

# Musculoskeletal Anatomy and Physiology Home Study Course

14 CE Hours  
Online Study Guide

Presented by the:  
*Center for Massage Therapy Continuing Education*

*PO Box 117 • Elk Point, SD 57025  
866-784-5940 • [www.massagetherapyceu.com](http://www.massagetherapyceu.com)*

## Table of Contents

INSTRUCTIONS .....	3
EXAM (for review before taking the online exam).....	4

### Center for Massage Therapy Continuing Education

© 2016, Center for Massage Therapy Continuing Education  
PO Box 117  
Elk Point, SD 57025  
www.massagetherapyceu.com  
Ph: 866-784-5940 • Fax: 605-761-2261  
info@massagetherapyceu.com

Published by the Center for Massage Therapy Continuing Education

The author grants permission to photocopy this outline for personal use only. Beyond this consent, no portion of this outline may be copied or reproduced in any form without written permission from the Center for Massage Therapy Continuing Education.

It is the responsibility of the practitioner to determine the appropriateness of the principles presented in terms within the scope of practice. This information is in no way meant to diagnose or treat medical conditions. This course is not meant to teach advanced hands-on massage techniques. Written medical opinions are always the best way to resolve any questions regarding contra-indications to massage therapy.

**PLEASE CAREFULLY READ THE DIRECTIONS ON PAGE 3**

## **Instructions for the Musculoskeletal Anatomy and Physiology Home Study Course**

Thank you for investing in the Musculoskeletal Anatomy and Physiology home study course, a 14 CE hour course designed to further your knowledge of the anatomy and physiology of the skeletal, muscular and nervous systems. This guide will contain all of the instructions you will need to complete this course. This is a 14 CE hour course, so that means it should take you approximately 14 hours to read the text, complete the exam and course evaluation. This course is not meant to teach hands on massage techniques. It is an advanced course in anatomy and physiology of the musculoskeletal system.

### **The following are steps to follow in completing this course:**

- 1. Read the instructions and review the text and exam.**
- 2. Access the online examination in your account at [www.massagetherapyceu.com](http://www.massagetherapyceu.com).**
- 3. Complete your examination and print your certificate. The exam is open book and there is no time limit for completion.**

You must pass the exam with an 80% or better to pass this home study course. Feel free to review the textbook and DVD-ROM while taking the exam. You are allowed to access and take the exam up to 3 times if needed. There is no time limit when taking the exam. This course uses the textbook “The Concise Book of Muscles”, by Chris Jarney. There are no trick questions on the exam. All of the answers can be found in the textbook.

**It is advised to answer the exam questions in the study guide before testing online. That way, when you are testing you do not have go back and forth through the online exam and risk losing your answered questions!**

Good luck as you complete this course. If you have any question please feel free to contact us at 866-784-5940, 712-490-8245 or by email at [info@massagetherapyceu.com](mailto:info@massagetherapyceu.com). Most state boards require that you keep your “proof of completion” certificates for at least four years in case of audit. Thank you for taking our Musculoskeletal Anatomy and Physiology home study course.

# Musculoskeletal Anatomy and Physiology Examination

## Chapter 1

1. The term \_\_\_\_\_ refers to below, or away from the head or toward the lower part of a structure of the body.
  - A. Anterior
  - B. Medial
  - C. Superior
  - D. Inferior
2. When referring to the arm, which of the following parts is the most distal?
  - A. Fingers
  - B. Shoulder
  - C. Bicep
  - D. Elbow
3. What does the term “plantar” refer to?
  - A. The top of the foot
  - B. The sole of the foot
  - C. The back of the hand
  - D. The palm of the hand
4. Which of the following planes divides the body into upper and lower sections?
  - A. Sagittal
  - B. Frontal
  - C. Transverse
  - D. Dorsal
5. Movement of a bone away from the midline of the body or the midline of a limb is called:
  - A. Flexion
  - B. Abduction
  - C. Adduction
  - D. Rotation
6. What is pronation?
  - A. To turn the palm of the hand up to face the ceiling
  - B. To turn the sole of the foot inward
  - C. To turn towards the midline
  - D. To turn the palm of the hand down to face the floor
7. Opposition is a movement specific to which of the following joints?
  - A. The saddle joint of the thumb
  - B. The ball and socket joint of the shoulder
  - C. The hinge joint of the elbow
  - D. The pivot joint of the tibia and fibula

8. How many thoracic vertebrae exist?
- A. 7
  - B. 12
  - C. 5
  - D. 3
9. Which of the following is a bone of the skull?
- A. Parietal
  - B. Temporal
  - C. Frontal
  - D. All of the above
10. The biceps femoris and gastrocnemius muscles are located in the \_\_\_\_\_ body.
- A. Anterior
  - B. Posterior
11. Which of the following describes the insertion of a muscle?
- A. The place where a muscle attaches to a relatively stationary point on a bone
  - B. The end of the muscle that attaches to the bone that moves
  - C. A non-movable end point of a tendon or aponeurosis
  - D. The middle point of the muscle which contains the muscle bundles
12. An \_\_\_\_\_ contraction occurs when a muscle increases its tension, but the length of the muscle is not altered.
- A. Isotonic
  - B. Isometric
  - C. Exocentric
  - D. Eccentric
13. When flexing the arm at the elbow, which of the following muscles is the antagonist?
- A. Biceps brachii
  - B. Deltoid
  - C. Triceps brachii
  - D. Brachialis

## Chapter 2

14. What is the action of the orbicularis oculi?
- A. Strongly closes eyelids
  - B. Pulls scalp backwards
  - C. Wrinkles nose
  - D. Draws eyebrows downward
15. Which of the following muscles enables strong “sniffing” and sneezing?
- A. Corrugator supercillii
  - B. Procerus
  - C. Nasalis
  - D. Orbicularis oris

16. Where can you palpate the levator anguli oris muscle?
- Around the eyes
  - Around the ears
  - Around the lips
  - Around the occipital bone
17. Which of the following muscles contains fibers which are continuous with the platysma?
- Depressor anguli oris
  - Zygomaticus
  - Buccinator
  - Masseter
18. Which of the following muscles forms the substance of the cheek?
- Platysma
  - Mentalis
  - Buccinator
  - Temporalis
19. What is the origin of the temporalis muscle?
- Zygomatic arch
  - Lateral surface of the mandible
  - Temporal fossa including frontal, parietal and temporal bones
  - Coronoid process and ramus of mandible
20. Which of the following muscles are activated by the trigeminal V nerve (mandibular division)?
- Masseter
  - Pterygoideus lateralis
  - Pterygoideus medialis
  - All of the above
21. Which of the following muscles puts pressure on the brachial plexus and the subclavian artery when tight/hypertonic?
- Scalenus anterior, medius, posterior
  - Sternocleidomastoideus
  - Semispinalis capitis, cervicis, thoracis
  - All of the above
22. Which of the following is an action of the sternocleidomastoideus?
- Flexes the neck
  - Raises the sternum, and consequently the ribs during deep inhalation
  - Tilts the head towards the same side
  - All of the above

### Chapter 3

23. Where can you palpate the erector spinae (sacrospinalis) muscles?
- Deep to the transversospinalis group, on the left side of the spine
  - Superficially, on the posterior side of the trunk, on each side of the spine
  - Superficially, on the anterior side of the trunk, on each side of the rib cage
  - Along the transverse processes of the cervical vertebrae

24. What three muscle groups comprise the transversospinalis?
- Erector spinae, semispinalis and splenius capitis
  - Splenius capitis, splenius cervicis and rotatores
  - Semispinalis, multifidis and rotatores
  - Semispinalis, splenius capitis and splenius cervicis
25. When acting together, what is the action of the splenius capitis and splenius cervicis?
- Extends the head and neck
  - Flexes the head and neck
  - Laterally flexes the neck
  - All of the above
26. In the textbook illustrations of the muscles, blue marks the insertion, while red marks the origin.
- True
  - False
27. Which of the following muscles helps maintain good posture and spinal stability during all movements?
- Semispinalis capitis, cervicis and thoracis
  - Sacrospinalis
  - Multifidis and rotatores
  - External and internal intercostals
28. There are \_\_\_\_\_ external intercostals located on each side of the ribcage.
- 7
  - 9
  - 11
  - 13
29. What is the origin of the external oblique?
- Iliac crest
  - Lower eight ribs
  - Bottom three or four ribs
  - Thoracolumbar fascia
30. What is the action of the transversus abdominis?
- Compresses the abdomen, helping to support the abdominal viscera against the pull of gravity
  - Forms the floor of the thoracic cavity
  - Flexes the lumbar spine; depresses the ribcage; stabilizes the pelvis during walking
  - Laterally flexes the vertebral column; helps extend the lumbar part of the vertebral column; gives lateral stability
31. Which of the following movements may cause damage to the quadratus lumborum muscle?
- Bending forward or jumping with tucked knees too quickly
  - Going up a step or walking up a hill too quickly
  - Lifting without bending the knees or keeping the back erect
  - Bending sideways or lifting from a sideways position too quickly

32. Which two muscles form the iliopsoas muscle?
- A. Psoas major and iliacus
  - B. Psoas major and psoas minor
  - C. Quadratus lumborum and psoas major
  - D. Iliacus and quadratus lumborum

#### Chapter 4

33. What is the insertion of the trapezius muscle?
- A. Base of the skull; spinous processes of C7 and thoracic vertebrae
  - B. Upper medial vertebral border of the scapula
  - C. Lateral third of the clavicle; acromion process; spine of scapula
  - D. All of the above
34. Which of the following may result from a chronically tight/shortened levator scapulae muscle?
- A. Low back pain and stiffness
  - B. Neck pain or stiffness, headaches
  - C. Loss of function of shoulder joint
  - D. Thoracic pain or stiffness
35. What is the action of the rhomboids (minor and major)?
- A. Retracts scapula
  - B. Stabilizes scapula
  - C. Slightly assists in outer range of adduction of arm
  - D. All of the above
36. The \_\_\_\_\_ of the serratus anterior is the anterior (costal) surface of the medial border of scapula and the inferior angle of the scapula.
- A. Origin
  - B. Insertion
  - C. Action
  - D. Nerve activation
37. Which of the following is a strengthening exercise for the pectoralis minor muscle?
- A. Bench press
  - B. Dumb-bell flies
  - C. Pull-overs
  - D. All of the above
38. Where can you palpate the insertion of the pectoralis major?
- A. Upper shaft of humerus
  - B. Sternum and adjacent upper six costal cartilages
  - C. Coracoid process of scapula
  - D. Medial two-thirds of front clavicle



39. Along with the subscapularis and teres major, the \_\_\_\_\_ forms the posterior wall of the axilla.
- A. Pectoralis major
  - B. Pectoralis minor
  - C. Latissimus dorsi
  - D. Quadratus lumborum
40. Which of the following is an example of the action of the deltoideus muscle?
- A. Raising the arm to wave
  - B. Bending forward to pick something up
  - C. Flexing the arm at the elbow
  - D. Reaching into your back pocket
41. Which four muscles comprise the rotator cuff?
- A. Supraspinatus, deltoideus, pectoralis minor and infraspinatus
  - B. Supraspinatus, infraspinatus, teres minor and subscapularis
  - C. Infraspinatus, teres major, subscapularis and biceps brachii
  - D. Teres major, teres minor, subscapularis and infraspinatus
42. What is the insertion of the infraspinatus muscle?
- A. Middle two-thirds of the dorsal surface of the scapula, below the spine of the scapula
  - B. Upper two-thirds of the lateral edge of the dorsal surface of the scapula
  - C. Greater tubercle at the top of the humerus; capsule of the shoulder joint
  - D. Subscapular fossa
43. What is the action of the teres minor muscle?
- A. Laterally rotates the humerus; weakly adducts the humerus
  - B. Medially rotates the humerus
  - C. Extends the humerus from the flexed position
  - D. All of the above
44. What is the function of the rotator cuff?
- A. To help hold the head of the humerus in contact with the glenoid cavity (socket of the shoulder joint) of the scapula during movements of the shoulder
  - B. To help hold the distal portion of the humerus in contact with the olecranon process during movements of the arm
  - C. To act as the prime mover of the posterior arm and help stabilize the shoulder joint
  - D. All of the above
45. Which of the following is a strengthening exercise for the teres major?
- A. Bench press
  - B. Shoulder press
  - C. Seated rowing
  - D. All of the above
46. The biceps brachii muscle operates over three joints and has two tendinosus heads at its origin and two tendinosus insertions.
- A. True
  - B. False

47. The nerve from \_\_\_\_\_ and \_\_\_\_\_ helps activate the coracobrachialis muscle.
- A. C6, C8
  - B. C6, C7
  - C. C4, C5
  - D. C5, C7
48. Where can you palpate the origin of the brachialis muscle?
- A. Coronoid process and tuberosity of the ulna
  - B. Coracoid process of the humerus
  - C. Anterior lower shaft of the humerus
  - D. Posterior lower shaft of the humerus
49. Which of the following is a strengthening exercise for the triceps brachii?
- A. Bench press
  - B. Dips
  - C. Triceps kick-back
  - D. All of the above
50. Which of the following movements may injure the triceps brachii?
- A. Throwing with excessive force
  - B. Lifting at an angle suddenly
  - C. Sudden lateral rotation
  - D. Catching with excessive force

## Chapter 5

51. Which of the following muscles pronates the forearm?
- A. Triceps brachii
  - B. Pronator teres
  - C. Wrist flexors
  - D. Brachialis
52. All of the following muscles are wrist flexors EXCEPT:
- A. Palmaris longus
  - B. Flexor carpi ulnaris
  - C. Flexor carpi radialis
  - D. Brachialis
53. Which of the following conditions involves the wrist flexor muscles?
- A. Tennis elbow
  - B. Carpal tunnel syndrome
  - C. Thoracic outlet syndrome
  - D. All of the above
54. The flexor digitorum profundus flexes the \_\_\_\_\_.
- A. Distal phalanges
  - B. Distal metatarsals
  - C. Middle phalanges of each finger
  - D. Wrist

55. What is the insertion of the brachioradialis?
- Base of the distal phalanges
  - Carpals, metacarpals and phalanges
  - Lower lateral end of the radius, just above the styloid process
  - Lower lateral end of the ulna, just below the styloid process
56. Which of the following is the basic functional movement of the supinator?
- Waving
  - Typing
  - Turning a door handle
  - Pulling something toward yourself
57. Which of the following muscles is a wrist extensor?
- Extensor carpi radialis longus
  - Extensor carpi radialis brevis
  - Extensor carpi ulnaris
  - All of the above
58. Which of the following nerves activates the finger extensors?
- Deep radial nerve
  - Radial nerve
  - Ulnar nerve
  - Median nerve
59. Where can you palpate the insertion of the opponens pollicis?
- Radial side of the base of the proximal phalanx of the thumb
  - Flexor retinaculum
  - Tubercle of the trapezium
  - Entire length of the radial border of the first metacarpal
60. Which of the following activities may damage the opponens pollicis and flexor pollicis brevis?
- Lifting a heavy object improperly
  - Overextension of the thumb from a fall
  - Bending at the waist for extended periods
  - All of the above
61. The lumbricales of the hand are comprised of \_\_\_\_\_ small cylindrical muscles, named after the earthworm, because of their shape.
- 2
  - 3
  - 4
  - 5
62. What is the origin of the abductor digiti minimi?
- Pisiform bone, tendon of the flexor carpi ulnaris
  - Ulnar side of the base of the proximal phalanx of the little finger
  - Hamate bone, tendon of the flexor carpi ulnaris
  - Radial side of the base of the distal phalanx of the little finger

63. The \_\_\_\_\_ and the \_\_\_\_\_ both originate on the hook of the hamate bone and the anterior surface of the flexor retinaculum.
- A. Palmar interossei and dorsal interossei
  - B. Abductor digiti minimi and opponens digiti minimi
  - C. Opponens digiti minimi and flexor digiti minimi brevis
  - D. Abductor pollicis brevis and opponens digiti minimi
64. What is the action of the abductor pollicis brevis?
- A. Adducts the thumb and moves it anteriorly
  - B. Abducts the thumb and moves it anteriorly
  - C. Flexes the little finger
  - D. Abducts the index finger and moves it anteriorly
65. Which of the following actions uses the adductor pollicis?
- A. Typing
  - B. Holding a thread with the finger tips
  - C. Holding a large ball
  - D. Gripping a jam jar lid to screw it on

## Chapter 6

66. Where can you palpate the insertion of the gluteus maximus?
- A. Upper posterior area of the femur and iliotibial tract of the fascia lata muscle
  - B. Outer surface of the ilium and posterior surface of the sacrum and coccyx
  - C. Upper anterior area of the femur and greater trochanter of the femur
  - D. Ischial tuberosity and posterior surface of the sacrum and coccyx
67. Which of the following is an action of the gluteus maximus?
- A. Extends and laterally rotates hip joint
  - B. Extends trunk
  - C. Assist in adduction of hip joint
  - D. All of the above
68. Which of the following is a strengthening exercise for the tensor fasciae latae muscle?
- A. Abductor machine
  - B. Hip abduction
  - C. Multi-hip machine
  - D. All of the above
69. Where can you palpate the origin of the gluteus medius?
- A. Lateral surface of the greater trochanter of the femur
  - B. Medial surface of the greater trochanter of the femur
  - C. Upper outer surface of the ilium
  - D. Anterior surface of the ilium
70. The gluteus minimus muscle is deep to the gluteus medius, making it very difficult to palpate.
- A. True
  - B. False

71. All of the following are actions of the piriformis muscle EXCEPT:
- A. Laterally rotates the hip joint
  - B. Abducts the thigh when the hip is flexed
  - C. Helps hold the head of the femur in its socket
  - D. Adducts the thigh when the hip is flexed
72. Which of the following may result when the piriformis muscle is chronically tight or shortened?
- A. Middle back pain which spreads into the lower back
  - B. Sciatic pain which begins in the buttocks
  - C. Dislocation of the femur
  - D. Anterior thigh pain which begins in the inguinal area
73. Which of the following is a deep lateral hip rotator?
- A. Obturator internus
  - B. Gemellus superior
  - C. Quadratus femoris
  - D. All of the above
74. All of the deep lateral hip rotators insert and can be palpated on the greater trochanter EXCEPT:
- A. Obturator internus
  - B. Gemellus inferior
  - C. Quadratus femoris
  - D. Gemellus superior
75. What three muscles comprise the hamstring group?
- A. Semimembranosus, semitendinosus and biceps femoris
  - B. Semimembranosus, semitendinosus and quadriceps femoris
  - C. Rectus femoris, semitendinosus and biceps femoris
  - D. Sartorius, semitendinosus and quadriceps femoris
76. What three muscles/tendons comprise the femoral triangle?
- A. Adductor longus, sartorius and inguinal ligament
  - B. Adductor magnus, adductor brevis and adductor longus
  - C. Sartorius, tensor fascia latae and inguinal ligament
  - D. Psoas major, gracilis and adductor longus
77. Where can the gracilis muscle be palpated in the body?
- A. Along the lateral side of the thigh next to the fascia latae
  - B. Along the posterior surface of the thigh in front of the biceps femoris
  - C. Along the medial side of the thigh in front of the semimembranosus
  - D. All of the above
78. What is the insertion of the pectineus muscle?
- A. Lower margin of pelvic bone
  - B. Upper medial shaft of femur
  - C. Upper medial surface of tibia
  - D. Upper anterior margin of pubic bone

79. The \_\_\_\_\_ is the most superficial muscle of the anterior thigh.
- A. Gracilis
  - B. Rectus femoris
  - C. Vastus medialis
  - D. Sartorius
80. What is the action of the rectus femoris muscle?
- A. Extends the knee joint and flexes the hip joint
  - B. Adducts the hip joint and flexes the hip joint
  - C. Flexes the knee joint and extends the hip joint
  - D. Extends the knee joint and extends the hip joint
81. Which of the following quadriceps muscles has two heads of origin?
- A. Vastus lateralis
  - B. Vastus intermedius
  - C. Vastus Medialis
  - D. Rectus femoris

## Chapter 7

82. What is the origin of the tibialis anterior?
- A. Upper half of the lateral and anterior surface of the fibula
  - B. Medial edge of the front of the foot, medial cuneiform and base of first metatarsal
  - C. Upper half of the lateral and anterior surface of the tibia
  - D. Anterior surface of the fibula and interosseous membrane
83. Which of the following muscles is the deepest in the anterior leg?
- A. Tibialis anterior
  - B. Extensor hallucis longus
  - C. Extensor digitorum longus
  - D. Gastrocnemius
84. What is the insertion of the fibularis longus?
- A. Base of the first metatarsal
  - B. Base of the second metatarsal
  - C. Base of the fourth metatarsal
  - D. Base of the fifth metatarsal
85. Forced \_\_\_\_\_ of the fibularis longus and brevis may create chronic problems with ankle joint stability.
- A. Eversion
  - B. Inversion
  - C. Abduction
  - D. Rotation
86. Which three muscles comprise the triceps surae?
- A. Fibularis longus, gastrocnemius and soleus
  - B. Gastrocnemius, soleus and plantaris
  - C. Gastrocnemius, soleus and popliteus
  - D. Soleus, plantaris and popliteus

87. Which of the following nerves activates the soleus muscle?
- A. Tibial nerve
  - B. Deep peroneal nerve
  - C. Fibular nerve
  - D. All of the following
88. What is the insertion of the popliteus muscle?
- A. Lateral surface of the lateral condyle of the femur
  - B. Lower part of the anterior surface of the tibia, inferior to the soleal line
  - C. Upper part of the posterior surface of the tibia, superior to the soleal line
  - D. Upper part of the anterior surface of the tibia, inferior to the soleal line
89. Which of the following is the deepest muscle of the back of the leg?
- A. Popliteus
  - B. Soleus
  - C. Tibialis posterior
  - D. Gastrocnemius
90. Where can you palpate the flexor digitorum longus?
- A. Medial, posterior lower half of the calf
  - B. Anterior, distal upper half of the calf
  - C. Lower edge of the popliteal fossa
  - D. Upper edge of the popliteal fossa
91. What is the insertion of the flexor hallucis longus?
- A. Distal phalanges of the second through fifth toes
  - B. Lower two-thirds of the posterior surface of the fibula and interosseous membrane
  - C. Adjacent sides of the metatarsal bones
  - D. Distal phalanx of the great toe
92. Which of the following muscles is heavily utilized in running, especially with bare feet?
- A. Lumbricales
  - B. Dorsal interossei
  - C. Flexor digitorum longus
  - D. Gracilis

This completes the Musculoskeletal Anatomy and Physiology exam.