Musculoskeletal disorders are the leading cause of pain, suffering, disability, direct and indirect health care expenses, and lost productivity in America, as well as the rest of the world. Furthermore, patients presenting with musculoskeletal pain may suffer from any of one or more causative disorders ranging from benign to life-threatening, including myofascial dysfunction, nutritional deficiencies, metastatic cancer, occult infections, acute compartment syndrome and cauda equina syndrome. It is, therefore, obvious that all primary health care professions must ensure competence in musculoskeletal diagnosis and treatment among their graduates. Anything less than this presents a disservice to individual patients and a clear and present danger to the general public.

Furthermore, the interventions employed for alleviation of musculoskeletal pain should be safe, effective and cost-effective for optimal patient health, while minimizing iatrogenesis and the financial burden on the health care system. In consideration of these important issues, this article will briefly compare and contrast chiropractic and allopathic musculoskeletal competence, and then compare and contrast natural/chiropractic interventions with those commonly employed by allopaths; citations [complete references accompany the online version] will direct interested readers to additional information.

Comparative Assessment of Musculoskeletal Competence

Several research studies published in respected, peer-reviewed medical journals have sought to quantify and qualify the level of musculoskeletal competence among the primary health care professions, with the majority of these studies having been performed among allopathic/medical students and clinicians. In 1998, Freedman and Bernstein published a landmark study in the Journal of Bone and Joint Surgery, wherein they administered a validated musculoskeletal competency examination to 85 recent medical graduates who had begun their hospital residency. Of these medical doctors, 82 percent failed to demonstrate basic competency on the examination, leading the authors to conclude, "We therefore believe that medical school
preparation in musculoskeletal medicine is inadequate." They repeated their study in 2002 and this time, the examination questions, which previously had been validated by orthopedic specialists, were validated by directors of internal medicine departments. Their conclusions stated:

"According to the standard suggested by the program directors of internal medicine residency departments, a large majority of the examinees once again failed to demonstrate basic competency in musculoskeletal medicine on the examination. It is therefore reasonable to conclude that medical school preparation in musculoskeletal medicine is inadequate." 5

In their 2004 review published in *Physician and Sportsmedicine*, Joy and Van Hala6 describe the musculoskeletal training of allopathic physicians as "woefully inadequate," and note that among a sample of 85 recent medical graduates, "the average time spent in rotations or courses devoted to orthopedics during medical school was only 2.1 weeks. One third of these examinees graduated without any formal training in orthopedics."

In February 2005, Matzkin, et. Al.,7 administered a standardized test of musculoskeletal competency to 334 medical students, residents and staff physicians. The conclusion from their study reads as follows: "Seventy-nine percent of the participants failed the basic musculoskeletal cognitive examination. This suggests that training in musculoskeletal medicine is inadequate in both medical school and nonorthopedic residency training programs."

Later in 2005, Schmale8 showed that when a standardized musculoskeletal examination was administered, "less than 50 percent of fourth-year (medical) students showed competency. ... These results suggested that the curricular approach toward teaching musculoskeletal medicine at this medical school was insufficient."

In 2006, a small study of 54 osteopathic students showed that approximately 30 percent of these students had achieved competence in musculoskeletal medicine, as assessed by virtually the same standardized test used in the previously cited studies.9 Finally, in early 2007, Humphreys, et al.,10 administered the previously utilized standardized competency examination to a sample of 123 senior chiropractic students from a single college to find that 51 percent of these students were competent in musculoskeletal care by this standard. Remarkably, the pass rate for a group of 10 chiropractic doctors was 100 percent on this same examination that was consistently failed by allopathic students, doctors and, according to a small study, osteopathic students. Thus, while additional data with larger, controlled and more representative groups is needed, the best available current evidence indicates that generally, only 20 percent to 30 percent of
allopathic seniors and graduates are competent in musculoskeletal medicine, while the comparable rate of competence among chiropractic seniors and clinicians ranges from 52 percent to 100 percent.

Again, more data is needed, but based on results obtained from the administration of a standardized, interprofessionally peer-reviewed test of musculoskeletal competence, chiropractic students and doctors far outshine their allopathic and osteopathic counterparts. Thus, to say that "chiropractors are just as good as medical doctors" in the musculoskeletal arena is an inaccurate undervaluation of the chiropractic profession’s education, professionalism and potential. According to the studies evaluating musculoskeletal competence, chiropractors are not "just as good" as allopaths; chiropractors appear to be "better."

**Comparative Assessment of Clinical Outcomes**

The clinical management of musculoskeletal disorders is complicated and compromised by the overuse of pharmacosurgical treatments that often do more harm than good. Nonsteroidal, anti-inflammatory drugs are advocated as first-line treatment by the allopathic profession, despite clear evidence that such drugs accelerate joint destruction\textsuperscript{11-14} and result in more than 100,000 hospitalizations and more than 16,000 deaths per year.\textsuperscript{15} Selective cyclooxygenase-2 inhibiting drugs ("coxibs") received the most aggressive marketing campaigns in American history to boost their sales into the high-profit stratosphere,\textsuperscript{16} despite clear evidence of inefficacy, exorbitant expenses and health risks, including but not limited to interstitial nephritis,\textsuperscript{17} acute cholestatic hepatitis,\textsuperscript{18} toxic epidermal necrolysis\textsuperscript{19} and predictable adverse cardiovascular events (including hypertension, stroke, myocardial infarction and sudden death) that affected more than 160,000 Americans\textsuperscript{20} and killed up to 55,000 Americans.\textsuperscript{21}

Arthroscopic surgery for osteoarthritis of the knee might be considered a hazard to the general public, insofar as its benefits do not exceed those produced by placebo surgery,\textsuperscript{22,23} yet the procedure exposes patients to risks of anesthesia and other drugs while burdening patients, employers, insurers and the U.S. government with billions of dollars in annual costs.\textsuperscript{24} Similarly, the comparative cost-effectiveness of surgery for lumbar disc herniation has not been established, and long-term results from this procedure are not dramatically different from nonsurgical treatment.\textsuperscript{25} Generally speaking, drug/surgical treatments cause more than 180,000-225,000 iatrogenic deaths per year (range: 493-616 iatrogenic medical deaths per day in America) and millions of injuries, and cost more than $136 billion per year in drug-induced adverse effects.\textsuperscript{26,27} These are probably serious underestimations of iatrogenic injury/death and unnecessary expense, since medical errors are common and are often unreported.\textsuperscript{28-31} Regarding cost-effectiveness,
safety, patient satisfaction and treatment outcomes for conservatively managed musculoskeletal conditions, the chiropractic profession fares well and often better than the allopathic/medical profession. The dietary and nutritional interventions commonly used by chiropractic doctors for the supportive and direct treatment of musculoskeletal pain and inflammation are well-substantiated by basic and clinical research published in peer-reviewed biomedical journals; see the following reviews for additional citations.

Consistent with chiropractic philosophy, the nutritional therapeutics employed by chiropractic doctors simultaneously alleviate pain and promote musculoskeletal health and overall wellness. For example, vitamin D not only promotes skeletal health and eradicates low back pain in deficient patients, but also improves sensorimotor/propr ioceptive coordination, reduces systemic inflammation, alleviates hypertension and promotes psychological well-being, among its many other benefits. Use of niacinamide, fatty acids and specific botanical supplements (including willow extract and proteolytic enzymes such as bromelain) have been shown to alleviate pain and inflammation while promoting improved overall health and wellness. Although their profession emphasizes musculoskeletal care, chiropractic doctors also treat nonmusculoskeletal conditions and promote overall health and wellness.

Chiropractic management of chronic hypertension is so successful that it could revolutionize cardiovascular care in this country and internationally, based on the unparalleled safety, effectiveness and cost-effectiveness documented by Goldhamer and colleagues. Further, select nutritional supplements can also be used for the safe and effective nonpharmaceutical treatment of hypertension. Research I’ve extensively reviewed and compiled elsewhere strongly suggests integrative chiropractic wellness promotion could raise and set a new standard in health care, delivering safety, efficacy and cost-effectiveness that hitherto have not been seen in America.

Editor’s note: In part 2 of this article, scheduled to appear in the April 23 issue, Dr. Vasquez poses the question, "Why is it that a profession with so much current promise and future potential is so undervalued, underutilized and underfunded?" and exhorts chiropractors to reaffirm and reunite with their holistic identity. Complete references accompany part 2 of Dr. Vasquez’s article. Dr. Alex Vasquez graduated from Western States Chiropractic College in 1996 and currently practices in Fort Worth, Texas. A prolific writer and lecturer, he has been published in countless peer-reviewed journals and is the author of two clinical textbooks: Integrative Orthopedics and Integrative Rheumatology.
**Dr. Alex Vasquez** is a 1996 graduate of Western States Chiropractic College (Doctor of Chiropractic) 1999 graduate of Bastyr University (Doctor of Naturopathic Medicine), and 2010 graduate of University of North Texas Health Science Center, Texas College of Osteopathic Medicine (Doctor of Osteopathic Medicine). A prolific author with more than 70 published articles/papers and five books to his credit, Dr. Vasquez’s two most recent texts are Chiropractic and Naturopathic Mastery of Common Clinical Disorders and Chiropractic Management of Chronic Hypertension; excerpts from the latter will be published as articles in *DC* in the coming months.

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