

Frequency of Specific Osteopathic Manipulative Treatment Modalities Used by Candidates While Taking COMLEX-USA Level 2-PE

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Context: As one of the key measures of clinical skills assessment, the Comprehensive Osteopathic Medical Licensing Examination-USA Level 2-Performance Evaluation (COMLEX-USA Level 2-PE) is used to rate candidates' performance of osteopathic manipulative treatment (OMT).

Objective: To evaluate the frequency of specific OMT modalities used by COMLEX-USA Level 2-PE candidates and to report frequent use on the basis of clinical presentation.

Methods: With enhanced scoring procedures in place, OMT physician-examiners identified and documented specific OMT techniques that were performed by candidates at the 28 colleges of osteopathic medicine and branch campuses that had eligible students at that time. A frequency analysis for OMT techniques, according to clinical content axis, was applied to all candidates (N=4757) for the 2010-2011 testing cycle.

Results: Students used a wide range of specific OMT techniques. Candidates performed 24,202 instances of specific OMT techniques, including 10,471 myofascial/soft tissue (43.3%), 3942 muscle energy (16.3%), 1676 sinus drainage (6.9%), 1476 inhibition (6.1%), 1221 fascial release (5.0%),

1171 rib raising (4.8%), 918 lymphatic (3.8%), and 866 counterstrain (3.6%). A few students (<0.01%) used high-velocity, low-amplitude (HVLA), a technique that is prohibited from use on the COMLEX-USA Level 2-PE because of the potential hazard of repeatedly treating a standardized patient with thrust technique to the same segment in a given day. Additional techniques included functional, facilitated positional release, balanced ligamentous tension, and visceral. Use of techniques also varied according to the clinical presentation of the standardized patient (ie, cardiovascular, respiratory, neuromusculoskeletal, gastrointestinal, or other) and chronicity (ie, acute or chronic).

Conclusion: Findings contributed to a better understanding of the types of OMT techniques being used by candidates taking COMLEX-USA Level 2-PE. Frequency of use of specific OMT modalities varied according to clinical case presentation.

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Osteopathic manipulative treatment (OMT) is a cornerstone of osteopathic medicine and is used to manage a variety of clinical conditions and somatic dysfunctions.¹ Physicians incorporate and use OMT to varying degrees when treating patients;²⁻⁷ and all osteopathic medical students learn OMT as a fundamental part of osteopathic medicine.

The Comprehensive Osteopathic Medical Licensing Examination-USA Level 2-Performance Evaluation (COMLEX-USA Level 2-PE) is a 12-station, standardized patient-based clinical examination. Each station involves a 14-minute patient-physician encounter followed by 9 minutes for the candidate to complete a written post-encounter note (ie, SOAP note: subjective, objective, assessment, and plan).⁸ On the basis of a blueprint for content specifications, cases vary according to presenting symptoms (ie, cardiovascular, respiratory, neuromusculoskeletal, gastrointestinal, and other) and other factors (eg, age, sex, race/ethnicity).⁸ Cases also vary in clinical complaints that could be acute or chronic or could provide opportunities for health promotion or disease prevention. The examination assesses candidates' knowledge of osteopathic principles and practice, including OMT, by means of perform-

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ance measures set to a cut-score of minimal competence for entry into graduate medical education. Although osteopathic principles and practice are evaluated throughout the entire examination, 25% to 40% of the cases are specifically scored for OMT performance. Osteopathic manipulative treatment physician-examiners with expertise in neuromusculoskeletal medicine or osteopathic manipulative medicine are specifically trained to score candidates' performance of OMT using a holistic Likert-type rating scale.^{8,9} For the 2010-2011 testing cycle, a new enhancement was added to the National Board of Osteopathic Medical Examiners' Web-based scoring portal, allowing OMT physician-examiners to classify and code the specific OMT techniques performed by candidates.

As in clinical practice, candidates may use whichever techniques they deem appropriate. For COMLEX-USA Level 2-PE, candidates are instructed to "evaluate and treat the patient as they see fit" for every station.¹⁰ Unlike traditional practical examination models—such as those used during courses in osteopathic manipulative medicine at colleges of osteopathic medicine (COMs)—candidates are not instructed to perform specific techniques. Prior to this study, specific OMT techniques that were used by candidates taking COMLEX-USA Level 2-PE had not been tabulated. The OMT physician-examiners, as well as the COMLEX-USA Level 2-PE staff, relied on anecdotal evidence that techniques varied according to frequency of use and modality observed. The enhanced Web-based scoring portal now allows physician-examiners to document specific techniques. The purpose of the present study was to determine the frequency and type of OMT techniques used by candidates while taking the COMLEX-USA Level 2-PE during the 2010-2011 testing cycle.

Methods

Sample

The performances of 4757 candidates (ie, first-time takers and repeaters) from 28 COMs and branch campuses who took the COMLEX-USA Level 2-PE during the 2010-2011 testing cycle were assessed and scored in the usual fashion.⁸⁻¹⁰ The sample included only students from COMs who took the examination during the 2010-2011 testing cycle. Therefore, students at newly established COMs were not yet eligible to take the examination at the time of the study.

Measures

In addition to rating candidate performance, trained OMT physician-examiners select modalities performed by candidates using a secure, Web-based scoring portal. The OMT physician-examiners recorded which modalities were performed during the scored encounter according to the predetermined list (*Table*). The list of OMT modalities was developed by physician staff of the NBOME, who

were informed by the *Glossary of Osteopathic Terminology* developed by the Educational Council on Osteopathic Principles.¹¹ The final list was reviewed, modified, and endorsed by OMT physician-examiners as expert consensus. All OMT physician-examiners were trained to use the final list of modalities prior to the start of the 2010-2011 testing cycle.

Analysis

Data were extracted from the COMLEX-USA Level 2-PE scoring database and aggregated, a process that deidentified the candidates and COMs. This method of analyzing and reporting data maintains confidentiality, and thus this study was considered exempt from institutional review board approval. Descriptive statistics and data were analyzed using Microsoft Excel 2007 (Microsoft Corporation, Redmond, Washington) and SPSS (version 12.0; SPSS Inc, Chicago, Illinois).

Results

A wide range of OMT techniques (N=24,202) was used by 4757 students from 28 COMs (*Table*). The most commonly used techniques included the following: myofascial/soft tissue (10,471 [43.3%]), muscle energy (3942 [16.3%]), sinus drainage (1676 [6.9%]), inhibition (1476 [6.1%]), fascial release (1221 [5.0%]), rib raising (1171 [4.8%]), lymphatic (918 [3.8%]), and counterstrain (866 [3.6%]). Techniques used infrequently were facilitated positional release (239 [1.0%]), Still (78 [0.3%]), progressive inhibition of neuromusculoskeletal structures (PINS) (5 [$<0.01\%$]), and high-velocity, low-amplitude (HVLA)/articular thrust (4 [$<0.01\%$]). Although general use of HVLA is considered an appropriate technique by the National Board of Osteopathic Medical Examiners (NBOME) in clinical practice, the use of HVLA during the examination is prohibited. This technique is prohibited because of the possibility that individual standardized patients may be treated multiple times by several candidates with a thrust technique to the same segment during a single testing session. The frequency of use of techniques can be found in the *Figure* and the *Table*.

In addition, use of techniques varied according to the clinical presentation of the standardized patient (ie, cardiovascular, respiratory, neuromusculoskeletal, gastrointestinal, or other) and chronicity (ie, acute or chronic). For instance, candidates used 264 muscle energy techniques (20.4%) when treating patients with cardiovascular complaints but used muscle energy 65 times (1.7%) when treating patients with respiratory complaints. Details can be found in the *Figure* and the *Table*.

Comment

Data from this study suggest that candidates used a wide

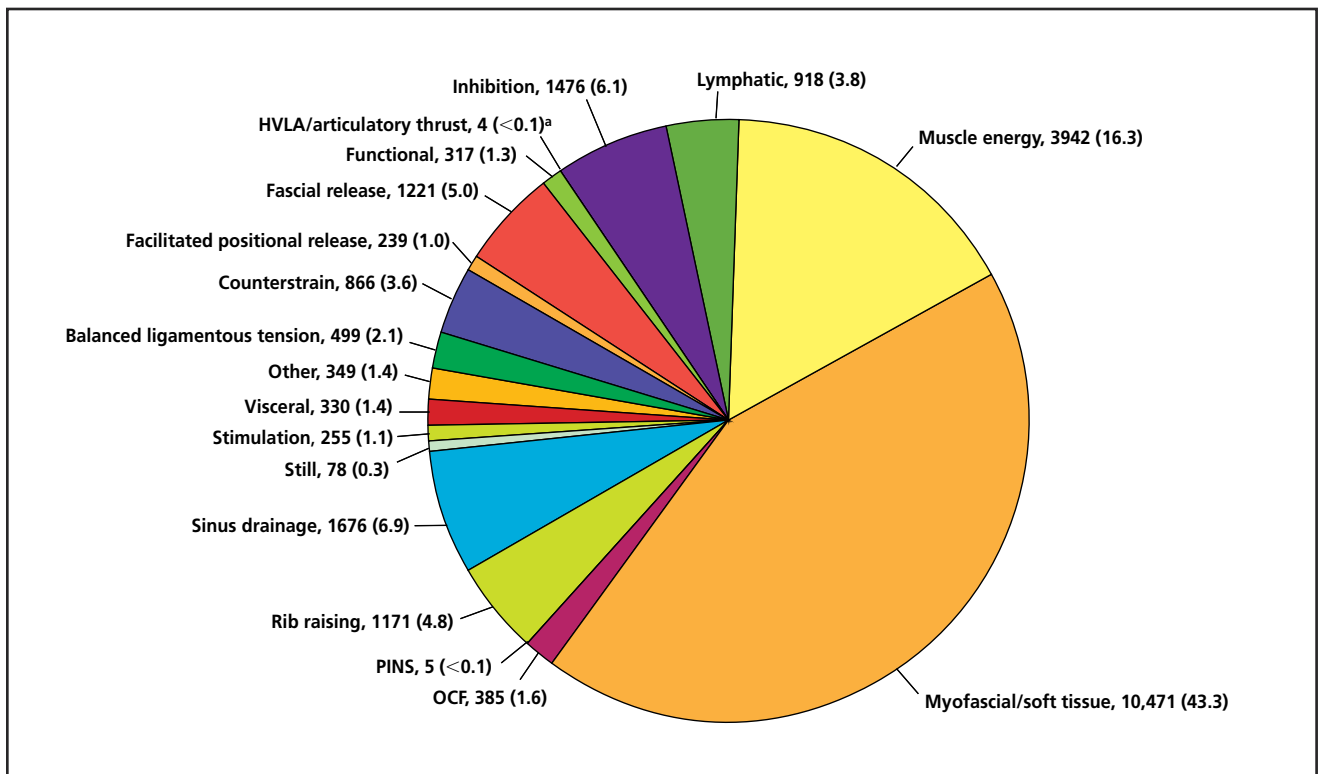


Figure. Instances of osteopathic manipulative treatment (OMT) techniques (N=24,202) by No. (%) used on the Comprehensive Osteopathic Medical Licensing Examination-USA Level 2-Performance Evaluation (COMLEX-USA Level 2-PE) during the year 2010-2011 testing cycle. Although osteopathic principles are evaluated throughout COMLEX-USA Level 2-PE, only 25% to 40% of cases are explicitly scored for OMT; therefore, the reported data are confined to OMT-scored encounters. ^aStu-

dents are prohibited from using high-velocity, low-amplitude (HVLA) during COMLEX-USA Level 2-PE because of concerns that standardized patients might be repeatedly treated with thrust technique by up to 12 student candidates to the same segment during a single testing session. **Abbreviations:** OCF, osteopathy in the cranial field; PINS, progressive inhibition of neuromuscular structures.

range of OMT techniques when taking COMLEX-USA Level 2-PE. The most frequently used technique was myofascial/soft tissue. The frequent use of this technique is consistent with other reports.^{7,12} For instance, the results of one study⁷ indicated that 76% of osteopathic emergency physicians used soft-tissue treatment, and among physicians who used OMT frequently (daily or weekly), 82% reported using soft-tissue treatment. In another study,¹² 955 osteopathic physicians of differing specialties reported soft tissue as the most preferred OMT modality used in practice. Results from this study are therefore consistent with those in previous reports.

Selection of techniques in this study varied according to clinical presentation and chronicity. For example, sinus drainage technique was used for approximately 40% of patients with respiratory complaints, compared with 7% of all clinical complaints. This preference is consistent with what a physician would use when treating real patients

with respiratory complaints in clinical practice, where treatments may include one of many techniques: sinus drainage, rib raising, counterstrain, muscle energy, or lymphatic techniques.¹ Candidates used clinically appropriate treatment modalities, basing their choices on the clinical complaint.

Despite unsettling reports from previous studies indicating that students have negative perceptions of OMT and low utilization rates,^{13,14} it is encouraging that a variety of modalities are being used by candidates taking the COMLEX-USA Level 2-PE. This use of multiple OMT techniques suggests that osteopathic medical students are indeed being taught a broad range of OMT modalities, and that they have enough apparent confidence and comfort to use OMT when taking a high-stakes clinical skills examination.

This study has some limitations. First, the list of modalities is not comprehensive, and a small subset of techniques

Table.
Osteopathic Manipulative Treatment Techniques Used on COMLEX-USA Level 2-PE, 2010-2011 Testing Cycle, by No. (%)^a

Technique ^b	Overall (N=24,202)	Clinical Presentation					Chronicity	
		Cardiovascular (n=1292)	Respiratory (n=3886)	NMS (n=13,932)	GI (n=2868)	Other (n=2224)	Acute (n=15,109)	Chronic (n=9093)
Balanced ligamentous tension	499 (2.1)	84 (6.5)	6 (0.2)	335 (2.4)	45 (1.6)	29 (1.3)	365 (2.4)	134 (1.5)
Counterstrain	866 (3.6)	168 (13.0)	3 (0.1)	648 (4.7)	34 (1.2)	13 (0.6)	521 (3.4)	345 (3.8)
Facilitated positional release	239 (1.0)	26 (2.0)	12 (0.3)	167 (1.2)	16 (0.6)	18 (0.8)	159 (1.1)	80 (0.9)
Fascial release	1221 (5.0)	80 (6.2)	207 (5.3)	741 (5.3)	127 (4.4)	66 (3.0)	875 (5.8)	346 (3.8)
Functional	317 (1.3)	25 (1.9)	5 (0.1)	250 (1.8)	19 (0.7)	18 (0.8)	197 (1.3)	120 (1.3)
HVLA/articular thrust ^c	4 (<0.1)	NA	NA	2 (<0.1)	1 (<0.1)	1 (<0.1)	2 (<0.1)	2 (<0.1)
Inhibition	1476 (6.1)	25 (1.9)	127 (3.3)	759 (5.4)	173 (6.0)	392 (17.6)	830 (5.5)	646 (7.1)
Lymphatic	918 (3.8)	9 (0.7)	799 (20.6)	98 (0.7)	7 (0.2)	5 (0.2)	878 (5.8)	40 (0.4)
Muscle energy	3942 (16.3)	264 (20.4)	65 (1.7)	2720 (19.5)	525 (18.3)	368 (16.5)	2060 (13.6)	1882 (20.7)
Myofascial/soft tissue	10,471 (43.3)	328 (25.4)	529 (13.6)	7226 (51.9)	1227 (42.8)	1161 (52.2)	5933 (39.3)	4538 (49.9)
OCF	385 (1.6)	5 (0.4)	241 (6.2)	127 (0.9)	7 (0.2)	5 (0.2)	370 (2.4)	15 (0.2)
PINS	5 (<0.1)	1 (0.1)	NA	4 (<0.1)	NA	NA	4 (<0.1)	1 (<0.1)
Rib raising	1171 (4.8)	247 (19.1)	42 (1.1)	601 (4.3)	225 (7.8)	56 (2.5)	862 (5.7)	309 (3.4)
Sinus drainage	1676 (6.9)	NA	1645 (42.3)	30 (0.2)	NA	1 (<0.1)	1675 (11.1)	1 (<0.1)
Still	78 (0.3)	10 (0.8)	3 (0.1)	53 (0.4)	8 (0.3)	4 (0.2)	38 (0.3)	40 (0.4)
Stimulation	255 (1.1)	2 (0.2)	160 (4.1)	3 (<0.1)	89 (3.1)	1 (<0.1)	164 (1.1)	91 (1.0)
Visceral	330 (1.4)	3 (0.2)	3 (0.1)	1 (<0.1)	298 (10.4)	25 (1.1)	7 (<0.1)	323 (3.6)
Other	349 (1.4)	15 (1.2)	39 (1.0)	167 (1.2)	67 (2.3)	61 (2.7)	169 (1.1)	180 (2.0)

^a Although osteopathic principles are evaluated throughout the Comprehensive Osteopathic Medical Licensing Examination-USA Level 2-Performance Evaluation (COMLEX-USA Level 2-PE), only 25% to 40% of cases are explicitly scored for osteopathic manipulative treatment; therefore, the reported data are confined to the techniques used during those scored encounters.

^b Candidates may have performed more than 1 technique per case.

^c Candidates are prohibited from using high-velocity, low-amplitude (HVLA) during COMLEX-USA Level 2-PE because of concerns that standardized patients might be repeatedly treated for the same diagnosis by up to 12 student candidates during a single testing session.

Abbreviations: GI, gastrointestinal; NA, not applicable; NMS, neuromusculoskeletal; OCF, osteopathy in the cranial field; PINS, progressive inhibition of neuromuscular structures.

may be embedded within the “other” category. Second, candidates taking COMLEX-USA Level 2-PE are not permitted to perform HVLA techniques. The use of HVLA, which introduces a rapid force through a restricted joint delivered over a short distance, is an accepted and appropriate modality in clinical practice. However, for COMLEX-USA Level 2-PE, standardized patients present the same clinical scenario to 12 candidates during a single testing session. To prevent injury to standardized patients, who could potentially be exposed to 12 consecutive manipulations to the same segment during 1 session, candidates are prohibited from using HVLA during the examination.¹⁰ Therefore, the use of HVLA is underrepresented and not

fully investigated in this study. Third, candidates may elect to use OMT in all encounters, not only those 25% to 40% of encounters specifically scored for OMT; therefore, the number and types of techniques performed throughout the entire examination are underreported in this study. Fourth, candidates may have performed more than 1 technique during each encounter (eg, myofascial/soft tissue and muscle energy), and the number of techniques performed in each patient encounter was not analyzed. Fifth, student performance on the COMLEX-USA Level 2-PE (ie, pass-fail determination), as a function of selected technique, was not analyzed in this study. Student performance data may be of interest for future study.

Conclusion

Candidates taking COMLEX-USA Level 2-PE use a variety of OMT techniques during the examination. Results also suggest that COMs provide a strong curricular foundation in OMT, bolstering students' skill and confidence with using a wide range of OMT modalities.

Acknowledgments

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Editor's Note: Terms for osteopathic manipulative treatment techniques in this article differ from the style guidelines of JAOA—*The Journal of the American Osteopathic Association* and the *Glossary of Osteopathic Terminology*. The nomenclature used in this article is based on a list of modalities developed by the National Board of Osteopathic Medical Examiners and the Educational Council on Osteopathic Principles. The list was reviewed and endorsed by OMT physician-examiners as expert consensus.