, 2003)
- In patients suffering from chronic pain subsequent to degenerative spinal disease, 59% can eliminate the need for pain drugs by consuming adequate levels of omega-3 essential fatty acids. (*Surgical Neurology*, 2006)
- Chiropractic adjustments have been shown to significantly lower blood pressure. (*Journal of Human Hypertension*, 2007)
- The estimated incidence of chronic pain from whiplash trauma is 15-40%. (*Jour of the Am Academy of Ortho Surg*, 2007)
- Meniere's Disease has been linked to a disorder of the upper cervical spine facet joints. (*International Tinnitus Jour*, 2007)
- Supplementing with vitamin D3 has the potential to reduce cancer deaths in America by 75%. (*Ann of Epidemiology*, 2009)
- Potentially, the largest exposure of Americans to the neurotoxin mercury is through the consumption of products containing High Fructose Corn Syrup. (*Environmental Health*, 2009)
- Those who consumed the highest amounts of nonsteroidal anti-inflammatory pain drugs increased their risk of dementia, including Alzheimer's dementia, by 66%. (*Neurology*, 2009)
- The newest estimate for the incidence of autism is 1 in 91 US children. (*Pediatrics*, 2009)

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Dr. Dan,

Any chiropractor that truly cares about his patients and not about just making a buck needs to be subscribing to your Article Review Updates. I certainly am going to do my part to see that each chiro I come in contact with knows what an absolutely invaluable resource it is. I sat in amazement at the last two articles you sent regarding antibiotic overuse and atopic disorders. What crucial information to pass on to my practice members. Thanks and keep up the awesome work.

Dr. G.M.; August 1, 2002

Dear Dan,

I hope you can continue providing this information for many years to come. I have been in practice for 18 years and find these citations to be the most informative, chiropractically relevant information that I have received in my career. I would be willing to pay more for this information to make sure that it keeps coming. Again, thank you!!

JR, DC; January 8, 2005