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Posterior Rotations

By Daniel C. Seemann, Ph.D.

There is agreement in NUCCA that posterior rotations are more difficult to adjust than anterior rotations and the tendency has been to ignore discussion about posterior rotations because we know less about how posterior rotations are produced. The purpose of this paper is to attempt to answer why posterior rotations are more difficult to adjust and in general, raise some questions about how they are produced.

The incidence of anterior rotations to posterior rotations has remained constant over the past 15 years. Anterior rotations occur about 68% of the time (Seemann 1972, 1984). With our understanding of the basic types, a further delineation is possible. See Table 1. What is not fully understood is why 68% of all posterior rotations are type 1 subluxations.

TABLE 1

Percentage By Types That Are Either Posterior or Anterior Rotations

Posterior		Anterior	
Type 1	68%	Type 1	55%
Type 2	24%	Type 2	39%
Type 3	8%	Type 3	6%

Grand Total Anterior 68%
Posterior 32%

In the 1984 study (Seemann) an attempt was made to answer that question. The conclusion of that study was that in the frontal plane, type 2's would tend to rotate on the condyle, on the side of laterality, or the short axis. With type 1's, the tendency was to rotate on the condyle opposite to the laterality or the long axis. See Figure 1 (Second Basic Type) and Figure 2 (First Basic Type).

There also was an hypothesis that in the sagittal plane, if the skull was tilted interiorally, the tendency would be an anterior rotation and if the skull tilted posteriorally, the tendency would be a posterior rotation. See Figure 3.

Further examination of the sagittal plane hypothesis suggests that the head tilting on the condyles may not determine the type of rotation. For an example, an examination of the head tilt (superior to inferior) in the sagittal plane by degrees indicates no preference for the type of rotation. See Table 2. Note that the preference shown for all degrees (1°-6°) is approximately 70% for anterior and 30% for

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Some Considerations on Instrument and Manual Adjusting

By James F. Palmer
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The primary purpose of this article is to initiate meaningful discussion within the Chiropractic community on mechanical and manual adjusting in general and on mechanical and manual adjusting of the upper cervical region in particular. The secondary purpose of this article is to stimulate appropriate, well thought-out research. Initial impressions of this author are the content of this article.

Malpositioned vertebrae can be restored toward a normal position; if anatomical irregularities, asymmetries, and abnormalities are relatively minor, the malpositioned vertebrae can be restored to a normal position by an adjustment. An adjustment brings head and vertebrae into proper position or arrangement, thus restoring the ability for normal motion.

Most upper cervical procedures have as their intent the transmission of energy to the transverse process of the atlas. Only a fraction of the energy delivered at the skin will reach the transverse process. The stiffness and damping properties of the intervening soft tissue will dissipate energy and affect the spectrum of vibrational frequencies that can reach the transverse process; the quantity and quality of the energy that reaches the transverse process will be filtered and transformed by the intervening soft tissue. Of the energy that reaches the transverse process, some will be reflected, some will be transmitted, and some will be absorbed.

An appropriate quantity and quality of energy reaching the transverse process results in a displacement of the atlas. This displacement is the vectorial resultant of the actual path of motion of the center of mass of the atlas. The actual path of motion of the center of mass of C-1 is a combination of translational and rotational "displacements" in time (motion) in 3-dimensions and is essentially confined to the articulating surfaces. These surfaces are either concave or convex. (Recent work indicates that the "long-axis" of the surfaces of the atlanto-occipital joint are matching parabolas.)[1]

Some of the energy that reaches the transverse process does not cause displacement; it does not manifest itself as either translational kinetic energy or rotational kinetic energy. The absorbed energy causes the atlas to vibrate. The

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Some Considerations on Adjusting

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atlas as does the skull, axis, etc., has a natural frequency of vibration. It is well known, for example, that the human body as a whole resonates at approximately 6 hertz, that the pelvis resonates at 5-9 hertz, and that the head resonates relative to the shoulders at approximately 20 hertz. Mechanical instrument adjusting appears to "ring" the spine. The effective part of the activator instrument — based on spring constant and mass data — apparently was designed to have a resonance frequency of approximately 20 hertz.[2,3]

The atlas when in motion has both rotational and translational kinetic energies. The sum of these energies is not a constant; frictional forces continually dissipate these kinetic energies. Frictional forces resist motion.

The most important resistance to the force(s) of the adjustment is in the subluxation. The primary resistance in the subluxation is apparently in the relative orientation and architecture of the articulating surfaces. The secondary resistance in the subluxation is apparently in the relevant musculature. The efficacy of the lever system that is being used should not detract from the validity of these clinical distillations. Obviously the relative position of the fulcrum, load, and input force will affect the magnitude of the input force that is needed in the adjustment. A subluxation's resistance for a given listing is usually less in children than in adults; this is believed to be due to the increased importance of the architecture of the articulating surfaces and to the differences in both spatial orientation of the vertebrae and in spinal loading rather than differences in the resistance of the musculature or in the lengths of the lever arms.

Work is done in overcoming the resistance of the subluxation. When the applied force is greater than the resistive force there is a net or unbalanced force. A net force results in an acceleration. A smaller net force results in a smaller acceleration. A smaller acceleration means that the time rate-of-change of the displacement-time ratio is smaller, that is, the time rate-of-change of velocity is smaller.

Based on an analysis of x-rays, most upper cervical practitioners determine a single line-of-drive for the corrective force. That is, what is determined by x-ray analysis is only the direction of the adjustic force that is necessary for maximum correction. The magnitude of the adjustic force, depth, etc., is therefore not determined by the analysis of the x-rays. This is not to say that the magnitude (or other factors) are not correlated with the listing.

Most highly skilled upper cervical specialists use x-ray analysis systems that are very similar and consequently, for the majority of cases, they would be expected to obtain highly correlated listings. Therefore, based on that portion of the x-ray analysis that is in common, these Chiropractors should be able to agree on the (conventional) line-of-drive. For the majority of cases the line-of-drive is not a variable relevant in the explanations as to the differences in the outcomes obtained by various types of mechanical instrument adjusting. Neither is it a relevant variable in the comparison between instrument and manual adjusting.

In this author's opinion, there will be significant differences in the minority of cases because the NUCCA double-pivot point system is more accurate and precise than triangulation methods. Differences are most evident in cases that have significant skull-edge asymmetries. This minority of cases does not appear to be able to account for stated differences in the percent of the subluxation corrected between adjustment by mechanical instruments and manual technique.

At the Third Annual Upper Cervical Conference held at Life Chiropractic College in December of 1986 it was stated by one researcher that two different mechanical instruments had been able to produce only 40-60 percent of total correction. Only one of the instruments was able to reduce rotations to any extent and that instrument had difficulty reducing laterality. What is of importance here is (1) that the level of total reduction is low and (2) that misalignment factors are not reducing proportionately. The study by Aldis and Hill, which is known as the Wollongong study, is even more damaging; its only positive conclusion on instrument adjusting is that the instrument was able to normalize the distribution of laterality in the population.[4,5]

Gregory found that a patient's prognosis is best when the subluxation's misalignments are reduced by 80% or more and that the prognosis changes from good to fair when the misalignments are reduced to between 70 and 80 percent. With less than 60% reduction, the prognosis is rated poor. The conclusion is obvious: whether done manually or by mechanical instrument a reduction of less than 60% is unacceptable whereas a reduction of at least 70% is acceptable but not optimal. It is important to note that (1) 40% of the cases had a 95% or better reduction; (2) 50% of the cases had a 90% or better reduction, (3) 68% of the cases had an 80% or better reduction, and (4) 89% of the cases had a 60% or better reduction.[4]

When the misalignment factors of the patient are not reduced proportionately then the patient has a different subluxation (listing); this is a consequence of a maladjustment. If on this new listing of new line-of-drive is not computed, then any additional adjustment will also be a maladjustment. As Gregory stated, "A biomechanical relationship exists between the reduction of C1 laterality and correction of the angulation of the cervical spine (lower angle) from the vertical axis. The resistances to C1 laterality reduction in the lower angle must be overcome if a correction of C1 on the occipital condyles is to take place. The reduction will be reciprocally proportionate if all the elements of the adjustment are accurate."[5] If the time, money, and effort that has already gone into mechanical instruments had gone into correcting the subluxation and into understanding the Grostic/NUCCA adjustment, then support for Chiropractic research would be years ahead of where it is now.

This author is unaware of any feedback mechanism on a mechanical adjusting instrument. The manual adjuster is getting feedback that indicates that the C-1 vertebra is "moving along the prescribed reduction pathway and successfully overcoming the resistance set up by the superior articulating surfaces of C-2 and the subadjacent cervical

vertebrae".[5] Some considerations and comparisons are in order between the activator instrument and the NUCCA manual adjustment.

The activator instrument uses preloading whereas the NUCCA adjustment has comparatively little preloading. The activator stylus has high velocity and high acceleration; the pisaform in the NUCCA manual adjustment has low velocity and low acceleration. It is reasonable to assume that the intervening soft tissue will provide greater damping at higher velocities; consequently, one would expect a smaller percent of the total energy delivered at the skin to be effective in reducing the subluxation. (This author would like to know what affect the carpals of the contact hand have on the transmission of energy.)

Because the net force is larger in mechanical instrument adjusting then in NUCCA adjusting, the velocity and acceleration of the atlas at any point in time will be greater than in the NUCCRA adjustment. Consequently the orientation of the articulating surfaces at the same point in time will be different for the two adjusting methods. What is not well understood is that the locus of points of reference will not be the same; that is, the reduction pathway on the articulating surfaces by the NUCCRA manual adjustment is not the "reduction pathway" of the mechanical instrument adjustment. Apparently the line-of-drive is appropriate only for NUCCA/Grostic adjusting. This does not preclude that there may be a unique line-of-drive for a listing for each mechanical instrument; this does not preclude the possibility that some day superb manual adjusting may be duplicated by the appropriate application of technology.

Another point that is not sufficiently appreciated by those who use the mechanical adjusting instruments is that the conventional line-of-drive for a given listing may not be the best line-of-drive. NUCCA has what I call a second-order correction system.

This second-order correction system has three terms. The zeroth-order term is the best single approximation for determining the appropriate line-of-drive. The zeroth-order term is the result of the conventional x-ray analysis system as modified by the double-point pivot system. The first-order term is the most important modifier of the line-of-drive; this term applies the enhanced understanding of the biomechanics of the given subluxation that is provided by the four basic types. The second-order term is the next most important modifier of the line-of-drive; this term utilizes the four basic types and a multiple support head piece to determine the optimum positioning of the patient's head. It takes into account the relative reactive forces of the head piece on the skull and how it affects the "movement" of the skull during the adjustment. This term modifies the line-of-drive, that is, changes the reduction pathway.

One additional factor needs to be mentioned. That factor is torque. Only manual adjusting has been able to introduce a torque into the adjustment. Torque is necessary for complete reductions in some listings.

In conclusion, the magnitude and direction of the displacement depends essentially on these factors: the magnitude and direction of the applied force (instrument/hand and headpiece), the depth of the applied force, the time during which the force is applied, the magnitude of the force as a function of depth and the resistance of the subluxation as a function of depth, the distribution of the applied force, the presence or absence of preload and its magnitude, the stiffness and damping properties of the interviewing soft tissue, transmission characteristics of the intervening soft tissue relative to the mechanical impedance characteristics of the adjustic "instrument", surface architecture (reduction pathways) and inertial, geometrical, and resonance properties of the head (skull) and vertebrae, and the spectrum of frequencies that can be transmitted to the transverse process. The bottom line: Post x-rays.

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Posterior Rotations

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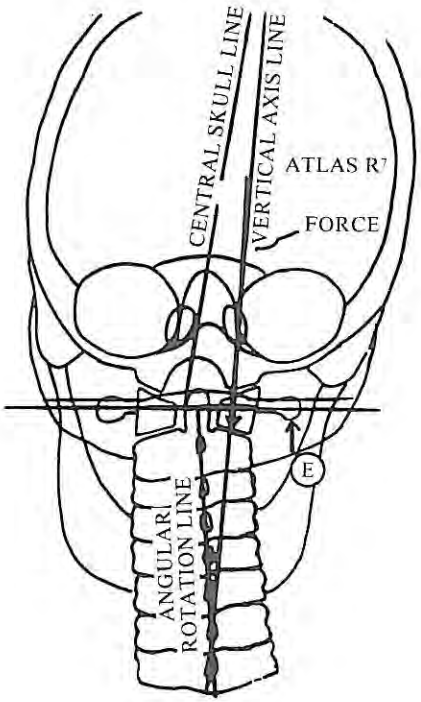


Figure 1

Second Basic Type
More Prone To Be Short Axis With Anteriors

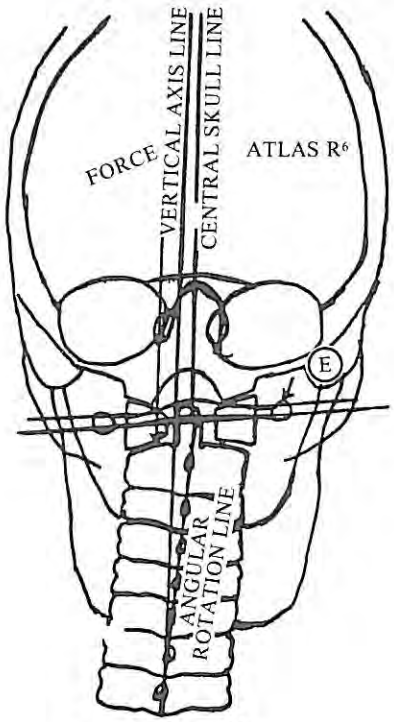


Figure 2

First Basic Type
More Prone To Be Long Axis With Posteriors

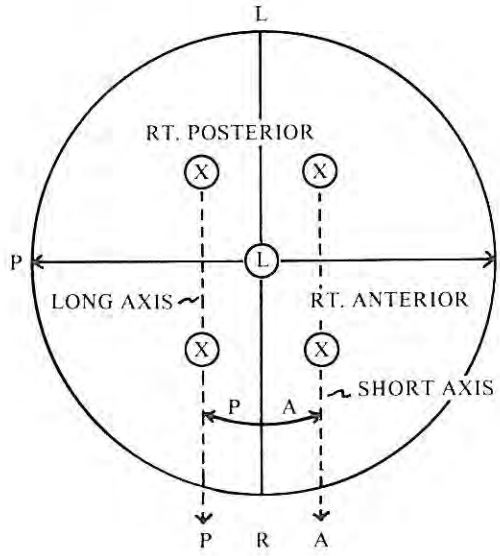


Figure 3

Posterior & Anterior Rotations

TABLE 2

S-Line In Relation To
Anterior or Posterior Rotations

S-Line	Anterior	Posterior	Perc.
1	65	30	69/31
2	176	101	63/37
3	300	129	70/30
4	83	44	69/31
5	22	6	79/21
6	6	1	85/15
	Anterior mean	70%	
	Posterior	30%	

posterior. To support the original hypothesis the prediction would be, as the S-line increased, the tend would go from anterior to posterior as evidenced by the numbers, this is not the case. In all S lines from one degree to six degrees, the trend is an anterior rotation.

Another point which challenges the sagittal hypothesis is it appears that the axis of rotation of the atlas cannot shift from an anterior position to a posterior position. The axis of rotation if it is to be a short or long axis is fixed. The axis of rotation is fixed on the atlas, anterior to the center of the atlas (0). See Figure 4. This suggests that rotation is fixed at

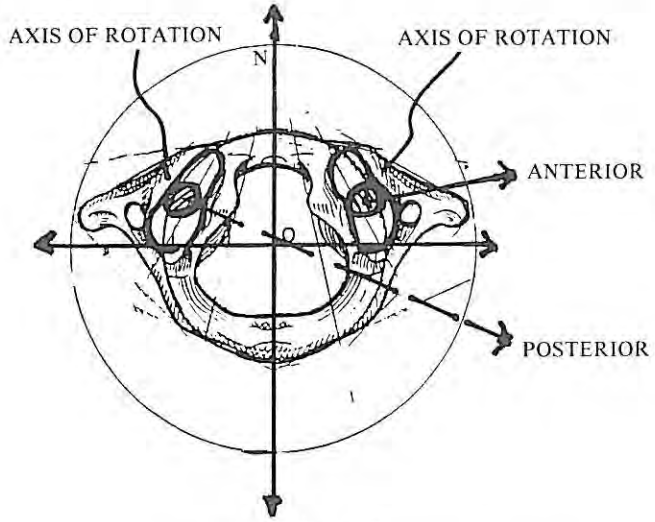
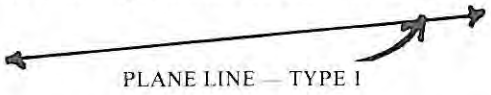


Figure 4

Mechanics of Anterior and Posterior Rotations



one location on either side of the frontal plane and not two as suggested by the original hypothesis. This conclusion does not preclude that there might be sagittal shift between the skull and the atlas but the shift occurs on the condyles.

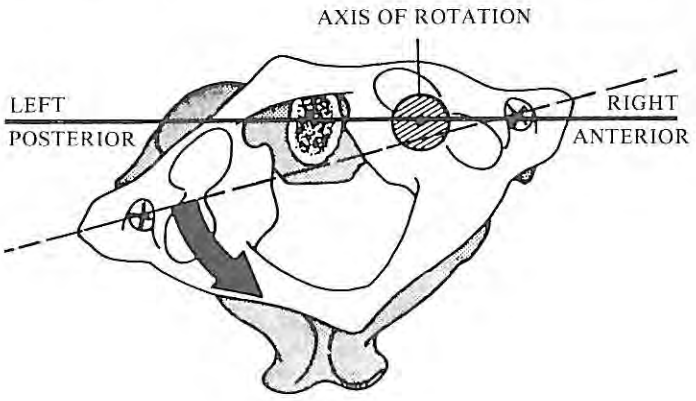


Figure 5

An Example of How a True
Anterior or Posterior Occurs

Figure 5 illustrates how an anterior or posterior rotates. If an anterior rotation occurs, the axis of rotation is a short axis and would be a right anterior as shown in Figure 5. A

left posterior rotation would be the long axis as illustrated in Figure 5. It is the writer's opinion, this is the only manner in which the atlas rotates, because of the juxtaposition of the atlas to the skull (occiput).

Punjabi and White (1978) suggest that the atlas can rotate where the condyle of the atlas rotates anterior to the occiput and axis. This would be extremely difficult to do unless the patient had an abnormal displacement due to some form of trauma. See Figure 6. Also note the spinal canal and the

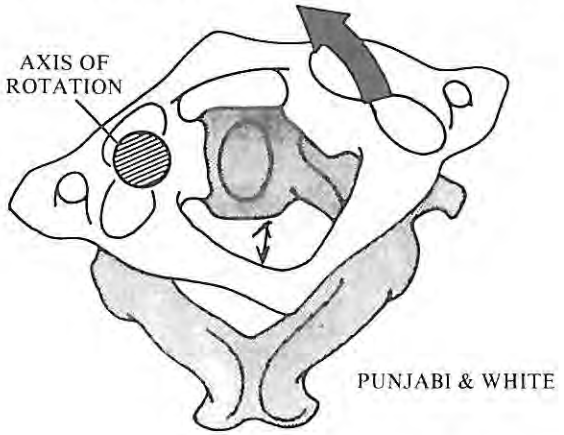


Figure 6

*An Example of How a Rotation Could **Not** Occur*

insult that would occur to the spinal cord. The chances of this type of rotation occurring would be minimal.

The chances of a bilateral rotation occurring is also remote as illustrated in Figure 7. Although the axis of rotation is located at the odontoid, the rotation is facilitated at the condyles bilaterally. There are a couple of reasons why this probably would not happen.

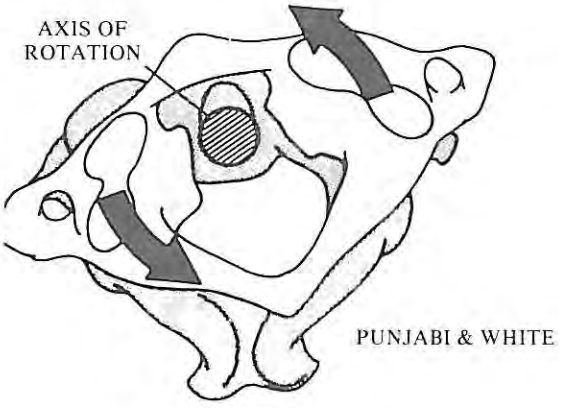


Figure 7

An Example of a Bilateral Rotation — Difficult to Occur

Gregory (1987) has indicated that a bilateral rotation probably does not occur, because if a bilateral rotation did occur the atlas would be level after the rotation. This does not happen in practice.

Another reason that does not support the bilateral rotation hypothesis is if there is equal distribution of the skull weight on both condyles, neither of the condyles would have the freedom to move in a rotation. It would seem that one of the condyles would have to be free to move if rotation was to take place.

Another thought related to the above discussion is that if there was equal weight on the condyles of the atlas, there would be no subluxation. If the condyles of the occiput are firmly nested in the superior condyles of the atlas, i.e., where there is no gap between the anterior condyles of either the occiput or the atlas, the atlas cannot shift either laterally or rotate posteriorally or anteriorially. It is when there is a gap between the atlas and occiput that the atlas can shift.

The conclusion therefore is the atlas has to displace in the sagittal plane first, before laterality and rotation takes place. Laterality would occur first then rotation because the atlas would have to shift laterally before rotating.

Adjusting Posterior Rotations

The 1984 study on rotations did not take into consideration the short and long axis concept and how the biomechanics would effect the adjustment. Using the short and long axis concept may explain why adjusting posterior rotations are more difficult than adjusting anterior rotations.

We need to review the 1981 study (Seemann) on the lever system to understand the concept. It was noted with a type 1 adjustment the effort (E) was directed down and around the axial circle. The resistance (R) was located close to the (E) and the fulcrum (F) was located somewhere on the opposite condyle. See Figure 8.

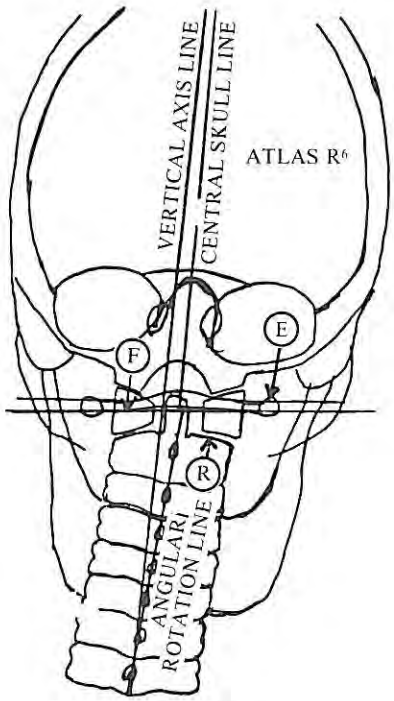


Figure 8

First Basic Type

It was proposed the lever set-up was a second class lever because the fulcrum (F) was located at the end of the lever opposite to the side where the (E) was applied. The assumption with the type 1 subluxation was that the resistance was located on the same side as the effect.

With the type 2 subluxation the adjustment effort (E) was directed up and around the condylar circle. The fulcrum was now located on the same side as the effort (E) and the resistance (R) was found on the opposite condyles from the (E). See Figure 9. It was proposed that the lever set-up was a first class lever because the (F) was located between the effort and the resistance on the same side as the effort.

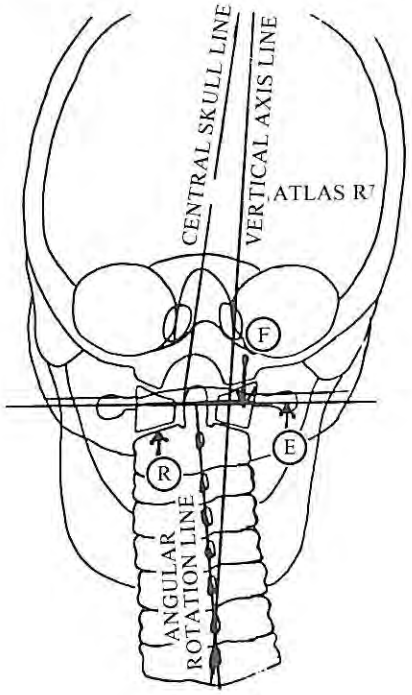


Figure 9

Second Basic Type

Further examination of these hypotheses shows that this is too simplistic when the long and short axis concept is considered. Recall that 68% of all posterior rotations are type 1 subluxations mechanically turn opposite to the side laterality and the vertical axis and fall on the condyle opposite laterality. Since most posterior rotations are long axis rotations it follows that most posterior rotations are type 1's.

It is more accurate when discussing the lever system that the short and long axis be considered, especially when examining how difficult the adjustment is for anterior or posterior rotations.

Type 1 Lever System

An anterior type 1 subluxation will differ mechanically from a posterior type 1 subluxation. See Figure 10. With an anterior T-1 the fulcrum (F) is located on the same side as the effort (E) and the resistance (R). Mechanically, there is an advantage if the (F) and (R) are close together especially if it is a second class lever.

With a posterior Type 1 subluxation the fulcrum should be located on the opposite condyle to the effort (E). The resistance (R) and effort (E) are located on the same side. This stretches out the F distancing it from the (R). The mechanical advantage is lost that was present with the anterior rotation. Using a hypothetical R of 15 lbs. Figure 11. The effort required to adjust an anterior T-1 would be 3.75 lbs. and with a posterior T-1 the effort would be 9 lbs.

Type 1 anterior subluxations occur in 60% of the cases.

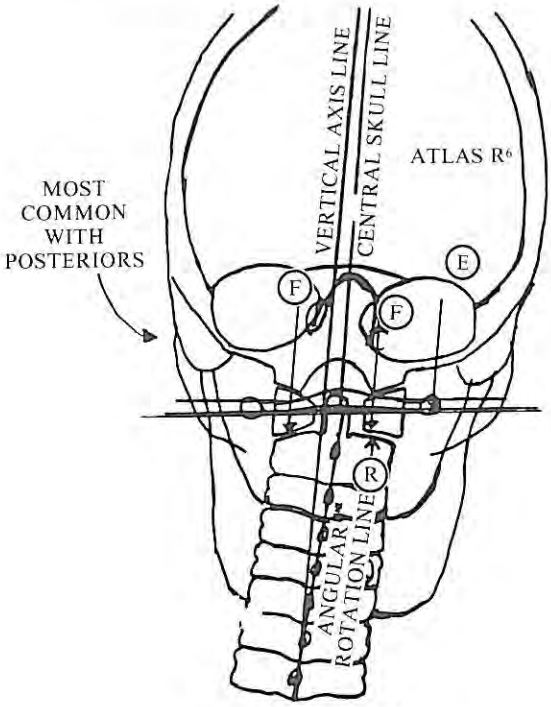


Figure 10

First Basic Type
Lever System — Type 1
Posterior and Anterior Rotations

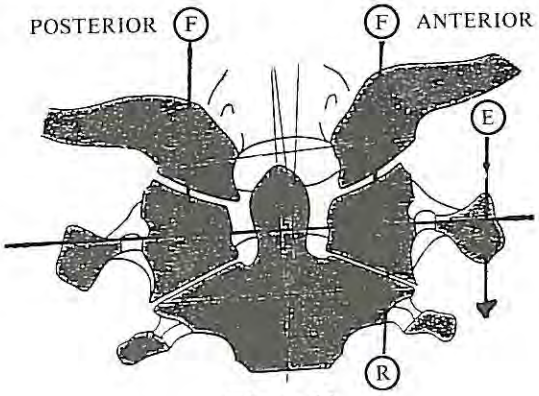
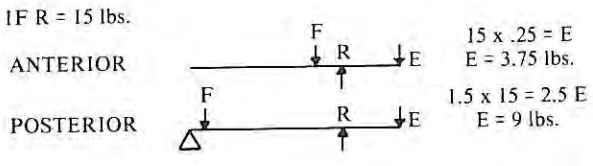


Figure 11

Lever System — Type 1
Posterior and Anterior Rotations



Type 2 and 3 Lever System

With an anterior T-2 rotation the fulcrum (F) and effort (E) are located on the short axis. The resistance (R) falls on the opposite condyle. See Figure 12. With a posterior T-2,

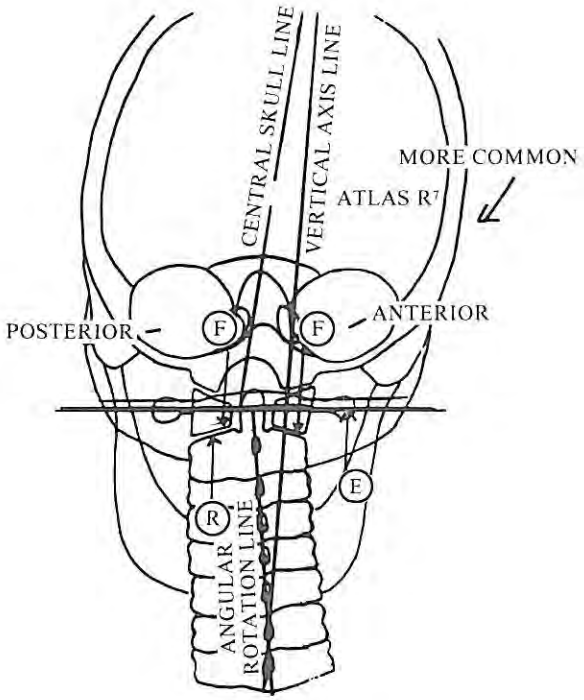


Figure 12

Second Basic Type
Lever System — Type 2
Posterior and Anterior Rotations

the fulcrum shifts to the opposite condyle with the resistance (R). This creates a large mechanical advantage for the adjuster because the fulcrum is much closer to the resistance.

Using a hypothetical resistance of 10 lbs., the effort to move an anterior rotation would be 15 lbs. whereas it would only take 6.6 lbs. to move a posterior rotation. See Figure 13. The adjuster should not become over-joyed with this, because a T-2 posterior rotation occurs about 23% of the time.

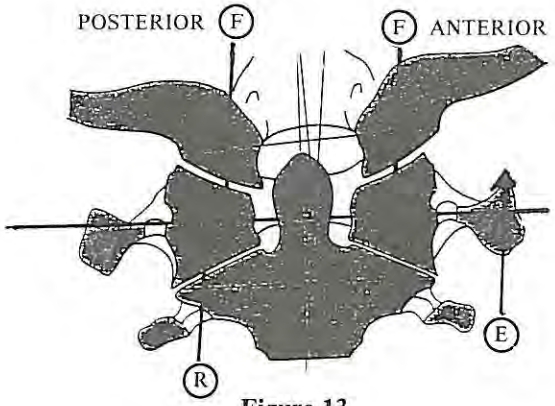
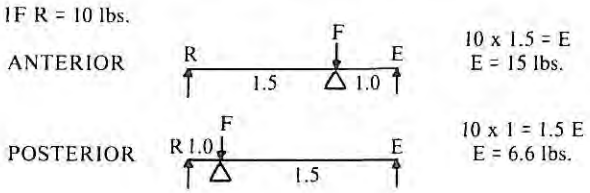


Figure 13

Lever System — Type 2
Posterior and Anterior Rotations



Conclusions

If the rationale is simply that T-1 posteriors are more difficult to adjust because they require more effort at least in comparison with T-1 anteriors, a case could be made that T-2 anteriors require more effort than T-1 posteriors. Again it is more complicated than that.

Most adjusters would probably agree that T-1 subluxations are more difficult to adjust than T-2's because with T-2's the plane line is usually level and the adjustment is concerned with moving the skull on the condyles. With T-1's there is usually a high plane line on the side of laterality and the atlas is shifted on the condyles which makes the adjustment a more complicated procedure.

But given that a T-1 is more complicated, then which is more difficult to adjust, a posterior or an anterior? With the long axis concept, it seems reasonable to assume that more effort is required to adjust a posterior. The T-1 posterior adjustment also has to overcome the resistance of a high plane line, more so than an anterior or more so than a T-2 anterior.

Summary

This paper has attempted to revive some concerns about rotations in general and focus on posterior rotations in particular.

The focus was on how rotations are produced and attempted to answer why posterior rotations are more difficult to adjust.

It was posited that subluxations are probably produced in the sagittal plane first, caused by a gap between the occiput and the superior condyles of the atlas. Laterality is then produced with a shift on the condyles and in the process of shifting, rotation develops. Further research should attempt to verify this hypothesis.

As to why posterior rotations are more difficult to adjust. The mechanics of the long axis and T-1 subluxation are the major reasons. Another reason simply is that the adjuster will see more posteriors as T-1's (68%) and see more T-2's as anteriors (77%).

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NUCCRA Research has expanded in the search for solutions to many problems regarding the subluxation, its effects, and its correction. Non-chiropractic institutions have become involved with their expertise. Many thousands of dollars have been raised, and more money to finance research is needed.

Contributors wishing to assist may contribute directly to NUCCRA or through the Ruth O. Gregory Memorial Fund. This fund was established by the NUCCA Directive Board after Mrs. Gregory's death in 1982 and is to exist in perpetuity. It is in memory of Ruth O. Gregory, who devoted time, effort, and money so unselfishly to the organizations that chiropractic would become more scientific and of greater benefit to the patient, the practitioner, and the profession.

All contributions are tax deductible.

Listed below are the most recent donors to NUCCRA and the Ruth O. Gregory Memorial Fund. NUCCRA extends its heartfelt thanks to all who have so kindly contributed.

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The 1987 NUCCA Fall Seminar

Asserted by many doctors and students to be the finest NUCCA seminar presented so far, the 1987 Fall seminar, held from October 31 through November 4, was well attended.

The educational program, under the supervision of Dr. Daniel C. Seemann of the University of Toledo and Executive Director of NUCCA, consisted of x-ray analysis, adjusting technique, biomechanics of the upper cervical spine, patient placement for x-ray, anatometer instruction, and leg checking. Coordinating the program was James F. Palmer, M.S., University of Toledo and a member of the NUCCRA Research Board.

Doctors and college students from several states attended. Doctors were given a choice as to the particular subject they felt they needed help in. Adjusting was taught on a one-to-one basis. Biomechanics was a preferred subject by all.

All seminar income above expenses will be used for research.

The accompanying photo shows the doctors who assisted in presenting the program.



Standing (left to right): Drs. Ed Stein, Washington; Dan Fedeli, Illinois; Lonnie Pond, New Mexico; Lloyd Pond, New Mexico; R. R. Gregory, Michigan; G. Cripe, California. Seated: A. A. Berti, Vancouver, Canada; M. W. Clark, Oklahoma; M. Dickholtz, Sr., Illinois; D. C. Seemann, Ohio; K. E. Denton, Michigan; J. F. Palmer, Ohio. Center front: T. A. Palmer, Ohio.

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1988 — The Year of Challenge

Mrs. D. D. Palmer published a book titled *The Chiropractor* in 1914 consisting of heretofore unpublished writings of D. D. Palmer. You will recall that D. D. Palmer passed away in 1913.

In his writings in the book, D. D. Palmer wrote a passage in which he not only included that which comprised chiropractic, but also excluded that which is not chiropractic. He wrote:

"The science of chiropractic has led to the creation of the art of vertebral adjusting. Chiropractic to be a science must be specific. In order to be scientific it must contain the knowledge of the principles and facts of biology reduced to an unvarying law and embodied into a system. Where science ends, faith begins.

To know chiropractic as a science, we must become familiar with its principles, we must make it scientific. To know it as an art is to make it specific, make use of the knowledge which composes the science. A chiropractor is one who has a knowledge of the science and art of chiropractic, one who is capable of performing the art of adjusting vertebrae, he should also, comprehend the philosophy of the science and art, the reason for so doing."

His statement was an all inclusive, yet all exclusive clarification of the science he founded.

And how well you, Dr. Ralph Gregory and the National Upper Cervical Chiropractic Association understand the meaning of D. D. Palmer's words as tireless hours are spent in developing, testing, proving and improving the art of vertebral adjusting, ever keeping chiropractic confined within its own separate field and school in the healing arts.

And the requisites to be a separate school for each profession in the healing arts were set out in the case of Nelson v Harrington, 72 Wisc, 591,40, N. W. 228 (1888).

Just briefly to bring the facts of this case into focus, I quote from "Malpractice as Applied to Chiropractors," Arthur T. Holmes, Attorney, 1924.

"This was a case of a clairvoyant physician. The rule laid down in that case is that to constitute a recognized school of medicine (and from a malpractice point of view chiropractic is a school of medicine) there must be a theory of principles and practice concerning disease, the diagnosis and remedy, which all the members of the school profess and are required to follow. This means that there must be some theory concerning disease or the cause thereof.

Now what does 'diagnosis' mean from the angle of the court in determining whether there is a separate school or not? Diagnosis means finding out what is wrong with the patient or "what is causing the disease according to the above theory of disease." Further quoting:

"In the chiropractic theory this could be by palpation, xray, nerve tracing, etc. In the Allopathic school, it would be to give a medical name to a group of symptoms or a condition. Now although spinal analysis is different from medical diagnosis, the courts have held it really means finding out what is wrong with the patient according to the school or theory of disease.

These further quotes from Attorney Holmes also help in understanding as to what is meant by a separate school:

"In determining whether there is a separate school, what does the court mean when it speaks of the remedy? It does not necessarily mean medicine but it means whatever that school uses or does to restore the patient or eliminate the cause of disease. With the allopathic physician, it would be whatever medicine was prescribed or surgical operation performed and with the Christian Scientists whatever was done to correct the spiritual error. In chiropractic it would be the adjustment of the articulations of the spine. These principles above enumerated must be professed and followed by members of that school."

Attorney Holmes finalized chiropractic in these words:

"Chiropractic is now a science unto itself. It is separate and distinct from allopathic medicine, and from osteopathy or any form or system of healing. It has its own particular method of ascertaining the cause of disease, and its own particular method of eliminating the cause and allowing innate to restore the patient to health."

I would encourage everyone to go to your local law library for a complete copy of this decision for a thorough understanding. Its importance cannot be underestimated.

The NUCCA movement is very vital to the preservation and forward thrust of chiropractic. Not only is the scientific application of the chiropractic adjustment being advanced and proven through research, but equally important, as stated before, NUCCA is projecting and maintaining chiropractic within the bounds of our own separate school in the healing arts.

The value of keeping within the boundaries of our separate school is nowhere more acutely visible than in case of malpractice. Many in the chiropractic profession hold the belief that they are perfectly safe in the 'folds of chiropractic' if they practice within the limits of chiropractic as defined by state statute. A rude and painful awakening awaits any one who is sued for malpractice, and whose practice involves any type of medical practice, physical therapy practice, orthopedic practice, or, the practice of other professional practices. This is so, even though the particular state statute defining chiropractic may hold such practices in the statute language. You are in the other profession's practice field and must stand the standard of care of the profession invaded.

While it is true that the standard of care is held to be that of the ordinary, prudent chiropractor in the community, if the practice is confined to chiropractic within our own separate school, nevertheless, if an invasion is made into other professional practices, then the other profession may testify as to the standard of care. I have found that many, many chiropractors are not aware of this most vital point. Don't be lulled into a false sense of security.

To clarify, I quote directly from the malpractice case of Janice Fern Sheppard vs P. B. Firth, D. C.

Janice Fern Sheppard,
Plaintiff - Respondent,
vs.
P. B. Firth,
Defendant - Appellant.

In the Supreme Court of the State of Oregon, March Term 1956. Appellant - Abstract of Record and Brief Pages 32, 33, 34, 35 and 36 under the title.

Argument

Respondent sought treatment by appellant, who she alleges, and it is agreed, was a duly licensed and practicing chiropractor: In treating respondent, appellant was not negligent because a member of the medical profession whose services are later secured, had no use for chiropractors and the chiropractic system and who would have treated respondent by his method rather than that followed by appellant as a chiropractor. A straight or regular chiropractor — and by that appellant means a chiropractor of the Palmer School and not a chiropractic physician who uses therapy and resorts to minor surgery — treats conditions of the spine, which was respondent's complaint, by the method of that school, namely, use of the neurocalometer and xray for analysis followed by adjustments to accomplish the desired relief. The medical profession follows a different system that of diagnosis and traction or spinal fusion.

Appellant was entitled to have his treatment tested by the rules and principles of the school to which he belonged, that is the school of straight chiropractic, the Palmer System. This rule is followed throughout the United States in those states where the chiropractor is licensed as he is in Oregon. In malpractice cases the only expert who should be allowed to testify as to the propriety of the treatment complained of is one who belongs to the same branch of medicine or system to which the accused belongs. This rule was adopted in *Hilgedorf v Bertschinger,* (1930), 132 or 641,285 p 819, and in *Wemmett v Mount,* (1930) 143 or 313, 292 p 93.

Quoting further from the decision:

"There is no testimony or evidence of any kind in this case that appellant was outside of his system of chiropractic. His treatment fell within the scope only of a chiropractor who used that system, and neither John Frank Abele, MD, nor any other member of the medical profession was qualified to express an opinion upon appellant's treatment. It is only in those cases where members of two professions use methods recognized by each, or, as is sometimes said, work in a common field that the one can testify concerning the work of the other. For instance, had the appellant resorted to surgery as do some chiropractic physicians, a medical doctor whose profession uses surgery would have been qualified to testify as to the propriety of the treatment. Or, for instance, had appellant used a diathermy machine, as chiropractic physicians sometimes do and as the medical profession does, then a member of the medical profession would have been competent to testify, as to the manner in which the machine was used. Or had appellant been giving xray treatments as chiropractic physicians sometimes do and as the medical profession does, a member of the medical profession would have been qualified to testify. Or had appellant attempted traction or fusion of the spine, in which field of treatment the medical profession works, a medical doctor could have testified as to the manner in which the treatment was given. Here appellant used a neurocalometer to locate the point of nerve pressure, an instrument of which the medical doctor Abele admittedly never heard and knew nothing.

Appellant took an xray of the vertebra to which the neurocalometer directed his attention as the seat of the respondent's trouble. There is no question here of the propriety of the xray. Appellant is not charged with negligence in taking an xray so this gave no point of inquiry upon which the testimony of the medical doctor was competent.

Appellant made adjustments of the spine. The medical profession does not use adjustments of the spine as a method of treatment so the testimony of the medical doctor upon the matter of adjustments was not competent."

The decision was in favor of the dependent-appellant, P. B. Firth.

Legal decisions have been consistent in the interpretation of chiropractic as a separate practice.

We, as a profession stand and exist because of chiropractic being a separate school in the healing arts, a separate school won by our pioneers who willed to go to jail in countless instances rather than plead guilty to the charge of practicing medicine without a license. Their's was a new and separate principle and practice. They would not compromise.

Could we today catch and hold that same vision and purpose? A purpose and a vision so that this and succeeding generations might have access to one of the greatest gifts mankind can give one another — spinal adjustments to release the imprisoned impulse flow due to the vertebral subluxation, once more allowing a normal flow over the nervous system for innate healing and health restoration.

So it is Dr. Ralph Gregory and NUCCA, I salute you for the fine work being done by you and NUCCA. For indeed our only reason for existence as a profession is to locate and adjust the vertebral subluxation. This is our claim to be a separate school in the healing arts.

But tragedy indeed it is for the chiropractic profession as we witness a so-called victory over the medical associations allowing chiropractors to be recognized and practice in hospitals *unless a separate specific chiropractic section is set up in each hospital and chiropractors are confined to legitimate chiropractic practice.*

Unless this is done, the quicker the demise of chiropractic as a separate profession will occur. For today's chiropractic physician yearns to be a respectable chiropractic physician, but, tomorrow he yearns to be a respectable chiropractic

medical physician. Witness the legislation recently enacted in the State of Illinois. But this goes hand in hand with the education of the chiropractic physician under the present mixer accreditation program. Meanwhile the unity band wagon rolls on further greasing the skids hastening the day for a quicker demise of chiropractic as a separate profession.

Let us ask ourselves these questions. When will the chiropractic profession awaken and discover that the enemy is not without — but within? That the 'withering on the vine' of chiropractic as a singular, separate, non-duplicated practice is being accomplished by those who would lead the profession down the primrose path of being a chiropractic physician fostering a practice of treating the whole body symptoms rather than abiding within the guidelines of our school which allows us to remain a separate profession?

Every chiropractor should study the decision in the case of Schlichting vs Texas Board of Medical Examiners (1958 Naturopathy) 310 S/W 2nd 557. In this decision, the court ruled that chiropractic restricted to a specific portion of the body is a proper subject for licensure separate from the medical profession. In the same decision, naturopathy was erased as a separate profession because naturopaths were treating the whole body and therefore were required to obtain a medical license to practice naturopathy. Does this not have a message and meaning for chiropractic today?

NUCCA stands as a beacon in the rapidly moving effort by those within the profession desiring to be something other than what they like to call a 'chiropractic technician'. But you have consistently demonstrated that through scientific chiropractic technique, the science of chiropractic can live, survive and be projected as a separate profession. Yours is a candle in the darkness. But light attracts.

I firmly believe that there are thousands of sincere, dedicated chiropractors who are, and always have been, attracted by the light of pure, unadulterated chiropractic. If banded together they could move chiropractic forward to heights yet unknown. This great profession won by 'blood, sweat and tears' of those who have gone before, could take its true place in the healing arts as a separate profession.

If there are those of similar thought, let us begin. I would be glad to lend my efforts to the endeavor and I take this opportunity to issue the call for a new movement within the profession to save chiropractic as a separate profession. I am sure there are many of you who are like-minded — 1988 could well be the year of a new beginning.

L. W. Rutherford, D. C.

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Biomechanics of C1 Subluxation Production

By Ralph R. Gregory

INTRODUCTION

This article discusses some of the biomechanical factors that produce, or influence the production, of the C1 Subluxation Complex. The term "complex" indicates the damaging distortion effects on the spine and pelvic girdle of a C1 subluxation; the C1 subluxation is not confined solely to the atlas but includes the entire spinal column. In its production and reduction, it is, therefore, a full spine technique. Because a C1 subluxation causes the spine and pelvic girdle to distort, which results from an imbalance between neurological facilitation and inhibition, spastic contracture of the extensor musculature occurs, the spine and pelvis become deviated from the body's vertical axis, a cause of vertebral rotation into the transverse plane. It is the restoration to normal position of the misalignment factors of the C1 subluxation that restores the spine and pelvic girdle to normal or to the vertical axis, creating a normal biomechanical state by releasing the spastic contracture. Attempting to locally correct the spine and pelvic girdle does not relieve the spastic contracture; therefore, is not effective because spastic contracture is not relieved and the distortion so-caused will shortly recur.

Before it can subluxate, a vertebra must abnormally move (misalign) from its normal position on the vertical axis into one or more planes. It moves beyond its normal range of motion and requires an external force to restore it. Chiropractors employ several methods to move abnormally positioned vertebrae. These methods include joint mobilization, manipulation, and adjusting. The former two methods are somewhat similar in producing joint movement, but mobilization, unlike manipulation, never induces joint movement beyond its normal range of motion. Manipulation does. The effects of either system in restoring misplaced vertebrae to the vertical axis seems questionable.

Adjusting a misaligned vertebra is peculiar to orthodox chiropractic. It is the procedure of adjusting that distinguishes orthodox chiropractic from all other health systems, and consists of an applied force directed from a specific point in space to move the displaced vertebra to its normal position. D. D. Palmer, the Discoverer of chiropractic, stated it clearly on page 11 of his *Science, Art and Philosophy of Chiropractic* when he made the claim to be the "first to replace displaced vertebrae by using the spinous and transverse processes as levers wherewith to rack subluxated vertebrae into normal position—" Palmer made a clear distinction between adjusting vertebrae and other methods. Palmer reinforces his adjusting concept on page 42 of the same book when he states that "adjustments are only made when a vertebra is returned to its normal position". Manipulation existed for centuries before Palmer and he rejected the method.

The term "subluxation", like adjustment, has been rejected in some chiropractic circles as an inappropriate term.

Some chiropractors feel that the term" subluxation" is not defensible in this scientific age. Medical dictionaries, however, define a subluxation as an incomplete dislocation, one in which the joint surfaces are partially separated. These vertebrae are not in their normal positions, and like any partial or complete dislocation should be restored to normal position. If a vertebra moves from its normal position, its joints must partially separate. Such misaligned vertebrae, therefore, can be characterized by the term "subluxation". If vertebrae with partially separated joints did not occur, there would be no need for any introduction of force to replace them. Chiropractic would be unnecessary.

D. D. Palmer recognized the term "subluxation" and defined it on page 490 of his book as a "partial or incomplete separation; one in which the articulating surfaces remain in partial contact". Chiropractors who cannot show measureable and objective evidence of the effects of a C1 subluxation on the human body may well have problems accepting the term, and substitute the word "fixation" or some other term to their procedures.

The physical signs of a C1 subluxation that are verifiable by measurements indicate that a C1 subluxation is a physical stressor, a cause of postural defects, body strains, damage to intervertebral discs, and ultimate damage to hip and knee joints. Whenever these signs are present, they indicate a C1 subluxation. These signs have been measured on thousands of cases, using an Anatometer (Figure 1), without finding one exception. The signs include leg disparity as to length and resistance, spinal imbalance, pelvic malalignment, and muscular contraction.

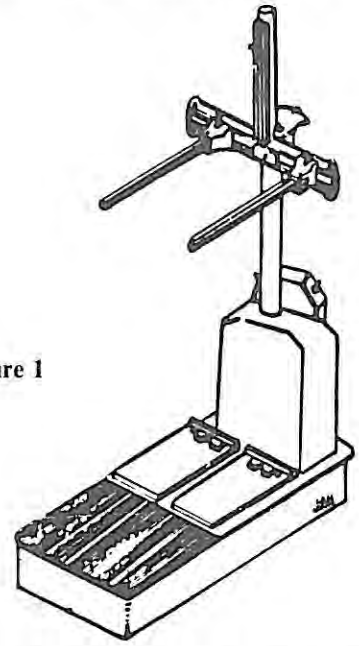


Figure 1

It should be remembered in this day of apparent professional confusion about terms and methods of "treating" subluxations that all vertebrae are capable of a normal range of motion only if they align to the vertical axis, i.e., are in their normal positions. When in their normal positions, they can execute concentric (from a common center) motion. To the extent that they deviate from the vertical axis, or normal position, they execute eccentric (off-center) motion, resulting in an abnormal range of motion. The cause of an abnormal range of motion lies in a displaced vertebra; the correction of the abnormal range of motion lies in restoring the vertebra or vertebrae that are displaced. Therefore, the displaced vertebra, or vertebrae, must be adjusted, not manipulated or whatever.

The current professional schism is not based on whether to practice straight or to include adjunctive therapy. Straight vs. mixer is an emotional argument; it is also oversimplified. The argument is rooted in whether the chiropractor will practice along scientific lines. This means that orthodox chiropractic must be further researched, the system subjected to rigorous testing. Enough evidence exists at present, at least so far as upper cervical is concerned, to warrant further scientific investigation. If a C1 subluxation can distort the spinal column and body, which has been amply proved, it is reasonable to assume that it can cause other health problems.

Because vertebral misalignments cause vertebral subluxations, corrections of the misalignment factors are essential. This is the chiropractic restoration principle. This type of vertebral correction has been proved as has the distortion effects of the C1 subluxation. The restoration principle in practice seems to have been over-looked in our chiropractic colleges and students appear very confused as they graduate troubled and uncertain as to practice procedures. Not knowing how to correct subluxations, they include less effective modality practices.

To conduct scientific research on the effects of the subluxation on the body and the benefits of its correction, the subluxation must first be corrected. If it is not corrected, one can hardly relate the correction to the beneficial results. At the time of the subluxation analysis, the doctor should know the biomechanical outcome of his adjustment, that his calculated adjustment will establish a biomechanical state of normalcy. In so predicting, he/she is practicing a scientific procedure.

C1 SUBLUXATION PRODUCTION

Before discussing the biomechanics of the production of the C1 Subluxation, the term biomechanics should be briefly explained. "Bio" is a prefix meaning life or living matter, and "mechanics" is the science that deals with the action of forces on bodies and with motion. Mechanics is the science of motion of real objects, and is subdivided into statics—the forces acting on bodies at rest—and into dynamics which deals with the forces acting on objects and the motion caused by these forces. Briefly stated, biomechanics is that branch of physics known as mechanics applied to living bodies.

To simplify this discussion, a wooden model is used, a simple drawing, and x-ray films of the four basic types of the C1 Subluxation Complex before and after (pre and post) a correction of the biomechanical problems of the C1 subluxation. While over 10,000 C1 subluxations are known to occur, they are reducible for purposes of analysis and correction to four basic types.

The wooden model (Figure 2) consists of two black circles, representing the skull and cervical spine, the C1

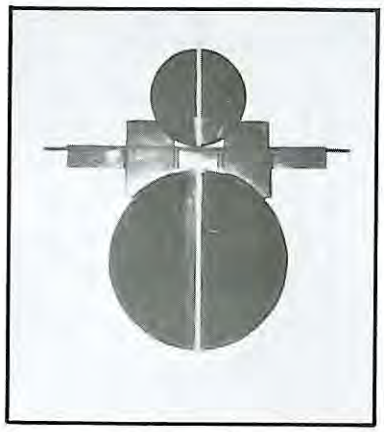


Figure 2

vertebra dividing them through which horizontally extends a red piece of dowling representing the C1 plane line, and a yellow piece of dowling vertically extending through each of the black circles. The yellow dowling through the upper black circle represents the center line of the skull, or central skull line; the yellow dowling through the lower black circle representing C2 and the cervical spine. The angle formed by the central skull line and the atlas plane line, if less than 90° is the side of laterality of C1. Because C2 supports C1 and the skull, it is referred to as the base of support.

Figure 2 shows the normal biomechanical relation of the skull, C1, and the cervical spinal vertebrae. The red and yellow pieces of dowling intersect at 90° angles. the post x-ray should show a biomechanical status as indicated in Figure 2. If a line were drawn along the edge of a triangular square aligned with the base of the x-ray film and through the center of the first or second dorsal vertebra extending upward through the skull (vertical axis), it would align with the yellow dowling representing the lower cervical vertebrae and the dowling depicting the central skull line. The skull center and lower cervical vertebrae would then be on the vertical axis and capable of executing normal ranges of motion. (The first or second dorsal vertebrae are termed the Fixed point)

The first step in analyzing an x-ray film from A-P is to erect the vertical axis line as described above. This alerts the analyzer as to the basic type subluxation he/she is analyzing. Knowing the characteristics of each basic type, he/she can look for them, an aid in analyzing films. Erecting the vertical axis line, permits the analyzer to visualize what he/she must achieve with the adjustment to obtain a normal biomechanical state.

The wooden model, of course, can only depict the C1 subluxation complex from the frontal plane (A-P). It is, however, the abnormal movement of the subjacent cervical vertebrae into a frontal plane that causes them to move into the transverse plane.

Figure 2(A) is a sketch depicting the normal biomechanical state: the vertical axis line aligns with the central skull line and the lower angle line; the atlas plane line is at 90° to the central skull line and lower angular line.

Figure 2(B) shows a normal x-ray film in which no subluxation is present.

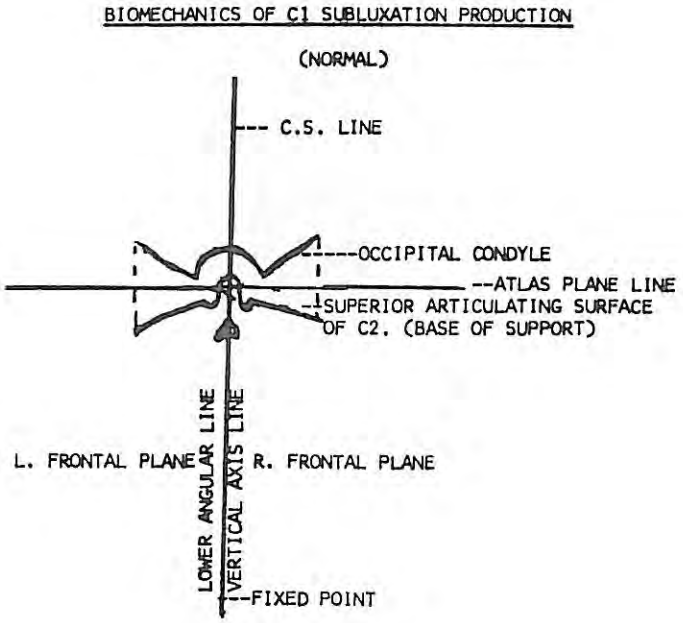


Figure 2(A)

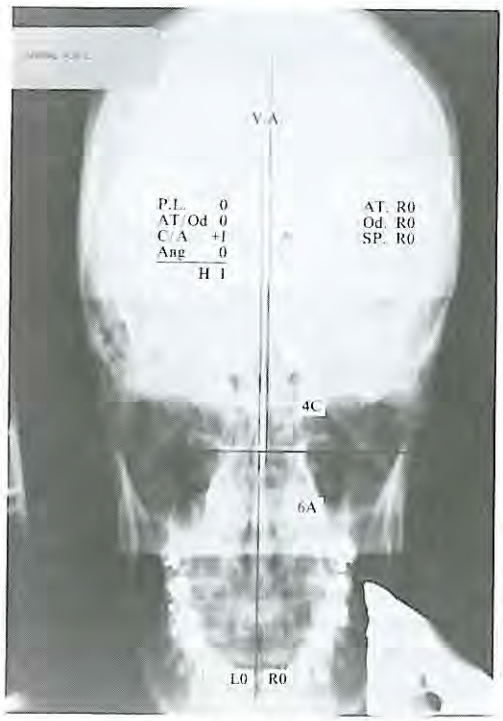


Figure 2(B)
Normal

The first basic type is shown in Figure 3. C1 is right because the angle formed by the central skull line and the atlas plane line is less than 90°. (On the x-ray film, this angle would be exactly measured because the degree of abnormal movement of C1 on the condyles of occiput determines the amount of laterality of the odontoid process and of C2 spinous) Note that the dowling representing the centers of the lower cervicals has deviated several degrees from the vertical axis, or normal, into the right frontal plane. This deviation exerts an upward pressure by the superior articulation of C2 against the inferior surface of the right lateral

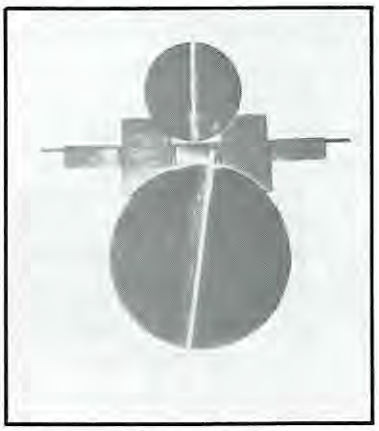


Figure 3

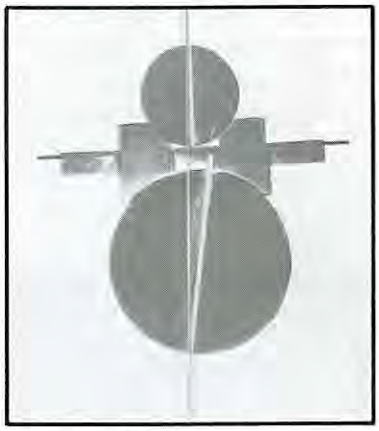


Figure 3(A)

mass, forcing C1 higher on the condyles and turning the head higher on the right.

Figure 3(A) shows a basic type one on which a vertical axis has been erected from the Fixed point at D1. Erecting a vertical axis indicates to the analyzer what must be done in the adjustment to correct the C1 subluxation toward the normal biomechanical state on the A-P film. It can be seen that C1 must be directed down and around the superior articulatory surfaces of C2, using C1 as a lever, if this is done in the adjustment with the proper vector, the lower cervicals will be returned to the vertical axis, i.e., angulation of the cervical spine into the right frontal plane will be corrected, and the rotations into the transverse plane of these vertebrae will be eliminated: it is the angulation of the vertebrae below C2 that chiefly causes them to rotate. C1 will be restored to the vertical axis, and the skull will be aligned to the vertical axis.

In analyzing a first basic type subluxation, the characteristics that the analyzer should look for are: (1) a higher plane line, (2) skull turned away from the side of laterality of C1, or level; (3) laterality always opposite the side of angular rotation.

In many type ones, the skull does not go higher on the side of C1 laterality, but remains parallel to the vertical axis line. Because the skull line of gravity (see Figure 3(B) determines rotation of C1 in the transverse plane because it becomes the axis of rotation, the more the gravital line is displaced to the side opposite laterality, the greater will be the chance of C1 moving posterior on the side of laterality. In anterior

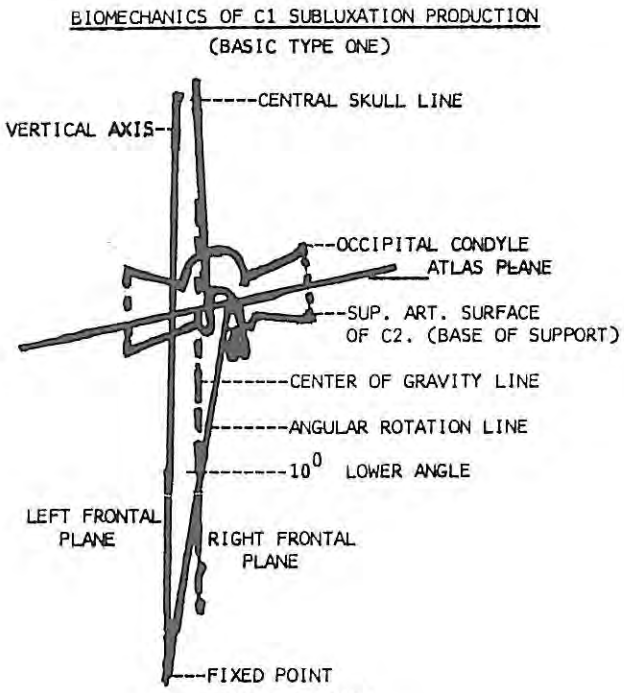


Figure 3(B)

rotations into the transverse plane, the gravital line falls nearer to the side of laterality and is seen in basic types where the head turns down on the side of laterality.

When placing the patient on the headpiece of the adjusting table for the adjustment, care must be taken to center the head over the mastoid support of the head piece at the skull center of gravity whrn adjusting any basic type one. This permits the skull to turn back to the vertical axis or remain on the vertical axis. This procedure also makes the adjustment much easier and effective.

The skull center of gravity is one of the internal forces of the C1 subluxation. Defined, the center of gravity of an object is that point about which a single downward force equals the weight of the object. A skull contains a vertical line having a single downward force which is the sum of all the downward forces of the skull equal to the weight of the skull. This force is necessary to maintain the skull in its vertical position. When the center of gravity is in a state of equilibrium, the center of gravity is at its highest level on the vertical plane. As the center of gravity becomes unstable, it will lower and move away from its original vertical center.

Equilibrium is an important element of the adjustment. The upper cervical spine is quite labile, therefore, equilibrium must be achieved when adjusting. When equilibrium is obtained, the adjustment holds longer, and the patient responds better.

Figure 3(B) is a sketch of a basic type one, depicting a right laterality, angular rotation into the right frontal plane, the skull center of gravity line, and the vertical axis.

Figures 3(C) and 3(D) are photos of x-rays of a type one before and after the adjustment.

The abnormal biomechanics of a type two C1 subluxation are depicted in Figure 4 as seen on the wooden model. It is a right laterality, determined by the less than 90° angle between the C1 plane line and the central skull line. The

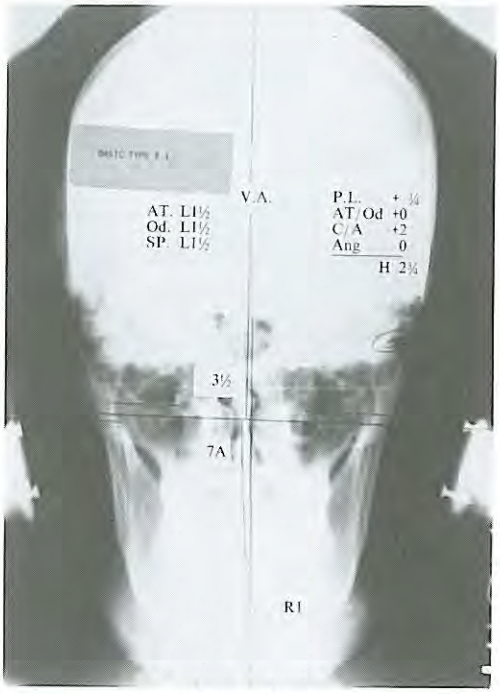


Figure 3(C)
Basic Type #1

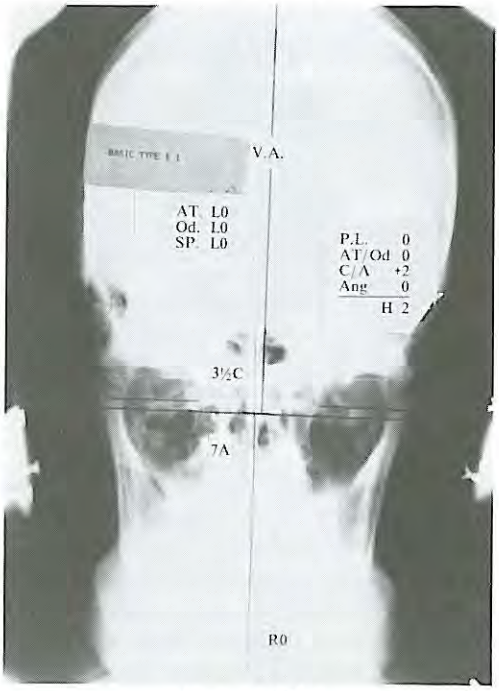


Figure 3(D)
Basic Type #1

turning of the skull to the right side determines most to the C1 laterality. Therefore, the line of skull gravity falls to the side of laterality, indicating that C1 is anterior on the side of laterality (see sketch of basic type two). The greater upward pressure is against the left condyle of the occiput.

The entire configuration has taken place in the left frontal plane which produces the internal forces responsible for this type of C1 subluxation.

By erecting a vertical axis (see Figure 4(A), it becomes clearer how this type of case should be adjusted. The adjustic

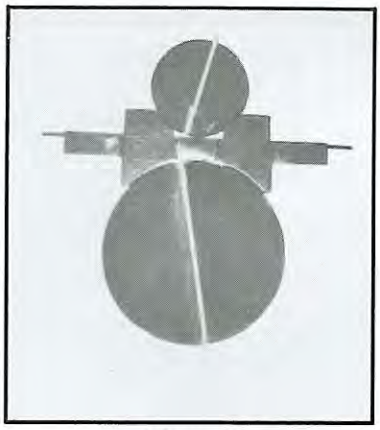


Figure 4

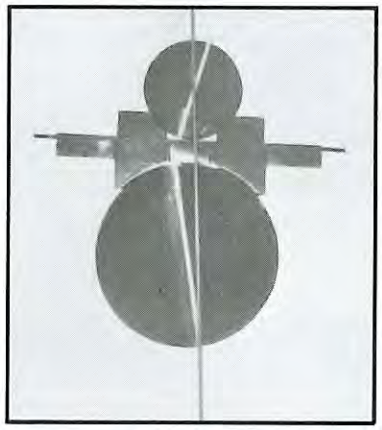


Figure 4(A)

force must be directed so as to bring the skull back to the vertical. Thus, the force must be low enough to go up and around the superior articulations of C2, a force calculated to bring the lower cervical vertebrae back to the vertical axis. This force, properly determined and delivered, aligns the head and angular rotation to the vertical axis.

The head must be aligned to afford relief to the foramen magnum, and angular rotation corrected to remove the internal pressure of the lower angle against the left condyle to insure stability. Rotation of the lower cervicals is a left rotation, depending to some extent on the rotation of C2. Rotation of C1 is usually anterior because of the position of the gravital line which is nearer to the side of laterality. Rotations of all vertebrae are corrected with the return of the lower angle to the vertical axis, and the proper vector.

On the wooden model, the C1 subluxation has occurred in the left frontal plane; on the sketch (see Figure 4(B)), it is in the right frontal plane. Laterality is left in the sketch. Note the effect of skull gravity in the sketch and the position of the vertical axis.

The characteristics of a basic type two C1 subluxation are: (1) laterality of C1 occurs in the same frontal plane as angular rotation, (2) the C1 plane line is exactly horizontal or slightly higher or lower, the skull is turned into the side of the C1 subluxation and generally causes the greater part of the laterality, and (4) C1 has not moved to a great extent on the occipital condyles.

Figure 4(B) is a sketch of a basic type two.

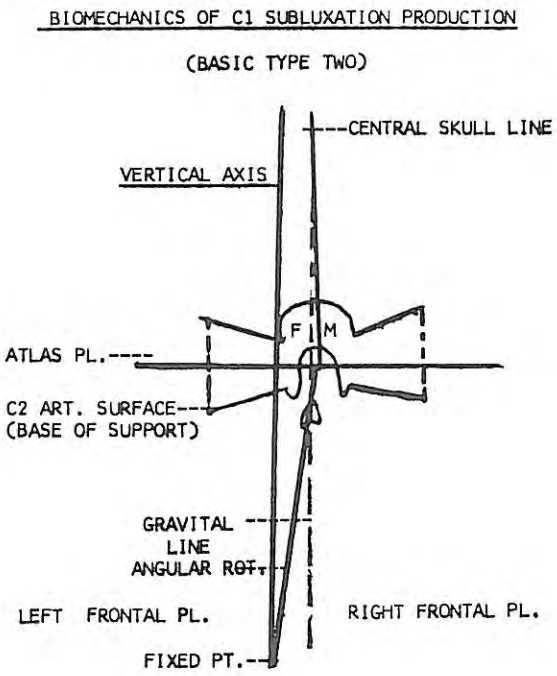


Figure 4(B)

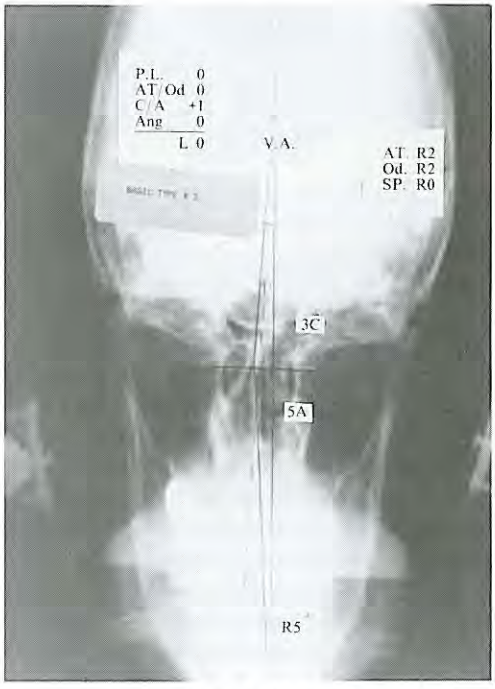


Figure 4(C)
Basic Type #2

Figure 4(C) and 4(D) are photos of x-rays, pre and post, of actual cases.

A wooden model of the abnormal biomechanics of the third basic type C1 Subluxation is seen in Figure 5. Note that a type three (rather rare) is the only basic type in which angular rotation of the lower cervical spine does not occur, i.e., the cervical spine as a unit does not move into either the right or the left frontal plane. There are, therefore, no upward forces exerted on C1 and the skull. Laterality is produced solely from the turning of the head, and laterality

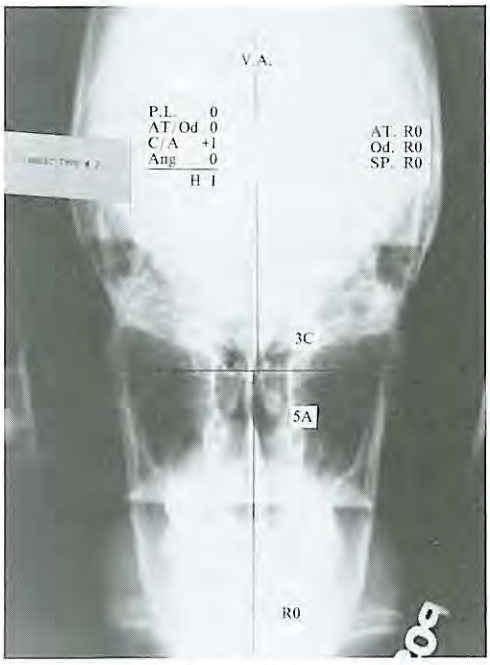


Figure 4(D)
Basic Type #2

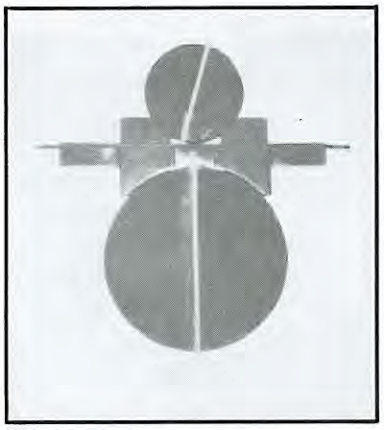


Figure 5

is on the side to which the head turns. Rotation of the cervical vertebrae below C2 into the transverse plane cannot occur. This is evidence that angular rotation of the cervical spine from the vertical axis produces vertebral rotation into the transverse plane. In other basic types wherein angular rotation exists, rotation of the cervical vertebrae is to the side of the angular rotation. A rather large rotation of C2 may influence the lower cervical vertebral rotations. The rotation of C1 into the transverse plane is usually anterior because of the gravital line from the skull.

In Figure 5(A) a vertical axis has been added to the model. Because the angular rotation does not exist in a basic type three and the head produces the downway internal force, the adjusting problem is to bring the head to the vertical axis. The adjustic force, therefore, must be directed up and around the superior articulations of C2, but not enough to disturb the lower angle. The head must be placed so that the patient's mastoid process rests at its tip on the upper side of the mastoid process of the headpiece of the table. Thus, the greater weight of the head will assist in bringing it back to

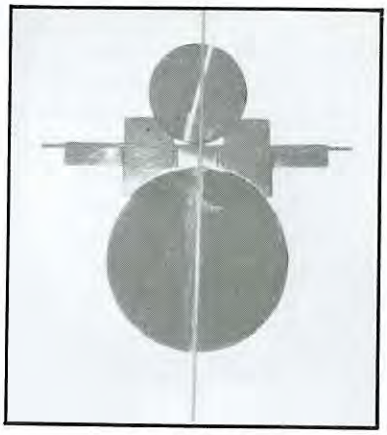


Figure 5(A)

the vertical axis. The headpiece should be slanted down at its parietal end.

The characteristics of a basic type three are: (1) level or low plane line, (2) no angular rotation of the cervical spine, (3) no rotation into the transverse plane of subjacent cervical or dorsal vertebrae, and (4) a tipping of the skull away from the vertical axis.

Figure 5(B) is a sketch of a basic type three with a left laterality. Note the gravital line from the skull central line.

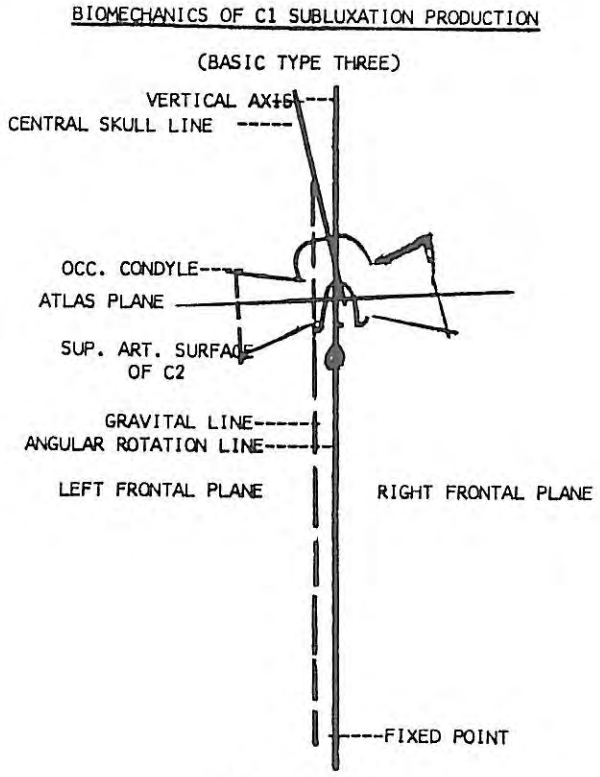


Figure 5(B)

Figures 5(C) and 5(D) are photos of x-rays showing the pre and post.

Figure 6 shows a wooden model of a basic type four that has deviated from the vertical axis into the right frontal plane. C1 laterality is to the right caused by a turning of the skull and an abnormal movement of C1 on the occipital condyles. This configuration indicates that a basic type four



Figure 5(C)
Basic Type #3

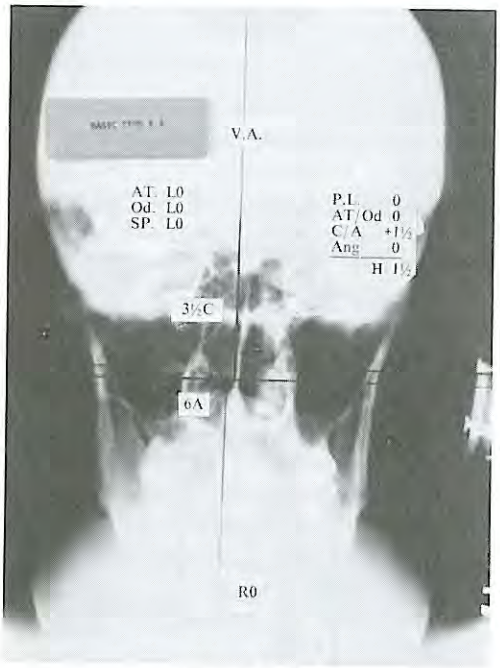


Figure 5(D)
Basic Type #3

is a combination of a type one and a type two. C1 laterality is right and angular rotation is in the right frontal plane.

Figure 6(A) depicts a wooden model of a basic type four with an attached vertical axis. The vertical axis indicates that the head must be turned to the vertical axis, the plane line of C2 lowered, and the angular rotation corrected to the vertical axis. The adjustment must be directed somewhat down and around the superior articulations of C2, and the patient's head supported on the mastoid end of the adjusting table at the patient's mastoid process. Because this basic type does not move into a frontal plane to any extent, there

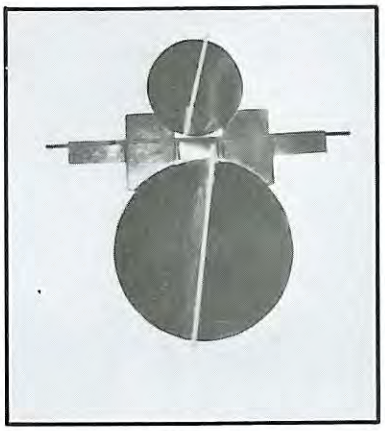


Figure 6

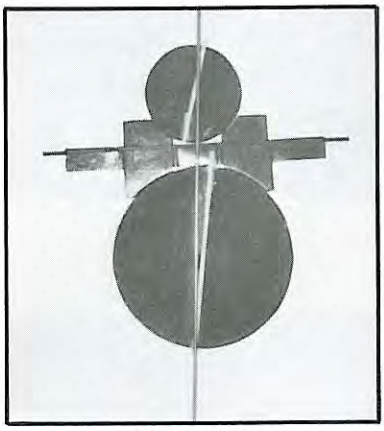


Figure 6(A)

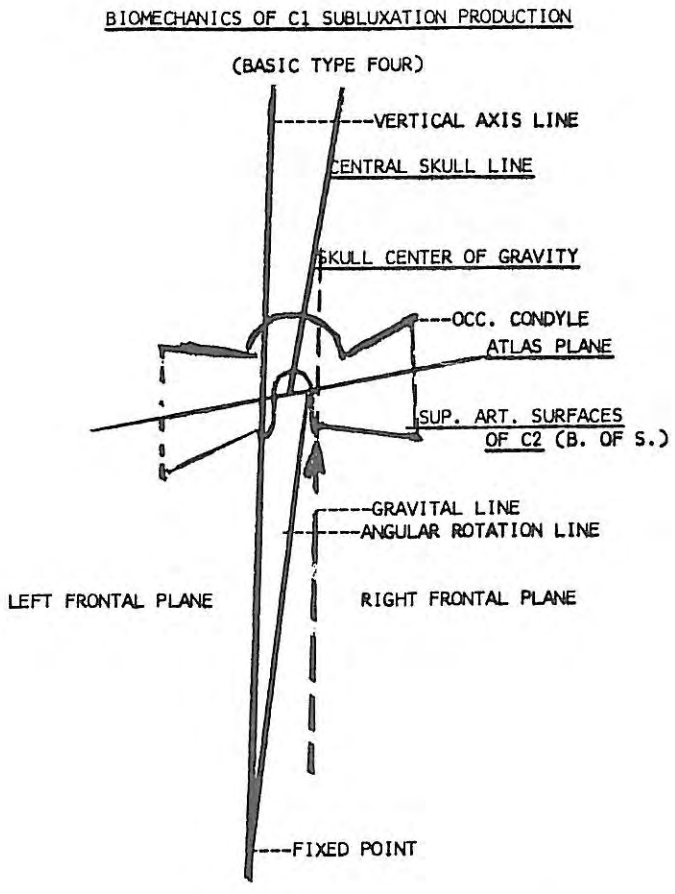


Figure 6(B)

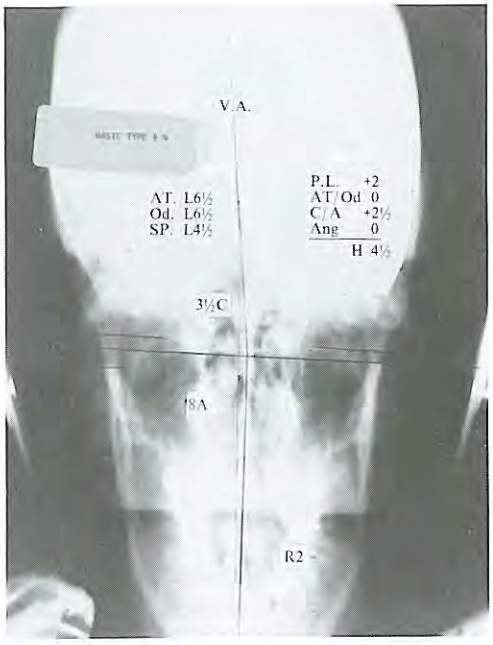


Figure 6(C)
Basic Type #4

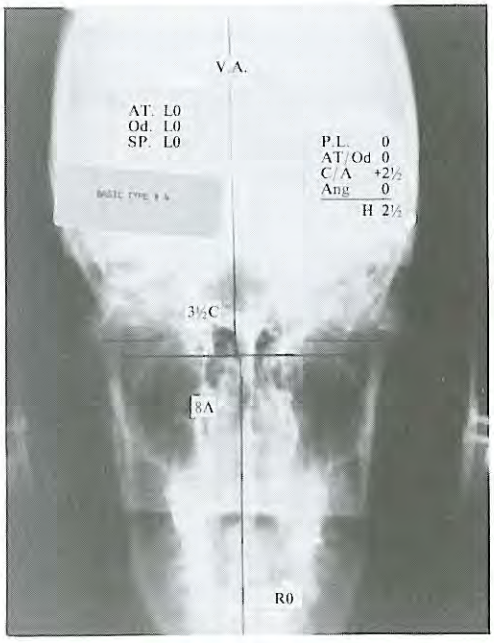


Figure 6(D)
Basic Type #4

is little upward pressure against the inferior surface of the lateral mass of C1.

The internal forces producing the fourth basic type stem from angular rotation and from the displacement of the skull from the vertical axis. Note in Figure 6(B), the sketch of a basic type four, which is also a right laterality, the downward force of the weight of the skull as indicated by the gravital line. These types are usually anteriors on the side of C1 laterality, because the axis of rotation is to the right of the center of the superior articulations of C2. Further note the gravital line and the vertical axis line.

Figures 6(C) and 6(D) are photos of x-ray films of a fourth basic type, pre and post.

Conclusion

The internal causes of the production of the C1 subluxation can be easily seen in a breakdown of the subluxation into the four basic types. The causative effects of angulation of the cervical spine as a unit into one of the frontal planes, the deviation of the skull from the vertical axis, the displacement of the skull center of gravity, the cause of subjacent vertebral rotations from angulation into a frontal plane and on C1 rotation from the displacement of the skull gravital line are clearly apparent from a detailed study of thousands of x-rays.

Understanding the production of the C1 subluxation clarifies the procedures necessary to its reduction. knowing the C1 subluxation's resistances aids in its restoration.

NUCCA CERTIFICATION

A certification program has been initiated by the National Upper Cervical Chiropractic Association, Inc. (NUCCA). The purpose of the program is to NUCCA-qualify doctors in the NUCCA work. Doctors who successfully complete the program will be eligible to conduct and teach basic classes. A certification committee will be established from the initial group of doctors first certified. Examinations will be given at NUCCA seminars and conventions.

Doctors who wish to be NUCCA-certified must meet the following prior conditions: (1) be in practice for a period of at least three years, (2) have possession of, or access to, equipment and instrumentation recommended by NUCCA, and (3) permit NUCCA inspection of their office facilities. The entire examination must be completed in two years. Certificates will be issued successful candidates.

Doctors who have not engaged in practice for three years but who have attended NUCCA seminars are eligible to take the examination which covers a two-year period. A fee is charged each candidate. In the event of failure of the examination, or any part thereof, the candidate is re-examined in the part of the examination he failed without paying an additional fee, provided re-examination takes place within the two-year period.

Certification will be evaluated every three to five years, and certified doctors will be requested to either take an oral examination on updated data or provide evidence that they have attended a NUCCA seminar at least once each year.

The examination is in three segments, as follows:

1. X-RAY AND INSTRUMENTATION
   - A. Understanding of x-ray alignment procedures
   - B. Theory about distortion, magnification, collimation
   - C. Produce ten sets of cervical films suitable for analysis
   - D. Examination on x-ray procedures
   - E. Submit a set of x-ray alignment films
   - F. Examination on instrumentation
2. FILM ANALYSIS
   - A. Knowledge of osseous structures
   - B. Read ten sets of cervical spinal x-rays with an inter-observer reliability of .90
   - C. Examination of film analysis
3. ADJUSTING
   - A. Submit ten sets of consecutive pre and post cervical x-rays. The post x-rays presented to the examining board be those taken after the initial adjustment. Reductions in the height and rotation vectors to be evaluated at the discretion of the examining board.
   - B. Oral examination in which the candidate is given various listings for which he is to explain reduction procedures.
   - C. Written examination on adjusting. 100 questions with a passing grade of 85.

The 1988 NUCCA Convention and Educational Conference

The 1988 NUCCA Convention and Educational Conference will be held at the Howard Johnson Motor Lodge, 1440 North Dixie, Monroe, Michigan (48161). It will start on Saturday, April 30 at 8:00 a.m. and close on Tuesday, May 3 at 12:00 noon.

The theme of the convention is: Applying Biomechanical Principles to Chiropractic. The convention chairman will be announced. The Educational Program will be supervised by Dr. Daniel C. Seemann, NUCCA Executive Director, from the University of Toledo. Coordinating the Educational Conference will be J. F. Palmer, M.S., NUCCRA Research Board member and a University of Toledo faculty member.

Past NUCCA educational conferences and seminars have been accepted by many state boards for license-renewal. Participants at the 1988 Conference who desire credit must attend every educational session, be monitored by NUCCA, obtain a NUCCA attendance card, and have it punched after each session.

Subjects will include basic film analysis for beginners, advanced film analysis, classifications of the C1 subluxation complex, patient placement for each classification, mechanical levers, subluxation resistances, anatometer exercises, leg checking, and problem exercises in biomechanics, adjusting, and film analysis. Instruction will be the "hands on" type. Qualified doctors may exercise a choice of subjects.

Prepared videotapes will include adjusting errors, x-ray machine alignment, patient placement for upper cervical x-ray, and others as time permits.

The fee for a professional is $350. For doctors in practice two years or less, the fee is $200. Students are admitted for $150. In each case, the fee includes membership in NUCCA for one year. A $25 charge is added to the fee if the fee or a $50 deposit is not received at the NUCCA office by the March 14, 1988 deadline.

All income above expenses will be donated to NUCCRA for research.

NUCCA will host a banquet on Monday evening, May 2 at 7:30 p.m.

Please register early because only a limited number can be accommodated. Also please observe the March 14 deadline.

For further information, write NUCCA, 217 West Second Street, Monroe, Michigan 48161.

NOTICE

The NUCCA Board of Directors has decided to make the NUCCA collection of video tapes available to members. The price for tapes has been set at $100.00 per classroom hour. Available titles include:

Osseous Structure Identification (45 min.) ..... $ 90.00
This tape depicts the various bony structures involved in the NUCCA x-ray analysis. Included are structures that present analytical problems. X-rays of live and dry specimens are used.

NUCCA X-ray Analysis (60 min.) $100.00
Step by step procedure of the NUCCA analysis using X-rays of live specimen.

Leg Check and *Headpiece Placement* (45 min.) ..... $ 90.00
Leg Check describes the planes of reference and how to align the examiner's body for accurate checking. Models and patient used. Errors are discussed. *Headpiece Placement* briefly describes the biomechanics of the correction of the four basic types. Center of Gravity of the skull and its placement on the three types of headpieces is shown.

Adjusting the A.S.C. (3½ hrs.) $300.00
Step by step procedures used to align the adjustor's body in addressing the various A.S.C.s. Includes the most common errors in each phase. Outline of video follows early *Monographs,* Vol. 1 No. 3 through Vol. 2 No. 4. Film includes various steps for posterior rotations and low vector listings.

Errors in Adjusting the A.S.C. (2 hrs. $200.00
Compliments *Adjusting the A.S.C.* This tape describes errors in adjusting, what causes them, and how to correct them.

Patient Placement For X-ray (45 min.) $90.00
Precision placement of the patient for the lateral, vertex, and nasium views are discussed.

X-ray Alignment (45 min.) $90.00
Step by step procedure used to align cervical x-ray equipment to N.U.C.C.A. standards. To be used with the N.U.C.C.A. X-ray Alignment booklet.

Biomechanics of The Four Basic Types (1 hr.) $100.00
Detailed discussion of the production and correction of The Four Basic Types of A.S.C.S. Headpiece placement and lever system shown in detail.

Questions And Answers, A Self Evaluation For Adjusting The A.S.C. (1 hr.) $100.00
Follows Monograph Vol. 3, No. 9 and No. 10. A chronological order as a guide for the adjustor when practicing the C-1 or triceps pull adjustment. By self-questioning, based on this tape, the adjustor is alerted to the adjusting steps he/she may have neglected or does not know, and the order in which the steps should be performed.

High quality video tapes have been used for reproduction, which carry a lifetime guarantee. Please specify BETA or VHS. Allow 4-6 weeks for delivery. Prices are subject to change with cost of reproduction.

Five patient education pamphlets are now available from NUCCA. The cost is $27.00 per hundred which includes postage and handling. All pamphlets must be paid in advance due to our non-profit status.

1. *A Patient Guide,* (yellow), explains step-by-step office procedure to new patients.

2. *Questions and Answers,* (yellow), answers questions most frequently asked.

3. *A Patient Guide,* (green), explains what every patient should know.

4. *The Adjustment and the Patient,* (blue), explains the adjustment and how it works.

5. *The NUCCA System of Chiropractic,* (white), for patients, doctors and students, explaining the NUCCA system.

Two new booklets have been published by NUCCA. The first booklet details the NUCCA x-ray analysis procedure in detail: *The NUCCA Basic Course: X-Ray Analysis.* The second booklet, *The NUCCA Advanced Course: Biomechanics,* explains the biomechanic characteristics of the Atlas Subluxation Complex. Each booklet sells for $15.00.