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in teaching, promoting, and researching the science, art, and philosophy of osteopathic medicine, with the goal of integrating osteopathic principles and osteopathic manipulative treatment in patient care.

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AAOJ Call for Submissions

Time is precious and article writing is often triaged for busy physicians. In an effort to help guide the journal and stimulate interest in academic and scholarly activity, we are providing some broad topics that can be “reserved” for you. These are by no means the only topics for the journal, but it helps to eliminate the writer’s block that so many of us may face.

Below are the topics available to reserve if you would like to support your portfolio with academic writing:

• Osteopathic approaches to treating patients with pelvic dysfunctions
• Osteopathic approaches for the cardiac patient
• The body triune: osteopathic treatment of mind and spirit for today’s patient
• Beyond Spencer technique: OMT for shoulder overuse
• Using OMT to treat patients with long-term side effects of radiation for cancer treatment

If you are interested in any of these topics, send an email to Lauren Good and reserve your topic today. Manuscripts should be emailed to editoraaoj@gmail.com within three months of reserving a topic. See the AAOJ’s Instructions for Contributors for more information on submitting manuscripts.

In addition, we are asking for peer reviewers to assist us in producing the best journals we can, so please contact AAO Communications Specialist Lauren Good at LGood@academyofosteopathy.org if you can help in this capacity. No experience is required, and training resources will be provided. Peer reviewers are expected to review at least two manuscripts per year.

If you have any questions, please email us at editoraaoj@gmail.com.
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AAOJ Submission Checklist

Manuscript Submission

☐ Submission emailed to editoraaoj@gmail.com or mailed on a flash drive or CD to the AAOJ’s managing editor, American Academy of Osteopathy, 3500 DePauw Blvd, Suite 1100, Indianapolis, IN 46268-1136

☐ Manuscript formatted in Microsoft Word for Windows (.doc, .docx), text document format (.txt), or rich text format (.rtf)

Manuscript Components

☐ Cover letter addressed to the AAOJ’s editor-in-chief with any special requests (eg, rapid review) noted and justified

☐ Title page, including the authors’ full names, financial and other affiliations, and disclosure of financial support related to the original research or other scholarly endeavor described in the manuscript

☐ “Abstract” (see “Abstract” section in “AAOJ Instructions for Contributors” for additional information)

☐ “Methods” section
  • the name of the public registry in which the trial is listed, if applicable
  • ethical standards, therapeutic agents or devices, and statistical methods defined

☐ Four multiple-choice questions for the continuing medical education quiz and brief discussions of the correct answers

☐ Editorial conventions adhered to
  • terms related to osteopathic medicine used in accordance with the Glossary of Osteopathic Terminology
  • units of measure given with all laboratory values
  • on first mention, all abbreviations other than measurements placed in parentheses after the full names of the terms, as in “American Academy of Osteopathy (AAO)”

☐ Numbered references, tables, and figures cited sequentially in the text
  • journal articles and other material cited in the “References” section follow the guidelines described in the most current edition of the AMA Manual of Style: A Guide for Authors and Editors
  • references include direct, open-access URLs to posted, full-text versions of the documents, preferably to digital object identifiers (DOIs) or to the original sources
  • photocopies provided for referenced documents not accessible through URLs

☐ “Acknowledgments” section with a concise, comprehensive list of the contributions made by individuals who do not merit authorship credit, as well as permission from each individual to be named

☐ For manuscripts based on survey data, a copy of the original validated survey and cover letter

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☐ For photographs in which patients are featured, signed and dated patient-model release forms

☐ For named sources of unpublished data and individuals listed in the “Acknowledgments” section, written permission to publish their names in the AAOJ

☐ For authors serving in the US military, the armed forces’ written approval of the manuscript, as well as military or other institutional disclaimers

Financial Disclosure and Conflict of Interest

Authors are required to disclose all financial and nonfinancial relationships related to the submission’s subject matter. All disclosures should be included in the manuscript’s title page. See the “Title Page” section of “AAOJ Instructions to Contributors” for examples of relationships and affiliations that must be disclosed. Those authors who have no financial or other relationships to disclose must indicate that on the manuscript’s title page (eg, “Dr Jones has no conflict of interest or financial disclosure relevant to the topic of the submitted manuscript”).

Publication in the JAOA

Please include permission to forward the manuscript to The Journal of the American Osteopathic Association if the AAOJ’s editor-in-chief determines that the manuscript would likely benefit osteopathic medicine more if the JAOA agreed to publish it.
Just as the proverbial freshly sharpened pencils and new box of crayons usher in the new school year, the white coat is the sign of a fresh batch of altruistic medical students about to start their journey toward a career in medicine. In white coat ceremonies across the country, students don short white coats, indicating they are in training. As the years pass and they graduate, they are given the honor of wearing full-length white coats, indicating they have passed that first milestone of training. These ceremonies convey meaning and responsibility—even if the new doctor doesn’t feel deserving of the honor themselves.

For some, the white coat never feels as if it is earned, no matter what the length. While medical schools select students for their knowledge, service, attention to detail, conscientiousness and professional demeanor, those students may never feel like the status is earned. Imposter syndrome can haunt students, making them believe that they were selected wrongly and they can never live up to the responsibility. Indeed, many doctors find the very traits that caused them to be selected as students are the same traits that lead to imposter syndrome: namely, perfectionism and, dare I say, a tendency to neuroticism in some.

While students outwardly may have a pedigreed application in which all the boxes are checked, inwardly they may have that seed of doubt that can grow into an incompatibility with the messiness of medicine. How can one who leans toward perfection be comfortable with the unknowns and variables that make medicine an art? In my mind, these seeds begin to sprout the minute they take their first test—or even before they walk in the door. Over time, these seeds can become full-blown medical student burnout, or if graduated, physician burnout.

Andrew Taylor Still focused the foundations of osteopathic medicine on mind, body and spirit as all equally important. In the years since he established the first osteopathic medical school in Missouri, it seems medical schools increasingly select for mind only, forgetting the body and spirit are also important to the wholeness of the physician, as well as the patient. With such an emphasis, is it any wonder we have a generation of physicians who are uncomfortable with the uncertainties medicine brings, fueling one aspect of the epidemic of burnout the medical profession is currently encountering?

What if we as physicians walked the talk and remembered that we are a body triune ourselves? Would we be the examples that medicine can be compatible with a balanced human life experience? What if we taught resilience and mindfulness early in the path to medicine so we did not have to lose so many to burnout or worse, suicide? Perhaps it is time to put down the “superhero capes” we call white coats and recognize we all are humans first. While the ritual progression of the white coat is important, isn’t life in the present moment just as important as the next milestone?

I am reminded of the thought attributed to the poet Rumi: “The wound is the place where Light enters you.” Perhaps we can heal these wounds in medicine by letting the light in and starting with ourselves. Time to color outside the lines a little and be ok with messy.

In gratitude,

Janice Blumer, DO, FAAO
# AAO Calendar of Events

Mark your calendar for these upcoming Academy meetings and educational courses.

### 2018–19

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<th>Date</th>
<th>Event Details</th>
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<tr>
<td>Sept. 12</td>
<td>LBORC Grants Review Subcommittee’s teleconference—7:30 p.m. Eastern</td>
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<td>Oct. 6-8</td>
<td>AAO at OMED: “Respectful and Mindful Use of Our Hands Across the Osteopathic Disciplines” — Robert N. Agnello, DO, FACOFP, program chair—San Diego Convention Center</td>
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<tr>
<td>Oct. 20</td>
<td>Committee on Fellowship in the AAO’s meeting and examinations—The Pyramids in Indianapolis</td>
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<td>Oct. 27</td>
<td>AAO Board of Trustees’ meeting—The Pyramids in Indianapolis</td>
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<tr>
<td>Nov. 9-11</td>
<td>“Fascial Approach to the Thoracic Viscera: A Basic Course”—Richard G. Schuster, DO, course director—Rowan University School of Osteopathic Medicine in Stratford, New Jersey</td>
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<td>Nov. 22-23</td>
<td>Thanksgiving holiday—AAO office closed</td>
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<tr>
<td>Nov. 30-Dec. 2</td>
<td>“Fascial Distortion Model: Treating the Shoulder, Ankle and Knee”—Todd A. Capistrant, DO, MHA, course director—The Pyramids in Indianapolis</td>
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<td>Dec. 7-9</td>
<td>“A Visceral Approach to the Arteries of the Abdomen and Pelvis”—Kenneth J. Lossing, DO, course director—UNTHSC/Texas College of Osteopathic Medicine in Fort Worth</td>
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<td>Dec. 12</td>
<td>Committee on Fellowship in the AAO’s teleconference—8 p.m. Eastern</td>
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<td>Dec. 25</td>
<td>Christmas Day—AAO office closed</td>
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<td>Jan. 1</td>
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<td>Jan. 16</td>
<td>Committee on Fellowship in the AAO’s teleconference—8 p.m. Eastern</td>
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<td>March 10-12</td>
<td>Pre-Convocation course—“Brain Therapy for Neonatal Reflexes &amp; Lifelong Reflexes in Adults and Children”—Bruno Chikly, MD, DO (France), course director—Rosen Shingle Creek in Orlando, Florida</td>
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<tr>
<td>March 10-12</td>
<td>Pre-Convocation course—“Fascial Distortion Model—Beyond the Basics: Osteopathy and FDM moving forward together!” — Todd A. Capistrant, DO, MHA, course director—Rosen Shingle Creek in Orlando, Florida</td>
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<tr>
<td>March 10-12</td>
<td>Pre-Convocation course—“Visceral Lymphatics”—Kenneth J. Lossing, DO, course director—Rosen Shingle Creek in Orlando, Florida</td>
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<td>March 13-17</td>
<td>Convocation—“Leading, Expanding and Cutting: The Edges of Osteopathic Medicine”—Rebecca E. Giusti, DO, program chair—Rosen Shingle Creek in Orlando, Florida</td>
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<td>March 17</td>
<td>Post-Convocation—Residency Program Directors’ Workshop—Darren L. Grunwaldt, DO, course director—Rosen Shingle Creek in Orlando, Florida</td>
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**OMED 2018: Oct 5-9 in San Diego!**

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The AAO Journal • Vol. 28, No. 3 • September 2018
Incorporating Osteopathic Philosophy Into Residency Programs

Stephen I. Goldman, DO, FAAO, FAOASM

Abstract
Osteopathic residency programs face many difficulties with incorporating osteopathic philosophy into their curricula. The author reviews the Accreditation Council for Graduate Medical Education (ACGME) requirements for philosophy and presents a strategy for developing and implementing osteopathic philosophy in residency programs utilizing the works of Andrew Taylor Still, MD, DO, reviewing the history of the osteopathic profession, and introducing healing philosophies.

Introduction
One of the greatest challenges presenting residency program directors is how to incorporate osteopathic philosophy into osteopathic residency education.

Developing a neuromusculoskeletal medicine (NMM) curriculum (or in the ACGME parlance, osteopathic neuromusculoskeletal medicine, or ONMM) into a residency program is actually easier to accomplish than people realize, as there are many resources available for teaching the hands-on component in ONMM residency programs.

However, trying to decide what truly constitutes an osteopathic curriculum beyond osteopathic manipulative medicine (OMM) is challenging. This is true for all residencies, including ONMM programs.

For decades, the concept of defining an osteopathic physician has been confined to medical school curriculum. A few lectures here and there, combined with the OMM/ONMM curriculum, is supposed to give osteopathic medical students a strong foundation of osteopathic identity to last them into their residencies and their entire careers. Little, if any, emphasis is placed on treating hospitalized patients. Once they enter their clinical rotations, which is mostly hospital-based training, students are at a loss as to how to apply osteopathic principles to the hospital world, as they receive little additional training or support on using these principles in this setting. In addition, once they enter their residency programs, osteopathic physicians often find that, aside from some lectures in OMM, if they are fortunate, they have little reinforcement of their osteopathic identity. Identifying and contracting OMM/ONMM board-certified physicians and funding them to mentor students and residents would help greatly in advancing interest and utilization of osteopathic principles in the hospital setting, and it may encourage osteopathic physicians to continue utilizing OMM/ONMM after they have completed their training.

Now, the ACGME accreditation process has changed the landscape for osteopathic medicine. Many residency programs are choosing not to pursue osteopathic recognition and are training their residents on the ACGME (allopathic) model. Those that choose Osteopathic Recognition, as well as ONMM residency programs, face the new challenge of designing and implementing OMM and osteopathic philosophy into their programs. It is now up to individual residency programs to assure the future of osteopathy in their residency programs. Unfortunately, many residency programs lack the expertise and resources to design and implement Osteopathic Recognition. The AAO could help in this regard by providing board-certified NMM physicians to aid residency programs and

(continued on page 8)
by implementing a centralized AAO-directed Osteopathic Recognition curriculum to the residency programs.

ONMM residency programs, by their very nature, have already incorporated the manual medicine aspect of ONMM into their programs. After all, that is what ONMM residents signed up to learn. The more difficult thing, however, is trying to figure out what to include in the philosophical part of the residency program. Even more difficult is making it interesting for residents to learn and convincing them that it is a vital part of their education. This is even more of a problem for other, non-ONMM residency programs: How do you maintain a philosophic osteopathic identity in the ACGME world?

In my many years of running an integrated family medicine/NMM program and an ONMM-2 (NMM Plus One) program, osteopathic philosophy has always been the eye-rolling part for residents. With lots of resident feedback, I have actually found that residents are very interested in learning philosophy if it is approached differently than in the past. Younger residents do not respond to having mandatory curriculum force-fed to them like they experienced in medical school. This is especially true for non-scientific curriculum such as philosophy. It requires a new approach based on these points:

- How can this interest me personally?
- Does it have any relevance to me and how I will treat patients?

Once I finally understood that I needed to make philosophy personally important to the residents, figuring out how to interest residents in learning osteopathic philosophy became an easier task.

If residency program directors are to successfully demonstrate that osteopathic philosophy is important to learn, it becomes necessary to make philosophy real to our residents, to encourage them to see how everything they do for their patients is dependent on having a strong understanding of why and how they treat osteopathically. With a good foundation in osteopathic philosophy, it helps them further develop their osteopathic identity, and helps to reinforce that ONMM is much more than manual medicine.

ACGME vs AOA Requirements

The original ACGME requirements for philosophy for ONMM residency programs was stated as follows:

Residents must study osteopathic philosophy in depth during the program (Program Requirement: IV.A.6.a.(1))

This original recommendation was further expanded upon by the ONMM Residency Committee in an FAQ statement:

This should reinforce the importance of the original philosophy, as expressed by Dr. A.T. Still in his writings, and other philosophy related to osteopathic principles and practice. The Review Committee strongly recommends that residents read at least one book by Dr. Still prior to completion of the program. This is considered a minimum and should promote a lifelong pursuit and commitment to understanding and implementing the osteopathic philosophy and practices.

In the American Osteopathic Association’s basic standards documents for OMM residency training, there was a specific requirement for reading two books by Andrew Taylor Still:

5.2.12 Osteopathic philosophy must be studied in depth by the resident in Neuromusculoskeletal Medicine and Osteopathic Manipulative Medicine. A minimum of two texts by A.T. Still, MD, DO must be read during the two-year residency period. This philosophy must be incorporated into the basic science and clinical study.

The new ACGME document gives additional latitude as far as what to choose to include in the curriculum, yet it also is very specific in stating goals for osteopathic philosophy: “should promote a lifelong pursuit and commitment to understanding and implementing the osteopathic philosophy and practices.” Thus, the document allows programs to be creative in designing curriculum but is very specific in what they should do for teaching osteopathic philosophy. Paradoxically, the ACGME recommendations for teaching osteopathic philosophy can be seen as being stronger than the previous AOA requirements.

Teaching the Writings of Dr. Still

Realistically, every ONMM residency program incorporates teaching osteopathic philosophy at some level. But the trap that all residency programs can fall into is that the training is heavily weighted on teaching manual skills while neglecting the importance of utilizing the neuromusculoskeletal system in diagnosing systemic diseases. As they are trained to become NMM specialists, however, residents must be taught to recognize structural problems as clues to systemic processes. After all, they are being trained as neuromuscular medicine specialists, not just manual medicine specialists!

This concept is what Dr. Still emphasized when he established osteopathic medicine. While reviewing Dr. Still’s books and the early books in osteopathy is important, they are difficult to read and understand, especially for residents. Understanding Dr. Still's
(continued from page 8)

To better understand Dr. Still’s writings, my recommendation is to start with John Lewis’ first-rate biography, A.T. Still: From the Dry Bone to The Living Man. Lewis’ biography provides a well-researched, in-depth look at the life of Dr. Still and his founding of the osteopathic profession. Lewis’ book also provides a great history of the early politics of our profession, and the looming battles over osteopathic philosophy that exist to this day. Reviewing Lewis’ biography before reading Dr. Still’s books provides an excellent foundation upon which to better understand Dr. Still’s writings. All of my residents have said that after reading Lewis’ book and learning his life’s story and motivations that they had a much better understanding and appreciation for Dr. Still and his teachings.

Utilizing a supplemental text such as the one by Lewis will help residents gain a better understanding of the motivations and concepts behind Dr. Still’s writings. This additional background will help all physicians, but especially residents, to more deeply examine the stories and metaphors that he used to describe osteopathic concepts. Most importantly, it will assist residents to better understand and appreciate the emerging philosophical concepts of osteopathy and the battle over its meanings that persist today.

History: Our Past and Our Journey

The second piece to the puzzle is providing residents with a strong understanding of osteopathic history from the early days of the profession to the new, uncharted territory of the ACGME world. Osteopathic history is not a subject that is presented well at most osteopathic medical schools, so it is incumbent upon program directors to make sure that it is presented to our residents. History, however, should be more than memorizing the date the banner was flung to the breeze. It should be about understanding the events and stories that created the historical events.

Understanding the history of the profession will bridge residents’ perceptions of the profession from the early days to the 21st century and help them understand how the battles to define and maintain osteopathic philosophy continue to this day. I firmly believe that reading philosophy without historical context is a worthless undertaking. It leaves the reader either believing in the philosophy almost like a religion, or it becomes so obtuse to the reader that

(continued on page 10)
it cannot be understood or fully appreciated. Additionally, since many of the battles over osteopathic teaching and identity date back to the early days of the profession, obtaining a historical perspective also lends itself to a better and deeper understanding of the philosophical underpinnings of osteopathic medicine.

Educationally, providing residents with a historical underpinning to osteopathic philosophy and the battles that ensued to grow the profession gives them a better understanding of where the osteopathic profession came from, the challenges that were faced in the past, how the profession grew, and the challenges facing the future of the profession. It makes the philosophy real and personal. And, with all the changes facing our profession in the next few years, understanding where we came from and how we got here is of vital importance.

My favorite easily read text of osteopathic history is The DOs: Osteopathic Medicine in America by Norman Gevitz. He presents a concise, accurate, easily read history of osteopathic medicine. Like Lewis, he is able to relate the history of the osteopathic profession in a manner that makes it accessible to the modern reader. Most importantly, it enables residents, all of whom were born years after many of the major battles in the profession, to understand how the osteopathic profession came to the problems and decisions that it faces today.

Healing Philosophies

The next step to incorporate philosophy should branch out into healing philosophies with an emphasis on the osteopathic approach to patient care.

This can take many different approaches, from energy medicine to spirituality and healing. Because available didactic time in any residency program is at a premium, it is important to try to choose topics relevant to osteopathy and of interest to your residents.

Dr. Still emphasized over and over again the concept of a higher life force, a Creator that designed the body to always return to health. To him, this concept was the basic underpinning of the osteopathic concept:

First the material body, second the spiritual being, third a being of mind which is far superior to all vital motions and material forms, whose duty is to wisely manage this great engine of life.

The importance of adding this into the residency curriculum is not to try to convince residents of a particular belief system. It is included to heighten their curiosity, and to expand their understanding of how healing goes beyond the hard sciences. The concept of a greater, spiritual being as part of health and healing is finally becoming a widely discussed part of medicine. Also, patients will inevitably want to discuss these topics with their physicians, so they should at least become familiar with discussing healing philosophies. Not everyone will be comfortable discussing spirituality and healing with their patients, but everyone needs to understand these concepts and how they are an important part of patient healing.

While there are many different healing philosophies that can be included in an osteopathic curriculum, there are several osteopathic authors who have published books on spiritual healing powers. Osteopathy and Swedenborg by David Fuller, DO, traces the concept of the soul-body connection back hundreds of years to the Swedish physician and philosopher Emanuel Swedenborg.

Probably the 2 physicians who have recently contributed the most to incorporating philosophy into our profession are Robert Fulford, DO, and R. Paul Lee, DO. Drs. Fulford and Lee do an excellent job of incorporating the philosophy of energy, spirituality and healing into an osteopathic perspective. They bring a modern perspective to the very topics that Dr. Still presented about nature and the body’s self-healing abilities.

Pulling It All Together

One of the advantages of the ACGME curriculum is that it provides a lot of room for creativity. So, just like any other part of the curriculum, philosophy becomes another piece of the puzzle. It can easily be included as a short part of a didactic session. Oftentimes, the discussion on philosophy lasts longer than anticipated, which means that the residents had some good insights and questions. A chapter out of a philosophy book reviewed per month spreads out a longer book over most if not all of an academic year. The books that I have referenced are suggestions. You may find other ones to use in your particular program. The ACGME requirement for an average of 4 hours of structured teaching per week allows ample time to add philosophy into the residency program.

Residency program directors should be prepared for some resistance to including philosophy in residency didactics. This is usually due to the fact that residency training is geared towards the hard sciences and how they apply to physical diagnosis and treatment. Teaching philosophy encourages residents to think about the art of medicine. It may even make them uncomfortable at first. I have found that the residents who are attracted to the ONMM program are much more open to examining osteopathic and healing philosophies, but they still are more interested in learning techniques.
I hope that the strategies that I have presented here—osteopathic philosophy, history, and healing philosophies—will give residency program directors a framework for incorporating philosophy into their own programs.

We need to remember, and to teach our residents, that osteopathy is more than OMM. It is a system, and it is a philosophy. It is the science of medicine; and it is the art of medicine. OMM is an integral part of osteopathic medicine, but we need to remember for ourselves—and to teach those who study under us—that we all need to learn our heritage, understand our philosophy, and remember that all of humanity, indeed all of our patients, are more than their physical ailments. Then, and only then, do we become true osteopathic physicians as envisioned by Dr. Still:

I want to say that when an Osteopath explores the human body for the cause of disease he knows he is dealing with complicated perfection.

Acknowledgement
The author thanks David M. Kanze, DO, for reviewing and providing suggestions for this manuscript.

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An Osteopathic Approach to Low Back Pain and Short Leg Syndrome in a Patient with Traumatic Brain Injury Following Motor Vehicle Crash: A Case Report

Drew D. Lewis, DO, FAAO, FNAOME, FAOCMPMR, FAAPMR, and Garth K. Summers, DO

CASE REPORT

Abstract
A 16-year-old boy suffered a traumatic brain injury in a motor vehicle collision with resulting subdural hematoma, post-traumatic seizures, headaches, and cognitive dysfunction. In addition, he experienced severe acute low back, neck, and hip pain. The patient’s pediatrician identified him as likely to benefit from osteopathic manipulative medicine (OMM), and he was subsequently referred to the Des Moines University (DMU) specialty care clinic for further evaluation and management.

The patient’s outpatient rehabilitation was impacted by multiple somatic dysfunctions and by onset of short leg syndrome. An OMM approach with direct techniques (muscle energy; low-velocity, moderate-amplitude; soft tissue), indirect techniques (counter-strain, Still, myofascial release), and cranial techniques were utilized to minimize his pain, maximize the neuromusculoskeletal recovery, and to assist in returning him to his prior level of functioning.

The acute nature of the injury and apparent new-onset leg length discrepancy allowed for a rapid correction with a heel lift and an ongoing OMM approach to address somatic dysfunction associated with the condition. After 5 treatments with OMM and use of the heel lift, the patient’s low back pain substantially improved, and his headaches completely resolved.

Background
Acute low back pain (LBP) is a common, disabling, and costly condition and one of the most common presentations to primary care offices.1 Acute LBP is a common complaint following major trauma, such as a motor vehicle collision (MVC).2 In addition to a multitude of possible traumatic injuries, numerous and significant somatic dysfunctions may also result from MVCs.3

Short leg syndrome (SLS) also is a common etiology of LBP.4,5 SLS can occur developmentally over a person’s life or can be acquired, eg, following hip replacement surgery or traumatic injuries.3,6 Classic somatic dysfunction findings of short leg syndrome have been well documented. These related dysfunctions can be global and range from foot pronation, innominate rotations and shears, compensatory spinal curves, and cervical and cranial dysfunctions.7

MVC is also a common cause of traumatic brain injury (TBI).8 Clinical issues following TBI vary greatly9 and include a variety of physical, cognitive, and neurobehavioral impairments.10,11

The purpose of this case report is to provide an OMM approach to a pediatric patient suffering from the traumatic results of an MVC: multiple significant somatic dysfunctions, TBI and associated sequela, and short leg syndrome.

Optimal management of the patient’s recovery included addressing significant somatic dysfunctions, assessment and heel lift therapy for the acquired short leg syndrome, and a multidisciplinary rehabilitation approach focused on helping return to prior neurocognitive function.

(continued on page 13)
Report of Case

History Of Present Illness

A 16-year-old boy was the front passenger involved in a motor vehicle collision (MVC) in which the car was broadsided on the driver’s side by a truck traveling at an estimated 55 mph. Loss of consciousness was reported at the scene. Non-contrast computed tomography (CT) scan was performed after arrival to the emergency department and demonstrated a small extra-axial hematoma anterior to the tip of the left temporal lobe, non-displaced left sphenoid fracture, and left parietal scalp hematoma (see Figure 1).

The patient experienced seizures and was placed on levetiracetam for post-traumatic epilepsy (PTE) prevention by a pediatric neurologist. He reported memory issues and was referred to a local rehabilitation facility for outpatient neuropsychiatric evaluation and treatment. Radiographic imaging of the lumbar, thoracic and cervical spine, as well as hips and sacroiliac joints were negative for fractures. Cervical spine CT scan demonstrated straightening of the cervical lordotic curve. Musculoskeletal pain symptoms were progressively worsening, and his pediatrician referred him to the OMM clinic. He presented to the Des Moines University specialty care clinic 13 days after the MVC and reported the following complaints (see Figure 2):

1. Low back pain, right side greater than left, was described as a 5 out of 10, constant, dull aching pressure that felt like a “painful stretch.” The patient denied radiation of pain, numbness, or tingling into the lower limbs. Pain improved with lying down or resting and was worse with movement. He reported minimal relief with acetaminophen. He denied bowel or bladder issues.
2. Left hip pain was described as a 3 out of 10 intermittent pain. The patient felt it was likely from the center console hitting his left hip in the MVC. Pain was worse with walking down stairs and leaning on the left side.
3. Mild, intermittent, aching pain was present at the base of the neck with accompanying medial shoulder pain bilaterally.
4. Left-sided headache ipsilateral to the extra-axial hematoma and sphenoid fracture which was described as throbbing in nature and worsened with use of his mental processes such as when playing cards and performing mental calculations.

Additional conditions following the MVC included PTE, cognitive issues, and mental health issues. Seizures were exacerbated by physical and mental fatigue; his first day back to school was the day before his initial visit to the OMM clinic, and he was only capable of attending classes for 3 hours. The patient reported extreme memory loss and confusion. Mental health concerns included increased anxiety when he was traveling in the car.

Medical History and Review of Systems

Patient did not have a history of any surgeries. Medical and social history were also non-contributory.

Physical Examination

The patient’s vital signs were stable. Upon cognitive examination, the patient was alert, oriented, and in no acute distress. He followed commands without difficulty. Mood and affect were appropriate, and he was well groomed. Language was normal in fluency, content, context, intelligibility, and response latency. Cranial

Figure 1. A non-contrast CT scan on the day of the accident shows a small extra-axial hematoma anterior to the tip of the left temporal lobe, non-displaced left sphenoid fracture, and left parietal scalp hematoma.

Figure 2. Pain diagram on initial visit intake form. Legend: 5 5 5 = aching; ||| = stabbing; ### = weakness

(continued from page 12)
nerves were grossly intact, including extraocular movements intact without evidence of nystagmus. Head was tender with extracranial hematoma appreciated in the left parietal region. Gait exam revealed slight tilt of torso to left; otherwise, no ataxia or imbalance was appreciated. Heel and toe walking were without weakness or difficulty.

A modified ASIA (neurologic) exam was performed. Sensation was intact to light touch in the bilateral C3-T1 and L2-S2 dermatomes. Deep tendon reflexes were 2/4 in the bilateral upper limbs (biceps, brachioradialis, and triceps). Lower limb revealed 3/4 reflexes in the bilateral patella and 2/4 in the bilateral Achilles. A motor exam revealed 5/5 full strength in upper and lower limb muscles assessed, including elbow flexion (C5), wrist extension (C6), elbow extension (C7), long finger flexion (C8), fifth-digit abductors (T1), hip flexors (L2), knee extensors (L3), ankle dorsiflexors (L4), great toe extensors (L5), and knee flexors (S1). Hoffman sign was positive (present) on the right, negative on the left. Plantar reflex responses were downward bilaterally. Clonus in the ankle was 0 beats on the right and 2 beats on the left.

A musculoskeletal exam revealed iliac crest and greater trochanter elevated on the right side. Active lumbar range of motion revealed decreased lumbar flexion with reproduction of pain in the right low back region. Trunk sidebending to the left produced pain in the left hip region, and sidebending to the right produced right paraspinal low back pain. Extension and bilateral rotation were without restriction or pain. Straight leg raise and Bragard test were negative bilaterally. An Adams forward bend test was negative for rib hump or signs of scoliotic curvature. Unilateral supine hip flexion was pain-free; however, a mildly positive Thomas sign was present bilaterally. Hip and sacroiliac joint range of motion and provocative testing were otherwise negative.

A focused structural exam was performed at the first visit. The following somatic dysfunctions were appreciated: right quadratus lumborum (QL) tender point; L1-4 neutral, sidebent right, rotated left; left on right (backward) sacral torsion; right anterior innominate rotation; and right superior innominate shear (upslip). Significant lower limb strains with tender points were also appreciated in the left iliacus and left piriformis.

Concerns
Problems related to the mild-moderate TBI following MVC with left subdural hematoma (SDH) included post-traumatic left-sided headaches, PTE, and mental health/cognitive issues including anxiety when in the car coupled with memory loss and confusion.

Neurological exam was abnormal with 3/4 patellar reflexes, Hoffman sign was positive asymmetrically on the left, and the patient was leaning to the left with unassisted gait.

Additionally, the patient suffered from multiple painful musculoskeletal injuries and somatic dysfunctions, including acute strain lumbosacral region, QL strain, upslip of right innominate, left hip strain, left iliacus and piriformis strains, SI dysfunction, neck and shoulder pain likely related to lateral whiplash injury suffered in above MVC, and apparent short left leg.

Medical Decision-Making
While the patient suffered a TBI, which would require time and supportive care for healing, there were also significant musculoskeletal injuries and somatic dysfunctions present upon initial presentation to DMU’s specialty care clinic. During his initial evaluation, 5 of the 6 “dirty-half-dozen” somatic dysfunctions, as originally described by Dr. Greenman, were identified.

Recommendations
Neurology recommended continuing levetiracetam for PTE prophylaxis, re-imaging of the brain in 2 months, and no driving for 6 months. Additionally, they consulted neuropsychiatry for evaluation of cognitive deficits, as well as screening and recommendations for the anxiety/PTSD related to the MVC.

After initial evaluation at DMU’s specialty care clinic, OMM was discussed as having the potential to help alleviate the musculoskeletal injuries associated with the identified somatic dysfunctions. It was agreed that the patient could significantly benefit from OMM. The patient and his mother consented and were very interested in initiating a treatment plan with OMM.

First Treatment
OMM provided on the initial visit for the somatic dysfunctions previously mentioned included counterstrain; muscle energy (lumbar and sacral dysfunctions); Still technique; and low-velocity, moderate-amplitude (innominate) leg tugs. The apparent leg length discrepancy, short left leg, was discussed with the patient and his mother, but it was recommended to re-visit this after completing a trial of OMM.

Second Treatment
The first follow-up visit occurred 1 week later. The patient reported that he felt significant improvement with minimal pain for nearly 5 days after the first treatment. He stated his hip pain was much better with almost no pain, and he reported that when the pain began to return, it was less severe and had centralized to his low

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back. He rated the pain as a 5 out of 10. He continued to struggle with focus at school, and he found that concentrating too hard aggravated his headaches.

The patient received a broader osteopathic structural examination, which revealed somatic dysfunction in the head, cervical, thoracic, lumbar, sacrum, pelvis, lower and upper extremities, and ribs (see Table 1). OMM was provided, including a focus on the thoracic inlet for increased drainage from the head and neck. Additionally, generalized cranial restriction was appreciated, and venous sinus drainage (VSD) technique\(^{(p177)}\) was utilized to both improve cranial bone mobility and promote venous and lymphatic return. This technique involved decreasing tension in the occipital sinus myofascial, decompressing the condylar parts, opening the transverse, straight, and superior sagittal sinuses.

At the end of the second visit, the patient’s standing iliac crest and greater trochanter heights were visually assessed and found to still be lower on the left side. Considering the acuity of his traumatic injury, it was determined he would likely tolerate a near-full correction of the lower limb length discrepancy. After evaluating with shims of differing heights, the patient was provided a 5 mm heel lift. As with typical heel lift therapy, recommendations included monitoring closely for worsening symptoms and providing OMM as his body adjusted to the postural correction.

**Treatment Course**

At the third visit, the patient reported tolerating the heel lift well. The pain continued to localize to his low back; however he now described it as “soreness” that worsened with activity. An MRI of the brain was performed on day 24 post-injury, and it was determined that the previously seen small extra-axial hematoma anterior to the tip of the left temporal lobe had resolved (see Figure 3). OMM was provided with very similar structural exam findings and treatment as during the prior visit.

At the fourth visit, the patient reported his low back pain was “much better,” rating his pain 2 out of 10. He was tolerating full days of school with some assistance with his math work. OMM was provided to 9 body regions. Persistent somatic dysfunctions included right innominate upsip, sacral dysfunction that resisted anterior nutation, and right QL strain. Additionally, cranial VSD technique to address the generalized cranial restriction and to improve venous and lymphatic return (see Table 2).

At the end of the fourth visit, a self-stretch for the right QL was prescribed and demonstrated, and a patient education handout was provided. The goal of this self-stretch was to help address the leg length discrepancy and to assist in maintaining long-term balance of his pelvis. Similarly, a prone press-up self-correction exercise\(^{(p498)}\) was prescribed and demonstrated, and a patient education handout

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### Table 1. Second OMM treatment, given 1 week after initial visit.

<table>
<thead>
<tr>
<th>Body area</th>
<th>Somatic dysfunctions</th>
<th>Technique applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower extremity</td>
<td>Iliacus tenderpoint (tp) left</td>
<td>Counterstrain (CS)</td>
</tr>
<tr>
<td></td>
<td>Biceps femoris tp left</td>
<td>CS</td>
</tr>
<tr>
<td>Lumbar</td>
<td>L1-4 NSrRI</td>
<td>Muscle energy</td>
</tr>
<tr>
<td></td>
<td>Quadratus lumborum tp right</td>
<td>CS</td>
</tr>
<tr>
<td></td>
<td>Lumbopelvic roll right, iliac crest high left</td>
<td>Muscle energy; low-velocity, moderate-amplitude (LVMA)</td>
</tr>
<tr>
<td>Thoracic</td>
<td>Thoracolumbar shift left, iliac Crest high left</td>
<td>LVMA</td>
</tr>
<tr>
<td>Pelvis</td>
<td>Anterior rotation left innominate</td>
<td>LVMA</td>
</tr>
<tr>
<td></td>
<td>Upslip on right</td>
<td>Muscle energy</td>
</tr>
<tr>
<td>Sacrum</td>
<td>Right extension</td>
<td>Muscle energy</td>
</tr>
<tr>
<td>Ribs</td>
<td>Posterior 10th rib left</td>
<td>LVMA</td>
</tr>
<tr>
<td></td>
<td>Posterior 11, 10, 5, 4, 3, right</td>
<td>LVMA</td>
</tr>
<tr>
<td>Inlet</td>
<td>T1 FRlSl, first rib elevated on right</td>
<td>Still</td>
</tr>
<tr>
<td>Cervical</td>
<td>Paraspinal muscles tight bilaterally</td>
<td>Soft tissue</td>
</tr>
<tr>
<td>Head</td>
<td>Occipito-atlantal ESrRI</td>
<td>Muscle energy, LVMA</td>
</tr>
<tr>
<td></td>
<td>Generalized cranial restriction</td>
<td>Venous sinus drainage</td>
</tr>
</tbody>
</table>

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*Figure 3. MRI of the brain (T2 Axial) on day 24 post-MVC shows a left subdural hematoma.*
was provided to help address his recurrent “stuck-backwards,” sacral dysfunctions.

Upon returning for the fifth treatment, the patient’s headaches had resolved. His low back and neck pain had transitioned to being intermittent, specifically worsened with increased exercise (see Figure 4). He also reported that the at-home exercises for the sacrum and QL were helping. He denied any other pain issues.

The patient continued to use the heel lift at all times. Additionally, he continued to adhere to neurology’s driving restriction and the PTE prophylactic levetiracetam recommendations. He also continued to see neuropsychology for ongoing treatment of his cognitive deficits and education on strategies for mood disorders related to the TBI. It was recommended to continue with OMM on an as-needed basis, with the anticipation that his musculoskeletal pain issues would continue to improve.

Discussion
This case presents an example of the utility of OMT in a pediatric patient with a mild-to-moderate TBI and significant post-traumatic low back pain. He presented with numerous significant somatic dysfunctions contributing to his condition that according to Greenman et al. may have failed other traditional (non-OMM) treatment approaches.

The patient’s pediatrician correctly identified the patient as being likely to benefit from care in an OMM specialty clinic. Some of the dysfunctions found were consistent with the typical postural response to sacral base unleveling, such as the anterior innominate rotation on the left, the side of the shorter lower limb. However, these dysfunctions are also frequently seen in patient contralateral to an anatomic short leg.

Interestingly, the initial finding of an anterior innominate rotation on the right, which was the same side of his long leg and innominate upslip, was an atypical presentation. This

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suggests the patient may have had a leg length discrepancy pre-
dating the MVC, and his compensatory postural changes, which
allowed him to be asymptomatic prior to the MVC, were altered
by the traumatic forces of the injury. It is possible a lower limb in
contact with the floor boards of the car could have caused asy-
metric shearing and torsion-like forces, which may have contrib-
uted to multiple dysfunctions in the pelvis.

Alternatively, due to the acuity of the traumatic injury, perhaps
there had not been enough time for the patient’s innominate
bones to assume the more typical rotatory-compensation pattern seen in
chronic cases of leg length discrepancy. It may have been the com-
bination of strains, core fascial twists, and other somatic dysfunc-
tions that caused the departure from the classic pattern.

OMM was provided on 6 occasions. Treatments focused on key
somatic dysfunctions in the lumbar and pelvic regions to address
the postural dysfunction and low back pain. Additionally, basic cran-
ial treatments, as well as evaluation and treatment of fascial pat-
tern dysfunctions at the transitional regions of the spine, were used
to promote venous and lymphatic return. The patient was evaluated
and successfully treated with a heel lift for his acquired leg length
discrepancy. Focus exercises were prescribed to address recalcitrant
somatic dysfunctions. His rehabilitation continued to progress with neuropsychology providing strategies for improving
concentration and stamina as well as education for monitor-
ing mental health issues. Addressing structural issues with OMM
helped facilitate his neuromusculoskeletal recovery and assist in
returning him to his prior level of functioning.

Conclusion

This case illustrates the importance of looking for leg length dis-
crepancy. It also demonstrates how a clinical visual assessment
and evaluation (radiographic imaging) allow a provider to diagnose and treat a patient suffering from a short leg syndrome. Third, it highlights how exercise prescription can be utilized—even in small doses—to augment treatment benefits between visits and ultimately provide patients with tools for self-management. Finally, the case demonstrates how OMM can be implemented effectively in an interdiscipli-
ary approach to a complex patient.

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Prescribing Herbal Medicines to Complement Osteopathic Manipulative Treatment for Chronic Pain and Dysfunction

David R. Beatty, DO

ORIGINAL CONTRIBUTION

Introduction
Chronic pain is very common in the United States, with over 20% of Americans reporting daily pain of at least 3 months’ duration in a 2012 comprehensive survey. Over three-quarters of those with chronic back pain reported trying some form of complementary medicine. The most frequently used complementary therapies are non-vitamin and non-mineral natural products including plant medicines.

Musculoskeletal pain is the most common problem treated by osteopathic manipulative treatment (OMT). Conditions with chronic pain and somatic dysfunction amenable to this treatment include arthralgia and arthritis, primary headaches, lymphedema, menopause, and neuralgia and neuritis. These problems are seldom curable by OMT alone, and many patients use or could benefit from other therapies, affording osteopathic physicians an opportunity to refine or recommend herbal medicines for improved safety and effectiveness of self-care.

Arthralgia/Arthritis
Somatic dysfunction of degenerated joints can be safely and effectively treated with a careful approach using a combination of indirect and modified direct techniques. Osteoarthritic joints can be gently moved into a restrictive barrier using traction to unload the joint before applying an activating force such as isometric muscle contraction, myofascial stretch, or joint articulation. Such unloaded movements restore motion and reduce joint inflammation by improving circulation via the respiratory-circulatory model.

Turmeric
Herbal treatments for osteoarthritic joints similarly reduce inflammation and improve mobility. The most known, used, and studied plant for osteoarthritis relief is turmeric. Of the 8 studies that met the selection criteria in the most recent systematic review, 3 reported a mean reduction of -2.04 on the pain visual analogue score compared to placebo. Four additional studies showed a mean decrease of -15.36 on the Western Ontario and McMaster Universities Osteoarthritis Index. Dietary use of this Indian spice can be supplemented by 4 times a day capsules of the dried root for relief of osteoarthritis. (Table 1)

Black cohosh
Better known for reducing menopausal symptoms, black cohosh root (Actaea racemosa) also has an established history of effectiveness for rheumatological disorders. An anti-inflammatory action, due in part to the constituent salicylic acid, is complemented by antispasmodic and nervine relaxant properties to relieve joint pain, improve motion, and reduce swelling for single degenerated joints or systemic osteoarthritis. (Table 2)

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Figure 1. Circumduction with traction for the glenohumeral joint can improve motion without worsening pain.

Figure 2. Black cohosh has a flowering stalk referred to as a fairy wand.

Figure 3. Flowers of the weeping willow (Salix babylonica).

Figure 4. Solomon’s seal in early spring.

Table 1. Prescribing turmeric for osteoarthritis.

<table>
<thead>
<tr>
<th>Indications/dosage</th>
<th>500mg capsules QID (standardized to 95% curcumin)</th>
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<tbody>
<tr>
<td>Interactions</td>
<td>Cinnamon</td>
</tr>
<tr>
<td>Adverse effects</td>
<td>Rare abdominal bloating</td>
</tr>
<tr>
<td>Warnings/contraindications</td>
<td>Bile duct obstruction, gastric ulcer; discontinue prior to surgery</td>
</tr>
<tr>
<td>Pharmacologic mechanisms</td>
<td>Anti-inflammatory, antioxidant, analgesic</td>
</tr>
</tbody>
</table>

Table 2. Prescribing black cohosh for osteoarthritis.

<table>
<thead>
<tr>
<th>Indications/dosage</th>
<th>20-80 mg tablets PO BID (standardized to 1 mg triterpene glycosides/20 mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactions</td>
<td>Immunosuppressants (reduced effect)</td>
</tr>
<tr>
<td>Adverse effects</td>
<td>Rare</td>
</tr>
<tr>
<td>Warnings/contraindications</td>
<td>Estrogen-sensitive cancers, pregnancy</td>
</tr>
<tr>
<td>Pharmacologic mechanisms</td>
<td>Anti-inflammatory (salicylic acid); serotonin reuptake inhibition</td>
</tr>
</tbody>
</table>
Figure 5. Cervical segmental diagnosis and treatment.

Figure 6. Frontal lift.

Figure 7. Feverfew capsules are effective for migraines.

Figure 8. Lavender essential oil helps insomnia.

Figure 9. Thoracic pump.

Figure 10. Upper extremity petrissage.
Additional options

Other herbs useful for degenerative joint disease include cayenne (see Neuralgia), willow bark (Figure 3), and Solomon’s seal (Figure 4).

The anti-inflammatory and analgesic effects of the inner bark of the willow tree (Salix species), the original source of acetylsalicylic acid in aspirin, are supported by a systematic review concluding that oral willow bark extract in daily doses of up to 240 mg (60 mg capsules TID or QID) has evidence of effectiveness for low back pain and osteoarthritis.11 In the review, 3 well-designed studies were noted to demonstrate a dose-dependent analgesic effect similar to the nonsteroidal anti-inflammatory rofecoxib in patients with low back pain and osteoarthritis.

Solomon’s seal root (Polygonatum biflorum) has not been as well studied or standardized, but history of use as a tincture for joint pain is supported by biochemical analyses revealing steroid sapo-

Chronic Pain

Opium poppy, the prototypical plant medicine for pain, is inappropriate for most cases of chronic pain due to tolerance and dependence. Many other herbs have been tried, but only one has demonstrated efficacy for chronic pain of all causes. The most recent systematic review of marijuana (Cannabis species) concluded that there is moderate-quality evidence for effectiveness in both chronic pain and spasticity.13 In the 79 studies meeting inclusion criteria, mean reduction in both number of patients with decreased pain (37%) and in pain rating (-0.46) was significantly greater than for those taking a placebo.

While dosing of inhaled or ingested cannabis is variable, a tincture of a high cannabidiol (CBD) variety has advantages of standardized extraction, high analgesic and low psychoactive effects, and fast onset of action if administered sublingually. In states where medical cannabis is still illegal, an oil extract from a high-CBD variety of industrial hemp (Cannabis sativa bred for negligible tetrahydrocannabinol) is available in many natural food stores. In states with legalized whole plant cannabis, physician prescription is usually for the maximum monthly amount (120 g Q 30D), with form, dose, and frequency determined by the patient with help from a dispensary agent.

Cannabis should be prescribed with caution for those who operate machinery, take other sedatives, or have a history of substance abuse, mental illness, or seizure disorder.

Headache

Integrating OMT into treatment of primary headaches is supported by systematic reviews of manual therapy.14,15,16 Treatment of related cranial, cervical, and thoracic somatic dysfunctions can relieve tension and cervicogenic headaches and prevent migraines.17 (Figures 5-6)

Plant medicines receiving support from systematic reviews for treatment of primary headaches include feverfew, peppermint, and lavender. Feverfew (Tanacetum parthenium) is efficacious for prevention of migraines and with no major safety issues.18,19 (Figure 7) (Table 3) In one study cited in these reviews, there was a three-fold increase (P < .02) in headache frequency for feverfew users who switched to placebo.20

Simplicity and safety of inhaled essential oils has spurred their recent popularity as headache remedies. Peppermint oil (Mentha piperita) applied topically or inhaled can be effective for tension headaches.21 (Figure 8) A significant reduction in headache severity compared to placebo and comparable to acetaminophen was noted in the 2 trials cited in the Kligler and Chaudhary review. Inhaled lavender oil (Lavandula angustifolia) has early evidence that it is helpful for insomnia often related to headaches.22 In the systematic review by Fismer and Pilkington, 5 of the 8 studies meeting the inclusion criteria showed either increased deep sleep or reduced wake frequency compared to controls.

Lymphedema

An osteopathic approach to treatment of lymphedema due to venous insufficiency involves removing structural impediments to drainage, particularly tension at related fascial diaphragms,

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improving autonomic balance by sympathetic and parasympathetic normalization, and applying a lymphatic pump or soft tissue drainage technique (effleurage or petrissage).24 (Figures 9 and 10) This approach can be complemented by prescription of an herbal lymphatic.

Placing a buckeye in your pocket may not be an effective healing charm, but a medicine made from the seed of the related horse chestnut tree is effective at reducing edema from venous insufficiency. (Figure 11) The most recent peer-reviewed systematic review concluded that horse chestnut seed extract improves the pain and swelling of chronic venous insufficiency with only rare and mild side effects.25 In the 6 controlled studies cited by Pittler and Ernst, there was a significant reduction in leg pain compared to placebo. The most active component is believed to be the saponin escin, a potent vasoconstrictor, but the extract also contains esculin, another saponin with antithrombin activity.26 (Table 4)

Menopausal Vasomotor Instability
OMT has been successfully applied for autonomic dysfunction (hot flashes, night sweats) related to vasomotor instability associated with menopause. Treating fascial diaphragm restrictions related to respiration and cranial fluctuation, thoracolumbar dysfunctions related to sympathetic imbalance, and upper cervical and sacral dysfunctions related to parasympathetic imbalance is recommended for women experiencing hot flashes, insomnia, myalgias, or arthralgias related to menopause.27 (Figures 12-13)

Whether 3-leaved or 4, red clover has a longstanding use for relieving menopausal symptoms that is supported by a systematic review of efficacy.28 (Figure 14) In this meta-analysis of 17 studies, vaginal dryness and atrophy were both significantly improved with red clover compared to control groups. This effectiveness is due at least in part to isoflavones that act as phytoestrogens. This raises a potential contraindication for women at risk for estrogen-sensitive breast cancers, though this risk has evidence of being less for red clover.
(continued from page 22)

than for other estrogens. \( ^{29} \) (Table 5) Red clover flowers also contain coumarins and salicylates that promote circulation, resulting in its classification as a lymphatic and additional uses for pharyngitis and chronic skin conditions.

**Neuralgia/Neuritis**

Osteopathic diagnosis and treatment of sciatic neuritis primarily seeks to identify and modify biomechanical causes of nerve compression such as piriformis syndrome and degenerative joint or disc disease. \( ^{31} \) When nerve, joint, or disc inflammation is present, indirect techniques such as counterstrain and myofascial release can restore motion without triggering neuropathic pain. \( ^{32} \) (Figure 15)

Herbs useful in the treatment of sciatic and other neuritides include nerve relaxants and tonics, antispasmodics, and anti-inflammatories. St. John’s wort, although recently known for antidepressant effects, \( ^{33} \) has each of these actions and enjoys a long-standing history of clinical effectiveness for sciatic neuritis. \( ^{60,371} \) (Figure 16) It also has many drug interactions as a cytochrome P3A4 inducer, and can cause photodermatitis or psychosis in some individuals. (Table 6)

Infantile colic can be due to a compressive neuralgia causing pain and nursing

(continued on page 24)

**Table 4. Prescribing horse chestnut for chronic venous insufficiency.** \( ^{26} \)

<table>
<thead>
<tr>
<th>Indications/dosage</th>
<th>300 mg capsules PO BID (standardized to 50 mg escin)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactions</td>
<td>Increased effect of anticoagulants</td>
</tr>
<tr>
<td>Adverse effects</td>
<td>Rare gastrointestinal complaints, dizziness, headache, pruritus</td>
</tr>
<tr>
<td>Warnings/contraindications</td>
<td>Bleeding disorders, hepatic or renal impairment, pregnancy</td>
</tr>
<tr>
<td>Pharmacologic mechanisms</td>
<td>Venoconstriction, decreased venous permeability</td>
</tr>
</tbody>
</table>

**Table 5. Prescribing red clover for menopause.** \( ^{30} \)

<table>
<thead>
<tr>
<th>Indications/dosage</th>
<th>Menopausal symptoms: 40-80 mg capsules PO BID Other: Infusion 8 oz TID; tincture (1:10 in 45% alcohol) 1-2 ml TID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactions</td>
<td>Synergy – estrogens, anticoagulants</td>
</tr>
<tr>
<td>Adverse effects</td>
<td>Estrogen-like effects, rash</td>
</tr>
<tr>
<td>Warnings/contraindications</td>
<td>Estrogen-sensitive cancers, endometriosis, fibroids, coagulation disorders, pregnancy</td>
</tr>
<tr>
<td>Pharmacologic mechanisms</td>
<td>Phytoestrogen, lymphatic, antispasmodic, expectorant</td>
</tr>
</tbody>
</table>

**Table 6. Prescribing St. John’s wort for sciatic neuritis.** \( ^{34} \)

<table>
<thead>
<tr>
<th>Dosage</th>
<th>300 mg capsules PO TID (standardized to 0.3% hypericin)</th>
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</thead>
<tbody>
<tr>
<td>Interactions</td>
<td>Tyramine foods, oral contraceptives, antidepressants, CYP3A4 inducer</td>
</tr>
<tr>
<td>Adverse effects</td>
<td>Photosensitivity, psychosis</td>
</tr>
<tr>
<td>Warnings/contraindications</td>
<td>Alzheimer disease, bipolar disorder, psychosis, schizophrenia</td>
</tr>
<tr>
<td>Pharmacologic mechanisms</td>
<td>Dopaminergic and SSRI effects</td>
</tr>
</tbody>
</table>

Figure 15. Counterstrain treatment of a piriformis tender point can relieve sciatic neuritis.

Figure 16. St. John’s wort flowers and leaves have nervine, anti-inflammatory, and antispasmodic properties.
or digestive difficulties. An osteopathic approach to colic involves diagnosis and treatment of cranial and upper cervical somatic dysfunctions that can irritate vagus, trigeminal, or hypoglossal nerves. Prolonged or traumatic childbirth can contribute to non-physiological dysfunction at these areas. Skilled treatment of atlantoaxial or occipitoatlantal dysfunction or a sphenobasilar strain can relieve the gastrointestinal distress or head pain related to persistent crying. Decompression of a jammed occipital condyle can open the hypoglossal canal, relieving nursing or swallowing difficulties. (Figure 17)

Most people are familiar with catnip (Nepeta cataria) as, well, a nip for their cats. (Figure 18) Nepetalactone is the essential oil believed to stimulate olfactory sensory neurons to the amygdala and hypothalamus, triggering the feline pleasure response. Humans usually don’t respond with such overt sensuality, but longstanding use has established catnip and other aromatic mints as effective for infantile colic. This empirical effectiveness is supported by a systematic review that identified herbal teas as having evidence of efficacy for relieving the symptoms of colic. In one of the studies cited by Weizman et al, 57% of infants being given herbal tea no longer met the criteria for colic after seven days, compared to 26% receiving placebo. Like most aromatic mints, an infusion of catnip warms the stomach and cools the mind with mild antispasmodic and sedative actions resulting from volatile oils, sterols, acids, and tannins. These effects are more pronounced in colicky babies who respond to a small bottle of cooled catnip tea with reduced crying, improved sleep, and less bloating. Alternatively, a few drops of catnip tincture diluted in a tablespoon of olive oil can be gently rubbed on the baby’s abdomen. (Table 7)

<table>
<thead>
<tr>
<th>Indications/dosage</th>
<th>Infusion 1 oz TID in bottle Tincture 1-3 drops in 1 tbsp olive oil applied topically to abdomen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactions</td>
<td>Increased effect – lithium, sedatives</td>
</tr>
<tr>
<td>Adverse effects</td>
<td>None known</td>
</tr>
<tr>
<td>Warnings/contraindications</td>
<td>Pregnancy</td>
</tr>
<tr>
<td>Pharmacologic mechanisms</td>
<td>Diaphoretic, antispasmodic, sedative</td>
</tr>
</tbody>
</table>

**Herbal Formulas for Chronic Problems**

OMT often proves helpful for reducing pain and improving function in chronic conditions like arthralgia/arthritis, chronic pain, headache, lymphedema, menopausal symptoms, and neuralgia/neuritis. Complementing manual therapy with efficacious herbal prescriptions should improve patient function more than either treatment alone because of differing and non-competitive mechanisms of action, although this proposed additivity hasn’t been studied. While botanical prescribing can be more comprehensive with multi-herb formulas, the single herb recommendations summarized in Table 8 have the advantages of established effectiveness, relative safety, known drug interactions, and standardized dosing for electronic prescribing.

**References**


(continued on page 25)
### Table 8. Herbal prescriptions for selected problems.

<table>
<thead>
<tr>
<th>CONCERN</th>
<th>HERB</th>
<th>DOSING</th>
<th>CONTRAINDICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthralgia/arthritis</td>
<td>Turmeric (Curcuma longa)</td>
<td>500 mg capsules QID</td>
<td>Bile duct obstruction, gastric ulcer</td>
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<tr>
<td></td>
<td>Black cohosh (Actaea racemosa)</td>
<td>20-80 mg tablets PO BID</td>
<td>Estrogen sensitivity, pregnancy</td>
</tr>
<tr>
<td>Chronic pain</td>
<td>Cannabis (Cannabis species)</td>
<td>Tincture: 5-15 drops SL BID-QID</td>
<td>Mental illness, sedative use, seizure disorder, machinery operation</td>
</tr>
<tr>
<td></td>
<td>Hemp oil: 5-15 drops PO BID-QID</td>
<td>Dried plant: 120 g q 30d</td>
<td></td>
</tr>
<tr>
<td>Headache, migraine</td>
<td>Feverfew (Tanacetum parthenium)</td>
<td>Prophylaxis: 50-100 mg capsules PO QD</td>
<td>Pregnancy</td>
</tr>
<tr>
<td></td>
<td>Control: 100 mg capsule PO q 30 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headache, tension</td>
<td>Peppermint (Mentha piperita)</td>
<td>Essential oil (10%) 2 drops applied to forehead and temples at onset</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lavender (Lavandula angustifolia)</td>
<td>Essential oil 2-4 drops in diffuser at bedtime</td>
<td></td>
</tr>
<tr>
<td>Infantile colic</td>
<td>Catnip (Nepeta cataria)</td>
<td>Infusion 1 oz TID in bottle</td>
<td>None known</td>
</tr>
<tr>
<td>Lymphedema – venous insufficiency</td>
<td>Horse chestnut (Aesculus hippocastanum)</td>
<td>300 mg capsules PO BID</td>
<td>Bleeding disorders, hepatic or renal impairment, pregnancy</td>
</tr>
<tr>
<td>Menopausal vasomotor instability</td>
<td>Red clover (Trifolium pratense)</td>
<td>40-80 mg capsules PO BID</td>
<td>Estrogen sensitivity, bleeding disorders, pregnancy</td>
</tr>
<tr>
<td>Neuralgia/neuritis</td>
<td>St. John’s wort (Hypericum perfoliatum)</td>
<td>300 mg capsules PO TID</td>
<td>Alzheimer disease, bipolar, psychosis, schizophrenia</td>
</tr>
</tbody>
</table>

(continued from page 25)


(continued on page 26)

CONTINUING MEDICAL EDUCATION QUIZ

The purpose of the continuing medical education quiz is to provide a convenient means of self-assessing your comprehension of the scientific content in the article “Prescribing Herbal Medicines to Complement Osteopathic Manipulative Treatment For Chronic Pain and Dysfunction” by David R. Beatty, DO.

To apply for 0.5 credits of AOA Category 2-B continuing medical education, fill out the form on page 27 and submit it to the American Academy of Osteopathy. The AAO will note that you submitted the form and forward your results to the American Osteopathic Association’s Division of Continuing Medical Education for documentation.

Be sure to answer each question in the quiz. You must score a 75% or higher on the quiz to receive CME credit. The correct answers will be published in the next issue of the AAOJ.

Stay in the know—follow AAO online!
This CME Certification of Home Study is intended to document your review of the CME article in this issue of The AAO Journal under the criteria for AOA Category 2-B continuing medical education credit.

**CME Certification of Home Study**

This is to certify that I, ____________________________, (type or print name) read the following article for AOA CME credit.

**Name of article:** “Prescribing Herbal Medicines to Complement Osteopathic Manipulative Treatment For Chronic Pain and Dysfunction”

**Authors:** David R. Beatty, DO

**Publication:** The AAO Journal, Vol. 28, No. 3, September 2018, pages 18-26

AOA Category 2-B credit may be granted for this article.

00__________

(AOA number)

Full name: ____________________________ (type or print name)

Street address: ____________________________

City: ____________________________

State and ZIP code: ____________________________

Signature: ____________________________

Complete the quiz to the right by circling the correct answers. Send your completed answer sheet to the American Academy of Osteopathy. The AAO will forward your results to the American Osteopathic Association. You must answer 75% of the quiz questions correctly to receive CME credit.

1. Oral administration of the herb turmeric has been found to be helpful in which of the following conditions?
   a. Reducing inflammation
   b. Menopausal symptoms
   c. Lowering cholesterol
   d. Improving URI

2. A helpful counterstrain point for the relief of sciatica is which of the following?
   a. Quadratus lumborum point
   b. Inguinal ligament point
   c. Piriformis point
   d. Iliacus point

3. Which of the following herbal substances is felt to improve osteoarthritis?
   a. Cinnamon
   b. Black cohosh
   c. Ginseng
   d. Echinacea

4. An osteopathic approach to the treatment of lymphedema includes which technique when used for upper extremity edema?
   a. Thoracic diaphragm release
   b. Splenic pump
   c. Upper extremity petrissage
   d. Cervical effleurage

Below are the answers to The AAO Journal's June 2018 quiz on the article titled “Osteopathic Evaluation and Post-Surgical Rehabilitation Approach in a Patient With Myelopathy and Tetraparesis Related to Cervical Ependymoma: A Case Report” by Drew D. Lewis, DO, FAAO, FNAOME, FAOCMPM, FAAPMR.

1. **a.** Cervical myelopathy may be suspected in patients experiencing paresthesias, gait changes, or bowel or bladder function changes.
2. **b.** Ependymoma is best described as an intramedullary mass of the spinal column.
3. **a, b, c.** Management for neuropathic pain from an ependymoma can include gabapentin, aquatic therapy, or psychological assessment.
4. **a, b, d.** OMT techniques during the subacute rehabilitation phase of a spinal cord tumor can include MFR, Still technique, or strain-counterstrain.
Course Description
This course is an introductory course in visceral techniques to the thorax and thoracic viscera. Attendees will explore traditional osteopathic concepts of ventral technique as they apply to the thoracic viscera, ribs and anterior neck. Emphasis will be placed on physical examination, functional anatomy, and the anatomical relationships between diaphragm, ribs, sternum, thoracic spine and cervical spine, to the base of the skull, particularly as they relate to fascial continuity. Included will be discussion of the autonomic nervous system, vascular flow and lymphatic drainage.

Attendees will come away with improved confidence in physical examination, direct and indirect approaches to the ribs and thoracic viscera, and lymphatic techniques. Integration of visceral (ventral) techniques with spinal (dorsal) and cranial techniques will be emphasized at the conclusion.

This is an intermediate level course.

Prerequisites
It is strongly encouraged, though not required, that participants have taken a course in abdominal visceral approaches.

Course Times
Friday and Saturday from 8 a.m. to 5:30 p.m.
Sunday from 8 a.m. to 12:30 p.m.

Continuing Medical Education
20 credits of AOA Category 1-A CME anticipated.

Meal Information
Morning coffee and tea will be provided. Lunch will be provided Friday and Saturday. Notify AAO Event Planner Gennie Watts of any special dietary needs no fewer than seven days in advance.

Course Location
Rowan University School of Osteopathic Medicine
42 East Laurel Rd., Stratford, NJ 08084

Registration Fees

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<tr>
<td>Nonmember student</td>
<td>$700</td>
<td>$900</td>
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</tbody>
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* The AAO’s associate members, international affiliates and supporter members are entitled to register at the same fees as full members.

Travel Arrangements
Contact Tina Callahan of Globally Yours Travel at (480) 816-3200 or globallyyourstravel@cox.net.

Registration Form
A Fascial Approach to the Thoracic Viscera
Nov. 9-11, 2018

Name: _______________________________ AOA No.: ____________

Nickname for badge: ____________________________

Street address: ________________________________

________________________________________________________________________

City: __________________ State: _______ ZIP: _________

Phone: __________________ Fax: __________________

Email: __________________________

I hereby authorize the American Academy of Osteopathy to charge the above credit card for the amount of the course registration.

Signature: ____________________________

☐ I am a practicing health care professional.
☐ I am a resident or intern.
☐ I am an osteopathic or allopathic medical student.

The AAO accepts check, Visa, MasterCard and Discover payments in U.S. dollars. The AAO does not accept American Express.

Credit card No.: ______________________________

Cardholder’s name: ____________________________

Expiration date: ___________ 3-digit CVV No.: _________

Billing address (if different): ____________________________

I hereby authorize the American Academy of Osteopathy to charge the above credit card for the amount of the course registration.

Signature: ____________________________

View the AAO’s cancellation and refund policy.

View the AAO’s photo and video release statement.

Register online at www.academyofosteopathy.org, or submit this registration form and your payment by email to GWatts@academyofosteopathy.org; by mail to the American Academy of Osteopathy, 3500 DePauw Blvd., Suite 1100, Indianapolis, IN 46268-1136; or by fax at (317) 879-0563.
Course Description
Sometimes referred to as Module 1, this introductory course is an excellent starting point on the journey of learning the fascial distortion model (FDM). FDM is an excellent modality to be used in the clinic, on the field, and in the emergency room for fast and effective results.

While there are some specific FDM techniques, emphasis will be placed on thinking and working in the model while using all manipulative modalities.

Attendees will be introduced to the theory of FDM while focusing on the shoulder, ankle and knee regions. Learn how FDM expands the toolbox you use to help more patients. This modality is valuable for any practitioner and no previous manipulation experience is required.

All medical providers are invited to attend, including DOs, MDs, PTs, OTs, PAs, NPs, DPMs, etc.

Course Times
Friday from 5 to 9 p.m.
Saturday and Sunday from 8 a.m. to 5 p.m.

Continuing Medical Education
20 credits of AOA Category 1-A CME anticipated.

Meal Information
Morning coffee and tea will be provided. Lunch will be provided Saturday and Sunday. Notify AAO Event Planner Gennie Watts of any special dietary needs no fewer than seven days in advance.

Course Location
The Pyramids, Building Three
3500 DePauw Blvd., Lower Level, Conference Rooms A and B
Indianapolis, IN 46268

Travel Arrangements
Contact Tina Callahan of Globally Yours Travel at (480) 816-3200 or globallyyourstravel@cox.net.

Registration Fees
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* The AAO’s associate members, international affiliates and supporter members are entitled to register at the same fees as full members.

Registration Form
Fascial Distortion Model: Treating the Shoulder, Ankle and Knee
Nov. 30-Dec. 2, 2018

Name: ___________________________ AOA No.: __________

Nickname for badge: ___________________________

Street address: ___________________________

City: __________ State: _____ ZIP: __________

Phone: __________ Fax: _______________________

Email: ___________________________

☐ I am a practicing health care professional.
☐ I am a resident or intern.
☐ I am an osteopathic or allopathic medical student.

The AAO accepts check, Visa, MasterCard and Discover payments in U.S. dollars. The AAO does not accept American Express.

Credit card No.: _______________________

Cardholder’s name: _______________________

Expiration date: ___________ 3-digit CVV No.: __________

Billing address (if different): _______________________

I hereby authorize the American Academy of Osteopathy to charge the above credit card for the amount of the course registration.

Signature: _______________________

View the AAO’s cancellation and refund policy.

View the AAO’s photo and video release statement.
A Visceral Approach to The Arteries of the Abdomen & Pelvis

Dec. 7-9, 2018 • UNTHSC Texas College of Osteopathic Medicine in Fort Worth

The arterial system is regulated by the autonomic nervous system. The arteries can show a lack of distensibility/mobility when there is a retained tension in the vessel walls. In this class, participants will evaluate the mobility of the abdominal organs, then palpate and evaluate the arteries that supply those organs. When the organ is moved in such a way that the arterial pulsation to the organ is improved, it is held for 20 seconds, resulting in improved visceral function.

Participants will palpate, evaluate and treat the following structures: abdominal aorta, spleen and splenic artery, stomach, left and right gastric arteries, gastro mental artery, liver, gall bladder and common and proper hepatic arteries, pancreas, duodenum and pancreaduodenal artery, small intestine, superior mesenteric artery, large intestine, colic arteries, kidneys, renal arteries, inferior mesenteric, aortic bifurcations, common iliac arteries, internal iliac arteries, external iliac arteries, uterine artery, and internal pudendal artery.

This is an intermediate level course.

Course Times
Friday and Saturday, 8 a.m. to 5:30 p.m.
Sunday, 8 a.m. to 4 p.m.

Continuing Medical Education
22 credits of NMM-specific AOA Category 1-A CME anticipated.

Meal Information
Morning coffee and tea will be provided. Lunch will be provided each day. Notify AAO Event Planner Gennie Watts of any special dietary needs no fewer than seven days in advance.

Course Location
University of North Texas Health Science Center
Texas College of Osteopathic Medicine
500 Camp Bowie Blvd., MET-470 Lab
Fort Worth, TX 76107

Travel Arrangements
Contact Tina Callahan at Globally Yours Travel at (480) 816-3200 or globallyyourstravel@cox.net.

Registration Fees

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</tbody>
</table>

* The AAO’s associate members, international affiliates and supporter members are entitled to register at the same fees as full members.

I hereby authorize the American Academy of Osteopathy to charge the above credit card for the amount of the course registration.

Signature:

Dr. Lossing studied visceral manipulation with Jean-Pierre Barral, DO (France). An internationally recognized lecturer, Dr. Lossing contributed to the second and third editions of the American Osteopathic Association’s Foundations of Osteopathic Medicine textbook as well as the upcoming fourth edition.

As the AAO’s 2014-15 president, Dr. Lossing was featured in a segment of “American Health Front!” that focused on osteopathic manipulative medicine.

Dr. Lossing and his wife, Margret Klein, OA, run a private practice in San Rafael, California.
2019 Convocation—Leading, Expanding and Cutting: The Edges of Osteopathic Medicine

March 13-17 • Rosen Shingle Creek Resort
Orlando, Florida

Pre-Convocation courses • March 10-12

March 10-12, 2019 • Pre-Convocation course
Brain Therapy for Neonatal Reflexes & Lifelong Reflexes in Adults and Children
Bruno Chikly, MD, DO (France), course director
24 credits of AOA Category 1-A CME anticipated
Registrants must have taken Dr. Chikly’s “Brain 1” course or at least two cranial courses.

March 10-12, 2019 • Pre-Convocation course
Fascial Distortion Model—Beyond the Basics: Osteopathy and FDM moving forward together!
Todd A. Capistrant, DO, MHA
Rosen Shingle Creek in Orlando, Florida
24 credits of AOA Category 1-A CME anticipated

March 10-12, 2019 • Pre-Convocation course
Visceral Lymphatics
Kenneth J. Lossing, DO
Rosen Shingle Creek in Orlando, Florida
22 credits of AOA Category 1-A CME anticipated
Sept. 14-15, 2018
Osteopathy’s Promise to Children
Integrated Osteopathic Dental Team—Part 1: Expanding the Integrative Team Approach to Sleep Disturbances
Course director: Julie Mai, DO, and Darick Nordstrom, DDS
Osteopathic Center San Diego
16 credits of AOA Category 1-A CME anticipated
Learn more and register at the-promise.org/cme/.

Sept. 14-16, 2018
Michigan State University College of Osteopathic Medicine
Integrated Neuromuscular and Myofascial Release
Course director: Lisa Ann DeStefano, DO
East Lansing, Michigan
19 credits of AOA Category 1-A CME anticipated
Learn more and register at com.msu.edu/cme.

Sept. 14-16, 2018
Indiana Academy of Osteopathy
A Sutural Approach to Osteopathy in the Cranial Field
Course director: Charles A. Beck, DO, FAAO
Indianapolis
24 credits of AOA Category 1-A CME anticipated
Learn more and register at www.indianaacademyofosteopathy.com.

Oct. 5, 2018
Osteopathy’s Promise to Children
OMT for Systemic Disorders and Physiological Functions: Gastrointestinal and Nervous Systems
Course director: Hollis H. King, DO, PhD, FAAO
Osteopathic Center San Diego
8 credits of AOA Category 1-A CME anticipated
Learn more and register at the-promise.org/cme/.

Oct. 8-12, 2018
Edward Via College of Osteopathic Medicine–Virginia Campus
Connective Tissue Connectivity: Ligamentous Articular Strain/ Cranial Membranous Articular Strain
Course director: Albert J. Kozar, DO, FAOASM, R-MSK
Course faculty: Anthony G. Chila, DO, FAAODist, FCA
Blacksburg, Virginia
40 credits of AOA Category 1-A CME anticipated
This course is reserved for and targeted to ONMM residents.
Learn more and register at www.vcom.edu.

Oct. 19-23, 2018
Michigan State University College of Osteopathic Medicine
Craniosacral Techniques: Part II
Course director: Barbara J. Briner, DO
East Lansing, Michigan
35 credits of AOA Category 1-A CME anticipated
Learn more and register at com.msu.edu/cme.

Oct. 26-28, 2019
The Colorado Society of Osteopathic Medicine and the Rocky Mountain Academy of Osteopathy
Osteopathy Head to Toe
Course directors: R. Paul Lee, DO, FAAO, FCA, and Ellice Goldberg, DO, FACOFP
Rocky Vista University
Parker, Colorado
21 credits of AOA Category 1-A CME anticipated
Learn more at rockymountain.wixsite.com.

Oct. 26-29, 2018
Michigan State University College of Osteopathic Medicine
Exercise Prescription as a Complement to Manual Medicine
Course director: Mark Bookhout, PT
East Lansing, Michigan
26 credits of AOA Category 1-A CME anticipated
Learn more and register at com.msu.edu/cme.

Nov. 1-4, 2018
Osteopathy’s Promise to Children
Advanced Explorations in Pediatric Osteopathy: Innovative Healing Approaches to Support Rapid Change in the Child
Course director: Shawn K. Centers, DO, MH, FACOP
Osteopathic Center San Diego
24 credits of AOA Category 1-A CME anticipated
Learn more and register at the-promise.org/cme/.

Nov. 9-13, 2018
Michigan State University College of Osteopathic Medicine
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