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A Method to Determine the True Head Tilt When Taking a Nasal X-Ray

Marshall Dickholtz, Sr., D.C.
Daniel C. Seemann, Ph.D.

Background

Owens,[1] in his comprehensive search of the literature, acknowledges that it is possible to analyze line drawings on x-rays if rotatory measurement is used. He did, however, caution that improper head placement can affect consistent outcomes for the practitioner. NUCCA has studied these types of problems for the past twenty-five years.

Head placement can be a major factor in contributing to error in determining the reduction vector for the adjustment. An incorrect vector can either fail to reduce the subluxation or, worse, maladjust the patient.[2]

There has been no set of clear standards to insure consistent head placement. Most practitioners who take cervical x-rays agree the standing position is best for an accurate analysis of the subluxation, but practicality dictates that cervical x-rays be taken in the seated position.[3]

The purpose of this study was to find a procedure for positioning the head during cervical x-rays that was the most consistent and had the least variability. Three positions were compared: standing, the sitting position and the sitting position with the head tilted forward. (See Figures 1-3)

Method

Subjects were measured in the three positions with a horizontal level strapped to their foreheads. Three measurements were taken at each position in fraction of degrees. If the measurement was left of center the reading was listed as minus (–) and, if the measurement was to the right of center, it was recorded as plus (+).

A total of 14 subjects were used in the study. They were all volunteers, randomly-picked patients of a NUCCA chiropractor.

Results

As was indicated earlier, the purpose of the study was to determine what amount of variance existed at each of the three positions. Table 1 shows the means and standard deviations of the three positions. The differences in the means do not appear to be "marked", especially if the hypothesis is that the standing position would be significantly different than the other two positions. The reader would especially be misled comparing the standard deviations, because the sitting position seems to have less variability than the other two. An Analysis of Variance (ANOVA) was computed, and the



Figure 1.
Nasium and Lateral View of Measurement Taken in the Standing Position.

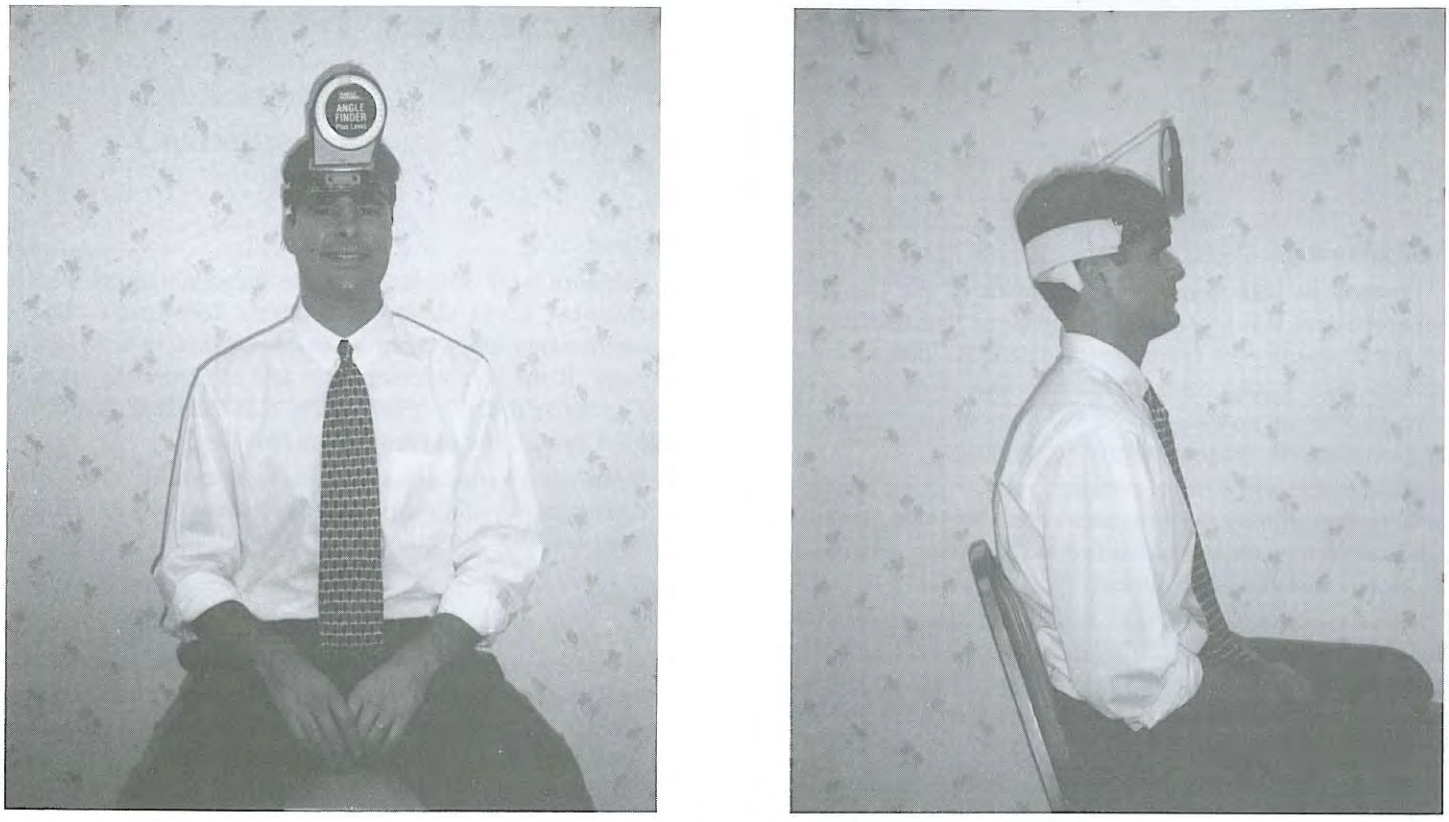


Figure 2.
Nasium and Lateral View of Measurement Taken in the Sitting Position.

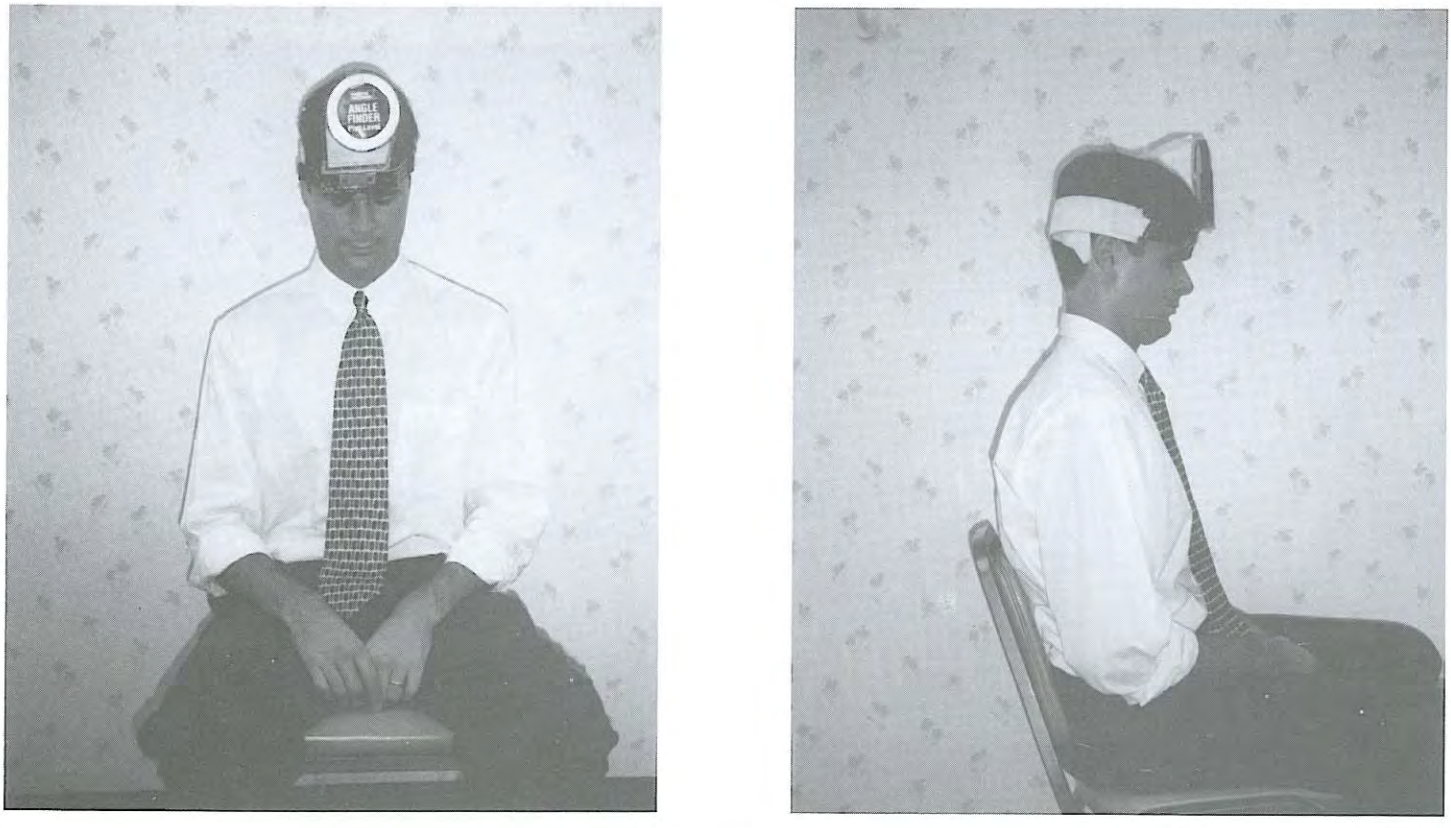


Figure 3.
Nasium and Lateral View of Measurement Taken in the Sitting Position with Head Tilted Forward.

means were found not to be significantly different. (See Table 2) In comparing the standard deviations and the variance from the raw data, the standing position has clearly less spread of the curve and variance. (See Table 3 and 4)

For example, in analyzing the standard deviation raw data column for eight out of the 14 measurements taken, the standard deviation was zero, which means that the three measurements taken on the subject in the standing position were the same. None of the other positions recorded a zero standard deviation. The raw data is found in Table 5.

Conclusions

Perhaps the most important conclusion from the study is that head position will change from the standing to the sitting and the sitting with the head tilted. If it can be concluded that the standing position is a more accurate reflection of the influence of gravity,[4] then it would follow that the standing position is the recommended head position for taking upper cervical x-rays.

There seems to be more consistency with the measurements and less variability in the standing position. This especially becomes crucial with the post x-ray where any effects other than the adjustment can be accounted for.

These findings support the need for a standardized procedure when taking a cervical x-ray. Dickholtz[5] is recommending that a wall chart with horizontal lines spaced every 1-1/2 inches be placed on a wall 4-1/2 feet above the floor. The patient is instructed to stand with his/her back to the wall and, with his/her eyes closed, raise and lower his/her head. An observer then notes the level of the ears in relationship to the horizontal lines on the chart. This spatial relationship is then used as a reference in taking the nasium film with the patient in the sitting position. Dickholtz feels this procedure helped him with the consistency in the taking of the nasium x-ray.

Understanding head positioning with the nasium film may lead to a better method of taking the lateral film as well. There has been considerable interest in lateral curve changes after an adjustment. The problem is the same in that a standard has to be found which will eliminate curve changes that are caused by head positioning in the lateral view. Preliminary studies show that the odontoid, after an adjustment, will shift under the center of gravity of the skull.[6] At this time it is not known how much of the shift can be attributed to head positioning.

Table 1

Means and Standard Deviations of the Standing, Sitting and Sitting with Head Tilted.

	Standing	Sitting	Head Tilt
Mean	-.559	-.476	-.452
SD	1.81	1.51	1.85

Table 2

One Way ANOVA of the Three Positions

Source of Variation	SS	df	F
Between	.09	2	.015*
Within	115.18	39	2.950
Total	115.27	41	

*Not significant at the .05 level

Table 3

Means and Standard Deviations of the 14 Computed SD's.

	Standing	Sitting	Head Tilt
Mean	.165	.773	.696
SD	.248	.385	.279

Table 4

Means and Standard Deviations of the 14 Computed Mean Variances.

	Standing	Sitting	Head Tilt
Mean	.036	.736	.557
SD	.042	.666	.403

Table 5

A Comparison of the Three Positions Using the Standard Deviations for all 14 Subjects

	Standing	Sitting	Head Tilt
1.	.288	.763	.570
2.	.000*	.760	.560
3.	.288	.577	.288
4.	.288	.577	1.155
5.	.000*	1.527	1.000
6.	.000*	.288	.500
7.	.000*	1.154	.500
8.	.288	.500	.866
9.	.288	1.258	.288
10.	.000*	.288	.577
11.	.000*	.288	1.000
12.	.000*	1.040	.577
13.	.000*	1.040	.866
14.	.288	.763	1.000

*no variance

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A Reliability Study Using a Positive Nasium to Establish Laterality

By Daniel C. Seemann, Ph.D.

Background

NUCCA, for the past 25 years, has supported the theory that line drawings can be used accurately and reliably to locate subluxations in the cervical region. Studies from the early 1980s were opposed to the practice of line drawings on x-rays for such valid reasons as low interreliability, x-ray distortion, skull anomalies and the competence of the analyzer. In the late 1980s, however, the resistance to line drawings weakened especially after the report by Jackson et al[1] that found x-rays could be read accurately. Other research supported the NUCCA and Jackson position. In comprehensive searches of the literature, Gay[2] and Owens[3] both acknowledged that x-rays can be read validly if rotatory measurement is used. Owens warns researchers that consideration must be given to patient placement and skull anomalies.

NUCCA[4] would agree with those considerations and add two more. Probably the first and most basic requirement for this type of research is to ensure that the x-ray equipment is aligned properly. The writer is aware of research that was performed where the equipment was not aligned. The other factor is the skill of the adjustor. Seemann[5] estimates there are approximately 1000 field doctors who practice upper cervical work exclusively, and a much smaller number skilled enough to reduce an atlas subluxation below one degree. Given all the concerns about line drawings, it is possible to reduce an atlas subluxation using a rotatory system of measurement with a skilled adjustor.

The purpose of this study was to show that a large group of NUCCA field doctors reading a positive print of a nasium film could determine the amount and side of laterality, within plus or minus one degree. The hypothesis was therefore null; i.e., no significant differences would be found as to the correct laterality compared with laterality found by the participants.

Method

This was a post hoc study where the 43 participants were blind to the goals of the research. As part of a training session held at a NUCCA seminar, field doctors were asked to analyze a positive nasium film. The analysis took place in a large seminar room. The participants were allowed roughly 30 minutes to complete the analysis. The mean years in practice for the field doctors was about 8 years. Years in practice ranged from six months to 33 years. The analysis was not made in the best of conditions as the print was somewhat glossy and the lighting for such an analysis was poor. The correct analysis was made by one of the NUCCA certified doctors who has been in practice approximately forty years. The analysis was verified by other certified practitioners.

Results

Table 1 compares the average laterality of the 43 participants and the correct listing for laterality. The mean difference is .55 degrees which is not significant and less than one degree predicted in the hypothesis. Thus the null hypothesis was validated.

A break-down of the participants as to how close they were to the correct laterality is found in Table 2. About 40% of the group were within a quarter of a degree and almost 75% of the group were within one degree.

An ancillary finding not discussed in the hypothesis is that only one field doctor out of the 43 who analyzed the positive film found laterality on the right side. Table 3 shows results of the correct side of laterality.

Table 1

The Average Laterality Found by the 43 Participants of the Film Analysis

	N	Mean	SD
	43	1.70°	.60
	correct laterality	2.25°	
		*-.55°	

*t = .06 the deviation is not significant

Table 2

Percentage of Participants Deviating From The Norm of 2.25 by Fraction of Degrees.

	Fraction of Degrees			
	±.25°	±.50°	±1.00°	±1.50°
N	16	22	31	43
%	.37	.51	.73	1.00

Table 3

Number of Participants Who Analyzed X-ray Film on the Correct Side of Laterality. N = 43

	Side of Laterality	
	*Left	Right
N	42	1
%	.98	.02

*correct side

Discussion

The standard that NUCCA uses to determine the presence of a subluxation is that laterality must be at least 3/4 of a degree to trigger the Atlas Subluxation Complex. Therefore it is critical that the analysis be accurate in fractions of degrees. A mean deviation of .55° from the correct analysis is an acceptable range. Better than half of the participants were within ± 1/2 of a degree. Anything greater than 1° would not be acceptable for analysis. The problem becomes more acute as laterality approaches the 3/4 degree standard, because the analyzer may think laterality is 3/4 of a degree when, in fact, laterality could be from one degree to 1 and 3/4 degrees, thus requiring an adjustment. The reverse of this example is also true. The analyzer may find laterality greater than 3/4 of a degree and decide to adjust when an adjustment is contraindicated.

The importance of adjusting the correct side of laterality does not need to be explained to the competent adjustor; however, as laterality approaches zero, it is possible, working with such small tolerances, that a mistake can be made as to the side of laterality. A one-degree error toward zero could cause a problem. The fact that 42 of the participants found laterality on the correct side of laterality was impressive.

There are some probable flaws in this study. The participants had to analyze a positive film which is not like a real film. The positive film tended to be a bit shiny. The lighting was poor and the film was read on a flat surface. This could have contributed to a larger standard deviation or range of behavior with the participants.

The other problem was the range of experience of the analyzer. As indicated earlier, the mean time in practice was eight years. Some of the participants had been in practice for only six months. Field doctors who had been in practice for five or more years did better on the analysis. The mean deviation score for this group was .40 degrees. If the purpose of this study was to show less deviation from the correct listing, it is the writer's opinion that it could have been accomplished by using only the most experienced doctors.

On the other hand, a complement of doctors with field experience ranging from six months to 33 years producing a mean deviation of only .5° should impress the critics of line drawings who believe it is not possible to read films reliably or accurately.

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Standards of Care

By Steven N. MacDonald, D.C.

In recent years the chiropractic profession has been actively involved in pursuing standards of care for our profession and finally culminating with the Mercy guidelines.[1] Discussion will continue regarding these guidelines and eventually lead to further refining these standards, built upon the Mercy model.

Since its inception in 1967, the National Upper Cervical Chiropractic Association (NUCCA) has been at the forefront in stating the need for standards of care for chiropractic methods practiced in our profession. NUCCA placed high standards on its own organization by forming the National Upper Cervical Chiropractic Research Association (NUCCRA) in 1971. NUCCRA was formed specifically to engage in a comprehensive research program designed to establish a scientific basis for the practice of chiropractic. This research group worked to establish a body of acceptable knowledge that is testable, relevant to fact, and compatible with established and accepted scientific theories. It continues to test existing chiropractic premises, beliefs and assertions; to establish an acceptable and scientific body of knowledge regarding the subluxation, its causes and physiological and pathological effects on the human organism; to design and develop equipment for the measurement of physical phenomena that have been observed to exist concurrently with the vertebral subluxation, and to assist chiropractic colleges, organizations and practitioners.[2]

Dr. Ralph Gregory, President of NUCCA from 1971 up to his death in 1990, stated in his editorial in the Upper Cervical Monograph[3] that the NUCCA method was to be based on scientific theory, on measurement, demonstration, and verification, and on testing the physical phenomena observable when subluxation exists. This has continued to be the guidelines for the NUCCA work throughout its existence.[4]

Chiropractic in general lacks proper validating research for much of what is practiced. Many chiropractic techniques are founded on unsound mechanical principles. I believe that NUCCA has based its analysis and correction of the Atlas Subluxation Complex[5] on sound mechanical principles.[6,7] NUCCA has taken the time to research and validate its premises so that they are founded in sound current scientific theory that is universally accepted today for all of science.[8,9,10,11,12,13] On Sept. 21, 1973 the NUCCA Directive Board adopted a resolution dealing with the use of questionable chiropractic techniques which violate relevant mechanical principles. The resolution was adopted in the interest of the public and the profession.[14] It was forwarded to all chiropractic colleges existing at that time. It included a request for the cooperation of the colleges and associations to adopt the resolution for the general protection and welfare of the public and the chiropractic profession. Only four colleges responded and none adopted it.

There are several articles on standards of care for the chiropractic profession in the proceedings of the 1990 International Conference on Spinal Manipulation sponsored by FCER. Shekelle[15] in his article stated that standards of care must be acceptable and useful to the clinician; they must be consonant with the available scientific literature and expert opinion. Adams[16] from LACC in his article says there is widespread difference in the way in which doctors of chiropractic practice, thus giving mixed signals to the consumer public about what is considered to be appropriate chiropractic care. This is underpinned by the realization that much of chiropractic practice lacks rigorous scientific foundation. The development of standards should include reliable and valid methods which take into consideration consensus of practitioner and expert opinion, evidence produced by the scientific method, and application of logic and reason. McMichail, et al.,[17] in his article on standards of care in the 1990 proceedings says the only practicable criterion of validity ever produced by science is that of consistency.

In all of these preceding articles, the authors are agreeing that all chiropractic methods need to be based on current scientific theories and principles. This has always been what NUCCA has advocated. I believe that NUCCA is one of the few chiropractic methods that has based its procedures on the scientific theories needed for standards of care.

Kaminiski, et al. (1987),[18] in his article "A Model for the Evaluation of Chiropractic Methods," asks a series of questions. How is a procedure defined? What observations and measurements are made? Is it consistent with present science and substantiated by research? He lists four steps that must be satisfied in any chiropractic method: 1) Definition and description. This definition should clearly identify the therapy and eliminate any misunderstanding of terms. 2) Measurable observations require a description and cataloging of observations. What parameters are measured, how are they measured and how does the measurement relate to the procedure? 3) Science knowledge. This involves a review of relevant scientific information, consistent with current scientific models, not necessarily a proven fact. Provisional acceptance is given to procedures that pass this inquiry. 4) Experimentation and testing. This requires the evaluation of pertinent research to substantiate all procedures with clinical studies and delineation of basic mechanisms. Full acceptance is given to procedures that pass this extensive inquiry.

A validation model is set forth that I believe NUCCA fulfills. A definition is required consisting of detailed description of the procedure of practice which includes a comprehensive list of unique terminology, a history, and a basic statement of rationale. This information has been collected throughout the years of the NUCCA organization.[19,20,5,21]

Observations are also included in this validation model. This asks the question, does a consistent and meaningful relationship exist between two or more observed events? In other words does a specific adjustment predictably result in a specific outcome? Specific time is the measurement of these relationships. If you can't measure them, then the conclusion is not supported. Also it must be recognized that measurable observation only becomes meaningful when vested within a conceptual context. Adequate definitions and sufficient collection of appropriate observations are next assessed with

respect to current scientific knowledge. New knowledge must be analyzed in the context of current understandings. The procedure or practice should be both reasonable and logical. The NUCCA/NUCCRA organizations again have taken the time throughout the years to meet these criteria and have always realized their importance in validating the the NUCCA work.[2,4,8,9,10,11,12,13,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36]

Provisional status in this validation model is given to emerging ideas that meet the test of scientific consistency. They still need to progress to full acceptance. All procedures deserve an avenue of possible validation. Forms of rejection provide a neutral status rather than a negative one. Unsubstantiated are those procedures that cannot stand the test of this process. This model is a tool for the definition, evaluation and classification of chiropractic methods.

I believe that NUCCA has gone the distance and continues to do so in fulfilling such a validation model for a chiropractic method. We have satisfied the requirements to reach provisional status and participate in experimentation and testing for full acceptance. As to how we fit in with the Mercy guidelines has yet to be established. As far as fulfilling a validation model for evaluation of chiropractic methods, I believe that we have done so. Our true objective is to maintain our scientific basis and sound mechanical principles in correcting the Atlas Subluxation Complex in our patients. It is through these objectives that we are able to truly help our patients.

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The Sequel to "The Flight From the Subluxation"

By Donald K. Moon, D.C.

A few years ago I wrote an article entitled "The Flight From the Subluxation" that was first printed in the NUCCA Monograph and was later reprinted in the ACA Journal, the Texas Chiropractic Association Journal and the Ohio State Chiropractic Association Journal.

The premise of the first article centered on the apparent effort on the part of many in our profession, including educators and political leaders, to de-emphasize the importance of the subluxation and to concentrate instead on those areas of chiropractic that are more palatable to the political element in the medical community. The desire within our profession to be accepted at any cost appears to be accelerating at an alarming rate. There are many who would probably agree to totally abandon the theory of subluxation in exchange for almost any modicum of acceptance by the medical community. Such forfeiture might ensure subsequent recognition on any level by insurance plans, workers compensation programs and governmental agencies as well as the general population. Whether this would work without acceptance of a para-medical status is doubtful not to mention the probability that research on the subluxation would be severely reduced to the point that chiropractic doctors could make no claim to be a separate profession.

Whether or not this march toward obscurity can be halted remains to be seen but its momentum is growing and could soon be beyond the point of no return. The proof of this statement can be seen by the lack of research in our profession on the vertebral subluxation and the increased use of the terms fixation, manipulation, lesion, and mobilization to name a few. It is no wonder that there are many who fear that the term subluxation may be found to be unprovable and therefore in order to survive they must embrace conventional thought. Never mind the fact that there would be no chiropractic profession today without unconventional thoughts coupled with good old-fashioned logic.

But today it takes more than logic. It takes scientific research and double-blind studies and the use of measurement and physics. But even that is not enough. NUCCA has probably done more to prove the subluxation and its relationship to malfunction than any other group in chiropractic research today. Yet the march away from the subluxation continues and we wonder why.

I remember the epigram that B.J. Palmer had put on a wall at the college which said: Build a Better Mousetrap and ADVERTISE and the world will beat a path to your door. If NUCCA expects to influence thought in our profession in time to reverse the flight from the subluxation it must engage in an educational program within the profession itself. It must start at the college level as well as the field practitioner level and educate those that have the power to influence the future of chiropractic. Those of us within NUCCA may have a tendency to overestimate the influence of our research because it is so meaningful to us. We have been accused by a very prominent and respected member of both the chiropractic and medical communities, of being an elitist organization unwilling to share our knowledge or to subject our research to the scrutiny of others within our profession. Whether this is true or not is less important than the perception by many that there is in fact a basis for this concept.

Like it or not NUCCA has a political imperative if it is ever to see the chiropractic profession benefit from its research on the vertebral subluxation complex. We can continue as we are – a small group of dedicated and concerned practitioners with little or no influence beyond our borders; or we can try to expand by influencing the leaders of our profession on a college level, state association level and through individual leaders within our profession. This requires a concerted and continuous effort at communication until a level of understanding is achieved. Once the evidence is available that the subluxation concept can be proven with measurements of pre and post x-rays (in the cervical region),this understanding could be accomplished and genuine research on the subluxation could accelerate at a significant rate.

The fear that the subluxation is indefensible would be eliminated and we could become accepted members of the health care provider community without surrendering our identity.

If we do not at least make the effort we will never know what might have been.

Editorial Comment

The letter to the editor by Rick G. Cockwill, in the last issue of the Upper Cervical Monograph, drew many comments from upper cervical practitioners. I have chosen to reprint Dr. Cockwill's article to refresh our memory along with letters to the editor by Dr. Marshall Dickholtz, Sr., and Dr. James McAlpine, in opposition to Dr. Cockwill's article.

Letter To The Editor

To The Editor:

Ever since chiropractors began adjusting the spine, the upper cervical region has been recognized as a special area, not only because of its unique architecture and relationship to the brainstem, but also because of the structural and symptomatic changes which occur following an upper cervical adjustment. The National Upper Cervical Chiropractors Association has found some clinically demonstrable structural changes which occur in all patients who present with an upper cervical subluxation and have termed these changes the Atlas Subluxation Complex. These structural changes include unilateral extensor hypertonia, contractured leg, pelvic distortion, and displacement of the body's center of gravity. Many different theories have been proposed to explain the neurological mechanisms involved with the production of these structural changes. In the most recent MONOGRAPH, Dr. Grostic has suggested that the dentate ligament tractionization mechanism is one way to explain the various structural and symptomatic changes seen in patients following reduction of upper cervical misalignments. I would like to make a few comments on this theory as well as to propose an alternate view which can account for these phenomena.

Dr. Grostic states that the physical and symptomatic changes seen in individuals presenting with an upper cervical subluxation are due to direct mechanical compromise of the tracts of the brain stem by abnormal tensile stresses caused by the dentate ligaments. Due to the proximity of the spinocerebellar and spinothalamic tracts to the attachment point of the dentate ligaments, it is proposed that mechanical deformation of these nervous structures can alter their function. Extensor imbalance and pelvic distortion are proposed to be the end result of altered electrical impulses within these compromised nerves. Dr. Grostic cites as examples – warmth in the lower extremity or the reduction of sciatic pain immediately following an upper cervical adjustment. The source of the nerve impingement is proposed to be located in the brain stem as opposed to being located in the lower lumbar area where the sciatic nerve exits the spinal column. Most cases of sciatica which I have encountered show direct evidence of nerve root impingement at the lower lumbar area. The pain distribution usually follows a discreet dermatomal pattern along the area which is innervated by a specific nerve at a specific lumbar level. Also straight leg raising is usually reduced on the affected side due to nerve entrapment in the lower lumbar spine. If the source of the nerve impingement was located in the brain stem level as Dr. Grostic states, the pain would not follow a discreet dermatomal pattern nor would straight leg raising be affected. Reflex and muscle testing of the lower limb can frequently indicate specifically which nerve root is involved. If the nerve impingement were to be located on the brainstem area, all reflexes would appear normal because reflexes are mediated by a monosynaptic reflex loop near the specific spinal level that the nerve enters the cord. Impingement of the nerve higher up the neuraxis would not affect this simple reflex. Plain film, myelography, and C.A.T. scan imaging can also clearly demonstrate narrowing of the I.V. F. which can affect the sciatic nerve. If the problem were located in the brain stem area, no amount of manual therapy, including manipulation of the lumbar spine or surgical removal of a herniated disc, would affect any positive change. We do frequently see, however, that these treatments for sciatic pain can often reduce the severity of pain experienced by these patients.

The minimum amount of displacement between the skull and atlas vertebrae (laterality) which may cause physical manifestation of the atlas subluxation complex has been observed to be three quarters of a degree. This amount of bone-on-bone movement is less than one millimeter. Static x-rays of the upper cervical spine show the relationship of the skull, atlas, and subadjacent cervical vertebrae to the vertical axis and the three cardinal planes. These views are taken when the spine is at rest. The spine, however, is a dynamic structure and is capable of a large degree of motion. If less than one millimeter of laterality is capable of producing all of the signs of an atlas subluxation, what happens to the brain stem structures when the cervical spine is moved to its end range of motion? Punjabi and White have demonstrated that there is a large degree of mobility in the upper cervical spine. The values most pertinent to our discussion include eight degrees of motion between the occiput and atlas during lateral flexion of the head and forty-seven degrees of rotation between atlas and axis during normal neck rotation. In fact fifty percent of neck rotation occurs between C1 and C2. If static misalignment of the occipital-atlantal joint of less than one degree is sufficient to cause tractionization of the brain stem and subsequent postural distortions, what happens when lateral flexion of the head causes an increase in angulation to eight degrees? What happens when the head is rotated? The axis of rotation of C1 on C2 is the odontoid process and when the spine is rotated around this pivot point there is considerable displacement of the neural foramen. What happens in an asymptomatic, subluxation-free individual during normal cervical range of motion? If the brain stem were so firmly anchored within the neural canal at the atlanto-axial area, there would be no normal movement possible between the vertebrae without creating a massive amount of neurological interference. If the brainstem were susceptible to small changes in tension applied to the dentate ligaments what occurs when the person is lying on their side? Would not the laterally transferred weight of the brain stem also cause neurological problems? While it is true that movements of the neck can cause

changes in the flexor-extensor tone of the paravertebral musculature, I feel that this is not due to the neck movements causing tractionization of the nerves leading to these muscles, but rather through an inherent reflex mechanism which coordinates body posture and movement.

I feel that the recognized importance of the upper cervical spine is not because of its proximity to the brain stem or the brain stem's vulnerability to mechanical derangement via the dentate ligaments or osseous encroachment, but simply due to the fact that the upper cervical spine serves as a base of support for the skull. Nature has provided ample free space in the upper cervical area to allow for a large degree of movement without causing any impingement on neurological structures. Examples of this can be seen in cases where there has been a fracture of the odontoid, congenital absence of the odontoid, or rupture of the transverse ligament which causes large displacements of the atlas on axis during flexion and extension. Many of these patients are asymptomatic even though there is direct mechanical compression of the spinal cord by the posterior arch of the atlas during extreme forward flexion or extension. Small misalignments in the upper cervical area do not cause an imbalance in the extensor musculature by physically deforming nerves, but simply by initiating special postural reflexes which are "hard-wired" into our nervous system.

The upper cervical spine serves as a base of support for our skull which not only houses the brain but also contains two of the primary detectors of body position and equilibrium, our eyes and our inner ear (vestibular apparatus). These organs are responsible for informing the central nervous system of the head's position in relation to the horizon and the velocity and direction of head motion. A greater degree of information has been required of these organs ever since man abandoned quadripedal stance and decided to walk upright on two feet. The delicate act of balancing on such a narrow base of support has eventually evolved a complex neural circuitry which deals with upright stance, coordinated head and eye motion, and coordinated body motion.

The primary component of an upper cervical subluxation has long been recognized as a lateral deviation of the skull on the atlas – termed "laterality." Laterality must be present in any individual presenting with signs of an atlas subluxation. As the skull deviates laterally on the atlas, the third receptor responsible for informing the brain about structural positioning becomes an important component to the production of the A.S.C. These organs are the proprioceptive mechanoreceptors which are imbedded within the joint capsules and muscle tissues of the body, namely the articular receptors and muscle spindles. As I have described before (NUCCA MONOGRAPH 1985, "Neurological Mechanisms of the Atlas Subluxation Complex") these receptors are found in extremely high density in the upper cervical spine, provide detailed information about the degree of tension and length of each muscle in which they are imbedded, and respond to even minute changes in muscle length or tension. In fact these are the only receptors that have been shown experimentally to be capable of responding to the minute displacements seen in subluxations of only three quarters of a degree. Changing the rate of discharge of the muscle spindles has also been shown to reflexively affect changes in muscle tension in various associated muscles of the body. As laterality is produced the skull will initially deviate from the vertical axis in the frontal plane. The eyes, inner ear (vestibular apparatus or statokinetic labyrinthe), and the muscle spindles associated with the upper cervical spine will all detect this deviation from the vertical axis. The brain, sensing this deviation, must compensate by attempting to return the skull to the vertical axis. As T.D. Roberts has stated in his book entitled *Neurophysiology of Postural Mechanisms*, "The original head positions are primarily determined by the labyrinthe and optic organs; the somatic (body) orienting reflexes occur secondarily. These reflexes serve to align the body to the position of the head and to stabilize the trunk with respect to the vertical axis."

These body orienting reflexes will tend to shift the spine under the skull by changing the tone of the extensor musculature so as to return the skull and its enclosed proprioceptive organs to a more optimal position parallel to the vertical axis. If the top part of the spine shifts then there must be a concomitant shift in the lower spine and pelvis to further compensate. This deviation of the skull from the vertical axis, recognition of the deviation by the central nervous system, and subsequent reflex alteration of supporting extensor musculature, can easily produce the hallmarks of the A.S.C.: unilateral extensor hypertonia, pelvic distortion, contractured leg, and displacement of the body's center of gravity.

The muscular imbalances and deviation of the spine and pelvis from the vertical axis will change the axis of motion and the distribution of gravitational forces in all supporting structural architecture. Abnormal gravitational stresses may, in time, result in facet irritation, muscular hypertonicities, vertebral fixations, hypermobilities, hypomobilities, sacro-iliac joint strain, and mechanical derangement of the intervertebral discs due to unequal lateral force distribution from the nucleus pulposis to the outer annular fibers. The peripheral nervous system may also become affected due to the fact that the spine houses the spinal cord. Mechanical impingement of the nerve roots may occur by decreasing the diameter of the transverse foramen, resulting from facet joint capsule swelling, by contracture of the musculature which the nerve must pass through, or by herniation of the nucleus pulposis.

Treatment of all spinal conditions must first be comprised of an attempt to restore the spinal column to its optimum structural relationship, namely on the vertical axis with the base of support of the spine (pelvis) and base of support of the skull (atlas) perpendicular to the vertical axis with all musculature and ligamentous structures balanced. Through proper adjusting of the upper cervical spine the skull is returned to the vertical axis, its base of support (atlas) becomes level, and the subadjacent cervical vertebrae are also returned to their proper position along the vertical axis. The optic organs, inner ear, and upper cervical mechanoreceptors now inform the brain that everything is positioned properly; therefore, there is no need for postural compensation of the subadjacent spinal musculature. The extensor muscles balance, the pelvis levels off, and the contractured leg now becomes equal. Gravitational forces become centered, abnormal unilateral stresses are eliminated, and the balanced musculature can function in a coordinated, bilaterally symmetrical manner. This allows the facet joint to heal, the strained sacro-iliac joint to move properly, and the compressed peripheral nerve to regain function.

Letter to the Editor *(continued from page 13)*

As you can see, we do not need elaborate theories of mechanical compression, venous stasis, or brain stem tractionization to adequately explain the symptomatic and structural changes seen with subluxation of the upper cervical spine. The signs and symptoms of the Atlas Subluxation Complex are simply the result of pre-programmed neural reflexes attempting to perform the complex task of maintaining an upright posture against the constant pull of gravity.

Sincerely yours,

R.G. COCKWILL, D.C.

RGC:ks

Letter To The Editor

By Marshall Dickholtz, Sr., D.C.

In answer to Dr. R.G. Cockwill's letter to the editor in the April 1993 Monograph, where he quotes Punjabi and White as having demonstrated that there are eight degrees of motion between the occiput and the atlas during lateral flexion of the head, I wish to correct this misconception.

Quoting from a Brief Report by John P. Goodridge, D.O. and Brinton C. Donalson, D.O.[1], the authors stated that in his physiology text Kapandji[2] taught that during lateral flexion at the atlanto-occipital joint, "Movement occurs only between the axis and the third cervical and between the occiput and the atlas. Between the occiput and the atlas movement consists only of the slipping of the occipital condyles to the right during flexion to the left and vice versa in flexion to the right; there is a small range of movement."

Again from the Brief Report, Doctors Goodridge and Donalson tried to document the movement of the atlas on the condyles with x-rays in the frontal plane by moving the head to the right and left of what they thought was the central ray. Their conclusion was there was movement between the atlas and the condyles. They didn't take into account that when you move a three dimensional object off center of the central beam of the x-ray, there will be a different portion (edge) of the object that will be projected on the film, other than a round ball.

I have also found that you can't predict the side of laterality, no matter which way the neck or head is flexed in the frontal plane.

Gray's Anatomy states that there is only a slight movement between the atlas on the condyles.[3] Some researchers try to use the transverses in relationship to the mastoids for measurement. This also is erroneous. There are no consistent spots from which to take measurements. It is possible that when some researchers use cadavers that the ligaments and muscles have lost their tonicity. This would enable the atlas to move forward in the sagittal plane, which would give the atlas greater freedom to move because of the vee shape of both the condyles and lateral masses.

To understand these vee shape joints: If you draw bisecting longitudinal lines through each condyle or lateral mass you'll see that the lines converge at the anterior. The interlocking vees are a very stable joint. That is why full hyperextension of the cervical spine and head is a detriment to maintaining proper cervical alignment.

Now, I don't believe that any medical or osteopathic researcher has studied nearly as many head and neck x-rays as the chiropractors who are doing specific upper cervical work.

I personally have studied x-rays of up to 20,000 patients looking for atlas laterality. By using the landmarks of dividing the parietal region above the squamosal sutures for my central skull line, (this would be the best for the center of gravity for the head) and a line drawn through the inferior border of the posterior arch of the atlas as it crosses the lateral border of the lateral masses, I have been able to measure atlas laterality.

Now, in trying to disprove that there is more than one half of a degree of normal movement of the atlas, you have to use my previous mentioned measuring system along with the following:

1. X-ray equipment alignment[4] with head clamp and film holder mounted on a wall frame and aligned to the central ray, with very tight collimation of the x-ray field to get x-rays with greatest detail.

2. The x-ray views should be nasal exposures with the posterior arch of the atlas showing the inferior attachments to the lateral masses.

3. With the patient sitting in a movable chair, clamp the patient's head at a vertical angle so there is symmetrical and equal magnification of the parietal region. Move the patient's body to the right for one exposure and to the left for another exposure and analyze as above. This would be equivalent to lateral flexion of the head, and the reference points are truer to the x-ray field.

I found no movement at the atlas that I could detect, where the angular rotation of the lower cervicals average six and one half degrees degrees in each direction.

This research will be presented at The Upper Cervical Conference, Life Chiropractic College, November 19, 20, 1994.

References

1. Brief Report, Goodridge and Donalson, JAOA, Vol. 92, No. 9, Sept. 1992.
2. Kapandji, I.A. The Physiology of the Joints III, Ed. 2 New York, N.Y.
3. Gray's Anatomy, 1974, Running Press, page 230.
4. National Upper Cervical Chiropractic X-Ray Alignment Book by Dr. M. Dickholtz. Reprinted 1993.

NOTE: Excerpts of writings from Dr. Ralph Gregory, past President of the National Upper Cervical Chiropractic Association.

A stressor has been defined as a condition in the body produced by an injurious factor and manifested by a syndrome (H. Selye). A subluxated C1 distorts the spine and the pelvis be-

cause it causes spastic contracture of the extensor (anti-gravity) muscle of the spinal column. Spinal and bodily distortion result. A subluxated C1, therefore, is acting as an injurious factor, manifesting itself as a syndrome which is verifiable by measurement and can be correlated to the C1 subluxation. The patient with a subluxated C1 has a subluxated spinal column, an over-innervation of the motor neurons of the spinal cord, neuromuscular imbalance, loss of muscular synergism, distortion of the spinal column from the true axis of the body, and leg disparity. This is the C1 subluxation complex syndrome, and is correctable solely from a precise and pre-determined C1 adjustment.

If disequilibrium and cervical spine displacement do not cause a state of subluxation until C1 moves laterally on the occipital condyles, what constitutes a normal lateral range of motion for C1? Vertebrae can be shown to displace and not cause detriment or insult to the nervous structure. If a vertebra does displace and thereby causes insult to the nervous structure, it is logical to assume that it has abnormally moved, or moved beyond its normal range of motion. Because C1 cannot misalign laterally more than 1/2 of a degree from its alignment to the occipital condyles (about the thickness of a sharp pencil mark), without imbalancing the neurological inhibitory mechanism of the reticular formation at the caudal end of the brain stem, C1 has practically no normal lateral range of motion.

This phenomenon has been observed and tested on over 10,000 cases over a period of many years. The C1 distortion syndrome has always manifested itself whenever C1 has moved laterally three-quarters of one degree or beyond on the occipital condyles when the vertebra was moving from its normal position toward the abnormal position.

The type of neurological detriment that is caused by the lateral displacement of C1 on the occipital condyles appears to be a mechanical tractionization of the caudal end of the brain stem. It has been noted in medical literature that pathological and traumatic situations affecting the brain stem can produce impairment or loss of the inhibitory control over the body's extensor musculature. National Upper Cervical Chiropractic Research Association research on the effects of a subluxated C1 on the caudal end of the brain stem confirms the medical hypothesis.

Letter To The Editor

By James E. McAlpine, D.C.

Dear Editor,

This is an attempt to explain how a 3/4 degree misalignment could cause a neural insult severe enough to trigger a short leg and the serious health problems that often accompany this minimal misalignment factor.

I became interested in the dentate ligament tractionalization theory when I found the dentate ligaments were piamater intimate with the neural tissue and they extended through the arachnoid membrane and attached to the dura mater which in turn was attached to the rim of the foramen magnum and the 2nd and 3rd cervical vertebra. It followed that if the spinal cord moved from the center of the foramen magnum the fixed attached dentate ligament would pull on the spinal cord or brain stem. Anatomists say the brain stem ends at a point midway between the foramen magnum and the atlas, therefore any excursion of the spinal cord at the level of the foramen magnum would be considered a traction on the brain stem.

The brain stem and upper spinal cord are firmly anchored at the foramen magnum to protect the brain from being pulled down into the neural canal. The neck movement from full extension to full flexion elongates the neural canal 2.8 cm (Breig). The dentate ligaments protect the brain from being pulled down into the foramen magnum. Emery states the dentate ligaments allow the spinal cord to move 2.5 mm up or down but if the brain moved as little as 3 mm down it could cause brain damage. Emery cited one case of severe brain swelling in an infant in which the brain stem severed but the dentate ligaments remained intact. The dentate ligaments suspend the spinal cord in the neural canal and hold the brain up in the cranium to protect it. The dentate ligaments are under a constant normal tension, that is why less than 1 mm of increased unilateral tension is abnormal and can trigger the short leg. The cervical spine is designed to have more freedom of movement than other parts of the spine and in some of these movements, especially in neck flexion, the stretching of the cord will increase the dentate ligament traction on the cord and brain stem. It appears to tolerate the extremes of movement as long as these movements are transient. The tension of the cord due to an atlas lateral misalignment is a continuous insult to the nervous system until it is corrected.

Contrary to Dr. Cockwill's opinion, I feel the importance of the upper cervical spine anatomical relationship to the brain stem, spinal cord, and direct attachment to the foramen magnum and upper three cervical vertebrae is the only explanation for the almost limitless range of effect on the human system. It doesn't appear to be explained by the disruption of the righting reflexes which appear to me to be normal reflexes and should in no way by themselves interfere with nerve transmission throughout the body.

Contrary to Dr. Cockwill's opinion, I feel the importance of the upper cervical spine anatomical relationship to the brain stem, spinal cord, and direct attachment to the foramen magnum and upper three cervical vertebra is the only explana-tion for the almost limitless range of effect on the human system. It doesn't appear to be explained by the disruption of the righting reflexes which appear to me to be normal reflexes and should in no way by themselves interfere with nerve transmission throughout the body.

It has been proven that tension or compression of nerve tissues causes a reduction in frequency and amplitude of nerve impulses. Nerve impulses are coded signals that cause malfunction when reduced in frequency and amplitude. Autopsies show degenerative changes and hypertrophied dentate ligaments appear at the same level in the cervical spinal cord, indicating the tethering of the cord by the dentate ligaments caused the degeneration and the hypertrophy (Bedford). The mechanoreceptor theory does not explain altering of the coded nerve signal or nerve interference the basic tenant of chiropractic.

Although I was not aware of it at the time, research had already been done on dogs proving my theory. Cusick, J.F., M.D.,

Letter to the Editor *(continued from page 15)*

Ackmann, J.J., Ph.D., and Larson, J.L., M.D., Ph.D., reported in J. Neurosurg., Vol. 46, June 1977, of experiments with dogs in which the lamina of the vertebrae were removed at six levels of the cervico thoracic spine and slings placed under the spinal cord. The cord was lifted in increments of .8mm. The tension of the spinal cord was measured by a force transducer and axonal conduction of the peroneal nerve was measured by somatosensory evoked potential, at each increment of elevation. Mild to moderate elevation of the cord resulted in reduction of evoked potential amplitude. The reduction began before the posterior surface of the cord reached the posterior limits of the canine vertebral canal. After the dentate ligaments were sectioned, similar changes in evoked-potential response did not occur until greater degrees of posterior elevation and recorded tension had been reached. This is definite proof that excursion of the spinal cord from its normal position in the neural canal is resisted by the dentate ligaments and it causes a reduction of amplitude of axonal conduction of the peroneal nerve (a branch of the sciatic nerve). .8mm movement will cause about 4% reduction in amplitude in the lower C. upper T. spine.

Fibrous tissue follows the stretch hypertrophy rule. Living fibrous tissue structures when exposed to a series of intermittent elongating tension loads undergo additional formation of collagen. Although such alterations occur only with intermittent tension loads, it appears reasonable to assume that dentate ligaments in certain instances of cervical spondylosis (or subluxation) undergo stretch hypertrophy occurring intermittently when the cord is in ventroflexion. The above authors say such a mechanism could offer a possible explanation of the clinical pathology findings of Bedford and others. These authors noted that the most significant areas of cord degeneration were those regions adjacent to the thickened dentate ligaments. Their findings conform with other clinical pathological studies that the areas of maximum pathological changes are in the lateral, posterolateral, and medial posterior columns with sparing of the anterior columns.

This information has caused me to be involved with a research project to examine the spinal cords of cadavers to see if the dentate ligaments in the upper cervical spine undergo stretch hypertrophy and if there is accompanying degenerative changes at their attachments to the spinal cord and brain stem. I'm happy to report that such a project is underway in a joint effort between Palmer and Life College.

I first proposed the dentate ligament traction on the brain stem and the spinal cord in a paper published in the Oct.-Dec., 1980 I.C.A. Review. It was erroneous in some respects due to the lack of published knowledge of anatomy at that time. Research at Palmer College by Dr. Grostic and some colleagues confirmed the dura mater is attached to the inner rim of the foramen magnum but also revealed the dura is firmly attached to the inner rim of the 1st, 2nd and 3rd cervical vertebrae.

The dentate ligaments are piamater that pass through the arachnoid and attach to the dura mater and periosteum of the foraman magnum and upper three cervical segments. A misalignment factor causes an immediate and persistent tension on the central nervous system with only 3/4 degree misalignment of atlas or about 0.8mm on a 4" diameter condyle.

I'm sure Dr. Grostic is fully aware of the nerve root compression due to a trapped nerve in the low back and the results of disk surgery in relieving sciatica. He is also aware this same relief can be given by an upper cervical correction untrapping the nerve by reducing the imbalance of compression on the disk bulge allowing it to subside. We also have cases of sciatic pain although a trapped nerve is not demonstrable. The nerve tracts to the lower leg are at the perimeter of the spinal cord and most vulnerable to the traction of the dentate ligaments. The vulnerability is also a logical explanation of how only 3/4 degree less than 1 mm laterality of the atlas can cause a predominant unilateral insult to the spinal cord and trigger the functional short leg phenomena.

B.J. was right – it is a spinal cord neural insult, however, it is not cord compression. It is a cord traction which causes the same neural deficiency, and decrease in frequency and amplitude of the nerve impulse signal. The same deficiency occurs when a nerve is trapped by a bulging disk.

I agree a constant abnormal stress on the spine becomes a focus of degenerative change no matter which joint is constantly stressed. It, however, does not appear to me to have the potential for total body neurological inefficiency as direct spinal cord, brain stem, or central nervous system insult.

Recommended Reading

1. "Dentate Ligament Traction Mechanism," James E. McAlpine, D.C., I.C.A. Review.
2. "Dentate Ligament Cord Distortion Hypothesis," John Grostic, D.C., F.I.C.R., CRJ, Vol. 1, Number 1, 1988.
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Attention Deficit Disorder (ADD) and the Atlas Subluxation Complex

By Robert J. Goodman, D.C.

Introduction

Daydreaming, procrastination, impulsive behavior, undisciplined, lazy, hyperactive, or irresponsible are all terms used to describe the typical Attention Deficit Disorder patient. Is it a real illness, an ingrained charter flaw, or tension on the brain stem interrupting bio communication transmissions from the brain to the body and vice versa?

The Merck Manual of diagnosis and therapy describes the ADD patient as developmentally inappropriate in attention and impulsivity, with or without hyperactivity.[1]

The September issue of Men's Health says, according to the "experts," many men's inability to succeed socially and financially results from a physical problem, not a psychological one. They claim these irrational behaviors are caused by a glitch in the brain's wiring. They label it ADD.[2]

Dr. Ralph Gregory, founder of the NUCCA method of spinal correction states that tractionalized or compressed nerve structure at the brain stem level can cause cessation of normal nerve inhibitrons and create spastic contracture of spinal musculature.[3] He further states that the Atlas Subluxation Complex can create this type of interference and effect normal body activity. To this author, this also sounds like a glitch in the brain's wiring.

The Atlas Subluxation Complex (from here in called ASC) can be described as a displacement of the top vertebra in the neck (called the Atlas) creating a misalignment of the head and neck resulting in neuromuscular stress.

In my practice, I have had the opportunity to correct the ASC on more than 20 children and adults who have been previously diagnosed with ADD. I have had positive results in relieving many of the symptoms used to define this condition. I had only one patient whose symptomatology according to ADD did not change. However, I did note postural and muscular improvements in this patient. At times, the changes were very timely and dramatic. I have seen patients who were diagnosed with ADD by school teachers, school psychologists, school nurses, and MD's. Ritalin is the usual prescribed treatment for both children and adults. The prescription of this drug to control or mask the symptoms of this disorder instead of investigating and eliminating possible cause factors is, once again, where conventional medicine and natural health care find their boundaries.

After clinical observation and examination of patients diagnosed with ADD, I documented common characteristics among both children and adults.

The children are usually hyperactive and difficult to handle. Parents always reported problems at school either with discipline or with the educational process. Each child was very sensitive to digital palpation of the cervical region as a result of severe cervical hypertonicity. The examination would yield a "jump response" which is an involuntary neurological reaction present in children due to severe cervical musculature tension. In other words, the child's whole body would jerk when slight pressure was applied to the neck.

In the case of adults, most were experiencing periods of confusion, fatigue, depression, and lack of concentration. They all commonly complained of headaches and tension or pain in the neck.

All of these patients, after physical examination and x-ray analysis were diagnosed with ASC and treated in my office.

The goal of this NUCCA practitioner is to correct the ASC. However, research papers, articles, and documentation of mental, behaviorial, or physical changes as a result of a spinal correction can enhance our ability to educate the public and the health care community on the importance of structural balance to normal physical and mental functions. The following case study is offered as a clinical example of symptomatic changes after correction of the Atlas Subluxation Complex.

Case History

Patient A is a nine year old female who presented to our office experiencing symptoms that had been diagnosed as ADD. The primary signs were hyperactivity, short attention span, and poor impulse control. According to her parents and school teacher, Patient A had a first grade reading level (1.5) at the beginning of the third grade. Her printing was illegible, and spelling was a problem. The parents stated that Patient A has never been able to sit still and relax and has never taken naps. She also woke up crying at least twice every night. A school psychologist had suggested that Patient A be evaluated by a pediatrician and then given Ritalin to control the ADD symptoms. Patient A's parents had decided to investigate a more conservative alternative and chose not to medicate Patient A at this time. However, the parents agreed that Patient A's behavior and learning abilities were being compromised by this condition which was labeled ADD.

Examination

Physical examination of Patient A revealed the following information:

- a right leg deficiency in the supine position
- a right low hip and shoulder in the standing position
- right spastic contracture of the paraspinal musculature especially in the cervical region
- digital palpation of the cervical spine elicited a jump response
- patient was nervous and fidgety

X-ray examination of the cervical region revealed an ASC. The lateral view revealed a hypolodotic cervical curve. Rotation of the atlas vertebra was minimal.

ADD *(continued from page 17)*

Results

The success of the first NUCCA adjustment was initially measured by lessening of the leg deficiency, postural changes, post x-ray analysis, cervical palpation, and observation. After this spinal correction, the leg length measured even; the hips and shoulders were level, and x-ray analysis showed a fifty percent reduction of the ASC. Patient A was noticeably more relaxed and drowsy. She was instructed to relax in a reclined position after returning home.

Patient A's parents noticed several distinct changes in her behavior and schedule. Patient A relaxed for 2 hours watching TV and napping. Her parents stated that they were amazed. She had never remained motionless for an extended period. Patient A slept through the night for the first time in her entire life.

By the end of the next school semester, Patient A had seven A's on her report card. Her reading level was 3.5 (a 2.0 increase in less than three months). Her manuscript and cursive writing were legible. Her teacher described her as poised and relaxed. As a final note, the school psychologist became a patient in our office and referred several other children.

Discussion

On follow-up appointments, I questioned Patient A's parents to see if anything had been changed during her treatment in our office. The parents reported that activities, eating habits, nutritional supplements, and family relationships had all remained constant to their knowledge. Therefore, this author would have to conclude that correction of the ASC effectively changed the symptoms used to diagnose the condition known as ADD. The remission of those symptoms were clearly documented.

Documentation of changes in mental and behavioral functions as a consequence of upper cervical adjustments is nothing new to the chiropractic field. It began several decades ago when Palmer College reported a sixty-six percent recovery rate of mental patients at two sanitariums owned by the school for over twenty-five years. This recovery rate was far above the national average. It was more recently discussed in a research paper written and published by Dr. Michael Thomas entitled, Upper Cervical Adjustments May Improve Mental Function.[4] Further investigation into the causation of mental and behavioral disorders could reveal the correction of the ASC as a possible avenue to reduce or eliminate the need for drug and other more radical therapies.

References

1. The Merck Manual of Diagnosis and Therapy, 15th Edition, 1987, p. 1978-79.
2. Gower, Timothy, Attention Headache, Men's Health, Sept. 1994; p. 55-56.
3. Gregory, R., The Upper Cervical Monograph, Vol. 3, No. 3, April 1982, p. 10-12.
4. Thomas, M.D., Wood, J.: Upper Cervical Adjustments May Improve Mental Function; Journal of Manual Medicine (1992) 6:215-216.

NUCCA NEWS
Published by **THE NATIONAL UPPER CERVICAL CHIROPRACTIC ASSOCIATION, INC.**

NUCCA/NUCCRA Calendar of Events

September 24, 1994	Academy of Upper Cervical Chiropractic Organizations Jekyll Island, Georgia
October 1, 2, 3, 1994	NUCCA Fall Seminar - Hyatt Regency Woodfield, Shaumburg, Illinois
October 22, 23, 1994	1994 National Subluxation Conference Sherman College of Straight Chiropractic, Charlotte, North Carolina
November 19, 20, 1994	Upper Cervical Conference Life Chiropractic College, Marietta, Georgia
January, 1995	Membership Dues
January, 1995	Monograph Articles Due
February, 1995	Directory Information Due
May 20, 21, 22, 1995	29th Annual Spring Conference - NUCCA Hyatt Regency Bellevue Bellevue, Washington
May 1995	Vol. 5, No. 5 Monograph

Research Funds

The Board of Directors acknowledges those who have contributed to the NUCCA/NUCCRA Organization. All donations are tax deductible. Special donors include:

Dr. Kurt Sherwood	Washington
Dr. Newby	Michigan
Dr. Paul Harrington	California
Dr. Kazuo Nakano	California
Mrs. Marynelle Shields	Indiana
Mr. Bert Kizer	Illinois
Mrs. Yvonne Maurice	California
Danira Bulnes	
Dr. & Mrs. Keith Denton	Michigan

NUCCA Membership Directory

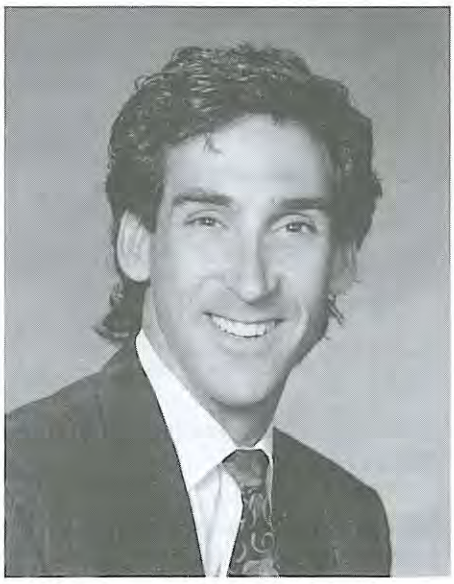
NUCCA has published its first membership directory. This directory contains the names, addresses, and phone numbers of Doctors and students who have paid their annual dues. With the exception of Certified Doctors, this directory makes no attempt to qualify individual expertise or right to practice Chiropractic in any jurisdiction. Contact the NUCCA Executive Secretary regarding any corrections, omissions, or deletions. Directory information due February, 1995.

Three Receive NUCCA Certification

The NUCCA Board of Directors take pride in announcing that Drs. R. Wiedemann, M. Dickholtz, Jr. and Sherry Dickholtz-Gaber completed all requirements for certification. All doctors are long standing members of NUCCA.



Dr. Wiedemann is a 1977 graduate of Palmer College of Chiropractic and has been in practice for 16 years. He is located at 2711 N. Mason St., Appleton, WI 54914. He and his wife Bonnie have three children.



Dr. Marshall Dickholtz Jr. has been an active member of NUCCA for more than 18 years. A 1978 graduate of Palmer College of Chiropractic, Dr. Dickholtz is a recognized lecturer, educator, and practitioner of NUCCA. His private practice is located at 9346 Waukegan Rd., Morton Grove, IL 60053. He is a current member of the Board of Directors and heads the membership relations under the public relations committee.

Dr. Dickholtz and his wife Lisa have recently had their first child and reside in Glenview, IL. His interests and hobbies include sports cars, golf, downhill skiing and performing as a professional stand-up comedian.



Dr. Sherry Dickholtz-Gaber graduated from Palmer College of Chiropractic in 1977. She was in practice for 18 years in Chicago, IL. Dr. Dickholtz-Gaber and her husband Steven, reside in Chicago, IL.



Daniel David Palmer Scientific Award

Recipient Dr. Marshall Dickholtz Sr.

Today we are honoring Dr. Marshall Dickholtz Sr., an alumnus who has, through his dedicated effort, advanced the science and art of chiropractic.

Dr. Dickholtz received his doctor of chiropractic degree from Palmer School of Chiropractic in 1956 and has practiced in Chicago ever since. For over 30 years, he has been one of the pioneers in low distortion x-ray techniques, x-ray alignment procedures and x-ray radiation reduction methods. Among his inventions are a Cervical Spinal Demonstrator, a chin centering device for cervical vertex x-rays. He is the author of numerous articles on x-ray and x-ray analysis and wrote the booklet "X-ray Equipment Alignment."

In addition to his research, Dr. Dickholtz is a founding director of the National Upper Cervical Chiropractic Association and has been on the board of directors since its founding in 1966. He is also a founding director of the National Upper Cervical Chiropractic Research Association and has served as treasurer since its beginning in 1971.

For over 38 years, Dr. Marshall Dickholtz Sr. has provided dedicated service and research to the chiropractic profession. We acknowledge and honor his many accomplishments today.

The Citation

Dr. Marshall Dickholtz Sr. . . .

. . . for his many years of leadership in the advancement of the chiropractic profession . . .

. . . for sharing his exceptional knowledge and skill with his colleagues . . .

. . . for the relief his work has brought to chiropractic patients around the world . . .

Now on behalf of the Faculty of Palmer College of Chiropractic and the Board of Trustees of the Palmer Chiropractic University System, and by virtue of the authority vested in me by the state of Iowa, I do hereby confer on Dr. Marshall Dickholtz Sr. the Daniel David Palmer Chiropractic Scientific Award, honorus causa, admitting him to all rights and privileges thereto; in testimony thereof, I present this diploma and medallion symbolic of the award.



DR. ROBERT J. GOODMAN would like to announce the opening of the **Nevada Spine Center**, a NUCCA practice in Boulder City, Nevada, a suburb of Las Vegas.

Dr. Goodman graduated from Palmer College in 1989 and worked with Dr. Glenn Cripe until October of 1993. Dr. Goodman would like to take this opportunity to thank Dr. Cripe and all the NUCCA practitioners who have provided opportunities for recent graduates to learn the NUCCA system.



Announcement

Dr. Ryan D. Hamm announces his association in practice with Dr. Marshall Dickholtz Sr. of Chicago, IL.

A native of Peoria, IL, Dr. Hamm enrolled at Palmer College of Chiropractic in March 1991 where he served as NUCCA Club President for three academic terms. Dr. Hamm graduated Cum Laude from Palmer College in June 1994.



The committee to form the Academy of Upper Cervical Chiropractic Organizations had their first meeting June 11, 1994 at Jekyll Island, Georgia. Attendance was in response to a proposal made at the Tenth Annual Upper Cervical Spine Conference last December and included representative members of Atlas Orthogonality, Grostic, the Society of Orthospinology and the National Upper Cervical Chiropractic Association. The Academy of Upper Cervical Chiropractic Organizations is being created to enhance and promote the common procedural elements between these different schools of adjusting the atlas. The initial committee meeting established the academy's purpose, a mission statement, and an interim board of directors.

The committee hopes to charter the Academy at the Upper Cervical Spine Conference, November 19-20, 1994. All upper cervical practitioners interested in being involved are invited to contact:

Ms. Heather Patrick
Coordinating Secretary-AUCCO
P. O. Box 13051
Jekyll Island, GA 31527

The next meeting of this committee and the board of directors is September 24, 1994 at the Jekyll Island Ramada Inn.

NOTICE

The Board of Directors wish to announce that a new policy has been adopted regarding the use of audio visual equipment. No video cameras, tape recorders, etc. will be allowed in the conference rooms during the seminars. Your cooperation is appreciated.

New NUCCA Policy Re Techniques

The National Upper Cervical Chiropractic Association, Inc. (NUCCA) has adopted the policy that any chiropractic technique taught in NUCCA conventions and/or seminars must have the prior approval of the research board (NUCCRA).

This NUCCA policy insures that all techniques taught in NUCCA conventions and seminars must meet the same rigid research requirements that are imposed on those techniques now taught by NUCCA.

These requirements include: (1) proof of the existence of the misalignment factors of the subluxation (x-ray); (2) proof of the maximum reduction of the misalignment factors by the act of the adjustment (post x-ray); (3) evidence of the detrimental effects of the misalignment factors on the neurological component; (4) evidence of the reduction of the deformation of the neurological component by the misalignment factors; (5) physical proof that the subluxation does adversely influence the human organism, and (6) a system of measurement by which the physical effects of the subluxation can be accurately determined and which will provide proof of their reduction and ultimate removal by the correction of the subluxation (Anatometer).

Doctors desiring to submit original research to the National Upper Cervical Chiropractic *Research* Association, Inc. (NUCCRA) must first prepare a written detailed report of their research work for submission to the NUCCRA board members. Upon acceptance of the report by the board, an opportunity will be afforded the submitting doctor to appear before the board to present his research work in person, and to answer any questions that may have arisen regarding his work. Full credit will be given to the doctor for his original research upon approval by the NUCCRA board.

Further information may be obtained by interested doctors by writing NUCCRA, 221 West Second Street, Monroe, Michigan 48161.

NUCCA Supportive Membership Established

A supportive membership category has been established for patients, family and friends. The annual fee is $25.00. The Public Relations Committee has developed a placard for office use detailing the supportive member category. Each member will be recognized and the placards are available from the NUCCA office.

Special members are:

Judy McVay, Edmonds, WA
(Dr. J. Hoeller)

Lisa Kline
(Dr. S. MacDonald)

NATIONAL UPPER CERVICAL CHIROPRACTIC ASSOCIATION, INC.

A NON-PROFIT CHIROPRACTIC ORGANIZATION
APPLICATION FOR MEMBERSHIP

I hereby apply for membership in the NATIONAL UPPER CERVICAL CHIROPRACTIC ASSOCIATION, INC. (NUCCA):

- ☐ **ACTIVE MEMBERS: In Practice Over 2 Years:** Dues $100.00 per year.
- ☐ **ACTIVE MEMBERS: 1st and 2nd Year Doctors:** Dues $50.00 per year.
- ☐ **STUDENT MEMBERS:** Dues $25.00 per year.
- ☐ **LIFETIME MEMBERS:** Dues $2,000.00.
- ☐ **ACADEMIC MEMBERS:** Dues $50.00 per year.
- ☐ **SUPPORTIVE MEMBERS:** Dues $25.00 per year.
- ☐ **RETIRED MEMBERS:** Dues $25.00 per year.
- ☐ **HONORARY MEMBERS:**

Directory Information Due February, 1995

NAME_____ AGE_____

ADDRESS_____ CITY_____ STATE_____ ZIP_____

CHIROPRACTIC COLLEGE (ATTENDING OR GRADUATED FROM)_____

I AM LICENSED TO PRACTICE CHIROPRACTIC IN THE FOLLOWING STATES:_____

_____ YEARS IN PRACTICE_____

DATE:_____ SIGNATURE:_____

MAKE CHECK PAYABLE TO:

NATIONAL UPPER CERVICAL CHIROPRACTIC ASSOCIATION, INC.

MAIL TO: **NUCCA**
217 West Second Street
Monroe, Michigan 48161

MEMBERSHIP DESCRIPTION

ACTIVE MEMBERS Shall be any graduate chiropractor from a chartered college or university of chiropractic who is in good standing in his/her state of residence, who has applied for membership, and who has paid his/her annual dues. Active members shall have all the rights and privileges of membership, be eligible to vote, and to hold elective office.
Seminar fees for active members are:

$400.00 in practice over 2 years
$200.00 1st and 2nd year Doctors
$150.00 Students

Members will receive a 10% discount on all NUCCA supplies.

LIFETIME MEMBERS shall be Active Members who pay lifetime dues to NUCCA and shall have all of the rights and privileges of Active Members.

ACADEMIC MEMBERS shall be members of the faculty, research department, or administration of chartered colleges or universities who are in good standing and have paid annual academic dues. Academic Members are entitled to attend NUCCA membership meetings and to address the assembly, but are not able to make motions, vote, or hold elective office.

STUDENT MEMBERS shall be chiropractic students who have applied to or are actively enrolled in a charter college or university of chiropractic who have paid annual student dues. They are entitled to attend NUCCA membership meetings and to address the assembly but are not eligible to make motions, vote, or hold elective office.

SUPPORTIVE MEMBERS shall be NUCCA friends, family, and patients who desire to contribute dues and/or other gifts for the advancement and support of NUCCA. They are entitled to attend NUCCA membership meetings and to address the assembly but are not eligible to make motions, vote, or hold elective office.

RETIRED MEMBERS shall be former Active, Academic, or Supportive Members who have achieved retirement and who wish to retain membership in their previous category. Retired members are excluded from holding office.

HONORARY MEMBERS are persons other than student or graduate chiropractors who have demonstrated outstanding devotion and service to NUCCA. Honorary Members shall be recommended by a member of NUCCA and elected by a majority vote of the Board of Directors. They shall not pay dues, be entitled to vote, or hold elective office.

SUPPLY PRICE LIST

NUCCA's Non-Profit status requires that remittance be received prior to shipping of orders.
Make checks payable to: NUCCA

INSTRUMENTS - SET

	Non-Member	Member
(Vertex Square, Cephalometer, Relatoscope)		
Students -	$33.00	$30.00
Doctors -	$66.00	$60.00

NUCCA PLAQUE - $125.00

PAMPHLETS

Non-Member	Member
$33.00 per 100	$30.00 per 100

- A Patient Guide
- Questions & Answers
- The Adjustment and the Patient
- The NUCCA System of Chiropractic
- A Patient Guide

Non-Member	Member
$75.00 per 100	$70.00 per 100

- Introduction to Chiropractic Care

MONOGRAPHS - SET

	Non-Member	Member
Students -	$50.00	$45.00
Doctors -	$100.00	$90.00

POSTER

A.S.C. Poster

Non-Member	Member
$30.00	$25.00

BLACK BOOKLETS - SET

Non-Member	Member
$51.00	$45.00

STANDARDS OF PRACTICE MANUAL

Non-Member	Member
$83.00	$75.00

NUCCA PINS

Silver - $25.00
Gold - $500.00 Donation

INSTRUMENTS - INDIVIDUAL

	Non-Member	Member
Vertex Square	$17.00	$15.00
Cephalometer	$28.00	$25.00
Relatoscope	$22.00	$20.00
X-ray Alignment Mask	$75.00	$75.00
Chin Centering Device	$30.00	$25.00
Film Marketing Pencils	$12.00/dz.	$10.00/dz.
Protractors	$11.00/ea.	$10.00/ea.
Cutting Knife, Mirror, & White Lead Paint (with instructions)	$17.00	$15.00

MONOGRAPHS - INDIVIDUAL

Vol. 1-3	$1.00 each
Vol. 4-5	$3.00 each

POSTER

Post/Adjustment Healing Cycle

Non-Member	Member
$7.00	$5.00

BLACK BOOKLETS - INDIVIDUAL

	Non-Member	Member
X-Ray Analysis	$17.00	$15.00
Biomechanics	$17.00	$15.00
Adjusting	$17.00	$15.00

VIDEO TAPES

Osseous Structure	$90.00
X-Ray Analysis	$100.00
Adjusting the ASC	$300.00
Errors In Adjusting The ASC	$200.00
Leg Check/Headpiece Placement	$90.00
X-Ray Alignment & Pt. Placement	$90.00
Biomechanics - 4 Basic Types	$100.00
Questions and Answers	$100.00

WHOLE SET OF TAPES $800.00

Orders must be received by December 15th of calendar year

In Memoriam

It was a great sadness to learn of the deaths of ten young men and four young women on July 6, 1994, who died while fighting a fire on Storm King Mountain at Glenwood Springs, Colorado.

In our search for latter day heroes, we need only look to these young men and women. The men and women on that mountain are a cut above the rest. It wasn't simply that they were doing their jobs, it's what the job entailed and the fact they chose to do it. Firefighters don't get the approving roars of arena crowds. They don't command large salaries. Because they put themselves between the danger and us, firefighters deserve the title, "hero."

Bonnie J. Holtby, age 21, was one of the victims of the four day old fire that suddenly caught the wind and turned wild. She began her firefighting career in the summer of 1992, following a family tradition.

Bonnie completed her education in Redmond, Oregon where she was a member and captain of her cross country team. She played basketball and was captain of the basketball team and given the award for the most improved athlete. She was involved in 4-H, and had hobbies of writing letters, spending time with friends and working out.

Bonnie, the daughter of Dr. and Mrs. Ralph Holtby of Redmond, Oregon, is also survived by a brother, Benjamin, and sister, Stacy. Our heartfelt sympathy is extended to the Holtby family.



In Memoriam

The NUCCA Organization received word of the death of Dr. Thomas R. Elliott, Sr. who died of a lengthy illness on June 6, 1993. Dr. Elliott was one of the first third generation Chiropractors in history.

He attended school in Cushing, Oklahoma; achieved the rank of an Eagle Scout; attended Oklahoma A & M and Phillips University and served in Italy during World War II. Dr. Elliott graduated from the Palmer School of Chiropractic and was a technique instructor following his graduation.

Dr. Elliott was a long time supporter of the NUCCA Organization and served on the Board of Directors of both NUCCA and NUCCRA. He was a mentor and friend to most of the NUCCA doctors with ties to Oklahoma. He practiced in Tulsa for almost 40 years.

Dr. Elliott is survived by his wife of more than 50 years, Alma; daughter, Carol Elliott Evans and son, Dr. Thomas R. Elliott, Jr.

The Monograph extends its sympathy to the Elliott family.