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Center of Gravity Influence in the Performance of the C1 Adjustic Motor Skill

by Ralph R. Gregory, D.C.

Efficient performance in any motor skill requires an understanding of the basic principles that underlie the skill. The C1 adjustic motor skill is no exception. It incorporates basic principles essential to the efficient performance of all motor skills. If the C1 adjustic motor skill is reduced to its basic elements, it is observed that anatomic and mechanical principles contribute to the adjuster's efficient use of his body as a tool for the reduction and correction of C1 subluxations. The adjuster must be knowledgeable about the joints and muscles that are used to perform the adjustic act, how they are used, and to what extent they must be used to produce the rectilinear force essential to C1 vertebral correction. A very important and basic element is the adjuster's location and control of his center of gravity throughout his performance of the phases of the adjustment. This paper deals with the adjuster's center of gravity location in the adjustic phases, how to control it, and the principle of feedback.

The Problem

A survey of C1 adjusters at a recent practice session disclosed that less than five percent were performing efficiently out of a group of approximately 70 adjusters. Awkwardness of performance, resulting from loss of stability, greatly decreased efficiency of movement. Not conscious of the location of his center of gravity, the adjuster rearranged his body parts without regard to his objective: the alignment of his parallel forces or action lines to the plane of the reduction pathway of the C1 subluxation he was addressing. Not only did lack of stability destroy the adjuster's body alignment, but caused excessive force in the adjustment to compensate for loss of stability.

Discussion

The center of gravity of the body is that point at which the weight of the body may be considered to be concentrated;[1] or "that point in the body about which all the parts exactly balance each other." A line passing from the center of gravity downward is known as the "line of gravity" or "gravital line." It is also called the "weight line."

The center of gravity varies somewhat in different adjusters because of differences in physique, but is located in the pelvis approximately anterior to the base of the sacrum. It is slightly lower in the female because of heavier pelves and shorter legs.

Some motor skills require stability, some do not. The C1 adjustic motor skill requires considerable stability throughout all its phases. Loss of stability in any of the adjustic phases results in instability in all succeeding phases. It cannot be recovered, and the

(Continued on page 2)

Magnification: How Much of a Problem in Spinographic Analysis?

by M. Dickholtz, Sr., D. C.

Magnification in x-ray images depends on four factors: the size of the object, the size of the film, the target film distance and the distance the object is from the film (Luster & Keats, 1978). The purpose of this study was to determine how much magnification actually occurs using procedures that approximate the N.U.C.C.A. system for taking x-rays (Gregory, 1971).

METHOD

Equipment

The x-ray unit used for this investigation was a 100 MA - 100 KVP, a rotating anode with a focal spot of 1.5 mm. The stationary microline grid had 110 lines per inch, with a 36 to 42 inch focal distance, and a 10:1 grid ratio. A bucky, that took the place of the microline grid was used on one x-ray film, in the third investigation.

The x-ray equipment was aligned according to N.U.C.C.A.'s system (Dickholtz, 1971). The port of the tube housing was permanently closed to 1/4″ x 1/2″. The focal spot being 1-1/4″ behind the port. The shutters on the collimator were set for 10″ x 12″ film at a 42″ focal spot to film distance.

A one piece plastic device, 4-1/4″ high and 3-7/8″ in diameter was designed, resembling two flat circular surfaces joined with a center shaft. A one-half inch radius was grooved near the outer edge on each superior surface. The unit was turned on a machine lathe so that all surfaces and holes would then be centered, concentric, squared and parallel.

A flat metal ring was imbedded at the bottom of the device around a 3/4″ centered hole. A 1/8″ ball bearing was

(Continued on page 5)

adjuster unconsciously compensates and the compensation destroys the alignment of his action lines to the reduction pathway. He no longer is capable of producing rectilinear force. If this error exists, the adjuster must start again with the initial phase—the approach phase.

Loss of stability may result from the lack of realization that as the adjuster moves his body through the phases of the adjustment, his center of gravity also moves. The principle that as body parts move, the location of the center of gravity shifts in the direction of the movement applies.[2] In the third, or Turn-in phase, the greater weight of the adjuster's body moves rapidly over the point of contact, and his center of gravity, if not positioned correctly in the first two phases, may move outside the margin of his base of support, causing an instability problem.

The adjuster should be aware of the principle that a body is stable if its center of gravity falls within its base of support; it is unstable whenever its center of gravity moves outside any margin of the base of support.[3] If at any point in any adjustic phase, the adjuster becomes conscious of greater weight resting on his inside foot, this feedback should alert him to his loss of control of his center of gravity. In the third, or Turn-in phase, the adjuster's center of gravity should not gravitate past the center of his base of support. His feedback would be a feeling of equal weight on each foot.

The base of support involves the points of contact with the supporting surface and the two-dimensional area between these points of contact.[4] The points of contact in the C1 adjustic motor skill are, of course, the feet of the adjuster. (Figure 1)

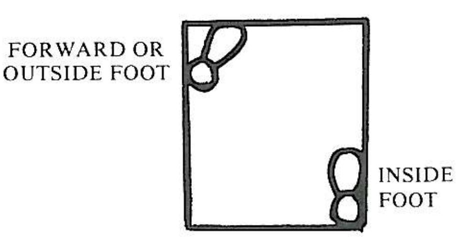

FIGURE 1
BASE

In the C1 motor skill, the width dimension of the base of support is determined by the distance between the acetabular cavities. The width of the base should not be wider than this distance because a wider distance may introduce a lateral component of force into the pelvic girdle. If that component of force is greater on one side than the other, the pelvic girdle is shifted laterally to the opposite side, dislocating the adjuster's center of gravity.

The A-P dimension of the base of support is established according to the length of the Horizontal Resultant (HR). A long HR necessitates a longer A-P dimension because a greater spread of the feet is required to accomplish more angulation of the pelvic and shoulder levers of the adjuster so that they become coplanar with the reduction pathway, computed from the x-ray analysis. Larger force vectors require longer resultants. An advantage on longer HRs is that the adjuster's center of gravity tends to fall to the distal side of his base of support as his pelvis angulates more.

In the first, or Approach phase, when the base of support is set up at the distal end of the HR, attention must be paid to the location of the center of gravity in relation to the base. The base should be at a 90° angle to the HR. If the base is not positioned at the distal end of the HR, or at right angles to the HR, the adjuster's center of gravity will not be positioned properly for the following phases. (Figure 2) In the final, or Kinetic phase, the adjuster's action lines will not be coplanar with the subluxation's reduction pathway because they will angle away from the reduction pathway. The action lines, or parallel forces, emanate from the shoulder and pelvic levers of the adjuster which must be at right angles to the reduction pathway in the final phase. An improperly positioned base of support in the first phase not only displaces the location of the center of gravity but malaligns the adjuster's action lines.

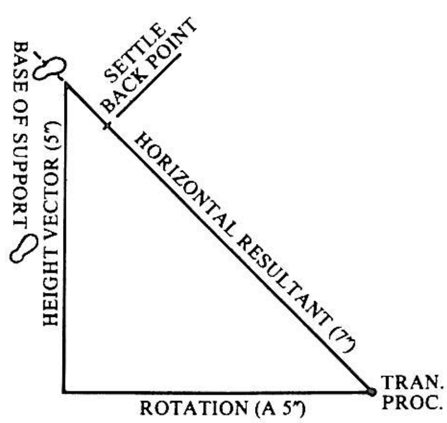

FIG. 2
Aligning the adjuster's feet (base of support) to the horizontal resultant.

In setting up the base of support, the adjuster advances his outside foot straight forward to a point where the HR, if continued, would cut through the arch of the forward foot. (Figure 2) In a C1 subluxation, for example, in which the atlas has misaligned to the left (referred to as a left listing), the forward foot would be at the left foot and referred to as the outside foot. As the adjuster moves his outside foot forward, his pelvic lever must remain parallel to the HR. To obtain and maintain parallelism with the HR, the outside leg is advanced solely from the left acetabulum which is the major joint center of motion for the act. Confining the center of motion to the acetabulum will cause some dropping of the pelvic lever on the side of the advanced foot which permits greater angulation of the pelvic lever, and to some extent shifts the adjuster's center of gravity forward and toward the distal margin of the base of support, helping him to obtain the correct location for his center of gravity.

As the adjuster advances his outside leg forward, his center of gravity will gravitate to the inside leg; the greater weight tends to remain on the inside leg. (Figure 3) If he does not remedy this situation, his center of gravity locates toward the posterior margin of his base of support, causing instability.

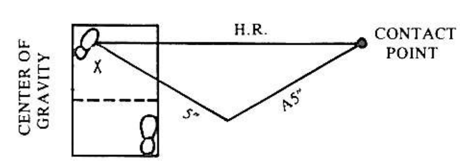

FIG. 3
Location of adjuster's center of gravity in Phases 1, 2, and in the final phase.

He corrects the center of gravity problem by making sure that his forward leg is advanced solely from the acetabular cavity on the side of the forward (outside) leg. If he advances his outside foot and in so doing turns his pelvic lever forward in the act, allowing his greater weight to remain over his inside foot, his pelvic lever turns forward on the side of the outside leg, resulting in a lateral component of force traveling up the inside leg that turns the pelvic lever forward on the side of the outside leg, causing loss of parallelism of the pelvic lever to the HR, and displacing the center of gravity.

Because pelvic lever parallelism to the HR must be maintained in the first adjustic phase, the adjuster must employ a lock-action at the superior anterior aspect of his pelvis on the side of the outside leg. A lock-action is simply putting a body part into a position which will automatically stabilize other parts of the body and lead to more efficient action with a minimum of effort.[5] The hip lock-action is initiated when the adjuster advances his outside leg. If the center of motion is confined to the acetabular cavity on the side of the outside leg, the lock-action is nearly automatic. It is re-inforced when the adjuster's center of gravity shifts forward and the line of gravity falls more nearly to the inside of the outside leg. The adjuster's center of gravity is now secured for the following phases, and greater stability is established.

In the second, or Settleback phase, the principle that the center of gravity follows moving body parts is very much in evidence. One of the main purposes of the phase is to convert the adjuster's body to a more vertical plane—to begin the alignment of the body to the subluxation's reduction pathway. If the adjuster simply bends forward, using the lumbo-sacral joint as the main center of motion, his center of gravity will follow his upper body and his center of gravity will move too far forward. His pelvic lever, moreover, will not angulate to a more vertical position.

The action of Settleback is as if the adjuster's body were moving backward down an inclined plane. The movement is from the acetabular joints, and as if about a solid bar between the two joints. This action draws the adjuster's episternal notch downward, angulates his pelvic and shoulder levers, and, if he has properly located his center of gravity in the first phase, maintains it in the forward position. The spread of the adjuster's feet from A-P determines the degree of pelvic lever and shoulder angulation. The average adjuster's body levers must angulate 23° for a HR of a length of seven inches. Because the degree of angulation affects the center of gravity location, the adjuster must angulate his body levers in relation to his base of support. He can figure the degree of angulation by a rule of thumb: Multiply the length of the HR by three and add two. For example, if the HR is seven inches long, multiplying by three and adding two would give the number 23, the degrees of angulation.

In performing the Settleback phase, the adjuster must guard against the possibility of center of gravity location error: his center of gravity may tend to gravitate to the posterior of his base of support. His feedback will be too much weight on the inside foot, and he will be "back on his heels" and very unstable. The remedy is to advance the outside leg more forward, which increases the A-P distance of his base of support, and advances his center of gravity forward. If the center of gravity is not relocated forward, the pelvic lever is turned from its parallelism to the HR, his action lines are turned away, and he is too unstable to perform the following phases.

The adjuster executes the third, or Turn-in phase, by turning his body over the point of application of force, or the transverse process, from the location of his base of support at the distal end of the HR. Again, the principle must be observed that as a body part moves, the location of the center of gravity shifts in the direction of the movement. In the third phase, the adjuster's center of gravity moves rapidly in the direction his trunk turns, and his center of gravity may very quickly gravitate to his inside leg, locating beyond the inside margin of his base of support. This creates a very unstable situation. Efficient performance is prevented because the body is very unstable, loss of pelvic lever lockage occurs, control of the direction of the action lines is lost, and the adjuster cannot adequately perform the following phase.

Control of the center of gravity in the third phase is accomplished by closely confining the turning motion of the adjuster's body to the ankle joints as the primary center of motion. The adjuster performs a pivoting action in his ankle joints by consciously twisting his legs, using the rotator leg muscles. The action is an angular action, like the turning of the hands of a clock, in which the spinal lever moves in an arc about the tip of the sacrum, utilizing the full length of the spinal lever.

Because the greater weight of the adjuster's body is being turned toward the transverse process, he must be extremely careful that his center of gravity does not move past the center of his base of support. (Figure 4) If he feels too much weight is exerted on his inside foot, this feedback indicates to him that his center of gravity is located beyond the center of his base, or even beyond the inside margin of his base of support. In either case, he has lost control of the center of gravity, and is too unstable to continue; his only remedy is to start again at the first phase.

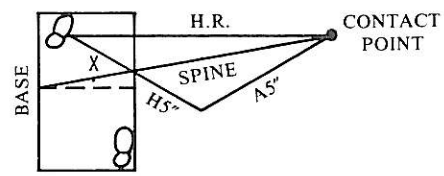

FIG. 4

Location of adjuster's center of gravity in Phase 3 (turn-in phase) after turning spinal lever over contact point.

If the third phase has been successfully concluded, the adjuster is ready for the Roll-in phase. In executing this phase, he should be careful that his center of gravity remains located as described above. In other words, if he moves his body too much in one direction or another, his center of gravity may shift too far beyond the center of his base of support or beyond its margin.

The purpose of the sixth, or Conversion phase, is to increase the angulation of the adjuster's body levers, and to return him to the settleback point on the HR. The center of motion for this phase is the episternal notch of the adjuster. The adjuster's body is turned more vertically about the episternal notch and backward along an imaginary line from his outside shoulder to his inside hip. Pushing his body backward along this line will angulate his shoulder and pelvic levers more greatly and return his spinal lever to the settleback point on the HR. The adjuster's spinal lever at the completion of the sixth phase should be at right angles to the HR, and his action lines coplanar with the subluxation's reduction pathway. If these conditions prevail, he is ready for the final or Kinetic phase of the adjustic act.

The sixth phase, because it increases the angulation of the pelvic and shoulder levers, aids in positioning the center of gravity back to the outside foot. Because the adjuster's center of gravity must be located behind his final adjustic act, it is vital to the efficiency of the adjustment that it be so located. In cases of very long HRs, it is necessary to execute another, the Pelvic Lever phase, in which the adjuster elevates his inside leg from a center of motion in the acetabulum of the outside leg. The purpose of this adjustic act is to obtain greater angulation of his action lines in the final phase, and it also aids in locating the center of gravity near the outside foot.

Conclusion

This paper attempts a discussion of the effective use of the location of the adjuster's center of gravity in the performance of the C1 motor skill. As in the case of any motor skill requiring stability, control of the center of gravity in the adjustment of C1 subluxations is vital to efficient performance. The need for excessive force is greatly reduced by obtaining the accuracy of rectilinear force along the reduction pathway, and vertebral corrections are made with less force and with greater ease.

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[3]*Ibid.,* pg. 167.

[4]*Ibid.,* pg.

[5]Anderson, T. McClurg, *Human Kinetics and Analysing Body Movements,* William Heinemann Medical Books Ltd., London, 1951, pg. 95.

N.U.C.C.A. Training Available as T.C.C. Postgraduate Courses

The basic N.U.C.C.A. training class is now available through the Postgraduate Division of Texas Chiropractic College. The 50-hour program is offered as four sequential, 12 ½-hour courses and will be taught by N.U.C.C.A.-approved instructors. Many doctors may find it advantageous for license renewal purposes to study the basic course as a postgraduate offering of a C.C.E.-accredited school.

The first module of the series introduces procedures for installing precision-aligned x-ray equipment and prepares the doctor to properly position and expose the analytic views, while the second course presents the method of radiographic analysis. In the third segment the doctor is introduced to N.U.C.C.A. biomechanical concepts and the measurement of postural distortion using the supine leg length sign and the Anatometer. Adjustic technique is presented in the fourth module.

The N.U.C.C.A. training sequence can be offered wherever sufficient demand exists to make presentation economically feasible. Organizations, groups, or individuals wanting more information on scheduling a class offering are invited to contact Dr. Ronald Grant, Postgraduate Director, Texas Chiropractic College, 5912 Spencer, Pasadena, TX 77505.

The 1982 NUCCA November Seminar

The 1982 NUCCA November Seminar was held at the Howard Johnson Motor Lodge in Monroe, Michigan from November 13th through November 17th. It was the largest NUCCA Seminar held to date. Doctors from throughout the United States and Canada and students from several Chiropractic Colleges attended. Several applicants who applied after the September deadline had to be refused because of lack of space.

Both the basic and the advanced work were taught, including the latest research findings of the National Upper Cervical Chiropractic Research Association, Inc. (NUCCRA).

The Seminar was conducted as a workshop, and actual office conditions were simulated. Reading boxes and sets of films were supplied. The x-ray films were those used in the NIH studies being conducted by NUCCRA. The analyses of the advanced registrants were checked for accuracy against the master listings used in the NIH studies.

Other subjects included C1 Classifications, the four basic type C1 subluxations, Identification of Structures, Mechanical Levers of the C1 Subluxation Complex, Resistances to the C1 Adjustment, Supine Leg Checking, X-ray Alignment and X-ray Patient Placement, Headpiece Placement, Adjusting Biomechanics, Adjusting Problems, Adjusting Technique, and Biomechanical Problems.

The program was under the supervision of Daniel C. Seemann, Ph.D. of the University of Toledo. Instructors were: Daniel C. Seemann, Ph.D., Marshall Dickholtz, D.C., Ralph R. Gregory, D.C., and Albert Berti, D.C.

Co-sponsoring the seminar was the University of Toledo, and a Certificate of Completion was issued by the University's Division of Continuing Education.

Donators to NUCCRA Research at the November Seminar were:

Dr. Albert Berti	Vancouver, Can.
Dr. Robert Brooks	Oklahoma
Dr. George Wentland	California

Magnification
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imbedded in the center at the top of the unit. See Figure 1.

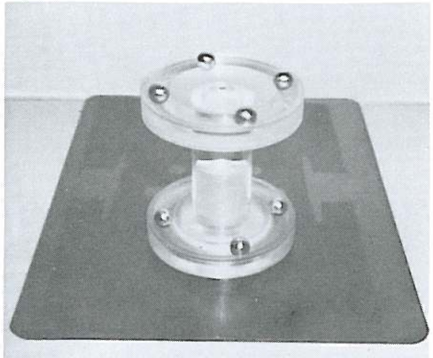


FIGURE 1
Checking device.

Ball bearings 1/2" in diameter were used for the study because the object should always have a circumference that is round, and all parts of the circumference equal distance to the film, if they are aligned properly to the film and x-ray beam.

PROCEDURE

First Investigation

The grid holder was placed in a horizontal position and the checking device was centered with a head clamp. The x-ray head was placed over the grid holder. See Figure 2.

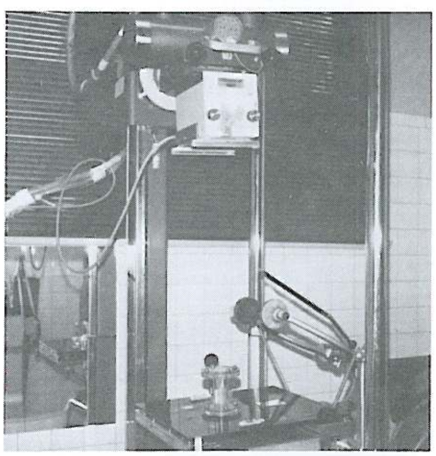
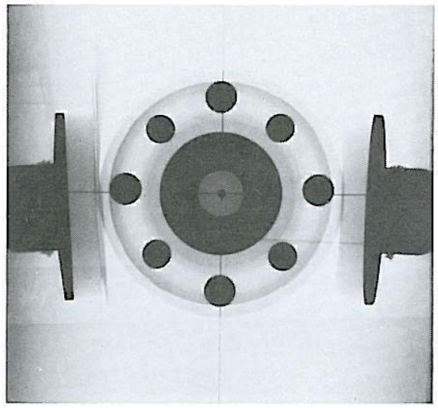


FIGURE 2
Checking device placed on the grid holder.

Radiographs were taken with the x-ray tube being moved slightly forward or backward over the checking device until the 1/8" ball bearing was projected in the center of the metal ring.

The first x-ray was taken with four 1/2" ball bearings in the concentric groove on each of the two levels. The ball bearings were placed at 90 degrees to each other on each level. See #1 x-ray positive.



X-RAY #1
1/8" ball bearing centered in the centering device.

Two additional x-rays were taken with a grooved ruler placed on top of the plastic device. See Figure 3. Two 1/2" ball bearings were placed 6" apart on the ruler and equal distances from the center of the device. The ball bearings were then 5-3/4" from the top of the film. An exposure was then made. The ruler was turned 90 degrees from the first position and another exposure was taken. On each of the last two exposures there were one or two ball bearings on one or both levels of the plastic unit. See x-ray positive #2, #3, and Figure 3. (The smaller ball bearing images are the ones closer to the film.)

No distortion was noted on any of the bearings that were as much as 5-3/4" from the surface of the films and

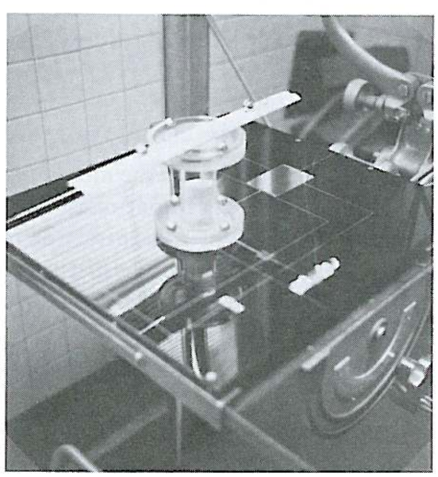
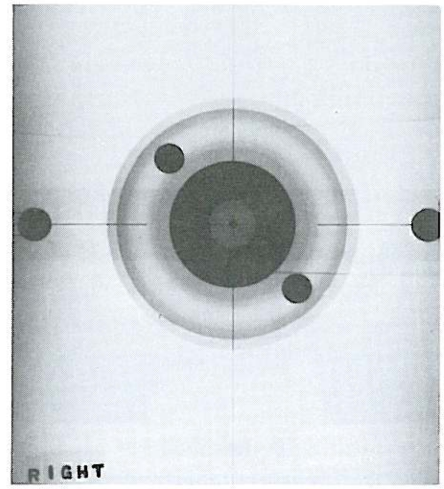
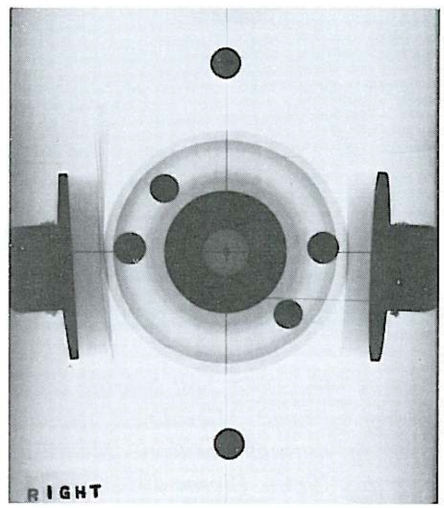


FIGURE 3
Grooved ruler placed on checking device.



X-RAY #2
1/2" ball bearings on grooved ruler located at the sides of centering device located 5-1/4" from the film.

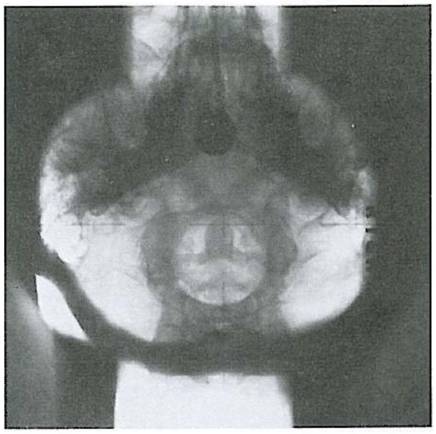


X-RAY #3
1/2" ball bearings on grooved ruler located at the top and bottom of the centering device located 5-1/4" from the film.

three inches from the central ray. The microline grid was used with this procedure.

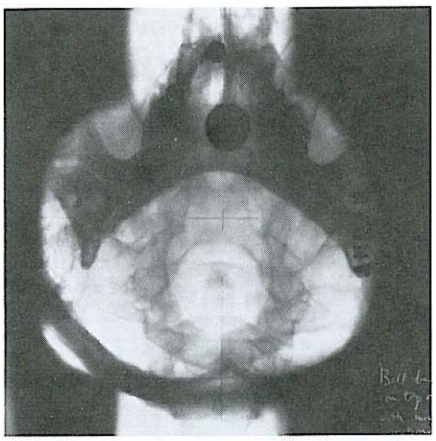
Second Investigation

There is more scattered radiation on a heavier object such as a head. Therefore, a nasium and vertex film was taken with a 1/2" ball bearing placed on top of the head for the vertex film. The patient was in a sitting position, with the head placed close to the grid holder or bucky. The bearings were about 8 inches from the film on the nasium x-ray and about 9-1/2 inches from the film on the vertex x-ray. On



X-RAY #4

1/2″ ball bearings taped to forehead—Vertex view.



X-RAY #5

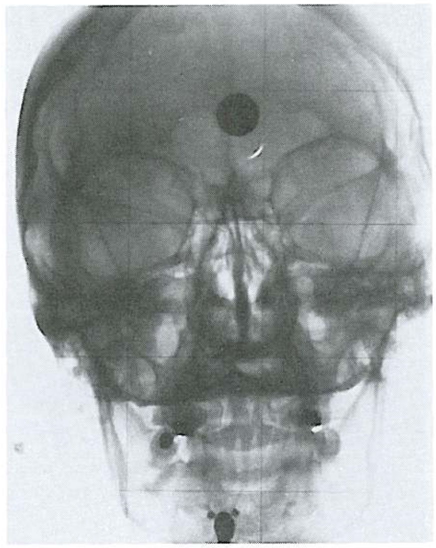
Vertex view. 1/2″ ball bearing taped on top of head. Microline stationary grid in normal position. Measured 18mm x 19mm. (Some distortion.)

the nasium film the ball bearing image measured 16-1/2 mm x 17-1/2 mm. On the vertex film, the measurements were 17 mm x 18 mm. See x-ray positive #4. The same x-ray equipment was used as described previously, with the microline grid. The grid lines being in a standard vertical position when the grid holder was in a vertical position.

The microline grid was then turned ninety degrees and nasium and vertex films were taken. The ball bearing images were distorted in the opposite direction of the previous ball bearing images.

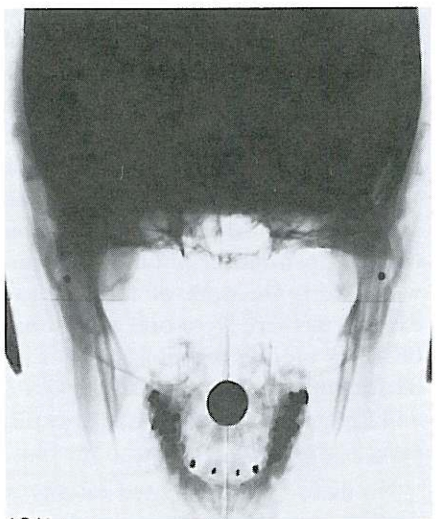
Third Investigation

The next procedure was to use a bucky instead of a stationary grid, when taking the nasium film. The ball bearing image appeared round on the film.



X-RAY #6

Nasium view. 1/2″ ball bearing taped to forehead. Microline grid turned 90°. Measured 15-1/4mm x 16-1/4mm. (Some distortion.)

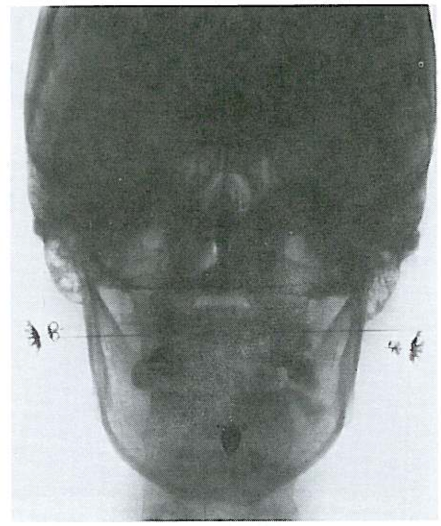


X-RAY #7

Nasium view. 1/2″ ball bearing taped to tip of nose. Microline grid in normal position. Measured 16-1/2mm x 17-1/2mm. (Some distortion.)

Conclusions

The heavier the object the more scattered x-rays. Scatter radiation distorts the object or subject in the direction of the stationary grid lines. The distortion when the grid was used was less than 6% when the object was 8 to 9-1/2″ from the film. The object being metal, had very little or no x-ray absorption, probably caused more scatter x-rays. When a bucky was used there wasn't any distortion due to less scatter and less concentration of scatter radiation on the film.



X-RAY #8

Nasium view. 1/2″ ball bearing taped to forehead. Full spine bucky. Measured 16-1/4mm x 16-1/4mm. (No distortion.)

If you consider an atlas in viva placed about 4″ to the film, either a nasium or vertex film rather than 8 or 9-1/2″ in this study the distortion would be much less because the magnification factor is less.

If rotatory measurements are used on x-ray films they can be valid if there is proper installation and alignment of the x-ray equipment. As a result distortion from x-rays are negligible even with a stationary microline grid that directs scattered x-rays in the direction of the lines in the grid, and anatomical structures are magnified equally.

This study suggests that the effects of x-ray magnification are minimal especially if the object is less than 9-1/2″ from the film. There was some distortion when the microline grid was used, but when the bucky was used there was none.

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[3]Luster and Keats, *Atlas of Roentgenographic Measurement,* 4th Edition. Year Book Medical Publishers, Inc., Chicago: 1978.

NUCCRA Board Establishes Ruth O. Gregory Memorial Fund

At the 1982 NUCCRA November Board meeting, the Directive Board of the National Upper Cervical Chiropractic Research Association, Inc. (NUCCRA) unanimously voted to establish a Ruth O. Gregory Memorial Fund. The Fund is to exist for the life of the organization, and cannot be financially depleted.

The Memorial Fund was established in appreciation for the time and effort that Ruth O. Gregory donated through the years to the NUCCA-NUCCRA organizations. Her contributions frequently involved the sacrifice of her personal desires.

Ruth O. Gregory died June 9, 1982 at the Toledo Hospital. Seriously ill for the past two years, she was, however, able to attend some of the 1982 NUCCA Convention and Educational Conference, and at its yearly banquet received a beautiful tribute for her long and arduous services.

Many contributions were received from doctors, patients, and friends in Ruth Gregory's memory immediately following her death which were turned over to NUCCRA Research projects. These contributors are listed in the October, 1982 *Monograph.*

All donations to the Ruth O. Gregory Memorial Fund will be used to further the chiropractic research work of NUCCRA in which she was so interested and involved.

Donators to the Ruth O. Gregory Memorial Fund are listed below:

Dr. H. Culver	Oklahoma
Dr. L. Vinson	Alabama
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Dr. K. Denton	Michigan
Markey Foundation	Ohio
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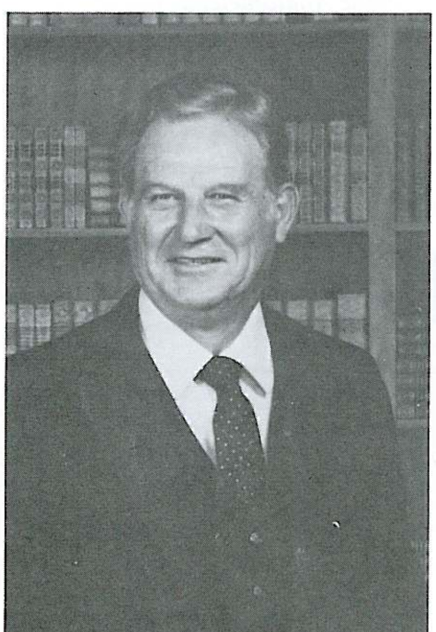
Dr. Lonnie Pond	New Mexico
Dr. G. Hasick	Canada
Dr. K. Nakano	California
Dr. R. Brooks	Oklahoma
Dr. O. Portmann	Washington
Dr. M. W. Clark	Oklahoma
Dr. B. O'Brien	Hawaii
Dr. G. Cripe	California
Dr. G. J. Kilian	Canada
Dr. J. S. Smith	Arizona
Dr. R. L. Wiedemann	Wisconsin
Dr. E. Stein	Washington
Dr. R. Juszczyk	Ohio
Dr. K. Fox	Ohio
Dr. D. Moon	Ohio
Mrs. Caroline Galor	Connecticut
Dr. Janice Lindgren	Oklahoma
Mr. Bert Kiser	Illinois
R. R. Gregory, D.C.	Michigan
Helen C. Fitts	Ohio

IN MEMORIAM
Dr. Boyd Jackson

NUCCA has lost a friend and Chiropractic has suffered a great loss in the recent passing of Dr. Boyd Jackson on Wednesday, November 17, 1982. Dr. Jackson, 64, died of an apparent heart attack in his sleep at home.

Not only a distinguished chiropractor, Dr. Jackson was a prominent citizen in Winfield, Alabama, an active participant in the city's religious, civic and business life. For 33 years, he served as choir director at the Winfield Baptist Church. Dr. Jackson was also a Mason, member of the Chamber of Commerce, and a past member of the Lions Club. He was state representative from Alabama for the International Chiropractors Association for 18 years, and was elected a Fellow in the ICA. He was very active in the Alabama State Chiropractic Association. He was also a Veteran of the Second World War.



Dr. Jackson graduated from the Palmer College of Chiropractic in June of 1947. On July 1, 1947, he opened a practice in Winfield, Alabama where he practiced until his death. In 1950 Dr. Jackson attended his first Grostic seminar in Louisville, Kentucky, and continued seminars until 1964 in which year Grostic seminars ended because of the death of Dr. John F. Grostic. In 1976, Dr. Jackson joined the National Upper Cervical Chiropractic Association (NUCCA), remaining a supporter and member until his untimely death.

The *Monograph* extends its heartfelt sympathy to Dr. Jackson's wife, Mrs. Katherine Strickland Jackson, and to his family.

Change of Address

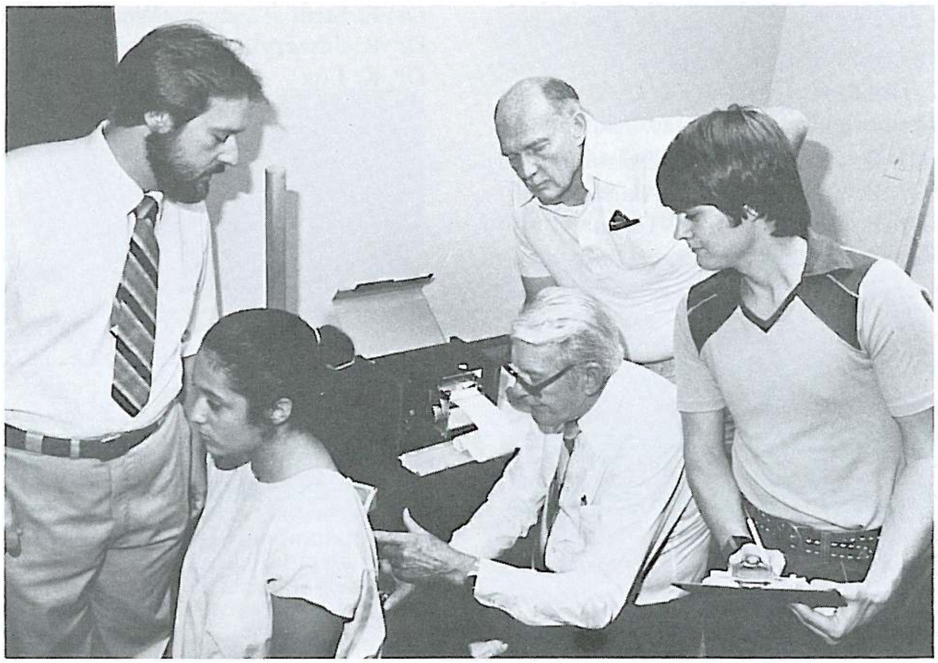
Many MONOGRAPH copies and other NUCCA and NUCCRA material are returned because of the subscriber's change of address. Please notify the NUCCA editor, 221 West Second Street, Monroe, Michigan 48161, of any change of address.

Anatometer Placed at T.C.C.

Student interns at the main Clinic of Texas Chiropractic College in Pasadena, Texas, can now monitor their patients' progress with the Anatometer. The patented postural measurement unit has been loaned to the College for an initial period of one year by Benesh Tool and Manufacturing Co. of Monroe, Michigan, on the recommendation of Dr. Ralph R. Gregory, President of N.U.C.C.A. "We're very pleased for our student doctors to have the use of this instrument," said Dr. John Barfoot, T.C.C. President.

The Anatometer was delivered to T.C.C. by air freight and was assembled by Mr. Peter E. Benesh on September 29. It is the first instrument in the T.C.C. Clinic's new Instrumentation Room and is available to any intern or faculty member who has been trained in its use, regardless of adjustive technique used. To date over fifty students and faculty members have been approved to use the device. Some were students in the Upper Cervical technique course last fall, which included laboratory sessions with the instrument. Spring and summer term Upper Cervical courses will also include Anatometer training, and additional out-of-class sessions are planned as well.

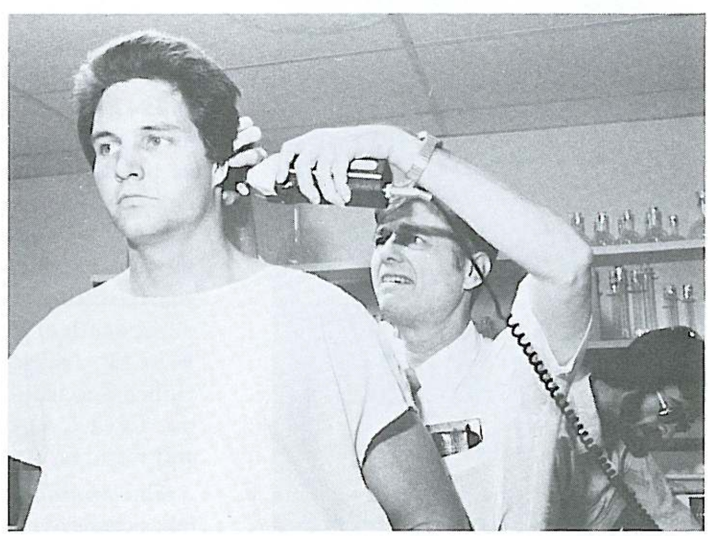
The Anatometer saw its first use at T.C.C. on October 2-3 in a clinical research project investigating the consistency of a number of chiropractic clinical measurements and observations. Twenty-six entering first-year



Dr. John B. Clark takes ThermoScribe II readings on subject as research assistant Michael Polson notes findings.
Dr. Elmer A. Addington (left) and Dr. Jim Reeves, research assistant (second from right) observe procedure.

Dr. W. Andrew Shepherd measures subject's pelvic and spinal distortion with the Anatometer as research assistant Randy Andrews records findings.

Research subject turns in completed data forms to Dr. Elmer A. Addington, project director.



Dr. David P. Mohle, Vice President for Academic Affairs at T.C.C., takes Derma-Therm 500 reading on student subject as Roland Ferguson, research assistant, notes data.

T.C.C. students and spouses abstained from receiving any adjustment, manipulation, or physical therapy for a period of one month in order to stabilize their spinal configurations. Then the subjects were measured repeatedly over two days by clinical observers at each of eleven stations set up in the T.C.C. Clinic.

Drs. John B. Clark of Kerrville, Texas, and W. Andrew Shepherd, of Austin, Texas, alternated in performing Anatometer measurements, supine leg check, and ThermoScribe-II graphs. Dr. Clark also conducted a number of Anatometer training sessions for several days prior to the study. Other observations made in the project included thermographs with the Derma Therm 500, weight-bearing as measured by the Chirotron instrument, physical indicators used in the Logan Basic and Sacro-Occipital techniques, respectively, static and motion palpatory listings of the full spine, and a number of podiatric and orthopedic measurements of lower-limb biomechanics.

The object of the study, according to principal investigator Dr. Elmer A. Addington of T.C.C.'s Department of Principles and Technique, is to determine a number of chiropractic indicators that have a high reliability and objectivity and would therefore be acceptable as measures of clinical progress in controlled trials and chiropractic care. Additionally, correlational techniques will be used to investigate empirical relationships between those observations which demonstrate good measurement consistency.

Eight other T.C.C. faculty members and 18 student research assistants also participated in the study. Data transcription has been completed, and statistical analysis is underway.

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Dr. Ralph R. Gregory
221 West Second Street
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The 1983 NUCCA Convention and Educational Conference

The 1983 NUCCA Convention and Educational Conference will be held at the Howard Johnson Motor Lodge, Monroe, Michigan, starting Saturday, May 7th and closing Tuesday, May 10th at 12:00 noon. It will be sponsored by the National Upper Cervical Chiropractic Association, Inc. and the University of Toledo. A Certificate of Completion will be awarded by the University of Toledo's Division of Continuing Education. Participants who intend to apply for license-renewal credits based on the Educational Conference must attend all educational sessions, will be monitored, and their attendance recorded at each session on the duplicate NUCCA Attendance Record Cards. Daniel C. Seemann, Ph.D., associate professor at the University of Toledo and Research Advisor to the National Upper Cervical Chiropractic Research Association, Inc. (NUCCRA) will supervise the Conference.

Subjects will include basic and advanced x-ray analysis, classifications of the C1 subluxation complex, patient placement for the adjustment according to the basic type subluxations, mechanical levers of the C1 subluxation, vertebral resistances to the adjustment, anatometer exercises, supine leg-check, adjusting techniques, adjusting biomechanics, and kinesiological principles of adjusting the C1 subluxation. James F. Palmer, M.S. of the University of Toledo will present a review of Government X-ray documents, and E. A. Addington, M.A., D.C., will discuss his findings regarding upper cervical research at the Texas Chiropractic College.

Fees for professionals are $300.00. Doctors in practice for two years or less are $200.00, and students are admitted for $150.00.

NUCCA will host a banquet on Monday evening, May 9th at the French-Italian Inn.

Income from the Convention above expenses will be used to finance NUCCRA research.

Further information may be obtained by writing NUCCA, 217 West Second Street, Monroe, Michigan 48161.

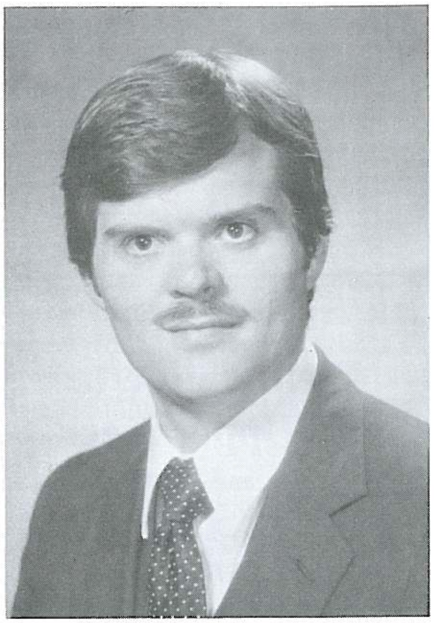
Field Guide to the Upper Neck

The author and illustrator of the *Field Guide to the Upper Neck (FGUN)*, Dr. Robert E. Burns, has produced a book that should be of great interest to all Upper Cervical practitioners. It is a required tool in the explanation of Upper Cervical to patients.

Dr. Burns summarizes his book as follows: "The *FGUN* has fifty pages, printed on one side. Half of the book is text and half is illustrations. There are over 200 illustrations arranged into 91 figures, with a brief paragraph of text to explain the illustrations in each figure. A list of the major topics in the *FGUN* includes: vertebral contour subtleties, vascular passages, spongy and cortical bone densities, dozens of 'ADI' variations, articular projectional variations upon common misalignment patterns, flexion and extension lateral cervical analysis, occipital alignment with atlas, craniovertebral malformation, brainstem neuroanatomy, upper cervical ligaments, CSF cisterns, several 'in situ' views of the spinal cord and medulla, implications of an upper cervical subluxation, progression of ossification and developmental anomalies, transverse sections through the upper cord and medulla, paravertebral structures involved with misalignments and postural changes re: major vessels, cranial nerves, and sympathetic nerves."

The *Field Guide to the Upper Neck* sells for $5.00. Include $1.00 for shipping and handling. Order from Lakeview Research/Robert E. Burns, D.C., 1717 Bath Road-H2, Bristol, Pennsylvania 19007.

Ralph R. Gregory, D.C.



Announcement

Dr. R. L. Wiedemann is pleased to announce the opening of his office at 1478 Kenwood Center in Menasha, Wisconsin. Dr. Wiedemann is a 1977 graduate of Palmer College of Chiropractic, where he was awarded B.S. and D.C. degrees. A native of Iowa, he received his undergraduate training at Muscatine Community College in Iowa and at Union College, Lincoln, Nebraska.

While at Palmer College, he served as a member of the President's Committee on technic and Philosophy. Dr. Wiedemann also served as a member of the Upper Cervical Society and was elected to serve as Vice President for one term and as President for two terms. As an intern in the Palmer Clinic Dr. Wiedemann served as a Supervisory Intern and was awarded a certificate of superior clinical proficiency upon graduation. In addition to being a Diplomate of the National Boards of Chiropractic Examiners, Dr. Wiedemann holds licenses in the states of Iowa, Montana, Tennessee, Washington and Wisconsin.

Dr. Wiedemann planned installation of an Anatometer in his office on or about December 1, 1982.

NUCCA Scholarship Awards

It was announced at the May NUCCA Convention that the NUCCA Directive Board has authorized a scholarship grant-in-aid award of $200.00. This sum will be paid to chiropractic students currently enrolled in a chartered college of chiropractic who submit to the MONOGRAPH editor an acceptable article pertaining to the upper cervical spine. The announcement was made by Professor Daniel C. Seamann, NUCCRA Research Advisor.

Submitted articles may deal with any aspect of the Occipital-atlanto-axial area of the cervical spine: Mechanics, neurological manifestations, analyses of cervical subluxations, corrective techniques for cervical subluxations, detrimental effects of upper cervical subluxations on the human organism, etc.

All entries will be judged by the NUCCA Directive Board and by Professor Seemann. Their judgement will be final. Accepted articles become the property of the National Upper Cervical Chiropractic Association, Inc. Winners will be announced at the 1983 NUCCA Convention.

NUCCA will attempt to return all manuscripts that are accompanied by a self-addressed, stamped envelope. The organization will not be responsible for lost or mislaid material. The writer should retain a carbon copy.

Further information is available by writing:

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