The Differences between No Research, Clinical and Peer-Review Research

All techniques are not the same. Some of the techniques are supported by no research, clinical research or peer-reviewed research.

No Research Support

If the technique is not supported with any research behind their theories, then clinician is trusting the bias of the person that developed the technique. If there is no research, then it is a bias opinion.

Clinical Research

If the technique is supported by clinical research, then the research that was done is not published in the journals. If the technique is supported by just clinical research it still might be good and a possible valid technique to explore. But the clinician is also taking a chance because the research projects haven't gone through a peer review board. If the research was not published in the journals then there might be biased opinions about the technique. It is stronger then the “no research” category, but it still is a bias opinion in favor of the technique.

Peer-Review Research

If the technique is supported by peer-reviewed research then it is a solid technique that the clinician can trust. When a clinician is looking at changing or incorporating new techniques into their clinic they should look at techniques that are supported by peer-review research. Peer-review research has gone through rigorous review from the editors that publishes the research journals. This rigorous review takes a lot of the biased opinion out of the research behind technique. It also reinsurers the clinician that is investigating the technique that it has and is stating the truth about the repeatability, validity and effectiveness of the technique.
All Techniques Are Not The Same

No Research

A clinician's time and energy is very important. If the clinician puts a lot of time and energy into a technique that has no research, then they're taking a chance of wasting a lot of time and energy in their clinic. So the logical solution is to not put too much time and energy in techniques that do not have research behind them.

Clinical Research

The clinician that puts a lot of time and energy in a technique that is supported only by clinical research is also taking a chance of that technique wasting a lot of their time and energy. Techniques that have clinical research only behind them have the bias opinion of the developer of the technique. So the clinician is still taking a chance of wasting a lot of their time and energy incorporating a technique that might not give them the repeatability, validity and effectiveness they want.
Peer-Review Research

The clinician that puts a lot of time and energy in a technique that has peer-review research supporting it, can be more confident to achieve the results they desire. This technique that is supported by peer-reviewed research has been through the rigorous review of the editing staff of the journal. This reassures the clinician they will get repeatable, valid and effective results in the clinic. So the clinician that chooses a technique that has peer-review research supporting it can be confident that their time and energy will not be wasted.

The Published Research behind the MIT Technique

The Efficiency of Multiple Impulse Therapy for Musculoskeletal Complaints
Daniel L. Collins, D.C.,
Joseph M. Evans, Ph.D. and Reed H. Grundy, B.S.E.E.

ABSTRACT
Objective: The aim of the study was to document the response to multiple impulse therapy for a variety of musculoskeletal complaints encountered in clinical practice.

Methods: A single practitioner in a private clinic setting provided the therapy to 249 patients. Survival analysis was used to plot probability of pain vs the days required for symptom resolution for each of 8 patient complaints. Analysis of variance was used to examine the influence of covariates of the results of published studies of low back pain and neck pain are presented.
Results: The average number of visits required to achieve a pain-free state for each of 8 patient symptoms, the half-life for response to multiple impulse therapy, and comparison of the results of published studies of low back and neck pain.

Conclusion: Response of patients in the study sample to multiple impulse therapy for symptoms of low back and neck pain appeared to be considerably faster than that obtained in 3 recent studies (J Manipulative Physiol Ther 2006;29:162.e1-162.e9)

**Pilot Study of The Effectiveness of Multiple Impulse Therapy for Musculoskeletal Complaints**

Joseph M. Evans, Ph.D., Daniel L. Collins, D.C., Reed H Grundy, B.S.E.E.

**ABSTRACT**

Study Design: This study presents the results of treatment of 50 patients using multiple impulse therapy provided by the PulStarFRAS™. The study consisted of a randomized retrospective analysis of patient files to determine symptomatic improvement over the course of treatment for a variety of musculoskeletal complaints that were encountered in clinical practice. The multiple impulse therapy was supplemented, at the discretion of the practitioner, with manual adjustments. The manual adjustments consisted of HVLA (high velocity low amplitude) and drop table and were administered to fewer than 5% of the patients. Objective: The objective of this study was to document the effectiveness of the multiple impulse therapy provided by the PulStarFRAS for a variety of musculoskeletal symptoms encountered in clinical practice. Setting: The therapy was provided by a single practitioner in a private clinic setting. Results: Important findings of the study include: 1) All patients expressed improvement in symptoms immediately after the first visit (average improvement in subjective pain rating scale of 41%). 2) Patient symptoms improved between the first and second visits for 70% of patients (average improvement in subjective pain scale for all patients was 58%). 3) No patients expressed a negative result to therapy. 4) The majority of patients achieved complete resolution of symptoms between the 3rd and 4th visits. 5) Maximum benefit for all patients across all symptoms required an average of 4.2 visits. 6) The half-life for response to multiple impulse therapy using the PulStarFRAS for all symptoms was 17 to 26 days. 7) The half-life for response to multiple impulse therapy using the PulStarFRAS for low back pain was 9 to 16 days. Conclusion: The results of this study support the use of multiple impulse therapy provided by the PulStarFRAS as a means of resolving musculoskeletal symptoms. These results compare favorably with published studies of techniques of musculoskeletal therapy.

**Differential Compliance Instrument in the Treatment of Infantile Colic: A Report of Two Cases**

ABSTRACT
Objective: To report on a novel use for a computer assisted adjusting device as a potentially safe method for treatment of infantile colic. Clinical Features: Two pediatrician-diagnosed cases of infantile colic, characterized by signs of distress, uncontrolled crying, with brief episodes of screaming, were otherwise associated with normal growth (despite low birth weight in the second case) and no other abnormalities. Intervention and Outcome: A PulStar Function Recording and Analysis System (PulStarFRASTM) device was used to administer light impulses (viz. @1.7 joules which produced a 3 to 4 lb. Force) at each segmental level throughout the dorsal spine using probe tips spaced 2 cm apart, straddling the spinous processes. Crying was reduced by 50% after a single session of instrumented adjusting in a 6-week old female and after four sessions in a 9-week old male, according to colic diaries kept prospectively by the mothers. Uninterrupted daily sleep increased from 3.5 to 6.5 average hours after a single session. Within 10 days (5 and 8 sessions respectively) colicky behavior disappeared and total daily sleep improved to 14.5 average hours (up from 4.5 average previously); results continued over a 30-day follow-up. The treatment was well tolerated, with only mild temporary observed discomfort. These initial findings using a low force instrumented procedure mirror results from controlled trials of manual adjustments for colic. Conclusion: The PulStar mechanical adjusting device appears to have been well tolerated and beneficial in two cases of infantile colic. Further research will be necessary to determine if this device can enhance the safety and/or effectiveness of chiropractic treatment in infants with colic.

PulStar Differential Spinal Compliance Instrument: A Blinded Randomized Inter- and Intra-Examiner Reliability Study
Robert A. Leach, D.C., Patrick L. Parker, M.S., Joseph M. Evans, Ph.D. and Paul S. Veal, D.C.

ABSTRACT
Objective: To provide an entry-level, new-technology reliability assessment of the PulStar computer assisted, differential spinal compliance instrument. Subjects: Eighteen college students (9 males and 9 females) were recruited by announcements and personal contacts. Methods: Inclusion criteria included subjects aged only in the 18 to 25 range, of normal weight (obesity defined by World Health Organization criteria), and who denied any prior history of significant spinal problems or treatment. Following approval of the consent process by the institutional review board of Mississippi State University, a PulStar Function Recording and Analysis System (PulStarFRAS™) device was evaluated for clinical reliability. Two blinded examiners used the instrument in random order on individual subjects lying prone with their backs exposed, to administer light impulses (vis. ul. 7 joules which produced a 3 to 4 lb. force) at each segmental level throughout the cervical, dorsal, and lumbar spine using probe tips spaced 3 cm apart, straddling the spinous processes, while a computer recorded the findings (resistance to thrust on a scale of 0 to 255 joules). Results: Data were analyzed by Exploratory Data Analysis (EDA) with ANOVA testing, and by use of
the Intraclass Correlation Coefficient (ICC). In addition, a means test (ANOVA) was conducted to determine if a trend in variation occurred as a result of repeated light thrusts to the spine, independent of variance explained by different examiners. Using EDA analysis and ANOVA intra-examiner reliability for the two practitioners was very high but not perfect. This was confirmed by ICC statistics demonstrating good to excellent reliability for both practitioners (0.89 for the experienced practitioner, 0.78 for the newly trained practitioner). Inter-examiner reliability of PulStar was similarly very high but not perfect based upon EDA/ANOVA analysis, and good to excellent (ICC = 0.87). Means testing with ANOVA did not explain variance between examinations which might have been expected due to any biological effect of repeated measurements with the device set to analysis mode. A fatigue effect was observed with the newly trained practitioner's reliability decreasing over time during the trial. Conclusion: the PulStar mechanical adjusting device set to analysis mode appears to have good to excellent reliability when used by either an experienced or a novice (but trained) examiner. In addition, as a measure for spinal resistance to a light thrust, or spinal compliance, reliability was similarly good to excellent between the two doctors using the PulStar instrument. This initial study does not address the validity or clinical significant of the measurement method. Further research will be necessary using greater numbers and a wider variety of subjects, and more diverse examiners, to verify these findings and fully understand the generalizability of these results.

The Minimum Energy Hypothesis: A Unified Model Of Fixation Resolution

ABSTRACT
Objective: To present a new theoretical construct, the Minimum Energy hypothesis, which explains structural changes observed in the spine concomitant to spinal joint fixation resolution in initial investigations. Design: Theoretical analysis. Hypothesis: A unified theory of manipulative effectiveness is proposed which integrates the fixation and sensory tonus models of manipulation. The theory is based on the fact that the spine will assume a position of minimum internal energy when mechanical equilibrium is achieved. Using a simple mathematical model, it is shown that the fixation model and the sensory tonus models are two different aspects of the same theoretical construct. The Minimum Energy hypothesis predicts that the spine will seek an optimal minimum energy configuration, if the constraints preventing it from doing so are removed. Constraints are hypothesized to be joint fixations caused by inflammation in and about the spine and its sequella, muscle spasm, fibroadipose and scar tissue, and ultimately degeneration. It is further hypothesized that use of a computerized mechanical manipulative device may resolve such fixations, an example of which is radiographically demonstrable cervical hypolordosis. Conclusion: A
unified theory of manipulative effectiveness based on the concept of minimum energy to attain mechanical equilibrium is brought forward to explain the results of initial investigations.

**Similarities and Differences Between X-ray Analysis And Computerized Fixation Imaging of the Cervical Spine**

*Joseph M. Evans Ph.D., Daniel L. Collins D.C. Presented at the Seventh Annual National Subluxation Conference Sponsored by Sherman College of Straight Chiropractic Spartanburg South Carolina October 1999*

**ABSTRACT**

This paper presents a comparative study of the results of x-ray analysis and Computerized Fixation Imaging (CFI) analysis of the cervical spine. Twenty-five patients seeking chiropractic care at a private clinic were randomly selected to participate in the study.

This study was undertaken to answer questions from clinicians using the Sense Technology PulStarFRAS (Function Recording and Analysis System). These questions arise regarding the findings of a mature and widely used method of spinal analysis (x-ray) and this new and rapidly evolving method of objective instrumented palpation (CFI).

Significant major findings were:

- A Kendall coefficient of concordance of .74 was obtained between the results of x-ray analysis and the results of CFI analysis.
- A Kendall coefficient of concordance of .74 was obtained between x-ray findings of arthritic joint involvement and CFI analysis and
- A Kendall coefficient of concordance of .76 was obtained between x-ray findings of discontinuities of cervical spine curvature and CFI analysis.

These results show that there is a high degree of correlation between x-ray analysis and CFI in findings of discontinuities of spinal structure and in observation of evidence of osteoarthritis.

**The Clinical Application of Differential Compliance Methodology to Joint Fixation Identification and Resolution Using the PulStarFRAS™**


**ABSTRACT**

This Paper describes a single subject case study designed to evaluate the clinical usefulness of Differential Compliance Methodology employing the PulStarFRAS instrumentation. The results of the study illustrate the effectiveness of multiple impulse percussive force
application in the release of fixations of spinal joints, where the fixations were identified by compliance readings obtained with the PulStarFRAS. Over a progression of three weeks, the patient experienced a change in cervical curvature from a radius of 150 cm to 15 cm, as well as resolution of presenting symptoms. Moreover, a restoration of normal cervical hard tissue compliance was recorded. Based on the results of the study, Differential Compliance Methodology including multiple impulse force application using the PulStarFRAS can be considered to have been an effective intervention in the care of the patient studied, who exhibited signs of spinal fixation with accompanying musculoskeletal dysfunction and other symptoms.

**Pilot Study of the Repeatability of the PulStarFRASTM**
Joseph M. Evans, Ph.D., Daniel L. Collins, D.C., Reed H. Grundy, B.S.E.E.
Submitted to Journal of the Neuromusculoskeletal System

ABSTRACT
Objective: The objective of this study was to document the repeatability of computerized method of instrumented palpation of the spinal musculoskeletal system in three positions of analysis: prone, sitting and standing. Clinical Setting: Private chiropractic office. Results: The spines of ten patients (7,200 observations) were analyzed by four investigators following a repeated measures design. Each subject’s spinal structure was analyzed in the prone, sitting and standing positions. The measured compliance of the spine was observed to vary smoothly along the spine with the exception of T2 where a discontinuity was observed. Four clinical users of the PulStarFRAS with different levels of experience with the PulStarFRAS were able to reproduce their findings on ten chiropractic patients with remarkable consistency (R+.83 for experienced users; .73-.75 for less experienced users). Inter-examiner results were also high. The positional analysis showed that the prone position produced the highest repeatability. Conclusion: this study contributes to the understanding of the musculoskeletal system’s response to low energy dynamic impulses, but more research is needed before the results can be extended to the general patient population. The study results indicate that instrumented palpation with the PulStarFRAS has the potential of exceeding the repeatability of any other method of clinical assessment of the musculoskeletal system in general use.