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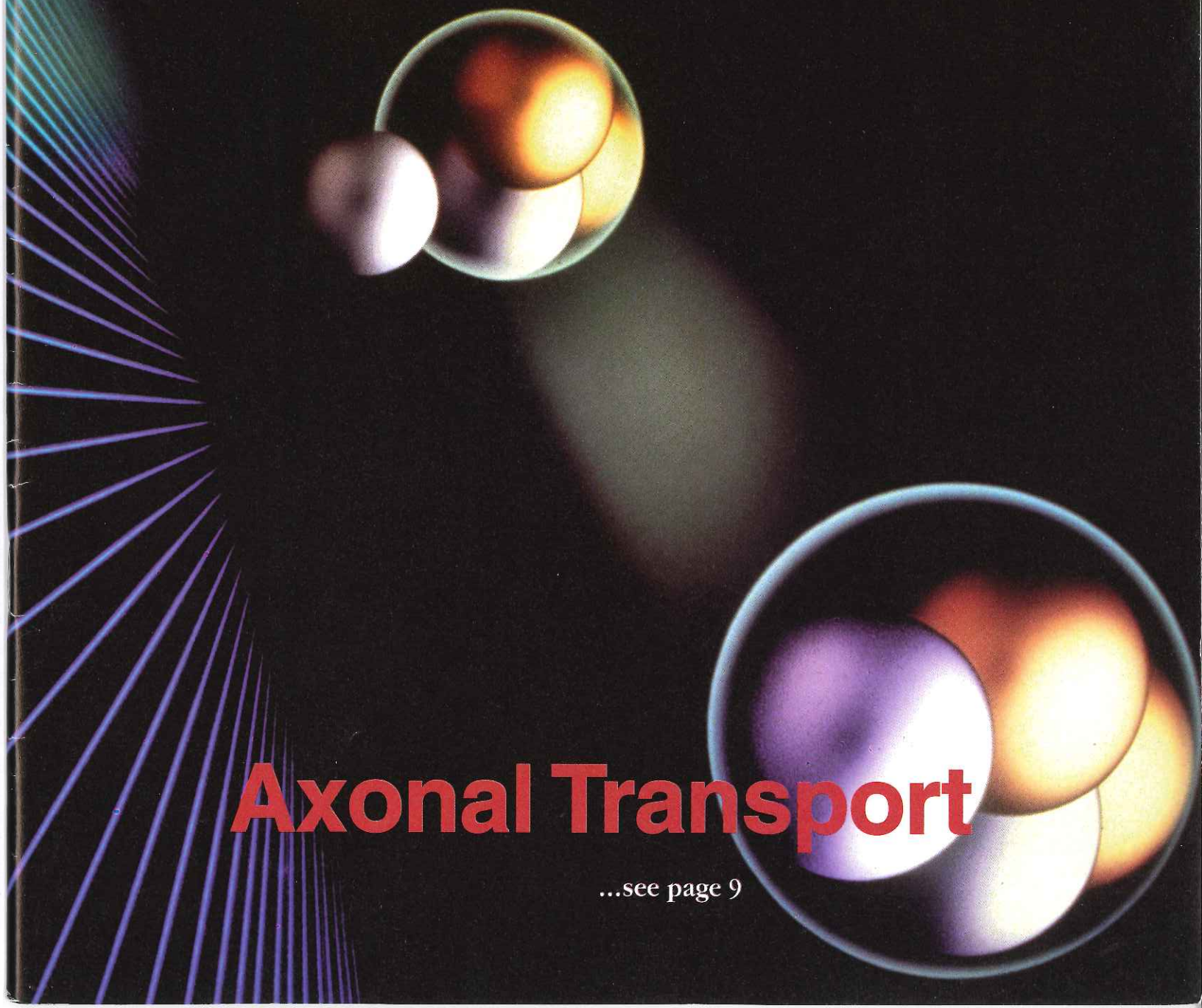

Axonal Transport

...see page 9

Concept and Technique of the Levitor Orthotic Device

(Jungmann Method)

August 26-27, 1995

AAO Headquarters' Building, Indianapolis, Indiana

CME Hours – 16 Category 1-A

Program Chairperson

Michael Kuchera, DO, FAAO

Objective

Participants in the Levitor Tutorial will qualify to be directors of certified Levitor Orthotic Centers with all the prerequisite knowledge and skills necessary to choose, fit and monitor patients benefiting from the Levitor Treatment protocol. Physicians with unlimited license will be able to enroll in this program,

Conference Location

Pyramid III, Conference Rooms1&2
3500 DePauw Boulevard
Indianapolis, IN 46268-1136

Indy Connection Airport Limousine Service can be called if you need transportation to and from the airport. A $12.00 (not including gratuity) one-way when you stay at the Holiday Inn North. Their phone number is 241-7100. Call ahead and make reservations.

Special rates obtained for this program are $70.00 per day for single/double occupancy.

To make reservations for this conference, call Holiday Inn North, 3850 DePauw Boulevard, Indianapolis, IN 46268. Phone (317) 872-9790 or FAX (317) 871-5608. A one night room deposit is required to guarantee your reservation.

Course Fee:

AAO Members	$400.00
AAO Non-Members	$500.00
(no discounts available)	

Tuition includes the Levitor device, Radiographic postural study, course materials, continental breakfasts, luncheons and breaks.

Program

Material to be covered:

Tutorial Goals

History of the Levitor

Radiographic Changes: Pelvic Index in Normal Aging and with Accelerated Decline

The Levitor, General Principles

Patient Selection

Case History #1

Levitor Mechanics: Bending and Pressure Distribution

Demonstration – Lab: Fitting of the Levitor

Construction of the Levitor

Workshop: Construction of the Levitor

Fitting a Patient: The Art of Bending and Tailor Fitting. Expected and Documented Results

Follow-up and the Role of Manipulation in the Levitor Patient

Lab: Follow-up and Manipulation

Panel Discussion, Case Histories

A Regional Center's First Year Report

Regional Center Expectations

Lab: Levitor Recheck and Means of Modification

Panel Discussion: Questions most often asked by patients and physicians

Office Concerns Regarding the Levitor

Panel Discussion: General Questions and Answers

Summary of the Course and Distribution of Certificates

Registration Form

Name

Address

City State Zip

Daytime Phone

AOA # Col/Yr Grad

We Accept MasterCard and Visa (circle one)

Card Number

Expiration Date

Signature

Refund Policy:
All cancellations must be received in writing at least two weeks prior to the opening day of the educational program. An administrative fee of 15 percent of the total registration fee will be charged for all cancellations made prior to July 26, 1995. No-shows and cancellations received after July 26, 1995 will receive no refund.

Attire:

In order to allow for proper fitting of the Levitor, registrants should wear appropriate loose-fitting clothing.

American Academy of Osteopathy

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THE AAO
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Subscriptions: $25.00 per year

From the Editor

by Raymond J. Hruby, DO, FAAO

Circles

What goes around comes around. I'm sure we have all heard this famous adage. I was reminded of it recently when I participated in a meeting which was attended by representatives of almost all of our osteopathic colleges. Over the course of several days, I had many conversations with these folks. Among other things, each one talked about his or her area within their college, problems facing the profession at large, and other such things. Some reports were very positive, some not so positive. A few were particularly negative.

As I listened to each person discuss problems and concerns, it occurred to me that these items of discussion are the same ones, I have heard about over and over again, at least during the years I have been associated within the osteopathic profession. Two questions came to mind: 1) How long have these problems existed within the osteopathic profession? and 2) when, if ever, do we break out of this circle and begin to resolve some of these issues?

On the flight home from this meeting, I was rereading the book *Frontier Doctor, Medical Pioneer* by Charles E. Still, Jr., the grandson of A. T. Still. Interestingly, the chapter I happened to be looking at talked about some of the issues facing A. T. Still and his newly formed school and profession. I was struck by the similarity between his problems and some of the ones I had heard about over that weekend. Let me illustrate by mentioning a few of the problems expressed by colleagues, followed by what "Dr. Charlie" (if you will forgive my presumptuous use of familiarity) had to say about the same or similar things:

Several people discussed the need for more unity within our profession. This is what Dr. Charlie had to say: "Many of the early graduates (of the American School of Osteopathy), after starting their practices in a particular town or city, began to feel that their locations 'belonged' to them solely. They resented the arrival of other practitioners. It actually took several years before they found that additional members, of their own profession in a community, would be a help to them rather than a hindrance. As their practices expanded, these same graduates discovered there was no way any one person could take care of all the prospective patients in most communities, no matter how small a community. This was one of the first steps in creating a need for national and state organizations, the rapidly growing profession needed cooperation, not independent operators."

Another concern was that the profession, because of hospital closings, mergers and the availability of allopathic training programs for our graduates, would be "swallowed up" by the medical profession. Doctor Still had a different thought. According to Dr. Charlie: "The Old Doctor, who had been through many other battles with the medical profession and had survived them to bring this new profession into existence, often said, 'We need not fear our enemies who have contested every step we have taken. They cannot harm us; their kicks are only a blessing in disguise. Our great danger, in fact the only danger that could threaten the future of osteopathy, are the mistakes of those who profess to be our friends."

Still another concern was that not enough of our students are truly interested in the principles of osteopathy; some are more interested in the allopathic aspects of medicine. Dr. Charlie said, "In a short five years (of the ASO), the character of the student body had changed rather dramatically. During the first three years, nearly all of the students came from families whose members had benefited from osteopathic services. Few of them knew whether a livelihood could be made from their new profession. Now there were successful practitioners scattered all over the country, most of whom were doing quite well financially. There were no students enrolled at ASO who admitted they were there just to get a diploma and get out so they could go into the field and make money."

And finally, some commented that with all the changes going on in our current health care system, the practice of osteopathic medicine was just not as much fun as it used to be. Dr. Charlie said of his grandfather, "He continued to think about the days before the infirmary when, during pleasant weather before the onset of winter, his patients gathered under the trees, often with picnic baskets, waiting to be seen. Many were lame and some were blind, but before he would treat any of them, he would go out on the lawn and join in their conversation. He enjoyed their laughter at some of his jokes. And, he would often treat his patients right there under the trees."

These are only a few of the items I heard discussed at the meeting, but you get the picture. The answer to my first question seems clear: these problems have been around for as long as the profession has existed. As for my second question, I have no answer. One thing seems evident, though: *what goes around does indeed come around.*❑

Instructions for Authors

The American Academy of Osteopathy (AAO) Journal is intended as a forum for disseminating information on the science and art of osteopathic manipulative medicine. It is directed toward osteopathic physicians, students, interns and residents and particularly toward those physicians with a special interest in osteopathic manipulative treatment.

The *AAO Journal* welcomes contributions in the following categories:

Original Contributions

Clinical or applied research, or basic science research related to clinical practice.

Case Reports

Unusual clinical presentations, newly recognized situations or rarely reported features.

Clinical Practice

Articles about practical applications for general practitioners or specialists.

Special Communications

Items related to the art of practice, such as poems, essays and stories.

Letters to the Editor

Comments on articles published in *The AAO Journal* or new information on clinical topics.

Professional News

News of promotions, awards, appointments and other similar professional activities.

Book Reviews

Reviews of publications related to osteopathic manipulative medicine and to manipulative medicine in general.

Note: Contributions are accepted from members of the AOA, faculty members in osteopathic medical colleges, osteopathic residents and interns and students of osteopathic colleges. Contributions by others are accepted on an individual basis.

Submission

Submit all papers to Raymond J. Hruby, DO, FAAO, Editor-in-Chief, MSU-COM, Dept. of Biomechanics, A-439 E. Fee Hall, East Lansing, MI 48824.

Editorial Review

Papers submitted to *The AAO Journal* may be submitted for review by the Editorial Board. Notification of acceptance or rejection usually is given within three months after receipt of the paper; publication follows as soon as possible thereafter, depending upon the backlog of papers. Some papers may be rejected because of duplication of subject matter or the need to establish priorities on the use of limited space.

Requirements for manuscript submission:

Manuscript

1. Type all text, references and tabular material using upper and lower case, double-spaced with one-inch margins. Number all pages consecutively.

2. Submit original plus one copy. Please retain one copy for your files.

3. Check that all references, tables and figures are cited in the text and in numerical order.

4. Include a cover letter that gives the author's full name and address, telephone number, institution from which work initiated and academic title or position.

Computer Disks

We encourage and welcome computer disks containing the material submitted in hard copy form. Though we prefer Macintosh 3-1/2" disks, MS-DOS formats using either 3-1/2" or 5-1/4" discs are equally acceptable.

Illustrations

1. Be sure that illustrations submitted are clearly labeled.

2. Photos should be submitted as 5" x 7" glossy black and white prints with high contrast. On the back of each, clearly indicate the top of the photo. Use a photocopy to indicate the placement of arrows and other markers on the photos. If color is necessary, submit clearly labeled 35 mm slides with the tops marked on the frames. All illustrations will be returned to the authors of published manuscripts.

3. Include a caption for each figure.

Permissions

Obtain written permission from the publisher and author to use previously published illustrations and submit these letters with the manuscript. You also must obtain written permission from patients to use their photos if there is a possibility that they might be identified. In the case of children, permission must be obtained from a parent or guardian.

References

1. References are required for all material derived from the work of others. Cite all references in numerical order in the text. If there are references used as general source material, but from which no specific information was taken, list them in alphabetical order following the numbered journals.

2. For journals, include the names of all authors, complete title of the article, name of the journal, volume number, date and inclusive page numbers. For books, include the name(s) of the editor(s), name and location of publisher and year of publication. Give page numbers for exact quotations.

Editorial Processing

All accepted articles are subject to copy editing. Authors are responsible for all statements, including changes made by the manuscript editor. No material may be reprinted from *The AAO Journal* without the written permission of the editor and the author(s).

Message from the Executive Director

by Stephen J. Noone, CAE

With the Academy's fiscal year ending on July 31, AAO Treasurer Anthony Chila and I have been diligently engaged in the development of a proposed 1995-1996 budget for consideration by the AAO Board of Trustees at their July meeting. The budget development process includes input from all committee chairpersons as they plan activities for the next fiscal year.

As Dr. Chila has reported frequently in the past, the Academy's leadership established a strong policy of financial management to move the organization away from recent deficit budgeting toward a goal for A balanced budget by the 1997-1998 fiscal year. The Academy is currently in its second year of living within this policy. The Board will face significant challenges in the next three years as it fully implements this goal without diminishing the services and programs for AAO members.

How does the Academy fund its operations? I would like to share some observations as reflected in the current year's budget data:

Revenues

43% Educational programs
25% Membership dues
16% Publications
10% Grants/donations
6% Interest and miscellaneous

This revenue distribution is an excellent one according to the literature on not-for-profit organizations. The norm is that associations must continually search for *non-dues* sources of revenues.

Disbursements

28% Staff payroll/benefits
26% Educational programs
14% Office operations
9% Boards/Committees
9% PublicationS for sale
7% Outreach
5% Membership publications
2% UAAO

The distribution of expenses likewise is within the normal range for not-for-profit associations. Since the Academy's mission is primarily an educational one, this accounts for the significant allocations in educational programs and publications.

What about the future? As the Board of Trustees goes about the task of budget projections, they must face the reality that the deficits must be reduced by 25 percent for each of the next three years in order to implement the goal of a balanced budget by 1997-1998. These are some of the facts which the Trustees must consider as they plan for the future:

1) While Academy membership is steadily increasing, the Board will not find significant dollars for debt reduction in recruitment of new members. It will take 52 new members paying the full $175 dues to increase revenues by *one percent.*

2) There is potential additional revenue in the sale of AAO publications. For this reason, the Academy has stepped up its marketing efforts and expanded its overseas promotions. In addition to its annual yearbook series, the Board also has published one new text (*Functional Methods*) and has another book currently under negotiations. One caution is that marketing and production still require funding prior to generating sales.

3) Grants and donations are another source of revenue. The Board reactivated the annual fund — The Golden Ram Society — which exceeded budgeted projections this year. The Board also has challenged committee chairpersons to identify potential sources of grant funds to supplement the Academy's operations.

4) The final source for increased revenues are the Academy's educational programs. Within this category there are subsets of revenue, i.e. tuition, program

grants to underwrite speakers and exhibitors for trade shows.

Tuition for the Academy's educational programs is higher than courses sponsored by other medical organizations. One reason is that the cost of paying speakers and table trainers is borne primarily by tuition, not by grants from pharmaceutical companies and medical equipment manufacturers as is the case with most medical societies. Also, the Academy's programs are normally hands-on courses which require table trainers to assist participants, treatment tables for laboratory practice and more square feet of meeting space to accommodate the skill-building sessions.

As the Academy has ventured into holding an exhibition at the annual Convocation, industry supporters have not been beating down the door to attend. Pharmaceutical companies appropriate their marketing dollar more heavily for promotion of recently developed products, e.g. those for treatment of hypertension and infectious disease. Right or wrong, the perception is that Academy members are not an ideal target market for the pharmaceutical industry.

5) If the Academy cannot substantially increase revenues, why not just cut expenses? The first place to cut could be staff. However, when I started my duties as CEO of the Academy in April 1992, there were six staff members, the same number as currently employed. Since that time, the services to AAO members have increased substantially. Hence, cutting staff surely would result in a reduction in services to Academy members.

Another substantial area of expense is educational programming. However, if the Trustees reduce the courses offered, they correspondingly cut out potential sources of revenue. Other expense areas are likewise critical to the viability of the organization.

What is the answer to the dilemma? There will obviously be hard choices for the Trustees in the next three years. However, in my judgment, the Academy must aggressively work to increase its revenues by (1) promoting increased attendance at its educational programs, (2) marketing its publications worldwide, (3) recruiting more physicians as AAO members and (4) securing substantial donations from individuals and grantors to supplement its operational expenses. The AAO has established itself as a credible source of education in osteopathy and must now begin to capitalize on that recognition as it seeks to expand its sphere of influence.

Coding Alerts!

Please note this advisory and inform your staff members responsible for coding your professional services.

The Health Care Financing Administration (HCFA) has notified all Medicare intermediaries that it will NOT permit separate payment for CPT code 97265 (joint mobilization) on the same day when CPT code 97250 (myofascial release) or CPT codes 97260-97261 (manual manipulation) have been reported for the same patient. HCFA has deemed these services as overlapping. Likewise, when CPT codes 98925-98929 (osteopathic manipulative treatment) is billed to Medicare, Medicare carriers are directed to deny payment for 97265 (joint mobilization), 97250 (myofascial release) and 97260-97261 (manual manipulation). Osteopathic physicians who fail to heed this advisory run the risk of a Medicare audit and may be penalized for fraudulent practice.

CHAMPUS

July 15, 1995 is the expected date for implementation of CHAMPUS' revised policy for payment of OMT in addition to E/M services. The Civilian Health and Medical Program of the Uniformed Services had previously notified the American Osteopathic Association that it had revised its Policy Manual to read as follows:

A separate charge for an evaluation and management (E/M) (99201-99205 or 99211-99215) may be allowed jointly with an osteopathic manipulative treatment (0MT) (98925-98929) when the OMT is provided on the same day, if it can be justified that the E/M is a significant, separately identifiable service.

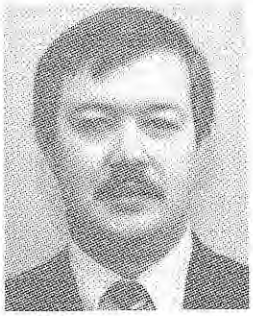
However, CHAMPUS has experienced a delay in policy implementation. Prior to billing CHAMPUS for OMT and E/M services, AAO members are encouraged to contact their CHAMPUS intermediary on July 15, 1995 to confirm that this revised OMT policy has gone into effect.

Message from the President

by Boyd R. Buser, DO

Facing the Challenges of Growing Up

Editor's Note: *The following is the acceptance speech Dr. Buser gave during the 1995 Convocation Presidential Banquet this past March at the Opryland Hotel in Nashville, TN.*



Once upon a time, there was a group of physicians called the American Academy of Osteopathy. Nice people, they enjoyed getting together every year, like a family reunion. Gradually, they began to pay somewhat less attention to activities outside of their group, preferring their own excellent company and camaraderie.

Then, just a few years ago, some stirrings began and suddenly the group and the osteopathic medical students associated with them was impressive. It marked a turning point in the Academy's existence. A new generation of leaders became active. The Academy abandoned its inward-looking existence. Our goals became leadership in education and activism within and outside our profession. Our growth in these areas has been successful in many ways, but not without cost. I call this next phase of our existence, "Facing the Challenges of Growing Up".

The challenges I see facing us, and I intend to address during my term as your president are as follows:

1. **We must improve our ability to serve our members.** Recognition and appropriate reimbursement for osteopathic manipulative procedures is essential for our survival. Therefore, we must continue to educate and assist our members in appropriate coding and documentation procedures. We must become more active in research and participate in the development of clinical practice guidelines.

2. **We must continue to establish our leadership within the osteopathic profession.** To accomplish this we must continue to expand our educational offerings. Our expertise and advice is sought by the AOA leadership, and we must continue to support them in their drive to reestablish the distinctiveness of our profession.

3. **Our professional relationships with other healthcare providers must continue to evolve.** Training and certification of MDs in OMM is an important step in this process. Clarification of our relationship with DOs in other countries is also essential. These steps will help us develop educational policies relating to other allied health professions. The world of manipulative treatment is ever-growing, and it is the Academy's responsibility to participate as leaders in this process.

All of these strategies *must* be accomplished in a fiscally responsible manner. This is essential to our survival as an organization. The Academy's leadership and staff are committed to you, the membership. You are the Academy. As the Academy serves you, so must you serve the Academy. We depend upon you. Our momentum is great, but the future is far from certain.

It is with great anticipation and enthusiasm that I enter my term as AAO President. Despite the growth and change that has occurred, this is still one great family, filled with love and support. You are my best friends, and it is pure enjoyment working with you. I can't wait! Thank you.

Please...to keep your mail coming and our records straight, be sure to let us know if you have a new name, home, office, FAX or telephone number!

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Axoplasmic Transport

Current mechanisms and their clinical implication regarding the use of Osteopathic Manipulative Medicine

by Gregory A. Dott, DO, FAAO

Editor's Note: *Gregory A. Dott, DO, FAAO is a 1984 graduate of the Texas College of Osteopathic Medicine. He is certified both in family practice and osteopathic manipulative medicine. Dr. Dott is currently an assistant professor in the Department of Manipulative Medicine at University of North Texas Health Science Center at Fort Worth/ Texas College of Osteopathic Medicine. He became a fellow of the American Academy of Osteopathy at the 1994 Convocation in Colorado Springs, CO.*

Scott first suggested in 1906 a hypothesis that synaptic transmission is dependent upon anterograde axonal transport of material from the cell body. In the 1960s, Korr demonstrated the transfer of tagged proteins from the floor of the fourth ventricle to the skeletal muscles of the tongue. With his work in the 70s he correlated his models on the "lesioned segment" with their altered axonal transport of neuroproteins and the resulting effect on the end organ's function. Knowledge about the components of the axonal transport has increased considerably during the past two decades. The mechanism of transport, a long-standing mystery, is beginning to unfold. Microtubules within the axon play a central part in rapid transport, both antegrade and retrograde, when coupled with "motor proteins" (kinesin and dynein) and ATP or GTP. Slow transport may be the result of dynamin protein bridges attached to neurofilaments which "crawl" within the dense cytomatrix. Alteration in the protein transport affects the end organ, producing or enhancing pathologies such as diabetic neuropathy, Vitamin E deficient neurologic deficits and acetylcholine reduction of fast protein transmission. Peripheral nerve injury can trigger central sprouting of myelinated afferents.

"Microtubules within the axon play a central part in rapid transport, both antegrade and retrograde . . ."

In A. T. Still's book, *The Philosophy of Osteopathy*, he eluded to five components of nerve function and delineated these in the categories of sensation, motion, nutrition, voluntary and involuntary actions. Of these, Still considered the nerves of nutrition essential to the health of the end organ.[1] In this paper we will concentrate on the role of the axon in the delivery of neuroproteins and other "nourishing" elements to the intercellular junctions. For a more complete discussion on the transfer of the "nourishing" substances across the intercellular junctions as the final link in the nutritional support of nerves to the end organ, please see Korr.[2]

Still felt that the nerves took elements or "chemical compounds" out of the blood at the nerve's cell body, converted them for special purposes and transported them along the axons to the end organs. Osteopathic belief holds that all parts of the human body require these chemical compounds for survival and that they be supplied or manufactured for local needs. Any changes which would disturb the delicate balance of the body's processes will result in the detrimental function of the end organ and the body as a whole. The osteopathic physician, therefore, is trained to find such imbalances and correct them.[1]

If "chemical compounds" are necessary for survival, then "we must reason that to withhold the supply from a limb, to wither away would be natural."[1] Therefore, local supply of nutrients and removal of waste must be properly maintained and a balance of nerve and vessel is required for proper function of the end organ. In the prevention of disease, one requires "unlimited freedom of the circulatory system of nerves, blood and cerebral fluid."[1]

Scott, in 1906, was suggesting the importance of the passage of material from the cell body down the axon for the maintenance of stimulation-induced synaptic transmission.[3] He actually formulated thoughts on both axonal transport and chemical neurotransmission. In 1910, Still noted, "I think the law of the freedom of the nutrient nervous system is equal, if not

→

superior in importance, to the law of the free circulation of the blood."[4] He also reasoned that we should cautiously look at the atoms of the end organs, as their nature can be derived from the nervous system. Therefore, "we see that the two systems, nerve and blood supply, must be kept fully normal or we will fail to cure our patients. Let us remember that no atom of flesh in the body is out of connection with the three nerves, motor, nutrition and sensory, and that we should know that all muscles and other parts of the body are formed by and act through this nerve energy."[4]

In 1967, Korr initially suggested transynaptic transfer of radiolabeled proteins at the neuromuscular junction.[2] Many researchers in the late 60s and early 70s actively pursued the mechanism of transport within the axon by placing radiolabeled material in the cell body to later identify in the nerve's end organ. Prior to this time most research was concentrated on the electrical conduction of nerves. However, by the end of the 1970s, microtubules and neurofilaments had been identified as the cytoskeleton within the axon and responsible in some manner for the active transport of elements from the cell body to the synaptic end plate. To date most researchers are busy fine tuning those general models and observing what chemicals, disease processes or physical entities might affect the potential or rate of axoplasmic transport. The trophic nature of nerves, being to provide a nutritional basis essential for the health of the end organs, is no longer in question.

Mechanism of Transport

Axoplasmic flow has demonstrated several kinetic components ranging from a fast rate of 400 mm/day to a slow rate of 0.2 mm/day. There do not appear to be any stationary components, although there is a small minority that appear to be moving exceptionally slow. Transport time of the same proteins in different axons appears to vary with the axon's function and makeup.[5]

Fast Anterograde Transport

Studies which observe the transport profiles of various labeled proteins along the nerve axon show that fast (400 mm/day) anterograde transport depends critically upon oxidative metabolism. The labeled proteins do not appear to be affected by protein synthesis. Also, they are independent of the cell body, as transport even occurs in nerves which have been severed from the cell body located within the ganglion. The fast components utilize microtubules in the neurons' cytoskeleton which provide an essentially stationary track for specific organelles to move within. Alkaloids which disrupt microtubules and block mitosis, such as Colchicine and Vinblastine, also interfere with fast transport mechanisms. ATPases such as Kinesin are believed to be motor molecules for this anterograde movement and act as cross bridges (or as feet) to help move the organelles along the microtubules.[6]

Slow Axonal Transport

As subcellular organelles move down the axon via fast transport, the cytoskeletal elements and soluble proteins transport via slow axoplasmic flow. Slow axonal transport is a complex mechanism having at least two different components of application. A slower component travels at a rate of 0.2-2.5 mm per day and carries fibrillar protein elements of the cytoskeleton. These elements contribute to the neurofilaments and to the subunits of alpha and beta tubulin of the microtubule.[6] The neurofilaments and microtubules are believed to move in polymerized form as a network and chemicals which depolymerize these proteins upset this transport process.

The faster component of the slow axoplasmic flow is approximately twice as fast as the slower component's 0.2-2.5 mm per day. The faster component protein composition is more complex and includes neomiosin or miosin-like protein clathrin. Clathrin forms a highly ordered polyhedral coat around vesicles and plays a critical role in the recycling of synaptic vesicle membranes. Calmodulin, a Ca2+ - binding protein in the presence of Ca2+, binds reversibly to many enzymes and other proteins thereby regulating their function. Therefore, the enzymes of intermediate metabolism that are formed on free ribosomes also move in this faster form of slow axoplasmic flow.

Fast Retrograde Transport

Fast transport also occurs in a retrograde direction from the cells' nerve endings toward the cell body. In this manner, materials from the terminals can be returned to the cell body for either restoration and reuse or degradation. The materials are transported via organelles that are part of the lysosomal system. The retrograde transport is approximately 1/2 to 2/3 the speed of the anterograde transport. Retrograde transport also moves along microtubules. It appears that dynein is the motor molecule for retrograde transport as kinesin is the motor molecule for the anterograde transport.[6] Through the study of developmental neurobiology, it has become apparent that retrograde transport informs the cell body about events that are occurring in the distant ends of the axonal processes. Nerve growth factor (NGF) is found in peripheral nerves. NGF, a peptide synthesized by the target cells, stimulates the growth of certain neurons and is utilized in regeneration of damaged axons. It is also well noted clinically that various viruses and toxins can be transported via cytosis and retrograde method.

Altered Axonal Plasmic Transport

The neurotransmitter acetylcholine (ACh) suppresses axoplasmic transport reversibly in both antegrade and retrograde directions. Suppression occurs through the activation of muscarinic ACh receptors. The receptors inhibit adenylate cyclase, activate phospholipase and control the ionic channels. Mediation of the muscarinic ACh receptors occurs through islet-activating protein (IAP)-sensitive GTP-binding protein.[7]

ATP is the primary source of energy for fast axoplasmic transport and in asphyxiation we see a rapid block of this fast transport mechanism.[8] Neurotoxins usually adversely affect axoplasmic transport by decreasing glucose and producing a decrease in the amount of ATP available for the active transport. In peridesheathed neurons, neurotoxins can increase or decrease calcium ion content adversely affecting transport. Batrachotoxin (BTX) has been shown to hold open sodium ion channels and affect the sodium pump mechanism, thereby blocking transport. Local anesthetics at high concentrations will defuse into the axon and stop transport.[9]

In environments where the temperature is reduced, the fast axoplasmic transport rate is decreased.[10] In addition, it has been shown that the concentration of magnesium ion, NGF, level of ATPase and cAMP all help regulate axoplasmic flow.

Mechanical effects such as ligature, stretching, compression and crush injuries all play a part in the rate of potential reversibility of abnormal transport.[3,11,12] In conditions where a change in the axonal caliber occurs, an alteration in the delivery of neurofilaments used in slow axon transport is noted. With the decreased neurofilaments a decreased volume transport becomes apparent while the rate appears to be largely unaffected.[13] However, this decreased volume will still have an altered function on the end organ.[3] Stretching produces a beading-like appearance in which there are corresponding areas of increased and decreased neurofilament levels. This, too, demonstrates an altered transport mechanism. Ligatures demonstrated some of the earliest examples of altered function. It was noted that axonal swelling would occur proximal to the ligature while the distal end of the axon would become attenuated. A small degree of bulging occurs near the ligature on the distal end, which is attributed to the retrograde transport mechanism. With removal of the ligature redistribution of axoplasm occurs and normal function usually returns. This, however, depends on the degree of compression and its duration.

End organs constantly produce a stream of NGF across the synaptic membrane which is transported retrograde along the axon. It appears that when this stimulus stops, the cell body becomes "aware" of the presence of an obstruction or axonal damage. Schwann cells, when no longer under the influence of exogenous NGF, produce their own NGF and assist in the healing process. NGF helps stimulate axonal cones in the developing embryo. Macrophages that respond to the site of injury to clean up debris release Interleukin 1, a protein which stimulates rapid and transient synthesis of NGF in the Schwann cells. In ligation and crush injuries, the presence of Schwann cells to maintain myelinated tracks, as well as to produce NGF, is essential to potential healing of the damaged nerve cell's axon.[6]

Clinical Correlation

Abnormalities in axonal transport of proteins are thought to play an important role in the pathogeneses of diabetic neuropathy. The peripheral nerves involved in axonal transport of the sensory fibers are affected more easily and to a greater extent than the motor fibers. In experimental diabetic neuropathy, gangliosides facilitate structural and functional regeneration, hence producing a preventive and recovery stage. Gangliosides accomplish this by restoring normal Na+, K+-ATPase transport, which stimulates an increased rate of axonal maturation and reestablishes functionally and morphologically normal neuromuscular junctions.[14,15]

Alcohol appears to have only a transitory negative affect on fast axonal organelle transport. After five months of exposure to alcohol there does not appear to be any permanent impairment of fast transport. The sensory endings on muscle spindles did, however, show transitory increases in the organelle density. Retrograde transport speed appears to increase by 11 percent to 17 percent and may be a partial compensatory mechanism to help restore normal terminal organelle density.[16]

An accumulation of neurofibrillary tangles (NFT) is associated with major decreases in the number of axonal microtubules seen in Alzheimer patients. A rise in NFT is also seen in Down's Syndrome, post head trauma (boxers dementia) and infectious conditions (post encephalitis - Parkinson). This loss of microtubules produces significant dysfunction of the fast anterograde axoplasmic transport. As a consequence of decreased microtubules, there is a disruption of retrograde axonal transport producing an accumulation of degraded vesicular organelle, including mitochondria, lysosomes and multivesicular bodies, in the nerve ending. This contributes to the poor health of the end organ and the decreased effectiveness of communication along the nerve.[17]

Acute and chronic compression of peripheral nerves may result in disorders of sensory and motor function. Compression of a peripheral

→

nerve may impair intraneural microcirculation as well as produce structural damage to myelin and the axons. The rapid anterograde axonal transport may be reversibly blocked by as little pressure as 30 mm Hg, when applied over two hours. Microscopic observations demonstrated significant impairment of intraneural blood flow, at pressures between 30-50 mm Hg. Compression at pressures between 200-400 mm Hg produced complete ischemia and severe nerve fiber deformation. Endoneural edema is also observed following higher pressure applications. As expected, recovery time from fast anterograde axonal transport block varied depending on the degree and length of compression applied.[3]

Dahlin[18] describes the biochemical changes and the effects on morphology which occur in the neuron following compression injuries. The altered axonal transport of tubulin associated with nerve injury follows a slower time course while not proceeding morphological changes. This is a complete but reversible inhibition of axonal transport and is dependent on the duration of inhibition and the amount of pressure applied. In Dahlin's nerve studies, compression with 50 mm Hg for two hours inhibits fast transport for up to 24 hours. He noted that carpal tunnel patients may have pressure exceeding 100 mm Hg on the median nerve. The ulnar and/or radial nerve frequently has pressure greater than 200 mm Hg applied to them in common physiologic entrapment conditions. Other studies with colchicine have noted similar temporary inhibitions of axonal transport producing similar morphological and biochemical changes in the neuron.

Dahlin[18] noted that neurons which had undergone previous compression appeared to be more sensitive and demonstrated increased regenerative capacity, compared to the previously uninjured nerve, when insulted a second time. However, with change in tubulin transport it appears that the nerve trunk becomes more susceptible to a second (follow up) compressive trauma. This increased susceptibility may be the basis of the double crush syndrome. Patients with diabetic neuropathy appeared to be more susceptible, possibly due to the already present irritability and decreased function of the axonal transport mechanism.

Neurotrophic viruses and toxins may ascend via fast retrograde transport from peripheral nerve terminal to cell bodies, thus not all materials transported are beneficial.[6] The polio virus, herpes simplex, rabies, and tetanus toxin have all been demonstrated to act in this manner.[6,12] There are some studies which have demonstrated the retrograde transport of lead, cadmium and mercury, with evidence of mercury found in the brainstem of motoneurons.[19,20]

Sucher[21] evaluated the benefits of Osteopathic Manipulative Treatment (OMT) on carpal tunnel syndrome patients. An initial electrical nerve conduction study was used to demonstrate the presence of conduction abnormalities in symptomatic patients who had failed conservative treatment. An osteopathic structural exam of the wrist and related areas was performed. The patients were then started on treatment utilizing osteopathic myofascial release manipulation and self stretching techniques. Following symptomatic improvement the patients were reevaluated via electrical nerve conduction and MRI studies. In all of the cases presented electrical nerve conduction studies documented electrical improvement consistent with clinical recovery. The cases further demonstrated improved antero-posterior and transverse dimensions of the carpal canal.

Summary

Much has been added to our knowledge of the mechanics involved in axoplasmic transport. The effects of various disease states on the rate of axoplasmic flow and nutrient volume to the end organ is being studied. The clinical application of therapeutic approaches and preventive measures in some neuropathies may soon be available. Resurgence of research on the mechanical effects seen in nerve deformation or compression on altered axoplasmic transport further support the principles and practice of osteopathy. As Korr stated, "any factor which for a protracted time alters the metabolism and protein synthesis of the neuron or which impedes axonal transport could block the neural influence on the innervated structures or cause it to become adverse and detrimental, thereby contributing to disease. Among the most probable factors are the compressive forces and mechanical stresses occurring in the myofascial tissues and the channels through which the nerves pass."[22] In addition, the altered chemical environment in these tissues with the susceptibility of nonmyelinated nerve fibers could produce an even more dramatic effects on altering axoplasmic transport.

Dahlin[18] demonstrated the effects of relative low pressure compression to nerve axons in the carpal tunnel. He found that in the carpal tunnel the forces necessary to impair nerve function could easily be produced within the body. Sucher[21] demonstrated in carpal tunnel syndrome the beneficial effects of osteopathic myofascial release manipulation and simple home stretches. He documented his findings with MRI and electrical nerve conduction studies.

Scientists experimentally observes one phenomenon at a time. This is to prevent more than one variable from occurring and confusing the results of the experiment. In the human body, a

multitude of factors may be in place simultaneously. Exaggerated sympathetic response initiated by a facilitated spinal segment causes a decreased arteriole blood supply to an area and subsequently alters the venous and lymphatic drainage.[23] This would predictably produce multiple interrelated changes such as a decrease in oxygen and glucose levels along with altered ionic balance. These conditions, when at appropriate levels, have already been identified as causes for altered rates of axoplasmic transport. Mild compressive forces from tissue edema, metabolic waste buildup, or myofascial tissue strain may accelerate changes in axoplasmic transport. It would be important to investigate the effects of altered axoplasmic transport on the functions and influences of sympathetic efferent neurons. Further research documenting these hypotheses is needed.

Acknowledgment

The author wishes to express his appreciation to the following for their editorial contribution: Irvin M. Korr, PhD and Claire McKay, DO.

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John Glover, DO

Faculty:
Daniel Bensky, DO
Ken Lossing, DO

Program

Friday, September 15, 1995

8:00am Registration
8:30am Introduction / Announcements
8:45am Introduction to Course
- What is visceral manipulation?
- Where does visceral manipulation come from?
- How does visceral manipulation fit into Osteopathy?
- Purpose of the seminar
- Basic Concepts: Different types of motion
- Basic Concepts: What are we doing?

10:30am Small Group Discussion
11:00am Exercises
- Sacral compliance
- Liver lift

12:00pm LUNCH
1:00pm Anatomy
- Review of topography & general anatomy
- Attachments
- Indications
- Mobility and Motility testing
- Treatment techniques

1:45pm Practice
- Liver lifts revisited
- Liver via the ribs
- Use of upper extremities
- Induction

3:00pm Small group discussion
3:30pm Stomach
- Anatomy
- Review of topography & general anatomy
- Attachments
- Indications
- Mobility and Motility testing
- Treatment techniques
  - Gastroesophageal junction
  - Fundus
  - Pylorus

Saturday, September 16, 1995

8:00am Review and questions
8:30am Practice stomach diagnosis & treatment
- Feeling stomach
- Gastroesophageal junction techniques (direct & indirect)
- Prolapse techniques
- General techniques
- Induction

10:00am Biliary system
- Anatomy & physiology
- Indications & cautions
- Treatment sequence

10:30am Small Group Discussion
11:00am Biliary System Practice
- Biliary system sequence
- Liver / Gallbladder induction

12:00pm LUNCH
1:00pm Sphincter-like areas (SLA)
- Meaning
- Location
- Diagnosis
- Treatment

1:30pm Practice treatment of SLA's
2:15pm Duodenum
- Anatomy & physiology
- Indications
- Treatment techniques

2:45pm Small group discussion
3:00pm Duodenal practice
- Duodenum via liver
- Direct treatment
- Induction

4:15pm Jejunoileum
- Anatomy & physiology
- Indications
- Mobility ad Motility testing
- Treatment techniques

Sunday, September 17, 1995

8:00am Review and Questions
8:30am Jejunoileum Practice
- Loop-de-loop
- Mobilization
- Root release
- Induction

10:00am Cecum
- Anatomy & Physiology
- Indications
- Mobility and Motility testing
- Treatment techniques

10:30am Cecum Practice
- Cecal attachments
- Ileocecal valve
- Induction

11:30am Colon
- Anatomy
- Indications
- Techniques

12:15pm LUNCH
1:30pm Integration of the Viscera into OMT
2:00pm Colon Practice
- Ascending colon
- Flexures
- Sigmoid and mesocolon
- Induction (entire intestine)

3:30pm Summary & Conclusion

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Continuum Technique

by Stephen Typaldos, DO, Fort Worth, Texas
The Manual Medical Center of Fort Worth

Introduction

Continuum technique is a soft tissue manipulative approach used in the treatment of acute and chronic musculoskeletal pain and dysfunction. It is based on the premise that injuries can occur in tissues, 'transition zones', and correction of the distortion caused by the injury will result in an improvement in both subjective and objective findings. Transition zones are found between different tissue types and are a CONTINUUM from one of the tissue types to another. It is thought that during an injury the percentages of certain tissue components of each 'subzone' become 'shifted'. This results in pain, tenderness, tightness, decreased motion of the affected area and swelling. Continuum Technique is designed to reverse this process by 'shifting' the continuum back into its original configuration. Once this occurs, there is normally a dramatic and instantaneous improvement in both range of motion and pain. Continuum Technique is particularly useful in the emergency room setting in which ankle and knee sprains and cervical and lumbar strains are treated on a daily basis. Drawings of proposed 'shifting' continuum of a ligament-bone transition zone are shown in **Figures 1 and 2.**

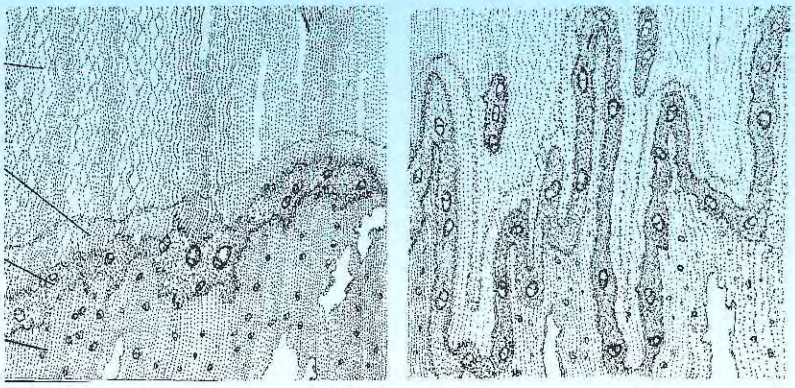

Figure 1

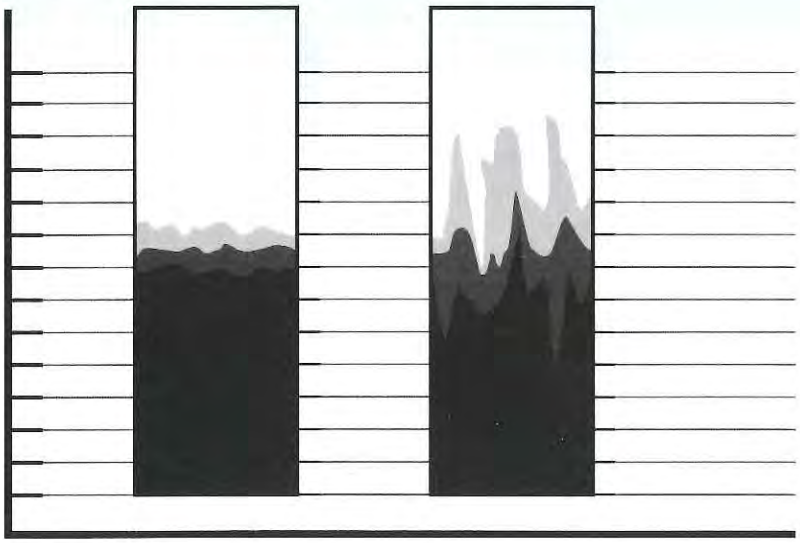

Figure 2

Clinical Applications of Continuum Theory

A common example of 'shifting' continuum can be seen in ankle sprains. In the transition zone between ligament and bone are four subzones. During the injury itself, bony components from the zone of lamellar bone are 'pulled' into the mineralized fibrocartilage zone. At the same time mineralized fibrocartilage components are 'pulled' into the unmineralized fibrocartilage zone, and unmineralized fibrocartilage components are 'pulled' into the ligamentous zone. The net effect of this is that the entire transitional zone has become 'shifted' into the direction of the ligament. This results in a ligament that is now not only stiffer than it was prior to the injury but is also functionally shorter. Continuum

→

Technique utilizes pressure in the OPPOSITE direction, which forces the continuum to 'shift' back into the direction of its pre-injury state.

The amount of force used in Continuum Technique to 'shift' the continuum back into its pre-injury state is equal to the force that caused the injury in the first place. The difference is that the direction of the force applied is OPPOSITE and is much more SPECIFIC in that it is applied only to the resultant distortion rather than to the injured area as a whole. Although the patient may complain of the entire ankle hurting, this is not anatomically correct. Only certain specific distortions have occurred and once they are corrected the patient may then be pain-free, regardless of how much pain or swelling he or she had upon entering the emergency department.

The treatment itself is normally painful. This is because the forces that caused the injury were significant and thus the treatment forces used to correct it also need to be significant. But the pain induced by the treatment is temporary and once the distortion is corrected the severe pain and tenderness are gone despite how much force is then applied to the injured area. In most ankle sprains there are normally two to five continuum distortions that need to be corrected. Other acute injuries may involve only one. If only a portion of the distortions are corrected there will be only a partial improvement, and although this may still obtain a superior result compared to standard treatments, it is not the dramatic and complete result that is normally anticipated and hoped for with Continuum Technique.

Continuum Technique works on an all-or-none principle. Either the continuum distortion resolved or it did not. There is no in-between. If an objective and dramatic result does not occur, then a complete reevaluation should be done. Failure to respond suggests either the diagnosis was incorrect (i.e., a fracture was missed) or the technique itself was improperly applied. The most common reason for improper technique is hesitancy of the physician to use adequate force. With experience this is easily overcome.

The actual physical act of Continuum Technique involves applying firm pressure with the physician's thumb to the area of distorted continuum. The distortion itself is located by palpation of the distortion and by the amount of pain induced by the palpatory process. Firm pressure is applied into the direction of maximum pain. The patient may describe the pain as being intolerable, or more graphically "like a hot poker". The physician will feel it to be something like 'a bubble of gel in a small button'. If the patient expresses that the pain is "not that bad", then the direction and force of intensity should be changed until the pain is maximized again. The pressure should be constant and gradually increased until 'resolution'. When this occurs both physician and patient are immediately aware of it. The patient experiences an immediate and dramatic reduction in pain and tightness, and the physician feels as if the 'button has slipped into the button hole'. The resolution process can also be described by patients as a 'release'. The 'release' of the distorted continuum occurs over a period of one to five seconds with two being the average. Once the 'release' is complete, that distortion is considered 'corrected', and the other distortions are treated if they are present. When all the distortions have been corrected the treatment is completed. Follow-up is advised in a day or two to recheck for any residual distortions.

"Continuum Technique works on an all-or-none principle."

Continuum distortions should not be confused with other types of fascial distortions. They are not 'triggerbands' which have a completely different etiology and treatment, and are the subject of the accompanying paper *Triggerband Technique*. In addition, they are not 'triggerpoints' which are compared with continuum distortions in *Introducing the Fascial Distortion Model*. The differentiation of continuum distortions from these other fascial distortions is clinically relevant because the treatment modality selected should be based upon the anatomical findings encountered. Failure to appreciate this point will greatly decrease the results of any modalities used. The presentation of other distortions in the same patient at the same time occurs rather commonly. Triggerbands often occur in acute ankle, knee, cervical and lumbar sprains. They should be treated if they are present. In chronic pain, triggerbands should be treated first before Continuum Technique is utilized. This is because adhesions have formed which are holding the injury in its 'shifted state'. Once the triggerband is corrected then the continuum distortion can be successfully treated.

Continuum distortions commonly occur at the origin or insertion of ligaments or tendons with bone.

Because of this they can be found in the neck, back, ribs, elbows, knees or other locations that have tendons or ligaments. The treatment of all of them is essentially the same—that is, to guide the injured area into the direction of pain and to correct the distortion. The illustrations in **Figures 3-6** show some of the most common sites of continuum distortions that are seen in the emergency room patient. Treatment of ankle sprains are then discussed in the following section. These are perhaps the most rewarding to treat since they often respond so dramatically. But just as each patient is different so is each injury, and modifications are necessary for optimal results. As with any treatment modality the diagnosis is paramount, and contradictions should be reviewed before usage (see Triggerband Technique paper). Almost all patients will accept a painful treatment if it is effective, which fortunately when using Continuum Technique occurs most of the time.

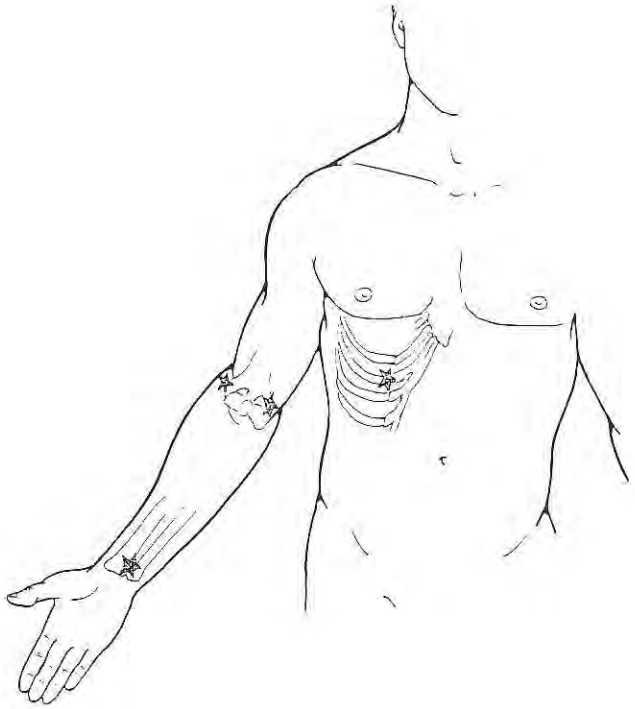

Figure 4

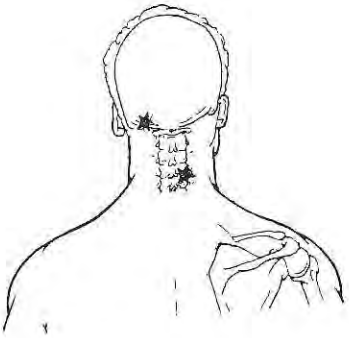

Figure 5

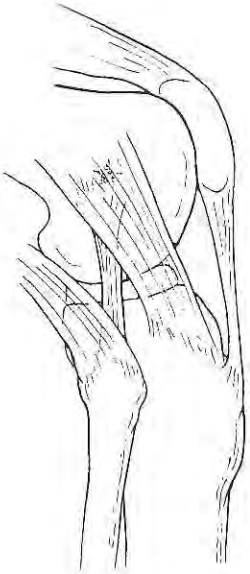

Figure 3

Treatment of the Acutely Sprained Ankle

Sprained ankles are perhaps one of the most common extremity injuries seen in the emergency room setting. The usual treatment of these consists of rest, ice, elevation, splinting and anti-inflammatory and analgesic medications. This treatment regimen typically results in gradual subjective improvement and takes days or weeks until most patients are able to walk

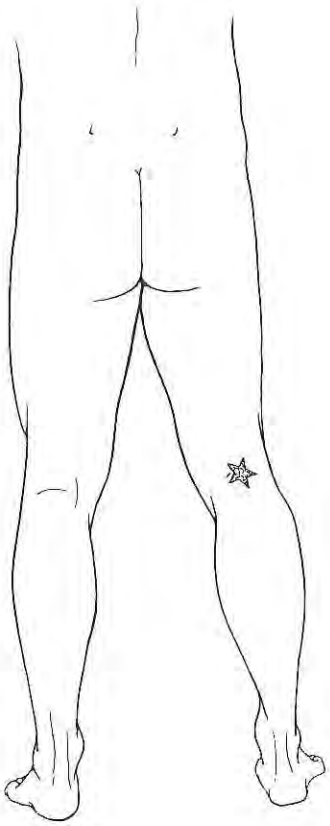

Figure 6

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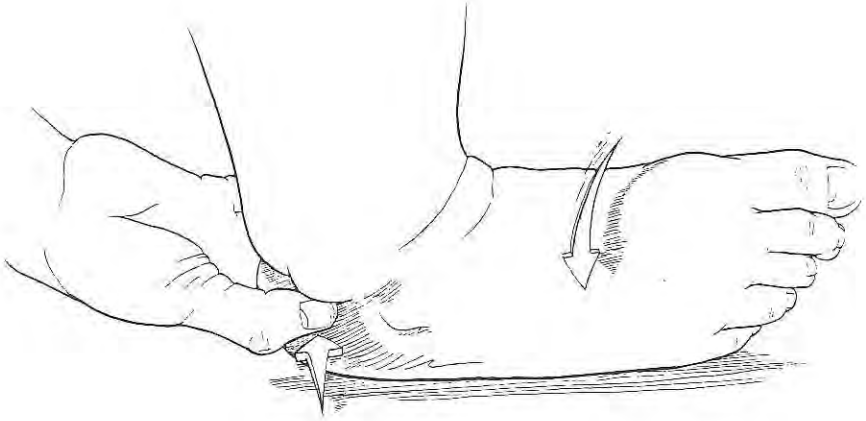

Figure 7a

limp-free. Some patients continue to have residual pain even months later. In the fascial distortion model the sprained ankle is viewed as consisting of alterations of the bone-ligament transition zone. Once the distortion is corrected then optimally there should be normal range of motion and no pain. Fortunately, in the emergency room setting this dramatic result is typical. Any result that is not dramatic should make the physician suspicious of an underlying fracture.

In the chronically injured ankle, adhesions have formed and Triggerband Technique must be employed before using Continuum Technique. These patients normally complain of the pain radiating from the ankle into the knee, foot or hip. To successfully treat them it is necessary to correct all of those fascial distortions. Treating only the ankle will result in failure. Normally several treatments are needed for the chronically sprained ankle, and after the third or fourth visit thrusting manipulation of the joint is advised. Acutely sprained ankles rarely need high velocity manipulation, and often respond poorly to this treatment modality.

Typical Steps in the Treatment of the Acutely Sprained Ankle

1) Physical examination—record passive and active range of motion and check for ligamental instability and vascular compromise.

2) X-ray the ankle to rule out fracture.

3) Have the patient point to the 'spot' of most intense pain.

4) Explain to the patient that you are going to examine the injury more carefully and that he or she can expect a temporary increase in discomfort.

5) Gently rotate the ankle into the position in which it was injured, normally done by inverting the foot. Palpate the area indicated by the patient and feel for the continuum distortion. Gently apply pressure and gradually increase the force until resolution. Please refer to **Figures 7a and 7b.**

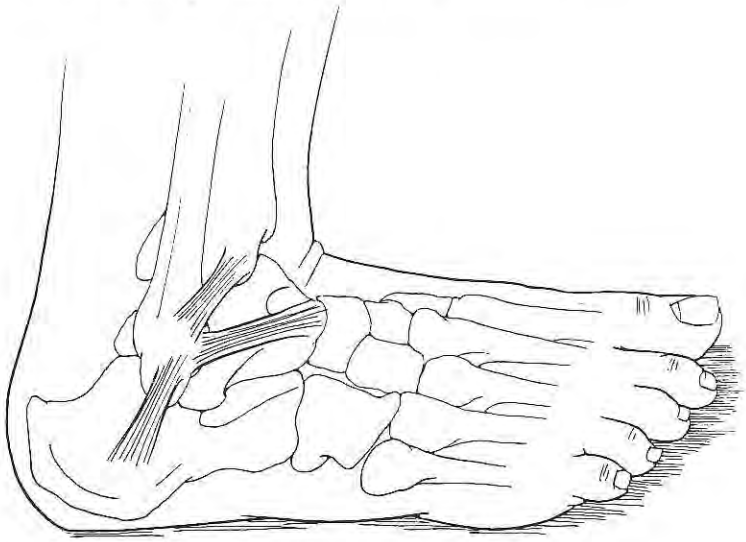

Figure 7b

Figure 8a

6) After the first distortion is corrected recheck the range of motion and have the patient palpate the area just corrected. This will demonstrate to him or her that improvement has occurred.

7) Again gently guide the ankle into a position that elicits pain. Ask the patient to point to the most painful spot, and feel for the distortion. **Figures 8a and 8b** show the most common anterior ankle distortions. Correct it in the same manner, recheck the range of motion and ask once more where it hurts. Repeat the sequence until the patient reports only a diffuse sensation of generalized tenderness or no pain.

8) Ask the patient to stand and point to where the ankle still hurts. While the patient is standing correct the distortion in the same manner as previously described. Repeat this step until the patient can stand with little or no pain.

9) Next have the patient walk and identify what movement induces pain. Then hold the ankle in that position and correct the distortion.

10) Once the range of motion has been restored and the patient has had either a dramatic reduction in pain or is pain free, he or she can then be discharged from the emergency room. Ice is encouraged and splints and medication are considered to be optional. Follow-up with their own doctor is advised in 24-48 hours. ❑

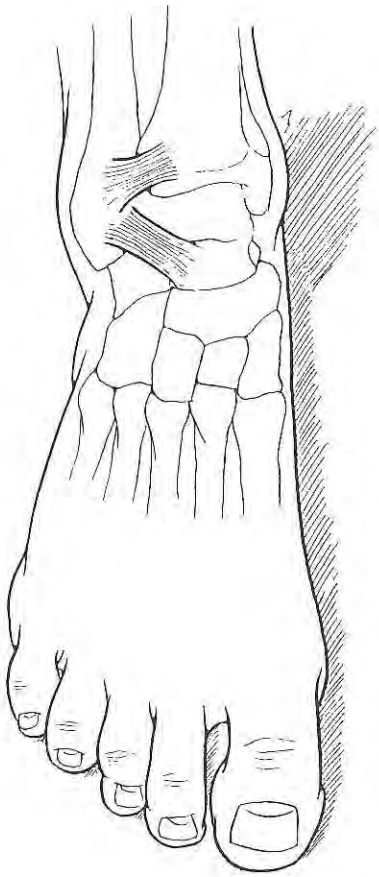

Figure 8b

Key Words

continuum distortion
ankle sprain
transition zone

Basic Percussion Vibrator Course
November 11-12, 1995

Faculty

Robert C. Fulford, DO, Waverly, Ohio
Richard W. Koss, DO, Fort Worth, Texas

CME Hours: 15 Category 1-A
Seminar Fee: $400.00

PROGRAM

Saturday, November 11, 1995
8:00 a.m. - 5:00 p.m.

8:00 a.m.
Introduction & History of Vibration/Percussion

Lab Session:
Diagnosis – Subtle Motion
Assess the Delicate Motion
Use of Correct Hand On Front of Body

Discussion of Motor:

Parts of:	*Technique:*
Care	*Frequency*
Grease	*Pressure, Angle*
Clean	*Vibration/Resonance*
	Thought - Intention

Lab Session:
Learn Technique of Percussion on One Point of Knee: Attention – Intention; – Vibration; – Direct Release
Shock - Release

12:00 noon -- Lunch

1:00 p.m.
Fascia Bioelectricity, Trauma
Richard W. Koss, DO

Rhythmic Balance Interchange
Robert C. Fulford, DO

Delivery of the Baby --
Trauma to Knee, Shoulders, Head

Lab Session:
Knee, Ankle, Foot, Trochanters, Pelvis

Sunday, October 23, 1994
8:00 a.m. - 4:00 p.m.

Review –
Common Faults in Use of Hammer

To Tables:
Pelvis, Spine, Lumbar, Thoracic,
No Higher Than C7, Diaphragm

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The Experimental Method of Learning

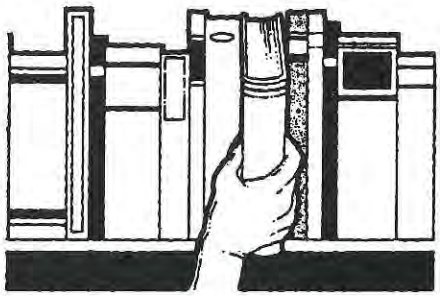
by M. D. Young, DO
Seattle, Washington

We have all heard of how Dr. Still carried around a sack of bones of the human skeleton and that he would ask someone to pick out a bone out of that sack and then he, blindfolded, would describe the bone and its function. Perhaps not one of us has ever studied and mastered anatomy as he did.

He studied every bone and then every other tissue of the body in its relation to the whole body efficiency and economy. He philosophized upon that relationship and the function of each part as related to the whole. If we are to be efficient followers of his, we can never forget or discard the philosophic part any more than we can the scientific part. It all adds up to efficiency in the practical.

From those who knew Dr. Still personally and were privileged to sit at his feet for instruction, we are told that he never left any written record, or even a verbal record of any specific technic. His only instructions were, "Find it and fix it", and then for good measure, he added, "let it alone". Those who watched him saw him carefully examine the patient until he located the trouble and he deftly "Fixed it".

He studied the structure of the part, or parts, but his mind must have been centered upon the normal function to be attained. Each bone or other tissue, or part, had its function and he must have visualized that function. He thought of structure in terms of a



function to be performed in a normal manner, and according to nature's intention.

When a carpenter picks up a saw he visualizes that saw in the role of the function it is going to perform. Sure, he sees to it that it has been properly made and properly sharpened in its structure, but it is the function properly performed that he is most interested in. So with every tool in his tool chest. So with everything we use in our daily activities. The structure is there in the form it is in for the purpose of performing a perfect function. Function is what we are striving for. Therefore, function may be defined as "a structure in action at a given time".

As often stated, technic has always been difficult to describe in words. Perhaps that is one reason Dr. Still never left us a description in words, and again perhaps, he realized that every patient is different, so he tried to give the student the concept that every case is a project for research. First, find it.

After you have found it, your fingers and your common sense, so he must have reasoned, would tell you how to fix it. It seems that we learn to find it long before we learn how to fix it. Perhaps, this is because the human organism is so complex. Our researchers are still trying to unravel those complexities.

In the early days of osteopathic teaching the technic was often crude and laborious. As the laws have given us unrestricted practice rights, many in our profession have found it easier to wield a hypodermic needle or write a prescription – more is the pity! For the greatest service to humanity, manipulative osteopathy must be preserved; which can only come about by more specific and easily demonstrated technic.

Now there are two phases in the development of osteopathy which should have run parallel. They have not always done so, but the ideal attainment is that they should receive parallel attention and development. I refer, first, to the development of the most efficient technic possible to attain. This has consumed the attention, study and skill of the best minds in our profession for three quarters of a century; not to overlook those of us lesser skilled who have plugged along as best as we could. The amazing thing about all this is we that have done as well as we have and come as far as we have.

continued on page 34

Letter to A. T. Still

Doctor Still,

Osteopathic physicians today still have discussions, even debates, regarding your thoughts on the use of pharmaceutical agents. The question always arises: What would be your feeling regarding the use of drugs if you were here with us today? There are those who feel that you always were against the use of drugs, and that you would continue to be opposed to their use even today. There are others who say that, given the effective medications available to us today, you would not oppose the use of at least some of these agents.

Your writings on this subject provide many insights, but still somehow we cannot resolve the debate. I found a number of items on this subject in the book A. T. Still in the Living, by Robert E. Truhlar, DO. For example, you said: "Early in life I began to hate drugs." And again, "You do not need drugs. The body has a hundred drugs of it own of which the doctor knows nothing. But the body's drugs actually cure disease, where as the doctor's drugs kill." The thoughts would seem to indicate that you had no use for drugs.

On the other hand, you also said. "To be able to intelligently prescribe any and all drugs, one must first learn the fundamental principles that govern their administration. Namely: There must exist within the body the physiological wrong for which the drug is given. Otherwise, it becomes a poison instead of a remedial agency and that is a lifetime job for any man or woman." This statement seems to imply some room for the proper use of medications.

And so the debate will go on, I'm sure. Where does the use of drugs fit in with our osteopathic principles? As a first line treatment? After osteopathic manipulative medicine is applied? Or together with manipulation, in some fashion? If so, how do we decide? If only we could always know exactly what to do in every clinical situation.

Your ongoing student,
Raymond J. Hruby, DO, FAAO

Three-Dimensional Counterstrain Lifts (3-DCL) Theoretical Concept and Applications

by James A. Carlson, DO, FAOAS,
J. Michael Carlson, DO and Daniel T. Earl, DO

James A. Carlson, DO, FAOAS is a graduate of the Kansas City College of Osteopathic Medicine. He is a fellow of the American Osteopathic College of Sports Medicine and is a fellow of the American College of Sclerotherapy. He is certified in osteopathic manipulative medicine. He is in private practice in non-surgical orthopedics and sports medicine in Knoxville, Tennessee.

J. Michael Carlson, DO is a graduate of the West Virginia School of Osteopathic Medicine, and is a resident in the family medicine residency program at East Tennessee State University. He has particular interest in osteopathic postgraduate education and sports medicine.

Daniel T. Earl, DO is a graduate of the Chicago College of Osteopathic Medicine, and is an associate professor and associate program director, Department of Family Medicine, East Tennessee State University, Johnson City, Tennessee.

Introduction

The traditional concept in heel-lifting has been limited to one articulo-fascial plane, the posterior plane. This method of lifting has historically been determined by radiographs and the subsequent measurement of leg length and/or sacral base level. In this method, the heel lift is placed under the determined short leg. This method of lifting does not take into consideration, however, all the articulo-fascial planes and the rotatory components. Therefore, a method of lifting must be developed which accounts for all articulo-fascial planes, of which there are three: anterior, anterio-medial and posterior and rotational components which make up normal biomechanics.

The three-dimensional counter-strain lifting technique (3-DCL) is a new concept in lifting. This technique uses forefoot as well as hindfoot lifts to accomplish a homeostatic equilibrium allowing the body to begin healing processes and achieving normal biomechanics. These forefoot and hindfoot lifts can be used alone or in combination depending on the patient needs. When applied properly, these lifts correct all three articulo-fascial planes and will decrease rotational stresses which have been superimposed on the body.

To begin conceptualizing 3-DCL using the lifts, it is necessary to understand the effects of lifting at the plantar surface of the foot and the subsequent effect of this lifting on the anterior and posterior articulo-fascial planes which run the entire length of the body. Beginning with the plantar surface of the foot, one can think of it as a "teeter-totter". This teeter-totter has a fulcrum which is the talus bone. When using the forefoot lift, the anterior part of the foot is raised, whereas the hindfoot lift will raise the posterior foot (heel).

The anterior articulo-fascial planes (discussed later) begin at the dorsal part of the foot and run anteriorly, continuing toward the cranium. The posterior articulo-fascial plane begins on the plantar surface of the foot and runs continually on the posterior part of the body toward the cranium.

Combining the effects of the lifts on the articulo-fascial planes, one produces a relief of stress ("slack") on the anterior articulo-fascial planes when using a forefoot lift. In a like manner, relief of stress on the posterior articulo-fascial plane is achieved by using the hindfoot lifts.

The goal of 3-DCL is to relieve the stress (tension) on articulo-fascial planes which are in strain. This reduction in stress using the forefoot and hindfoot lifts will produce "equilibrium" in all planes and in addition, will tend to effect correction for any rotational components which have been superimposed upon the body. The correct placement of the lifts is achieved by using the body's own monitoring system, the cranio-sacral system. In this way, a physician works with a patient's body to correct for any undue stresses instead of against the patient's body and allows time for adaptation.

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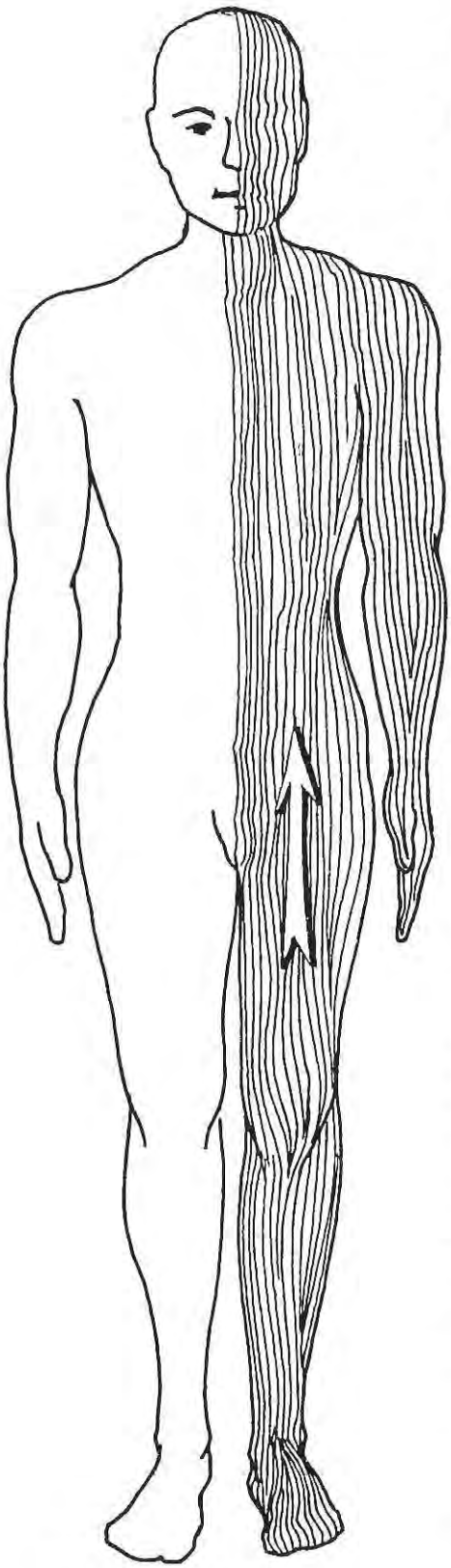

Figure 1
Anterior - Articulo Fasical Plane

Articulo-Fascial Planes

There are three anatomic **articulo-fascial planes** which help explain the mechanics of the 3-DCL. These articulo-fascial planes are: anterior, anterio-medial (with two components) and the posterior.

The **anterior articulo-fascial plane** is superficial and can, for all practical purposes, be considered superficial fascia. This plane begins at the dorsum of the foot and continues ipsilaterally up to the frontalis muscle on the cranium **Figure 1**.

The **anterio-medial articulo-fascial plane** has two components (superficial and deep). These components are unique in that they begin ipsilaterally on one side and progress to the *contra*lateral side. This is in contrast to the anterior and posterior planes which stay ipsilateral their entire course. Beginning with the *superficial* component **(Figure 2a)**, this articulo-fascial plane begins on the dorsum of the foot and continues in an ipsilateral path in the following order: anterior tibialis, quadriceps and rectus abdominus.

From the rectus abdominus, the plane crosses over to the contralateral side using the sternalis muscle which is continuous with the sternocleido-mastoid muscle and finally inserting onto the temporal bone. The temporal bone, by way of the spheno-temporal ligament, attaches to the greater wing of the sphenoid bone. The ***deep*** component **(Figure 2b)** of the **anteriomedial articulofascial plane** begins at the medial arch of the foot, where it progresses on an ipsilateral side in the following order; posterior tibialis muscle, adductor muscle group, ilio-psoas. From the ilio-psoas, the plane uses the anterior sacroiliac joint as a fulcrum to cross contralaterally, attaching onto the thoracic diaphragm. The thoracic

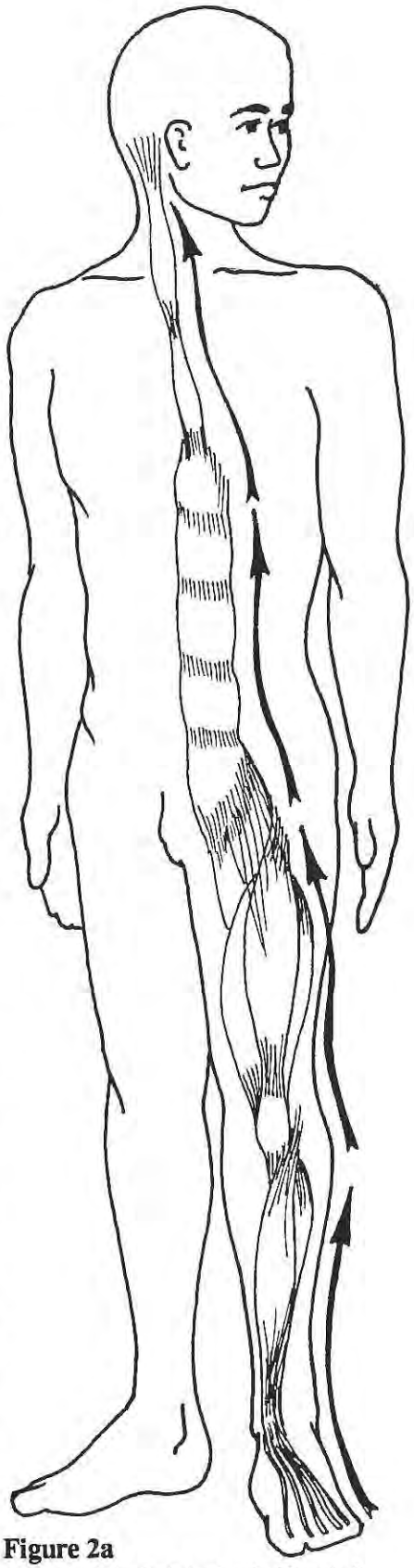

Figure 2a
Anterio-Medial Articulo Fascial Plane (Superficial Component)

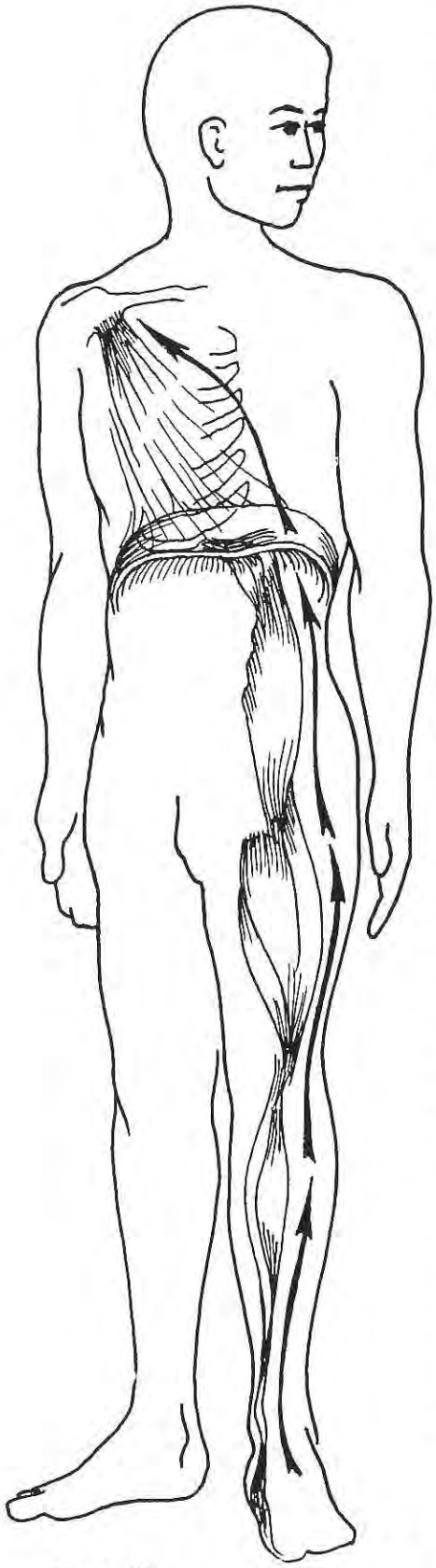

Figure 2b
Anterio-Medial Articulo Fascial Plane (Deep Component)

diaphragm (which attaches onto the last six ribs) is in a continuum with the pectoralis major and minor muscles. This deep plane eventually ends at the glenohumeral joint.

The last articulo-fascial plane to consider is the **posterior plane (Figure 3)**. This plane, like the anterior plane, can be considered superficial fascia on the posterior part of the body. This plane is a continuation of the plantar fascia of the foot and runs on the ipsilateral side, ending on the occipital portion of the cranium.

Application of the Hindfoot and Forefoot Lifts

One of the most remarkable features of the 3-DCL is that the body has an intrinsic mechanism (monitor) to assist the physician in determining how the patient must be fitted with the lifts. This mechanism is the craniosacral system. The craniosacral system functions to monitor the variations in stresses on the fascia along its distribution, which runs the length of the body.

In this mode of monitoring, the **anterior fascial planes** are assessed by monitoring the sphenoid bone, whereas the **posterior fascial plane** is monitored by assessing the occipital bone. When the patient is standing erect, the physician can relieve the unwanted stresses on the body by placing the appropriate lifts (with the assistance of another person) under the feet.

The "net force" of the three articulo-fascial planes which were alluded to is computed by the craniosacral mechanism, which in turn guides the physician in the placement of the right combination of lifts by a simple monitoring of the sphenoid and occipital bones.

Cranial motion testing is chosen as the method of application and

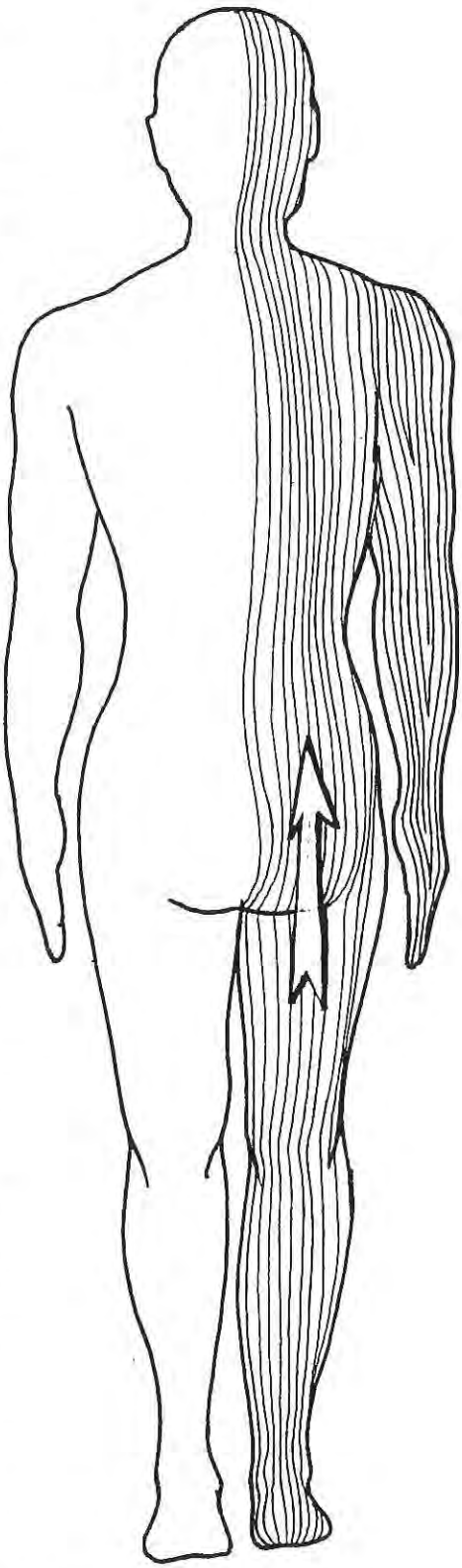

Figure 3
Posterior-Articulo Fascial Plane

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Figure 4
Physician standing at patient's side

Figure 5
Close up Hand Position

monitoring of lift therapy since it allows the body to account for subtle abnormalities that are not always visible to the human eye. Treatment begins with the patient standing erect with toes placed on a line to prevent an uneven stance and with the patient looking straight ahead. The physician stands to the patient's side, facing the patient (**Figure 4**). Using one hand, the physician places the thumb and third finger on both the right and left greater wing of the sphenoid bone to monitor its cranial motion. The other hand is positioned on the occiput, just inferior and lateral to the greater protuberance (not on the mastoid process) in order to monitor cranial motion (**Figure 5**).

Monitoring the motion of the sphenoid bone, the physician typically feels one of the greater wings of the sphenoid, distinctively higher when compared to the other side. Beginning with small increments (1/8" to 1/2" inches), forefoot lifts (**Figure 6**) are placed under the ball of the foot which is "contralateral" to the side of the high wing of the sphenoid. Placing the lift on the opposite side to the high sphenoid wing is done due to the cross-over pattern of the anteromedial articulo-fascial plane. The lift should be placed by an assistant while the physician maintains monitoring of the cranial motion (**Figure 7**). Within a few minutes after the forefoot lift is placed, the sphenoid wings should come into balance. When this has occurred, attention may be given to the occipital bone.

The physician, while monitoring the motion of the occipital bone, will feel the distinct inferior motion of one side of the occiput as it goes into flexion. While monitoring this motion, 1/8" to 1/2" lifts are placed under the calcaneal bone on the same side as the low-sided occiput (the posterior articulo-fascial plane is ipsilateral) until a balancing of the occipital bone is attained (**Figure 8**).

Once a balance of the sphenoid and occiput has been attained, the lifts should be placed in the patient's shoes and this "lift pattern" should be left in place for several days, until re-examination is performed. It must be understood that the body may have undergone several traumatic events which have led to this dysfunction in the body, and gradual "unwinding" may occur, leading to adjustments in the lift pattern over time. This "unwinding" is due to relief of rotational forces as well as release of

Figure 6 – *Heel Lifts*

Figure 7
Anterior Lifts (Placement of)

Figure 8
Posterior Lifts (Placement of)

stored energy in muscles and fascia as resolution occurs. The individual's own body will determine the order of "unwinding" that may occur, and the temptation to use radiographic guidance to override an ongoing process of "unwinding" should be resisted. Frequent evaluation and adjustment of the lift patterns will eventually establish a set pattern, and normal balance and motion can be attained. This process of changing patterns needs to be explained to the patient so that they may be comfortable with their changing needs. After a set pattern is established, this pattern can be considered permanent, and permanent shoe lifts are advisable.

Summary

Application of the 3-dimensional counterstrain lifting technique requires a thorough knowledge of osteopathic concepts in both the skeletal and cranio-sacral systems. When applied correctly, the 3-DCL offers a dramatic, effective treatment of leg length discrepancies by monitoring the effect on fascial planes. Using the hindfoot and forefoot lifts enables a physician to account for articulo-fascial stresses and rotatory stresses due to pathology and gravity. This technique can be used as another modality in conjuction with or an adjunct to all other kinds of Osteopathic Manipulative Treatment. The goal of "equilibrium" in all other articulo-fascial planes leads to a biomechanically sound patient and numerous other beneficial effects. The physician is guided in lifting by the body's own monitoring system, the craniosacral system.

Special Thanks to
John H. Harakal, DO, FAAO

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To The Editor

Dear Editor:

About 18 years ago, a colleague called me up and requested that I review some manipulative techniques with him because he was planning on taking the GP Boards. I told him to come to my office and I reviewed the maneuvers with him.

During this session, while palpating his upper thoracic area, I noticed some lesions on the upper left from T1 through T4. I mentioned it to him with the comment that I usually associated lesions in the upper left thoracic area as indicative of possible heart disease. He then told me that he had two myocardial infarctions previously. I had not known that.

Since that time I have observed what I call a "normal lesion pattern". Namely, involvement on the right from the A-O articulation through about T5 or T6 on the right with a reciprocal left-sided lesion at the A-O. From T5 or T6, the pattern is more on the left caudally to the sacroiliac junction at which point there is also a reciprocal S1 lesion on the right. This pattern in the otherwise physically well patient has helped me predict organic problems with some regularity when the pattern is not present. For instance, lesions from the T6 or T7 area on the right through T12 often direct me toward GI problems. On the left side this area is less of a worry.

I have since refined these observations to question whether this "normal pattern" is in fact a protective mechanism. Does the body protect its internal organs by channeling musculoskeletal dysfunction into a distribution less likely to promote visceral disease? This normal pattern has been very constant, irrespective of handedness. I was wondering whether other clinicians have observed this.

Sincerely,
Roderick T. Beaman, DO
Warwick, Rhode Island

Dear Mr. Noone:

I wish to make the following comments on the Obituary of Dr. John Rolles which appeared in the Spring issue of the Journal. I knew him well for years and had kept up with him until his death last December.

I quote from the Obituary... "John Rolles returned to England in 1956 and took up an osteopathic practise with an American (Dr. Carl Cooke)." Cooke is misspelled – there is no "E" at the end.

My husband, Dr. Carl M. Cook, had been in England since **1927** and practised in London where he built up a world wide practise until 1954, when he left London to practise in Guildford. He **invited** Dr. John Rolles to work with him as is explained on page 206 of his autobiography, "*You Must Become A Doctor*", which you have in the Academy's archives, and I quote from this:

> "For several years now I had wanted to find a colleague to work with me, as my work load had become increasingly heavy. . . A year or two before I left London a Dr. John Rolles called on me who had recently graduated from the osteopathic college at Des Moines, Iowa. He had met several of my friends while there who had urged him to call on me and give me their greetings when he passed through London on his way back to India, where he had worked as a missionary for many years. The moment I saw him I felt he would be the colleague I would like to join me, and he promised to let me know when he returned to England in a few years' time.

About a year after moving to Guildford, I had a letter from Dr. Rolles telling me he would be returning to England in the near future, and soon after his arrival he called on me again and agreed to join me in practise. This he did at the end of November 1956, and we worked happily together for the next twelve years."

I felt I should write to you to record more exactly the facts which concerned my husband and the length of his years of practice before Dr. Rolles joined him.

All best wishes,
Yours sincerely,
Mrs. Rosemary A. B. Cook

The Uniqueness of the Osteopathic Profession

I have just finished reading the editorial in the *American Academy of Osteopathy Journal*, Winter, 1994. The title really caught my eye: *"The Uniqueness of Osteopathic Medicine: Do We Know What It Is?"* The editor of the Journal and the author of this writing is Raymond J. Hruby, DO, FAAO and he does an excellent job of explaining his view point of what that uniqueness really is. He quotes I. M. Korr, PhD and mentions his prolific scientific writings on osteopathy. He quotes Norman Gevitz, PhD, who has made in-depth studies of the osteopathic profession over the years from the outside looking in and he also quotes Carol Trowbridge who wrote the *Biography of A. T. Still.*

The one thread that weaves through the three authors and is stressed by Dr. Hruby in that osteopathic manipulation is not the only unique characteristic of our profession. He challenges each of us to share our views about this issue of

uniqueness. Dr. Hruby asks what our thoughts are about this uniqueness. He invites responses from readers so that the *AAO Journal* might put some of them into print.

I have been an osteopathic physician for 35 years. I have known about the profession since 1944 as I was exposed to it by my uncle, a DO. I'd like to share some of my thoughts with you about the profession.

I have seen the profession undergo a lot of changes in those 50 years. I have seen the profession struggle to be recognized as equal to the allopathic profession. I have seen DOs limited to caring for their patients in strictly osteopathic hospitals because they could not get staff privileges on larger allopathic ones. I have seen DOs limited to caring for their patients in strictly osteopathic hospitals because they could not get staff privileges on larger allopathic ones. I have seen DOs gain full acceptance in the military. I have seen the loss of one of our colleges and the granting of the little md degree to many of our California DOs. I have seen the expansion of our schools from 5 to 16 with 2 or 3 more on the drawing board. I have seen allopathic hospitals open their staff memberships to many of our physicians.

I have seen the acceptance of our graduates into allopathic residency programs with open arms, partially because the MDs discovered that our undergraduate training is very good, but also partially because their programs were not being filled by their own graduates. As a result of that acceptance, some of our schools have a very high number of graduates entering MD programs. Therein lies a problem. I have also observed a trend developing that might decrease the number of our graduates who enter primary care fields and opt for other specialities.

As an osteopathic educator for the last 15 years. I have seen many students come and go. Some are interested in the osteopath philosophy and some are not. I do know that our graduates are extremely well-trained and well-prepared for any residency program.

Now that the profession has gained greater recognition and equality with the allopathic profession, we are about to find out that in doing so, we are losing some of the uniqueness that brought us to this point. If we continue to stress the need to be totally equal, we will eventually lose that unique difference which has made the profession special over the last 100 years. We will lose that which has sustained us for so long. We are already at the point in time whereby our graduates do not know what it means to fight for our survival. Those battles were fought by many of us who entered the profession many years ago.

Manipulation is a very large part of the uniqueness, but there are other things as well. As a part of become a DO, we are taught to put our hands on a patient. In doing so, we develop something special – a special sense of trust the body has within itself the inherent ability to heal itself if all organs and tissues are in as normal a condition as possible. Therefore, we learn that prevention is a very import part of medicine. The interest we take in each of our patients and their families is another part of the uniqueness because we know that each patient's physical and emotional environment plays such an important role in their overall health.

Norman Gevitz's idea of a profession that is both parallel and distinct is right on target in my opinion. Parallel means that we teach everything the allopathic programs teach; train the same specialists and generalists that they train and, basically, practice medicine the same way they do. Distinctive means the use of palpation in finding structural diagnoses, treatment of those structural problems, practicing preventive medicine and being a good listener and friend to our patients.

I believe that those are the things that make up the uniqueness of our profession. We must never lose those qualities that constitute that uniqueness and distinctiveness. We must not lose sight of the fact that our colleges train the most graduates who enter primary care fields. Our leadership in this area must not diminish. I firmly believe that we must continue to produce graduates who want to become primary care physicians, especially in family practice.

Those DOs who receive their training in allopathic programs must bring the best of what they have learned to both undergraduate as well as graduate osteopathic medical education and training. They must help improve those programs where needed without diluting or diminishing the osteopathicness of our programs.

I believe that we need not fear the other profession destroying us from the outside, but that our real threat is that we will destroy ourselves from within by complacency and too much "me-too-ism." We must maintain the rationale for separation as a distinctive and unique medical profession that has something special to add to the health care of the people of this nation. I firmly believe that the osteopathic profession will survive and our colleges will survive because of that special uniqueness.

I invite each of you to examine your own philosophies about osteopath uniqueness. If you wish, I would also invite you to write your response and send it either to the *Texas DO* or to the *American Academy of Osteopathy Journal.*

T. Eugene Zachary, DO
Fort Worth, Texas

[Reprinted from the Texas DO *Journal, February, 1995.]*

Fifth Annual OMT Update

OMT – Advanced Osteopathic Life Support

plus Preparation for OMM Boards

October 19-22, 1995

Buena Vista Palace Hotel, Lake Buena Vista, Florida

This Academy program was designed to meet the needs of the physician desiring the following:

- OMT Review - "hands on experience and troubleshooting"
- Integration of OMT in treatment of various cases
- Preparation for OMM practical portions of certifying boards
- Preparation for AOBSPOMM (American Osteopathic Board of Special Proficiency in Osteopathic Manipulative Medicine) certifying boards
- Information on CODING for manipulative procedures
- Good review with relaxation and family time

Dates:
October 19-22, 1995
(Thursday PM - Sunday AM)

Location:
Buena Vista Palace, Lake Buena Vista, Florida

CME Hours:
4 days; 20 hours; AOA Category 1-A
21 hours; AAFP Approved
(Intermediate level course offered by the AAO)

Fees: (see registration form)

Refund Policy
All cancellations must be received in writing by September 19, 1995. An administrative fee of 15 percent of the total registration fee will be charged for all cancellations made by this date. No-shows and cancellations received after September 19, 1995 will receive no refund.

Lodging: Buena Vista Palace (An Official Hotel of Walt Disney World®)
Participants will receive a rate of $155 single/double occupancy. This is prime season in Orlando, so please call early and make your hotel reservations. **September 19, 1995 is the reservation cutoff date** and you cannot be guaranteed a room after that date or at that price. Call 1 (800) 327-2990 for reservations and be sure and tell them you are with the American Academy of Osteopathy's group.

Program

Ann L. Habenicht, DO, Program Chairperson

Certified AOBSPOMM, Certified ACOFP

Thursday, October 19

5:00 pm	Opening Reception
5:30- 5:45	Overview of the Course; "Applications of osteopathic concepts in clinical medicine... What to use: When and Why" Ann L. Habenicht, DO
5:45- 6:15	Cranial Osteopathy" includes question/answer period Melicien Tettambel, DO, FAAO
6:15- 6:45	Counterstrain" – Ann Habenicht, DO
6:45- 7:15	Myofascial Release" – Judith A. O'Connell, DO, FAAO
7:15- 7:45	Visceral Manipulation" – John Glover, DO
7:45-8:15	Muscle Energy" – Boyd R. Buser, DO
8:15- 8:45	High Velocity/Low Amplitude" – Ken Nelson, DO, FAAO
8:45- 9:15	Exercise Prescription" – John G. Hohner, DO
9:15- 9:30	Closing Comments – Ann L. Habenicht, DO

Friday, October 20

7:00am	Breakfast Lecture Coding Update – Getting Paid for What You Do" – Judith O'Connell, DO, FAAO
8:00-10:30	Lecture: "Thoracic Trouble-shooting" (to include various modalities approach - HVLA, ME, Counterstrain, indirect-MFR & cranial) Skills Session: Thoracic – John Glover, DO
10:30-11:00	Break

11:00- 1:30	Lecture: "Cervical/Suboccipital Troubleshooting" Skills Session: Cervical/Suboccipital – Melicien Tettambel, DO, FAAO Wrap-Up Session: (Summary) – Faculty
Friday PM	Free time for Exploration

Saturday, October 21

7:00am	Breakfast Lecture Coding Update -- Part II Judith O'Connell, DO, FAAO
8:00-10:30	Lecture: "Upper Extremity Troubleshooting" Skills Session: Upper Extremity – John Hohner, DO
10:30-11:00	Break
11:00- 1:30	Lecture: "Lumbar/Pelvis Troubleshooting" Skills Session: Lumbar/Pelvis – Boyd Buser, DO Wrap-Up Session: (Summary) – Faculty
Saturday PM	Free Time

Sunday, October 22

7:00am	Breakfast Lecture – Coding Update Part III Judith O'Connell, DO, FAAO
8:00-10:30	Lecture: "Lower Extremity Troubleshooting" Skills Session: Lower Extremity – Ken Nelson, DO, FAAO
10:30-11:00	Break
11:00- 1:30	Preparation for Manipulative Boards – Boyd R. Buser, DO John Glover, DO John Hohner, DO Ken Nelson, DO, FAAO Judith O'Connell, DO, FAAO

Case Study Preparation – "How to write them"
Written Exam Prep – "What to expect"
Oral Prep -- "What to expect & how to do it"
Individual Troubleshooting

****** Alternate Program ******

11:00- 1:30	Sports Medicine Extremity Review Mark McKeigue, DO Ann Habenicht, DO Melicien Tettambel, DO, FAAO

ADJOURN

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OMT Update Registration

October 19-22, 1995
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AAO Case Study:
Severe Left Hip Pain

by Sherri J. Tenpenny, DO

Indentification

J. B. is a 74-year-old, white male retired executive.

Chief Complaint

The patient's chief complaint is severe left hip pain with excruciating intermittent sharp pain radiating down the lateral aspect of his leg to the ankle. He also has intermittent sharp pains in the anterior aspect of his left thigh and in his left lower lumbar region. He states this pain has been present for 42 years.

History of Present Illness

This patient reports in 1952 he had an appendectomy and awoke with a painful ecchymotic area noted over the anterolateral aspect of his left iliac crest. He states he was told a clamp had been placed there during the appendectomy which caused the bruising. Since that time he has experienced intermittent, searing and painful episodes 6-8 times a day, lasting 5-20 minutes at a time. He states that the pain always starts in the area where the original bruise had been located. Over the years, he has been evaluated by multiple different neurologists at major centers. In 1984, a lateral femoral cutaneous nerve release of "scartissue" was performed by a neurosurgeon at a major center, without success. The patient states the pain bothers him most at night and he is awakened 2-3 times a night with searing pain radiating from his hip to his ankle. He has discovered that an ice pack to the iliac crest area decreases the duration of the pain and sometimes helps him get back to sleep. He has been on multiple medications including non-steroidal anti-inflammatories and non-narcotic analgesics without much success. He states the most relief he had obtained to date was from a series of acupuncture treatments he received approximately 15 years ago. However, that physician acupuncturist moved out of the area and he was unable to continue with these treatments. In addition, he relates intermittent chronic low-back pain that is well localized to the area of LS-S1 on the left. This is exacerbated by twisting and/or lifting. He denies any history of trauma to his back that precipitated the initial onset of pain.

Past Medical History

Past medical history includes hypertension, benign prostatic hypertrophy and an upper extremity tremor of undetermined etiology.

Past Surgical History

Past surgical history includes an appendectomy in 1952, hemorrhoidectomy, retinal reattachment, lateral femoral cutaneous nerve resection for "entrapment", a TURP and a right femoral hernia repair.

Medications

Medications include Chlorthalidone 25 mg 1/2 tablet b.i.d., Atenolol 50 mg 1 tablet q am, Amitriptyline 25 mg t.i.d., Ibuprofen 400 mg q.i.d. prn.

Allergies

None

Social History

Patient is a former smoker of 25 years duration. He stopped smoking in 1970. He admits to consuming approximately 1-2 ounces of alcohol in the evening daily and is on no special diet.

Physical Examination

Physical exam reveals an awake, alert extremely pleasant and delightful gentleman who appears his stated age. He is 5 feet 7 inches tall and weighs 190 pounds. His skin is noted to have multiple senile keratosis across his upper back and extremities. He ambulates well without any obvious disturbance to his gait. ENT exam is within normal limits. Heart rate is regular, rhythmical and without

murmurs. Lungs are clear to auscultation bilaterally. There is no obvious rib pain or rib somatic dysfunction noted. Abdomen is soft, non-tender. There is no rebound or guarding. There is no organomegaly and no obvious palpable masses.

Structural exam reveals decreased range of motion in the cervical spine compatible with his age. He has a mild increase of his mid-thoracic kyphosis. However, he has no appreciable somatic dysfunction in or through his cervical or thoracic spine areas. Lumbar spine reveals a positive standing and sitting flexion test on the left. There is no apparent short leg. There is noted to be somatic dysfunction in the lumbar spine area with the L5 noted to be neutral, side bent right and rotated left. Deep tendon reflexes were noted to be +2/4 bilaterally in both the upper and lower extremities without any obvious weakness, atrophy or fasciculations. He has an otherwise normal neurological exam. He has a negative Lasegue's test and a negative Fajersztagn' s test assessing for lumbar disc disease. He is found to have exquisitely tender, point localizing pain in the area of his gluteus minimus anterior muscle. Palpation of this triggerpoint reproduces the referred pain pattern down the lateral aspect of his leg to his knee and ankle.

Impressions

1. Myofascial pain syndrome involving the gluteus minimus anterior muscle

2. Somatic dysfunction of the lumbar spine

Treatment Plan

It was recommended that the patient receive osteopathic manipulation in addition to a series of treatments for myofascial pain syndrome, including myofascial release, muscle stretching and spraying utilizing Fluori-Methane, and, if necessary, triggerpoint injections.

Course of Therapy

On the first visit, the patient received osteopathic manipulative treatment using indirect and high-velocity/low-amplitude techniques to mobilize the somatic dysfunction in the area of his lumbar spine. In addition, Fluori-Methane spray was utilized to spray and stretch the following muscle groups on the left: gluteus minimus anterior, gluteus minimus posterior, gluteus maximus, adductors, rectus femoris, vastus lateralis, biceps femoris and hamstrings. Full active and passive range of motion was then performed to the muscle groups of the hip and low-back. An injection of Decadron (lcc) and Sensorcaine (3cc) was given into the triggerpoint of the gluteus minimus anterior muscle with a very good local twitch response which included reproducing the referred pain pattern to the ankle. In addition, dry needling techniques were used to break-up several satellite triggers that were located close by. The patient then received hot pack therapy for approximately 20 minutes and 3 full sets of active range of motion to the hip muscles. The patient was instructed extensively on stretches to be performed every 1 1/2 to 2 hours while awake for the next week. In addition, he was instructed to use warm heat in the area of his triggerpoint pain if he was awakened during the night instead of using ice.

The patient returned the following week stating the frequency of his pain attacks had definitely decreased to 5 times a day from 10 times a day. In addition, he states these painful episodes are now only lasting 5-10 minutes as opposed to 20 minutes. He states that after the initial visit, he slept 3 of 7 nights in a row without being awakened at all. He is faithfully doing his exercises 6-10 times a day and also when he begins experiencing a painful episode.

Physical exam reveals moderate pain still remaining at the sight of the gluteus minimus anterior trigger point. He was treated with spray and stretch techniques to all of the gluteus muscles, upper thigh muscles, latissimus dorsi and quadratus lumborum. The triggerpoint was, again, injected, this time with a solution of 1% Ponticaine (2cc) and normal saline (2cc). A good local twitch response was again obtained; however, the associated pain pattern was much less intense than his previous injection. Hot packs were applied for 10-15 minutes and the area was fully stretched and mobilized. High-velocity/low-amplitude techniques were applied to the patient's lumbar spine somatic dysfunction with good mobilization. There was no appreciable somatic dysfunction in the cervical or thoracic areas. The patient's craniosacral mechanism was assessed and found to have a rate of 8-10 cycles per minute with good amplitude. Sub-occipital release and a CV IV was performed. The stretches for his low back were reviewed and several new long trunk and quadratus lumborum stretches were added. On his follow-up visit 2 weeks later, J. B. reported having no pain in the area of his intensely painful gluteus minimus anterior triggerpoint. He has been sleeping the entire night for the last 2 weeks. He reported a new pain in the anterior aspect of his left thigh. This pain is less frequent and less intensely painful than the gluteus minimus anterior t igger, however he describes this pain as a deep ache that is exacerbated by climbing stairs and playing golf. He stated that his low-

back pain has completely resolved.

Physical exam reveals a latent, non-tender but very ropey triggerpoint noted in the area of his rectus femoris muscle. This was injected with a mixture of 1% Ponticaine (1cc) and normal saline (1cc) with a very good local twitch response. There was complete relief of the taut band within the muscle. He was instructed to continue his previous exercises and an additional exercise was added to stretch out the fibers of his rectus femoris muscle.

The patient returned to the office 2 weeks later stating that he had no pain whatsoever in the area of his gluteus minimus trigger or his anterior thigh. At that time, he was complaining of some minimal pain to the area of his lumbar spine. The physical exam revealed a positive standing flexion test on the left, with the L4/L5 area noted to be neutral, sidebent right, rotated left. This somatic dysfunction was treated with indirect, high-velocity/low amplitude mobilization, and counterstrain with complete relief of his pain. The patient went on an extensive vacation through the Western states and did not return to the office for 6 weeks. On his follow-up visit, he was found to have no recurrence of his hip, thigh or low-back pain. The patient was instructed to follow up on a prn-type basis and to continue all stretches at least twice a day with increased frequency at any signs of return of the pain.

Discussion

This case demonstrates how long a myofascial pain syndrome can persist without the appropriate diagnosis and treatment. In addition, secondary latent triggerpoints can become active and cause pain after the primary triggers have been treated. The patient had experienced 42 years of exquisite pain that was relieved by recognition that the muscle itself can be a source of pain. ❑

continued from page 21

The discovery and development of cranial osteopathy demonstrated that we early practitioners had overlooked much that was right in our hands. The whole field of technic has had many facets and many false starts. WE are still far from perfection, but that is the reason for this effort today. We are striving to bring our technic to the ultimate for results in ease of operation upon both operator and patient and scientific perfection. We are trying to correlate all of the knowledge, skill and experience of the past into a better working future.

While we are working out this better modus operandi we are also trying to work out a better teaching practice. That has at times shown a great weakness in our professional development. It will not be enough for only a few to attain skill. We must work out an efficient system of instruction for our students so that their time will not be wasted in much vain striving as many of us have done. And that also is why we are here.

If we can, here and now, bring about a correlation between a better working and more efficient technic to the student, we will have reached another important milestone in the development of osteopathy.

We hope here, today, by practical demonstration, to kindle the fire of inspiration that will permeate the whole profession, including our college curricula.

1) A function is a structure in action at a given time.

2) A new approach to technic is combined with teaching methods, not formerly used, to make the learning of lesion correction easy.

AAO Extends "Thanks" to Convocation Supporters

The American Academy of Osteopathy would like to convey its appreciation to those companies which exhibited at the 1995 Annual Convocation in Nashville, Tennesee this past March. They are:

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VIDEO TAPES

1995 AAO Convocation
New Horizons in Pain Management
Nashville, Tennessee

VIDEO TAPES

Tape #1 "Neuroanatomy of pain"
Frank Willard, PhD

"Trauma vectors"
Judith O'Connell, DO, FAAO

Tape #2 "Reflex sympathetic dystrophy & sympathetic dystonia"
Robert Kappler, DO, FAAO

"Psychiatric aspects of chronic pain"
Andrew Lovy, DO

Tape #3 "Pharmacology in chronic pain"
William Elliot, DO, PhD

"Oh, no, fibromyalgia!"
Mark Cantieri, DO

Tape #4 "Chronic foot and ankle pain"
Thomas Ravin, MD

"Discogenic vs. non-discogenic pain"
Manuel Pinto, MD

"Acupuncture in chronic pain"
Kenneth Lubowich, OMD

Tape #5 "Nutritional needs in chronic pain"
Stephen Elsasser, DO

"Reducing gravitational strain pathophysiology"
Michael Kuchera, DO, FAAO

Tape #6 "Chronic pelvic pain"
Melicien Tettambel, DO, FAAO

"Exercises for chronic pain"
Karen Gajda, DO

Tape #7 "Anesthesia's role in chronic pain management"
Larry Harker, DO

"Migraine cephalgia"
Hal Pineless, DO

Tape #8 "Fascial pain: Bell's palsy and trigeminal neuralgia"
William Wyatt, DO

"Chronic cervical spine pain"
Karen M. Steele, DO, FAAO

Tape #9A Conclave of Fellows
"Finding the key somatic dysfunction"
Edward Stiles, DO, FAAO

Tape #9B Conclave of Fellows
"Fixing the key: which technique to use"
Herbert A. Yates, DO, FAAO

Convocation 1995
Video Tape Order Form

VHS video tapes of the 1995 AAO Convocation are now available for your personal library at a discount price of $149.95 plus $10.00 shipping and handling for the full set of 10 tapes. Program chairperson Ann Habenicht arranged the program around the theme "New Horizons in Pain Management". The Academy hired a professional contractor to tape these lectures with a two-camera setup with on-site editing. Please review the titles of these lectures and order your complete set. You may also order individual copies of tape(s) which pique your interest.

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OMT – Basic Osteopathic Life Support

The Academy's program will focus towards workshop demonstration and application of osteopathic manipulative medicine.

Topics to be covered:

Counterstrain Module

This four-hour module will allow for short introductory lectures followed by hands-on sessions. The four main topics and demonstrations will be cervical region, pelvis, thoracic region and upper extremities.

Utilization of OMM in the Hospital Setting

High Velocity Low Amplitude Module

Evaluation and treatment of the cervical, thoracic, lumbar and pelvis.

Muscle Energy Module

Evaluation and treatment of the hips, sacrum, cervical and lumbar regions.

Myofascial Release Module

Evaluation and treatment of the cervical, thoracic, rib and upper extremity.

OMT Coding Update

Guy DeFeo, DO, CSPOMM
Program Chairperson

In Memoriam

Charles E. Still, Jr., DO

Dr. Charles Still, Jr., the youngest grandson of Andrew Taylor Still, MD, founder of the osteopathic profession and the Kirksville College of Osteopath Medicine, passed away. He had decided early in his life to follow in the footsteps of his father, Charles E. Still, DO, and his famous grandfather.

Dr. Still earned his Doctor of Osteopathy degree from the Kirksville College of Osteopathic Medicine in 1933. He practiced in Missouri, Hawaii, California and Texas prior to his opening a practice in Arizona in 1961.

After he retiring in 1980, Dr. Still focused his energy on assisting elderly citizens in Arizona. Named the Arizona Senior Citizen of the Year in 1972, he served on the Governor's Council on Aging for 11 years, was the founding chairperson of the Senior Adult Education Advisory Committee at Scottsdale Community College and assisted with various programs for the elderly at the local, county and state levels for many years.

In 1994, Dr. Still was inducted into the Health Care Hall of Fame in Chicago, Illinois.

He was convinced that the best was yet to come for the osteopathic profession. "There is such tremendous potential that has yet to be tapped," he said during a visit to Kirksville in 1986. "Although the profession has enjoyed a rich history of growth, I believe the future of osteopathic medicine is destined to be even greater. As my grandfather once said, 'The squirrel of osteopathy is still in the tree; we have only got him by the tail.'"

He is survived by his wife of 58 years, Dorris; 2 sons, Charles and Gerry, both of Scottsdale and 4 grandchidlren

Robert B. Thomas, DO

Robert B. Thomas, DO, 89, of Huntington, West Virginia, passed away February 19, 1995.

Dr. Thomas had retired in 1987 after 62 years of practice. He was a member the American Academy of Osteopathy, the West Virginia Osteopathic Association, the American Osteopathic Association and the Eastern States Osteopathic Society.

A recipient of the American Osteopathic Association Distinguished Service Award, Dr. Thomas was also honored by the Kirksville College of Osteopathic Medicine in recognition of 50 years of service to society. He was recognized as Mountaineer of the Year.

He was preceded in death by his first wife, Effie Mae Sadler Thomas. Survivors include his wife, Joyce H. Thomas; two daughters, Carolyn T. Beyer Pearson, DO of Chesterton, Indiana and Mary Suzanne and her family residing in Florida; a granddaughter, Mary Carolyn Riecke of Fort Wayne, Indiana; a stepson, Michael A. Barnett of Sanford, Florida and four great-grandchildren.

January 13-20, 1996
20 CME Hours (Category 1-A)
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Learn Basic Osteopathic Diagnosis and Treatment; "Joint Mobilization and Articulatory Technique"

Objective of Course
Learn to diagnose and treat motion restriction in the musculosketetal system. We will go over basic anatomy and terminology.

Who May Attend Course
Educational objectives for AAO are to provide programs aimed to improve understanding of philosophy and diagnostic and manipulative skills of osteopathic physicians and foreign DOs with a full license or a registration, medical, podiatric and dental professions within their licensed privileges of practice and for those in programs leading to such license.

Itinerary

Day	Port	Arrive	Depart
Saturday	Ft. Lauderdale (CME)		5:00 pm
Sunday	Princess Cays	10:00 am	5:00 pm
Monday	At Sea (CME)		
Tuesday	Montego Bay, Jamaica	8:00 am	5:00 pm
Wednesday	Grand Cayman	8:00 am	4:00 pm
Thursday	Playa del Carmen/Cozumel	8:00 am	6:30 pm
Friday	At Sea (CME)		
Saturday	Ft. Lauderdale	8:00 am	

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at Genesys Regional Medical Center, Flint Osteopathic Campus beginning June 1, 1995. Full-time position which includes opportunities for in-hospital and outpatient consultation in OMM, and developing and directing OMM curriculum for house staff. Potential clinical faculty appointment at Michigan State University COM. Must be certified or board eligible by AOBSPOMM and completed undergraduate fellowship or residency in OMM. For more information call Dennis DeSimone, DO, Director of Medical Education, (800) 233-2863 or write to Genesys FOC, 3921 Beecher Road, Flint, MI 48532.

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Full Spectrum Family Medicine

Seeks a BE/BC family physician committed to holistic medicine to join three other physicians with interest/skills in holistic family medicine and obstetrics, acupuncture, homeopathy, nutrition and osteopathic manipulative medicine. Pleasant building shared with alternative health center, location in college community. Supported by community hospital with competitive salary and benefits. Contact: Full Spectrum Family Medicine, 2025 Abbott Road, Suite 100, East Lansing, Michigan 48823; Phone (517) 333-3550.

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Need osteopathic sports medicine physician (board certified in general/family practice or osteopathic manipulative medicine) with strong skills in OMM and orthopedic medicine. Call for details (802) 878-1003.

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Calendar of Events

June

17-21
Basic Course in Osteopathy in the Cranial Field
The Cranial Academy
Arizona Biltmore
Phoenix, Arizona
Contact: The Cranial Academy
(317) 594-9299

23-25
Cranial Academy Annual Conference; "Tour de Force"
The Cranial Academy
Arizona Biltmore
Phoenix, Arizona
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July

8-9
Workshop in Dr. T. Yamamoto's Scalp Acupuncture; sponsored by Maryland Society of Medical Acupuncture; Presented by his student, Richard Feely, DO, FAAO
No previous acupuncture experience is necessary! Yamamoto scalp acupuncture is impressive for instant pain relief and the treatment of neurologic disorders such as stroke.
Fee: $325
Bethesda Holiday Inn
Bethesda, Maryland
Contact: Lillian Somner, DO
(301) 718-3696

August

26-27
Concept and Technique of the Levitor Orthotic Device
Michael Kuchera, DO, FAAO
Program Chairperson
American Academy of Osteopathy
3500 DePauw Boulevard
Indianapolis, Indiana
CME Hours: 16 Category 1-A
Contact: Diana Finley
Associate Executive Director
(317) 879-1881

September

15-17
Introductory Visceral Manipulation
American Academy of Osteopathy
Holiday Inn Airport
Indianapolis, Indiana
CME Hours: 25 Category 1-A
Contact: Diana Finley
Associate Executive Director
(317) 879-1881

18-22
Basic Course of the Expanding Osteopathic Concept into the Cranial Field – OP&S of California
Shilo Inn Pomona Hilltop Suites Hotel
CME Hours: 40 Category 1-A
Contact: OP&S of California
(916) 447-2004

28-October 1
Twenty Fourth Annual Convention
New England Osteopathic Association
The Hyatt Regency Hotel
Cambridge, Massachusetts
Contact: Nancy Dickey, Exec. Secy.
(207) 474-2357

16-18
AOA/AAO Convention
AAO Program: OMT – Basic Osteopathic Life Support
Guy DeFeo, DO, Program Chairperson
Orlando, Florida
For information on AAO program
Contact: Diana Finley
Associate Executive Director
(317) 879-1881

19-22
Fifth Annual OMT Update – Advanced Osteopathic Life Support plus Preparation for OMM Boards
Ann Habenicht, DO,
Program Chairperson
Buena Vista Palace
Orlando, Florida
CME Hours: 20 Category 1-A
Contact: Diana Finley
Associate Executive Director
(317) 879-1881

November

11-12
Advanced Percussion Vibrator Course
Robert Fulford, DO, Speaker
Richard Koss, DO, Instructor and
Program Chairperson
American Academy of Osteopathy
3500 DePauw Boulevard
Indianapolis, Indiana
CME Hours: 15 Category 1-A
Contact: Diana Finley
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