Profile

Dr. Greg Kawchuk, DC, MSc
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Chiropractic is a tremendously diverse profession comprised of many different skills and maybe as many opinions. This lack of uniformity can be a distinct handicap for those who research chiropractic, but Dr. Greg Kawchuk from Calgary doesn't see it that way. "Whether the treatment is Diversified or Gonstead, or is thought to have effects at the neurological or cellular level, all start with a chiropractor providing a mechanical action that creates a mechanical response in the spine. That is why biomechanics is so important to the profession, It is what unites all of chiropractic."

Dr. Kawchuk's interest in research was fostered during his education at the Canadian Memorial Chiropractic College by many whom he considers to be his mentors including: Drs. Sil Mior, Dan Proctor and Howard Vernon. But it was a lecture by Dr. Adrian Grice that really caught Greg's attention. "Adrian was the first lecturer our class had who used a reference to support chiropractic treatment. I felt like I had just been taught the best technique I ever learned in chiropractic college – information acquisition."

Following graduation in 1990, Greg was able to pursue his research interests by volunteering as a research assistant at the Human Performance Laboratory in Calgary. The first studies he conducted examined the forces applied during cervical spine adjustment, papers that are still widely referenced today. "There is a great need for this type of research, but there is an increasing amount of pressure on researchers to generate 'outcomes' research. While those studies are important, we are currently unaware of so many basic aspects of our treatment. How much force should we provide to the spine? How should this vary with a patient's age? How often should we adjust a vertebral segment? Is a 'push' any different than a 'pull'? I think very few of us would feel comfortable about taking vitamin supplements and not knowing the optimal dosage or treatment schedule, but that is what we ask of our own patients every day."

In an attempt to assess the effects of adjustive techniques, Dr. Kawchuk began to look for ways to measure biomechanical outcomes. "Most non-invasive outcomes measures have typically been questionnaires. Since my goal was to directly measure biomechanics, I needed the chiropractic equivalent of a blood pressure cuff." At about that time, new studies were being published that utilized a hand-held device known as the tissue compliance meter. "We have traditionally had no way to measure what we are feeling with our hands. Without measurement, communication with individuals and agencies becomes restricted to phraseology. The tissue compliance meter seemed to be a real revelation as it claimed to be able to measure the same thing that chiropractors were palpating before and after

every treatment." What was additionally exciting to Dr. Kawchuk, was that tissue stiffness is a dynamic, functional measure, that was already correlated to tissue pathology in many other organ systems.

To study tissue stiffness, Greg entered into a full time Master's Program in biomechanics at the University of Calgary while continuing to practice full time. Despite the fact that the hand-held device had been used in a number of previous studies, Greg's first master's project tested the hand-held device for its reliability and accuracy: it was poor. Based on this result, Dr. Kawchuk was inspired to make something better. "In my mind, there was good clinical evidence that spinal stiffness was related to spinal pathologies, but the current tools to demonstrate this were insufficient." Greg's thesis then became focussed on the development of a new instrument that would improve on the hand-held device's faults. "Basically, the device developed at this time was a blunt metal rod that could be gently pushed, by electric motor, into the para-vertebral muscles of the spine. Special sensors on the rod described how far the rod moved and how hard the rod pushed into the tissue. From that information, tissue stiffness could be determined and many of the problems found in the hand-held device could be eliminated." Using this device, Greg was able to correlate the stiffness found in para-vertebral musculature during voluntary contractions to electromyography (EMG) signals. Work completed from Greg's Master's thesis has since been recognized with first prize awards at the 1995 centennial chiropractic conferences in both Toronto and Washington D.C. Greg additionally received the Centennial Award of Excellence.

From the results of his Master's thesis, Greg wanted to explore some exciting new ideas, but the time commitment to do so would have severely reduced his time in practice. "There are so many bills to pay following chiropractic college that there is little incentive to suspend your income potential and return to school for advanced research training." Almost coincidentally, a new program was initiated by the Foundation for Chiropractic Education and Research that offered support for chiropractic researchers studying at formal educational institutes. With the encouragement of his family, Greg applied for and won a three-year support scholarship for Ph.D. training from the FCER. With additional assistance from the College of Chiropractors of Alberta, Greg became a Ph.D. candidate in spinal mechanics at the McCaig Centre for Joint Injuries and Arthritis Research at the University of Calgary. "The McCaig Centre is an incredible facility not only because of the world-class personnel and laboratories, but because it emphasizes clinically relevant research largely through the importance placed on the clinician-researcher. The spinal research that will come out of the Centre in the next few years will be very exciting and very relevant."

Greg fulfils the clinician role of being a clinician-researcher by practicing at University Health Services as the first chiropractor appointed to a multi-disciplinary university clinic. He is also a care provider for the national Sports Centre based at the University, as well as an authorized W.C.B. provider. "Although I spend most of my time involved in research activities, I work very hard to be a good clinician and stay current in clinical issues. To remain 'hands-on' is very rewarding and helps keep my research focus relevant." Greg's clinical work may soon become a research focus itself. Through University Health Services, Greg has applied for major funding from Alberta Health Care to study the effectiveness of a multi-disciplinary environment in the treatment of low back pain.

In addition to research and clinical duties, Greg finds time to teach the spinal assessment portion of the University's athletic assessment course.

He also holds an adjunct professor position at CMCC, is an assistant editor for the JCCA, article reviewer for JMPT, and a member of the Canadian Chiropractic Examination Board.

While Greg finds all of his duties and activities very rewarding, coming home to his family is still the best part of his workday. Greg has a wonderful wife, Janet, and two little boys Jonathan and Michael. "Janet and the boys continually act as my reason to have fun and leave work alone for awhile. Their support has been unwavering although the boys wonder why I work at a lab and haven't yet cloned them a dinosaur."

At the present time, Dr. Kawchuk's doctoral work is focused on delineating how different tissues interact to define spinal stiffness. "We have no idea of what beneath the surface of the skin is responsible for the palpatory impression of stiffness formed by a clinician, or for that matter, what forms a patient's impression of their own spinal stiffness. What contributions do muscle bulk, muscle activity, spinal geometry, or mechanical behaviors have on spinal stiffness? If we can define tissue behaviors, then we can assess what forms of treatment may be most

efficacious." To study these questions, Greg is currently developing new methods of non-invasively assessing the behaviors of sub-cutaneous spinal tissues. "The techniques I am helping to develop in this research initiative may prove to be very useful in determining how chiropractic treatment affects the spine." With his supervisor, Dr. Rod Fauvel, a mechanical engineer, Greg has now completed studies which describe and validate several of these new techniques. In 1998, Greg will be presenting his latest developments at the International Conference on Spinal Manipulation in Vancouver and the North American Congress on Biomechanics in Waterloo Ontario. To date, Greg's dissertation work has been recognized by his receiving the Dean's Doctoral Scholarship at the University of Calgary as an outstanding graduate student.

Greg is hopeful that tissue stiffness assessment will become common in the evaluation and treatment of spinal conditions. "There is now some literature that implies spinal stiffness may have clinical significance. At the International Conference on Spinal Manipulation in Bournemouth, England I presented data that suggest tissue stiffness may be changed by spinal manipulation. Other research groups have published work indicating spinal stiffness is correlated to pain. While this preliminary evidence is exciting, we still have to insure that spinal stiffness can be measured in an accurate and reliable fashion. If the measurement performs poorly, then relating it to a patient's problems is futile. With these new techniques, I hope to eventually define how the spine reacts to the forces of chiropractic treatment in a clinical setting."

"As a student, Dr. Jim Grilliot once told me that a good doctor does not know all or do all, but has access to all. And when there is no access, you find the answers out for yourself. That is what makes research so exciting for me. If I can find just one answer to one question, I may help more people than if I had 100 lifetimes in practice."

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