Essential Anatomy Through the Lens of Physician Assistant Clinical Faculty

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INTRODUCTION.

Although anatomy is the foundation of physician assistant (PA) practice, the PA anatomy curriculum has not been well studied. PA education is guided by the Content Blueprint for the Physician Assistant National Certifying Examination (PANCE), which lacks explicit guidance for anatomy education but does report the organ system content covered in the exam. When paired with the paucity of literature, this indicates a need for more information about the anatomical knowledge considered most important for foundational learning and, ultimately, safe patient-centered care.

STUDY AIM.

Determine the anatomical structures considered most important by PA clinical (CLIN) and anatomy faculty (ANAT).

METHODS.

Individual faculty contact information was collected from 206 fully accredited PA programs. Using a "smart survey" (see Harmon et al., AC2025 Poster), participants provided demographic and professional information and rated (1=Not important to 7=Essential) the clinical importance of 1,156 structures within the seven body regions. Descriptive statistics were assessed for each structure and classifications of importance were assigned based on mean ratings. Mean ratings were collapsed into four classification categories: Essential (mean: 5.51-7.00), More Important (mean: 4.01-5.50), Less Important (mean: 2.51-4.00), and Not Important (mean: 0.00-2.50). A one-group multivariate t-test was performed for PA CLIN to compare the overall ratings of the seven regions. A one-way ANOVA was performed to compare CLIN to ANAT, and to compare ANAT teaching in PA programs to those teaching in MD programs on overall ratings of the seven regions. This study was approved by the IRB at The Ohio State University and considered exempt (IRB approval number 2024E0494).

RESULTS

Survey – Faculty Participants

Group	Emails	Responses	Response Rate
PA CLIN	1,264	95	7.5%
PA ANAT	76	21	22.8%

Essential Anatomy

Overview of Classifications

- CLIN & ANAT faculty: >93% of structures were Essential or More Important
- ANAT faculty: 6.6% (N=76) as Less Important (CLIN identified only lumbar nodes as Less Important)

Highlighted Topic: Lymphatics

Region	Group	Essential Lymphatics
Thorax	CLIN & ANAT	Palpable nodes
	ANAT	Breast, thoracic duct
Abdomen	CLIN	All organs
	ANAT	Small intestine
Pelvis & Perineum	ANAT	Rectum, anal canal , internal reproductive organs
Head & Neck	CLIN	Palpable nodes

Highlighted Topic: Surface Anatomy

CLIN & ANAT: High-yield surface anatomy in most regions, but not lower limb or head & neck, including:

- Upper limb: pulse points
- Thorax: Heart, lungs
- Abdomen: Liver, gallbladder, stomach, appendix
- Pelvis and Perineum: ASIS, iliac crest, inguinal ligament, superficial inguinal ring
- Across regions: Referred pain and palpable lymph nodes

Frequencies (%) of Classification Categories

Region (Nr. Structures)	Essential		More Important		Less Important		Not Important	
	CLIN	ANAT	CLIN	ANAT	CLIN	ANAT	CLIN	ANAT
Back (N=61)	55.7	23.0	44.3	52.5	0.0	24.6	0.0	0.0
Upper Limb (N=189)	30.7	31.2	69.3	54.5	0.0	14.3	0.0	0.0
Lower Limb (N=159)	16.4	39.0	83.6	57.2	0.0	3.8	0.0	0.0
Thorax (N=117)	46.2	65.8	53.8	30.8	0.0	3.4	0.0	0.0
Abdomen (N=180)	51.1	39.4	48.9	58.3	0.0	2.2	0.0	0.0
Pelvis & Perineum (N=189)	27.0	44.4	72.5	53.4	0.5	2.1	0.0	0.0
Head & Neck (N=261)	21.8	39.1	78.2	54.8	0.0	6.1	0.0	0.0
All Regions (N=1,156)	32.2	40.6	67.7	52.9	0.1	6.6	0.0	0.0

Mean Value (Likert Scale) Ratings from Selected Regions

Back

Vertebral Column (Location, Structure, Relationships)	CLIN	ANAT
1 Curvatures	5.87	5.75
2 Features of a typical vertebra (e.g., spinous process, pedicles, laminae)	5.79	5.50
3 Regional characteristics of the vertebrae (e.g., cervical transverse foraminae)	5.70	5.25
4 Ligaments of the vertebral column (e.g., ligamentum flavum, interspinous)	5.55	4.75
5 Craniovertebral joints (atlanto-occipital)	5.70	5.33
6 Vertebral joints (atlanto-axial, uncovertebral (Luschka), zygapophysial/facet)	5.70	4.50
7 Intervertebral discs (anulus fibrosus, nucleus pulposus)	5.89	5.50
8 Sacro-iliac joints	5.85	4.92
9 Nerve supply	5.79	4.58
10 Vascular supply	5.62	4.42
11 Lymphatic drainage	5.21	3.83
Arteries (Course, Relationships, Branches)		
37 Anterior spinal a.	4.58	3.64
38 Posterior spinal a.	4.58	3.64
39 Segmental medullary aa.	4.51	3.00
40 Great anterior segmental medullary a. (Adamkiewicz)	4.51	3.18
41 Radicular aa.	4.53	3.09
Veins (Course, Relationships, Branches)		
42 Anterior spinal v.	4.52	2.91
43 Posterior spinal vv.	4.52	2.91
44 Segmental medullary vv.	4.48	2.91
45 Radicular vv.	4.48	2.82
46 Internal vertebral venous plexus	4.50	3.09
47 External vertebral venous plexus	4.52	3.64

Upper Limb

Fascia of the Upper Limb (Location, Structure, Relationships)	CLIN	ANAT
36 Axillary sheath	4.38	3.73
37 Brachial fascia	4.35	3.18
38 Antebrachial fascia	4.35	3.18
39 Bicipital aponeurosis	4.38	3.73
40 Intermuscular septae of arm and forearm	4.36	3.27
41 Flexor retinaculum (transverse carpal ligament)	4.64	5.55
42 Extensor retinaculum	4.45	4.55
43 Palmar aponeurosis	4.45	4.55
44 Fibrous digital sheath	4.45	4.55

Thorax

Fascia of the Thorax (Location, Structure, Relationships)	CLIN	ANAT
25 Clavipectoral	4.61	3.44
26 Endothoracic	4.57	3.56
Nerves of the Thorax (Course, Branches, Composition/Function)		
54 Intercostal n.	4.65	6.00
55 Phrenic n.	5.00	6.22
56 Vagus n. (CN X)	5.19	6.33
57 Left recurrent laryngeal n.	4.98	6.22
58 Right recurrent laryngeal n.	4.81	5.78
59 Thoracic parasympathetic visceral branches (vagal)	4.62	5.67
60 Thoracic sympathetic trunk	4.48	6.33
61 Rami communicantes (gray and white)	4.35	5.67
62 Thoracic sympathetic trunk – visceral branches (cervical, thoracic)	4.40	5.44
63 Thoracic splanchnic nn. (greater, lesser, least)	4.38	5.78

Head and Neck

Cranial Nerves (Course, Branches, Composition/Function)	CLIN	ANAT
116 Optic n. (CN II)	5.68	6.57
117 Optic chiasm	5.53	6.29
119 Oculomotor n. (CN III) – somatic and parasympathetic components	5.68	6.57
120 Oculomotor n. (CN III) – superior division	5.70	5.86
121 Oculomotor n. (CN III) – inferior division	5.70	5.00
122 Trochlear n. (CN IV)	5.70	6.21
123 Trigeminal n. (CN V)	5.77	6.64
125 Ophthalmic n. (CN V1)	5.64	6.43
128 Maxillary n. (CN V2)	5.60	6.36
139 Abducens n. (CN VI)	5.57	6.43
140 Facial n. (CN VII) – somatic, parasympathetic, taste	5.62	6.64
147 Vestibulocochlear n. (CN VIII)	5.57	6.43
150 Glossopharyngeal n. (CN IX) – somatic, parasympathetic, taste	5.62	6.50
154 Vagus n. (CN X) – somatic, parasympathetic	5.74	6.64
160 Accessory n. (spinal accessory; CN XI)	5.68	6.43

Legend: Essential | More Important | Less Important | Not Important

DISCUSSION.

This study presents a detailed evaluation of the anatomy considered most important by CLIN and ANAT faculty in PA programs. Most (>93%) of structures were Essential or More Important for CLIN and ANAT combined (6.6% were Less Important for ANAT but none for CLIN faculty). This information can inform decisions about which content should be included, and which might be eliminated both for precision education and to accommodate limited curricular time. While the information in the PANCE Content Blueprint can be used as a starting point for anatomy curriculum decisions, direct comparisons with the present data are difficult due to differing scope and organization of the analyses (organ system/disease vs. body region). Future studies include recoding this data to permit this type of comparison.

STUDY LIMITATIONS

1. Relatively small sample of the total population
2. Possibility of survey fatigue
3. Straight-lining

Nevertheless, there was internal consistency of the data that supported key expectations (e.g., agreement between CLIN and ANAT that heart and lung anatomy was Essential).

SIGNIFICANCE.

Given the time constraints of the PA curriculum, the need for clinically relevant anatomy education is paramount. The present data should encourage PA clinical and anatomy faculty to determine collaboratively the most important foundational anatomical content, create relevant instructional objectives, and allocate appropriate curricular time to achieve the desired learning outcomes.

Please ask one of the presenting authors if you wish to review the full survey.

If you teach anatomy to PA students, please scan QR code to participate in the survey.