

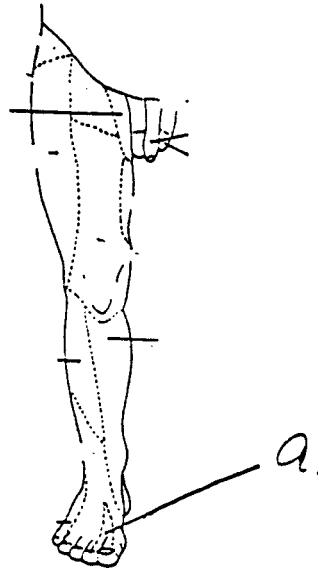
EXAMINATION I

September 5, 2003

PART I. Answer in the space provided. (6 pts)

1. Identify the innervation. (0.5 pt)

a. _____



2. Identify the structures. (1 pt)

a. _____

b. _____

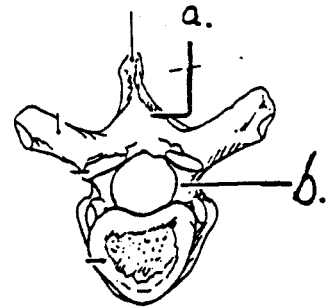
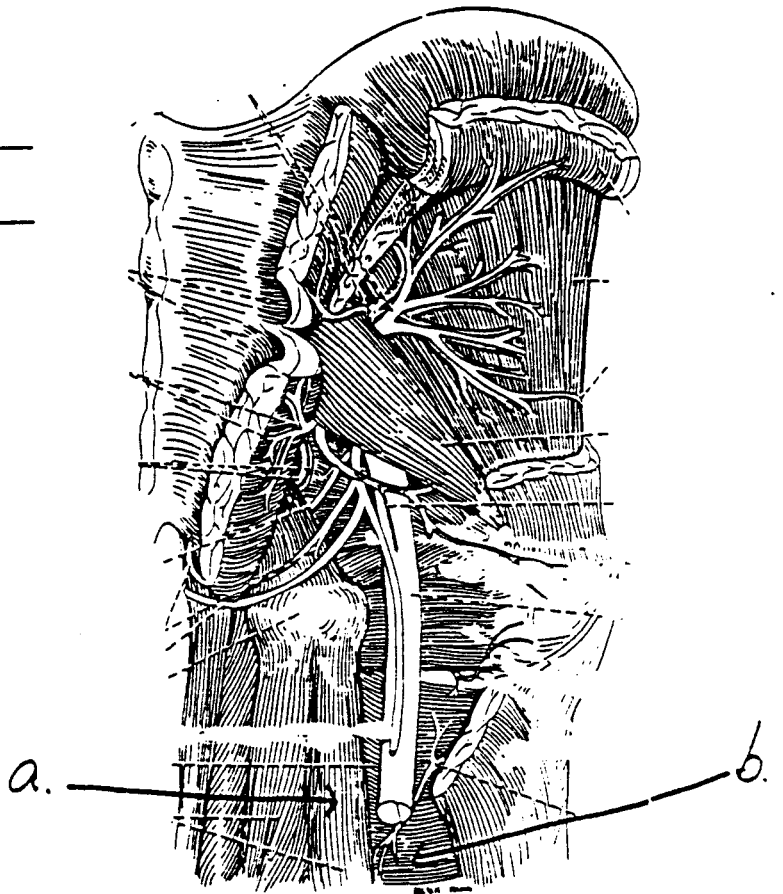


Figure 1. 1. Typical thoracic vertebra in lateral and superior view.

3. Identify the structures. (1 pt)

a. _____

b. _____



4. Identify the structures. (1 pt)

a. _____

b. _____

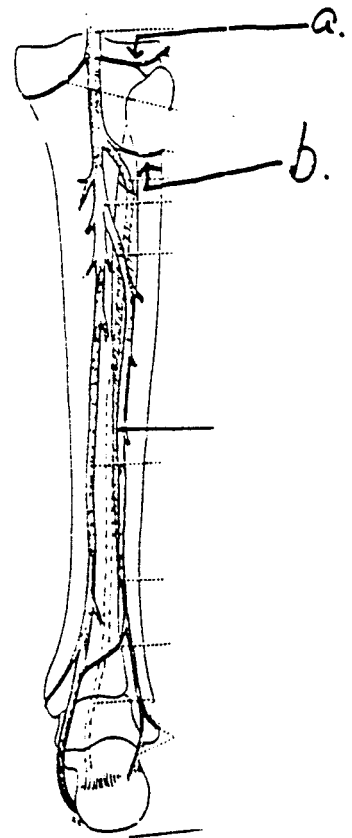


FIGURE 18-29.
Diagram of the arteries of the leg; posterior view.

5. Identify the structures. (0.5 pt)

a. _____

6. Identify the structures. (1 pt)

a. _____

b. _____

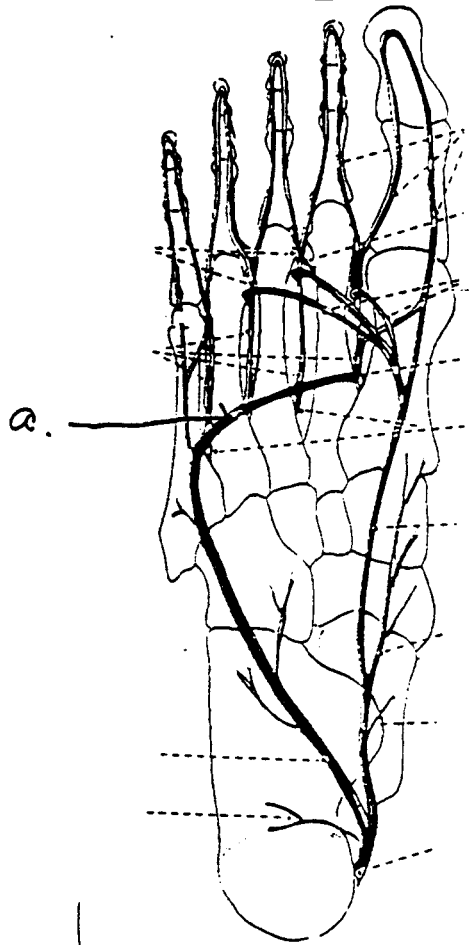
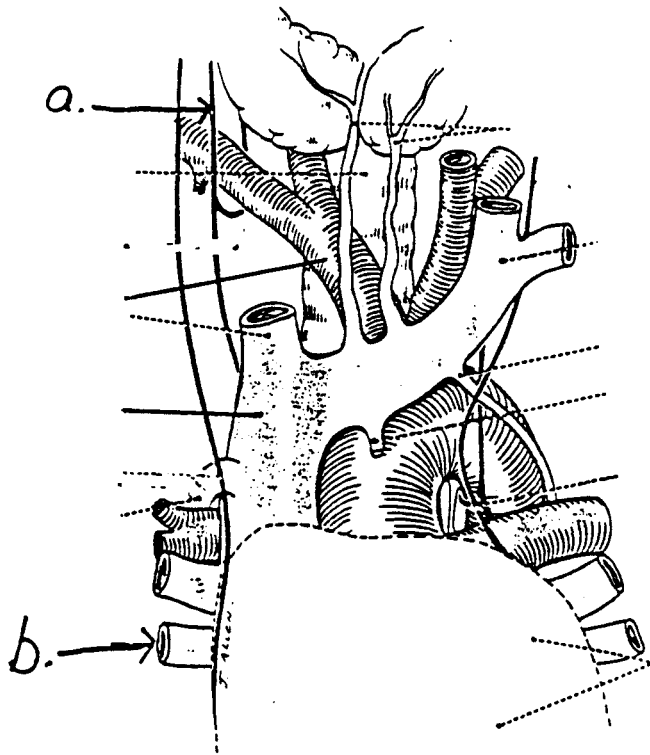


FIGURE 18-56.
Diagram of the plantar arteries.



7. Identify the structures. (1 pt)

a. _____

b. _____

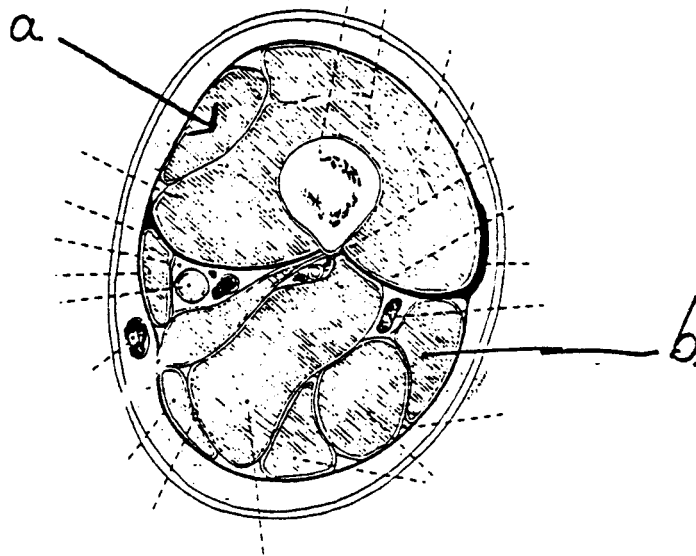


FIGURE 18-10.
A transverse section through the middle third of the thigh, drawn to show schematically the division of the musculature into compartments and to illustrate the position of the main nerves and vessels. The thickness of the fascia lata, intermuscular septa, and iliotibial tract is exaggerated.

Part II. Circle the correct answer. All, none, or some may apply. (28 pts)

1. With respect to the nervous system:

- a. There are white rami at the level of T1-4.
- b. The somatic efferents of the femoral nerve consist of pre- and post-ganglionic neurons.
- c. The visceral layer of serous pericardium is innervated by the phrenic nerve.
- d. Post-ganglionic neurons of the sympathetic nervous system are generally quite long compared to pre-ganglionic neurons.
- e. The somatic afferent fibers have cell bodies in the ventral root ganglion.
- f. The diaphragm is an example of a skeletal muscle innervated by the somatic nervous system.
- g. Preganglionic fibers of the greater splanchnic nerve synapse in the sympathetic trunk.
- h. Sympathetic innervation to the heart dilates the coronary arteries.

2. With respect to the gluteal region:

- a. The superior and inferior gemelli originate from the ischial tuberosity.
- b. From the posterior perspective, the obturator externus muscle lies deep to the quadratus femoris.
- c. The superior and inferior gemelli, piriformis, and gluteus minimus are all innervated by the superior gluteal nerve.
- d. The internal pudendal artery exits the greater sciatic foramen on the superior border of the piriformis muscle and enters the lesser sciatic foramen on the inferior border of the piriformis muscle.
- e. The sciatic nerve courses through the greater sciatic foramen.
- f. A lesion (injury) of the left superior gluteal nerve will cause the pelvis to tilt to the right when the right limb is raised off the ground.

3. With regard to the subinguinal region:

- a. The femoral canal encloses the femoral sheath.
- b. The medial femoral circumflex artery passes posteriorly between the iliopsoas and pectineus muscles.
- c. The inferior gluteal artery contributes to the cruciate anastomosis.
- d. Femoral hernias lie inferior and lateral to the pubic tubercle.
- e. The deep femoral artery (profunda femoris) arises from the femoral artery within the femoral sheath.
- f. The superficial circumflex artery, superficial epigastric artery, and external pudental artery originate from the femoral artery.

4. With respect to the lungs and ventilation:

- a. The apex of the lung reaches to 1 inch inferior to the clavicle.
- b. The pulmonary ligament contains the pulmonary trunk.
- c. The surface projection of the horizontal fissure follows the 6th rib.
- d. The carina separates the openings of the two principal bronchi.
- e. A foreign body is more likely to lodge in the right bronchus.
- f. The surface projection of the inferior border of the lung is at the 6th rib in the midclavicular plane.

5. In regard to the thorax and lungs:

- a. The surface projection of the inferior aspect of the parietal pleura in the midclavicular plane is at the level of the 8th rib.
- b. The pericardial sac can be penetrated at the cardiac notch without entering the pleural cavity.
- c. The cavity between the lung tissue and visceral pleura contains pleural fluid.
- d. The lungs are innervated by branches of the phrenic nerve.
- e. The costal pleural is supplied by intercostal nerves.

- f. Movement at the costovertebral and costotransverse joints of ribs 2-6 contribute to a change in movement in the transverse plane (termed the pump handle mechanism).
- g. The pericardiophrenic artery and vein lie in the endothoracic fascia.
6. In the thorax:
- a. The posterior intercostal arteries of the upper two intercostal spaces originate from the supreme intercostal artery that is derived from the costocervical branch of the subclavian artery.
 - b. At the 8th cartilage, the internal thoracic artery terminates in the musculophrenic and superior epigastric arteries.
 - c. The subcostal muscles are innervated by the autonomic nervous system.
 - d. There are 11 pair of intercostal spaces that contain innermost intercostal muscles.
 - e. The supreme (highest) intercostal vein drains into the brachiocephalic vein.
 - f. The anterior intercostal artery in the first intercostal space is derived from the brachiocephalic artery.
7. Contents of the superior mediastinum include:
- a. Right bronchus.
 - b. Esophagus.
 - c. Arch of the aorta.
 - d. Right phrenic nerve.
 - e. Arch of the azygous vein.
 - f. Left phrenic nerve.
8. With respect to the lymphatics of the lower extremity and the thorax:
- a. The deep inguinal lymph nodes are situated along the femoral vein deep to the fascia lata.
 - b. Bronchopulmonary lymph nodes are situated at hilum of the lung.
 - c. The bronchomediastinal lymph trunks are formed by the paratracheal nodes and parasternal lymphatics.

- d. Tracheobronchial lymph nodes receive lymphatic drainage from the heart.
 - e. The upper lateral quadrant of the breast is drained by the parasternal (sternal, internal mammary) nodes.
9. With regard to the lower extremity:
- a. The tibialis posterior is innervated by the peroneal nerve.
 - b. The flexor hallucis brevis is innervated by the lateral plantar nerve.
 - c. The peroneus tertius is innervated by the superficial branch of the common peroneal nerve.
 - d. The fibular (lateral) collateral ligament is extrasynovial but intracapsular.
 - e. The tibial (medial) collateral ligament is attached to the medial meniscus.
 - f. The superior peroneal retinaculum extends from the lateral malleolus to the calcaneus.

Part III. Indicate your understanding (characteristics, boundaries, criteria, importance, function, and/or contents) of the following. Answer in the space provided. (30 pts)

1. Hamstrings (4 pts)

2. Muscular lacuna. (3 pts)

3. Subtalar joint (3 pts)

4. Popliteus muscle (4 pts)

5. Anterior cruciate ligament (3 pts)

6. Endothoracic fascia (3 pts)

7. Iliofemoral ligament (3 pts)

8. Costodiaphragmatic recess (3 pts)

9. Lesser sciatic foramen (4 pts)

Part IV. Answer in the space provided (including the back of the page for each question). (36 pts)

1. A 45-yr old male with a history of heart problems presents with what you suspect is a dysfunction of one of the heart valves. **Discuss the structure and function (including blood flow to the coronary vessels) of the semilunar valves and the atrioventricular valves. (12 pts)**

2. Individuals with a loss of the upper limbs can compensate by using the digits of the lower limb for activities such as feeding, painting, and writing. There is more specificity in flexion of the digits of the foot than extension. **Discuss the muscles and ligaments involved with flexion and extension of the digits of the foot, and relate this to function.** (12 pts)

3. A 21-yr old college student presents to the emergency room with a gunshot wound to the thigh in the region of the femoral triangle. **Discuss the organization of the femoral triangle. Include contents, boundaries, muscles, fascia, innervation, and vasculature. Provide an account of structures entering and exiting the triangle at each boundary.** (12 pts)