



*Dynamic Chiropractic* – October 5, 1998, Vol. 16, Issue 21

## **Where Are Back Pain Dollars Headed: Do You Want to Know?**

By Craig Liebenson, DC

Beginning in 1987, the Los Angeles College of Chiropractic began hosting its annual Visiting Scholars Interdisciplinary Symposium. This program was begun in 1987 by this author with the help of Dr. Alan Adams. Over the years, we introduced many of the foremost experts in the field of spinal pain to chiropractic audiences. The bridges that were built have not only helped to improve our understanding of cutting-edge management of back pain, but have improved the understanding of many experts outside of chiropractic of our approaches.

The list of visiting scholars has included a who's who of top clinicians and researchers both within and outside of chiropractic. Janet Travell, Karel Lewit, Irvin Korr, Nicholai Bogduk, Phillip Greenman, Tom Mayer, Vladimir Janda, Scott Haldeman, Leon Chaitow, Jim Cox, Raymond Sandoz, Vert Mooney, J. David Cassidy, Dennis Morgan, Ron Gitelman, Howie Vernon, Adrian Grice, William Kirkaldy Willis, Ronald Donelson, John J. Triano, and many more have all appeared at LACC over the years.

This program is particularly important at a time like this because the economics of back pain will dictate resource allocation decisions. LACC's program often deals with issues of cost effectiveness and quality assurance by looking at the economic potential of disability prediction/prevention strategies and the cost effectiveness of various treatment approaches.

Four of this year's visiting scholars are amongst the most prolific scientists working in the field. Let me review some of my favorite contributions from these hall-of-fame back researchers and clinicians.

Subject: The Biopsychosocial Model for Back Pain

Author: Gordon Waddell

Citation: Waddell G. A new clinical model for the treatment of low back pain. *Spine* 1987;12:634.

Summary: In this Volvo award winning paper, Waddell presents his functional approach to back problems. He explains that pathoanatomy does not correlate with pain and this is why we must take a functional

approach. The treatment goal is not pain relief but disability prevention. The goal of pain treatments is to facilitate active rehabilitation.

Subject: The Role of History and Physical Examination in Diagnostic Triage

Author: Gordon Waddell

Citation: Waddell G. An approach to backache. *Brit J Hosp Med* 1982;28:187-219.

Summary: This paper demonstrated that history and physical examination have excellent sensitivity for identifying "red flags" of sinister disease in low back pain or sciatica patients. Decisions regarding laboratory or imaging procedures can be made on the basis of history and examination and need not be routinely performed.

Subject: Identification of Abnormal Illness Behavior with Physical Examination

Author: Gordon Waddell

Citation: Waddell G, McCulloch JA, Kummel E, Venner RM. Nonorganic physical signs in low-back pain. *Spine* 1980;5:117-125.

Summary: Signs of abnormal illness behavior can be reliably identified. These signs correlate with impairment and disability and are not equivalent to malingering signs.

Subject: The Relationship of Pain, Disability and Impairment

Author: Gordon Waddell

Citation: Waddell G. Clinical assessment of lumbar impairment. *Clin Orthop* 1987;221:110-120.

Summary: Pain, disability and impairment are all interrelated. They can each be reliably assessed, yet traditional history and examination procedures fail to do so.

Subject: Psychosocial Risk Factors of Chronicity: "Yellow Flags"

Author: Chris Main

Citation: Kendall NAS, Linton SJ, Main CJ. Guide to assessing psychosocial yellow flags in acute low back pain: risk factors for long-term disability and work loss. Accident Rehabilitation and Compensation Insurance Corporation of New Zealand and the National Health Committee, 1997. Wellington, New Zealand. Available from <http://www.nhc.govt.nz>.

Summary: An easy to administer questionnaire can identify patients at risk of chronic pain with over 85% sensitivity and specificity. The questionnaire takes less than five minutes to fill out.

Subject: Patient Education Pamphlet on Modern Management of Back Pain

Author: Chris Main

Citation: The Back Book. The Stationary Office, Norwich, England, 1997. ISBN 0-11-702078-8.

Summary: This pamphlet emerged from the British group responsible for their low back pain guidelines -- the Royal College of General Practitioners. In it, the modern approach is spelled out to laymen: that rest is generally to be avoided and activity is necessary to promote recovery; that manipulation along with medication are the two "gold standard" treatments; and that imaging findings of pathology are rarely correlated to pain and in fact the severity of pain does not correlate to the severity of the problem.

Subject: Inexpensive, Reliable, Quantifiable Functional Testing

Author: Hannu Alaranta

Citation: Alaranta H, Hurri H, Heliövaara M, et al. Non-dynamometric trunk performance tests: reliability and normative data. Scand J Rehab Med 1994;26:211-215.

Summary: Alaranta's goal was to establish a normative database on low-tech functional tests so that they could be used by any occupational care facility. Previously only high-tech tests had established normative data, but these were considered too expensive for the average occupational care facility. Four simple, reliable endurance tests that previously had been shown to be reliable were studied in both sexes, in blue- and white-collar workers, and across the age spectrum. These tests are the static back extensor endurance; dynamic back extensor endurance; dynamic trunk flexor endurance; and dynamic squatting endurance tests.

Subject: Comparison of Low-Tech to High-Tech Functional Tests in Their Association with Pain and Disability

Author: Hannu Alaranta

Citation: Rissanen A, Alaranta H, Sainio P, Harkonen H. Isokinetic and non-dynamometric tests in low back pain patients related to pain and disability index. Spine 1994;1(17):1963-67.

Summary: This paper showed that low-tech non-dynamometric tests correlated better with pain and disability than did isokinetic tests.

Subject: Low-Tech Functional Restoration for Chronic Back Pain and Disability

Author: Hannu Alaranta

Citation: Alaranta H, Rytoski U, Rissanen A, et al. Intensive physical and psychosocial training program for patients with chronic low back pain. A controlled clinical trial. Spine 1994;19(12):1339-49.

Summary: This paper was designed to see if a low-tech functional restoration approach could achieve results

similar to more expensive high-tech approaches in treating chronic disabled back pain sufferers. The results demonstrated that low-tech rehabilitation was effective.

Subject: Training with Maximal or Submaximal Effort May Reverse Selective Atrophy of Type 2 Muscle Fibers in Men

Author: Hannu Alaranta

Citations: Mattila M, Jurme M, Alaranta H, et al. The multifidus muscle in patients with lumbar disc herniation. A histochemical and morphometric analysis of intraoperative biopsies. *Spine* 1986;11:732-8; Rissanen A, Kalimo H, Alaranta H. Effect of intensive training on the isokinetic strength and structure of lumbar muscles in patients with chronic low back pain. *Spine* 1995;20(3):333-40.

Summary: It was shown from biopsies on discectomy patients that there was selective atrophy of type 2 (fast twitch) muscle fibers in the low back. A training program was shown to be able to reverse such muscle dysfunction and atrophy.

Subject: Mechanism of Injury of the Low Back Due to End Range Loading

Author: Stuart McGill

Citation: Cholewicki J, McGill SM. Mechanical stability of the in vivo lumbar spine: implications for injury and chronic low back pain. *Clin Biomech* 1996;11(1):1-15.

Summary: Utilizing intramuscular EMG and cineradiography while a weight lifter performed various lifting strategies, it was shown that the stoop position during lifting a weight could cause a momentary subluxation of lumbar vertebrae. This was accompanied by sharp pain and immediate multifidus activity. In contrast, while lifting weights with the lumbar spine maintained in lordosis, no such situation occurred.

Subject: The Ratio of Muscular Activity to Spinal Load during Common Activities and Exercises

Author: Stuart McGill

Citation: Axler CT, McGill SM. Low back loads over a variety of abdominal exercises: searching for the safest abdominal challenge. *Med Sci Sports Exerc* 1997;29:804-810.

Summary: A number of common tasks and popular exercises were studied. The purpose was to determine the joint load penalty during these activities as well as the muscular challenge. Certain exercises were found to have a dangerously high joint load penalty to muscular challenge ratio. These included situps with either knees straight or bent. Other exercises such as the partial curl-up and the new horizontal side raise have excellent potential as rehabilitation exercises because they achieve a high level of muscular activity and yet place a minimal amount of strain on the joints.

Subject: A Comparative Analysis of the Horizontal Side Bridge and Trunk Flexor and Extensor Endurance Tests

Author: Stuart McGill

Citation: McGill SM, Childs A, Liebenson C. Endurance times for stabilization exercises: clinical targets for testing and training from a normal database. Arch Phys Med Rehab Supp June 1998.

Summary: The horizontal side bridge has previously been shown to significantly challenge the quadratus lumborum and abdominal muscles yet place very little strain on the back. This study established a normative database for this procedure as a test in young healthy individuals. It was compared to other tests to determine the normal ratio of endurance between a trunk flexor, trunk extensor and side bridge test. The mean endurance time for the side bridge was .47 of the trunk extensor time.

Subject: Review of Scientific Justification for Low Back Exercises

Author: Stuart McGill

Citation: McGill S. Low back exercises: evidence for improving exercise regimens. Phys Ther 1998;78:754-765.

Summary: In clinical populations excessive load can be avoided by limited movements so as to avoid end range loading. Exercises such as the quadruped single leg raise are excellent for training the low back muscles without straining the back. Athletes or healthy individuals may not need to limit their training to exercises which reduce load to the spine and may therefore include exercises which load the spine through a full range of motion. For flexibility the quadruped cat exercise can be performed by an injured patient to warm up the spinal joints without placing them under significant load.

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Over the years, such programs have not only been a chance for our profession to hear from the leading experts making decisions that will influence governments, indemnity insurance companies and managed care groups, but the programs have been an opportunity for us to make a resounding impression on these researchers who collectively control many times more research funds than the entire chiropractic community combined.

There are many memorable moments which come to mind from the first programs which we held. I can recall hosting Janet Travell when she gave her first ever talk at a chiropractic college during our second annual symposium in 1988. She riveted us with clinical pearl after pearl and then didn't hesitate to take one

of the researchers on the panel to task for not being in touch with the needs of patients for more understanding from their physicians.

Another time, I remember Irvin Korr speaking about the act of spinal manipulation as no less intimate than a sexual encounter between two flying insects. He not only brought the house down, but practically had Karel Lewit and Ron Gitelman on the floor with laughter. Of course, there was the time Lewit showed his true courage by being one of the very few individuals to take on Nicholai Bogduk in a debate on the relationship of cervical spine dysfunction and certain migraine headaches. Ironically, Bogduk's more recent research bears out much of Lewit's criticism.

Chiropractic stands at the threshold of a great opportunity. As David Cassady said, "Low back pain clearly represents the single greatest and most inefficient expenditure of health care resources in our society today! The only solace evident in this is that the low back problem, once clearly identified, also represents the greatest single opportunity for productive change and cost savings."

We have the potential to be the "benchmark" profession for the conservative care of neuromusculoskeletal conditions. Do we want to secure this for chiropractic?

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