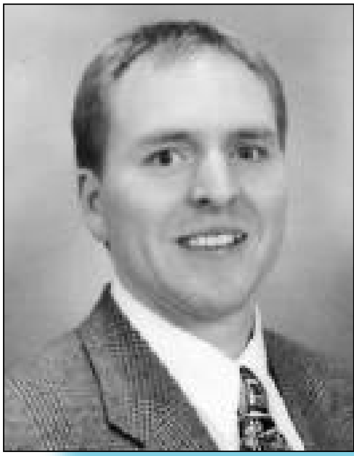
Biomechanics Corner

The Death and Resurrection of Spinal Subluxation: A CBP® Researcher's Perspective



by Deed Harrison, D.C.

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Abnormal postural positions of the human frame and associated spinal displacement patterns has been proposed as the most common type of spinal subluxation.

As such, postural analysis and spinal radiography are important tools for Chiropractic clinicians interested in identification and treatment of vertebral subluxations.[1,2] Recently, however, some researchers in Chiropractic have suggested that the traditional concept of spinal displacement originated by DD Palmer, as a component of vertebral subluxation is unreliable, invalid, and outdated.[3] As such, many researchers in Chiropractic have abandoned the "bone out of place" model of vertebral subluxation and have moved toward the concept of a "manipulable lesion" as the primary dysfunction of the spinal column. Consider, for example, the following statements made by some of the most prominent researchers in the Chiropractic profession:

1) "Valid and reliable tests to detect a manipulative lesion have not been established. Therefore, the presence of such lesion remains hypothetical. However, improvements in study designs might improve future evidence, and great efforts are needed to develop, establish and enforce valid and reliable test procedures." Hestbaek and Leboeuf-Yde WFC, Paris, 2001, May 21-26

2) "At this time, SD (spinal dysfunction-subluxation) cannot be reliably detected using the clinical methods investigated in these studies. Further, a valid operational definition of spinal dysfunction remains elusive. The construct of SD and the existence of a specific manipulable lesion therefore remain speculative." Crawford and Littlejohn CMCC — WFC Paris 2001, May 21-26

3) "In light of the findings of these studies, there is no doubt that the chiropractic profession must tackle the problems surrounding the detection of 'manipulable lesions.' A jury of researchers needs to define this term, design reliable and valid tests, and establish precise standards for using those tests—and the sooner the better." *Feise RJ. JMPT Letter Feb 2001*

4) "No study has been conducted to evaluate the validity of the presence of manipulable lesions in the lumbar spine. *Manipulable lesions may be a figment of the collective chiropractic, and other physical therapy professions' imagination.*" French et al. *JMPT* May 2000: 231-238

Now, before blood pressures begin to rise, let me explain why this situation exists and how we can rectify it. First, and foremost, these researchers have no definition of normal or non-lesioned. Second, they have not truly defined what a "manipulable lesion" is. Because of the above two reasoning errors, there is not any way possible to have reliable, let alone valid, methods to detect this enigma.

How do we, at CBP®, propose to rectify this situation in Chiropractic? The answer itself is simple, but the tasks required to fulfill the requirements are difficult and time consuming: 1) We need to strictly define what normal is, 2) We need to strictly define what abnormal is, 3) We need to have reliable and valid methods for measuring or detecting abnormal, 4) We need to provide evidence that the abnormal(s) cause or are associated with known disorders, 5) We need to develop methods to correct this abnormal subluxation, 6) We need to use the same valid and reliable methods in the third section to verify the correction of the abnormal, and 7) Finally, we need to document that correcting these abnormals will improve/resolve the known disorders in number four above.

Fortunately, all of these items have been or are being addressed and answered by researchers at Chiropractic Biophysics® Nonprofit, Inc.

Let me explain how we have answered several of items 1-7 above. Concerning **ITEM #1** above, we have written in detail about the normal/ideal alignment of the human spine.[1,2,3-7] We, at CBP® Nonprofit, Inc., have developed and published our ideal and average models of the shape and magnitude of the cervical and lumbar lordosis and are currently in the process of revising our average and ideal model of the thoracic kyphosis.[6,7] *Figure 1* represents this Ideal model of the human spine/frame from both the anterior and lateral perspectives.

Now that we have a strictly defined normal starting position, abnormal alignment (**ITEM #2** above) can be described. Using definitions from mechanical engineering and probability theory in mathematics, all the possible abnormal postural displacements of the head, thorax, and pelvis have been described by Harrison as rotational and translational movements in three-dimensions.[8-11] These rotations and translations of the head, thorax, and pelvis are abnormal postural displacements when present in neutral static upright stance. Further, these postural displacements are always associated with spinal/vertebral displacements (rotations and translations) away from the normal position described in Figure 1.[12,13] Actually, any displacement (rotation and/or translation) away from the neutral/normal position in Figure 1 would be described as abnormal.

ITEM #3: In order to identify or prove that an abnormal spinal or postural displacement is present, there must be valid and reliable methods for measuring such abnormality. Fortunately, measurement devices to detect abnormal skull, thoracic, and pelvic postures, have been found to have high/excellent inter- and intra-examiner reliability, and some of these devices have been found to have appropriate validity.[14-27]

These devices include simple plumb-line analysis, computerized assessment, and other simple devices for each individual area. Recently, a digital camera, computerized, assessment tool, the BioTonix system, was developed for the assessment of abnormal upright posture. We are currently in the process of studying the reliability and validity of this system. *Figure 2* is an example of the BioTonix posterior to anterior view analysis for a patient with right thoracic translation. In addition to posture analysis, x-ray measurement procedures, for the quantification of spinal displacements, have been found to be reliable.[28-35] In the lateral view, these measurements are valid, however, in the anterior to posterior view there are some validity concerns that must be appropriately understood. *Figure 3* demonstrates the spinal coupling patterns (vertebral displacement) for the posture in Figure 2 and the type of x-ray measurement procedure for the Anterior to posterior lumbo-pelvic spine.

ITEM #4: The evidence for abnormal spinal postures and spinal configurations being associated with symptoms or known diseases is growing in the literature.[1,2]

However, there still exists gaps in this information which must be filled before absolute conclusions can be drawn.

ITEM #5: In the early 1980's, Harrison developed Chiropractic Biophysics® Technique (CBP®). CBP® technique is based on linear algebra principles.[8-11] In order to correct or reduce abnormal postures, each individual rotation and translation of the skull, thorax, and pelvis is placed into its unique inverse. This unique inverse position is termed the "mirror image" and the adjustment is therefore, called Mirror Image® adjusting.

The outcomes of these procedures have not been fully studied to date, however, a few of our recent studies have provided validity for this approach. *Figures 4 and 5* demonstrate two of Harrison's Mirror Image® procedures to correct the abnormal right thoracic translation posture and x-ray coupling pattern depicted in Figures 2 and 3.

ITEM #6: In order to verify correction of abnormal posture and spinal displacement after application of appropriate treatment, it is obviously necessary to utilize the same valid and reliable posture analytical system and x-ray line drawing methods discussed under item #3.

ITEM #7: The documentation of improvement in spinal conditions or disease processes following the application of corrective procedures is the most challenging problem of the above listed items. None in Chiropractic research today can claim to have adequately documented this issue. However, if the Chiropractic profession embraced an appropriate model of subluxation, as discussed here, then advancement in this critical area might be made.

In Conclusion, I don't believe that

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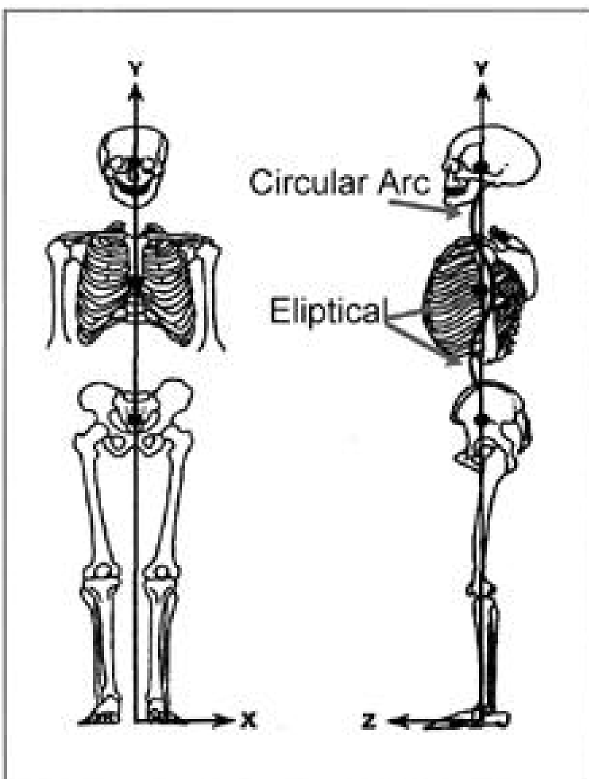

FIGURE 1

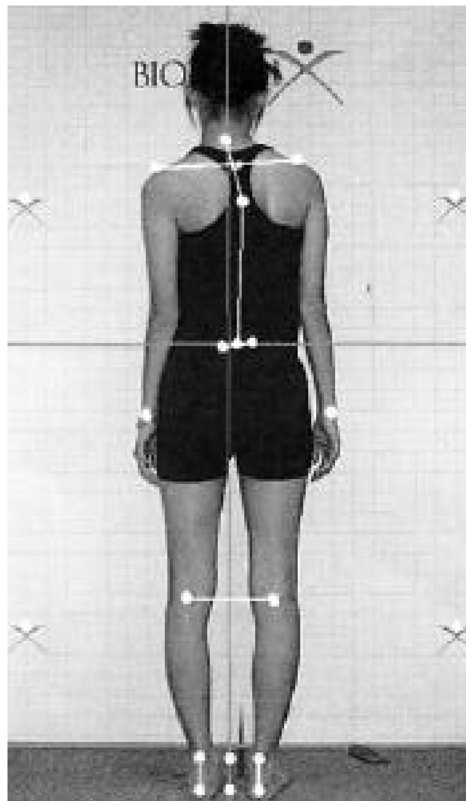

FIGURE 2

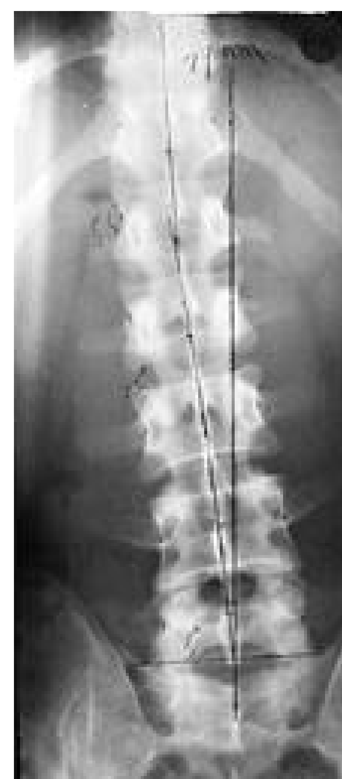

FIGURE 3

DEATH

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most Chiropractic clinicians really understand the state of their profession today. If our profession cannot agree on a model of subluxation, cannot find reliable and valid methods of detecting subluxation, then how can we ever document the correction of subluxation and the benefits to our patients?

Some clinicians may believe this issue to be irrelevant to their daily practice, however, rest assured that this issue is of grave concern to all of us. After all, guidelines for "quality assurance" used to support or limit Chiropractic coverage are based on the studies that Chiropractic research puts forth. In upcoming issues, I will apply the above 7 items to specific postural and spinal displacements in order to familiarize the reader with the benefits of the Chiropractic Biophysics® subluxation model and treatment approach.

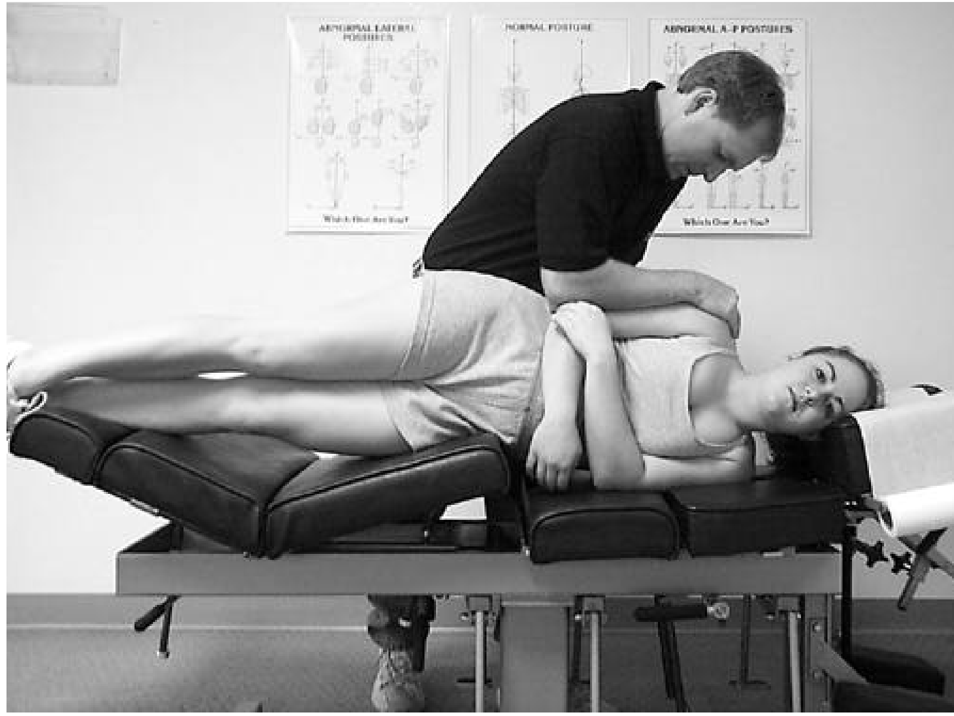

FIGURE 4

FIGURE 5

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