

Human Anatomy — Biology 255

Exam #4

Please place your name and I.D. number on the back of the last page of this exam.

You must answer *all* questions on this exam. Because statistics demonstrate that, on average, between 2-5 questions on every exam are ambiguous enough to come out “aberrant” on an item analysis, the total number of points possible on this exam is 106. However, grades will be calculated out of a possible 100 points, assuming that 2-3 questions on this exam are aberrant.

Section 1: Anterior and posterior muscles of the thigh. If the following statements are true place a (+) in the space provided; if the statements are false place a (O) in the space provided. (2 points each)

- _____ 1. Before each section of the lecture and lab outline when a new group of muscles are introduced there is a section entitled “General Stuff.” This section discusses general trends in origins, insertions, actions and/or innervations. For the anterior muscles of the thigh you will note that the primary actions are flexion of the thigh and extension of the leg, and that the general nerve of innervation is the obturator nerve.
- _____ 2. The most important flexor of the thigh is the iliopsoas muscle. The iliopsoas muscle is composed of the iliacus, psoas major and psoas minor. (We didn’t discuss the psoas minor in lecture, but take my word for it — it is a component of the iliopsoas.) The iliopsoas originates from the 12th thoracic to the 5th lumbar vertebrae and the ilium, and inserts onto the lesser trochanter of the femur. This muscle is innervated by the femoral nerve, and flexes the thigh.
- _____ 3. The sartorius originates from the anterior, superior iliac spine and inserts onto the tibia. This muscle has actions on both the thigh and leg. The sartorius flexes, laterally rotates and abducts the thigh, and flexes the leg. It is innervated by the femoral nerve.
- _____ 4. All of the quadriceps muscles (rectus femoris, vastus intermedius, vastus lateralis and vastus medialis) insert onto the tibial tuberosity by the patellar tendon and ligament. In addition, all of the quadriceps muscles have at least one origin on the femur.
- _____ 5. All of the quadriceps muscles are involved in flexion of the thigh.

- _____ 6. The muscles of the posterior thigh are collectively called the hamstrings (biceps femoris, semimembranosus, and semitendinosus). Each of these muscles will have an action on the thigh and on the leg, and they are innervated (at least) by the tibial nerve.
- _____ 7. The long head of the biceps femoris originates from the ischial tuberosity; the short head originates from the linea aspera of the femur. The biceps femoris inserts onto the fibula and tibia, and flexes and laterally rotates the thigh and extends and laterally rotates the leg. The biceps femoris is innervated by the tibial nerve (long head) and the common fibular nerve (short head).
- _____ 8. The semitendinosus flexes and laterally rotates the leg, and extends and laterally rotates the thigh. The semimembranosus, however, will flex and medially rotate the leg and extend and medially rotate the thigh. Both of these muscles are innervated by the tibial nerve.
- _____ 9. The semitendinosus inserts onto the tibia and fibula, while the semimembranosus inserts only onto the tibia.

Section 2: Adductor muscles of the thigh. Place the most appropriate letter in the space provided. (2 points each)

- _____ 10. Which of the following muscles has its origin on the inferior pubic ramus?
- adductor longus
 - adductor magnus
 - adductor brevis
 - two of the above
 - all of the above
 - none of the above.
- _____ 11. Which of the following muscles medially rotates the thigh?
- adductor longus
 - adductor magnus
 - adductor brevis
 - two of the above
 - all of the above
 - none of the above.

- _____ 12. Which of the following muscles is innervated (either entirely or in part) by the sciatic nerve?
- adductor longus
 - adductor magnus
 - adductor brevis
 - two of the above
 - all of the above
 - none of the above.
- _____ 13. Which of the following is not an attachment (*either* origin or insertion) of the adductor magnus?
- ischial tuberosity
 - inferior pubic ramus
 - ischial ramus
 - adductor tubercle of the femur
 - linea aspera of the femur
 - medial epicondyle of the femur
 - more than one of the above is not an attachment of the adductor magnus

Section 3: Gluteal muscles and the tensor fascia latae. Place the most appropriate letter in the space provided. (2 points each)

- _____ 14. Which of the following does *not* apply to the tensor fascia latae?
- origin on one or more parts of the ilium, including the anterior superior iliac spine
 - insertion onto the iliotibial band
 - innervated by the inferior gluteal nerve
 - medially rotates the thigh
 - abducts the thigh
 - stabilizes the knee
 - extends the leg
 - laterally rotates the leg
 - more than one of the above do not apply

- _____ 15. Which of the following does *not* apply to the gluteus maximus?
- origin on one or more parts of the ilium
 - origin on the sacrum
 - origin on the coccyx
 - origin on the sacrum
 - origin on the thoracolumbar fascia
 - origin on one or more of the lower lumbar vertebrae
 - insertion onto the iliotibial tract
 - insertion onto the gluteal tuberosity
 - extends the thigh
 - laterally rotates the thigh
 - abducts the thigh
 - stabilizes the knee
 - innervated by the inferior gluteal nerve
 - more than one of the above doesn't apply
- _____ 16. Which of the following muscles inserts onto the lesser trochanter of the femur?
- gluteus maximus
 - gluteus medius
 - gluteus minimus
 - tensor fascia latae
 - more than one of the above
 - none of the above
- _____ 17. Which of the following muscles is a lateral rotator of the thigh?
- gluteus maximus
 - gluteus medius
 - gluteus minimus
 - tensor fascia latae
 - more than one of the above
 - none of the above
- _____ 18. Which of the following muscles is a medial rotator of the thigh?
- gluteus maximus
 - gluteus medius
 - gluteus minimus
 - tensor fascia latae
 - more than one of the above
 - none of the above

Section 4: Muscles of the anterior and lateral compartments of the leg. Place the most appropriate letter in the space provided. (2 points each)

- _____ 19. Which of the following muscles has its insertion on the sole of the foot?
- tibialis anterior
 - extensor digitorum longus
 - extensor hallucis longus
 - fibularis brevis
 - fibularis longus
 - more than one of the above
 - none of the above
- _____ 20. Which of the following muscles inverts the foot?
- tibialis anterior
 - extensor digitorum longus
 - extensor hallucis longus
 - fibularis brevis
 - fibularis longus
 - more than one of the above
 - none of the above
- _____ 21. Which of the following muscles everts the foot?
- tibialis anterior
 - extensor digitorum longus
 - extensor hallucis longus
 - fibularis brevis
 - fibularis longus
 - more than one of the above
 - none of the above
- _____ 22. Which of the following is a plantar flexor of the foot?
- tibialis anterior
 - extensor digitorum longus
 - extensor hallucis longus
 - fibularis brevis
 - fibularis longus
 - more than one of the above
 - none of the above

- _____ 23. Which of the following muscles inserts onto the 5th metatarsal of the foot?
- a. tibialis anterior
 - b. extensor digitorum longus
 - c. extensor hallucis longus
 - d. fibularis brevis
 - e. fibularis longus
 - f. more than one of the above
 - g. none of the above
- _____ 24. Which of the following muscles is best described as having its origin on the tibia, its insertion on the medial cuneiform and the 2nd metatarsal, actions of dorsiflexion and inversion of the foot, and an innervation by the deep fibular nerve?
- a. tibialis anterior
 - b. extensor digitorum longus
 - c. extensor hallucis longus
 - d. fibularis brevis
 - e. fibularis longus
 - f. more than one of the above
 - g. none of the above
- _____ 25. Which of the following muscles is innervated by the common fibular nerve?
- a. tibialis anterior
 - b. extensor digitorum longus
 - c. extensor hallucis longus
 - d. fibularis brevis
 - e. fibularis longus
 - f. more than one of the above
 - g. none of the above

Section 5: Muscles of the posterior compartment of the leg. If the following statements are true place a (+) in the space provided; if the statement is false place a (O) in the space provided. (2 points each)

- _____ 26. The gastrocnemius is a plantar flexor of the foot and a flexor of the leg.
- _____ 27. The soleus originates from the tibia and the fibula.
- _____ 28. The soleus is a plantar flexor of the foot and a flexor of the leg.
- _____ 29. The gastrocnemius, soleus and plantaris all insert onto the calcaneus.
- _____ 30. The tibialis posterior inserts onto the navicular, cuboid, talus, all 3 cuneiforms, and metatarsals 2, 3, and 4.

_____ 31. The tibialis posterior is a plantar flexor and inverter of the foot.

Section 6: Agonist-Antagonist Section. Place the most appropriate letter in the space provided. (2 points each)

_____ 32. The gluteus maximus is an extensor of the thigh. Which of the following muscles (*either* partially or the whole muscle) would be an antagonist to that particular action of the gluteus maximus?

- a. adductor magnus
- b. gluteus medius
- c. adductor brevis
- d. adductor longus
- e. sartorius
- f. more than one of the above
- g. all of the above
- h. none of the above

_____ 33. The gracilis is an adductor of the thigh. Which of the following muscles (*either* partially or the whole muscle) would be an antagonist to that particular action of the gracilis?

- a. gluteus medius
- b. gluteus minimus
- c. gluteus maximus
- d. tensor fascia latae
- e. sartorius
- f. all but one of the above
- g. all of the above
- h. none of the above

_____ 34. The tensor fascia latae is a medial rotator of the thigh. Which of the following muscles (*either* partially or the whole muscle) would be an antagonist to that particular action of the tensor fascia latae?

- a. gluteus maximus
- b. gracilis
- c. gluteus medius
- d. gluteus minimus
- e. adductor magnus
- f. adductor longus
- g. all but one of the above
- h. all of the above
- i. none of the above

_____ 35. Relax, collect your thoughts, and sign your initials in the space provided to collect two free points

- _____ 36. The semitendinosus is a medial rotator of the leg. Which of the following muscles (*either* partially or the whole muscle) would be an antagonist to that particular action of the semitendinosus?
- biceps femoris (long head)
 - biceps femoris (short head)
 - tensor fascia latae
 - gracilis
 - plantaris
 - two of the above
 - three of the above
 - four of the above
 - all of the above
- _____ 37. The fibularis longus everts the foot. Which of the following muscles (*either* partially or the whole muscle) would be an antagonist to that particular action of the fibularis longus?
- tibialis anterior
 - tibialis posterior
 - gastrocnemius
 - more than one of the above
 - all of the above
 - none of the above

Go to the next page please

Section 7: Muscle Identification. On the next page is a cross section of a middle portion of the thigh. If a muscle on the following page is labeled place the proper letter in the appropriate space. However, *if a muscle is not labeled place XX in the space provided.* (NOTE LABELING OF ANTERIOR AND MEDIAL) (2 points each)

- _____ 38. gracilis
- _____ 39. adductor magnus
- _____ 40. adductor brevis
- _____ 41. adductor longus
- _____ 42. short head of biceps femoris

Section 8: Muscle Identification. On page 11 is a cross section of the leg. If a muscle on the following page is labeled place the proper letter in the appropriate space. However, *if a muscle is not labeled place XX in the space provided.* (2 points each) (NOTE THAT MEDIAL, LATERAL AND ANTERIOR ARE DETERMINED BY THE BONES OF THE LEG, WHICH YOU SHOULD KNOW)

- _____ 43. tibialis anterior
- _____ 44. soleus
- _____ 45. extensor hallucis longus
- _____ 46. extensor digitorum longus

Section 8: Terminology. Define the following terms in the space provided. (2 points each)

47. trochlea

48. trochanter

49. fissure

50. meatus

51. hamulus

52. sulcus

53. suture