

CHAPTER 11

MUSCULAR SYSTEM: Gross Anatomy

CHAPTER OVERVIEW: The names, shapes, relative positions, and bony attachments of the skeletal muscles are reviewed. Attachments are described from the perspective of the muscles' roles in generation of particular body movements. The use of the bones as levers is explained. Agonist/antagonist pairs of muscles are described and their functional role explained.

OUTLINE (one or two fifty-min. lectures):
Seeley A&P, 5/e

Chapt. Object.	Topic Outline, Chapter 11	Figures & Tables	Transparency Acetates
1	I. General Principles, p. 309		
2	a. Attached to Bones via Tendons		
2	or Aponeuroses		
	b. Origin and Insertion		
	c. Belly		
	d. Synergists, Antagonists, and Prime Mover		
	e. Fixators		
3	A. Muscle Shapes	Fig. 11.1, p.310	
	1. Pennate		
	a. Unipennate		
	b. Bipennate		
	c. Multipennate		
	2. Parallel		
	3. Convergent		
	4. Circular		
	B. Nomenclature		
	1. Location		
	2. Size		
	3. Shape		
	4. Orientation		
	5. Origin and Insertion		
	6. Number of Heads		
	7. Function		
3	C. Movements Accomplished by Muscles	Fig. 11.2, p.311	
	1. Muscles Provide Force		
4	2. Bones used as Levers		
	a. Class I Levers	Fig. 11.2a, p.311	
	b. Class II Levers	Fig. 11.2b, p.311	
	c. Class III Levers	Fig. 11.2c, p.311	
	D. Muscle Anatomy		
	1. Anterior View	Fig. 11.3a, p.313	TA-195

	2. Posterior View	Fig. 11.3b, p.314	TA-196
	II. Head Muscles, p. 312		
5	A. Head Movement	Table 11.1, p.315 Fig. 11.4, p.316	TA-197
	1. Flexors - Anterior Group	Fig. 11.4a, p. 316	TA-197
	2. Extensors - Posterior Group	Fig. 11.4b,c p.316 Fig. 11.5a, p.317	TA-197
	3. Multiple Possible Movements - Lateral Group	Predict Quest. 1 Fig. 11.5b, p.317 Clinical Note, p.312	
6	B. Facial Expression	Table 11.2, pp.318-319 Fig. 11.6, p.317 Fig. 11.7, p.320 Predict Quest. 2	TA-198 TA-199
	1. Cutaneous Muscles = Attached to Skin	Fig. 11.6, p.317	TA-198-199
	2. Muscles Around Eyes and Eyebrows	Fig. 11.7, p.320	
	3. Muscles Around Lips and Mouth		
7	C. Mastication		
	1. Muscles of the Mandible	Table 11.3 Fig. 11.8, p.320	TA-200
	2. Muscles of the Hyoid	Table 11.4 Fig. 11.9, p.322	TA-201
8	D. Tongue Movements	Table 11.5 Fig. 11.10, p.323 Clinical Note, p.321	TA202
8	1. Intrinsic Muscles of the Tongue		
8	2. Extrinsic Muscles of the Tongue		
9	E. Swallowing and the Larynx	Table 11.6, pp.324-325 Fig. 11.11, p.326 Clinical Notes, p.324	TA-203
	1. Infrahyoid Muscles can Elevate Larynx		
	2. Muscles of the Larynx		
	3. Muscles of the Soft Palate		
	4. Muscles of the Pharynx		
10	F. Movements of the Eyeball	Table 11.7, p. 327 Fig. 11.12, p.327	TA-203-204

			Predict Quest. 3
	1. Superior Muscles		
	2. Inferior Muscles		
	3. Lateral Muscles		
	III. Trunk Muscles, p. 325		
11	A. Muscles Moving the Vertebral Column	Table 11.8, p.328-329	
	1. Superficial		
	2. Deep	Fig. 11.13, p.330	TA-205
		Clinical Note, p.325	
12	B. Thoracic Muscles	Table 11.9, p. 331	TA-206
12	C. Abdominal Wall	Fig. 11.14, p.331 Table 11.10, p. 332	TA-207
	1. Anterior with Surface Landmarks	Fig. 11.15, p.332 Figs, 11.16 & 11.17, p.333	
	2. Posterior		
13	D. Pelvic Floor and Perineum	Table 11.11, p. 333	
	1. Male	Fig. 11.18a, p.334	TA-208
	2. Female	Fig. 11.18b, p.334	TA-208
	IV. Upper Limb Muscles, p. 330		
	A. Scapular Movements	Table 11.12, p.334	
	1. Attachment to Thorax		
	2. Posterior View	Fig. 11.19a, p. 335	TA-209
	3. Anterior View	Fig. 11.19b, p.335	TA-209
15	B. Arm Movements	Tables 11.13, p.336 & 11.14, p. 338 Fig. 11.21, p.339	
	1. Anterior View	Fig. 11.20a, p.337	TA-210
	2. Posterior View	Fig. 11.20b, p.337	TA-210
14	3. Rotator Cuff	Fig. 11.20c, p.337	TA-210
		Predict Quest. 4	
16	C. Forearm Movements	Fig. 11.22, p.340	TA-211

		Table 11.15, p.341	
	1. Extension and Flexion of the Forearm	Fig. 11.22, p.340	TA-211
	2. Pronation and Supination	Fig. 11.23, p.342	TA-212 TA-213
	D. Wrist, Hand, and Finger Movements	Predict Quest. 5 Table 11.16, p.343-344	
17	1. Extrinsic Hand Muscles	Clinical Note, p.338	
17	2. Intrinsic Hand Muscles	Table 11.17, p.347 Figs. 11.24-11.25, p.346	TA-214
	V. Lower Limb Muscles, P. 341	Fig. 11.27, p.348	
18	A. Thigh Movements	Table 11.18, p.348 Figs. 11.26- 11.28, p.348-349	TA-215, 216, 217
	B. Leg Movements	Table 11.19, p.349	
19	1. Anterior Compartment	Table 11.20, p.350 Fig. 11.27a, p.348	TA-216
	2. Medial Compartment	Fig. 11.27b, p.348	TA-216
	3. Posterior Compartment	Fig. 11.28, p.349	TA-217
	C. Ankle, Foot and Toe Movements	Clinical Note, p.344 Clinical Note, p. 349 Table 11.21, pp.352-353	
19	1. Anterior Compartment	Fig. 11.29, p.351 Fig. 11.31, p.355 Clinical Note, p.344	TA-218 TA-218
	2. Lateral Compartment	Fig. 11.29a, p. 351 Fig. 11.29b, p.351	TA-218
	3. Posterior Compartment	Fig. 11.29c,d,	TA-218

4. Intrinsic Foot Muscles

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Table 11.22, TA-219
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Clinical Note,
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Clinical Focus,
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IMPORTANT CONSIDERATIONS: Much of the detailed coverage of muscle positions can be left to the laboratory, however the considerations of the naming conventions and the functioning of levers should be systematically reviewed. If two lectures can be given to the material the first session can be used discussing the regularities and generalities common to all muscles and in defining terms. The second session can be devoted to selected specific examples of how the general principles are used to understand muscle structure and function.

Emphasis should be placed on how both knowledge about joints and knowledge about muscle placements are interrelated in being able to understand and predict how body movements are produced.

The interests and major career goals of the students should be considered in deciding how much of the detail to cover.

Many students may not be familiar with levers or the concept of mechanical advantage, so some time should be spent reviewing these topics as an aid to their understanding of the functions and placements of muscles.

Whenever possible the functions of organ systems of the body should be related to the concept of homeostasis and the role of each system in setting up and maintaining homeostasis, as well as what conditions are required for the optimal functioning of the organ system being studied.

SEE INSTRUCTOR'S MANUAL AND COURSE SOLUTIONS MANUAL FOR ADDITIONAL RESOURCES.