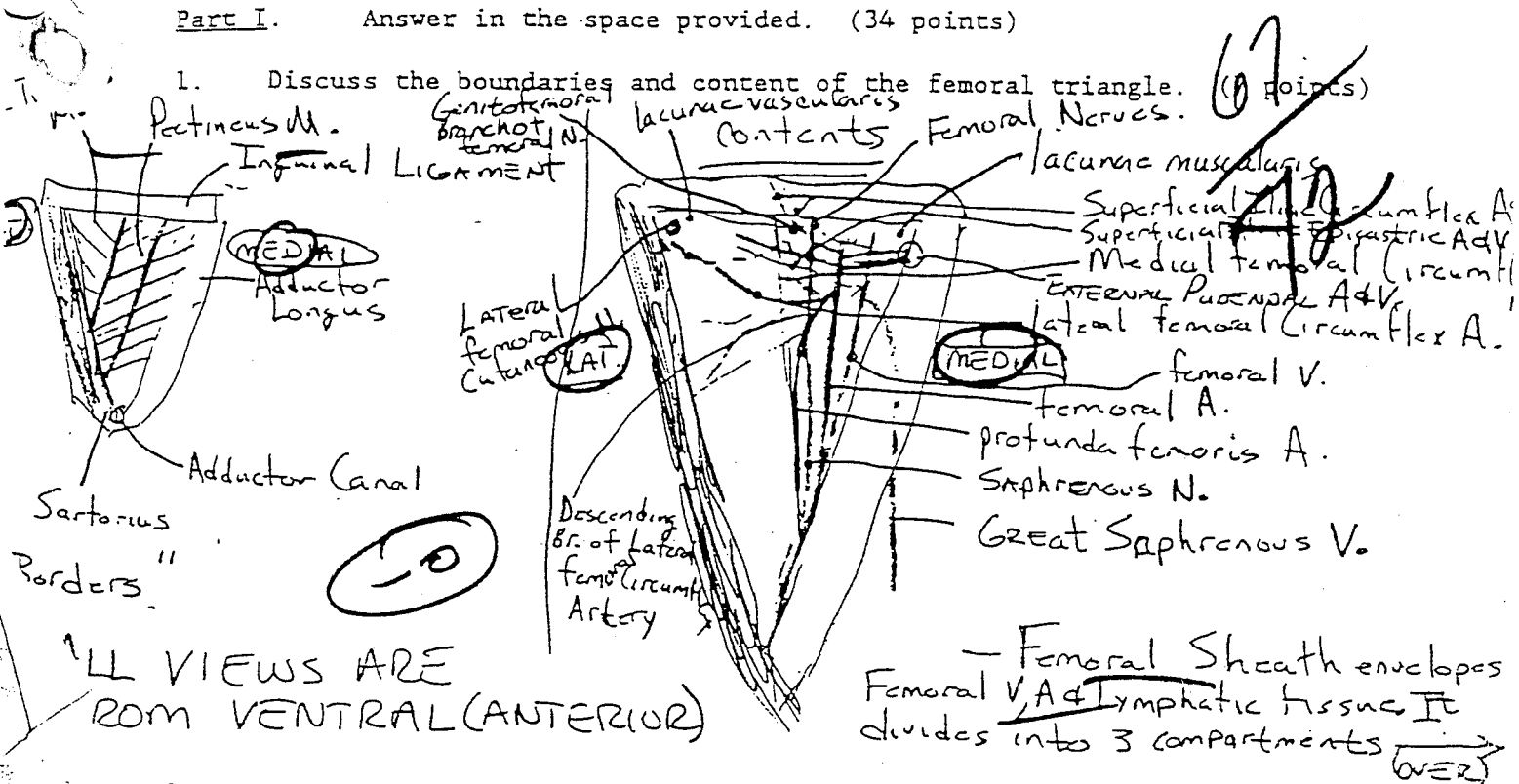


Part I. Answer in the space provided. (34 points)

1. Discuss the boundaries and content of the femoral triangle. (10 points)



ALL VIEWS ARE FROM VENTRAL (ANTERIOR)

2. Discuss the effects of severing the tibial nerve as it lies within the popliteal fossa, especially as it pertains to the gait cycle. (5 points)

Tibial Nerve innervates the following muscles below the Popliteal Fossa

Also, medial Sural Cutaneous Nerve, Medial & Lateral Plantar Nerves,

affected:

Partially the Sural Nerve (Lateral Sural Cutaneous N. is unaffected)

muscles affected:

Action Lost:

Gastrocnemius M.

Soleus Muscle M.

Tibialis Anterior M.

Flexor Hallucis Longus M.

Flexor Digitorum Longus M.

All Plantar muscles of foot

Plantar flexion, Flexion of knee

Plantar flexion

Inversion of foot

Plantar flexion

Plantar Flexion

Flexion of digits (phalanges), Metatarsals, adduction of digits, abduction of digits. Adduction & Abduction of the foot. Support of the Arches of foot

Even though the tibial Nerve was severed, there is still some action (flexion) of the knee due to biceps, semitendinosus, semimembranosus & gracilis muscles. But the above mentioned muscles would be lost. The person would have trouble during stance phase with the toe off period since it requires plantar flexion and with the flopping of the foot. The foot would be kept dorsiflexed most of the time. In the single phase the flexion of the knee is lost, the person would have to account for the fact that extension of the knee has been minimized & the foot must be raised to the ground to pass it by the other leg. For example the person would have to lift the good leg and tilt to that side, allowing the other leg to move forward.

-11/2

A 70-year-old woman fractures her femur just below the lesser ~~trochanter~~ trochanter. Describe the position of the fragments of the femur and the appearance of the limb. How will these effects differ from a fracture above the femoral condyles? (6 points)

- a) Since you have the ligaments surrounding the head of the femur (which extend down ~~into~~ onto the neck), a fracture below this point would prevent a loss of circulation to the head. The fragments would be ~~at the~~ <sup>in the area</sup> of the shaft (upper) of the femur. The Broken Shaft of the femur would be pointing laterally somewhat while the head of the femur would remain intact, held in place by the iliofemoral, ischiofemoral, & Pubofemoral ligaments; also the tendons of the iliopsoas (lesser trochanter), gemelli, obturator externus & internus, piriformis (greater trochanter) would hold the head of the femur, pulling the trochanters medially. The limb will not look much different from normal.
- b) A fracture above the femoral condyles would only affect flexion & extension of the knee. The knee & leg would appear as if communicate has broken down between them

4. Discuss the transverse tarsal joint. (4 points)

~~This joint is responsible for the inversion & eversion of the foot. It is the joint between the arch of the tibia/fibula & the talus bone. It is the joint responsible for the flexion/extension (Dorsi vs Plantar) flexion of the foot.~~  
It is between the tibia & fibular arches & the superior surface of talus bone.

-4

5. Identify the vessels indicated. (4 points)

- X Anterior Tibial Recurrent Artery
- B. Common Peroneal Artery
- C. Communicating Branch of Common Peroneal Artery \*
- D. Lateral Malleolar Artery

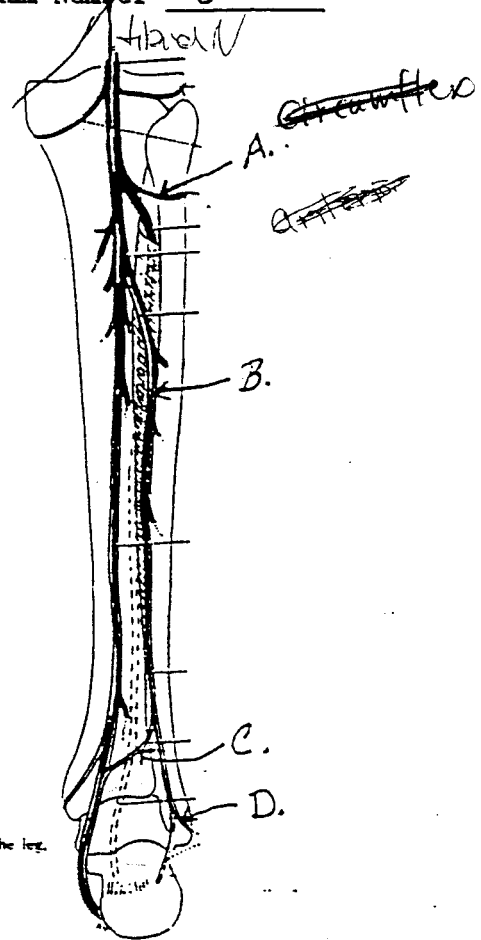


Diagram of the arteries of the leg. posterior view.

6. Place your answer in the space provided. (8 points)

- A. The most powerful flexor of the hip joint is the iliopsoas muscle.
- X The plantar arch is derived from the Lateral plantar tibial (Plantar) artery.
- C. The posterior cruciate ligament prevents excessive anterior slippage displacement of the femur on the tibia.
- X The articularis genus arises from the femur and inserts into the patellar ligament synovial membrane.
- X The inferior clunial nerves arise from the \_\_\_\_\_.
- F. The medial <sup>femoral</sup> circumflex artery turns posteriorly and passed deep to the iliopsoas and pectineus muscles.
- G. Of the contents of the adductor canal, the saphrenous nerve does not enter the adductor hiatus.

Part II. Answer in the space provided. (37 points)

25/2

1. Indicate your understanding of the following:

A. Transverse arch of the foot - (3 points)

1/2 It is formed by the Spring, Long Plantar & Short plantar ligaments. It is also supported by the plantar Aponeurosis; Flexor digitorum brevis & Flexor hallucis brevis muscles. It is higher on the medial side and is less apparent on the lateral side.

B. Short head of the biceps - (3 points)

2 It attaches <sup>to</sup> the <sup>lateral</sup> lip of the linea aspera of the femur in the middle third of the femur shaft. The long head is innervated by the tibial N., but the short head is innervated by the Common peroneal nerve.

C. Iliotibial tract - (3 points)

It is a thickening of the fascia lata of the lateral side of the thigh. Anteriorly, it is formed by the gluteus maximus & tensor fascia lata tendons. Posteriorly it blends in with the capsule of the knee.

D. Spring ligament - (2 points) or the Calcaneonavicular lig.

2 It <sup>helps</sup> support the longitudinal arch of the foot. It runs between the calcaneus bone & Navicular bones (both tarsals).

8/2

E. Innervation of the pericardium - (3 points)

Are two main systems: Phrenic Nerves & Vagus Nerves (both have Right & Left branches). The Phrenic-nerves are found on the outside of the pericardium between the fibrous pericardium & Mediastinal Pleura. The Vagus Nerves are on the inside of the Pericardium between the visceral & serous ~~pericardium~~ Pericardium of the heart

F. Femoral hernia - (3 points)

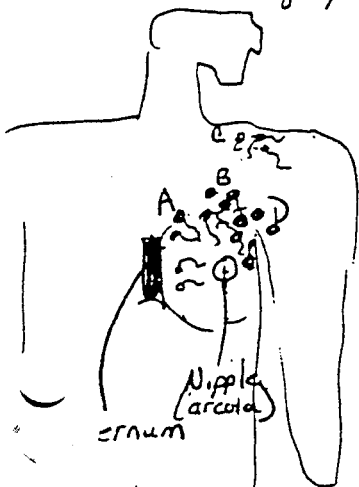
It is a hernia where there is an opening in the ~~Pericune vascularis~~ femoral sheath called the femoral canal (femoral ring) which allows the hernia to occur. There is nothing covering this space between the abdomen & the femoral triangle

G. Venous drainage of the first intercostal space - (2 points)

It is handled by the supreme intercostal vein which drains into the Right or Left ~~Subclavian V.~~ depending upon which side of the thorax you are on.

2. The breast is a frequent site of cancer. Discuss the lymphatic drainage of the breast. (6 points)

There are four main lymph nodes of the chest: The Apical & Pectoral Axillary nodes, the supraclavicular ~~nodes~~ nodes & the Parasternal nodes.



- Apical Axillary Nodes (B)
- Pectoral Axillary Nodes (D)
- Supraclavicular Nodes (C)
- Parasternal Nodes (A)

- The axillary nodes drain the upper part of the breast while the Parasternal nodes drains the breast medially & along the sternum. The Parasternal nodes are the ~~main~~ main nodes of

The Parasternal nodes drain the breast into the R & L. Bronchiomediastinal trunk which then drains into the R & L. Subclavian V. (between Subclavian & Jugular veins).

(Crete ≈ 5000 bc)  
HA HA HA!!!

Discuss the course of the left vagus nerve in the thoracic cavity. (4 points)

1 1/2 It runs Anterior to superior between the ~~thoracic~~ serous & visceral ~~pericardium~~ <sup>pericardium</sup> of the heart. As it passes posteriorly & behind the heart (dorsally somewhat) it sends communicating branches to the R. Vagus N. & then toward the Posterior of the ~~thorax~~ thorax near where the esophagus goes into the diaphragm. It forms the "esophageal plexus". At this point the R & L Vagus nerves become intermixed & are undistinguishable. The branches of the esophageal plexus then spread into the diaphragm.

4. Discuss the blood supply to the right 9th intercostal space. (4 points)

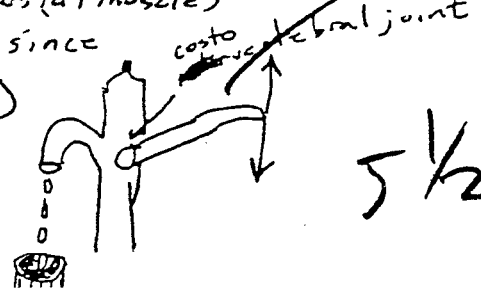
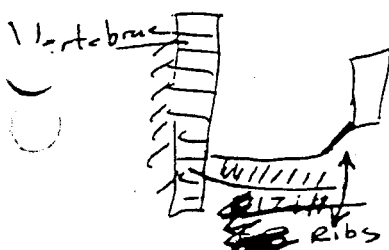
2 1/2 Anteriorly it is done by the musculophrenic artery (a branch of the internal thoracic artery). This artery supplies blood to the intercostal arteries here. Posteriorly, the blood supply is from the Aorta. Tiny branches of the aorta pierce out & into the intercostal spaces. Laterally the external thoracic artery may help but it is not likely. ✓✓

5. Discuss the pump-handle movement of the ribs during respiration. (4 points)

1 1/2 The ribs which are ~~not~~ individually connected to the sternum have pump handle movement. Their necks & heads are fixed to the vertebrae but since they do not have a direct connection to the sternum, they tend to remain fixed somewhat at the vertebral junction & move slightly more at their anterior ends. The intercostal muscles

can act with greater motion since the ribs are not attached at the anterior end (tails of ribs)

movement like a pump handle



5 1/2

Part III. Circle the correct answer(s). All, none, or some answers may apply. (29 points) -14/2

1. Structures that one can palpate on a patient include:

- A. superior gluteal nerve ✓
- B. base of the 5th metatarsal.
- C. extensor digitorum brevis
- D. common peroneal nerve ✓
- E. peroneus longus tendon

2. A bronchopulmonary segment includes:

- B. a/c
- A. primary bronchus ✓
  - B. branch of the pulmonary vein
  - C. branch of the pulmonary artery
  - D. eparterial bronchus ✓
  - E. pulmonary ligament ✓

3. In regard to the heart:

- Yes/No
- A. \*the coronary sinus lies to the left of the entrance (aperture) of the inferior vena cava ✓
  - B. the left coronary artery gives rise to the circumflex and posterior interventricular branches ✓
  - C. the middle cardiac vein drains blood from the coronary sulcus ✓
  - D. the anterior cardiac veins drain blood from the anterior surface of the right ventricle ?
  - E. the S.A. node lies beneath the epicardium at the cephalic end of the sulcus terminalis

4. In regard to the heart:

- A. the time for diastole is equal to that of both atrial and ventricular systole
- B. the inferior vena cava carries oxygenated blood in fetus ✓
- C. the dilated base of the aorta is often referred to as the bulb of the aorta
- D. the second heart sound is associated with closing of the tricuspid and bicuspid valves ?
- E. close to the moderator (septomarginal trabecula) the interventricular septum is thin and membranous; this is the pars membranacea

5. With respect to the nervous system:

- No
- A. the deep cardiac plexus, and superficial cardiac plexus, only contain autonomic efferent nerves
  - B. gray rami communicans are only found at spinal cord levels T1 - L3
  - C. a ganglion is a collection of nerve cell bodies outside the central nervous system
  - D. the 2nd intercostal nerve is part of the distribution of the ventral ramus
  - E. a dermatome is an area of skin supplied by a single spinal nerve

Circle the correct answer(s). All, none, or some answers may apply.

6. In regard to the nervous system:
- A. the sympathetic nervous system vasoconstricts blood vessels in the skin
  - B. the parasympathetic nervous system decreases the rate and strength of the heart beat
  - C. the phrenic nerve is part of the autonomic nervous system
  - D. the patellar reflex (knee jerk) is an example of the function of the autonomic nervous system
  - E. the lesser splanchnic nerve contains post-ganglionic neuronal fibers
7. In the thorax:
- A. the transversus thoracis muscles lie deep to the internal thoracic vein ✓
  - B. the reference point for counting ribs is the 2nd rib
  - C. at approximately the level of the xiphisternal junction lies the 6th pair of costal cartilages
  - D. the phrenic nerve lies posterior to the root of the lung ✓
  - E. the cupula of the pleura rises above the level of the 1st rib
  - F. on the back (dorsum) the external intercostal muscles form a "V" in the superior (cephalic) direction ✓
8. With respect to the lungs:
- A. the carina is located at the tracheal bifurcation
  - B. the horizontal fissure follows the course of the 6th rib ✓
  - C. the pulmonary ligament attaches to the central tendon of the diaphragm ✓
  - D. the horizontal fissure cannot be seen on the mediastinal surface of the right lung
  - E. the left bronchus passes under the aortic arch ✓
  - F. the right bronchial vein drains into the azygous vein ✓
9. Terminology in anatomy often reflects a characteristic of the structure named. Which of the following is(are) the correct English equivalent?
- A. mediastinum - stands in the middle
  - B. trabeculae - wooden beam
  - C. saphenous - visible
  - D. calcaneous - heel
  - E. malleolar - hammer
10. Contents of the middle mediastinum include:
- A. phrenic nerve
  - B. thoracic splanchnic nerves ✓
  - C. sternopericardial ligaments
  - D. right atria
  - E. esophagus
  - F. sympathetic trunk ✓



Circle the correct answer(s). All, none, or some answers may apply.

11. The following muscles are innervated by the medial plantar nerve:
- A. plantar interossei
  - B. flexor digitorum brevis
  - C. 2nd lumbrical
  - D. flexor hallucis brevis
  - E. oblique head of adductor hallucis

YOU HAVE FINISHED THE WRITTEN PORTION OF YOUR EXAMINATION.

WE HOPE TO SEE ALL OF YOU AT THE "WELCOMING PICNIC"

TO BE HELD AT DR. EVART'S HOME FROM 6:00 P.M. UNTIL 8:00 P.M.

*Dr. Alphonse E. Leure-duPree*