



# **Suggested Guidelines for an Osteopathic Neuromusculoskeletal Medicine (ONMM) Residency Curriculum**

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This document has been reviewed and approved by the Resident American Academy of Osteopathy (RAAO) Executive Committee and the American Academy of Osteopathy (AAO) Post-Graduate Training Committee. It is intended as a guide that Osteopathic Neuromusculoskeletal Medicine (ONMM) programs may choose to apply to their individual needs and resources to help achieve Accreditation Council for Graduate Medical Education (ACGME) milestones to residency training.

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## 1. Background

Since 2014, the Accreditation Council for Graduate Medical Education (ACGME), the American Osteopathic Association (AOA), and the American Association of Colleges of Osteopathic Medicine (AACOM) have moved towards a unified accreditation system for Graduate Medical Education (GME) with merging of programs completed on July 1, 2020.<sup>1,2</sup> Care has been taken in this transition to preserve unique osteopathic residency programs and the tradition and practice of osteopathic medicine. The Osteopathic Neuromusculoskeletal Medicine (ONMM) Residency is defined as follows by the American Association of Colleges of Osteopathic Medicine:

*“A primary residency disciplined in the neuromusculoskeletal system, its comprehensive relationship to other organ systems, and its dynamic function of locomotion. The principle focus of the discipline is osteopathic and patient-centered; specifically, it embodies structural and functional interrelation, body unity, self-healing, and self-maintenance.”<sup>3</sup>*

ACGME milestones specific to ONMM residencies have been developed and implemented to help review resident performance through the course of residency based on a developmental framework of progressively advanced knowledge, attitudes, and skills.<sup>4</sup> There are fifteen milestones that encompass six core competencies (Table 1). Specifically, this includes patient care, medical knowledge, system-based practice, practice-based learning and improvement, professionalism, and interpersonal and communication skills.

The proposed guidelines outlined in this document are developed to guide the achievement of these milestones and that programs may choose to apply to individual needs and resources. Given the recent merger into a single accreditation system, the development of guidelines to assist in the implementation of ONMM residency curriculum would be beneficial in defining the unique scope of practice of the evolving field of ONMM within the context of other ACGME medical specialties.

## 2. Needs Assessment

Suggested curriculum guidelines were developed on the basis of a needs assessment of an ONMM program in Texas. Proposed goals and objectives are based on qualitative analysis of the topics covered during ONMM didactics from the academic year July 2018 to September 2020, qualitative analysis of curriculum topics by ACGME milestones, and an open and closed-question survey of perceived resident and faculty needs for an ONMM residency curriculum.

Further details of this needs assessment are available in the study protocol submitted under CARRIE (Centralized Algorithms for Research Rules on IRB Exemption) through Medical City Fort Worth in Fort Worth, Texas; the project was determined to be exempt from Institutional Review Board oversight (reference # 2020-753) on October 1, 2020. Suggested guidelines have been reviewed for applicability across ACGME approved residency programs by the Resident American Academy of Osteopathy (RAAO) Executive Committee and the AAO Post-Graduate Training Committee.

### 3. Goals and Objectives

The overall goal of the proposed ONMM Residency Curriculum is to support residents in achieving the six core competencies for ONMM practicing physicians as outlined in the ACGME ONMM Milestone Project (Table 1 and 2).<sup>4</sup>

<b>Table 1. ACGME ONMM Milestones</b>
<b>Patient Care 1:</b> Osteopathic Manipulative Techniques (OMT) (Direct and Indirect)
<b>Patient Care 2:</b> Trigger Point Injection, Joint Aspiration, and Injection
<b>Patient Care 3:</b> Patient Management
<b>Patient Care 4:</b> Providing and Requesting Consultation
<b>Medical Knowledge 1:</b> Possess Clinical Knowledge (Anatomy, Physiology, Pharmacology, Assessment, and Treatment)
<b>Medical Knowledge 2:</b> Manifestation of Systemic Disease Through Neuromusculoskeletal System and Related Visceral and Somatic Reflex Patterns
<b>Systems-Based Practice 1:</b> Patient Safety and Advocacy
<b>Systems-Based Practice 2:</b> Practice Management and Economics
<b>Practice-Based Learning and Improvement 1:</b> Learning and Feedback
<b>Practice-Based Learning and Improvement 2:</b> Literature Review and Research
<b>Professionalism 1:</b> Patient and Community Interactions
<b>Professionalism 2:</b> Professional Conduct and Accountability
<b>Professionalism 3:</b> Maintains Emotional, Physical, and Mental Health; and Pursues Continual Personal and Professional Growth
<b>Interpersonal and Communication Skills 1:</b> Develops Meaningful, Therapeutic Relationships with Patients and Families
<b>Interpersonal and Communication Skills 2:</b> Interprofessional Communications

<b>Table 2. ONMM Residency Milestone Levels</b>
<b>Level 1:</b> Resident demonstrates milestones expected of an incoming resident
<b>Level 2:</b> Resident is advancing and demonstrates additional milestones, but not yet performing at mid-residency level
<b>Level 3:</b> Resident continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for residency
<b>Level 4:</b> Resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designated as the graduation target
<b>Level 5:</b> The resident has advanced beyond performance targets set for residency and is demonstrating “aspirational” goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.

Objectives described below are intended to be met by the *end of residency (Level 4)*. Objectives may be adjusted by appropriate level by post-graduate year according to the residency milestone levels described in table 2 and previously published.<sup>4</sup> Each objective is labeled as cognitive, affective, or psychomotor.<sup>5</sup>

### **3.1 Competency: Patient Care**

#### **3.1.1 Patient Care 1: Osteopathic Manipulative Techniques (OMT) (Direct and Indirect)**

Objective 1 (*psychomotor*): By the end of residency, learners will independently be able to apply and teach others how to use direct OMT techniques such as (Table 3):<sup>6,7</sup>

- Muscle Energy
- High-Velocity/Low Amplitude
- Articular technique and springing

Objective 2 (*psychomotor*): By the end of residency, learners will independently be able to apply and teach others how to use indirect OMT techniques such as (Table 3):

- Counterstrain techniques
- Facilitated Positional Release
- Exaggeration technique
- Functional method

Objective 3 (*psychomotor*): By the end of residency, learners will independently be able to apply and teach others how to utilize a variety of OMT techniques that may include techniques recognized by the American Board of Osteopathic Neuromusculoskeletal Medicine (AOBNMM), Educational Council on Osteopathic Principles (ECOP), AACOM, and other treatment modalities that may not yet be recognized (Table 3).<sup>3,7-11</sup>

<b>Table 3: OMM Techniques</b>					
<b>OMM Technique</b>	<b>Main OMM techniques tested on AOBNMM practical exam</b>	<b>Additional OMM techniques that may be tested on AOBNMM practical exam<sup>a</sup></b>	<b>Main OMM techniques included in osteopathic medical school curriculum established by ECOP</b>	<b>OMM techniques recognized in AACOM's Glossary of Osteopathic Terminology<sup>a</sup></b>	<b>OMM techniques not yet recognized<sup>a,b</sup></b>
<b>Muscle Energy</b>					
<b>High-Velocity/Low Amplitude</b>					
<b>Counterstrain</b>					
<b>Osteopathic Cranial Manipulative Medicine</b>					
<b>Myofascial Release</b>					
<b>Facilitated Positional Release</b>					
<b>Soft Tissue</b>					
<b>Articulatory Technique</b>					
<b>Chapman's Reflexes</b>					
<b>Respiratory Cooperation</b>					
<b>Balanced Ligamentous Tension</b>					
<b>Ligamentous Articular Strain</b>					
<b>Lymphatic Treatment</b>					
<b>Visceral Techniques</b>					
<b>Exaggeration Technique</b>					
<b>Facilitated Oscillatory</b>					

<b>Release Technique</b>					
<b>Fascial Unwinding</b>					
<b>Functional Method</b>					
<b>Inhibitory Pressure Technique</b>					
<b>Integrated Inhibition of Neuromuscular Structures</b>					
<b>Still Technique</b>					
<b>Biodynamics</b>					
<b>Fascial Distortion Model</b>					
<b>Viscerosomatic Release</b>					

<sup>a</sup>OMM techniques including, but not limited to the modalities listed.

<sup>b</sup>OMM techniques not yet recognized by AACOM.

Objective 4 (*psychomotor and cognitive*): By the end of residency, learners will successfully complete a 40-hour basic course in Osteopathic Cranial Manipulative Medicine.

Objective 5 (*psychomotor*): By the end of residency, learners will be able to employ appropriate biomechanics in the application of OMT to ensure their own physical safety and prevent injury.

### **3.1.2 Patient Care 2: Trigger Point Injection, Joint Aspiration, and Injection**

Objective 1 (*psychomotor*): By the end of residency, learners will safely and successfully be able to perform trigger point injections.

Objective 2 (*psychomotor and cognitive*): By the end of residency, learners will safely, successfully, and appropriately be able to perform a joint aspiration (such as for the knee or elbow), including ordering and interpreting labs.

Objective 3 (*psychomotor*): By the end of residency, learners will safely and successfully be able to perform musculoskeletal injection of the major joints which may include, but is not limited to:

- Knee injection
- Shoulder injection
- Hip injection

- If able, it is encouraged that these will also be able to be done under ultrasound guidance

Objective 4 (*psychomotor and cognitive*): By the end of residency, learners will gain a foundational knowledge of the indications for and how to perform a variety of specialized injection techniques such as the following, including indications for when to refer to another healthcare provider:

- Platelet rich plasma and prolotherapy injections
- Neural therapy
- Botox injections
- Hydro-dissection

### **3.1.3 Patient Care 3: Patient Management**

Objective 1 (*psychomotor*): By the end of residency, learners will be able to perform an accurate and complete physical examination and diagnose somatic dysfunction in complex patients. The parts of the physical examination should include:

- An osteopathic structural examination
- Upper and lower extremity orthopedic examination
- Upper and lower extremity neurological examination
- Identification of normal and abnormal gait patterns

Objective 2 (*cognitive*): By the end of residency, learners should be able to incorporate physical examination findings to determine appropriate next steps in narrowing their differential diagnosis including appropriate labs, imaging, and other testing.

Objective 3 (*cognitive*): By the end of residency, learners should be able to develop an accurate assessment and comprehensive plan that incorporates osteopathic principles in patient care.

Objective 4 (*cognitive*): By the end of residency, learners should be able to employ appropriate teaching methods to mentor medical students and other learners in the application of osteopathic principles in patient care.

### **3.1.4 Patient Care 4: Providing and Requesting Consultation**

Objective 1 (*psychomotor and cognitive*): By the end of residency, learners will have a broad knowledge of how to treat special populations using an osteopathic approach to patient care which may include, but are not limited to:

- Athletes (Sports Medicine)
- Performers (Performing Arts Medicine)
- Maternal and Child Health (Pediatric OMT and OMT in Pregnancy)
- Geriatrics

Objective 2 (*psychomotor and cognitive*): By the end of residency, learners will be able to write prescription for and request appropriate consultation for:

- Physical Therapy
- Occupational Therapy
- Orthotics

Objective 3 (*cognitive*): By the end of residency, learners will be able to refer patients to appropriate consultation and integrate consultant recommendations into their assessment and plan which may include, but are not limited to:<sup>12</sup>

- Neurosurgery
- Neurology
- Physical Medicine and Rehabilitation
- Occupational Medicine
- Orthopedic Surgery
- Sports Medicine
- Rheumatology
- Radiology
- Pain Management
- Podiatry
- Dentistry
- Functional medicine

Objective 4 (*psychomotor and cognitive*): By the end of residency, learners will apply additional tools or appropriately refer to consultation for a variety of services which may include, but are not limited to:

- Musculoskeletal ultrasound
- Splinting and casting
- Leg length inequality, including radiologic workup and lift therapy
- Acupuncture and dry needling
- Diet and exercise programming
- Yoga

### **3.2 Competency: Medical Knowledge**

#### **3.2.1 Medical Knowledge 1: Possesses Clinical Knowledge (Anatomy, Physiology, Pharmacology, Assessment, and Treatment)**

Objective 1 (*cognitive*): By the end of residency, learners will have a comprehensive understanding of gross anatomy and embryological development, including but not limited to:

- Head and neck
- Back and upper limb
- Lower (deep) back and lower limb
- Thorax and abdomen
- Pelvis

Objective 2 (*cognitive*): By the end of residency, learners will be able to integrate their knowledge of anatomy and physiology to understand the mechanisms of common injuries and problems such as:

- Head and neck injuries, including concussion
- Common upper and lower extremity injuries
- Low back pain
- Biomechanical effects of orthopedic and general surgery

Objective 3 (*cognitive*): By the end of residency, learners will understand the appropriate indications, contraindications, and mechanism of action for:

- Opioid medications, including recognition and management of side effects, tolerance, withdrawal, and signs of addiction.<sup>12,13</sup>
- Non-opioid pain medications, including non-opioid analgesics (nonsteroidal anti-inflammatory medications, acetaminophen), anti-depressants (SNRIs, tricyclic anti-depressants), anti-epileptic drugs (gabapentin and pregabalin), topical agents, botulinum toxin, and muscle relaxants.<sup>14</sup>
- Disease modifying anti-rheumatic drugs and glucocorticoids
- Hormone replacement therapy
- Vitamins and supplements

Objective 4 (*cognitive*): By the end of residency, learners will be able to integrate their knowledge of anatomy, physiology, and pharmacology using the five Osteopathic models to create a comprehensive assessment and treatment plan:<sup>15</sup>

- Biomechanical
- Respiratory-Circulatory
- Metabolic-Energetic
- Neurological
- Behavioral

Objective 5 (*cognitive*): By the end of residency, learners will gain a better understanding of the history and philosophy of osteopathic medicine by reading at least two books by Andrew Taylor Still and/or other figures significant to the development of osteopathy.

### **3.2.2 Medical Knowledge 2: Manifestation of Systemic Disease through Neuromusculoskeletal System and Related Visceral and Somatic Reflex Patterns**

Objective 1 (*psychomotor and cognitive*): By the end of residency, the learner will be able to identify and treat viscerosomatic and Chapman's reflexes.

Objective 2 (*cognitive and affective*): By the end of residency, the learner will be able to apply the Tenets of Osteopathic Medicine in the development of a long-term patient treatment plan that emphasizes:

- “1. *The body is a unit; the person is a unit of body, mind, and spirit.*
2. *The body is capable of self-regulation, self-healing, and health maintenance.*
3. *Structure and function are reciprocally interrelated.*
4. *Rational treatment is based upon an understanding of the basic principles of body unity, self-regulation, and the interrelationship of structure and function.*”<sup>15,16</sup>

### **3.3 Competency: Systems-Based Practice**

#### **3.3.1 Systems-Based Practice 1: Patient Safety and Advocacy**

Objective 1 (*cognitive*): By the end of residency, the learner will complete at least one quality improvement project during residency. This may consist of one PDSA (Plan-Do-Study-Act) cycle of a larger quality improvement project.<sup>17</sup>

Objective 2 (*cognitive*): By the end of residency, learners will be able to apply models of health promotion and disease prevention such as the Social-Ecological Model and Transtheoretical Model (stages of change and motivational interviewing) to promote patient health.<sup>18</sup>

#### **3.3.2 Systems-Based Practice 2: Practice Management and Economics**

Objective 1 (*cognitive*): By the end of residency, the learner will be able to manage personal finances and business-related finances in a cost-effective manner.

Objective 2 (*cognitive*): By the end of residency, the learner will be able to document appropriate billing and coding to their patient encounters according to level of complexity and modifiers for procedures such as OMT and injections.

Objective 3 (*cognitive*): By the end of residency, the learner will be able to coordinate cost effective care within the health care system.

Objective 4 (*cognitive*): By the end of residency, the learner will be able to evaluate and select an ONMM practice option that meets their long-term career goals.

### **3.4 Competency: Practice-Based Learning and Improvement**

#### **3.4.1 Practice-Based Learning and Improvement 1: Learning and Feedback**

Objective 1 (*cognitive and affective*): By the end of residency, the learner will effectively set goals and gain feedback from faculty, rotation preceptors, and colleagues to monitor and improve their progress as a medical professional.

Objective 2 (*cognitive*): By the end of residency, the learner will effectively provide feedback using methods such as the one-minute preceptor model.<sup>19</sup>

Objective 3 (*cognitive and affective*): By the end of residency, the learner will incorporate formative feedback from faculty, co-residents, patients, and colleagues throughout residency into their learning plan to identify areas of strength and target areas of improvement.

Objective 4 (*cognitive and affective*): By the end of residency, the learner will incorporate summative feedback from end-of-rotation evaluations, in-training exam scores, and ONMM Residency Milestone Evaluation into their learning plan to identify areas of strength and target areas of improvement.<sup>4,12</sup>

### **3.4.2 Practice-Based Learning and Improvement 2: Literature Review and Research**

Objective 1 (*cognitive*): Throughout residency, the learner will advance their knowledge of evidence-based care through participation in journal club.<sup>20,21</sup>

Objective 2 (*cognitive*): By the end of residency, the learner will be able to apply the following skills to a research project in the field of osteopathic neuromusculoskeletal medicine:

- Formulate a research question
- Conduct a literature review
- Design a research study
- Apply to an Institutional Review Board
- Conduct informed consent
- Conduct data collection and entry
- Conduct statistical analysis
- Synthesize findings and explain their relevance to the field of osteopathic neuromusculoskeletal medicine

Objective 3 (*cognitive*): By the end of residency, the learner will know how to write scientific literature by writing a grant application, research manuscript, research poster, and/or oral presentation for a research project in the field of osteopathic neuromusculoskeletal medicine.

## **3.5 Competency: Professionalism**

### **3.5.1 Professionalism 1: Patient and Community Interactions**

Objective 1 (*cognitive*): During residency, the learner will convey the purpose and utility of incorporating Osteopathic Manipulative Treatment into medical care to their patients and colleagues.

Objective 2 (*cognitive*): During residency, the learner will apply models of health behavior to their clinical practice such as the Transtheoretical Model (stages of

change and motivational interviewing) to promote health and manage difficult patient encounters.<sup>18</sup>

Objective 3 (*psychomotor*): During residency, the learner will participate in community volunteer and/or moonlighting opportunities to apply OMM skills such as soft tissue clinic and sideline sports game coverage as determined and approved by their individual residency program.

### **3.5.2 Professionalism 2: Professional Conduct and Accountability**

Objective 1 (*cognitive*): During residency, the learner will participate in opportunities to review standards of patient care such as through morbidity and mortality case review, chart review, quality improvement, and/or grand rounds.

Objective 2 (*cognitive*): During residency, the learner will gain a better understanding of personal leadership and communication styles through assessments such as, but not limited to StrengthsFinder and the Myers-Briggs Type Indicator.<sup>22,23</sup>

Objective 3 (*affective*): During residency, the learner will participate in longitudinal professionalism experiences which may include, but are not limited to:

- Structured didactics curriculum<sup>24</sup>
- Faculty mentorship
- Leadership roles at the local, state and/or national level

### **3.5.3 Professionalism 3: Maintains emotional, physical, and mental health; and pursues continual personal and professional growth**

Objective 1 (*affective*): During residency, the learner will participate in lectures on communication and stress management.

Objective 2 (*affective*): During residency, the learner will exhibit self-awareness and self-management of their emotional, physical, and emotional health.

Objective 3 (*affective*): During residency, the learner will have opportunities to engage in wellness activities both within and outside of residency.

Objective 4 (*affective*): During residency, the learner will pursue areas of continual personal and professional growth both within and outside of residency to promote their wellbeing.

## **3.6 Competency: Interpersonal and Communication Skills**

### **3.6.1 Interpersonal and Communication Skills 1: Develops Meaningful, Therapeutic Relationships with Patients and Families**

Objective 1 (*cognitive and affective*): During residency, the learner will participate in lectures on conflict management.<sup>25</sup>

Objective 2 (*cognitive*): During residency, the learner will participate in journal club to develop skills in evidence-based practice that integrate the triad of best clinical knowledge, individual clinical expertise, and patient values and expectations.<sup>20,21</sup>

Objective 3 (*psychomotor and affective*): During residency, the learner will participate in OMM continuity clinic to foster continuity of care and the development of meaningful patient relationships.

### **3.6.2 Interpersonal and Communication Skills 2: Interprofessional Communications**

Objective 1 (*psychomotor and cognitive*): During residency, learners will participate in local and regional conferences and trainings related to the field of Osteopathic Neuromusculoskeletal Medicine on a yearly basis.

Objective 2 (*psychomotor and cognitive*): During residency, the learner will participate in national conferences and trainings related to the field of Osteopathic Neuromusculoskeletal Medicine such as the American Academy of Osteopathy Convocation on a yearly basis, and a forty-hour introductory cranial course at least once during the course of residency.

Objective 3 (*cognitive and affective*): During residency, the learner may participate in personality type and emotional intelligence inventories to develop better understanding of personal strengths and application to interactions with others on healthcare interprofessional teams.<sup>22,26</sup>

Please see section 3.1.4 Patient Care 4: Providing and Requesting Consultation for additional objectives pertinent to interprofessional communications.

#### 4. Educational Strategies Based on Goals and Objectives

Table 4 outlines educational methods and evaluation strategies that may be applied to meet curriculum objectives. Programs may choose to apply which methods and strategies based on the items listed, or choose other strategies that best suit program needs.

**Table 4. ONMM Competency Based Objectives, Educational Methods, and Learner Evaluation**

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<b>Patient Care 1: Osteopathic Manipulative Techniques (OMT) (Direct and Indirect)</b>		
<p><b>Objective 1: By the end of residency, learners will independently be able to apply and teach others how to use direct OMT techniques such as (Table 3):<sup>6,7</sup></b></p> <ul style="list-style-type: none"> <li>• Muscle Energy</li> <li>• High-Velocity/Low Amplitude</li> <li>• Articular technique and springing</li> </ul>	<ul style="list-style-type: none"> <li>• Hands-on laboratory didactics</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Direct observation and feedback by faculty and co-residents in OMM didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> <li>• ONMM In-Training Exam</li> </ul>
<p><b>Objective 2: By the end of residency, learners will independently be able to apply and teach others how to use indirect OMT techniques such as (Table 3):</b></p> <ul style="list-style-type: none"> <li>• Counterstrain Techniques</li> <li>• Facilitated Positional Release</li> <li>• Exaggeration technique</li> <li>• Functional method</li> </ul>	<ul style="list-style-type: none"> <li>• Hands-on laboratory didactics</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Direct observation and feedback by faculty and co-residents in OMM didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> <li>• ONMM In-Training Exam</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<p><b>Objective 3: By the end of residency, learners will independently be able to apply and teach others how to utilize a variety of OMT techniques that may include techniques recognized by the American Board of Osteopathic Neuromusculoskeletal Medicine (AOBNMM), Educational Council on Osteopathic Principles (ECOP), AACOM, and other treatment modalities that may not yet be recognized (Table 3).<sup>3,7-11</sup></b></p>	<ul style="list-style-type: none"> <li>• Hands-on laboratory didactics</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Direct observation and feedback by faculty and co-residents in OMM didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> <li>• ONMM In-Training Exam</li> </ul>
<p><b>Objective 4: By the end of residency, learners will successfully complete a 40-hour basic course in Osteopathic Cranial Manipulative Medicine.</b></p>	<ul style="list-style-type: none"> <li>• Completion of a 40-hour basic course in Osteopathic Cranial Manipulative Medicine from the Osteopathic Cranial Academy, Sutherland Cranial Teaching Foundation or equivalent</li> </ul>	<ul style="list-style-type: none"> <li>• Certificate of completion of a 40-hour basic course in Osteopathic Cranial Manipulative Medicine</li> </ul>
<p><b>Objective 5: By the end of residency, learners will be able to employ appropriate biomechanics in the application of OMT to ensure their own physical safety and prevent injury.</b></p>	<ul style="list-style-type: none"> <li>• Hands-on laboratory didactics</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Direct observation and feedback by faculty and co-residents in didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and on rotation</li> <li>• ONMM In-Training Exam</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<b>Patient Care 2: Trigger Point Injection, Joint Aspiration, and Injection</b>		
<b>Objective 1: By the end of residency, learners will safely and successfully be able to perform trigger point injections</b>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Simulation laboratory on mannequins</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> <li>• Conferences and workshops</li> </ul>	<ul style="list-style-type: none"> <li>• Direct observation and feedback by faculty and co-residents in simulation laboratory</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>
<b>Objective 2: By the end of residency, learners will safely, successfully, and appropriately be able to perform a joint aspiration (such as for the knee or elbow), including ordering and interpreting labs.</b>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Simulation laboratory on mannequins</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> <li>• Conferences and workshops</li> </ul>	<ul style="list-style-type: none"> <li>• Direct observation and feedback by faculty and co-residents in simulation laboratory</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>
<b>Objective 3: By the end of residency, learners will safely and successfully be able to perform musculoskeletal injection of the major joints including, but not limited to:</b> <ul style="list-style-type: none"> <li>• Knee injection</li> <li>• Shoulder injection</li> <li>• Hip injection</li> <li>• If able, it is encouraged that these will also be able to be done under ultrasound guidance</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Ultrasound laboratory didactics</li> <li>• Simulation laboratory on mannequins</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> <li>• Conferences and workshops</li> </ul>	<ul style="list-style-type: none"> <li>• Direct observation and feedback by faculty and co-residents in ultrasound and simulation laboratory</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<p><b>Objective 4: By the end of residency, learners will gain a foundational knowledge in the indications for and how to perform a variety of specialized injection techniques such as the following, including indications for when to refer to another healthcare provider:</b></p> <ul style="list-style-type: none"> <li>• Platelet rich plasma and prolotherapy injections</li> <li>• Neural therapy</li> <li>• Botox injections</li> <li>• Hydro-dissection</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Demonstration and case presentation</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> <li>• Conferences and workshops</li> </ul>	<ul style="list-style-type: none"> <li>• Didactics attendance</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>

<b>Patient Care 3: Patient Management</b>		
<p><b>Objective 1: By the end of residency, learners will be able to perform an accurate and complete physical examination and diagnose somatic dysfunction in complex patients. The parts of the physical examination should include:</b></p> <ul style="list-style-type: none"> <li>• An osteopathic structural examination</li> <li>• Upper and lower extremity orthopedic examination</li> <li>• Upper and lower extremity neurological examination</li> <li>• Identification of normal and abnormal gait patterns</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Case presentation</li> <li>• Hands-on laboratory didactics</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Direct observation and feedback by faculty and co-residents in OMM didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> <li>• ONMM In-Training Exam</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<p><b>Objective 2: By the end of residency, learners should be able to incorporate physical examination findings to determine appropriate next steps in narrowing their differential diagnosis including appropriate labs, imaging, and other testing</b></p>	<ul style="list-style-type: none"> <li>• Faculty and resident led lectures on radiology and ordering of appropriate diagnostic testing</li> <li>• Case presentation and board review (oral cases)</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Didactics attendance</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> <li>• ONMM In-Training Exam</li> </ul>
<p><b>Objective 3: By the end of residency, learners should be able to develop an accurate assessment and comprehensive plan that incorporates osteopathic principles in patient care</b></p>	<ul style="list-style-type: none"> <li>• Case presentation and board review (oral cases)</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Didactics attendance</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> <li>• ONMM In-Training Exam</li> </ul>
<p><b>Objective 4: By the end of residency, learners should be able to employ appropriate teaching methods to mentor medical students and other learners in the application of osteopathic principles in patient care.</b></p>	<ul style="list-style-type: none"> <li>• Resident as Teacher Curriculum<sup>27</sup></li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• OMM didactics attendance</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<b>Patient Care 4: Providing and Requesting Consultation</b>		
<p><b>Objective 1: By the end of residency, learners will have a broad knowledge of how to treat special populations using an osteopathic approach to patient care which may include, but not limited to:</b></p> <ul style="list-style-type: none"> <li>• Athletes (Sports Medicine)</li> <li>• Performers (Performing Arts Medicine)</li> <li>• Maternal and Child Health (Pediatric OMT and OMT in Pregnancy)</li> <li>• Geriatrics</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Case Presentation</li> <li>• Hands-on laboratory didactics</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Direct observation and feedback by faculty and co-residents in OMM didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>
<p><b>Objective 2: By the end of residency, learners will be able to write prescription for and request appropriate consultation for:</b></p> <ul style="list-style-type: none"> <li>• Physical Therapy</li> <li>• Occupational Therapy</li> <li>• Orthotics</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Didactics attendance</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<p><b>Objective 3: By the end of residency, learners will be able to refer patients to appropriate consultation and integrate consultant recommendations into their assessment and plan which may include, but are not limited to:</b><sup>12</sup></p> <ul style="list-style-type: none"> <li>• Neurosurgery</li> <li>• Neurology</li> <li>• Physical Medicine and Rehabilitation</li> <li>• Occupational Medicine</li> <li>• Orthopedic Surgery</li> <li>• Sports Medicine</li> <li>• Rheumatology</li> <li>• Radiology</li> <li>• Pain Management</li> <li>• Podiatry</li> <li>• Dentistry</li> <li>• Functional medicine</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Case Presentation</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Didactics attendance</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>
<p><b>Objective 4: By the end of residency, learners may apply additional tools or appropriately refer for consultation for:</b></p> <ul style="list-style-type: none"> <li>• Musculoskeletal ultrasound</li> <li>• Splinting and casting</li> <li>• Leg length inequality, including radiologic workup and lift therapy</li> <li>• Acupuncture and dry needling</li> <li>• Diet and exercise programming</li> <li>• Yoga</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Hands-on laboratory didactics</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Direct observation and feedback by faculty and co-residents in OMM didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<b>Medical Knowledge 1: Possess Clinical Knowledge (Anatomy, Physiology, Pharmacology, Assessment, and Treatment)</b>		
<p><b>Objective 1: By the end of residency, learners will have a comprehensive understanding of gross anatomy and embryological development including, but not limited to:</b></p> <ul style="list-style-type: none"> <li>• Head and neck</li> <li>• Back and upper limb</li> <li>• Lower (deep) back and lower limb</li> <li>• Thorax and abdomen</li> <li>• Pelvis</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture on functional anatomy and embryology by faculty and co-residents</li> <li>• Gross anatomy lab</li> <li>• Hands-on laboratory didactics</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance in didactics and anatomy lab</li> <li>• Presentation of a lecture on functional anatomy to co-residents</li> <li>• Direct observation and feedback by faculty and co-residents in OMM didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<p><b>Objective 3: By the end of residency, learners will understand the appropriate indications, contraindications, and mechanism of action for:</b></p> <ul style="list-style-type: none"> <li>• Opioid medications, including recognition and management of side effects, tolerance, withdrawal, and signs of addiction<sup>12,13</sup></li> <li>• Non-opioid pain medications, including non-opioid analgesics (non-steroidal anti-inflammatory medications, acetaminophen, anti-depressants (SNRIs, tricyclic anti-depressants), anti-epileptic drugs (gabapentin and pregabalin), topical agents, botulinum toxin, and muscle relaxants<sup>14</sup></li> <li>• Disease modifying anti-rheumatic drugs and glucocorticoids</li> <li>• Hormone replacement therapy</li> <li>• Vitamins and supplements</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Case presentation</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> <li>• ONMM In-Training Exam</li> </ul>
<p><b>Objective 5 (cognitive): By the end of residency, learners will gain a better understanding of the history and philosophy of osteopathic medicine by reading at least two books by Andrew Taylor Still and/or other figures significant to the development of osteopathy.</b></p>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Discussion of reading material in small groups</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• ONMM In-Training Exam</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<p><b>Objective 4: By the end of residency, learners will be able to integrate their knowledge of anatomy, physiology, and pharmacology using the five Osteopathic models to create a comprehensive assessment and treatment plan:<sup>15</sup></b></p> <ul style="list-style-type: none"> <li>• Biomechanical</li> <li>• Respiratory-Circulatory</li> <li>• Metabolic-Energetic</li> <li>• Neurological</li> <li>• Behavioral</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Case presentation</li> <li>• Hands-on laboratory didactics</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> <li>• ONMM In-Training Exam</li> </ul>

**Medical Knowledge 2: Manifestation of Systemic Disease Through Neuromusculoskeletal System and Related Visceral and Somatic Reflex Patterns**

<p><b>Objective 1: By the end of residency, the learner will be able to identify and treat viscerosomatic and Chapman's reflexes.</b></p>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Case presentation</li> <li>• Hands-on laboratory didactics</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> <li>• ONMM In-Training Exam</li> </ul>
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ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<p><b>Objective 2: By the end of residency, the learner will be able to apply the Tenets of Osteopathic Medicine in the development of a long-term patient treatment plan that emphasizes:</b></p> <p><i>“1. The body is a unit; the person is a unit of body, mind, and spirit. 2. The body is capable of self-regulation, self-healing, and health maintenance. 3. Structure and function are reciprocally interrelated. 4. Rational treatment is based upon an understanding of the basic principles of body unity, self-regulation, and the interrelationship of structure and function.”<sup>15,16</sup></i></p>	<ul style="list-style-type: none"> <li>• Lecture on OMM history and philosophy</li> <li>• Case presentation</li> <li>• Hands-on laboratory didactics</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> <li>• ONMM In-Training Exam</li> </ul>
<b>Systems-Based Practice 1: Patient Safety and Advocacy</b>		
<p><b>Objective 1: By the end of residency, the learner will complete at least one quality improvement project during residency. This may consist of one PDSA (Plan-Do-Study-Act) cycle of a larger quality improvement project.<sup>17</sup></b></p>	<ul style="list-style-type: none"> <li>• Lecture on quality improvement processes</li> <li>• Participation in quality improvement project</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of one quality improvement project under faculty supervision by the end of residency</li> </ul>
<p><b>Objective 2: By the end of residency, learners will be able to apply models of health promotion and disease prevention such as the Social-Ecological Model and Transtheoretical Model (stages of change and motivational interviewing) to promote patient health.<sup>18</sup></b></p>	<ul style="list-style-type: none"> <li>• Lecture on motivational interviewing</li> <li>• Practice scenarios between residents or with standardized patient experiences</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<b>Systems-Based Practice 2: Practice Management and Economics</b>		
<b>Objective 1: By the end of residency, the learner will be able to manage personal and business-related finances in a cost-effective manner.</b>	<ul style="list-style-type: none"> <li>• Lecture on practice management and finances</li> <li>• Application of knowledge in personal and business-related matters</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Self-reflection and seeking out additional guidance from faculty and other mentors</li> </ul>
<b>Objective 2: By the end of residency, the learner will be able to document appropriate billing and coding to their patient encounters according to level of complexity and modifiers for procedures such as OMT and injections.</b>	<ul style="list-style-type: none"> <li>• Lecture on practice management and finances</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>
<b>Objective 3: By the end of residency, the learner will be able to coordinate cost effective care within the health care system.</b>	<ul style="list-style-type: none"> <li>• Lecture on practice management and finances</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>
<b>Objective 4: By the end of residency, the learner will be able to understand and choose between different ONMM practice options after residency</b>	<ul style="list-style-type: none"> <li>• Lecture on practice management and finances</li> <li>• Faculty-resident mentorship program<sup>28</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Participation in faculty-resident mentorship program</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<b>Practice-Based Learning and Improvement 1: Learning and Feedback</b>		
<b>Objective 1: By the end of residency, the learner will understand how to set goals and gain feedback.</b>	<ul style="list-style-type: none"> <li>• Lecture on practice management</li> <li>• Bi-annual review of ONMM Residency Milestone evaluation with program director</li> <li>• Development of an annual individualized learning plan in collaboration with program director or faculty mentor</li> <li>• Faculty-resident mentorship program<sup>28</sup></li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Self-reflection and seeking out additional guidance from faculty and other mentors</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• Participation in faculty-resident mentorship program</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>
<b>Objective 2: By the end of residency, the learner will practice providing feedback using methods such as the one-minute preceptor model.<sup>19</sup></b>	<ul style="list-style-type: none"> <li>• Resident as Teacher Curriculum<sup>27</sup></li> <li>• Practice scenarios between residents or with standardized patient experiences</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> <li>• Anonymous peer evaluation during Milestone Evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at OMM didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<p><b>Objective 3: By the end of residency, the learner will incorporate formative feedback from faculty, co-residents, patients, and colleagues throughout residency into their learning plan to identify areas of strength and target areas of improvement.</b></p>	<ul style="list-style-type: none"> <li>• ONMM Residency Milestone evaluation with program director</li> <li>• Development of an annual individualized learning plan in collaboration with program director or faculty mentor</li> <li>• Faculty-resident mentorship program<sup>28</sup></li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Self-reflection and seeking out additional guidance from faculty and other mentors</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• Participation in faculty-resident mentorship program</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>
<p><b>Objective 4: By the end of residency, the learner will incorporate summative feedback from end-of-rotation evaluations, in-training exam scores, and ONMM Residency Milestone Evaluation into areas into their learning plan to identify areas of strength and target areas of improvement.<sup>4,12</sup></b></p>	<ul style="list-style-type: none"> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> <li>• Yearly completion of In-Training Exam</li> </ul>	<ul style="list-style-type: none"> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> <li>• In-Training Exam</li> </ul>
<b>Practice-Based Learning and Improvement 2: Literature Review and Research</b>		
<p><b>Objective 1: Throughout residency, the learner will advance their knowledge of evidence-based care through participation in journal club.<sup>20,21</sup></b></p>	<ul style="list-style-type: none"> <li>• Journal club</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of at least one journal club presentation at didactics per year</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<p><b>Objective 2: By the end of residency, the learner will be able to apply the following skills to a research project in the field of osteopathic neuromusculoskeletal medicine to be completed by the end of residency:</b></p> <ul style="list-style-type: none"> <li>• Formulate a research question</li> <li>• Conduct a literature review</li> <li>• Design a research study</li> <li>• Apply to an Institutional Review Board</li> <li>• Conduct informed consent</li> <li>• Conduct data collection and entry</li> <li>• Conduct statistical analysis</li> <li>• Synthesize findings and explain their relevance to the field of osteopathic neuromusculoskeletal medicine</li> </ul>	<ul style="list-style-type: none"> <li>• Research didactics including lecture on listed topics</li> <li>• Journal club</li> <li>• Application of skills in completion of a research project during residency with guidance from a faculty member</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance in research didactics</li> <li>• Completion of at least one journal club presentation at didactics per year</li> <li>• Submission of a research proposal during residency</li> <li>• Completion of a research project during residency under faculty guidance including the development of a poster or oral presentation, and a manuscript that can be submitted for publication</li> </ul>
<p><b>Objective 3: By the end of residency, the learner will practice writing scientific literature by writing a grant application, research manuscript, research poster, and/or oral presentation for a research project in the field of osteopathic neuromusculoskeletal medicine.</b></p>	<ul style="list-style-type: none"> <li>• Research didactics including lecture on listed topics</li> <li>• Journal club</li> <li>• Application of skills in completion of a research project during residency with guidance from a faculty member</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance in research didactics</li> <li>• Presentation of at least one journal club article per year</li> <li>• Submission of a research proposal during residency</li> <li>• Completion of a research project during residency under faculty guidance including the development of a poster or oral presentation, and a manuscript that can be submitted for publication</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<b>Professionalism 1: Patient and Community Interactions</b>		
<b>Objective 1: During residency, the learner will convey the purpose and utility of incorporating Osteopathic Manipulative Treatment into medical care to their patients and colleagues.</b>	<ul style="list-style-type: none"> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>
<b>Objective 2: During residency, the learner will apply models of health behavior to their clinical practice such as the Transtheoretical Model (stages of change and motivational interviewing) to promote health and manage difficult patient encounters.<sup>18</sup></b>	<ul style="list-style-type: none"> <li>• Lecture on motivational interviewing</li> <li>• Practice scenarios between residents or with standardized patient experiences</li> <li>• Application of knowledge in OMM continuity clinic</li> <li>• Application of knowledge on rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>
<b>Objective 3: During residency, the learner will participate in community volunteer and/or moonlighting opportunities to apply OMM skills such as soft tissue clinic and sideline sports game coverage as determined and approved by their individual residency program.</b>	<ul style="list-style-type: none"> <li>• Participation in and supervision of medical students in soft tissue clinic</li> <li>• Junior and high school sports game coverage</li> <li>• Guest lectures at local meetings and conferences</li> <li>• Other volunteer and/or moonlighting opportunities as approved by the residency</li> </ul>	<ul style="list-style-type: none"> <li>• Participation in yearly community volunteer and/or moonlighting opportunities that allow application of ONMM skills</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<b>Professionalism 2: Professional Conduct and Accountability</b>		
<b>Objective 1: During residency, the learner will participate in opportunities to review standards of patient care such as through morbidity and mortality case review, chart review, quality improvement, and/or grand rounds</b>	<ul style="list-style-type: none"> <li>• Lecture and grand rounds</li> <li>• Morbidity and mortality case review</li> <li>• Chart review</li> <li>• Quality improvement projects</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics, morbidity and mortality case review, and/or grand rounds</li> <li>• Completion of assigned chart review and/or quality improvement project</li> </ul>
<b>Objective 2: During residency, the learner will understand gain a better understanding of personal leadership and communication styles through assessments such as, but not limited to StrengthsFinder and the Myers-Briggs Type Indicator.<sup>22,23</sup></b>	<ul style="list-style-type: none"> <li>• Completion of a leadership and/or communication type assessment such as the StrengthsFinder and/or Myers-Briggs Type Indicator</li> <li>• Discussion with faculty mentor and/or small groups</li> <li>• Application in leadership roles during residency such as when on rotation, teaching medical students, interacting with faculty/staff, and/or local, state, or national leadership positions</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of a leadership and/or communication type assessment</li> <li>• Attendance at didactics</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>
<b>Objective 3: During residency, the learner will participate in longitudinal professionalism experiences which may include, but are not limited to:</b> <ul style="list-style-type: none"> <li>• Structured didactics curriculum<sup>24</sup></li> <li>• Faculty mentorship</li> <li>• Leadership roles at the local, state, and/or national level</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Case presentation</li> <li>• Small group discussion</li> <li>• Regular meetings with faculty mentor as determined by resident and mentor to meet individual needs</li> <li>• Participation in leadership roles at local, state, and/or national level</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Attendance of meetings scheduled with faculty mentor</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<b>Professionalism 3: Maintains Emotional, Physical, and Mental Health; and Pursues Continual Personal and Professional Growth</b>		
<b>Objective 1: During residency, the learner will participate in lectures on communication and stress management.</b>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Case presentation</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Self-reflection and seeking out additional guidance from faculty and other mentors</li> </ul>
<b>Objective 2: During residency, the learner will exhibit self-awareness and self-management of their emotional, physical, and emotional health.</b>	<ul style="list-style-type: none"> <li>• Participation in peer-led wellness curriculum<sup>29,30</sup></li> <li>• Protected time during didactics for wellness activities</li> <li>• Faculty-resident mentorship program<sup>28</sup></li> <li>• Residency support and adherence to 80 hour work week and additional time requirements free of clinical work as determined by ACGME<sup>12</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Participation in peer-led wellness curriculum and faculty-resident mentorship program</li> <li>• Completion of yearly ACGME Resident/Fellow Survey<sup>31</sup></li> </ul>
<b>Objective 3: During residency, the learner will have opportunities to engage in wellness activities both within and outside or residency.</b>	<ul style="list-style-type: none"> <li>• Resident led wellness curriculum<sup>29,30</sup></li> <li>• Protected time during residency didactics for wellness activities</li> <li>• Residency support and adherence to 80 hour work week and additional time requirements free of clinical work as determined by ACGME<sup>12</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Participation in peer-led wellness curriculum and faculty-resident mentorship program</li> <li>• Self-reflection and seeking out additional resources and assistance from faculty, co-residents, and other colleagues</li> <li>• Completion of yearly ACGME Resident/Fellow Survey<sup>31</sup></li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<b>Objective 4: During residency, the learner will pursue areas of continual personal and professional growth both within and outside of residency to promote their wellbeing.</b>	<ul style="list-style-type: none"> <li>• Resident led wellness curriculum<sup>29,30</sup></li> <li>• Application of knowledge in personal and professional-related matters</li> </ul>	<ul style="list-style-type: none"> <li>• Participation in resident led wellness curriculum</li> <li>• Self-reflection and seeking out additional resources and assistance from faculty, co-residents, and other colleagues</li> </ul>
<b>Interpersonal and Communication Skills 1: Develops Meaningful, Therapeutic Relationships with Patients and Families</b>		
<b>Objective 1: During residency, the learner will participate in lectures on conflict management.<sup>25</sup></b>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Case presentation</li> <li>• Practice scenarios between residents or with standardized patient experiences</li> </ul>	<ul style="list-style-type: none"> <li>• Attendance at didactics</li> <li>• Presentation of lecture or case involving conflict management</li> <li>• Participation in practice scenarios</li> </ul>
<b>Objective 2: During residency, the learner will participate in journal club to develop skills in evidence-based practice that integrate the triad of best clinical knowledge, individual clinical expertise, and patient values and expectations.<sup>20,21</sup></b>	<ul style="list-style-type: none"> <li>• Journal club</li> </ul>	<ul style="list-style-type: none"> <li>• Presentation of at least one research article during journal club at didactics per year</li> </ul>
<b>Objective 3: During residency, the learner will participate in OMM continuity clinic to foster continuity of care and the development of meaningful patient relationships.</b>	<ul style="list-style-type: none"> <li>• Application of knowledge in OMM continuity clinic</li> </ul>	<ul style="list-style-type: none"> <li>• Direct observation and feedback by faculty in OMM clinic and while on rotation</li> <li>• End-of-rotation evaluation</li> <li>• ONMM Residency Milestone evaluation every 6 months</li> </ul>

ONMM Competency Based Objective	Educational Method(s)	Evaluation of Learner
<b>Interpersonal and Communication Skills 2: Interprofessional Communications</b>		
<b>Objective 1: During residency, the learner will participate in local and regional conferences and trainings related to the field of Osteopathic Neuromusculoskeletal Medicine.</b>	<ul style="list-style-type: none"> <li>Local and regional conferences</li> <li>Local and regional workshops</li> </ul>	<ul style="list-style-type: none"> <li>CME credit for participation in local and regional conferences</li> </ul>
<b>Objective 2: During residency, the learner will participate in national conferences and trainings related to the field of Osteopathic Neuromusculoskeletal Medicine such the American Academy of Osteopathy Convocation on a yearly basis, and a forty-hour introductory cranial course at least once during the course of residency.</b>	<ul style="list-style-type: none"> <li>AAO Convocation</li> <li>Attendance and completion of a 40-hour basic course in Osteopathic Cranial Manipulative Medicine from the Osteopathic Cranial Academy, Sutherland Cranial Teaching Foundation, or equivalent course</li> <li>Other national conferences and workshops</li> </ul>	<ul style="list-style-type: none"> <li>CME credit for participation in AAO Convocation and other national conferences and workshops</li> <li>Certificate of completion of a 40-hour basic course in Osteopathic Cranial Manipulative Medicine</li> </ul>
<b>Objective 3: During residency, the learner may participate in personality type and emotional intelligence inventories to develop better understanding of personal strengths and application to interactions with others on healthcare interprofessional teams<sup>22,26</sup></b>	<ul style="list-style-type: none"> <li>Completion of assessment(s) such as StrengthsFinder 2.0 and the Emotional Quotient Inventory (EQ-i)</li> </ul>	<ul style="list-style-type: none"> <li>Completion of assessment(s) such as StrengthsFinder 2.0 and the Emotional Quotient Inventory (EQ-i)</li> </ul>
<b>Please see section 3.1.4 Patient Care 4: Providing and Requesting Consultation for additional objectives pertinent to interprofessional communications.</b>		

## **5. Implementation**

### **5.1 Resources**

#### **5.1.1. Faculty, Staff, and Residents**

The implementation of a curriculum committee is recommended and may consist of the program director, assistant program director, designated faculty, chief resident(s), and/or program coordinator to help coordinate and implement curriculum. It may be appropriate to designate percentage of full-time effort for designated faculty who may assist with leading the coordination and development of program curriculum, scheduling didactics lectures and activities, and leading curriculum evaluation. Program faculty may be engaged to teach lectures and hands-on activities with the assistance of the curriculum committee. The chief resident or other appointed curriculum committee member may be assigned to lead resident-led lectures and hands-on activities.

#### **5.1.2 Didactics Calendar**

An academic calendar may be kept to help coordinate sign-ups and track didactics activities. Please see appendix A for an example of a template that may be used. A shared spreadsheet may be used to help facilitate coordination of scheduling.

#### **5.1.3 Time**

Time should be blocked off for weekly didactics (4 hours), curriculum committee meetings, faculty curriculum development, and for any assigned chief or resident duties.

#### **5.1.4 Funding**

Funding allocated for the following resources may be helpful in the implementation of program curriculum:

- Gross anatomy lab time
- Board review question bank
- 40-hour basic cranial course
- Research and conference related registration and travel
- Additional resources as planned through the curriculum committee prior to and during the course of the academic year

#### **5.1.5. Facilities/Equipment**

Due to COVID-19 the structure of the didactics curriculum may need to continue to allow for remote learning through Zoom or other method of video conference. Plans should be in place to support hands-on activities with appropriate PPE, OMM tables, and spacing to allow social distancing.

## **5.2 Support**

### **5.2.1 Internal**

- Curriculum committee including program director, faculty, chief residents, residency coordinator, and other designated curriculum committee members
- Faculty support to teach lectures and hands-on activities
- Resident participation and engagement in curriculum activities

### **5.2.2 External**

- Coordination of curriculum with ACGME guidelines
- Support and continued advocacy by osteopathic and allopathic organizations.

## **5.3 Barriers and Other Considerations**

- Change in structure of didactics from in person to video conferencing due to COVID-19, and need to incorporate appropriate plans for PPE and social distancing for hands-on activities.
- Guidelines may need to be adjusted alongside anticipated updates in ACGME residency milestones.<sup>32,33</sup>
- For purposes of these guidelines, curriculum content may be applied in a 12 month or 18 month cyclical fashion according to program needs based on residency program structure and resident matriculation into ONMM residency. Current residency pathways include an ONMM1 pathway (36 month ONMM residency program), ONMM2 pathway (matriculation into a 24 month residency program following a 12 month transition year), ONMM3 pathway (a 12 month residency following completion of a previous residency program) or a combined family/ONMM residency program.<sup>34</sup> Curriculum structure for residents matriculating into a 12 month or 24 month program may be based on a 12 month cycling curriculum. A curriculum structure for residents matriculating into a 36 month residency may be based on an 18 month cycle. Likewise, it may be appropriate to consider further development of separate guidelines for each pathway.

## **6. Evaluation and Feedback**

Please see section 4 for formative and summative evaluation of learners.

For program evaluation, please see Appendix B which includes an outline of a questionnaire that may be administered pre- and post- implementation of proposed curriculum changes.

## **7. Maintenance of Curriculum**

The pre- and post-test survey, as well as in-service exam scores can form the basis for ongoing program evaluation and curriculum re-alignment with program needs. Please see section 4 for formative and summative evaluation of learners. Regular meetings

between the program director and chief residents will also allow for informal curriculum feedback.

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## 9. SUPPLEMENTS/APPENDICES

### *Appendix A: Academic Calendar Template*

		<b>First Week of the Month</b>		<b>Second Week of the Month</b>		<b>Third Week of the Month</b>		<b>Fourth Week of the Month</b>		<b>Fifth Week of the Month</b>	
		<b>Topic</b>	<b>Speaker</b>	<b>Topic</b>	<b>Speaker</b>	<b>Topic</b>	<b>Speaker</b>	<b>Topic</b>	<b>Speaker</b>	<b>Topic</b>	<b>Speaker</b>
<b>Month and Monthly Topic</b>	<b>1:00 PM</b>	Residency Updates	<b>Program Director</b>	Hands-On Session	<b>Faculty</b>	Resident Led Lecture	<b>Resident</b>	Research	<b>Faculty</b>	Wellness Activity	
	<b>2:00 PM</b>	Resident Led Lecture	<b>Resident</b>			Resident Led Lecture	<b>Resident</b>	Research	<b>Faculty</b>		
	<b>3:00 PM</b>	Faculty Led Lecture	<b>Faculty</b>	Hands-On Session	<b>Faculty</b>	Anatomy Lab	<b>Faculty</b>	Journal Club	<b>Resident</b>		
	<b>4:00 PM</b>	Faculty Led Lecture	<b>Faculty</b>					Wellness Activity	Resident		
	<b>5:00 PM</b>										

*Appendix B: Pre- and Post-test Following Implementation of Curriculum Changes*

Please rank how well the following topics were covered during Osteopathic Neuromusculoskeletal Medicine (ONMM) Didactics this academic year.

	Did not meet my learning expectations	Met my learning expectations	Exceeded my learning expectations	Not Applicable
Osteopathic Manipulative Techniques (OMT) (Direct and Indirect)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trigger Point Injection, Joint Aspiration, and Injection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Providing and Requesting Consultation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Clinical Knowledge</b>				
Anatomy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physiology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pharmacology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manifestation of systemic disease through neuromusculoskeletal system and related visceral and somatic reflex patterns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient Safety and Advocacy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Practice Management and Economics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Developing a Learning Plan and Providing Feedback	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Literature Review and Research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient and Community Interactions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Professional Conduct and Accountability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Resident Wellness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communicating with Patients and Families	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interprofessional Communication	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What did you like best about ONMM didactics?

What did you like least about ONMM didactics?

How can ONMM didactics be improved?

Please complete the following statement: As a result of OMM didactics, I feel more confident in my knowledge of...

Please complete the following statement: I wish I were more confident in my knowledge of...