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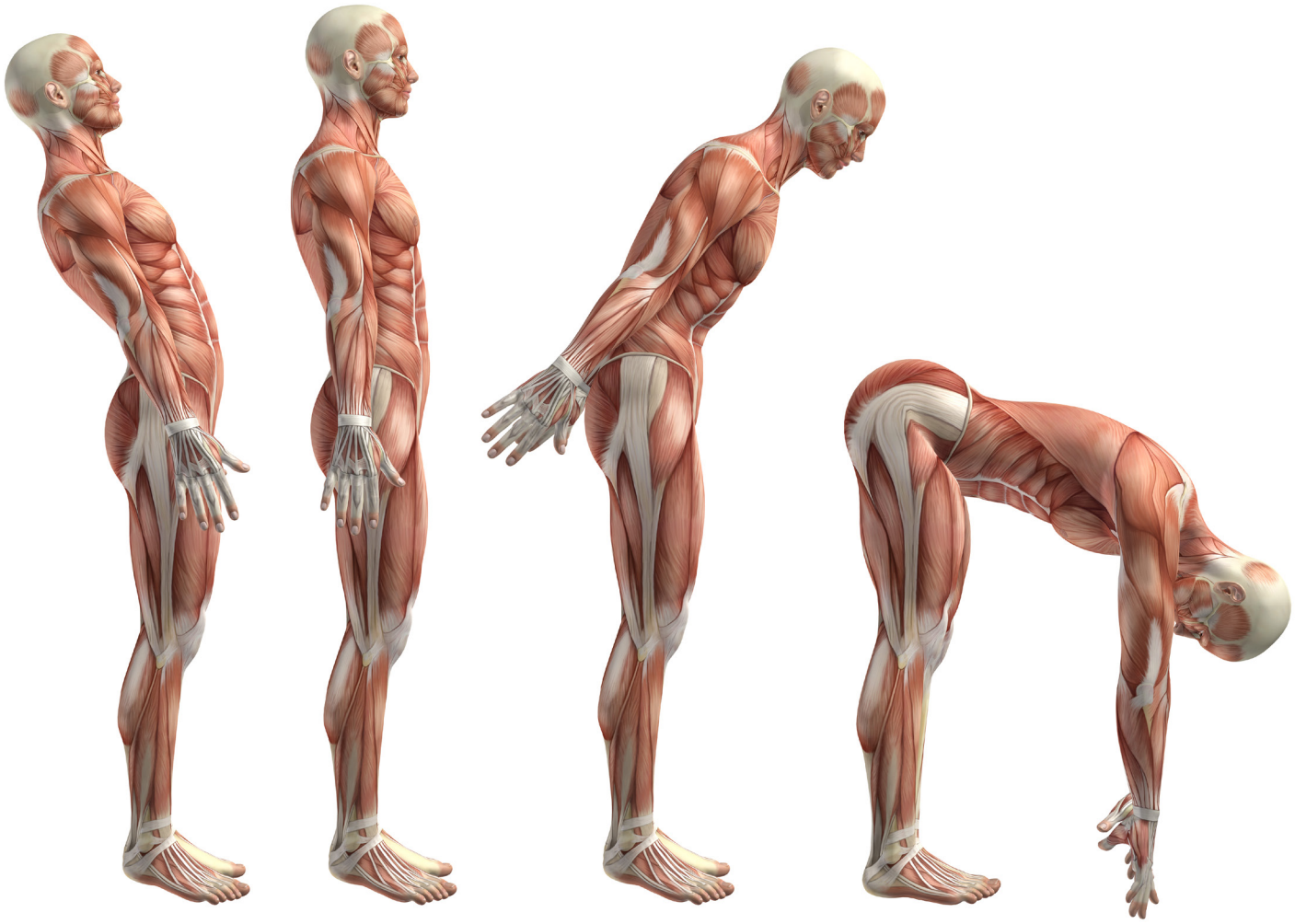
FORUM FOR OSTEOPATHIC THOUGHT
Official Publication of the American Academy of Osteopathy
TRADITION SHAPES THE FUTURE
VOLUME 26 • NUMBER 3 • SEPTEMBER 2016



The pilot study that begins on page 21 was designed to investigate whether using a shim to level the iliac crests changes the diagnostic reliability of the standing flexion test and to appraise interexaminer reliability.

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If you are not already a member of the American Academy of Osteopathy (AAO), the AAO Membership Committee invites you to join the Academy as a 2016-17 member. The AAO is your professional organization. It fosters the core principles that led you to become a doctor of osteopathic medicine.

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The mission of the American Academy of Osteopathy is to teach, advocate, and research the science, art, and philosophy of osteopathic medicine, emphasizing the integration of osteopathic principles, practices, and manipulative treatment in patient care.

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Editorial

Original Contributions

Regular Features

AAO Calendar of Events

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

2016–2017

Sept. 15	AAO Board of Trustees' meeting—9 a.m. to 5 p.m. Pacific—Anaheim, California
Sept. 16	AAO Leadership Forum—9 a.m. to 3 p.m. Pacific—Anaheim, California
Sept. 17	AAO Education Committee's meeting—3 to 4:30 p.m. Pacific—Anaheim, California
Sept. 17-20	AAO at OMED: Osteopathic Neuromusculoskeletal Medicine in the 21st Century—Daniel G. Williams, DO, program chair—Anaheim (California) Convention Center
Oct. 15	Committee on Fellowship in the AAO's meeting—AAO office in Indianapolis
Oct. 21-23	What's the Point? Multifaceted Clinical Approaches to Viscerosomatic Reflexes—Michael L. Kuchera, DO, FAAO, course director; William H. Devine, DO, and Richard A. Feely, DO, FAAO, FCA, course faculty—Midwestern University/Arizona College of Osteopathic Medicine in Glendale
Nov. 24	Thanksgiving Day—AAO office closed
Dec. 1	FAAO applications due
Dec. 2-4	Fulford's Advanced Percussion Hammer—Richard W. Koss, DO, course director—University of North Texas Health Science Center Texas College of Osteopathic Medicine in Fort Worth
Dec. 2-4	Cranial Approach of Beryl E. Arbuckle, DO—Kenneth J. Lossing, DO, course director—Midwestern University/Arizona College of Osteopathic Medicine in Glendale
Dec. 20	Committee on Fellowship in the AAO's teleconference—8:30 p.m. Eastern
Dec. 26	AAO office closed in observance of Christmas Day
Jan. 2	AAO office closed in observance of New Year's Day
Jan. 11	Committee on Fellowship in the AAO's teleconference—8:30 p.m. Eastern
Jan. 20-22	Osteopathic Management of Chronic Pain: Addressing Chronic Fatigue Syndrome, Fibromyalgia, Multiple Sclerosis and Neuroinflammation—Bruno J. Chikly, MD, DO (France), course director—Midwestern University/Arizona College of Osteopathic Medicine in Glendale
Feb. 3-4	AAO Education Committee's meeting—AAO office in Indianapolis
March 18-21	Pre-Convocation—The Strategic Crossroads of the Body—Jean-Pierre Barral, DO (France), featured speaker—The Broadmoor, Colorado Springs, Colorado
March 19-21	Pre-Convocation—Brain 1: Palpating and Treating the Brain, Brain Nuclei, White Matter and Spinal Cord—Bruno J. Chikly, MD, DO (France), course director—The Broadmoor, Colorado Springs, Colorado
March 19-21	Pre-Convocation—Fascial Distortion Model: Axial Spine—Todd A. Capistrant, DO, MHA, course director—The Broadmoor, Colorado Springs, Colorado
March 22	Pre-Convocation—Cervical Glymphatics—Frank Willard, PhD, course faculty—The Broadmoor, Colorado Springs, Colorado
March 22-27	AAO Convocation—The Balance Point: Bringing the Science and Art of Osteopathic Medicine Together—Natalie Ann Nevins, DO, program chair—The Broadmoor, Colorado Springs, Colorado
March 27	Post-Convocation—Program Directors Workshop—Eric Hunter Sharp, DO, course director—The Broadmoor, Colorado Springs, Colorado

View From the Pyramids: Reframing the "Marijuana Menace"

AAOJ Scientific Editor Brian E. Kaufman, DO, FACOI, FACP

EDITORIAL

The use of cannabis to treat medical conditions is established in documents dating back thousands of years. Cannabis has been used in the United States since the 1600s as hemp production was encouraged and needed for industry.[1] The use of the leaf for recreation is generally attributed to the influx of Mexican immigrants in the early third of the twentieth century. Fear of the immigrants, along with frustrations from the effects of the Great Depression resulted in backlash against the "Marijuana Menace."[1] This instigated a flurry of research which linked the use of cannabis with violent crimes and socially deviant behaviors, committed by the so-dubbed "racially inferior" communities.[1]

These fear-based, and largely content-devoid, assertions led to a number of progressively more restrictive laws limiting and then eliminating the use of cannabis. From the passage of the Marijuana Tax Act of 1937 until now, the use of cannabis has been a criminal offense under both federal and state laws.[1] Throughout the years, the degree of severity has waxed and waned. On November 30, 2011, the governors of 2 states petitioned the US Drug Enforcement Administration to change the status of medical cannabis,[2] and that brings us to the present.

Since learning the above, I will not use the term *medical marijuana* but instead use the term *medical cannabis* so as not to perpetuate the fear and biased terminology that harkens to the "Mexican Menace."

> **"The illegality of cannabis is outrageous, an impediment to full utilization of a drug which helps produce the serenity and insight, sensitivity and fellowship so desperately needed in this increasingly mad and dangerous world.**
>
> ***–Carl Sagan[9]***

On August 11, 2016, the DEA announced that they denied the petition to reclassify cannabis under the controlled substance act and thereby determined that cannabis will remain a Schedule 1 drug. By definition,[3] Schedule 1 drugs

- have a high potential for abuse
- have no currently accepted medical uses in the US
- lack accepted safety for using the drug under medical supervision

The decision to not reclassify cannabis was a disappointment to both patients and physicians. Cannabis has been shown to be helpful for many conditions, from epilepsy to chronic pain. Medical cannabis has also been shown to decrease the need for opiates, which in the present climate is extremely useful.[4]

As with all substances physicians prescribe, there are contraindications and cautions, and appropriate risk-benefit analysis should always take place. However, cannabis has an extremely good safety profile when compared to many of the medications we routinely prescribe. Nonsteroidal anti-inflammatories carry a risk of death with acute use, and in the US, NSAIDs account for at least 16,500 deaths a year.[5] Add to that the deaths attributed to Coumadin and the other novel anticoagulants, to antipsychotic medications, and to many others we prescribe daily, and cannabis does not come close.

A 2014 study reported 2 cases of death from acute use of cannabinoids, attributed to cardiovascular complications.[6] Besides that, the risks are all potentially with chronic use, and they are related to smoking, not the actual substance. There can also be secondary contributions, such as in use in a patient with schizophrenia trig-

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gering psychosis. The California Academy of Addiction Medicine (CSAM), states the following:

> The fact that marijuana is clearly addictive for a minority of people, and especially so for adolescents and children, does not mean that the public does not have a right to legalize its use. We currently permit the marketing, sale and consumption of multiple legal, though addictive, substances—eg, caffeine, nicotine and alcohol. We also permit the prescription medical use of very powerfully addictive drugs—eg, tranquilizers (benzodiazepines), sleep aids, amphetamine, opiate analgesics.[7]

Given the overwhelming safety profile of cannabis, regardless of proven clinical efficacy, I find the recent determination by the DEA both shortsighted and cowardly. This is a slap in the face to all patients who depend on this as a treatment and to those physicians who recommend cannabis for their patients. Indeed, just a week after the DEA announcement, a federal court ruled that the U.S. Department of Justice cannot spend any federal monies to prosecute cannabis-related offenses that don't violate state laws.[8] This appears to mitigate the effect of the DEA's determination, at least in part.

We have entered a time when we as physicians are having our prescribing abilities, not just over-regulated, but over-legislated, and our hands are becoming increasingly tied. In addition, we find our mouths are increasingly silenced. In the last few months, I have been told to stop prescribing opiates and to stop performing osteopathic manipulative treatment, and the federal government (via the Centers for Disease Control and Prevention) has provided a document that purports to be aimed at treating patients with chronic pain but instead seems aimed at convincing me that I am the cause of all of the problems with addiction in our society. As this is occurring, the federal government and the DEA are continuing to limit access to a potential treatment which is safer than ibuprofen.

Politics and outdated views governed by fear and ignorance have never had a place in medicine, yet they continue to be pushed into the medical space. It is incumbent on all of us to reach out to our legislators, colleagues, and national and state associations to voice our opinions.

Treating patients is our job, and we need to fight to retain our place in medical decision-making. Each day it is up to us to determine whether the safety and efficacy of a treatment is appropriate for our patients. If we wait too long, we may find that those rights and privileges that we achieved through our tenacity and sweat have been assigned elsewhere.

> **"Legalizing marijuana would make a lot of sense, I don't think there's a single case of marijuana overdose on record and tens of millions of users. It's much less dangerous than alcohol, for example.**
>
> ***–Noam Chomsky[10]***

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- specialists to develop osteopathic responses to articles published in nonosteopathic literature. For example, how would the osteopathic approach contribute to studies published in other scientific journals or featured in news articles?

For more information, email *AAOJ* Editor-in-Chief Brian E. Kaufman, DO, FACOI, FACP, at editoraaoj@gmail.com.

What's the Point?

Multifaceted Clinical Approaches to Viscerosomatic Reflexes

Oct. 21-23, 2016 • Midwestern University/Arizona College of Osteopathic Medicine in Glendale

Palpable somatic "points" provide the osteopathic clinician with key insights directing differential diagnoses and focused approaches to patient systemic complaints. Interestingly, from those using Chapman's reflexes or Jones' counterstrain points to those who integrate acupuncture concepts or Travell's myofascial trigger points, insightful clinicians have noted a significant overlap and a great deal of similarity in clinical presentations.

Working from Chapman's approach, this course will compare and contrast a number of clinically relevant points, focus on practical diagnostic and therapeutic clues and organize the information in a practical manner for patient care. Emphasis will be placed on developing and expanding skills and strategies to speed diagnosis and recovery.

Residents, residency trainers and directors of medical education will be accorded special tips for maximizing the integrative focus of this course.

Course Faculty

Led by course director Michael L. Kuchera, DO, FAAO, the faculty will include William H. Devine, DO, and Richard A. Feely, DO, FAAO, FCA. Additional faculty may be added as attendance requires.

Course Times

Friday and Saturday, 8 a.m. to 5:30 p.m. Sunday, 8 a.m. to noon.

Continuing Medical Education

20 credits of NMM-specific AOA Category 1-A CME anticipated.

Meal Information

Breakfast will be provided each day. Lunch will be provided Friday and Saturday. Contact the AAO Event Planner Gennie Watts with special dietary needs at (317) 879-1881, ext. 220, or GWatts@academyofosteopathy.org.

Course Location

Midwestern University/Arizona College of Osteopathic Medicine
Agave Hall, OMT Lab 101, 19555 N. 59th Ave., Glendale, AZ 85308

Travel Arrangements

Contact Tina Callahan of Globally Yours Travel at (800) 274-5975 or globallyyourstravel@cox.net.

Course Faculty

Michael L. Kuchera, DO, FAAO, is a professor of osteopathic manipulative medicine at the Marian University College of Osteopathic Medicine in Indianapolis. Dr. Kuchera frequently lectures on the diagnosis and management of somatic dysfunction in patients with pain, systemic disorders or specific neuromusculoskeletal complaints.

An internationally recognized educator, **William H. Devine, DO**, is a professor of osteopathic manipulative medicine (OMM) at the Midwestern University/Arizona College of Osteopathic Medicine (MWU/AZCOM) in Glendale, where he also serves as the director of postgraduate OMM, the director of the musculoskeletal medicine residency and the coordinator of the osteopathic specialty clinic.

Since 2000, **Richard A. Feely, DO, FAAO, FCA,** has operated the Feely Center for Optimal Health in Olympia Fields, Illinois, where he uses osteopathic manipulation and acupuncture to provide relief from headaches and muscle and joint pain. Dr. Feely served as the AAO's 2010-11 president. He currently serves as the president of the Foundation for Osteopathic Research and Continuous Education, and he serves on the boards of the American Osteopathic Foundation and The Osteopathic Cranial Academy Foundation.

Registration Fees	Before Oct. 15	On or after Oct. 16
Academy member in practice*	$700	$900
Resident or intern member	$500	$700
Student member	$300	$500
Nonmember practicing DO or other health care professional	$900	$1,100
Nonmember resident or intern	$700	$900
Nonmember student	$500	$700

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

Registration Form

What's the Point? Multifaceted Clinical Approaches to Viscerosomatic Dysfunction

Oct. 21-23, 2016

Name: _____ AOA No.: _____

Nickname for badge: _____

Street address: _____

_____

City: _____ State: _____ ZIP: _____

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

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The Incidence of Somatic Dysfunction in Patients With Sudden Onset Atraumatic Neck Pain: A Retrospective Case Note Study

Karen Teten Snider, DO, FAAO; Amrien Ghouse, OMS VI; Sheri Shiyi He, BS; and Vanessa K. Pazdernik, MS

Abstract

Background: Sudden onset atraumatic neck pain is a common complaint, but few studies have investigated this condition.

Objective: To determine the incidence of somatic dysfunction in patients with sudden onset atraumatic neck pain and to assess the immediate responses of the patients to osteopathic manipulative treatment (OMT).

Design: Electronic billing records dated between March 2001 and December 2011 from a neuromusculoskeletal medicine and osteopathic manipulative medicine (NMM/OMM) specialty clinic were retrospectively searched for outpatient clinical encounters that were diagnosed with neck pain or neck strain.

Methods: More than 1000 medical records of patients who were diagnosed with neck pain or neck strain were reviewed for sudden onset pain without precipitating trauma. From the 50 records meeting these criteria, data were collected for demographic characteristics, medical history, signs and symptoms, somatic dysfunctions, types of OMT techniques used, and immediate response to OMT.

Results: Of 1092 neck pain clinical encounters, 50 patients reported sudden onset atraumatic neck pain. Of those 50, patient ages ranged from 10 to 85 years (mean 44 years) and 37 (74%) were female. Twenty-nine patients (58%) had pain onset upon waking. Somatic dysfunctions were documented for 43 patients (86%) in the cervical region, 46 (92%) in the thoracic region, 36 (72%) in the rib region, 13 (26%) in the lumbar region, 8 (16%) in the sacral region, 6 (12%) in the pelvic region, and 5 (10%) in the cranial region. The most commonly documented muscle spasms were the right levator scapulae and left trapezius (9 patients [18%] for both). Of the 50 patients, 47 (94%) received OMT. The most commonly used OMT techniques included myofascial release used on 30 patients (60%); muscle energy on 26 (52%); high-velocity, low-amplitude on 24 (48%); articular technique on 23 (46%); and counterstrain on 14 (28%). Forty-four patients (88%) reported improved symptoms immediately after OMT.

Conclusions: The incidence of cervical, thoracic, and rib somatic dysfunction in patients presenting with sudden onset atraumatic neck pain was very high. Females were more likely to present to the clinic with these symptoms, and the onset most commonly occurred on waking. Most patients receiving OMT reported immediate improvement of symptoms.

From the A.T. Still University–Kirksville College of Osteopathic Medicine, Missouri (Snider and Ghouse), From A.T. Still University (Pazdernik), and from Chesterfield, Missouri (He)

Financial disclosure: none reported.

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Introduction

Neck pain is a common musculoskeletal problem that has a substantial impact on health care costs and quality of life.[1] Up to 71% of adults experience neck pain in their lives, and the annual prevalence is estimated between 30% and 50%.[2] Neck pain is a chronic condition in 10% of those affected.[3] The socioeconomic cost of neck pain can be significant and may include absenteeism from work, health care costs, disability, compensation, and impact on the daily activities and work of patients and their families.[1,4]

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Most neck pain is nonspecific with only 10% of neck pain having an identifiable cause, such as an infectious, inflammatory, neurologic, or neoplastic cause.[4] One type of nonspecific neck pain is commonly referred to as a "crick in the neck" and seems to occur without a precipitating event. The pain occurs suddenly after a simple turn of the head or after trivial atraumatic activities. Common historical findings include "I woke up with neck pain" or "It started after I worked at the computer all day." Typical symptoms include unilateral or bilateral pain accompanied by pain with active or passive cervical rotation. Fryer et al[5] utilized magnetic resonance imaging of the cervical spine to evaluate 5 patients who reported acute sudden onset atraumatic neck pain. For the level of resolution provided by the magnetic resonance imaging, no common source of pain could be identified.[5]

To determine the incidence of somatic dysfunction in patients with sudden onset atraumatic neck pain, the current study retrospectively reviewed the clinical records of patients presenting to a single neuromusculoskeletal medicine and osteopathic manipulative medicine specialty clinic with sudden onset neck pain of atraumatic origin. Patients' medical histories were assessed along with the incidence of somatic dysfunction findings. The documented response to osteopathic manipulative treatment (OMT) also was reviewed to determine if OMT resulted in reduced symptoms.

Methods

Electronic billing records dated between March 2001 and December 2011 from the Gutensohn Neuromusculoskeletal Medicine/Osteopathic Manipulative Medicine (NMM/OMM) specialty clinic in Kirksville, Missouri, were retrospectively searched for outpatient encounters involving patients aged 10 years and older who were diagnosed with neck pain or neck strain.

The medical records from the identified encounters were reviewed for documentation indicating an initial evaluation for sudden onset of neck pain without a history of associated trauma. For the current study, sudden onset atraumatic pain was defined as *the abrupt transition from a nonpainful to painful state without a traumatic precipitating event*. Clinical encounters were excluded from the current study if the patient had a documented history of prior cervical or thoracic spinal surgery or a history of trauma to the head, neck, thoracic, or shoulder regions within 6 weeks of the onset of the neck pain. Clinical encounters also were excluded from review if the medical records were stored outside of the clinic.

The study was reviewed and approved by the A.T. Still University-Kirksville Institutional Review Board.

The medical records reviewed in the current study included medical histories that were handwritten by patients and medical histories and clinical encounters that were handwritten by the treating physicians or dictated then transcribed. Medical records reviewed for the current study included patients from 22 different attending and resident physicians.

The following data were collected from the medical records:

- total number of OMM encounters related to the neck pain episode
- patient demographics (sex, age, race, ethnicity)
- medical history
- neck pain signs and symptoms
- somatic dysfunctions
- types of OMT used
- immediate response to OMT
- medications prescribed

Information about medical history included history of neck trauma more than 6 weeks prior to onset of neck pain, chronic neck pain, cervical degenerative joint disease, cervical degenerative disc disease, previous episodes of similar neck pain, previous evaluation for current neck pain episode, and onset of neck pain prior to the initial OMM visit.

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Continuing Medical Education Quiz

The purpose of the September 2016 quiz—found on page 20—is to provide a convenient means of self-assessing your comprehension of the scientific content in the article "The Incidence of Somatic Dysfunction in Patients With Sudden Onset Atraumatic Neck Pain: A Retrospective Case Note Study" by Karen Teten Snider, DO, FAAO; Amrien Ghouse, OMS VI; Sheri Shiyi He, BS; and Vanessa K. Pazdernik, MS.

Be sure to answer each question in the quiz. The correct answers will be published in the next issue of the *AAOJ*.

To apply for 2 credits of AOA Category 2-B continuing medical education, fill out the form on page 20 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.

You must score a 75% or higher on the quiz to receive CME credit.

Cranial Approach of Beryl E. Arbuckle, DO

Dec. 2-4, 2016 • Midwestern University/Arizona College of Osteopathic Medicine in Glendale

This course traces the cranial approaches of William Garner Sutherland, DO; Beryl E. Arbuckle, DO; and Robert Fulford, DO. Dr. Arbuckle was one of Dr. Sutherland's earliest students, studying with him before he taught using primary respiration as a therapeutic force. Diagnosis was performed by palpating the position of the cranial bones and motion testing. In her work with children, Dr. Arbuckle mostly used direct techniques.

Dr. Arbuckle was able to attend hundreds of autopsies, mostly on pediatric neurological cases. She observed regularly arranged fibers in the dura that she called "stress fibers." She also noted that the skull was reinforced in certain places, which she called buttresses. The stress bands and buttresses are used in both diagnosis and treatment.

Attendees will explore the embryology of the head; motion test the sphenobasilar suture, the cranial base, the face, the buttresses, the cranial-cervical junction, and the sacrum; unlock the bony skull and the membranes; work with stress bands; and explore the significance of thoracic respiration.

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

Course Times
Friday and Saturday from 8 a.m. to 6 p.m.
Sunday from 8 a.m. to 4 p.m.

Meal Information
Breakfast and lunch will be provided each day. Contact AAO Event Planner Gennie Watts with special dietary needs at (317) 879-1881, ext. 220, or GWatts@academyofosteopathy.org.

Course Location
Midwestern University/Arizona College of Osteopathic Medicine
Agave Hall, OMT Lab 101
19555 N. 59th Ave., Glendale, AZ 85308

Travel Arrangements
Contact Tina Callahan of Globally Yours Travel at (800) 274-5975 or globallyyourstravel@cox.net.

Course Director
A 1994 graduate of what is now the A.T. Still University–Kirksville College of Osteopathic Medicine, **Kenneth J. Lossing, DO,** served an internship and combined residency in neuromusculoskeletal medicine and family practice through the Ohio University Heritage College of Osteopathic Medicine in Athens. He is board certified in both neuromusculoskeletal medicine and family medicine.

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 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.

Registration Fees	On or before Sept. 30	Oct. 1 through Nov. 26	On or after Nov. 27
Academy member in practice*	$910	$960	$1,160
Resident or intern member	$710	$760	$960
Student member	$510	$560	$760
Nonmember practicing DO or other health care professional	$1,110	$1,160	$1,360
Nonmember resident or intern	$910	$960	$1,160
Nonmember student	$710	$760	$960

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

Registration Form

Cranial Approach of Beryl Arbuckle, DO

Dec. 2-4, 2016

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Table 1. *Demographic characteristics, medical history, and signs and symptoms of patients with sudden onset atraumatic neck pain (N=50)*

Outcome variable	Mean (Range) or No. (%)
Demographic characteristics	
Sex, female	37 (74)
Age, y	44 (10 to 85)
Race	
White	47 (94)
Not specified	2 (4)
Other	1 (2)
Ethnicity	
Non-Hispanic	49 (98)
Not specified	1 (2)
Medical history	
Neck trauma history	
Positive trauma > 6 weeks prior to pain onset	2 (4)
Negative trauma	39 (78)
Unspecified	9 (18)
Chronic neck pain history	
Positive chronic pain	4 (8)
Negative chronic pain	33 (66)
Unspecified	13 (26)
Cervical DJD history	
Positive DJD	1 (2)
Negative DJD	32 (64)
Unspecified	17 (34)
Cervical DDD history	
Positive DDD	1 (2)
Negative DDD	29 (58)
Unspecified	20 (40)
Previous episodes of similar pain	
Yes	11 (22)
No	14 (28)
Unspecified	25 (50)
Previous evaluation for current pain episode	
Physician outside the OMM clinic	5 (10)
No other evaluation	32 (64)
Not specified	13 (26)
Onset of pain prior to initial OMM visit	
≤ 7 days	34 (68)
8-14 days	7 (14)
15-29 days	5 (10)
1-2 months	2 (4)
> 6 months	1 (2)
Exact time unspecified but < 6 weeks	1 (2)

Outcome variable	Mean (Range) or No. (%)
Signs and symptoms	
Context of pain onset	
On waking	29 (58)
After specific atraumatic activity	13 (26)
Unspecified atraumatic onset	8 (16)
Location of pain[a]	
Right neck	19 (38)
Left neck	18 (36)
Right shoulder	6 (12)
Left shoulder	5 (10)
Right thoracic pain	1 (2)
Left thoracic pain	1 (2)
Right nonspecific back pain	5 (10)
Left nonspecific back pain	4 (8)
Generalized	16 (32)
Unspecified	1 (2)
Radiation of pain	
To head	4 (8)
To shoulders	4 (8)
To arms	2 (4)
To chest	1 (2)
No radiating pain	12 (24)
Not specified	27 (45)
Character of pain[a]	
Stiffness	15 (30)
Tightness	5 (10)
Ache	6 (12)
Sharp or stabbing	4 (8)
Burning	1 (2)
Not specified	23 (46)
Painful active range of motion[a]	
Right rotation	12 (24)
Left rotation	11 (22)
Right sidebending	0 (0)
Left sidebending	1 (2)
Extension	1 (2)
Generalized	13 (26)
Unspecified	21 (42)
Progression of pain since onset	
Improved	10 (20)
Unchanged	6 (12)
Worsened	9 (18)
Unspecified	25 (50)

Abbreviations: DDD, degenerative disc disease; DJD, degenerative joint disease; OMM, osteopathic manipulative medicine.

[a] Patients may have specified 1 or more of the listed signs or symptoms.

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For signs and symptoms, information was collected about the context of pain onset, location of pain, radiation of pain away from the site, character of the pain, presence of painful active range of motion, and progression of pain since onset.

Somatic dysfunction assessments along with the number and type of individual somatic dysfunction findings were collected from the physical examination portion of the initial clinical encounter documentation for segmental vertebral dysfunction and tender points in the head, cervical, thoracic, and rib regions along with specific findings of muscular spasms or tender points. Additionally, documentation of somatic dysfunction assessments of the lumbar, pelvic, sacral, and cranial regions was collected from the assessment portion of the clinical encounter. Number and type of somatic dysfunction findings were not collected for lumbar, pelvic, sacral, and cranial regions.

Information regarding types of OMT techniques, if used, immediate response to OMT, and medications prescribed was collected from the plan portion of the initial clinical encounter. Pain intensity after treatment was not documented in the medical records reviewed; therefore pain intensity was not collected in the current study.

Data analysis

The data for patient demographics, medical history, signs and symptoms, somatic dysfunctions, types of OMT techniques used, immediate response to OMT, and medications prescribed were tabulated. The frequency of patients having at least 1 vertebral somatic dysfunction in both the C3-C5 and T2-T5 regions was assessed. Fisher exact test and relative risk were used to assess associations between onset of neck pain and somatic dysfunction findings. $P \leq .05$ were considered statistically significant. The data were analyzed using SAS statistical software (version 9.3, SAS Institute, Inc.).

Results

Of the 1092 outpatient clinical encounters reviewed with neck pain or neck strain, 50 clinical encounters (5%) were documented as having an initial evaluation for sudden onset atraumatic neck pain without history of spinal surgery or recent trauma. The 50 encounters included 50 individual patients. Of those 50 patients,

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Table 2. *Incidence and frequency of documentation of cervical[a] and thoracic[b] segmental vertebral somatic dysfunction (N=50)*

Vertebral Level	Somatic Dysfunction, No. (%)										
	Total	ESlRl	ESrRr	Extended	FSlRl	FSrRr	Flexed	SlRl	SrRr	NSlRr[c]	NSrRl[c]
C2	17 (34)	3 (6)	8 (16)	0 (0)	1 (2)	2 (4)	0 (0)	0 (0)	3 (6)	-	-
C3	25 (50)	5 (10)	9 (18)	1 (2)	3 (6)	1 (2)	0 (0)	2 (4)	4 (8)	-	-
C4	21 (42)	3 (6)	6 (12)	1 (2)	5 (10)	3 (6)	0 (0)	0 (0)	3 (6)	-	-
C5	22 (44)	5 (10)	5 (10)	1 (2)	4 (8)	4 (8)	0 (0)	0 (0)	3 (6)	-	-
C6	15 (28)	1 (2)	3 (6)	0 (0)	2 (4)	4 (8)	0 (0)	0 (0)	5 (10)	-	-
C7	11 (22)	4 (8)	1 (2)	0 (0)	3 (6)	0 (0)	0 (0)	0 (0)	3 (6)	-	-
T1	14 (28)	0 (0)	0 (0)	0 (0)	5 (10)	3 (6)	2 (4)	0 (0)	2 (4)	1 (2)	2 (4)
T2	29 (58)	1 (2)	1 (2)	0 (0)	3 (6)	3 (6)	1 (2)	0 (0)	0 (0)	9 (18)	11 (22)
T3	21 (42)	1 (2)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	10 (20)	9 (18)
T4	23 (46)	0 (0)	0 (0)	0 (0)	1 (2)	1 (2)	0 (0)	0 (0)	0 (0)	11 (22)	10 (20)
T5	20 (40)	1 (2)	1 (2)	1 (2)	0 (0)	2 (4)	0 (0)	0 (0)	0 (0)	7 (14)	8 (16)
T6	13 (26)	1 (2)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	6 (12)	5 (10)
T7	9 (18)	0 (0)	0 (0)	0 (0)	0 (0)	2 (4)	0 (0)	0 (0)	0 (0)	4 (8)	3 (6)
T8	6 (12)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	4 (8)
T9	5 (10)[d]	3 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	2 (4)
T10	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)

Abbreviations: ESlRl, extended, sidebent left, rotated left; ESrRr, extended, sidebent right, rotated right; FSlRl, flexed, sidebent left, rotated left; FSrRr, flexed, sidebent right, rotated right; NSlRr, neutral, sidebent left, rotated right; NSrRl, neutral, sidebent right, rotated left; SlRl, sidebent left, rotated left; SrRr, sidebent right, rotated right.

[a] Findings for C1 were limited to 1 patient (2%) with C1 rotated right.

[b] No segmental vertebral somatic dysfunction was documented for T11-T12.

[c] Only assessed for thoracic segments.

[d] One patient had T9 documented as both NSlRr and NSrRl.

Table 3. *Incidence and frequency of documentation of anterior and posterior cervical and thoracic[a] tender points (N=50)*

Vertebral Level	Somatic Dysfunction No. (%)	Anterior Right Tender Points, No. (%)	Anterior Left Tender Points, No. (%)	Posterior Right Tender Points, No. (%)	Posterior Left Tender Points, No. (%)
C1	3 (6)	2 (4)	0 (0)	1 (2)	0 (0)
C2	1 (2)	0 (0)	0 (0)	1 (2)	0 (0)
C3	1 (2)	0 (0)	0 (0)	1 (2)	0 (0)
C4	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
C5	1 (2)	0 (0)	0 (0)	1 (2)	0 (0)
C6	1 (2)	1 (2)	0 (0)	0 (0)	0 (0)
C7	3 (6)	1 (2)	2 (4)	0 (0)	0 (0)
T1	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
T2	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
T3	1 (2)	0 (0)	0 (0)	1 (2)	0 (0)
T4	1 (2)	0 (0)	0 (0)	1 (2)	0 (0)

[a] No tender points were documented for T5-T12.

Table 4. *Incidence and frequency of documentation of rib[a] somatic dysfunction (N=50)*

Rib Level	Somatic Dysfunction, No. (%)	Inhaled,[b] No. (%)	Exhaled,[c] No. (%)	Posterior Tender Points,[d] No. (%)
Rib 1				
Right	16 (32)	15 (30)	1 (2)	0 (0)
Left	16 (32)	15 (30)	1 (2)	1 (2)
Rib 2				
Right	6 (12)	5 (10)	1 (2)	0 (0)
Left	1 (2)	1 (2)	0 (0)	0 (0)
Rib 3				
Right	5 (10)	4 (8)	1 (2)	0 (0)
Left	4 (8)	2 (4)	2 (4)	0 (0)
Rib 4				
Right	6 (12)	3 (6)	2 (4)	1 (2)
Left	4 (8)	2 (4)	2 (4)	0 (0)
Rib 5				
Right	3 (6)	2 (4)	1 (2)	1 (2)
Left	2 (4)	1 (2)	2 (4)	0 (0)
Rib 6				
Right	3 (6)	2 (4)	1 (2)	1 (2)
Left	1 (2)	1 (2)	0 (0)	0 (0)
Rib 7				
Right	1 (2)	1 (2)	0 (0)	0 (0)
Left	0 (0)	0 (0)	0 (0)	0 (0)
Rib 8				
Right	0 (0)	0 (0)	0 (0)	0 (0)
Left	2 (4)	2 (4)	1 (2)	0 (0)
Rib 9				
Right	0 (0)	0 (0)	0 (0)	0 (0)
Left	1 (2)	1 (2)	0 (0)	0 (0)
Rib 10				
Right	0 (0)	0 (0)	0 (0)	0 (0)
Left	1 (2)	1 (2)	0 (0)	0 (0)

[a] No rib somatic dysfunctions were documented for ribs 11-12, and no anterior rib tender points were documented.

[b] Includes rib somatic dysfunction documented as elevated without mention of a tender point.

[c] Includes rib somatic dysfunction documented as depressed without mention of a tender point.

[d] Includes rib somatic dysfunction documented as a depressed rib tender point.

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47 (94%) had 1 clinical encounter related to the neck pain episode, 2 (4%) had 2 clinical encounters for the same episode of neck pain, and 1 (2%) had 3 clinical encounters for the same episode of neck pain. See *Table 1* for detailed results of demographic characteristics, medical history, and signs and symptoms of patients presenting with sudden onset atraumatic neck pain.

Somatic dysfunction was documented at the occipitoatlantal (OA) joint for 27 patients (54%). The OA joint flexed, sidebent right, and rotated left was most frequently documented (11 [22%] patients). Other documented OA diagnoses included extended, sidebent right, and rotated left (5 [10%] patients); flexed, sidebent left, and rotated right (3 [6%] patients); extended, sidebent left, and rotated right (3 [6%] patients); neutral, sidebent right, and rotated left (2 [4%] patients); neutral, sidebent left, and rotated right (2 [4%] patients); and extended (1 [2%] patient). Only 1 patient (2%) had documented dysfunction at C1 (rotated right).

The incidence and frequency of documentation of C2-C7 vertebral somatic dysfunction findings and T1-T10 vertebral somatic dysfunction findings are presented in *Table 2*. Forty-three patients (86%) had at least 1 cervical vertebral or tender point finding documented, with a range findings of 0 to 9 and a mean (SD) of 3.0 (1.9). Forty-six patients (92%) had at least 1 thoracic vertebral or tender point finding documented, with a range of 0 to 10 findings and a mean (SD) of 2.9 (2.2). The most common vertebral somatic dysfunctions were at C3 (25 [50%] patients) and at T2 (29 [58%] patients). Thirty patients (60%) had at least 1 vertebral somatic dysfunction in both the C3-C5 and T2-T5 regions.

The incidence and frequency of documentation of cervical and thoracic tender points is presented in *Table 3*. Five patients (10%) had at least 1 cervical tender point documented, and 1 patient (2%) had at least 1 thoracic tender point documented. The most common cervical tender points were anterior right C1 (2 [4%] patients) and anterior left C7 (2 [4%] patients). The only thoracic tender points documented, right posterior T3 and T4, were in the same patient (1 [2%]). The PC1 inion tender point was documented in 1 patient (2%).

Table 4 lists the incidence and frequency of documentation of rib somatic dysfunction, including tender points. Thirty-six patients (72%) had at least 1 rib dysfunction or tender point documented, with a range of 0 to 7 findings and a mean (SD) of 1.6 (1.7). Inhalation dysfunction was more frequent than exhalation dysfunction, and inhalation of rib 1 was the most frequent finding (15 [30%] on the right and 15 [30%] on the left). Two patients (4%) had 1 or more rib tender points documented.

Table 5. *Incidence and frequency of documentation of muscular spasms and tender points (N=50)*

Location of Spasm or Tender Point	Incidence, No. (%)
Posterior	
Right trapezius	7 (14)
Left trapezius	9 (18)
Right levator scapulae	9 (18)
Left levator scapulae	7 (14)
Right rhomboids	2 (4)
Left rhomboids	2 (4)
Right post scalenes	5 (10)
Left post scalenes	5 (10)
Right omohyoid	1 (2)
Left omohyoid	0 (0)
Right paraspinal	8 (16)
Left paraspinal	8 (16)
Right suboccipital	1 (2)
Left suboccipital	0 (0)
Anterior	
Right anterior scalene	2 (4)
Left anterior scalene	1 (2)
Right middle scalene	1 (2)
Left middle scalene	2 (4)
Right pectoralis minor	1 (2)
Left pectoralis minor	0 (0)

The incidence and frequency of documented muscular spasms or tender points is presented in *Table 5*. Twenty-eight patients (56%) had at least 1 muscular spasm or tender point documented. The most commonly documented muscle spasms were the trapezius (7 [14%] on the right and 9 [18%] on the left), the levator scapulae (9 [18%] on the right and 7 [14%] on the left) and paraspinal muscles (8 [16%] on the right and 8 [16%] on the left).

Lumbar, sacral, and pelvic somatic dysfunction assessments were documented for 13 (26%), 8 (16%), and 6 (12%) patients, respectively. Cranial somatic dysfunction, excluding the OA joint, was documented for 5 patients (10%).

Twenty-nine patients (58%) had onset of pain on waking, which was negatively associated with right-sided posterior cervical tender points (P=.02). Those patients whose onset of pain did not occur on waking were 15 times more likely to have right posterior cervical tender points than those who reported onset of pain on waking. Onset of pain was not related to any other documented somatic dysfunctions, including tender points or muscle spasms.

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Of the 50 patients, 47 (94%) received OMT for the neck pain. Of the 47 patients who received OMT, myofascial release was the most commonly documented OMT technique. It was used on 30 patients (64%). Muscle energy was used on 26 patients (55%); high-velocity, low-amplitude on 24 (51%); articular technique on 23 (49%); counterstrain on 14 (30%); facilitated positional release on 10 (21%); balanced ligamentous tension or indirect on 9 (19%); percussion hammer on 5 (11%); Still technique on 5 (11%); osteopathic cranial manipulative medicine on 4 (9%); ligamentous articular strain on 4 (9%); neurofascial release on 3 (6%); and soft tissue on 3 (6%). The OMT techniques used on 5 patients (11%) were unspecified.

Of the 47 patients who received OMT, the response was documented as immediate pain improvement for 44 patients (94%) and was unchanged for 1 (2%); posttreatment response was not specified for 2 patients (4%). Medications prescribed included muscle relaxants for 4 patients (8%), nonsteroidal anti-inflammatory medications for 4 patients (8%), and other medications for 14 patients (28%). The other medications may or may not have been related to the neck pain complaint. No medications were prescribed for 28 patients (56%), and 1 patient (2%) received a trigger point injection.

Comment

The current study indicated that 74% of patients seeking NMM/OMM specialty care for sudden onset atraumatic neck pain were women. A clinical review found that women were more likely than men to visit health care practitioners for nondisabling neck pain.[2] A recent study also found that women sought treatment for sudden onset nonspecific neck pain more frequently than men.[6] However, because men are less likely to utilize health care services,[7,8] these findings do not necessarily reflect the incidence of sudden onset atraumatic neck pain between women and men.

The current study found that only 8% of patients presenting with sudden onset atraumatic neck pain reported chronic neck pain with 2% reporting chronic neck conditions, such as degenerative disc disease. However, over 20% had documented cases of similar neck pain in the past. Leaver et al,[6] who prospectively investigated acute episodes of nonspecific neck pain, found that 63% of patients reported previous episodes of neck pain. In the current study, information about medical history was limited to that documented by the treating physician; therefore, the incidence of previous episodes of similar neck pain may have been higher.

In a study by Vasseljen et al,[9] most patients had significant improvement in pain with or without treatment within 1 month of onset of acute neck pain. In addition, the authors found that those with higher pain intensity were more likely to seek treatment.[9] Pain intensity data was not collected in the current study because the kind of neck pain studied commonly has 2 levels of pain, one that occurs at rest and a higher pain level that occurs with cervical rotation. Future prospective studies investigating sudden onset atraumatic neck pain should include assessment of pain levels with various cervical ranges of motion.

In the current study, 60% of patients had vertebral somatic dysfunction within C3-C5 and T2-T5. Numerous studies have identified a benefit from treating thoracic dysfunction in the presence of nonspecific neck pain.[10] In one study,[11] neck pain patients were randomly assigned to electro/thermal therapy or to electro/thermal therapy plus a seated thoracic thrust manipulation each week for 3 weeks. Those patients receiving the thoracic manipulation had statistically significant improvement in pain ($P<.001$) and cervical range of motion ($P<.05$).[11] The current study found that somatic dysfunction was common in both the cervical and thoracic regions, suggesting that OMT should be focused in both regions. In a study by Masaracchio et al,[12] mechanical neck pain patients were randomly assigned to combined treatment of the cervical and thoracic spine or to treatment of the cervical spine alone. Their results indicated that the treatment of both regions had better short-term relief of pain than treatment of the cervical spine alone ($P<.001$).[12]

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Fulford's Advanced Percussion Hammer

Dec. 2-4, 2016 • University of North Texas Health Science Center Texas College of Osteopathic Medicine in Fort Worth

Based on the life exploration, philosophy and osteopathic practice of Robert C. Fulford, DO, this course builds on principles addressed in the basic course. More sensitive and potent concepts and techniques will be presented with supervised practice to assure a proper level of mastery during the course.

Dr. Fulford continued developing new techniques using the percussion hammer, which he pioneered, necessitating the development of an advanced course in the mid 1990s to allow participants to grasp the far-reaching osteopathic healing concepts that were the essence of the old doctor.

This is the same advanced course as taught by Dr. Fulford. An extra day has been added to allow greater study and practice into the thinking and practice of the modern-day osteopathic physician.

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Continuing Medical Education

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Course Times

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Sunday from 9 a.m. to 3 p.m.

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Course Location

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Texas College of Osteopathic Medicine
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Travel Arrangements

Contact Tina Callahan of Globally Yours Travel at (800) 274-5975 or globallyyourstravel@cox.net.

Course Director

When **Richard W. Koss, DO**, completed his undergraduate degree at Springfield College in Massachusetts, he planned to teach physical education, but an encounter with Bertha Miller, DO, changed his focus to osteopathic medicine.

In 1982, Dr. Koss graduated from what is now the A.T. Still University-Kirksville College of Osteopathic Medicine (ATSU-KCOM) in Missouri, after which he served in the U.S. Air Force Medical Corps for four years as a general medical officer, first at McChord Air Force Base near Tacoma, Washington, and then at Robins Air Force Base in Warner Robins, Georgia.

Dr. Koss first attended a percussion course taught by Robert C. Fulford, DO, in 1987 when Dr. Koss was a resident in osteopathic manipulative medicine at ATSU-KCOM. Two years later, Dr. Fulford invited Dr. Koss to be a table trainer for a percussion course. Dr. Koss continued to assist Dr. Fulford until the latter's death in 1997.

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Vertebral tender points were rarely documented for patients in the current study. Because of our retrospective study design, our results may not represent the actual incidence of vertebral tender points because the patients may not have been assessed for vertebral tender points. Documentation of muscular tender points was combined with documentation of muscular spasms during data collection, so we could not determine the incidence of specific muscular tender points. However, the existing documentation of muscular dysfunction suggested that the trapezius, levator scapulae, and paraspinal muscles were most commonly associated with sudden onset atraumatic neck pain. A small study evaluating muscular dysfunction in 15 patients with mechanical neck pain found that the most common trigger points were in the trapezius and levator scapulae.[13]

Although long-term outcomes were not investigated in the current study, 94% of the clinical encounters indicated immediate symptom improvement with OMT. The evidence base of manual therapy intervention for nonspecific neck pain is extensive. A recent systematic review suggested moderate evidence supports using manual therapies to treat patients with acute neck pain, and no evidence suggested that one type of technique was better than another.[14] In the current study, a wide variety of OMT techniques were used to manage neck pain. Future studies could investigate the type of technique or combination of techniques that is most effective for treating patients with atraumatic neck pain.

The current study had several limitations. The retrospective design relied upon physician documentation of all data such as history, physical findings and immediate response to OMT. As such, the data was often nonspecific and may have been incomplete. Therefore, some of the 1092 neck pain encounters reviewed may have met the study's inclusion criteria if documentation of the pain history had been more comprehensive. Another limitation was that the physical examinations performed during the patient encounters did not include a comprehensive assessment for each individual somatic dysfunction reported in the current study. Additionally, because previous studies suggest that the interobserver reliability of specific spinal palpatory findings is fair to poor,[15,16] correlation of patient symptoms with specific vertebral somatic dysfunctions may have depended on the individual examiner. Future prospective studies should use examiners trained in interobserver reliability to comprehensively assess the correlation of patient history and physical findings with neck pain symptoms.

Conclusion

In the current study, sudden onset atraumatic neck pain was documented in a small percentage of neck pain cases seen in an outpatient NMM/OMM specialty clinic. The actual number of cases may have been higher, however. The incidence of somatic dysfunction was very high in patients presenting with this condition. Consistent with the published literature, women more commonly presented to the clinic for treatment than men, and muscular somatic dysfunction of the trapezius and levator scapulae were common physical findings. Further, OMT resulted in immediate symptomatic improvement in 94% of the patients. The findings from the current study may be useful to guide more comprehensive assessments that can be used in future prospective studies examining the correlation of somatic dysfunction to atraumatic neck pain and the long-term outcomes of OMT.

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Acknowledgments

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Below are the answers to *The AAO Journal's* June 2016 quiz on the article titled "Use of Orthotics to Treat Persistent Low Back Pain After Left Sacrioiliac Joint Fixation: A Case Report" by James A. Lipton, DO, CSP-OMM, FAAO, FAAPMR, FAOCPMR, and 2LT Jochen A. Granja Vasquez MS, MSC, USAR, OMS IV .

1. **c.** According to the article, a successful transacral fixation was described after a failed unilateral fixation.
2. **e.** Sacroiliac joint fixation surgery can be associated with all of the following: iatrogenic injury, sensorimotor sequellae, hemorrhage, and osseous injury.
3. **d.** The Young-Burgess Classification pertains to pelvic fractures.
4. **e.** The orthotic correction described in this case study involved the use of heel lift and then replacing with custom molded orthotics with built-in assymetrical heel lift and medial wedging.

Continuing Medical Education

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Name of article: "The Incidence of Somatic Dysfunction in Patients With Sudden Onset Atraumatic Neck Pain: A Retrospective Case Note Study"

Authors: Karen Teten Snider, DO, FAAO; Amrien Ghouse, OMS VI; Sheri Shiyi He, BS; and Vanessa K. Pazdernik, MS

Publication: *The AAO Journal*, Vol. 26, No. 3, September 2016, pages 9-19

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

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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.

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1. Which of the data below were collected from medical records?
   a. Patient demographics
   b. Medications prescribed
   c. Type of OMT used
   d. All of the above

2. Which of the following was the most commonly documented technique used?
   a. Myofascial release
   b. High-velocity, low-amplitude
   c. Articular technique
   d. Counterstrain

3. How many patients had vertebral somatic dysfunctions within C3-C5 and T2-T5?
   a. 40% of patients
   b. 50% of patients
   c. 60% of patients
   d. 70% of patients

4. Which of the following was not listed as a limitation of the study?
   a. The retrospective design relied upon physician documentation of all data such as history, physical findings and immediate response to OMT.
   b. The physical examinations performed during the patient encounters did not include a comprehensive assessment for each individual somatic dysfunction reported in the current study.
   c. Because previous studies suggest that the interobserver reliability of specific spinal palpatory findings is fair to poor, correlation of patient symptoms with specific vertebral somatic dysfunctions may have depended on the individual examiner.
   d. Of the 1092 patients seeking NMM/OMM specialty care for sudden onset atraumatic neck pain, 74% were men.

Answers

See Page 19 for the answers to the *AAOJ's* June 2016 continuing medical education quiz.

Answers to the *AAOJ's* September 2016 CME quiz will appear in the next issue.

Does Using a Shim Improve the Diagnostic Reliability of the Standing Flexion Test? A Pilot Study

Alexa Paulina Marquez, OMS III, MS; Michelle Yim, OMS IV, MPH; Biana Zelimkhanian, OMS IV, MS; John Quiamas, OMS IV, MS; Rachel E. Davidge, DO; Matthew Siri, DO; and Raymond J. Hruby, DO, MS, FAAODist

Abstract

Context: The standing flexion test (StFT) is a key component in the osteopathic screening exam. Leveling the iliac crests prior to performing the test is thought to improve the reliability of the StFT.

Objective: This pilot study was designed to investigate whether using a shim to level the iliac crests changes the diagnostic reliability of the StFT and to appraise the interexaminer reliability of the StFT between 2 qualified examiners.

Methods: Examiners consisted of 2 osteopathic manipulative medicine predoctoral teaching fellows and 2 first-year osteopathic medical students, all of whom underwent consensus training. Each participant was evaluated by 2 examiners using the StFT, and results were recorded. If iliac crest levels were asymmetrical, a shim was used and a second standing flexion test was performed.

Results: Of the 64 participants in the study, the use of a shim changed the results of the standing flexion test 65.2%, 64.3%, 41.2%, and 64.3% of the time for participants assessed by examiners 1, 2, 3, and 4, respectively. Additional results yielded statistically insignificant interexaminer reliability with moderate reliability (k=0.43) between examiners with higher levels of palpatory experience.

Conclusion: These results suggest that the use of shims to level uneven iliac crests influences the results of the StFT. There is poor interexaminer reliability performing the StFT despite having examiners complete a consensus training session where they reviewed the standardized protocol. However, level of palpatory experience may influence interexaminer reliability.

From the Neuromuscular Medicine and Osteopathic Manipulative Medicine Department at the Western University of Health Sciences College of Osteopathic Medicine of the Pacific (WesternU/COMP) in Pomona, California. At the time of the study, Dr Davidge and Dr Siri were osteopathic medical students, and they were predoctoral teaching fellows at WesternU/COMP.

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Introduction

The standing flexion test (StFT) is an integral part of the osteopathic structural exam to assess for pelvic somatic dysfunction. Historically, osteopathic physicians (DOs) are taught that prior to performing the StFT, the iliac crests should be level "to enhance reliability of the standing flexion test."[1] In patients with uneven iliac crest levels, a shim is placed under the patient's heel on the side of the more inferior iliac crest. However, many DOs perform this maneuver with the patient's feet flat on the floor without using shims to adjust for unleveled iliac crests.

Kappler performed a study in which 1 examiner assessed 30 participants and concluded that using shims to adjust for iliac crest levels does not affect the results of this screening maneuver.[2] With the exception of Kappler's study, which lacked examiner blinding and interexaminer reliability testing, little scientific investigation into the nature of this phenomenon has been done. Therefore, the utility of a shim in the StFT is put to question. This study investigated

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whether using a shim to level the iliac crests changes the diagnostic reliability of StFT.

While the StFT has traditionally been taught to all osteopathic medical students at the beginning of their education, it has been widely acknowledged that inconsistent diagnostic interpretation between examiners is also a common problem.

Thus far, the literature demonstrates less than 50% interexaminer reliability of the StFT between osteopathic physicians.[3] One factor that may affect the accuracy between examiners is the problem of having poor reliability when using palpatory landmarks during the osteopathic screening exam.[4-6] To account for this, the examiners in this study completed consensus training before participants were evaluated. Previous studies have shown that consensus training improves interexaminer reliability[5] of diagnostic tests.

This pilot study had 2 objectives: to assess whether using a shim to level the iliac crests changes the diagnostic reliability of the StFT and to assess StFT interexaminer reliability among osteopathic medical students. This knowledge will contribute to developing osteopathic diagnostics, and it will lead to improving clinical practice and osteopathic medical student training.

Methods

Participant Selection

A call for volunteer participants was broadcast through emails and announcements in classrooms (eg, osteopathic manipulative medicine laboratory), with no incentive for participation. Potential participants were screened for eligibility by the project investigators and were asked to sign an informed consent to participate in the study.

Participants consisted of 64 volunteers selected from a convenience sample of 124 potential participants from the Western University of Health Sciences student body, faculty, and staff. Participants were males and females 18 years of age or older. Participants who could safely and comfortably bend forward from the hips while standing were eligible for inclusion in the study. Participants were excluded for pregnancy; history of pelvic, femoral, or tibial fracture; lower extremity amputation; hip or knee joint replacement; history of dizziness or vertigo; or any disease that pathologically inhibits lumbar or lower extremity physiologic motion (eg, ankylosing spondylitis).

Consensus Training

All 4 examiners underwent consensus training during a 1-hour session mediated by an osteopathic physician (RJH). Examiners 1 and 2 were first-year osteopathic medical students. Examiners 3 and 4 were predoctoral teaching fellows. Another first-year osteopathic medical student worked as a research coordinator.

Figure. *The examiners' consensus training applied this standing flexion test procedure as described by Seffinger et al.*[7]

Standing Flexion Test Procedure

1. The patient stands with his or her feet comfortably apart and weight evenly distributed to the lower extremities.
2. The practitioner sits or kneels behind the patient and places his or her thumbs on the inferior slopes of the patient's PSISs.
3. The patient is then asked to bend forward from the waist with arms hanging loosely and to attempt to touch the floor.
4. The practitioner observes whether the PSISs move symmetrically (ie, normal motion) or whether 1 PSIS is more superior or ventral than the other at the end of the forward bending motion (ie, positive test result).

The consensus training session entailed locating landmarks, palpating posterior superior iliac spines (PSIS), and standardizing the StFT together on multiple practice participants. The training applied the accepted method of performing the StFT as a step in diagnosing iliosacral somatic dysfunction as described by Seffinger and Hruby.[7] *(See Figure.)*

The examiners practiced the StFT until there was an agreement that all examiners were performing the maneuver in the same manner as closely as possible.

Protocol

Each participant was assessed by 2 examiners in a private area. Examiners were blinded to each other. Each examiner performed the StFT with the participant standing and with his or her feet flat on the floor. These results were recorded.

The participant's iliac crest levels were then assessed. If iliac crest levels were asymmetrical, a shim was placed under the inferior iliac crest and a second standing flexion test was performed and results were recorded. The same participant was then directed to the second examiner to perform the same assessment.

Statistical Analysis

Each examiner's data were compared to their own StFT data with and without a shim to determine if placing a shim under the

(continued on page 24)

Osteopathic Management of Chronic Pain:
Addressing Chronic Fatigue Syndrome, Fibromyalgia, Multiple Sclerosis and Neuroinflammation

Jan. 20-22, 2017 • Midwestern University/Arizona College of Osteopathic Medicine in Glendale

A growing number of people are diagnosed with chronic fatigue syndrome, fibromyalgia and other chronic pain conditions. These patients need effective, noninvasive treatments that don't aggravate their conditions. This course will provide participants the tools to recognize these conditions and their symptoms and to treat those patients.

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By the end of the course, participants will be able to identify several chronic pain conditions; describe the comorbidity, known causes, and differential diagnoses of these conditions; explain the importance of the lymphatic system in addressing these conditions; identify megalymphatics in the thorax; and perform lymphatic techniques to release the liver, spleen and small intestines.

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Travel Arrangements
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Course Director


Bruno J. Chikly, MD, DO (France), is a graduate of the medical school at St. Antoine Hospital in Paris, where his internship in general medicine included training in endocrinology, surgery, neurology and psychiatry. Dr. Chikly also has the French equivalent of a master's degree in psychology. He received an honorary DO degree from the European School of Osteopathy in Maidstone, Kent, in the United Kingdom and a PhD in osteopathy from the Royal University Libre of Brussels in Belgium.

Dr. Chikly is an international renowned educator, lecturer and writer. He is the author of the book *Silent Waves: The Theory and Practice of Lymph Drainage Therapy,* as well as the creator of a DVD titled *Dissection of the Brain and Spinal Cord*, and he is working on a book about osteopathic manipulation and the brain. He lives in Scottsdale, Arizona, with his wife and partner, Alaya.

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Student member	$570	$620	$820
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Nonmember resident or intern	$970	$1,020	$1,220
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Osteopathic Management of Chronic Pain

Jan. 20-22, 2017

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patient's foot made a difference in screening for pelvic somatic dysfunction. Percentage agreement was calculated to evaluate the outcome of the use of shims on the standing flexion test. Cohen's kappa coefficient (κ) and their 95% confidence intervals were calculated to evaluate interrater reliability. K factors out agreement between results due to chance. The κ coefficient ranges from -1 to 1 where 0 indicates an agreement no better than chance and positive values signify agreement better than results due to chance alone. The authors followed the guidelines in *Table 1* suggested by Landis and Koch[8] to interpret κ.

Results

Of the 64 participants of both genders who met the inclusion criteria, 46 participants were assessed by examiners 1 and 2 while 18 participants were assessed by examiners 3 and 4. The use of a shim changed the results of the standing flexion test 65.2%, 64.3%, 41.2%, and 64.3% of the time for participants assessed by examiners 1, 2, 3, and 4 respectively. *(See Table 2)*

In evaluating the data, it was determined that the difference in the number of participants assessed by each set of examiners was not statistically significant.

Table 1. *Guidelines by Landis and Koch for interpreting κ.*

Value of κ	Strength of agreement
0.0-0.20	Slight
0.21-0.40	Fair
0.41-0.60	Moderate
0.61-0.80	Substantial
0.81-1.00	Almost perfect

Table 2. *The effect of shims on the standing flexion test.*

Examiner	n	Uneven iliac crest	Different StFT result with shim	Percentage
1	46	23	15	65.7%
2	46	28	18	64.3%
3	18	17	7	41.2%
4	18	14	9	64.3%

Table 3. *Interrater reliability between examiners.*

Agreement	Examiners 1 and 2 (κ_1)	Examiners 3 and 4 (κ_2)
Iliac crests level	0.19 (95% CI -0.13, 0.50)	0.37 (95% CI -0.12, 0.85)
Shim necessity	0.16 (95% CI -0.14, 0.47)	0.43 (95% CI 0.05, 0.81)
First standing flexion test	0.29 (95% CI -0.08, 0.67)	-0.08 (95% CI -0.19, 0.03)

Cohen's kappa coefficients used to assess interrater reliability between examiners 1 and 2 (κ_1) and examiners 3 and 4 (κ_2) are shown in *Table 3*. Because intraexaminer bias could not be eliminated, data were compared between 2 blinded sets of 2 examiners who were blinded to each other.

Kappa was calculated to determine the level of agreement in using a shim between examiners 1 and 2, (κ_1=0.16) and examiners 3 and 4 (κ_2 =0.43), which correlates to slight and moderate agreement respectively. Additional results did not indicate significant agreement between the 2 examiners of each group in measuring iliac crest symmetry (κ_1=0.19, κ_2=0.37) or in agreement on initial StFT results (κ_1= 0.29, κ_2=-0.08).

Discussion

The results of this study indicate that using shims to level uneven iliac crests alters the outcome of the StFT. These results oppose conclusions made by Kappler. This study challenged Kappler's results by having 2 examiners, rather than 1 examiner, assess each study participant. Both examiners found shims to affect the StFT results, suggesting that leveling the iliac crest with a shim may be necessary prior to performing the StFT. One reason for this finding may be that unleveled iliac crests may also suggest that PSIS levels are uneven. Thus, when performing the StFT, structural asymmetry of the iliac crests may alter the degree of excursion of the PSIS when compared to leveled iliac crests.

Additionally, the results of this study indicate poor to moderate interexaminer reliability of the osteopathic structural exam components. This evidence is consistent with previous literature.[5,9]

Studies also have found that prior training to prepare researchers for a specific study protocol will increase interexaminer reproducibility.[10,11] This principle was carried into the current study in an attempt to maximize interexaminer reproducibility and to control for the difference in experience between examiners. Thus, consensus training was performed, but it was only performed once prior to initiating data collection.

Despite these efforts to control for interexaminer variability, it is apparent that the consensus training did not have a significant effect on minimizing the variability in the structural assessment and StFT results between examiners.

Perhaps having multiple sessions of consensus training (ie, prior to each set of data collection) would have helped to reduce inconsistencies and to improve accuracy in following standardized pro-

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tocols and locating anatomical landmarks. It is important that institutions find methods that optimize students' abilities to consistently follow protocol.

This brings into question the amount of variability in protocols used for the same osteopathic diagnostic procedures. For example, some StFT protocols require participants to position their feet shoulder width apart[12] versus comfortably apart.[7] In support of this, Bogduk[13] describes the need to establish standardized protocols for diagnostic assessments in osteopathic medicine. If there is poor interexaminer reliability within a standardized protocol, then it suggests that there may be wider variability in diagnoses when using different protocols for a particular screening test.

It is also important to point out that there was a stronger agreement between examiners 3 and 4 when compared to examiners 1 and 2 ($\kappa_2 > \kappa_1$) in using a shim and measuring iliac crest symmetry. This may be attributed to the fact that examiners 3 and 4 have a higher level of palpatory experience when compared to examiners 1 and 2. This suggests that level of training may strengthen consistency in the structural evaluation between examiners. However this data may have been skewed due to the fact that examiners 1 and 2 assessed 28 more participants than examiners 3 and 4.

Study Limitations

One limitation of this study was the small sample size. More studies of this nature, using larger groups of participants, would provide for a higher level of confidence in the results.

Another limitation in this study is the varying levels of experience between examiners. The outcome may have been different if all examiners were of the same training level.

One last factor to take into consideration is that the participants were primarily healthy medical students. It would be interesting to assess whether this study would have had a different outcome on patients with pelvic somatic dysfunctions.

Conclusion

This pilot study demonstrated that the use of shims to level uneven iliac crests influences the results of the StFT.

Poor interexaminer reliability remains an issue despite providing consensus training and reviewing the standardized protocol. However, interexaminer reliability may be strengthened by an examiner's level of palpatory experience and should be explored further.

Additional studies should aim to obtain a greater sample size, to use examiners of the same experience level, to have more standardized consensus training sessions, and to create more standardized diagnostic protocol. The authors hope this knowledge might contribute to the development of osteopathic diagnostics and lead to improving clinical practice and osteopathic medical student training.

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32 credits of NMM-specific
AOA Category 1-A CME anticipated

March 19-21, 2017
Pre-Convocation course:
Fascial Distortion Model: Axial Spine
Course director: Todd A. Capistrant, DO, MHA
24 credits of NMM specific
AOA Category 1-A CME anticipated

March 19-21, 2017
Pre-Convocation course:
Brain 1: Palpating and Treating the Brain, Brain Nuclei, White Matter and Spinal Cord
Course director: Bruno J. Chikly, MD, DO (France)
24 credits of NMM specific
AOA Category 1-A CME anticipated

March 22, 2017
Pre-Convocation course:
Cervical Glymphatics
Course director: Frank Willard, PhD
4 credits of NMM specific
AOA Category 1-A CME anticipated



2017 Convocation

The Balance Point:

Bringing the Science and Art of Osteopathic Medicine Together

Natalie Ann Nevins, DO, program chair

www.academyofosteopathy.org

AAOJ Submission Checklist

Manuscript Submission

- ☐ Submission emailed to editoraaoj@gmail.com or mailed on a flash drive or CD to the *AAOJ* 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* scientific editor 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

Graphic Elements

- ☐ Graphics formatted as specified in the "Graphic Elements" section of "*AAOJ* Instructions for Contributors"
- ☐ Graphics as separate graphic files (eg, jpg, tiff, pdf), not included with text
- ☐ Each graphic element cited in numerical order (eg, *Table 1*, *Table 2* and *Figure 1*, *Figure 2*) with corresponding numerical captions provided in the manuscript
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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 scientific editor determines that the manuscript would likely benefit osteopathic medicine more if the *JAOA* agreed to publish it.

Questions? Contact editoraaoj@gmail.com.

Component Societies and Affiliated Organizations Calendar of Upcoming Events

Sept. 16-18, 2016
The Osteopathic Cranial Academy
Orofacial Development: Merging OCF and Functional Dentistry
Course director: Eric J. Dolgin, DO, FCA
Hilton Irvine Hotel in California
22.5 credits of AOA Category 1-A CME anticipated
Learn more and register at www.cranialacademy.org.

Sept. 17, 2016
Osteopathy's Promise to Children
OMT for Systemic Disorders and Physiological Functions: Cardiopulmonary and Immune 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 www.the-promise.org/cme.

Sept. 17, 2016
FIMM (International Federation
for Manual/Musculoskeletal Medicine)
and the Bulgarian Society of Manual Medicine (BSMM)
New Evidence in Science Related to Manual and Musculoskeletal Medicine
Varna, Bulgaria
Learn more and register at fimm-online.com.

Sept. 18-19, 2016
FIMM (International Federation
for Manual/Musculoskeletal Medicine)
and the Bulgarian Society of Manual Medicine (BSMM)
2nd International Instructors Course
Medical faculty, Varna, Bulgaria
Learn more and register at fimm-online.com.

Sept. 18-19, 2016
FIMM (International Federation
for Manual/Musculoskeletal Medicine)
and the Bulgarian Society of Manual Medicine (BSMM)
Dry Needling and Manual Medicine for Myofascial Pain
Medical faculty, Varna, Bulgaria
Learn more and register at fimm-online.com.

Sept. 24-25, 2016
New York Institute of Technology
College of Osteopathic Medicine
OMT for the Visceral System
Course directors: Johannes Mayer, MD, DOM (Germany),
and Simeon John Hain, DO
Old Westbury, New York
14.25 credits of AOA Category 1-A CME
Learn more and register at NYIT.edu.

Sept. 30–Oct. 4, 2016
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.

Oct. 7-9, 2016
Rocky Mountain Academy of Osteopathy
Querying the Body Using PRM and Long Fascial Relationships
Course director: R. Paul Lee, DO, FAAO, FCA
Rocky Vista University College of Osteopathic Medicine
Parker, Colorado
24 credits of AOA Category 1-A CME anticipated
Learn more and register at
rockymountainaao.wix.com/rockymtnaao.

Oct. 7-9, 2016
Sutherland Cranial Teaching Foundation
The Eye
Course director: Michael P. Burruano, DO, FCA
University of New England College of Osteopathic Medicine
Biddeford, Maine
Learn more and register at www.sctf.com.

Oct. 8, 2016
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 www.the-promise.org/cme.

Oct. 21-24, 2016
Michigan State University College of Osteopathic Medicine
Exercise Prescription as a Complement to Manual Medicine
Course director: Mark Bookhout, PT
Course faculty: Lisa Chase, PT
East Lansing, Michigan
26 credits of AOA Category 1-A CME anticipated
Learn more and register at com.msu.edu.

Nov. 4-6, 2016
Osteopathy's Promise to Children
A Sequential Approach to Pediatric Osteopathy
Course director: Mary Anne Morelli Haskell, DO, FACOP
Osteopathic Center, San Diego
24 credits of AOA Category 1-A CME anticipated
Learn more and register at www.the-promise.org.

Visit www.academyofosteopathy.org for additional listings.