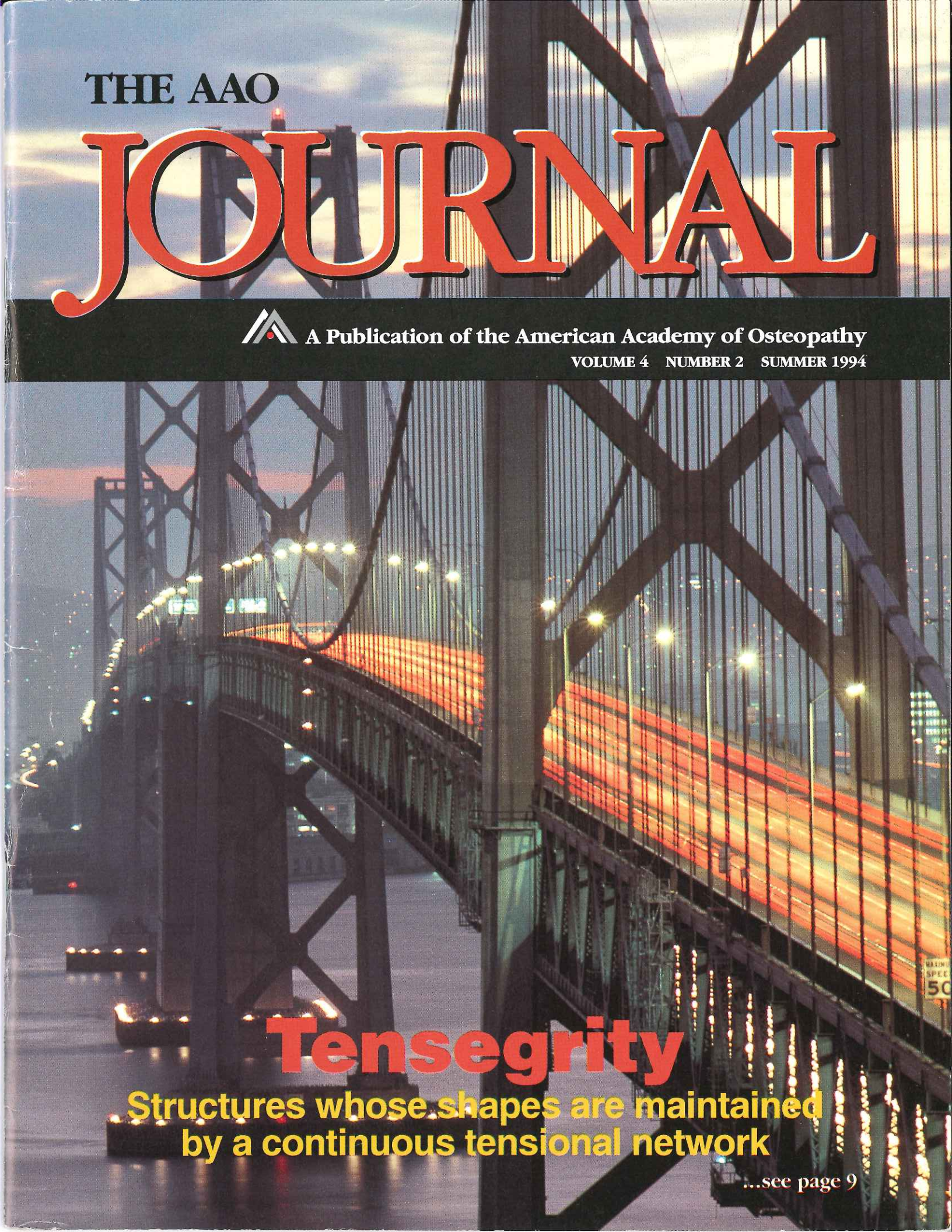

THE AAO JOURNAL

A Publication of the American Academy of Osteopathy
VOLUME 4 NUMBER 2 SUMMER 1994

Tensegrity

Structures whose shapes are maintained by a continuous tensional network

...see page 9

VIDEO TAPES
1994 AAO Convocation
"An Osteopathic Approach to Patients with Visceral Dysfunction"
Colorado Springs, CO

Lectures

Tape #1 *Welcome and Opening Remarks*
John C. Glover, DO, Program Chairperson

"History of Visceral Techniques in the Osteopathic Profession"
Anthony G. Chila, DO, FAAO

Tape #2 *"Spinal Cord I: Initial Processing of Nociception in the Spinal Cord Segment"*
Frank Willard, PhD

"Spinal Cord II: Somatic and Visceral Reflexes in Response to Nociception"
Frank Willard, PhD

Tape #3 *"Current Approaches to Visceral Manipulation"*
Jean-Pierre Barral, DO, MROF

Tape #4 *"Spinal Cord III: The Concept of a Homeostatic Nervous System"*
Frank Willard, PhD

Tape #5 *"A Missing Link?: Connections Between Visceral Manipulation & Acupuncture"*
Peter File, DO

"Research in the Development of Visceral Manipulation"
Jean-Pierre Barral, DO, MROF

Tape #6 *"Critical Pathways, Selection of Hospital Patients to Receive Manipulative Care"*
Edward Stiles, DO

"Evaluation & Treatment of the Surgical and Internal Medicine Patient"
Mark Cantieri, DO

Tape #7 *"Lymphatic System and the Diaphragm"*
Frank Willard, PhD

Tape #8 *"Role of Specialists in Manipulative Care"*
Michael Kuchera, DO, FAAO

"The Hospital Service: Privileges, Consultation, Charting, Charging & Quality Assurance"
Mark Cantieri, DO

Tape #9 *"Manipulative Care of an Obstetrics & Gynecology Practice"*
Melicien Tettambel, DO, FAAO

Tape #10 *"Differential Diagnosis & OMT Utilization with Emergency Department Patient"*
Frank Paul, DO

"Manipulative Care in the ICU"
G. Bradley Klock, DO

Tape #11 *"Manipulative Care in an Internal Medicine Practice"*
David A. Vick, DO

Tape #12 *"How I Use OMT in Genitourinary Practice"*
Wynne Steinsnyder, DO, FACOS

Tape #13 *"The Whole Patient Needs a Whole Physician. Is Fatigue Your Problem?"*
Galen S. Young, DO, FAAO

Tape #14 *"Blocks That Obstruct the Healing Process. Is Osteopathic Medical Care Good Enough?*
Robert England, DO, FAAO

Tape #15 *"Invisible, Intangible, Beyond the Microscope... Negative Influences Assail Our Patients"*
Viola M.Frymann, DO, FAAO

Workshops

Tape #16 *"Introduction to Visceral Manipulation"*
Jean-Pierre Barral, DO, MROF

Tape #17 *"Coding Update"*
Judith A. O'Connell, DO

Tape #18 *"Somatic Complaints of Visceral Origin"*
Daniel Bensky, DO

Tape #19 *"Use of Chapman's Reflexes in Evaluation and Treatment"*
David Patriquin, DO, FAAO &
Michael Kuchera, DO, FAAO

Tape #20 *"Evaluation & Treatment of Hospital Patients"*
Mark Cantieri, DO

Tape #21 *"Muscle-Fascial-Lymphatic Balancing Techniques"*
Wynne Steinsnyder, DO, FACOS

Tape #22 *"Teaching Disease Oriented Structural Diagnosis & Documentation"*
G. Bradley Klock, DO

for instructions to order video-tapes, . . . see page 8

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Subscriptions: $25.00 per year

From the Editor

Comments and Contributions: the State of the Journal

by Raymond J. Hruby, DO, FAAO

With this issue of the AAO Journal I would like to take some time to update our readers regarding the current state of our journalistic endeavors. A lot of people offer comments and ask questions about the Journal, so it is appropriate that we try to keep our readers informed as to what is happening with this important AAO publication.

First of all, you should know that the Journal has done well since its inception. We receive a lot of nice comments about the content and the appearance of the Journal, not only from Academy members, but also from other members of the profession and from people who see our Journal in osteopathic college and hospital libraries and other such places.

While I get a lot of compliments on the Journal's appearance, I can take very little credit for it. The classy appearance of our Journal is mostly the result of the efforts of Diana Finley, who does most of the layout of the Journal. Once we decide on the content of each issue, Diana either types, loads or scans the information into the computer, and then does a basic layout of all the material. The galley proofs are reviewed by myself, Steve Noone (our AAO Executive Director), Laurie Jones (our marketing and public relations expert) and the Editorial Board. Final revisions are made, and then the Journal is off to the printer! The elegant covers you have seen over recent months are due entirely to Diana's tasteful expertise in selecting them.

The content comes largely from member contributions, although we use occasional reprints from other sources when appropriate. I have to admit, when I first agreed to be the Journal editor, I was concerned about having enough content for each issue. However, the number of contributed articles have been so heavy that I am having trouble getting all the material published in a timely fashion! This is a great "problem" to have! For the most part, I try to publish contributed articles according to when we receive them. On rare occasion, because something is exceptionally timely or because of space considerations, we move things around a little. So, if you have sent me something for publication and have not seen it in the Journal yet, please bear with me. I swear it will be published just as soon as we can get to it!

Part of our problem is that we are a quarterly journal, and our publication costs are underwritten from the Academy's general funds with some income from advertisements that appear in the Journal. We are constantly contacting potential advertisers in an attempt to raise more revenue for the Journal. Since the AAO is working hard at keeping its budget balanced, I do not feel it is appropriate to ask for more general funds to expand the Journal. When we generate more income from other sources, we would like to either expand the Journal or publish more frequently.

For each issue I write the Editor's Page, the famous "Letter to A.T. Still", and I search out the material for the archival article. The rest comes from other contributors. The articles contributed by our members get better all the time. We hope these contributions will continue. We especially encourage our students, interns and residents to write articles for us to consider for inclusion in the Journal.

So, thanks to your comments and contributions, the *AAO Journal* continues to flourish and make its mark on the osteopathic world. All of us involved with the Journal are grateful to you. To quote those two famous philosophers, Bartells and James, "We thank you for your support!" ❑

Mark Your Calendar

June 18-22, 1994
Basic Course in Osteopathy in the Cranial Field
40 Hours CME Anticipated

June 23-26, 1994
Explorations in Osteopathy
(Clinical Correlations of Facial Structure and Function)
20 Hours CME Anticipated

Oklahoma City Marriott

Contact:
The Cranial Academy
3500 DePauw Blvd., Suite 1080
Indianapolis, IN 46268-1136
(317) 879-0713

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, University of New England, 11 Hills Beach Road, Biddeford, ME 04005.

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 President

Moving Beyond Equality Through Education and Unity

by Eileen DiGiovanna, DO, FAAO

Eileen DiGiovanna, DO, FAAO

As I looked back at my years in the Academy, I remember it when it was a "good ol' boys' club" in the best sense - because they let "good ol' girls" in, too. It was an educational and social club and we all enjoyed it. We met every year at the Broadmoor for convocation.

But it tended to be provincial. Dr. Bill Wyatt reminded the Board of Trustees that it was not so very long ago that the organization voted to keep students out of convocation. I am glad that was defeated because that would have been the death of the Academy.

When the Academy faced a crisis several years back, it stood up to that crisis. That was the best thing that ever happened to the Academy. Now it has evolved into a high quality organization. It sponsors high quality programs, has a high quality membership, high quality student membership and a high quality office staff. I am proud to be assuming the leadership of the Academy at this time in its history.

The theme for my presidency is "Moving Beyond Equality Through Education and Unity."

Unity is an issue frequently addressed recently. And a very important one. Unity must exist within the profession between all components, the American Osteopathic Association, the Academy, American College of Osteopathic Family Physicians and all other specialty organizations.

The organizations within the profession are a little like the three clergymen who went fishing. They rowed their boat out onto the lake and after fishing awhile the Catholic priest said he had to go to the bathroom so he got out of the boat and walked across the water to shore and returned the same way a short time later. Then the Protestant minister said he had to go to the bathroom and got out of the boat and walked across the surface of the lake to shore and returned a short time later and walked back to the boat. The Jewish rabbi was amazed. Well he knew that their Lord had walked on water but he thought, Moses had parted the Red Sea, so he stood up and stepped out of the boat and immediately sank to the bottom. The priest turned to the minister and asked, "Do you think we should have told him where the rocks are?"

To prevent the profession from sinking, we all need to communicate and share information about where "the rocks are."

Education is essential to my goal. One mission of the Academy is to become the worldwide authority on manual medicine. We need to not only educate our members and students through our programs, but also we need to educate people about the profession. We must teach third party payors, governmental agencies and the general public about the unique aspects of osteopathy.

The Academy must be the conscience of the profession, to keep it headed in the right directions preserving its heritage and traditions, as well as its unique concepts and philosophies.

We must strive to move the Academy and the profession beyond equality. For years the profession has been striving for equality with our allopathic counterparts. I read a quotation recently that stated that equality "Is the ceiling you place on your ability to be the best you can be."

All men are not created equal; we would be naive to think that they are. But they are all created with the equal right to be the best they can be. We do not want to limit ourselves with equality, but we do demand an equal right to practice our profession.

The temptation to pursue equality with MDs is a dangerous and slippery road. The Academy must dig in its heels and say, "So far and no farther."

Do you know how easy it would be to become equal?

- Stop doing OMT - rely on drugs and surgery.
- Stop looking at your patients as triune beings, and start looking at their diseases.
- Go to the colleges, cut the OMM curriculum. Then stop teaching OMM.
- Allow the colleges to stop granting the degree, "Doctor of Osteopathy."

Now, friends, you are equal -- easiest thing in the world.

I want to help lead the Academy

and through it, the profession beyond equality back to the unique profession we are. We must fight to retain our osteopathic philosophy, history and techniques.

We must encourage our students to have pride in their profession, their degree and their education.

I am proud to serve you at this exciting time in the history of medicine and this time of tremendous advance and growth of the Academy. I ask your help in all my endeavors, for I cannot succeed alone. ❑

To The Editor

"I Love My Work"

by David Teitelbaum, DO

My recent fortieth birthday stimulated a period of introspection. As I evaluated my current life, my thoughts repeatedly focused on my practice which is completely devoted to osteopathic manipulation. I have become aware of how my profession meets my physical, emotional, mental and spiritual needs.

Physically, I have been helped by osteopathic structural care in many ways. I no longer suffer from migraine headaches -- thanks to manipulative treatment received while I was a medical student. Other manipulative treatment has enabled me, in spite of a significant scoliosis, to lead an essentially pain free existence and be very active physically. Occasional aches and pains generated by a full day at the office respond to the same therapies I use with my patients, including self treatment and an applied osteopathic understanding of movement, breathing and exercise. Physical needs of food, clothing, shelter, education for my children and even eventual retirement are well met by my practice income, with money left over to indulge my passions for snow skiing, scuba diving and travel.

Emotionally, I am able to meet my personal needs for helping others, for caring, companionship, mirth, feeling useful, etc. I enjoy my patients and view many of them as friends. Those I can't come to think of as friends I view at best as instructional and at worst as entertaining! They share their joys, sorrows, loves, dreams, frustrations and catastrophes with me. I find it rewarding to be a part of their lives and provide compassion as well as relief of their physical pain.

My work also satisfies my addictive need for mental stimulation. This comes in myriad forms, including the reading of articles, CME programs and questions from patients, students and others who inquire about osteopathic structural care. I find the greatest mental challenge to be the one that osteopathic physicians from the time of A.T. Still get to deal with every day: How to apply osteopathic principles to most favorably effect the structure, function and health of the individual patient. I have learned much from many wonderful DOs, but much more I have learned from the daily treatment of my patients!

Over the years I have realized that my osteopathic practice does not just complement my spiritual path, it *is* my spiritual path! I have found little difference in learning to care for my difficult patients and learning to care for my fellow man in general. My practice teaches me that "difficult patients" are usually a result of my own difficulties, and this has helped me grow. I find more fulfillment in helping others lead less painful and more productive lives than any of my other endeavors. What can compare to the feeling of helping someone by artfully using one's hands? Further, doing a good job with indirect approaches requires me to repeatedly center myself through-out the day. This brings a pleasant calmness and promotes a sense of spiritual union not only with the patient, but my higher self within.

So I am now 40. I am an osteopathic physician. I love my "work". My needs are met. I am blessed.

Message from the Executive Director

Stephen J. Noone, CAE

At the March 1994 Convocation, the Board of Governors revised and reaffirmed the Academy's Long Range Plan, including the challenging goal "**To establish the AAO as the pre-eminent, worldwide source of education on osteopathy by the year 2000.**" I would like to point out three indicators which illustrate that the Academy is well on its way to achieving this goals.

Under the leadership of Program Chairman John Glover, the 1994 Convocation in Colorado Springs shattered all previous attendance records by physicians who this year studied *An Osteopathic Approach to Patients with Visceral Dysfunction.* The Academy is currently marketing video tapes of the 1994 Convocation's lectures and workshops not only for review by those who participated but also for those DOs who were unable to travel to Colorado Springs.

While the Academy is renowned for its delivery of high quality continuing medical education programs in osteopathic manipulative medicine, it also continues to make its mark in the publication of scholarly works in OMM. The AAO and Editor Myron Beal have published the 1993 edition of the Academy's series of yearbooks *The Selected Papers of John Stedman Denslow, DO*, whose "contributions to the osteopathic profession were clearly monumental and lasting." The AAO Yearbook is provided as a membership benefit to all Academy members.

Finally, *Nociception and the Neuroendocrine-Immune Connection* was the theme of the Academy's 1992 International Symposium. Co-chairs Frank Willard and Michael Patterson have completed their editing of the proceedings and have announced the availability of this publication through the AAO offices. Dr. Anthony Chila, Chairman of the AAO's Symposium Planning Committee comments in his forward for this publication: "Understanding the human body's ability to modulate responses to external and internal environmental signals is a significant first step to a deeper appreciation of the significance of Andrew Taylor Still's philosophy." This book is a significant contribution to the profession and should be included in the libraries of DOs everywhere!

AAO members should be proud of these educational achievements on the part of the organization and its leadership. I am thrilled to be part of the growing enthusiasm for osteopathy within the profession. I encourage you to invite your osteopathic physician colleagues to become a part of this dynamic organization. ❑

A Tensegrity Model for Osteopathy in the Cranial Field

by Charles H. Cummings, III, DO

Editor's note: Charles H. Cummings, III, DO is a 1987 graduate of the University Health Sciences College of Osteopathic Medicine in Kansas City. He currently has a private practice in Tiverton, Rhode Island both in family practice and osteopathic manipulative medicine.

Introduction

Osteopathic manipulative therapy is a system of physician-delivered treatment that involves palpation of tissue restriction and manual release of those areas of somatic dysfunction to improve tissue mobility. The ultimate goal of treatment is normalization of neuro-musculoskeletal and connective tissue function to maximize the body's homeostatic and self-healing potential.

Osteopathy involves removing the barriers to function of the normal physiologic processes. Although, by classical definition, respiration relates to oxygen exchange, from an osteopathic functional viewpoint, respiration can be seen as the cyclical contraction and relaxation to provide motion patterns vital to the life of the organism. William Garner Sutherland, DO recognized that respiration occurs not only in the thorax to involve the lungs, diaphragm and chest wall; but also he described the primary respiratory mechanism as a system of motion originating in the central nervous system, with palpable movements of the cranium, sacrum and all tissues of the body. This craniosacral motion is conducted not only through the muscles, fascia and skeletal system, but additionally, the nerves, dura and lymphatics are also involved in the transmission and coordination of motion. Craniosacral manipulative therapy is an osteopathic manipulative approach to diagnose, treat and harness the primary respiratory mechanism to improve the function of the somatic system in its entirety.

The ultimate goal of treatment is normalization of neuromusculoskeletal and connective tissue function to maximize the body's homeostatic and self-healing potential.

As a manipulative modality, craniosacral manipulative therapy has been practiced for over 50 years, and the clinical value of treatment to the craniosacral system has been investigated and reported in the literature.[1] Some research has been done to objectively document the craniosacral rhythmic impulse, but significant uncertainty regarding the origin of the mechanism still persists. Without an understanding of the origin of the primary respiratory mechanism, craniosacral manipulative therapy will never achieve widespread recognition and status as a bonafide treatment modality. An understanding of the origin of the primary respiratory mechanism is vital to predict the effects that craniosacral manipulative therapy have upon the homeostatic potential of the human organism.

Historical Perspective

Osteopathic physicians have developed a detailed system of diagnosis and treatment based upon reduction of strain at the reciprocal tension membranes.[2] William Garner Sutherland, DO originated the study of osteopathy in the cranial field, and he described the inherent motility of the neural tube, although he never actually described the brain tissues as the prime mover of the system.

Dr. Sutherland did understand that the cranial rhythmic impulse represented much more than the palpation of a simple pump circulating the cerebrospinal fluid. "Now notice the fluctuation of the tide - a movement coming in during inhalation and ebbing out during exhalation. Is it the waves that come rolling along the shore - is that the tide? No. The movement of the tide is the movement of that body of water, the ocean, that constant body of water. See that potency in the tide; more power, more

→

potency in that tide than there is in the waves that come dashing upon the shore."[3] Potency is a full and meaning-packed term to describe the fluctuation, "the movement of a fluid contained within a natural or artificial cavity and observed by palpation or percussion."[4] This term reflects the respect that Dr. Sutherland had for the power of the craniosacral system.

It is my view that several osteopathic physicians have misinterpreted Dr. Sutherland's descriptions of motility, fluctuation and potency. These terms are specifically process-oriented and represent a description of observed motion. Dr. Sutherland described his observations, and he related this to a coiling and uncoiling motion of the brain. But Dr. Sutherland admitted: "Do you think we will ever know from whence it cometh? Probably not. But it is there. That is all we need to know."[5] Other physicians have taken these descriptions of the coiling and uncoiling motions of the brain literally, and they have hypothesized that the craniosacral rhythm may originate from contractility of the oligodendroglia. Mitchell hypothesized actual movement of the brain tissue which he summarized: "The inherent motion of the brain can be described as a coiling and uncoiling of the neural tube... Its uncoiled state widens its transverse dimensions while shortening its anteroposterior dimension."[6] Upledger has taken this one step further and developed his "pressurestat model" whereby the craniosacral rhythmic impulse is powered by production of CSF at the choroid plexus.[7]

Realizing that there are no muscular agencies between the bones of the skull to provide the palpated motion at the cranial sutures, these hypotheses regarding the mechanism to power the palpated motion were developed in response to the need for a theoretical basis for clinical observation. Unfortunately, the models put forth thus far are not supported by known scientific evidence. The rate of production of the CSF from the choroid plexus is only 0.35 ml per minute.[8] It is difficult to translate this relatively slow production and flow of CSF into a model that powers the craniosacral system, a motion palpable not only from the occiput to the sacrum but throughout the entire body. There still exists no firm evidence of primary motion originating from the oligodendroglia of the brain. There does exist some evidence of motion at the cellular level,[9] but the proposed motility of the oligodendroglia has not been translated into a verifiable model whereby the brain literally coils and uncoils.

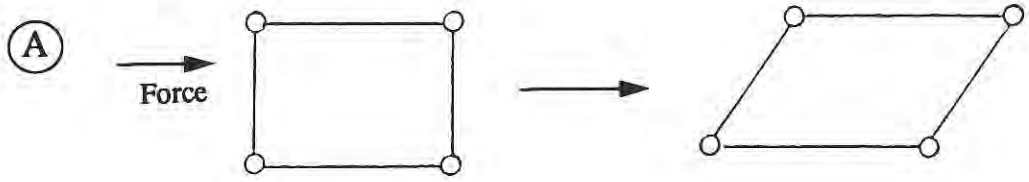
As physicians, we tend to analyze problems within the framework of anatomy and physiology, but in this case, that approach restricts our analytic process because our knowledge about the anatomy and physiology of the cranium, dural tube and lymphatics is incomplete. It is inherently difficult to study motion in the head because the system is totally disrupted with any invasive study. We have tried to tie together the postulated cranial bone movement with the palpated rhythmic motion, but it is even possible that the palpated rhythm has an entirely different origin. My purpose in the remainder of this paper is to propose another model for the cranial rhythmic impulse, still consistent with known anatomy and biophysics, that will also explain the clinical effectiveness of craniosacral manipulative treatment.

Theoretical Model

To determine the basis for the potency and motility of the craniosacral system, we must take a step back and analyze the entire system using system mechanics. Systems science allows us to see biologic organisms as composed of independent, yet interdependent subsystems which influence one another in non-linear ways.

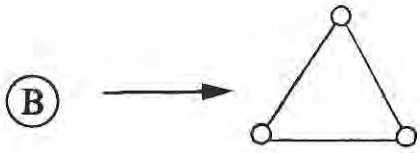
First, I want to demonstrate how system mechanics change the way that we view the musculoskeletal system. Levin has demonstrated that spinal mechanics cannot be reduced to simple lever mechanics. To balance the center of gravity, a rigid system of spinal motion based on levers and guide-wires would require huge spinous processes and "the forces necessary to stabilize a multiple-hinged, rigid-linked system such as the body would, in presently conceived linear, lever models, be bone-breaking, muscle-tearing and energy exhausting."[10] Levin explains "natural systems are self-generating, least energy systems with a hierarchy of structure and mechanics"[11] One model that is stable, with flexible hinges and minimal energy expenditure, is the truss. Loads applied at any one point are distributed about the truss, and there are no levers within a truss (Fig. 1). A bridge is a mechanical type of truss system (Fig. 2).

Systems science is useful in looking at the biologic organism as a whole which is more than just the sum of its parts. Biologic structures are not just tissues and multiple joints existing in close proximity to one another. All the tissues and joints are interdependent upon one another. The fascia, muscles, ligaments and connective tissues are similar to a

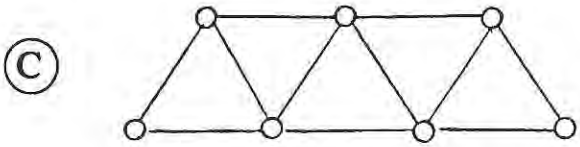


Flexible Hinge

Square Frame with Flexible Hinges:
Unstable to Resist Outside Force



Simple Truss:
Stable with Flexible Hinges



Single Plane Truss System:
Stable to Resist Outside Loads

Fig. 1

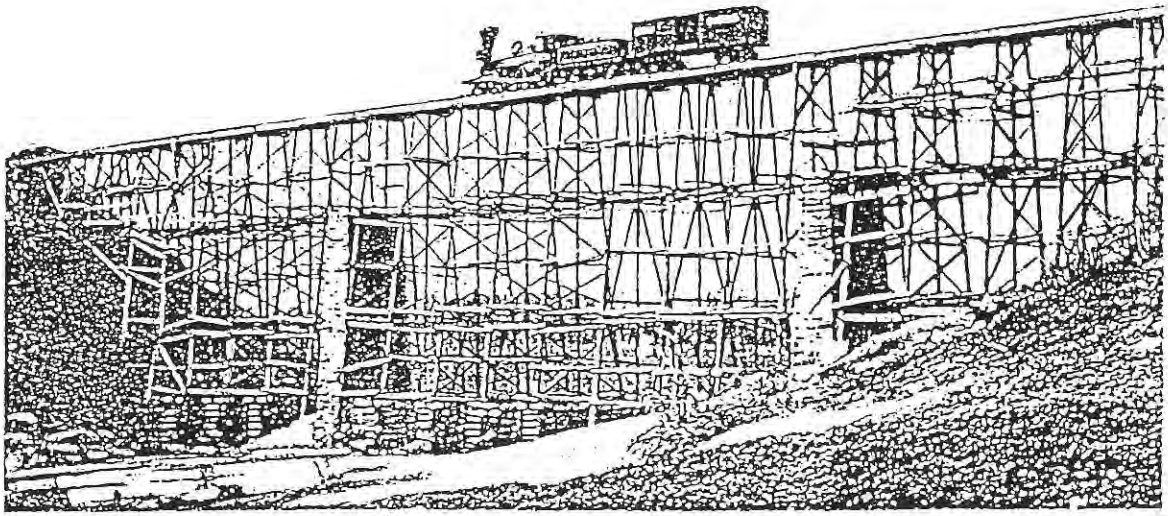


Fig. 2 - Bridge - A Tensegrity Structure

truss, the tension elements that maintain the tension of the system and hold it together.

Buckminster Fuller designed structures in which shapes are maintained by a continuous tensional network, and he coined the word tensegrity (from the words tension and integrity).[12] Reciprocal tension structures exist by balancing compression and tension together synergistically to form structures that can bear extremely strong loads. A cell is an example of a tensegrity structure.[13] The molecules inside are in constant motion, and the collisions of those molecules thrust them against the cell membrane which restrains the molecules inside by the tensional network of the cell membrane (Fig. 3).

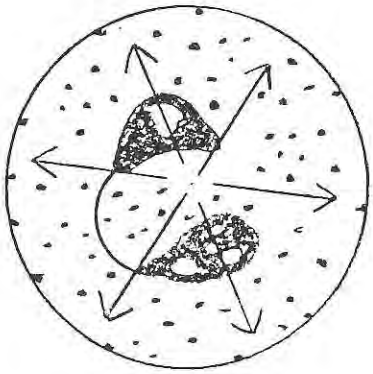


Fig. 3 Cell Wall Resists the Molecules Inside to Maintain Shape

The triangle is the basic shape for tensegrity structures in nature because, in the triangle, each angle is always braced by its opposite side, thus forming a structure that holds its shape without any outside support. When a structure is built with triangles, it does not need any outside influence to brace itself (Fig. 1). The icosahedron is self-stabilizing because its faces are composed entirely of triangles (Fig.4). It is postulated by Levin that the icosahedron is the primordial structure[14] out of which other structures are built. The proteins of viruses close-pack as icosahedra, and natural structures such as honeycombs and pollen grains are also variations of triangulated structures (Fig. 5). These structures require the least energy to maintain their structure.

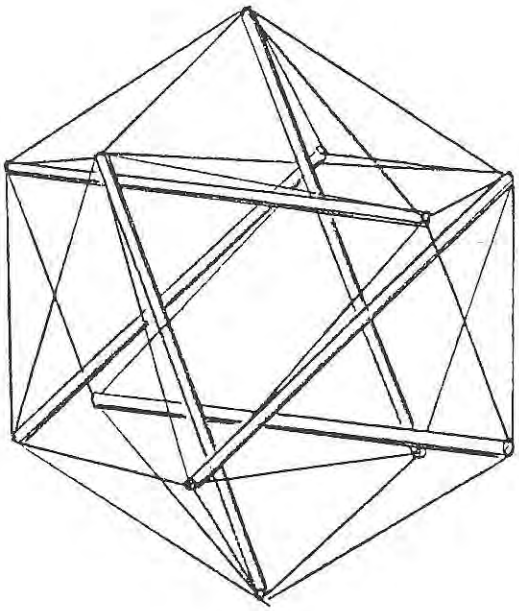
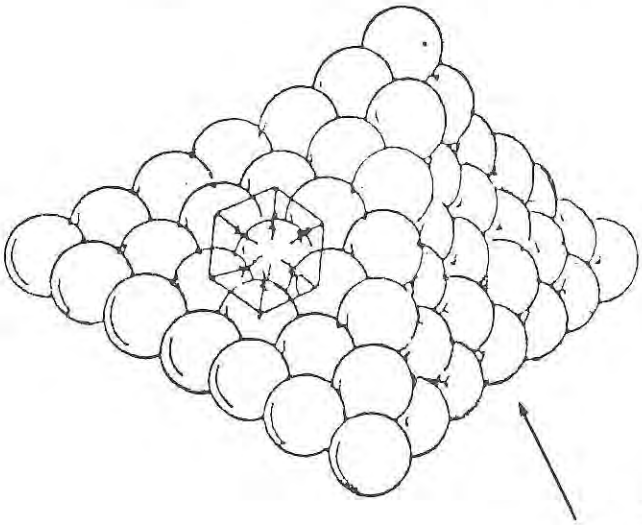
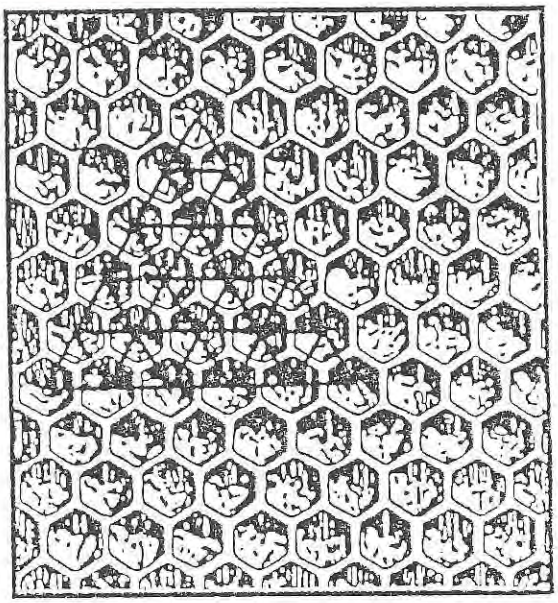


Fig. 4 Icosahedron - Faces are Composed of Triangles

A variation of the icosahedron exists whereas the icosahedra are linked so that each subunit can function as an independent icosahedron or as part of an ever increasing icosahedron in a hierarchal pattern (Fig. 6). Linked together in this way, complex structures may retain the dynamic stability of the

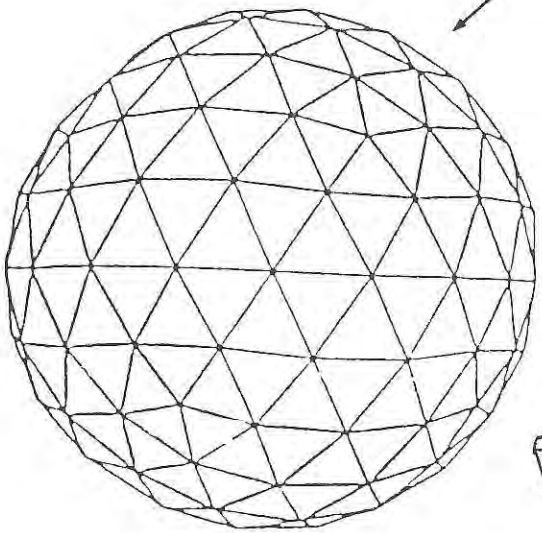
Ⓐ Close -- packing spheres -- form a hexagonal pattern. This pattern requires minimal energy to maintain stability.





Ⓑ Honeycomb

Fig. 5



Ⓒ Virus

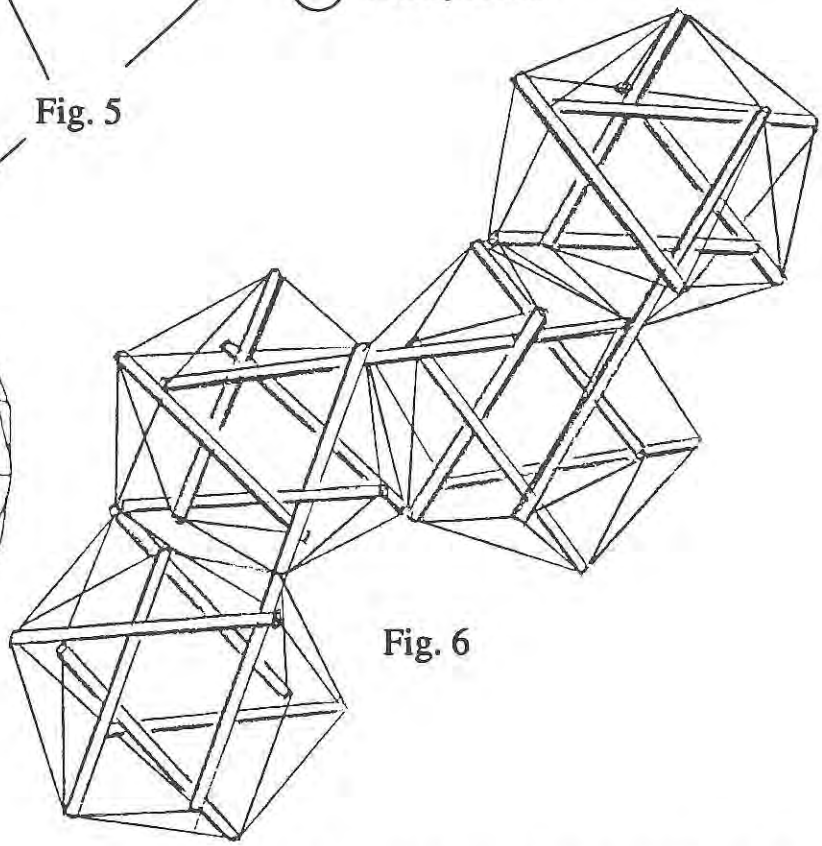
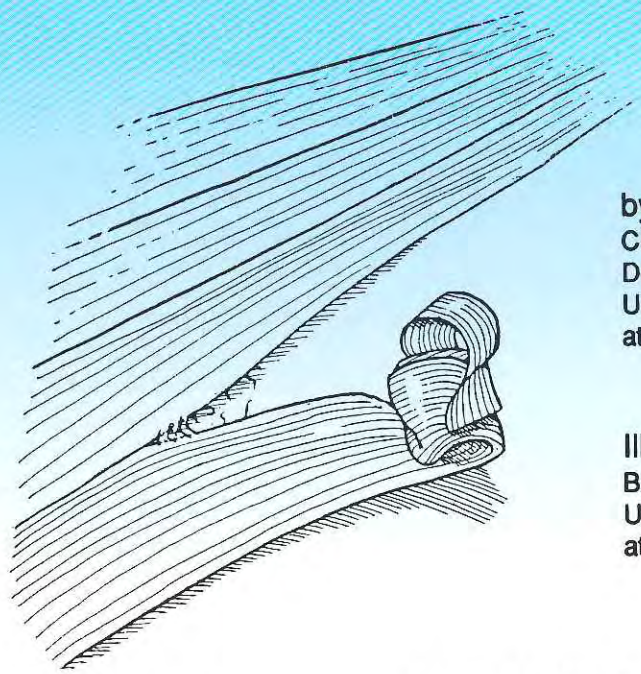


Fig. 6

Linked icosahedra -- high stability with added flexibility.

continued on page 24

Introducing the Fascial Distortion Model



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Introduction

The fascial distortion model is a new anatomical model in which many musculoskeletal injuries are thought to be the result of specific alterations of the body's fascia. It was developed in an attempt to improve current treatments by basing them on a more anatomical approach. Many of the most commonly seen musculoskeletal injuries are vaguely defined and often respond poorly to conventional treatments. One example of this is a pulled muscle. It is difficult to visualize what a pulled muscle is, and therefore most treatments are not specifically designed to correct the underlying dysfunction. In the fascial distortion model a pulled muscle is defined as a muscle that has a triggerband wedged within its belly at a perpendicular angle to the axis of the muscle. This definition allows us to conceptualize the pathology and to speculate on how our treatment choices might affect the dysfunction. Another example is tendonitis. The traditional definition implies that it is the result of inflammation of an involved tendon, but clinically this rarely occurs. In the fascial distortion model tendonitis is defined as a triggerband or less commonly a continuum distortion present in an involved tendon. The dysfunction now becomes tangible, and the treatment modality can be specifically selected for that particular distortion type. This change in terminology perspective can often lead to significantly more effective treatment results.

There are four principle distortion types and several subtypes which are considered to be the etiological cause of a whole host of commonly seen dysfunctions from ankle sprains to whiplash injuries. These distortions are presented and discussed over the next several pages. Some of the terms used will be familiar to the reader, but in the fascial distortion model they take on other meanings and have implications that the reader may not appreciate at first. This paper defines terminology so assumptions are not derived from other medical models. A glossary of fascial distortion model terminology is presented at the end of this paper. All of the drawings are based on as much clinical and anatomical information as is currently available. In time as more data accumulates through surgical and clinical investigations, more specific representations of fascial distortions can be made.

Principle types of Fascial Distortions

All fascial distortions currently known are of one of four types: triggerbands, triggerpoints, continuum distortions or folding distortions. These are reviewed and compared in Table 1. Note that each principle type is differentiated by the etiology of its distortion.

Triggerbands

Triggerbands are clinically the most commonly encountered fascial distortion and occur as fascial bands become pathologically altered. An important difference between triggerbands and the other principle fascial distortion types is that during treatment triggerbands move and the others do not. In the fascial distortion model movement is considered to occur when the tender area of a fascial band or its palpable distortion is able to change its location during treatment. Therefore any fascial distortion that can be induced to move is by definition a triggerband and is best treated with modalities that correct distorted fascial bands.

There are six clinically recognized subtypes of triggerbands: twists, crumples, knots, peas, grains of salt and waves. Note that these subtypes were named by my patients based on what these distortions felt like to them.

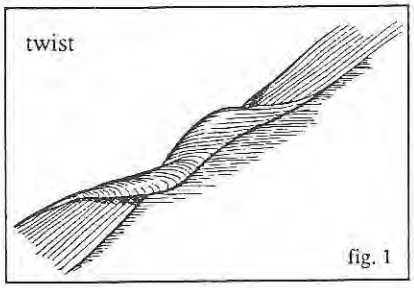

fig. 1

Table 1
CLINICAL COMPARISON OF PRINCIPLE TYPES OF FASCIAL DISTORTIONS

DISTORTION TYPE	Etiology	Movement during treatment	Common location	Most specific treatment
TRIGGERBANDS	Distorted Fascial Bands	Yes	Specific pathways throughout the body	Triggerband technique
TRIGGERPOINTS	Herniation of tissue through fascial plane	No	Abdomen, pelvic area, supraclavicular fossa	Jones technique or triggerpoint therapy
CONTINUUM DISTORTIONS	Alteration of transition zone between tissue types	No	Near joints at the origin and insertion of tendons or ligments and costo-chondro junction	Continuum technique
FOLDING DISTORTIONS	Three dimensional distortion of fascial planes	No	Inside joints, interosseous membranes	Myofascial release technique

The triggerband subtypes are compared in Table 2. An important point to realize is that regardless of the specific subtype all are treated essentially the same way, that is by using triggerband technique. The palpatory differentiation of the subtypes is necessary so they are not confused with other distortions and treated inappropriately. Their treatment is the subject of the accompanying paper *Triggerband Technique*.

Twists (fig. 1) are the most common of the triggerband subtypes and can appear anywhere in the body along specific, well-demarcated pathways. To the physician they feel like the edge of a twisted ribbon. A crumple (fig. 2) is a distorted fascial band that is wedged between two muscle layers. During treatment, patients describe these as causing a burning type of pain. Like all of the subtypes, twists and crumples are capable of travelling through tissues or joints into other fascial planes. Once a crumple is pushed through the muscle, it then is palpated as a twist.

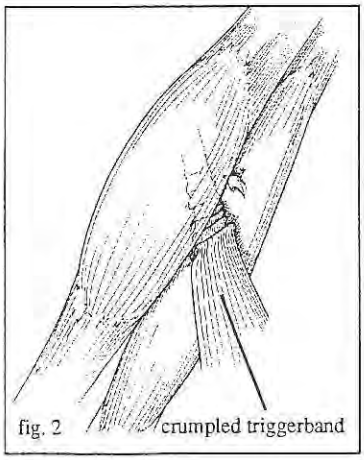
fig. 2 crumpled triggerband

Knots (fig. 3) are the largest of all the triggerband subtypes and are caused by either a portion of a fascial band becoming irregularly folded on itself or occur when a portion of the band that has been ripped off its attachment becomes knotted on top of itself. Knots tend to be found at crossbands, which are fascial bands that intersect the triggerband at an angle. The crossbands seem to stop the progression of the tearing between

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fascial fibers and thus stop the knot from becoming larger.

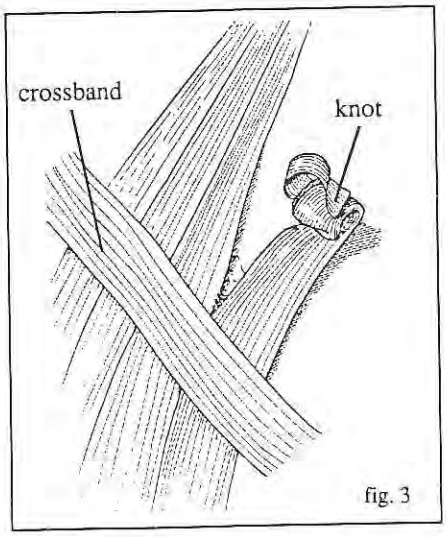

fig. 3

Peas (fig. 4) and grains of salt (fig. 5) are seemingly just smaller versions of knots. Peas are smooth, and are obviously pea-sized, while grains of salt are much smaller with irregular borders. As a general rule, knots are found the most centrally, peas are found in the neck, upper arms and thighs and grains of salt are found in the face, scalp, hands and feet.

The wave that is seen when a

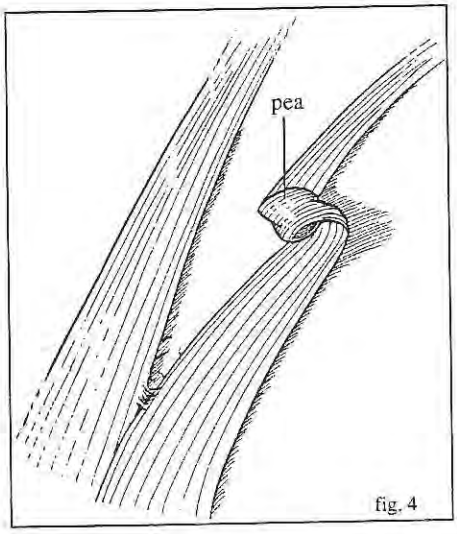

fig. 4

triggerband occurs is found on the fascial bands that connect to the injured band (fig. 6). The triggerband, because of its distorted or twisted fibers, becomes shortened. This shortening causes the adjoining fascial bands (usually crossbands) to be pulled toward the distortion at their point of attachment to the injured band. This results in the formation of the wave that is present with most triggerbands. The wave is therefore a distortion in its own right and it can take on a life of its own. It can be pulled or pushed by forces that may act upon it (including triggerband technique, stretching and high velocity low amplitude osteopathic manipulation). When waves occur in ligaments that are close to joints, they tend to become pulled by everyday normal motion in toward the joint. As they become closer physically to the joint, the patient experiences a sense of tightness of the joint because the wave is now interacting on the structures on and near the joint causing a restriction of joint function. This is

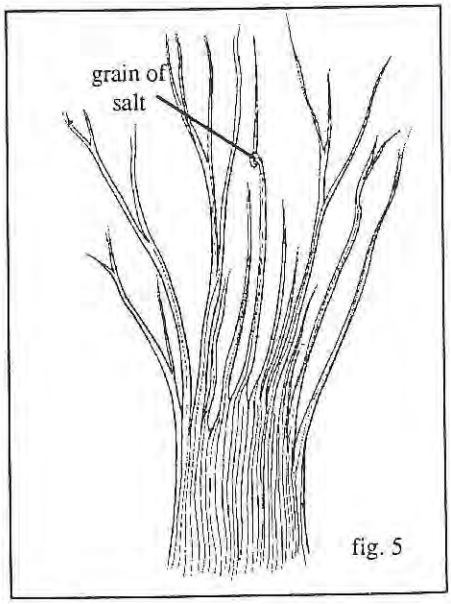

fig. 5

CLINICAL COMPARISON OF TRIGGERBAND SUBTYPES

Table 2

Subtype	Palpatory description	Patient's description during treatment	Palpatory dimension	Associated with other triggerband types?	Common locations
Twist	Ribbon edge	Well-defined, demarcated point of tenderness that moves with the treatment	Suture to pencil width	No	Anywhere including through joints
Crumple	Electrical sensation	Burning	1/4" to 1/2" wide	Yes, becomes twist during treatment	Between muscle layers
Knot	Knot	Tender knot	Nickel to half-dollar diameter	Yes, becomes pea, grain of salt or twist	Thoracic and lumbar areas
Pea	Soft, smooth and round, pea-like	Tender lump	pea-sized	Yes, becomes grain of salt or twist during treatment	Neck, thighs, and upper arms
Grain of Salt	Small with hard irregular borders	Scraping sensation	Salt grain-sized	No	Face, scalp, hands, and feet
Wave	Wrinkle	Tenderness or tightness at treatment site	Barely palpable	Yes, any distorted band can have a wave	Anywhere, but particularly near joints

objectively seen as a loss of motion of the involved joint. In acute conditions (i.e., distortions in which no fascial adhesions have formed) the wave is able to travel freely to and from the joint as the forces act upon it (fig. 7), but in general without intervention it is pulled in a direction toward the joint. In chronic pain (i.e., fascial distortions in which adhesions are present) the wave is held firmly in place by adhesions and is immobile (fig. 8). The degree of immobility of chronic pain is determined in part by how far the locked wave is from the joint. The closer the wave is to the joint the less motion the joint will have.

The acute wave can be corrected or moved by certain soft tissue techniques, such as triggerband technique, myofascial release, rolfing, traction or stretching. I prefer triggerband technique because it is the most specific; it follows the distortion until it is far from the injury site and corrects it at the conclusion of its pathway (fig. 9). Myofascial release, rolfing, stretching and traction merely pull it away from the joint to a distant area, but since the distortion is not actually corrected, it may eventually be pulled back into its prior location. In chronic pain, normally only triggerband technique will be effective because it is specifically designed not only to correct the wave but also to break the fascial adhesions.

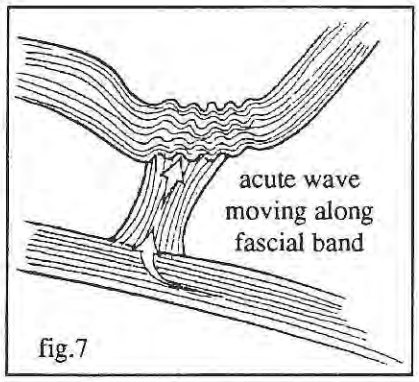

fig.7

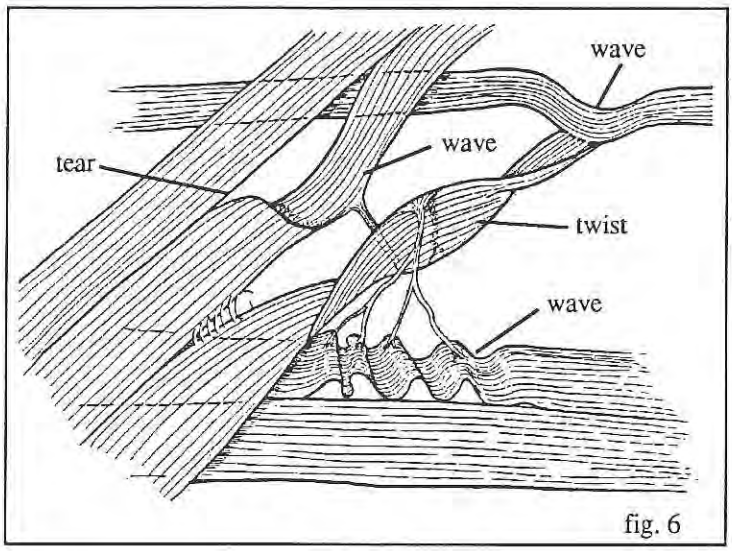

fig. 6

High velocity low amplitude osteopathic manipulation (HVLA) is a technique that uses the vertebrae or other bony structures as a fulcrum to slingshot the acute wave away from the joint at a very high speed. If the direction and speed of the wave reach a certain threshold the joint will manipulate and a popping sound can be heard. If the thrust does not generate enough speed, the wave will not be moved successfully and the joint will not be manipulated.

In the fascial distortion model the two clinical concerns with HVLA are 1) the wave has been forced away, but may in time be pulled back into its previous location and 2) adhesions would be expected to thwart the speed of the wave propagation, thus making HVLA an impractical treatment to use in chronic pain. The problem with the wave eventually returning is the same one that several other modalities have. This is seen most commonly in those patients that feel they need to be popped frequently. For other patients manipulation appears to be curative. This may be because the wave was pushed away into another location where the forces acting upon it were able to straighten it out. In chronic pain, a successful manipulative thrust is difficult to achieve, and the patient often expresses discomfort with the treatment itself. This is in contrast to acute pain in which the patient normally experiences a dramatic subjective improvement at the instant of the manipulation. As is expected from this model, once the adhesions are broken with triggerband technique, then even the most difficult to manipulate patients become easy to manipulate, and the manipulation is then a positive subjective experience. HVLA's role in the fascial distortion model is primarily in acute pain and in chronic pain after it has been made acute by destruction of the adhesions.

Triggerpoints

The term triggerpoint has been used in the past for a variety of fascial

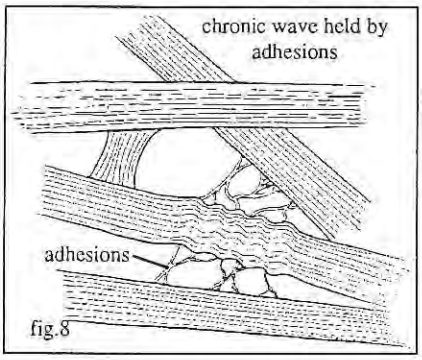

fig.8

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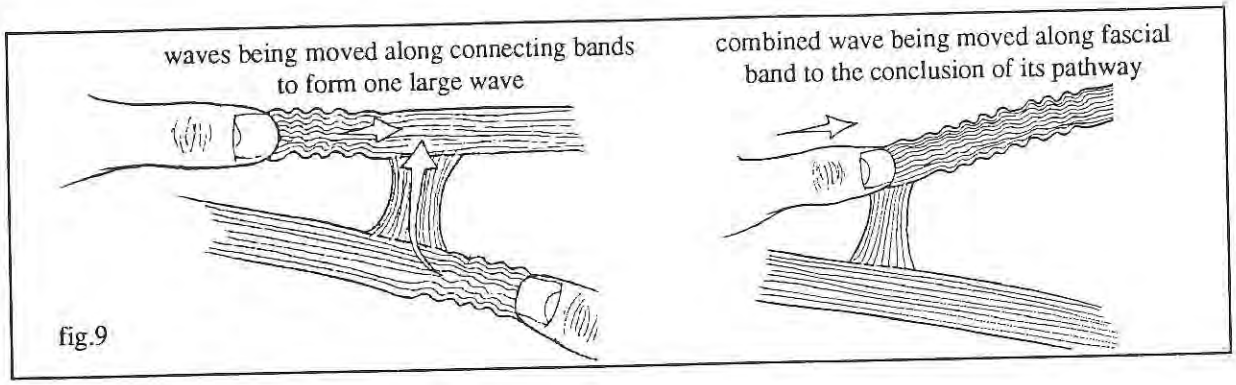

fig.9

distortions that have different etiologies and treatments. I prefer fascial distortion as a general term, and then I use terms such as triggerband, continuum distortion, triggerpoint and folding distortion as more specific descriptions. I believe that there is only one type of true triggerpoint. This is the one I refer to as a **herniated triggerpoint.**

However, there are two subtypes of these. One involves a fascial band distortion (i.e., triggerband) that results in a herniated triggerpoint and is therefore a combination of a triggerpoint and a triggerband, and the other involves herniation without a fascial band distortion. The treatment of a **non-banded herniated triggerpoint** (fig. 10) is to force the protruding tissue below the fascial plane. This is accomplished by holding firm pressure onto the affected area with the physician's thumb until a release is felt. Correction of the **banded herniated triggerpoints** (fig. 11) is initially the same. Following the release the triggerband is then corrected using triggerband technique. The two triggerpoint subtypes are compared in Table 3.

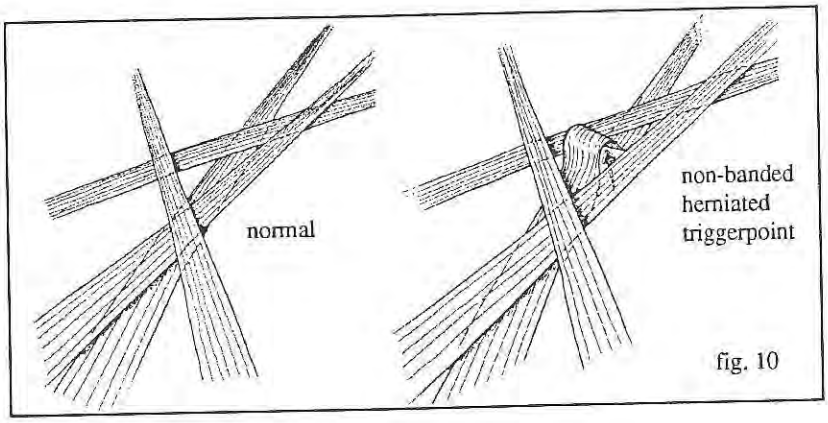

fig. 10

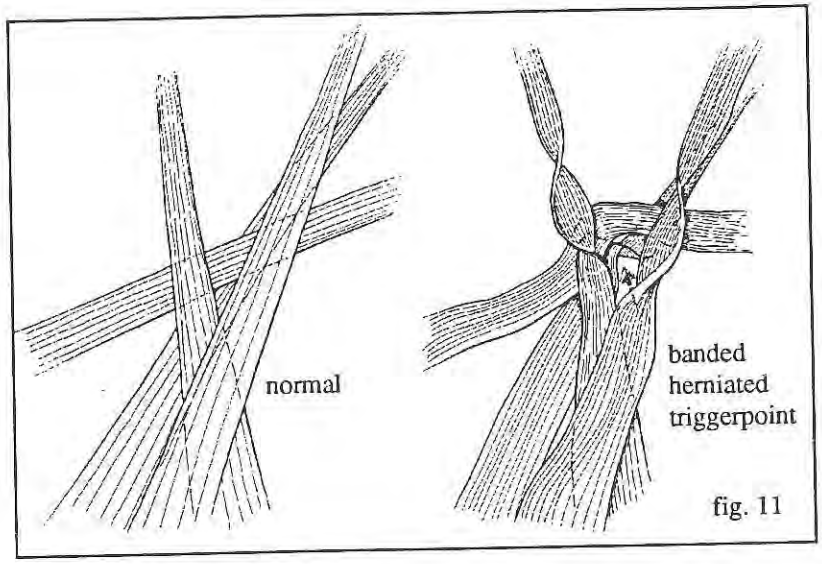

fig. 11

Triggerpoint distortions are clinically the cause of many types of abdominal and pelvic pain, particularly those that do not respond to surgical intervention. In addition, they are important factors in fascially frozen shoulders (see *Triggerband Technique*) and in bursitis-like injuries of the upper thighs and gluteal areas. Differentiating them from other principle distortion types is critical in obtaining successful treatment results.

Another type of fascial distortion is a **banded pseudo-triggerpoint** (fig. 12). It is a raised and tender area of fascia that is caused by two or more triggerbands becoming intertangled. It is not a triggerpoint at all, although upon palpation it may seem similar. It is treated by correcting one triggerband at a time until all the distortions are resolved.

continued on page 30

From the AOBSPOMM Files

AAO Case History

Postpartum Facial Palsy

by Robert Paul Lee, DO

Editor's Note: *Robert Paul Lee, DO, a 1976 graduate of Kansas City College of Osteopathic Medicine is board certified in OMM and holds a Certificate of Competency in Osteopathy in the Cranial Field. Dr. Lee completed his residency in osteopathic manipulative medicine in 1986 and is presently is private practice in Durango, Colorado.*

Introduction

Bell's Palsy, the spontaneous and usually transient weakness of the muscles of facial expression, is attributed to entrapment of the facial nerve (CN VII) as it courses through a tortuous canal within the temporal bone. Entrapment is believed to occur as a result of swelling within this unforgiving canal. This can happen if inflammation results from a viral infection, the etiology believed by conventional medicine to be the most common; or by mechanical trauma, the etiology to be discussed in this paper.

As cranial osteopaths know from clinical experience, limited motion of the temporal bone(s) is found in association with Bell's Palsy. Frequently, the patient presenting with a unilateral facial weakness has a significant restriction of motion of the ipsilateral temporal bone. Motion of the bone in external and internal rotation is severely limited.

The cranial concept posits that all the bones of the skull move very slightly to accommodate the cyclical swelling and receding of the central nervous system and the cerebrospinal fluid. The dural membranes within the skull and spinal canal integrate the motion of all these components of the system. This motion was named the primary respiratory mechanism, by its discoverer, William Garner Sutherland, DO.

Of special interest, in this case presented here, is the relationship that exists within this mechanism, between the cranium and sacrum. Surrounding the spinal cord is an inelastic dural tube which is firmly attached around the circumference of the foramen magnum at one end and to the posterior aspect of the spinal canal at the level of the second sacral segment at the other. Except for an attachment at the second and third cervical segments, the dura is otherwise relatively free to glide within the bony canal of the spine. This structural arrangement has the functional effect of integrating the motions of the basiocciput and the sacrum.

Osteopathic physicians recognize the importance of the sacrum and pelvis in the functioning of the occiput and the head and (visa versa).

As the primary respiratory mechanism cycles through flexion and extension, the cranial base elevates and descends very slightly. Because of the spinal dural tube, the sacrum is alternately pulled upward and released downward. In the flexion phase, the sacral base moves slightly towards the head, the coccyx moves anteriorly, and the base of the sacrum moves posteriorly. In extension, the sacrum moves inferiorly; its base moving anteriorly, and the coccyx posteriorly. These movements are commonplace for the practitioner of cranial osteopathy.

Clinically, osteopathic physicians recognize the importance of the sacrum and pelvis in the functioning of the occiput and the head, and *visa versa*. The ligamentous attachments suspending the sacrum within the pelvis integrate the motion of the sacrum with the entire pelvic bowl. Likewise the cranial dura integrates the motion of the entire cranium. These two "bowls"[1], the cranium and the pelvis, reflect each other through the spinal dura, called the "core link". For example, the sacrum and the →

occiput move similarly in the midline. In flexion, the basiocciput and the coccyx move toward their respective "internal" surfaces, the occiput superiorly towards the brain, and the coccyx anterosuperiorly towards the pubic bone. They reverse these movements in extension. In like manner, the ilia and the temporal bones imitate each other. In flexion, the mastoid processes of the temporal bones and the ischial tuberosities of the pelvis both move posteromedially. Likewise, the squamous portions of the temporals and the crests of the ilia move anterolaterally. The fulcra for these motions are the external auditory meatuses of the temporals and acetabula of the ilia.

Case Report

A 33 year-old Hispanic, full-term female, P1/G3/AB1, delivered at home, supporting her back with pillows against a wall, while sitting on the floor. Progression of labor was normal, 10 hours in duration, and the baby was born right occiput anterior with APGAR scores of 7 & 9. The uterus remained atonic after two intramuscular injections of oxytocin, and >1000 ml of blood loss was discovered behind the placenta after its delayed delivery. Acupuncture tonified the uterus, and bleeding was controlled; however, it was observed that the fundus remained located asymmetrically to the right; the left margin of the fundus was found to be to the right of the midline.

A few hours after delivery, the mother reported that the midline of her tongue felt numb. Twenty four hours later, she complained that she had difficulty focusing her right eye. Within 48 hours after delivery, facial weakness on the right side was becoming evident. By 72 hours a full-blown right facial palsy had developed with smooth, unwrinkled skin from the forehead to the chin.

Palpatory examination revealed the uterine fundus to be to the right of the midline. The left ilium was drawn inferiorly and medially, and the right ilium, superiorly and laterally. The sacrum was severely torsioned with the left base pulled inferiorly and anteriorly, about one inch. The left occiput was drawn inferiorly, as was the sacrum, quite severely, nearly one inch by palpatory comparison to the right. The right temporal bone was forced laterally and superiorly and locked in external rotation. There was an obvious bogginess of the motion of the right temporal bone as treatment began to release it from its compromised position.

Intensive osteopathic manipulative treatment for more than an hour on two successive days was required to release the craniopelvic restrictions. Nevertheless, the right temporal bone's mobility remained very sluggish. With osteopathic manipulative treatment and acupuncture, complete recovery was achieved in three weeks, with early signs of return of function at ten days postpartum. These signs were tingling and fasciculations in the maxillary area of the right side of the face. Wrinkles under the right eyelid and at the right corner of the mouth began to appear. Coincident with these early signs, the mobility of the right temporal bone normalized, no longer feeling sluggish or boggy to palpatory examination.

With osteopathic manipulative treatment and acupuncture, complete recovery was achieved in three weeks.

Discussion

This case provides evidence of the "core link", the dural connection between the cranium and sacrum. The trauma occurred in the pelvis, but it distorted the cranium just as severely as the pelvis, and the cranial distortion was symmetric with that of the pelvis. Evidently, the position of the sacrum between the ilia and position of the iliac bones were all distorted as a result of the forces of labor while the mother rested her pelvis asymmetrically upon a hard surface. Further evidence of the distortions of these bony relationships was the asymmetric position of the uterus, attached as it is to the sacrum by the uterosacral ligaments and to the lateral pelvic walls by the broad ligaments. The atony of the uterus could be explained by osteopathic principles as a consequence of the disturbed parasympathetic innervation of the uterus through the sacral plexus, because of the somatic dysfunction of the sacrum. Such a mechanism deserves further examination in other cases of postpartum uterine atony.

There was palpatory evidence of fluid congestion in the temporal bone. This is consistent with the mechanism of nerve entrapment. As the sluggishness of the motion of the temporal bone normalized, the function of the facial nerve began to return. The source of this fluid congestion, somatic dysfunction, resulted from the compromised movement of the involved part of the soma, the temporal bone. Without motion, the normal processes that remove and deliver fluid to and from the local area were interrupted.

The lymphatics could not remove the extracellular fluid, rich in proteins and products of cellular metabolism.

As osmotic pressure built, there was no place for expansion in the bony canal, and the vulnerable nerve ceased functioning. Impulses to the muscles of facial expression diminished and finally ceased. When motion was normalized, fluid exchange also normalized and the nerve regenerated restoring nerve impulses and muscle tone.

The right temporal bone became locked in external rotation and in an unphysiological position, superior and lateral to the normal. The force from the distorted sacrum through the core link, pulling down on the left side of the occiput tilted the right side superiorly, forcing the right temporal bone in the same direction. Because the infant was delivered ROA, and the left buttocks bore the weight of the mother on the firm surface of the floor, the right side of the pelvis was forced to expand more than the left. Therefore, the right ilium was lateralized and elevated, drawing the coccyx with it to the right and superiorly, while the body of the sacrum was pulled into a position facing the right, and the base of the sacrum became caught inferiorly, turning on an axis at the second sacral segment. The sacral twist was beyond the resiliency of the sacral ligaments and/or the tolerance of the proprioceptors. The sacroiliac joints could not accommodate the position of the sacral twist. Therefore, the position of the sacrum became locked in this unphysiologic twist. It pulled down on the occiput trapping the right temporal bone in a severe distortion to cause the Bell's Palsy.

Conclusion

These clinical findings indicate 1) the functional existence of the core link, 2) the integrative functions in the cranium of the dura, and in the pelvis of the sacral ligaments, 3) the relationships between the viscera (uterus) and the soma (sacrum) mediated by the autonomic nervous system, and 4) the association of the somatic dysfunction of the temporal bone and the entrapment of the facial nerve.

With further investigation, it may be shown that many cases of Bell's Palsy result from somatic dysfunction of the temporal bone. These dysfunctions may occur because of local trauma to the temporal bone itself or to the cranium, or they may occur because of distant trauma which is transmitted through the connective tissue to the temporal bone. ❑

From the Archives

Quality of Care: An Assessment of the Contributions of Osteopathic Medicine

from 1977 AAO Yearbook
by Anthony G. Chila, DO, FAAO

Editor's Note: *Anthony G. Chila, DO, FAAO is currently a Professor and Chairman of the Department of Family Medicine and the Chief of Clinical Research at Ohio University College of Osteopathic Medicine. Dr. Chila serves as the secretary-treasurer of the Academy as well as a member of the Education, Fellowship, Finance and Long Range Planning Committees and chairs the Governors/AOBSPOMM Nominating Committee and the Symposium Planning Task Force.*

The osteopathic profession has existed for one century in the frame work of a philosophic approach to the management of disease which requires a separate and distinct voice in relation to the majority view of medical practice in the United States. As a distinctively American contribution to the mainstream of medical thought, the profession's premises have been employed successfully on an empiric basis, scientifically substantiated, publicly accepted and legislatively defined. As propounded by Andrew Taylor Still, the purpose of this minority viewpoint was to catalyze a change in medicine's progress toward a concept of holistic well-being and the improvement of environmental adaptation to gravity. At the time when all the struggles against impediments were won, accepted intraprofessional attitudes appear to have lost sight of the fine line which separates true intellectual greatness from the obscurity of mental failure. Chapman[1] summarized the views of Korr in these words: "Seldom in history has an organized group of men an women perceived, grasped and then seemingly relinquished a greater opportunity."

In order to regain its perspective and provide enlightened leadership toward its original goal, the profession must consider several steps:

1) Active restructuring of teaching methods in all the osteopathic colleges so that a core curriculum of osteopathic theory and methods will provide a uniform philosophy in the predoctoral years.

2) Expansion of the teaching program during the year of rotating internship. Whether in a traditional 12-month program or in some modification of service for increasing exposure to the community's facilities, the intern must have the greatest possible clinical orientation to the community application of the holistic view of medical practice.

3) Improving and expanding analytic methods as to the effect of osteopathic manipulative therapy on disease processes. Research in this area is sorely needed to provide the basis for ongoing support of third-party interest in the potential of this profession's separate and distinct philosophy. The rotating internship in the osteopathic community hospital provides an excellent vehicle for the establishment and continuity of such clinical research.

4) Analysis of the quality of care per se. This appears to be an appropriate function for the committee on osteopathic principles and therapeutics. As constituted by regulations of the AOA, this committee at each hospital should represent all divisions of the medical staff and provide the broadest impact on the hospital teaching program. With the fullest possible utilization of osteopathic principles by each physician on the attending staff, the committees analytical function may be carried out easily by either a review of active charts of currently hospitalized patients or retrospective review of charts of discharged patients or both. On the assumption that every patient hospitalized in an osteopathic institution is deserving of at least one complete biome-chanical examination regardless of the admitting diagnosis, then no patient will be deprived of a parameter of care unique to the osteopathic profession. Statistical retrieval studies can be accomplished by close cooperation with the hospital's medical records depart-ment, utilizing

the PAS-MAP approach, or any similar program. Retrieval studies tied in with ongoing clinical research programs in every osteo-pathic hospital with an approved teaching program provide unlimited opportunities for the profession to assert its leadership in the study and management of disease.

5) Fellowship in the American Academy of Osteopathy (AAO) recognizes excellence in the use of osteopathic principles. If future developments indicate the need for certification in manipulative medicine, then the AAO will be the agency through which it can be accomplished.* One such certification becomes a reality, the skills of the certified specialist, if available in the teaching hospital, will provide the general practitioner an extra dimension in the care he/she can offer his/her patients. This is in accordance with the concept of Stiles[2] of a director of osteopathic medicine for an institution. This specialist can supplement the contribution of the Committee on Utilization of Osteopathic Principles and Methods.

A final word is in order with regard to the evolutionary tendency of medical thought. For most of its first century of existence, the osteopathic profession occupied the position of a digression vis-a-vis the monolithic philosophy of the allopathic profession. This is no longer the case. Within the allopathic school itself, interest in manipulation is increasing. Although allopathic physicians do not possess the knowledge demonstrated by the osteopathic school, the fact that this change has occurred demonstrates that the minority profession is now challenged by the need to provide a high caliber of interchange of thought, as originally advised by Andrew Taylor Still.

The presence of representatives of allopathic medicine, osteopathic medicine and chiropractic at a workshop discussing spinal manipulative therapy offers another warning to the osteopathic profession, since all the manipulative viewpoints were represented. Again, the osteopathic profession must provide a high caliber of interchange of thought.

The osteopathic profession today in numerically smaller than either the allopathic or the chiropractic group. Failure to continue to document the value of its philosophy significantly via its hospital teaching program is equivalent to reducing the profession's standing to a negative and naive "MD-plus" categorization by all who view it: the public, legislative bodies, the allopathic and chiropractic groups and osteopathic physicians themselves. Such an occurrence would serve to reduce the followers of a century-old example of philosophic and academic excellence in intellectual profession dissent to the status of a splinter group. It is past time for the osteopathic profession to ask itself what it considers its role to be in the delivery of health care.

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* In July 1977 the AOA Board of Trustees approved the establishment of the American Osteopathic Board of Fellowship of the American Academy of Osteopathy. The purposes of this board are to define and determine qualifications of DOs who desire certification of special proficiency in the knowledge and application of osteopathic structural diagnosis and manipulative management, to conduct examination for this purpose and to issue certificates to those found qualified.❑

continued from page 13

tensegrity network. These internally vectored icosahedra could model structures in nature such as the DNA helix, the neck of a dinosaur or the craniosacral system (Fig. 7).

It has previously been postulated that "the dural membranous link between the sacrum and occiput must have considerable slack; otherwise, we would not be able to move our spines at all."[15] This analysis that slack must exist in the dural membranes for spinal motion to exist reduces any possible relation between the occiput and sacrum as direct and linear. We know that complex relationships exist involving not only the skeleton, joints, ligaments and muscles but also the fascia, dural elements and possibly flow patterns of fluids including the CSF and lymph. Interpreting the craniosacral motion from the vantage of systems science, we must include the microscopic and macroscopic consequences of these tissues influencing one another, both directly and indirectly. The dura exists as a tube with fascial connections, and I hypothesize that this also can be viewed as an internally vectored tensegrity model, with the incompressable CSF as the compression resisting element (or "backbone") of the icosahedra.

The link between the occiput and sacrum is thus conceptually a bridge. A mechanical function of the icosahedron is that energy is transferred through the structure in a helical fashion when it is compressed. Analogously, there is no *direct* link between the occiput and sacrum; energy is similarly conducted in a helical fashion through the dural tube from the occiput down to the sacrum (Fig. 8). This concept explains how

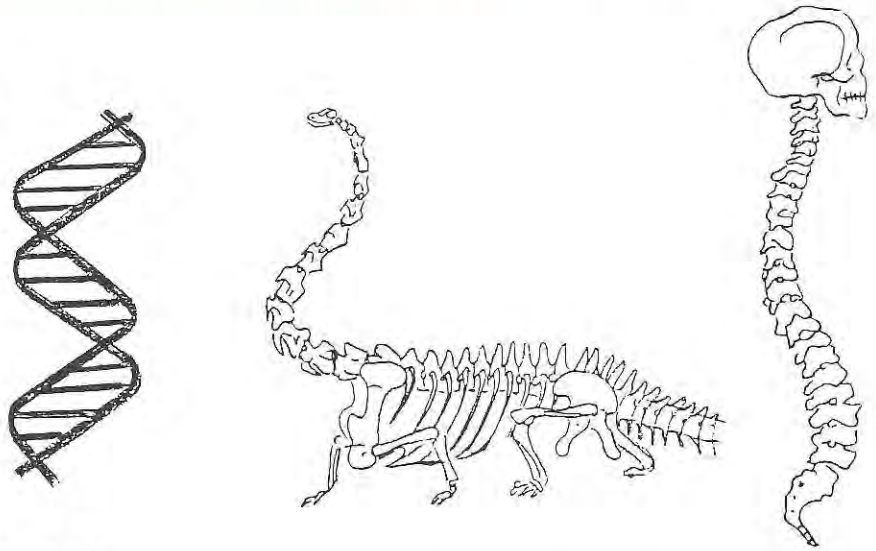

Fig. 7
DNA helix, neck of dinosaur and human craniosacral system -- all of these may achieve high stability yet flexibility by structures which are variations of linked icosahedra.

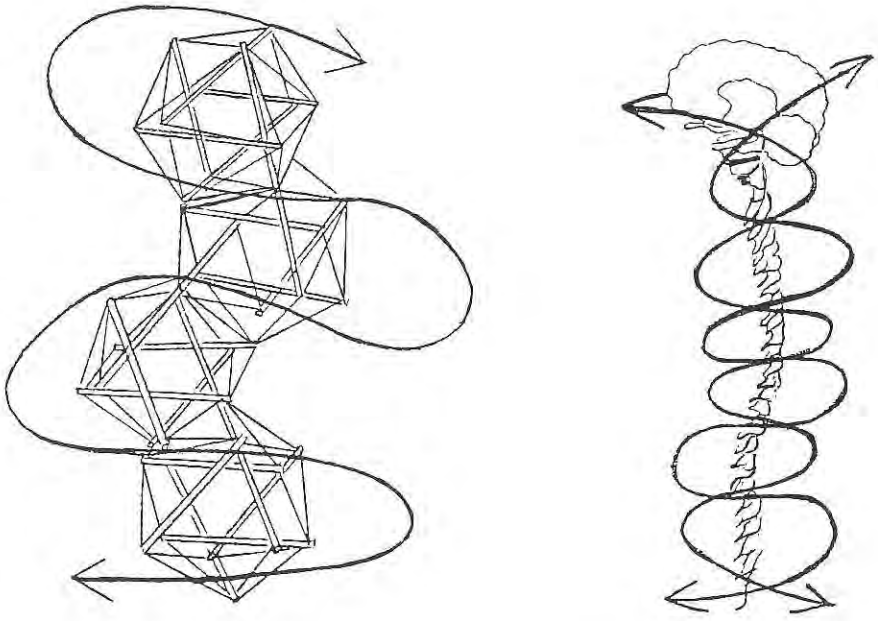

Fig. 8
Linked icosahedra compress in a helical fashion. Similarly, motion is conducted along the dural tube from the occiput to the sacrum in a helical fashion.

we can have enough flexibility to move our spines, yet allow for the craniosacral linkage between the distant occiput and sacrum. All the tissues in between, through their fascial connections, are also influenced by this compression-tension. The craniosacral rhythm (CRI) that we palpate may be the echo of the continuous tension network, rhythmically tensing and relaxing, or oscillating, as this system is influenced by other motions.

Craniosacral Manipulative Therapy

Considering that we are dealing with a complex system that includes the continuous fascia, muscles, multiple sutures and joints, as well as the coordinating influences of the nervous system, that which we palpate as the craniosacral mechanism could indeed be the rhythmic shifting of this interactive continuous tension network as it rhythmically responds to outside influences, such as cardiac contraction, pulmonary respiration and skeletal muscle contractions. This is not to say that the craniosacral motion is just a cumulative waveform generated from other motion patterns; rather, the craniosacral motion is a reflection of intrinsic and extrinsic motions upon the basic tension network of the system. When treating this tension system, a minor adjustment in the tensions at the sutures of the cranial bones or the sacrum may have a profound effect in changing the tension and flow of motion through the entire system, and as the system adapts to this treatment, permanent change is made in the system as a whole.

Thus, small adjustments may have major effects upon the whole continuous tension network. As an example, a golfer may make a small adjustment in his stance, and this minor change in foot position will affect the flow of torque through his body to ultimately bring about a major change in his swing and the final trajectory of the golf ball. Minor changes in the initial conditions that can have major impact upon the entire system are a known properties of non-linear dynamical systems, such as weather systems and most other natural systems.[16]

When performing craniosacral manipulative therapy, to balance the tensions within the system, the physician shifts and directs the motions palpated at his fingertips. However, that which is palpated with the hands as the craniosacral rhythmic impulse is not directly the patient's continuous tension system; what is palpated is an indirect phenomenon, a cumulative interactive motion of the tension network of the patient as palpated by an examiner who himself has a continuous tension network. The physician is an integral part of this scenario. The cranial rhythmic impulse is not a motion existing independently like the pulse or respiratory pattern; the cranial rhythmic impulse is a cumulative interactive motion involving both patient and examiner, and this perceived motion pattern does not exist until it is palpated by the examiner. Once the examiner and patient come together, the cumulative motions become a very real and palpable wave-form. The constant rhythmically adjusting motion in this system can be palpated and visualized by the examiner, and in some ways, this craniosacral system can be seen as a hologram,[17] a three dimensional representation of the underlying tension network of the system. But these cumulative motions are not an illusion; from experience, we know that the osteopathic physician interacts with the patient to effect permanent change in the system.

The cranial rhythmic impulse is a cumulative interactive motion involving both patient and examiner ...

This brings us to the question of what is being done when we perform craniosacral manipulative therapy. Very few osteopaths would conclude that all that we are doing is moving the cranial bones. I hypothesize that the examiner can narrow down and aim the palpated cumulative motion of the system as a tool to further change the underlying continuous tension system of the patient. This motion can be fine-tuned like a lithotripter or percussion hammer to change the basic tension network at the cranial sutures, the sacrum or anywhere else in the system.

One term that I have always found inappropriate in discussing the craniosacral system is "energy" which is defined as "power to produce motion, to overcome resistance, and to effect physical changes." We understand the origin of energy on the

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chemical or physical levels, but when we speak of the "energy" of the craniosacral system, our discussion jumps to the metaphysical level as we really do not know the nature, origin or function of this craniosacral "energy". The term "energy" when used in this way is a misnomer which implies that some force, whether intrinsic or extrinsic, is effecting motion in our system, but this concept leads us away from understanding the craniosacral motion as a manifestation of a complex and dynamic system.

In a balanced tension system, we do not need any source of "energy" as it is the nature of the balanced system itself that is continually changing, as the "truss" is continually adjusting to constant motion in the environment. In this model, the sphenoid does not independently move into flexion, and the sacrum does not independently move into extension, but rather, the entire system periodically oscillates from one moment to another. Several times per minute, our system cycles from an attitude of flexion to an attitude of extension. Energy is not required to "move" the sphenoid or the sacrum because in our complex system, when the balance of the system alternates from extension towards flexion, it is the least energy position for the sphenoid or the sacrum to assume a new position, and it only seems as if some energy force has extrinsically moved these bones.[6] This recognition of craniosacral motion as a manifestation of a complex *system* rather than a type of "energy" is the key to our understanding of this tensegrity model, and this focus on terminology is more than just a semantic argument. It is the *system* that is treated and balanced with craniosacral manipulative therapy.

James Norton, PhD has recently produced evidence documenting that the respiration and heartbeat of the examiner as well as the patient may have an influence on the craniosacral rhythm.[18] Additionally, he has presented evidence that the palpated craniosacral rhythm of one subject is not consistent when palpated by different examiners.[19] This is additional evidence that the craniosacral rhythm is a manifestation of a cumulative, interactive system between patient and examiner.

This recognition of craniosacral motion as a manifestation of a complex system rather than a type of "energy" is the key to our understanding of this tensegrity model

Some osteopathic physicians are disturbed by evidence that is inconsistent with the paradigms with which we have worked for many years, but this evidence does not malign the value of craniosacral osteopathy. Rather, we must redefine the models by which we understand the craniosacral system. Surely, Dr. Norton has presented disturbing data if we view the craniosacral motion simply as a mechanical coiling and uncoiling of the neural tube, but my goal in this paper is to propose an alternative paradigm consistent with known scientific and experimental evidence that also explains the clinical effectiveness of craniosacral treatment, and the tensegrity model may be a satisfactory model.

Conclusion

Craniosacral manipulative therapy thus has far-reaching therapeutic effects beyond simply moving cranial bones, and this is not inconsistent with what has previously been taught about osteopathy in the cranial field. In fact, I think that William Garner Sutherland, DO really envisioned the system concept in his teachings. He spoke of the "transmutation"' of the cerebrospinal fluid in the nerve tracts, and in this description, he may have implied that when the components of the system interact, the system transcends itself and is more than the sum of its parts. By using descriptors such as the "tide" and "transmutation," Dr. Sutherland specifically avoided reducing the craniosacral system to a mechanical pump, and he emphasized the interactive systems aspect in this school of thought.

It must be emphasized that understanding the craniosacral system as a continuous tension network does not minimize what we do with our hands, and I expect that it will not even change the way that we perform craniosacral manipulative therapy. This model may, however, change the ways in which we scientifically study the palpated craniosacral motion and how we measure its effects upon the entire system.

It has been a source of debate within our profession that osteopathic physicians using such diverse techniques as high-velocity low-amplitude mobilization, craniosacral manipulative therapy, Levitor orthotics or even sclerotherapy, are

all able to achieve positive results in treating patients in chronic pain. The tensegrity model for understanding the interconnectedness not only within the craniosacral system but the entire musculoskeletal system may be one unifying theory to understand the concurrent effectiveness of different treatment modalities. Other functional models, such as relating the craniosacral motion to standing wave phenomena, may also add to the understanding of this system.[20]

It is possible that craniosacral manipulative therapy, as a therapeutic modality, effects change upon the system in ways not understood by some very well respected osteopathic physicians. Additionally, the concept of fluctuation of the CSF may be a useful teaching tool, a paradigm to visualize that which is being performed manually. But the "coiling and uncoiling of the neural tube," when taken literally, is a mechanical model which does not stand up to known neuroanatomy and biophysics.

The hypothesis of the craniosacral system being a continuous tension network is but one alternate hypothesis regarding this complex system. This model is not inconsistent with known biophysics, but this model has a long way to go to be verified as an explanation for clinical reality. Hopefully, additional study will further elucidate the craniosacral mechanism and the value of treatment to that system.

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Stranger in a New Land

by Miriam Mills, MD

Editor's Note: *Dr. Mills is an Academy Associate member and has practiced pediatrics at Young People's Clinic in Tulsa for 10 years. She has three children, Bryan Richardson, age 15; Patrick Richardson, age 12; and Julia Mills, age 2 1/2.*

After 15 years of teaching at MD medical schools, such as where I trained, I'm going back to class myself.

Every Tuesday, I stop in the middle of my busiest day at the office and go to the osteopathic medical college here in Tulsa to join the first year students learning about osteopathic manipulative treatment.

Why would I be interested in relearning long-forgotten anatomy? Because these techniques -- high-touch in an era of high-tech -- work often where other treatments do not.

I first became interested in the field after a car accident, for which I sought pain relief from a DO. I was amazed at how little medication I required and how quickly I was able to return to work.

The same doctor helped me when I was passing a kidney stone and treated me during my over-40 pregnancy, helping me have an easy vaginal delivery after two C-sections.

Now that my patients know I have an interest in this field, many share with me that they seek "alternative" treatment for themselves, be it from a massage therapist, a chiropractor or an acupuncturist.

MD medical schools have begun to take this phenomena seriously. I recently attended a course at Harvard on the mind-body connection. They discussed the use of the "relaxation response" as an important component in the treatment of chronic pain, hypertension, ulcers, headaches and cancer.

During the past 20 years or so, the lines between MDs and DOs have blurred, but certainly not been obliterated.

The osteopathic perspective, among other things, is considered a "holistic" approach which emphasizes the body's innate capacity to heal itself.

These techniques are not as simplistic as "laying on of hands," but can be almost as magical when applied by an experienced practitioner.

One of the many ways to help the body feel better and function more effectively is to provide it with better mobility, relieve painful stiffness, facilitate relaxation and encourage symmetric function.

One principle behind this approach is if all the body parts are more freely mobile, the whole system works better: the blood flow, nerve conduction, lymph drainage, intestinal motility, the energy available to fight infection, the ability to relax and get a good night's sleep and so on.

To achieve this end, the physician develops sensitivity in his or her hands and eyes to pick up subtle clues from the tissues telling where the body holds restrictions and what to do to free them.

Such terms as strain/counterstrain, myofascial release, muscle energy balancing and craniosacral manipulation describe some of the many techniques used to mobilize the body's innate healing capacity.

These techniques are not as simplistic as "laying on of hands," but can be almost as magical when applied by an experienced practitioner.

There is a long-standing attitude, however, among many people, that the benefits of manipulation are overinflated or potentially dangerous.

Interestingly, the more intimidating popping and cracking techniques one might associate with manipulation are often not necessary, or even indicated in young children.

Furthermore, in the hands of a physician trained to diagnose and treat in a more "traditional" manner (e.g., surgery, x-ray diagnosis, antibiotics and other pharmaceuticals), a patient is unlikely to find manipulative treatment recommended when another is indicated. For one thing, it is more time-consuming.

So how do you decide what sort of treatment to seek, and who would be reputable and trustworthy to treat your children? The same way you choose any healthcare provider -- check out their credentials and ask others about their reputation.

Practitioners require training and practice and there are certification

requirements to be passed. I have taken about 100 hours of training over the past 2 years in one of the techniques, called craniosacral manipulation, and I still have much to learn.

This particular technique is especially useful in children because it's so gentle. It's also difficult to learn because it's so subtle.

Nonetheless, I have surprised myself in seeing its usefulness in the treatment of colic, headaches, chronic sinus congestion, recurrent ear infections and asthma.

It will never replace antibiotics or surgery, but is helpful in providing and even reducing the requirements for medication.

As a parent, you might ask to be treated yourself, and see how it feels. Bring your child along so he or she can watch and you can see how the physician interacts with your child. Talk to other parents whose children have the same problem.

Above all, beware the claims of "cure-all" guarantees. No medical technique is foolproof.

Finally, get another opinion if any practitioner recommends against what seems to be good sense to you, such as giving childhood immunizations.

Because of the confusion that can arise from not knowing what to recommend, I decided to find out from the inside, learning the techniques myself and working with the people who do them.

I'm a grateful and privileged student, who has been made to feel welcomed by my osteopathic colleagues. The more I learn, the more useful I can be to my patients, and that's why I'm in this business.

[Reprinted from Tulsa World, November 1993.] ❑

Letter to A.T. Still

Dear Doctor Still,

If you were here today, it might surprise you to find that people are still struggling to find the precise definition of osteopathic medicine. People often ask, "What is osteopathic medicine? How is it unique? How does it differ from other therapeutic approaches? What are the basic principles of osteopathic medicine?" You would think that after well over a hundred years of existence of the profession, we would know all of these answers. Still, the questions and the conversations go on.

I have (amongst others) a book entitled *Principles of Osteopathy*, written by Yale Castlio, DO, who was a professor at the Kansas City College of Osteopathy and Surgery. This book was given to me by a DO friend of mine who is now retired. It was apparently printed by the college; there is no publication date given. This was apparently a book he used when he was in school, and so there are a lot of notes written in the margins of the book. These are presumably things his professors told him in the classroom as he studied your principles.

This book gives yet another interesting definition of osteopathy. First of all, Doctor Castlio says that "Manipulative procedures have never been offered by the osteopathic profession as a substitute for all other therapeutic measures. The importance, in their place, of diet, rest, hygiene, psychotherapy, physiotherapy, drugs and surgery has never been questioned except by extremists. Osteopathy is not a system of drugless healing. It is not merely 'glorified massage'. Nor is it just a complex technic for the correction of a particular kind of pathology, the lesion."

Doctor Castlio makes the point that neither you nor anyone else ever advocated osteopathy as a panacea. Indeed, your intention was to have physicians utilize your principles and methods to **improve** the practice of medicine. His definition of osteopathy is simple and elegant: "Osteopathy is that system of medicine which, *while using every known therapeutic agent of proven value,** places chief emphasis upon the preservation of structural integrity in the maintenance of health, and regards manipulative therapy as the factor of greatest importance in the treatment of disease."

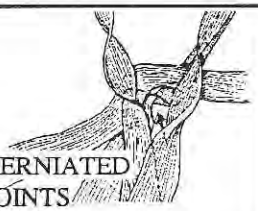
So as we struggle even today to grasp the totality of everything you gave us, we should remember to look at some of the information some of the early practitioners of osteopathic medicine gave us. It could make our search for answers a lot easier.

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

**These words were written in the margin by my friend.* ❑

Clinical Comparison of Triggerpoint Subtypes

Table 3

Subtype	Etiology	Palpatory Differentation	Treatment
 NON-BANDED HERNIATED TRIGGERPOINTS	Herniation of tissue through non-banded fascial plane	Correction is completed at the end of triggerpoint therapy	Triggerpoint therapy or Jones technique
 BANDED HERNIATED TRIGGERPOINTS	Herniation of tissue through a banded fascial plane distorted by a triggerband	At completion of triggerpoint therapy a triggerband is palpable	Triggerpoint therapy or Jones technique followed by triggerband technique

Continued from page 18

Continuum Distortions

Continuum distortions are clinically the primary cause of ankle sprains, pulled ribs, contusions and many other acute injuries seen daily in the emergency room setting. In addition, along with triggerbands, they are associated with chronic problems such as frozen shoulders, costochondritis and low back pain. Continuum distortions are thought to occur when the forces of injury cause an alteration of the transition zone between two tissue types (fig. 13). Continuum technique is designed to reverse this shifting of tissue components by applying equal and opposite force to the continuum distortion. When the direction and force are adequate, the injury suddenly reverses and clinically the injured area then resembles it pre-injury condition.

Continuity and continuum are two terms used frequently in the fascial distortion model. Although they may seem redundant, they are not, and the implications of each are important in understanding fascial distortions. Continuum is an anatomical model in which tissues are viewed as being in a constant state of physiological flux in which one tissue type can be transformed into another tissue type through its transition zone depending upon the external forces applied to it. In **Continuum Technique** only transitional zones between musculoskeletal tissues are discussed, but the continuum model applies to all tissue transition zones and therefore

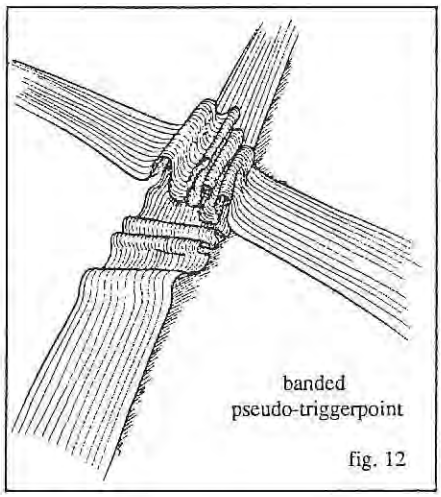


fig. 12

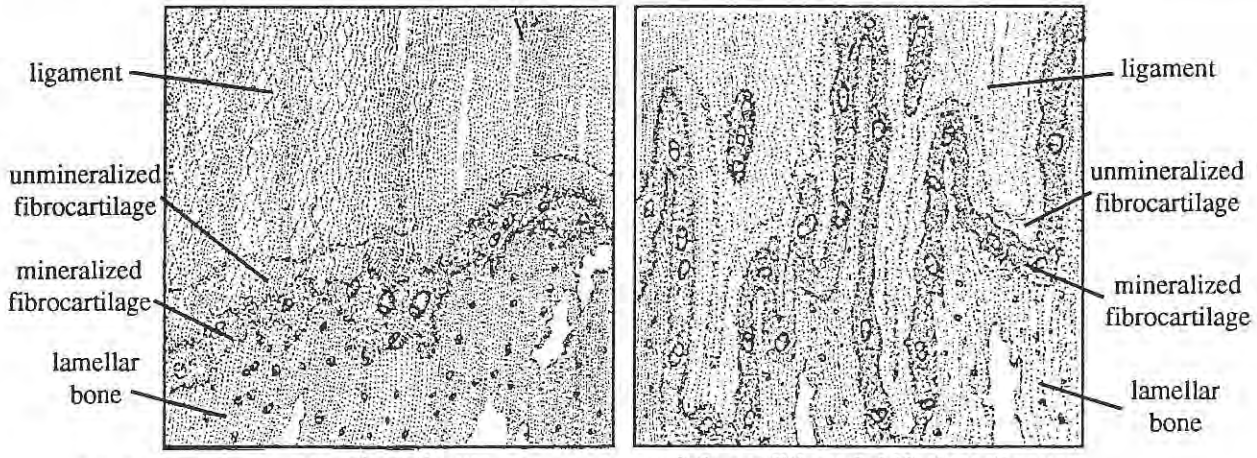


fig. 13 normal continuum artist's rendition of shifted continuum

Table 4 TRIGGERPOINT AND CONTINUUM DISTORTIONS

COMPARATIVE CATAGORY	TRIGGERPOINTS	CONTINUUM DISTORTIONS
Etiology	Herniation of tissue through fascial plane	Alteration of transition zone between tissues
Common location	Abdomen, supraclavicular fossa	Near joints at the origin and insertion of tendons, ligaments, and costo-chondro junction
Size	Dime to nickel	Pea-sized or smaller
Palpatory sensation to physician	Boggy marble	Vitamin A or E soft-gel capsule
Palpatory sensation to patient	Moderate tenderness	Moderately tender to excruciatingly painful
Time of treatment until release begins	Variable-- seconds to minutes	Variable-- less than a minute
Duration of time once release begins until completion	15 seconds to 3 minutes	1-5 seconds
Sensation experienced by physician and patient during release	"Melting"	"Button slipping into a button hole"

potentially effects all types of tissues. The term **continuity** refers to the interconnections of all the bodily tissues. In the context of fascial distortions it refers specifically to the fact that individual fascial fibers pass through various tissues and that an alternation of any given portion of that fiber will result in pathological changes elsewhere along that same fiber. Triggerband technique is based on the model of continuity, whereas continuum technique is based on the continuum model.

Although I have already spent some time talking about both continuum distortions and triggerpoints, I think that it is still worthwhile to compare them face to face (Table 4). Despite the fact that they are etiologically different, some physicians may have difficulty discerning the two. Continuum distortions are the result of shifting in the tissues transition zones, and triggerpoints are the protrusion of tissue above its fascial plane.

As a general rule, continuum distortions are found in or near a joint, or at the origin or insertion of tendon or ligament with bone. True triggerpoints are most common in the abdomen. Palpatory-wise they are quite different to the experienced physician. Continuum distortions are smaller, firmer and have little give. Triggerpoints are larger, have less-defined borders and are much softer. The release that occurs during correction is also different. The continuum distortion is like a button slipping into a button hole, while the triggerpoint is a melting sensation. The differences are clinically important because how they are envisioned will direct what force and finesse is actually used. In treating either of these, it is the skill of the treating physician that will ultimately determine the success of the treatment.

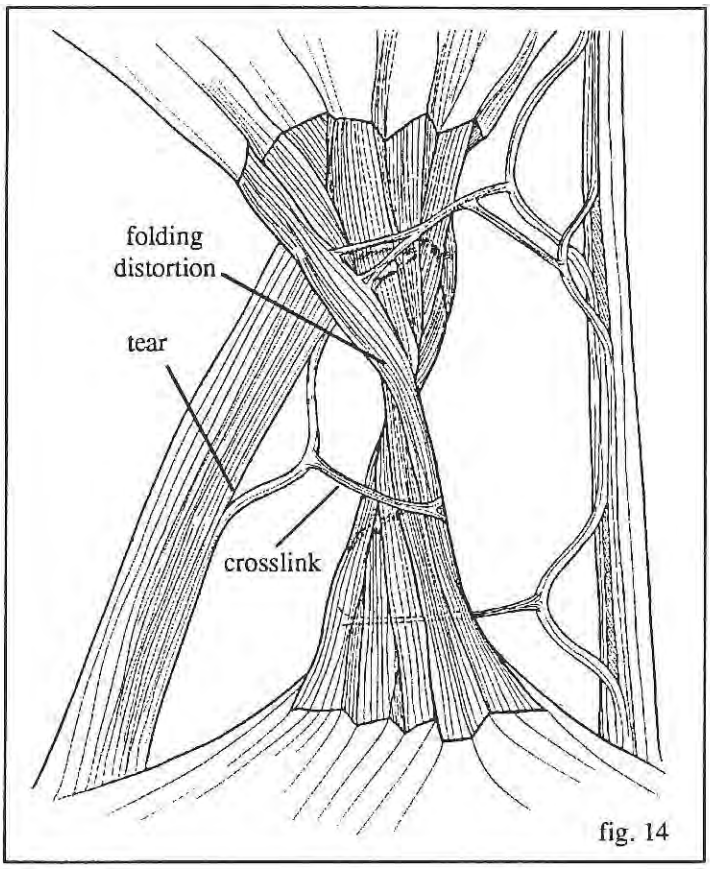


fig. 14

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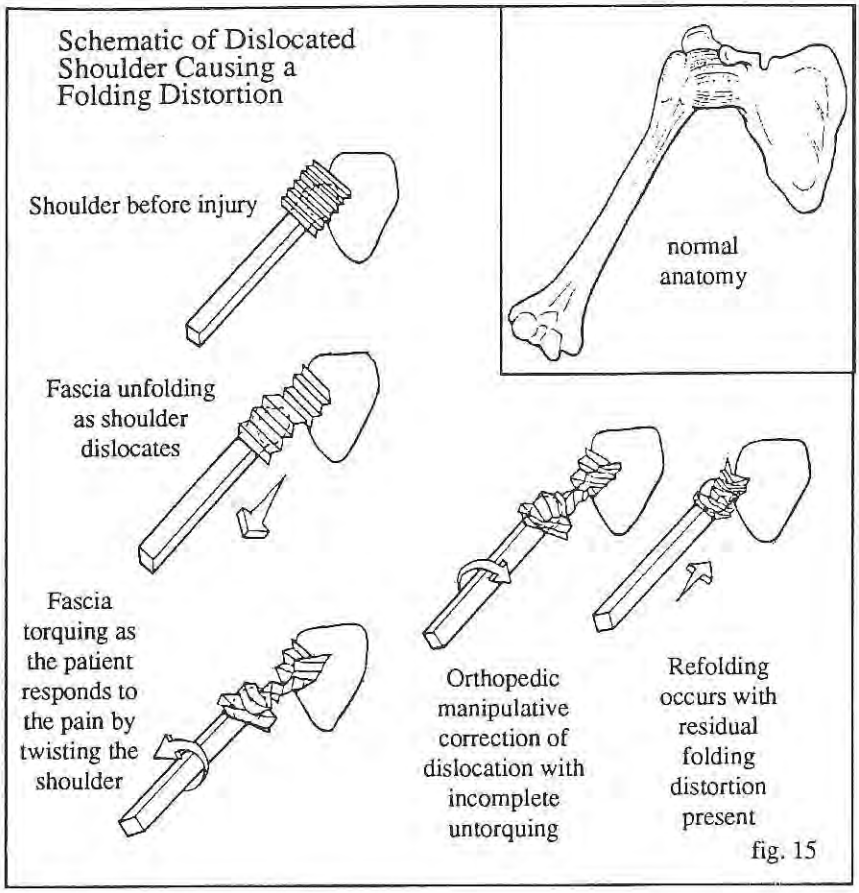


fig. 15

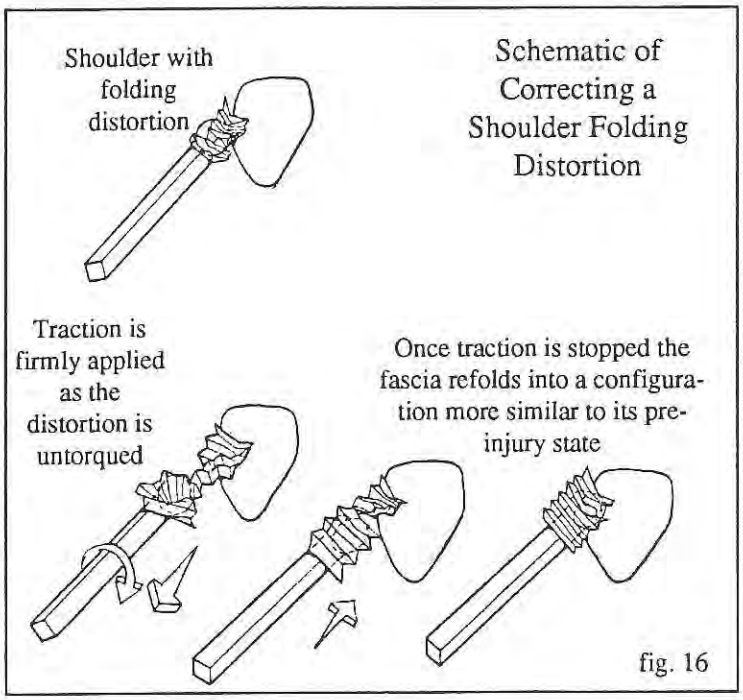


fig. 16

Folding Distortions

The term fascial plane has been used primarily by physical therapists and proponents of myofascial release. They tend to view the fascia as being present in a planar presentation which pathologically develops restrictions. Myofascial release technique is often a very effective approach to fascial distortions, but I believe not necessarily for the same reasons that have been commonly expressed. Although fascial planes do exist, they do not exist in the same sense that this piece of paper has a planar presentation. Within the fascial planes are fascial bands (fig. 14), which means that an alternation of the plane is in effect altering the fascial bands.

In addition, most fascial planes are not static entities that rest in the body like this paper can rest on the table. The planar presentation is dynamic and moving. As an arm is raised the interosseous fascial plane shifts and partially unfolds. If the forces are increased on the arm such as occurs with lifting, the fascia unfolds more.

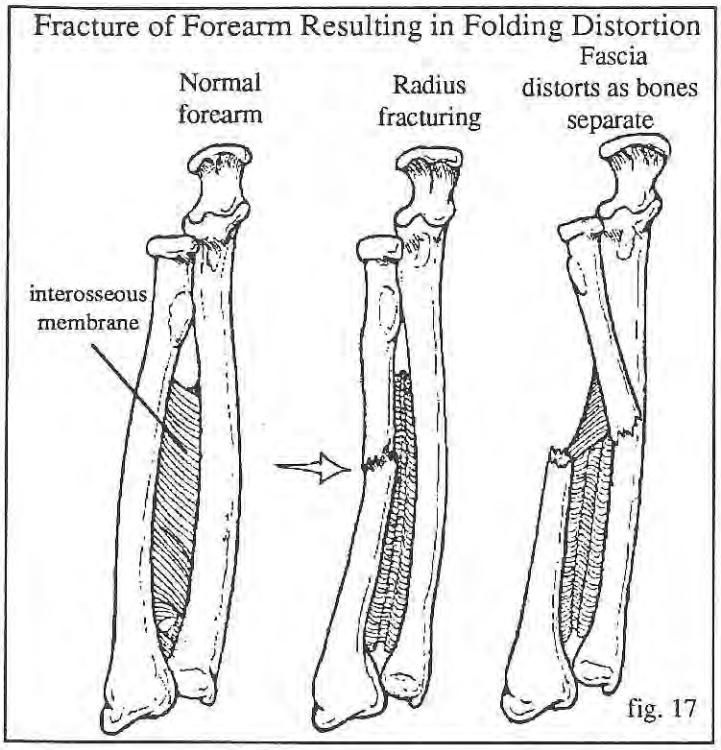
It is this unfolding of the fascial planes that is an important, and until now, unknown fascial phenomenon. So, as forces are applied to the fascial plane it is able to unfold to be able to accommodate the stress. This spreads the forces more evenly throughout the fascia and other musculoskeletal structures that are interconnected. But since the fascia unfolds under stress, it must be able to refold once the forces are removed. It is this ability that often is lost with injury and that myofascial techniques are the most effective in treating.

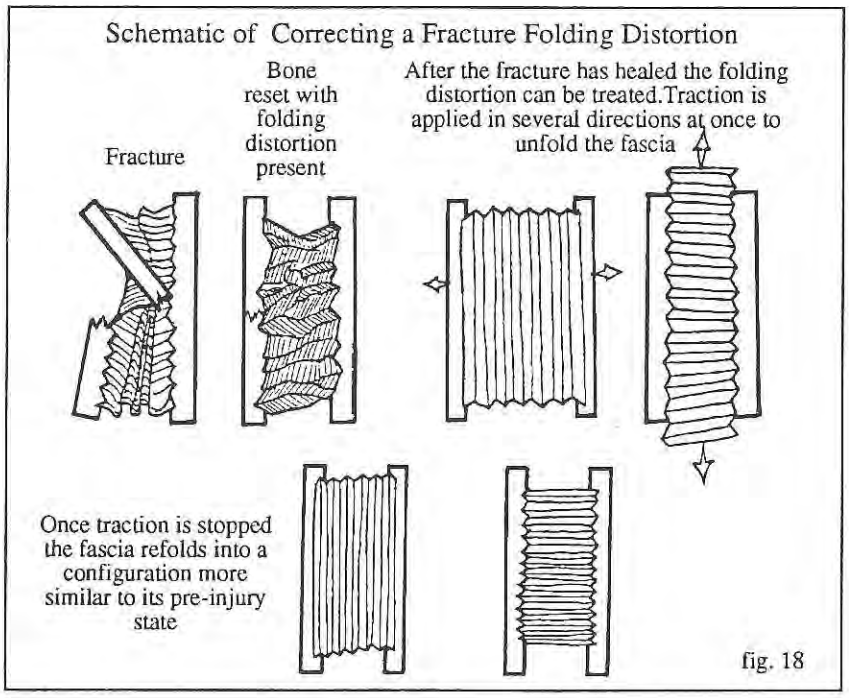
To visualize this better, think of the fascial plane as a piece of paper that is folded in fours. As forces are applied to the edges of the paper, it pulls apart. First it becomes a half, then three-quarters and then a full page. But if the paper is twisted during unfolding it will be contorted. For

proper refolding, the forces must be directed so that the contortion is reversed. If this does not occur then the refolding cannot be done in a way that restores the fascia to its pre-injured arrangement. I believe this is what myofascial release does; it restores fascial folds to their pre-injured states by simultaneously unfolding and untorquing the fascial distortion.

It must be remembered that there may be fascial band distortions as well, and for optimal results these need to be corrected. At times the fascial planar distortion cannot be corrected until the fascial band distortion has been resolved. In any case, the understanding of fascial folding distortions, fascial planes and myofascial release are all important principles in the fascial distortion model.

Fig. 15 demonstrates what may happen as a shoulder dislocates and is corrected by orthopedic manipulation. Although many times the result is adequate, some of these patients continue to have residual pain and decreased range of motion. This is thought to occur because the fascial plane remains torqued and distorted. In fig. 16, myofascial release is used to gently unfold the distortion and then untwist it before refolding occurs. The shoulder itself does not need to be dislocated to accomplish this, although firm traction is often necessary. A total correction of the folding distortion does not occur with this treatment alone. Stretching and strengthening, triggerband technique and normal everyday use of the shoulder may also be necessary for a complete resolution of the distortion.





Figs. 17 and 18 show what may happen to the fascial planes as a fracture occurs. The fascia is unfolded, torqued and then refolded with distorted fascial planes resulting. The best treatment after the fracture has healed is to correct the distortion with myofascial release. To be successful, forces must be applied in several directions at once to first unfold the fascia and then untorque it before it refolds. Often two or more sets of hands are necessary to accomplish this. Again, physical therapy, stretching, strengthening and triggerband technique may be helpful once the folding distortion has been successfully treated.

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Glossary

Acupressure Points: Specific anatomical sites along acupuncture meridians that are treated by holding pressure on them in the belief that this will correct dysfunctions elsewhere in the body. Triggerband pathways offer a possible anatomical mechanism for this to occur.

Acupuncture Points: Specific anatomical sites in which acupuncture needles are placed. These commonly match crossbands of triggerbands and the meridians often match triggerband pathways.

Acute Injuries: Musculoskeletal dysfunctions in which no adhesions have formed.

Adhesions: Fascial fibers that are aberrantly attached to other anatomical structures and result in dysfunction and restriction of those structures.

Arthritis-like Pain: Pain that is interpreted by the patient as arthritis but is instead of a fascial origin.

Banded Herniated Triggerpoints: One of two subtypes of triggerpoints that are characterized by herniation of tissue through a banded fascial plane that is distorted by a triggerband.

Banded Pseudo-Triggerpoint: A fascial distortion that occurs when two or more triggerbands overlap.

Bursitis: A painful area under a muscle that is tender to touch. Most of these are triggerbands, although some are either triggerpoints or continuum distortions.

Carpal Tunnel Syndrome: A condition in which median nerve conduction is impeded by a triggerband distortion.

Chronic Injuries: Musculoskeletal dysfunctions in which adhesions have formed.

Combination Distortion: A distortion that is made up of two or more principle fascial distortions, such as a continuum distortion and a triggerband present together.

Continuity Model of Anatomy: An anatomical model in which individual fascial fibers pass through various structures and tissues and that an alteration of any given portion of that fiber will result in pathological changes elsewhere along that fiber. It also includes the concept that fascial fibers are continuous with and become the fibers that make up bone, ligaments, tendons and other adjoining tissues.

Continuum Distortion: A principle fascial distortion type that occurs when there is an alteration of the transition zone between two tissue types. This most commonly occurs at the origin or insertion of ligaments or tendons with bone.

Continuum Model of Anatomy: An anatomical model in which tissues are viewed as being in a constant state of physiological flux in which one tissue type can be transformed into another tissue type through its transition zone depending on the forces applied to it.

Continuum Technique: A manual modality that is used to correct continuum distortions. The thumb of the physician is used to first locate and then treat the area of shifted continuum. Force is applied in equal amount and opposite direction to which the injury occurred and is held until there is resolution of the distortion.

Contusion: A continuum distortion of the periosteum.

Costochondritis: Chest wall pain resulting from a combination of continuum distortions and triggerbands.

Cranial Technique: Treatment modality in which the rhythm of fascial fluid is palpated in the cranial area and gentle alterations of the rhythm are made to influence fascial distortions at a distant site.

Crossbands: Fascial bands that are found in the same plane and at a different angle to a triggerband. They are often the anatomical starting place in triggerband technique.

Cross-link: A single fascial fiber that is present at a 90 degree angle to a fascial band which it is restraining. When injuries to cross-links occur, this may cause the band to twist or allow its fibers to tear and separate.

Crumple: A distorted fascial band wedged between muscle layers--triggerband subtype.

Double Twist: A triggerband distortion in which the fascial band is twisted twice. These are thought to be the cause of the "Headlight Effect".

Failed Back Surgery Syndrome: An ongoing pain the lumbar spine that has a fascial etiology that was not correctable by surgical intervention.

Fascia: The primary connective tissue of the body that makes up tendons, ligaments, fascial bands, myofascia, adhesions and other tissues that surround and engulf muscles, bones, nerves and organs.

Fascial Band: A collection of parallel fascial fibers.

Fascial Distortion: A pathological alteration of fascia that results in dysfunction of the affected fascia and its associated structures. The four principle types are triggerbands, triggerpoints, continuum distortions and folding distortions.

Fascial Distortion Model: A medical model in which most non-orthopedic, non-neurological and non-organic musculoskeletal dysfunctions are considered to be the result of injured or altered fascia.

Fascial Fiber: A collection of parallel collagen fibers.

Fascial Plane: Fascial tissue that is present in an orientation such that it is broad and wide but has little thickness.

Fascitis: An infection that involves the fascia.

Fibromyalgia: Multiple fascial distortions that involve large areas of the body and have an excessive amount of fascial adhesion formation.

Folding Distortion: A principle fascial distortion type that is the result of a three dimensional alteration of its fascial plane: These commonly occur as the result of a fracture or dislocation.

Frozen Shoulder: Any fascially injured shoulder that has reduced motion to the extent that daily activities are impaired.

Grain of Salt: A triggerband subtype that is a much smaller and firmer version of a knot.

Groin Pull: A triggerband present in the groin area.

Headlight Effect: During triggerband technique this occurs when the patient has an awareness of the course of the triggerband pathway some distance ahead of the actual point of the treatment. This is likely the effect from a double twist in which the second twist is pushed ahead by the pressure being applied to the first twist.

High Velocity Low Amplitude Osteopathic Manipulation: A thrusting technique in which joint restrictions are alleviated by sling-shotting the triggerband wave distortions away from the affected joint at a very high speed.

Jones Points: Anatomical locations of commonly palpated triggerbands, triggerpoints and continuum distortions.

Knot: A triggerband subtype that occurs when either a portion of a fascial band has become folded on top of itself or when a portion of a band has been ripped from its attachment and has become knotted on top of itself.

Massage: A treatment of myofascia that moves triggerbands away from the involved muscle.

Movement: The motion of a triggerband distortion along its pathway. This occurs in acute pain and during certain treatments such as triggerband technique, rolfing or traction.

Muscle Energy Technique: A treatment modality in which muscle contractions are used to force the triggerband away from a crossband that is in or near a muscle.

Myofascial Energy Technique: A treatment modality in which sustained manual traction is applied until a triggerband distortion is moved out of an affected muscle. It also can be used to correct folding distortions if the forces are directed so that the fascia is first unfolded and then untorqued before refolding occurs.

Non-banded Herniated Triggerpoint: One of the two subtypes of triggerpoints that is characterized by herniation of tissue through a non-banded fascial plane.

Osteoarthritis: A condition in which the fascia in or near a joint has taken on characteristics of the adjoining bone.

Pea: A triggerband subtype that has a similar etiology to that of a knot, but clinically has a much smoother and rounder palpatory presentation.

Plantar Fascitis: A triggerpoint involving the plantar fascia. If a heel spur has formed this is evidence that over time the continuum between fascia and bone has shifted dramatically.

Pressure Points: Small, well-demarcated areas of the body that elicit tenderness with palpation. To be adequately treated they must be differentiated into their anatomical etiologies of fascial distortion types. Many are either triggerpoints or continuum distortions, but triggerbands and banded pseudo-triggerpoints also are described by patients as being pressure points.

Principle Types of Fascial Distortions: Pathological alterations of fascia that have distinct etiologies. There are four currently known: triggerbands, triggerpoints, continuum distortions and folding distortions. For a new principle type to be recognized it must have a completely different etiology than any other type of fascial distortion previously described.

→

Pseudo-sciatica: Any one of several triggerband pathways that mimic the course of the sciatic nerve.

Pulled Muscle: A muscle that has a triggerband wedged within its belly at a perpendicular angle to the axis of the muscle.

Release: The sensation experienced by both physician and patient at the instant of correction of a triggerpoint, continuum distortion or folding distortion.

Rolfing: A treatment of muscle fascia that may result in breaking of adhesions and forcing of a triggerband out from an involved muscle.

Shifting of the Continuum: This occurs when forces are applied to the transition zone between two tissues and the percentages of their components become altered.

Sprain: A nonspecific description of a fascial distortion. Ankle sprains are most commonly continuum distortions. Cervical, lumbar and shoulder sprains are often triggerbands.

Strain Counterstrain Technique: A treatment modality in which a triggerband is forced away from an involved muscle by alternating the direction of muscle contractions.

Tendonitis: A triggerband, or less commonly a continuum distortion, present in a tendon.

Tennis Elbow/Little Leaguer's Elbow: A tender area over the lateral or medial epicondyle that is caused from a triggerband or less commonly a continuum distortion.

Traction: A treatment modality in which a pulling force is applied in one direction to an affected area of the body. Very small triggerbands can at times be corrected with this modality, and if the direction and force are appropriate, some folding distortions may also respond to traction.

Transition Zone: The intermediate area between two tissue types that contains characteristics of both tissue types.

Triggerband: A principle fascial distortion type characterized as being a distorted fascial band.

Triggerband Pathway: The anatomical course that a distorted fascial band is found to have during its correction using triggerband technique. Most patients with the same clinical problems tend to have anatomically the same distortion pathways.

Triggerband Technique: A manual approach to treating distorted fascial bands in which the distortion is located and corrected along its entire pathway by using physical force from the physician's thumb.

Triggerpoint: A principle fascial distortion type that results from a herniation of tissue through a fascial plane also known as a herniated triggerpoint.

Triggerpoint Therapy: A technique used in the treatment of triggerpoints in which the physician's thumb is used to push protruding tissue down below the fascial plane.

Twist: A triggerband subtype that occurs when a portion of a fascial band becomes rotated on itself.

Wave: A triggerband subtype that is palpated as a wrinkling in the crossband of the adjoining triggerband.

Whiplash Injury: A injury that results from a sudden introduction of flexion and extension to the cervical spine. Most of these are triggerband distortions of the cervical fascia, but continuum distortions also may occur at the origin and insertion of the cervical ligaments.

Fourth Annual OMT Update

Application of Osteopathic Concepts in Clinical Medicine

PLUS

Preparation for OMM Boards

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:

September 22-25, 1994
(Thursday PM - Sunday AM)

Location:

Walt Disney World,
Lake Buena Vista, Florida
Disney's Contemporary Resort

CME Hours:

4 days; 22 hours; AOA Category 1-A
21 hours; AAFP Approved
(Intermediate level course offered by the AAO)

Fees:

Prior to August 22, 1994

AAO Members DO/MD	$475
AAO Non-Members	$525

After August 22, 1994

AAO Members DO/MD	$525
AAO Non-Members	$575
Residents/Interns	$225

Program

Thursday, September 22

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
6:15- 6:45	"Counterstrain" Ann Habenicht, DO
6:45- 7:15	"Myofascial Release" Judith A. O'Connell, DO
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
8:45- 9:15	"Exercise Prescription" John G. Hohner, DO
9:15- 9:30	Closing Comments Ann L. Habenicht, DO

Friday, September 23

7:00- 8:00 am	Breakfast Lecture Coding Update --"Getting Paid for What You Do" Judith O'Connell, DO
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 Wrap-Up Session: (Summary) Faculty
Friday PM	Free time for Exploration

Saturday, September 24

7:00- 8:00 am	Breakfast Lecture Coding Update -- Part II Judith O'Connell, DO
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, September 25

7:00- 8:00 am	Breakfast Lecture Coding Update Part III Judith O'Connell, DO
8:00-10:30	Lecture: "Lower Extremity Troubleshooting" Skills Session: Lower Extremity Ken Nelson, DO
10:30-11:00	Break
11:00- 1:30	Prep for Manipulative Boards Judith O'Connell, DO John Hohner, DO John Glover, DO Ken Nelson, DO Case Study Prep -- "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 Daniel Davison, DO Boyd Buser, DO Ann Habenicht, DO Melicien Tettambel, DO

Classifieds

DO Wanted!

DO wanted to experience rural health care in remote mountains of West Virginia. Beautifully forested community of Man, 80 miles from state capital in Charleston. Family practitioner needed to provide primary care services to catchment of 30,000 people. Multi-specialty group or hospital-employed practice. Salary $80,000 to $100,000 with paid personal/professional insurances and other major benefits. Work with friendly people who have APPRECIATION FOR YOUR WORK and need your help. Send CV to or call: Greg Davis, Appalachian Regional Healthcare, P.O. Box 8086, Lexington, KY 40533 1-800-888-7045 or (606) 281-2537 collect.

DO Needed!

Opportunity available for a Family practitioner to be part of a busy practice at the River Valley Clinic in Northfield, MN. Must be willing to do OMT. River Valley Clinics are owned by Health One in Minneapolis. Contact: David Flicek, Administrator, 1400 Jefferson Road, Northfield, MN 55057, (507) 645-2095.

OMM/ Physical Medicine Physician

to join busy, well established practice in Colorado Springs, Colorado. Partnership or solo option available. Call Vincent Conner at (719) 260-8179.

Iowa

Major osteopathic college is seeking well credentialed, motivated and enthusiastic BC/BE osteopathic physicians to join an expanding department of osteopathic manipulative medicine. Position includes a good balance between patient care and didactic teaching. Excellent benefits with salary negotiable according to experience. Send letter of interest with CV and three professional references to David Boesler, DO, Chairman, Department of OMM, University of Osteopathic Medicine and Health Sciences, 3200 Grand Avenue, Des Moines, IA 50312. The University is an equal opportunity employer.

Jean-Pierre Barral, DO
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400 N. Lee Street,
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Full-time position in the Department of Osteopathic Principles and Practices, involving didactic as well as clinical instruction, research, student advising, service on College committees, participation in the practice plan and the usual faculty commitments. Requires an earned DO degree, board eligibility by specialty college and licensed or capable of being licensed in the State of Oklahoma.

Preference will be given to candidates who are board certified and who have publication, research and/or academic teaching experience.

Applications will be reviewed beginning July 1, 1994 until the position is filled.

Reply to:
Chair of the Search Committee,
Department of OP&P
Oklahoma State University
College of Osteopathic Medicine
111 W. 17th Street
Tulsa, OK 74107

The Academy
Invites its
Component Societies
to send in their
course schedules
to be published in the
AAO Journals
and the
AAO Newsletters.

Calendar of Events

JUNE

13
Deadline for applying for November Osteopathic Manipulative Medicine's (OMM) Board examination
Contact: Susan Barnhart
AAO Administrative Assistant
(317) 879-1881

18-22
Basic Course in Osteopathy in the Cranial Field
The Cranial Academy
Oklahoma City Marriott
Hours: 40 Category 1-A anticipated
Contact: Patricia Crampton
The Cranial Academy
Executive Director
(317) 879-9713

23-26
Explorations in Osteopathy
The Cranial Academy
Oklahoma City Marriott
Hours: 20 Category 1-A anticipated
Contact: Patricia Crampton
The Cranial Academy
Executive Director
(317) 879-9713

JULY

9-10
Board of Trustees' Meeting
American Academy of Osteopathy
Indianapolis, Indiana
Contact: Stephen Noone, CAE
AAO Executive Director
(317) 879-1881

15-17
Board of Trustees' Meeting
American Osteopathic Association
Atlanta, Georgia
Contact: Ann Wittner
AOA Director of Administration
(800) 621-1773

15-17
House of Delegates' Meeting
American Osteopathic Association
Atlanta, Georgia
Contact: Ann Wittner
AOA Director of Administration
(800) 621-1773

17-18
UAAO Council Meeting
Atlanta, Georgia
Contact: GiGi Rondinella
AAO/UAAO Liaison
(317) 879-1881

AUGUST

5-7
AAO Education Committee Meeting
Indianapolis, Indiana
Contact: Stephen Noone, CAE
Executive Director
AAO (317) 879-1881

26-28
Head, Neck and Should Pain; a multi disciplinary approach
Indianapolis, Indiana
Indiana Academy of Osteopathy
Contact: Indiana Association of Osteopathic Physicians & Surgeons
(800) 942-0501

SEPTEMBER

19-11
Midyear Seminar
Florida Osteopathic Medical Association
Hyatt Regency Westshore
Tampa, Florida
Contact: FOMA
(904) 878-7364

22-25
OMT Update plus Preparation for OMM Boards
Walt Disney World Resorts
Orlando, Florida
Contact: Diana Finley, AAO
Associate Executive Director
(317) 879-1881

22-25
23rd Annual Convention
New England Osteopathic Association
The Cliff House
Ogunquit, Maine
Contact: Nancy Dickey
Executive Secretary
(207) 474-2357

OCTOBER

7-9
SCTF Continuing Studies Course
Sutherland Cranial Teaching Foundation
UNECOM
Contact: Judy Staser
(817) 735-2498

22-23
Basic Percussion Vibrator Course
AAO Headquarters' Building
Indianapolis, Indiana
Contact: Diana Finley, AAO
Associate Executive Director
(317) 879-1881

NOVEMBER

11-12
Osteopathic Manipulative Medicine's (OMM) Boards
San Francisco, California
Contact: Susan Barnhart
AAO Administrative Assistnat
(317) 879-1881

13-17
AOA/AAO Convention
San Francisco, California
Contact: AAO
(317) 879-1881

The Objective Documentation of Somatic Dysfunction

Theme for AAO Program in San Francisco, California

in conjunction with

AOA Annual Convention
November 13-17, 1994

The AOA will be sending registration information in the near future. We invite you to

Support the Academy by Registering as an Academy Member!

Mark Cantieri, DO, Program Chairperson

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