

Growing Pains? We Don't Think So!

Charles Lantz, PhD,DC; Michael Schneider, DC, PhD; Robert Cooperstein, MA, DC; Stephen M. Perle, DC, MS

We are writing in response to Dr. Arlan Fuhr's *Dynamic Chiropractic* article, "Growing Pains," in the July 15, 2002 issue (www.chiroweb.com/archives/20/15/03.html).¹ It is a commentary on our study published in the *Journal of Manipulative and Physiological Therapeutics (JMPT)*.^{2,3} Dr. Fuhr had previously commented on our study in a letter to the editor of *JMPT*, to which our co-investigator, Dr. Gatterman, replied on her own.⁴ We also replied, separately from Dr. Gatterman, in a letter that is in press at the time of this writing.

We appreciate the kind words Dr. Fuhr has written about our work. The fact that this paper has engendered so much discussion in the pages of *Dynamic Chiropractic*, *JMPT* and on the internet is gratifying. We are grateful to know that it was read, and to see that it has stimulated much-needed critical thought within the profession. Although we acknowledge Dr. Fuhr's desire to set the record straight on the articles we published, we need to put his comments into perspective and clarify some degree of misrepresentation of our work. Right at the outset, we read: "The concept was relatively straightforward, the execution was meticulous, and the authors' cautions about the limitations in interpreting the findings were clear and appropriate. So, what went wrong?" Despite the postmortem tone struck in reference to our work, our answer is that nothing went wrong, even granted that some readers may have drawn extreme inferences.

Dr. Fuhr did a reasonably good job of summarizing our article, except for a few points that, while seemingly insignificant, strongly impact on the tone and interpretation of his comments. As we described, an expert panel rated the clinical effectiveness of 10 adjustive procedures for each of eight different low back conditions. The panel elected to provide separate ratings for acute and chronic presentations, excepting the case of spondylolisthesis, where it declined to rate adjustive methods for an acute presentation. Thus, it is misleading to suggest there were 15 conditions in our study, and "only 139 papers to fill 150 cells." In fact there were only eight conditions, and thus 80 cells, and each paper could be applied to multiple cells, as appropriate. Fuhr's analysis seriously overstates the scarcity of the literature base. Although 139 references are very few, relative to 80 treatment-condition combinations, the situation is not as bad as implied by Dr. Fuhr's commentary.

The second flaw in his commentary is the comparison of the matrix (10 rows and eight columns of treatment-conditions combinations) to "a block of Swiss cheese with more holes than cheese." Fuhr wrote that "something happened on the way to consensus" and "confronted by this limited base of evidence, the evaluation panel balked." Apart from the fact that it was fundamentally a procedure based on ratings, not consensus, the Swiss cheese metaphor doesn't work, because the image painted - that of a panel reluctant to draw conclusions from imperfect data - is counter to the simple truth that this panel did find certain adjustive procedures (side-posture HVLA, flexion-distraction and mobilization) well supported by literature, as discussed in our characterization paper.² This panel also had good reasons to regard the Activator cells "holes in the cheese," compared with other adjustive methods that embody the trabeculae of the "chiropractic technique cheese." After all, these Activator-related cells bore little clinical support for the use of the

Activator Adjusting Instrument (AAI).

Although the concept of the panel "balking" at rating procedures is ludicrous, it is interesting to examine and interpret the pattern of abstentions, as we did to some extent in our *JMPT* papers. Yes, there were many abstentions in the rating of procedures for specific conditions, and Dr. Fuhr's accounting of those abstentions is accurate. What he does not mention, however, is that 143 of the 327 abstentions (44 percent) were attributable to a single rater, who only provided seven ratings of the possible 150 (95 percent abstention rate). There were only seven cells in which the technique/condition combination was rated, and all other cells had at least one abstention (mostly due to the one panelist noted above), with a total of 63 cells having only seven responders. Every rater abstained from at least one rating (mean 41). Though it would be unlikely that eight chiropractors would be equally proficient or knowledgeable in all of 10 adjustive procedures, one would expect there would be a significant number of abstentions, particularly in light of the lack of literature evidence.

Dr. Fuhr correctly states that our study should not be misinterpreted as a condemnation of the effectiveness of any technique, and cites our comment that "lack of evidence in the literature is not evidence of lack of effectiveness." While this statement is correct, it has become very controversial, because it begs a rather obvious question: why is there not more clinical evidence in the literature? In the case of the AAI, there is an abundance of literature extolling the qualities of the instrument.

Recently, Keller, et al., have conducted a number of studies investigating various parameters related to adjusting with an AAI: its value and effectiveness as a mechanical impedance measurement tool;⁵ its role in producing increased paraspinal muscle strength as assessed through use of surface electromyography (sEMG);⁶ how an AAI equipped with a load cell and accelerometer can be used to quantify the dynamic stiffness of the thoracolumbar spine;⁷ and predicting lumbar segmental and intersegmental motion responses to Activator AAI forces on living subjects.⁸ Symons, et al.,⁹ used surface EMG to detect responses to AAI interventions at multiple locations, and found them more local, or quantitatively and qualitatively different from those obtained using manual manipulation.

Presented with all this basic science research, we would still ask: Where are the clinical effectiveness and safety studies? The fundamental hypothesis that must be tested in this regard is that using the AAI is safer and more effective than other methods employed by chiropractors. The issue would not be nearly as pressing if those representing Activator Methods in their seminars were less fervent in their promotional materials, and didn't make unsubstantiated claims about the safety and effectiveness of Activator compared to other methods. Although such claims are standard fare for technique seminar promotions, regardless of supporting evidence, it is incumbent on Dr. Fuhr and other technique promoters to provide credible clinical evidence of the claimed superiority of their procedures. If a handheld adjustive tool marks a significant advance, then this claim must be validated with the same rigor that a pharmaceutical or surgical equipment company must use to validate its goods and services.

The claim that using an AAI is "safer" than something else implies that other things are more "dangerous" - but is there any adjustive procedure that is shown to be even marginally unsafe? Now, common sense dictates that for certain patients, a handheld percussive device may be safer than a manual thrusting procedure, but one must be very careful in how one makes such claims, for fear of putting the entire profession in a bad light. Furthermore, safety isn't efficacy. It is usually safer to sit at home than to walk to the store, but doing so does not get the errands done.

Dr. Fuhr, asking a second time, "What went wrong?" concludes there is "too little hard data to draw firm, evidence-based conclusions of the many musculoskeletal problems that fill our offices. And perhaps this should not be too surprising, given that the history of hard-core research in chiropractic is barely two decades old."¹ Even granted that the chiropractic profession is a latecomer to clinical research, the question remains: Who has the primary responsibility for conducting clinical research on the merits of the AAI? Although Fuhr states, "many of us are ill-prepared by our formal education to deal with the details and nuances of the scientific process," this surely cannot refer to Fuhr himself, whose name appears on numerous scientific articles, in conjunction with colleagues who are highly trained and respected scientists. Researchers must not only take responsibility for the quality of their research, but for the choices they make in prioritizing what is to be researched.

If Activator advocates think it is more important to use the AAI for basic science research, rather than determine if chiropractic patients will benefit from its use, they must accept an important consequence of that decision: Expert panels and some *JMPT* readers might not be impressed with the evidence. From Fuhr's point of view, the only thing that "went wrong" in the ratings process we initiated was his unrealistic expectation that basic science research would clinically validate the AAI. One would have expected the advocates of the AAI, who so often tout their system technique to be one of the most scientifically studied in chiropractic, to have seen the need for clinical effectiveness studies long ago. Certainly, they must realize the primary responsibility to conduct studies on patented devices, and trademarked system techniques cannot lie with the chiropractic colleges.

While it is true that we do not wish to fall into the logical fallacy of the "appeal to ignorance" as described by Fuhr ("a logical fallacy in which the absence of evidence is offered as evidence"),¹ neither do we want to use ignorance as a shield for unsubstantiated claims about chiropractic adjustive procedures. In fact, one must be careful with this fallacy; it is also an "appeal to ignorance" to assert that a procedure is effective or safe without providing substantiating evidence. Further, the burden of proof lies with those making such claims, and not with those questioning such claims. Although Fuhr implies that all chiropractic adjustive procedures are lacking in evidence, this is inaccurate. Side posture manipulation has such a copious literature base, unlike the use of the AAI, that by default, side posture manipulation is the "gold standard" by which all other adjustive procedures for most low back conditions, in most clinical scenarios, are to be judged.

References

1. Fuhr A. Growing pains. *Dynamic Chiropractic* 2002;20(15):28-29.
2. Cooperstein R; Perle SM; Gatterman MI; Lantz C; Schneider MJ. Chiropractic technique procedures for specific low back conditions: characterizing the literature. *J Manipulative Physiol Ther* 2001;24(6):407-24.
3. Gatterman MI, Cooperstein R, Lantz C, Perle SM, Schneider MJ. Rating specific chiropractic technique procedures for common low back conditions. *J Manipulative Physiol Ther* 2001;24(7):449-56.
4. Fuhr A. Rating specific chiropractic technique procedures for common low back conditions (letter to the editor). *J Manipulative Physiol Ther* 2002;25(3):197-8.
5. Keller TS, Colloca CJ, Fuhr A. Validation of the force and frequency characteristics of the Activator adjusting instrument: effectiveness as a mechanical impedance measurement tool. *J Manipulative Physiol Ther* 1999; 22(2):75-86.
6. Keller TS, Colloca CJ. Mechanical force spinal manipulation increases trunk muscle strength assessed by electromyography: a comparative clinical trial. *J Manipulative Physiol Ther* 2000;23(9):585-95.

7. Keller TS, Colloca CJ, Fuhr A. In vivo transient vibration assessment of the normal human thoracolumbar spine. *J Manipulative Physiol Ther* 2000;23(8):521-30.
8. Keller TS, Colloca CJ, Beliveau JG. Force-deformation response of the lumbar spine: a sagittal plane model of posteroanterior manipulation and mobilization. *Clin Biomech* (Bristol, Avon) 2002;17(3):185-96.
9. Symons BP, Herzog W, Leonard T, Nguyen H. Reflex responses associated with Activator treatment. *J Manipulative Physiol Ther* 2000;23(3):155-9.

Dr. Robert Cooperstein, a professor at Palmer College of Chiropractic West, can be reached at www.chiroaccess.com, or by e-mail at drcoop@aol.com.

Robert Cooperstein,DC

Charles Lantz,PhD,DC

Stephen Perle,DC

Michael Schneider,DC

SEPTEMBER 2002