

**Clinical Guide To**  
**Musculoskeletal Palpation**

**CORRESPONDENCE EDUCATION PROGRAM #157**

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## **LEARNING OBJECTIVES:**

### ***Clinical Guide to Musculoskeletal Palpation***

**After completing this course participants will be able to:**

1. Learn the definition and goals of palpation.
2. Understand the importance of psychomotor skill with palpation.
3. Understand the use of palpation to assess the degree of tissue irritability and the importance of adequate knowledge of anatomy.
4. Be able to use the anatomical relationship terms when discussing palpation of injured tissues.
5. Understand palpation of the skin and know what information is provided about skin integrity, temperature, edema, tissue mobility, hydration, and trophic changes.
6. Gain a brief introduction into the palpation of bones, muscles, tendons, ligaments, nerves, distal pulses, bursae, joint capsules, and plica.
7. Learn the function and anatomy of the skull and face, including bones, muscles, arteries, and nerves.
8. Learn the correct techniques for palpation of the external occipital protuberance, orbital rim, nasal bone, zygomatic arch, mastoid process, mandibular condyle, mandibular angle, hyoid bone, and the following muscles: suprahyoids, infrahyoids, masseter, temporalis, medial pterygoid, and lateral pterygoid.
9. Learn how to correctly palpate the carotid pulse.
10. Work through a case study of injury to the head and face.
11. Learn the function of the shoulder girdle complex, as well as the bony, soft tissue, and neurovascular anatomy.
12. Learn the proper technique for palpating the medial, superior, inferior, and lateral border of the scapula.
13. Learn palpation technique for the spine of the scapula, acromion process, subacromial space, coracoid process, greater tubercle of the humerus, intertubercular groove of the humerus, lesser tubercle of the humerus, and deltoid tuberosity.

14. Know the muscle origin, insertion, innervation and action of the axioscapular and scapulohumeral muscles and the appropriate palpation techniques for each.
15. Be able to determine the type of tissue involved as well as possible diagnosis based on case history and palpation for a case study involving the shoulder.
16. Understand the function and anatomy of the pectoral and axillary region including bony, soft tissue and neurovascular anatomy.
17. Know how to palpate the clavicle, sternum, ribs, intercostal spaces, pectoralis major, pectoralis minor, serratus anterior, and the subclavius.
18. Be able to determine the cause of injury and diagnosis of an injury to the pectoral and axillary region based on a case study.
19. Learn the function and anatomy of the elbow and forearm.
20. Know how to palpate the anatomical structures of the elbow and forearm, and how to apply that knowledge to a case study to determine the cause of injury.
21. Know the origin, insertion, innervation, and joint action of the muscles of the elbow and forearm.
22. Learn the function and anatomy of the wrist and hand.
23. Know how to palpate the anatomical structures of the hand and wrist, including the anatomical snuff box, bones, muscles, and arteries.
24. Utilize the knowledge of function, anatomy, and palpation to solve a case study involving the hand and wrist.
25. Understand the function of the cervical spine, thoracic spine, and rib cage, and the bony, soft tissue, and neurovascular anatomy.
26. Learn how to palpate the bony and soft tissue anatomy of the cervical spine, thoracic spine, and rib cage.
27. Apply the knowledge of the cervical spine, thoracic spine, and rib cage in a case study.
28. Understand the function and anatomy of the lumbar and sacral spine including bones, soft tissues, and neurovascular structures.
29. Learn palpation techniques for 5 bony structures and 7 soft tissue structures in the lumbar and sacral spine, and then apply this knowledge to a case study.
30. Understand the function and anatomy of the hip and groin region including bones, soft tissues, and neurovascular structures.
31. Learn palpation techniques for the iliac crest, anterior superior iliac spine, posterior superior iliac spine, anterior inferior iliac spine, pubic tubercle, pubic ramus, greater trochanter, and ischial tuberosity.
32. Learn the origin, insertion, innervation, action, and palpation of the muscles of the hip and groin.



CEC/CEU Test for Clinical Guide to Musculoskeletal Palpation  
Please choose the BEST answer for each question

- 1. Which of the following disciplines does not require palpation?**
  - A. Physical therapists
  - B. Physician assistants
  - C. Personal trainers
  - D. Athletic trainers**
  
- 2. Good palpation skills are required for all of the following except:**
  - A. Patient trust.
  - B. Provider trust.
  - C. Patient confidence.
  - D. Patient rapport.**
  
- 3. Which of the following is in the superficial layers and not a palpation target?**
  - A. Bones
  - B. Muscles
  - C. Tendons
  - D. Skin epidermal layer**
  
- 4. Palpation can give immediate information about all of the following except:**
  - A. Range of motion
  - B. Tissue integrity
  - C. Degree of irritability
  - D. Temperature of the palpated area**

- 5. Which of the following requires light palpation because of their closeness to the surface of the body?**
- A. Medial and lateral epicondyles
  - B. Psoas major
  - C. Multifidus
  - D. Quadratus lumborum
- 6. Which of the following is not an essential element of the physical exam?**
- A. Medical history
  - B. Lab tests
  - C. Range of motion assessment
  - D. Muscle strength testing
- 7. What is one of the main objectives during the physical examination process?**
- A. Degree of irritability
  - B. Potassium levels
  - C. Testing for muscular imbalances
  - D. X-rays and CT scans
- 8. In anatomical position, the palms are facing:**
- A. To the body.
  - B. Forward.
  - C. Backward.
  - D. To the body and backward.
- 9. What anatomical term means higher up on a limb?**
- A. Anterior
  - B. Posterior
  - C. Distal
  - D. Proximal
- 10. Which of the following is not one of the four main types of tissue in the body?**
- A. Epithelial tissue
  - B. Endothelial tissue
  - C. Connective tissue
  - D. Muscle tissue

- 11. What is the term used for synovial folds?**
- A. Plica
  - B. Capsule
  - C. Bursae
  - D. Tendon
- 12. Which of the following joints in the face do physical therapists and other types of rehabilitation specialists commonly treat?**
- A. Facial fracture
  - B. Bony anomalies
  - C. Occlusion disorders
  - D. Temporomandibular joint (TMJ)
- 13. How many bones make up the facial skeleton?**
- A. 8 bones
  - B. 12 bones
  - C. 14 bones
  - D. 16 bones
- 14. What is the roof of the neurocranium where three sutures lines connect referred to as?**
- A. Frontal
  - B. Parietal
  - C. Sphenoid
  - D. Calvaria
- 15. Which of the following is not one of the bones that make up the inner orbital rim?**
- A. Zygomatic bone
  - B. Lacrimal bone
  - C. Sphenoid bone
  - D. Ethmoid bone

- 16. What cervical vertebrae level is where you would find the hyoid bone?**
- A. C1
  - B. C2
  - C. C3
  - D. C4
- 17. Which of the following arteries is not one of the three main branches that arise from the aortic arch?**
- A. Left subclavian artery
  - B. Right common carotid artery
  - C. Left common carotid artery
  - D. Right brachiocephalic trunk
- 18. Which of the following branches of the trigeminal nerve is not responsible for sensory innervation to the facial region?**
- A. Vestibular nerve
  - B. Ophthalmic nerve
  - C. Maxillary nerve
  - D. Mandibular nerve
- 19. Which bony protuberance is where the trapezius muscle originates?**
- A. Calvaria
  - B. External Occipital protuberance
  - C. Supraorbital rim
  - D. Suborbital rim
- 20. Which of the following statements regarding palpation of the nasal bone is incorrect?**
- A. The patient is sitting.
  - B. The clinician is standing directly behind the patient.
  - C. The patient's head and neck should be in a neutral spine position.
  - D. Start the palpation with one finger on each side of the nose.**



- 21. In which direction should the zygomatic arch be palpated?**
- A. Superior to inferior
  - B. Inferior to superior
  - C. Lateral to medial
  - D. Medial to lateral
- 22. Which of the following would be the correct palpation positioning for palpation of the mandibular condyle?**
- A. Superior to the ear canals
  - B. Inferior to the ear canals
  - C. Anterior to the ear canals
  - D. Posterior to the ear canals
- 23. What should be the patient head position during mandibular angle palpation?**
- A. Head and neck in neutral spine with patient facing forward
  - B. Patient looking up
  - C. Patient's head and neck rotated slightly away from the palpation side
  - D. Patient's head and neck rotated slightly toward the palpation side
- 24. Which of the following is not a suprahyoid muscle?**
- A. Mylohyoid muscle
  - B. Sternohyoid muscle
  - C. Geniohyoid muscle
  - D. Stylohyoid muscle
- 25. Which of the following muscles will not act by causing depression of the hyoid bone?**
- A. Digastric muscle
  - B. Omohyoid muscle
  - C. Sternothyroid muscle
  - D. Thyrohyoid muscle
- 26. What position should the patient be in for palpation of the Infrahyoid muscles?**
- A. Standing
  - B. Seated
  - C. Prone
  - D. Supine

- 27. What action will cause the Temporalis muscle to contract?**
- A. Smiling
  - B. Tongue protrusion
  - C. Biting down
  - D. Swallowing
- 28. The carotid pulse is most easily felt at what cervical vertebrae level?**
- A. C1-C2
  - B. C2-C3
  - C. C3-C4
  - D. C4-C5
- 29. What percentage of the population has problems with shoulder pain?**
- A. 5 to 10%
  - B. 16 to 21%
  - C. 33 to 47%
  - D. 50-75%
- 30. Which of the following is not part of the shoulder complex?**
- A. Scapula
  - B. Humerus
  - C. Clavicle
  - D. Cervical spine
- 31. Which of the following nerves wraps around the humerus in the spiral groove?**
- A. Radial nerve
  - B. Median nerve
  - C. Ulnar nerve
  - D. Axillary nerve

- 32. Which of the following is not one of the four joints of the shoulder girdle?**
- A. Glenohumeral joint
  - B. Sternoclavicular joint
  - C. Intravertebral joint
  - D. Acromioclavicular joint
- 33. Which of the following is an axioscapular muscle?**
- A. Deltoid
  - B. Teres major
  - C. Supraspinatus
  - D. Trapezius
- 34. Which of the following is not one of the rotator cuff muscles?**
- A. Supraspinatus
  - B. Teres major
  - C. Infraspinatus
  - D. Subscapularis
- 35. What is the lateral border of the quadrangular space?**
- A. Teres minor
  - B. Teres major
  - C. Surgical neck of the humerus
  - D. Long head of triceps
- 36. Which of the following is not a ligament associated with the scapula?**
- A. Brachiocephalic ligament
  - B. Acromioclavicular ligament
  - C. Coracoacromial ligament
  - D. Coracohumeral ligament
- 37. What nerve is responsible for innervation of the deltoid, teres minor, and skin on the superior lateral portion of the shoulder?**
- A. Suprascapular nerve
  - B. Subscapular nerve
  - C. Subclavian nerve
  - D. Axillary nerve

- 38. During palpation of the medial border of the scapula, where should the patient's hand be placed?**
- A. In front of the body
  - B. To the side of the body
  - C. Behind the back
  - D. Above the head
- 39. Where should the clinician be in respect to the patient when palpating the superior angle of the scapula?**
- A. In front of the patient
  - B. To the side of the patient
  - C. Behind the patient
  - D. Above the patient
- 40. How should the patient be positioned during palpation of the lateral border of the scapula?**
- A. Prone
  - B. Supine
  - C. Standing
  - D. Seated
- 41. Where should the patient's arm be while palpating the subacromial space?**
- A. Hanging at their side
  - B. Reaching anterior
  - C. Behind the back
  - D. Supported by the clinician
- 42. Where should the patient's hand be placed during palpation of the coracoid process?**
- A. Behind the body
  - B. Above the head
  - C. On the shoulder of the side being palpated
  - D. On the opposite shoulder

- 43. Which of the following is not an axioscapular muscle?**
- A. Trapezius
  - B. Deltoid
  - C. Latissimus dorsi
  - D. Rhomboids
- 44. Which scapulohumeral muscle is responsible for shoulder internal rotation, extension, and adduction?**
- A. Supraspinatus
  - B. Infraspinatus
  - C. Teres major
  - D. Teres minor
- 45. Where should manual resistance be applied during palpation of the Latissimus dorsi?**
- A. To the posterior-medial elbow
  - B. To the anterior-medial elbow
  - C. To the lateral elbow
  - D. To the superior-lateral humerus
- 46. When palpating up the Levator scapulae, where does it become uncovered from the Trapezius?**
- A. The trapezius covers the Levator scapulae all the way to its insertion on the cervical spine
  - B. At the superior angle of the scapula
  - C. In the posterior cervical triangle
  - D. At C5-C6
- 47. What is one of the most important functions of the pectoral and axillary regions?**
- A. Shoulder stability
  - B. Cervical stability
  - C. Thoracic stability
  - D. Protection of the thoracic viscera such as the heart and lungs

- 48. Which rib attaches to the sternal angle?**
- A. Rib 1
  - B. Rib 2
  - C. Rib 3
  - D. Rib 4
- 49. Which bone attaches the axial skeleton to the appendicular skeleton in the upper body?**
- A. Sternum
  - B. Clavicle
  - C. Scapula
  - D. Acromion process
- 50. Which of the following is not a border of the supraclavicular triangle?**
- A. Levator scapulae
  - B. Clavicle
  - C. Trapezius
  - D. Acromion process
- 51. Which of the following muscles is not located in the pectoral and axillary region?**
- A. Pectoralis major
  - B. Pectoralis minor
  - C. Serratus anterior
  - D. Supraspinatus
- 52. Which of the following muscles is not part of the posterior border of the axilla?**
- A. Latissimus dorsi
  - B. Subscapularis
  - C. Pectoralis major
  - D. Teres major

- 53. Which of the following nerve roots is not included in the formation of the brachial plexus?**
- A. C4
  - B. C5
  - C. C6
  - D. C7
- 54. When palpating the clavicle, which direction should your fingers move?**
- A. Medial
  - B. Lateral
  - C. Superior
  - D. Inferior
- 55. What is superficial in the jugular notch that will require gentle palpation?**
- A. Carotid artery
  - B. Brachial plexus
  - C. Trachea
  - D. Esophagus
- 56. What is the body ridge inferior to the manubrium of the sternum?**
- A. Sternal tuberosity
  - B. Manubrial tuberosity
  - C. Clavicular tuberosity
  - D. Sternal angle
- 57. Approximately how long is the body of the sternum?**
- A. 2 inches
  - B. 5 inches
  - C. 8 inches
  - D. 12 inches
- 58. Which portion of the sternum is pointed?**
- A. Manubrium
  - B. Sternal Angle
  - C. Body of the sternum
  - D. Xiphoid process

- 59. How many fingers should you use when palpating the intercostal spaces?**
- A. 1
  - B. 2
  - C. 3
  - D. 4
- 60. Which of the following muscles is innervated by the long thoracic nerve?**
- A. Serratus anterior
  - B. Pectoralis major
  - C. Pectoralis minor
  - D. Subclavius
- 61. Where does the pectoralis minor insert?**
- A. Acromion process
  - B. Coracoid process
  - C. Sternal angle
  - D. Manubrium
- 62. Which of the following is not a bone of the elbow and forearm?**
- A. Humerus
  - B. Radius
  - C. Fibula
  - D. Ulna
- 63. Which of the following is not one of the three fossae above the humeral condyles?**
- A. Radial fossa
  - B. Coronoid fossa
  - C. Olecranon fossa
  - D. Supracondylar fossa
- 64. All of the following are flexors of the elbow except the:**
- A. Biceps brachii.
  - B. Brachialis.
  - C. Anconeus
  - D. Brachioradialis



- 65. Which of the following is an intermediate layer of muscle in the anterior forearm?**
- A. Flexor digitorum superficialis
  - B. Pronator teres
  - C. Flexor carpi radialis
  - D. Palmaris longus
- 66. Which of the following nerves that cross the elbow joint are the most superficial?**
- A. Radial nerve
  - B. Ulnar nerve
  - C. Median nerve
  - D. Musculocutaneous nerve
- 67. Where will someone with golfer's elbow feel the most tenderness?**
- A. Lateral Epicondyle
  - B. Medial Epicondyle
  - C. Attachment of the common extensor tendon
  - D. Olecranon process
- 68. Which of the following muscles is not innervated by the radial nerve?**
- A. Brachialis
  - B. Brachioradialis
  - C. Extensor carpi radialis longus
  - D. Extensor carpi radialis brevis
- 69. Which head of the triceps is deep and cannot be accurately palpated?**
- A. Long head
  - B. Lateral head
  - C. Medial head
  - D. Inferior head

**70. Palpation of which muscle will be confirmed by having the patient extend digits 2 to 5 at the metacarpophalangeal joints?**

- A. Extensor carpi radialis longus
- B. Brachioradialis
- C. Extensor carpi radialis brevis
- D. Extensor digitorum communis

**71. Palpation of which muscle can be confirmed by having the patient flex the wrist and touch the thumb and pinkie finger together?**

- A. Extensor digitorum communis
- B. Extensor digiti minimi
- C. Pronator teres
- D. Palmaris longus

**72. Which side of the hand is used more for dexterity?**

- A. Radial or thumb side
- B. Medial or ulnar side
- C. Top of the hand
- D. Bottom of the hand

**73. How many bones make up the wrist joint?**

- A. 2
- B. 4
- C. 8
- D. 10

**74. Which finger does not have a middle phalanx?**

- A. Pinky finger
- B. Ring finger
- C. Index finger
- D. Thumb

**75. Which of the following is not a tendon that crosses over the anterior aspect of the wrist?**

- A. Brachioradialis
- B. Flexor carpi radialis
- C. Palmaris longus
- D. Flexor carpi ulnaris

- 76. Where is the carpal tunnel where the median nerve travels to the hand located?**
- A. Anterior aspect of wrist
  - B. Posterior aspect of wrist
  - C. Superior aspect of wrist
  - D. Inferior aspect of wrist
- 77. Which of the following is not a tendon that crosses over the posterior aspect of the wrist?**
- A. Flexor carpi radialis
  - B. Extensor carpi radialis longus
  - C. Extensor digitorum communis
  - D. Extensor digiti minimi
- 78. Which artery helps form the deep palmar arterial arch?**
- A. Ulnar artery
  - B. Median artery
  - C. Radial artery
  - D. Brachial artery
- 79. Which of the following is a dorsal ligament of the wrist and hand?**
- A. Palmar carpometacarpal ligament
  - B. Palmar ulnocarpal ligament
  - C. Volar radiocarpal ligament
  - D. Ulnar collateral ligament
- 80. Which joint movement will expose the anatomical snuff box?**
- A. Flexion and abduction of the thumb
  - B. Extension and adduction of the thumb
  - C. Extension and abduction of the thumb
  - D. Extension and adduction of the thumb

- 81. What bony prominence will be palpated lateral to the extensor pollicis longus tendon on the distal aspect of the posterior radius?**
- A. Lister's tubercle
  - B. Radial styloid process
  - C. Ulnar styloid process
  - D. Humeral greater tuberosity
- 82. Which of the following is not one of the anatomical structures that form the most stable column of the wrist and hand?**
- A. Capitate bone
  - B. Lunate bone
  - C. Third metacarpal
  - D. Second metacarpal
- 83. What bone sits on top of the triquetrum?**
- A. Scaphoid bone
  - B. Lunate bone
  - C. Pisiform bone
  - D. Trapezium bone
- 84. Which of the following soft tissues can be lacking in a portion of the population?**
- A. Hamate bone
  - B. Palmaris longus
  - C. Distal phalanges
  - D. Capitate bone
- 85. Which of the following muscles does not originate on the scaphoid and trapezium?**
- A. Abductor pollicis brevis
  - B. Abductor digiti minimi
  - C. Flexor pollicis brevis
  - D. Opponens pollicis

- 86. Which of the following muscles is not innervated by the median nerve?**
- A. Abductor pollicis brevis
  - B. Opponens pollicis
  - C. Adductor pollicis
  - D. Flexor pollicis brevis
- 87. What joint action would confirm palpation of the Adductor pollicis?**
- A. Thumb abduction
  - B. Wrist inversion
  - C. Wrist supination
  - D. Thumb adduction
- 88. Palpation of what muscle requires the fingers to move posteriorly and medially into the posterior web space?**
- A. Dorsal interossei
  - B. Hypothenars
  - C. Thenars
  - D. Adductor pollicis
- 89. What percentage of the population will experience neck pain at some point in their life?**
- A. 10%
  - B. 20%
  - C. 30%
  - D. 40%
- 90. How many vertebrae are there in the cervical spine?**
- A. 5
  - B. 6
  - C. 7
  - D. 8
- 91. What is the hallmark feature of the thoracic vertebrae?**
- A. A large projection called the dens
  - B. Small bodies
  - C. Transverse foramen for the vertebral artery
  - D. Costal facets

**92. Which of the following is not one of the suboccipital muscles?**

- A. Longus colli
- B. Superior oblique
- C. Inferior oblique
- D. Rectus capitus posterior major

**93. Which of the following is not one of the muscles that make up the erector spinae?**

- A. Iliocostalis
- B. Suprahyoid
- C. Longissimus
- D. Spinalis

**94. What is directly anterior to the Sternocleidomastoid muscle?**

- A. Upper trapezius
- B. Lower trapezius
- C. Carotid sheath
- D. Brachial plexus

**95. How many cervical nerves are there in the cervical vertebrae?**

- A. 5
- B. 6
- C. 7
- D. 8

**96. What position should the patient be in for palpation of the spinous processes of T1 to T12?**

- A. Supine with pillow under the head
- B. Standing with arms overhead
- C. Seated with arms resting on a stable surface
- D. Prone with pillow under abdomen

- 97. Having the patient take quick breaths through the nose will confirm palpation of which muscle?**
- A. Sternocleidomastoid
  - B. Scalenes
  - C. Upper trapezius
  - D. Mid-trapezius
- 98. Which muscles often become chronically shortened with forward head posture that may be associated with muscle spasm, trigger points, headaches, and orofacial pain?**
- A. Sternocleidomastoid
  - B. Scalenes
  - C. Suboccipital
  - D. Semispinalis capitis
- 99. What is the most important function of the lumbosacral region?**
- A. Support body weight
  - B. Protect the heart and lungs
  - C. Protect the reproductive organs
  - D. Improved diaphragmatic efficiency
- 100. Which of the following is not a local stabilizing muscle of the lumbosacral spine?**
- A. Multifidus
  - B. Rectus abdominus
  - C. Internal obliques
  - D. Transverse abdominal
- 101. What is the most superficial muscle to cross the lumbar and sacral spines?**
- A. Gluteus maximus
  - B. Multifidus
  - C. Latissimus dorsi
  - D. Internal obliques

**102. Which of the following groups of muscles do not make up the lumbar erector spinae?**

- A. Iliocostalis
- B. Longissimus
- C. Spinalis
- D. Quadratus lumborum

**103. While palpating the lumbar spinous processes, one finger should remain on which vertebrae?**

- A. T12
- B. L1
- C. L5
- D. S1

**104. Which of the following muscles is innervated by the ventral rami L1 to L3?**

- A. Psoas major
- B. Multifidus
- C. Rectus abdominus
- D. External obliques

**105. Palpation of which muscle can be confirmed by having the patient hike the hip or side-bend the spine?**

- A. Rectus abdominus
- B. Quadratus lumborum
- C. External oblique
- D. Transversus abdominis

**106. Which of the following is not one of the bones that make up an innominate in the pelvis?**

- A. Ilium
- B. Ischium
- C. Sacrum
- D. Pubis



**107. Which of the following bony landmarks is not associated with the ilium?**

- A. Anterior superior iliac spine
- B. Anterior inferior iliac spine
- C. Posterior superior iliac spine
- D. Posterior anterior iliac spine

**108. What is the largest and most superficial muscle on the posterior aspect of the ilium?**

- A. Piriformis
- B. Gluteus minimus
- C. Gluteus medius
- D. Gluteus maximus

**109. Which of the following muscles does not create hip external rotation?**

- A. Piriformis
- B. Gemelli
- C. Gluteus minimus
- D. Obturator internus

**110. Which of the following muscles is not part of the anterior compartment of the thigh?**

- A. Sartorius
- B. Biceps femoris
- C. Tensor fasciae latae
- D. Vastus medialis

**111. Which of the following muscles is part of the medial compartment of the thigh?**

- A. Vastus medialis
- B. Adductor longus
- C. Vastus intermedius
- D. Rectus femoris

- 112. Which of the following is not one of the muscles in the posterior compartment of the thigh?**
- A. Rectus femoris
  - B. Biceps femoris
  - C. Semitendinosus
  - D. Semimembranosus
- 113. What is the lateral border of the femoral triangle?**
- A. Adductor longus muscle
  - B. Inguinal ligament
  - C. Pectineus muscle
  - D. Sartorius muscle
- 114. The femoral artery is a continuation of which artery?**
- A. Brachial artery
  - B. Popliteal artery
  - C. External iliac artery
  - D. Descending genicular artery
- 115. What is the largest nerve arising from the sacrococcygeal plexus that innervates the hamstrings?**
- A. Sciatic nerve
  - B. Femoral nerve
  - C. Obturator nerve
  - D. Popliteal nerve
- 116. When palpating the iliac crest, what position should the patient be in?**
- A. Prone with a pillow under the abdomen
  - B. Supine with a pillow under the knees
  - C. Seated with the back resting against the chair
  - D. Standing with feet shoulder-width apart
- 117. What bony structure is one inch below the anterior superior iliac spine?**
- A. Femoral condyle
  - B. Anterior inferior iliac spine
  - C. Posterior superior iliac spine
  - D. Sacroiliac joint

**118. Which joint actions will confirm palpation of the greater trochanter of the femur?**

- A. Flexion and extension of the hip
- B. Flexion and extension of the knee
- C. Internal and external rotation of the hip
- D. Internal and external rotation of the knee

**119. Which muscle originates on the anterior superior iliac spine and the anterior lateral iliac crest?**

- A. Obturator externus
- B. Pectineus
- C. Tensor fascia latae
- D. Gracilis

**120. Which of the following muscles will not create hip external rotation?**

- A. Tensor fascia latae
- B. Adductor brevis
- C. Pectineus
- D. Semimembranosus

**121. Which of the following muscles is innervated by the sciatic nerve?**

- A. Semitendinosus
- B. Inferior gemellus
- C. Quadratus femoris
- D. Gracilis

**122. For which of the following muscles would you use adduction and flexion of the hip as confirmation of palpation?**

- A. Rectus femoris
- B. Adductor longus
- C. Adductor magnus
- D. Pectineus

**123. What is the main function of the knee joint?**

- A. Inversion and eversion
- B. Supination and pronation
- C. Flexion and extension
- D. Internal and external rotation

**124. What bony landmark is on the medial femoral epicondyle?**

- A. Tibial tuberosity
- B. Adductor tubercle
- C. Femoral crest
- D. Medial femoral spine

**125. What is on the distal anterior aspect of the femur?**

- A. Medial condyle
- B. Lateral condyle
- C. Trochlear groove
- D. Vestibular groove

**126. Which of the following is not part of the quadriceps muscle?**

- A. Rectus femoris
- B. Biceps femoris
- C. Vastus medialis
- D. Vastus lateralis

**127. Which of the following is not one of the four major ligaments that increase stability at the knee?**

- A. Medial meniscus
- B. Anterior cruciate ligament
- C. Lateral collateral ligament
- D. Posterior cruciate ligament

**128. What forms the inferior border of the popliteal fossa?**

- A. Hamstring tendons
- B. Quadriceps tendon
- C. Heads of the gastrocnemius
- D. Patellar tendon

- 129. Which artery is a direct continuation of the femoral artery below the adductor magnus muscle?**
- A. Brachial artery
  - B. External iliac artery
  - C. Peroneal artery
  - D. Popliteal artery
- 130. What is located approximately one inch below the inferior pole of the patella?**
- A. Tibial tuberosity
  - B. Tibial plateau
  - C. Insertion of the gastrocnemius
  - D. Insertion of the semimembranosus
- 131. How should the patient be position when palpating the adductor tubercle?**
- A. Standing
  - B. Seated at the edge of a table with the knees bent to 90 degrees
  - C. Lying supine on a table with the lower leg supported
  - D. Lying prone on a table with the lower leg unsupported
- 132. What muscle originates at the anterior inferior iliac spine?**
- A. Gracilis
  - B. Biceps femoris
  - C. Rectus femoris
  - D. Popliteus
- 133. Which of the following muscles is innervated by the Obturator nerve?**
- A. Rectus femoris
  - B. Gracilis
  - C. Vastus lateralis
  - D. Vastus medialis
- 134. Which of the vastus muscles is too deep to palpate?**
- A. Vastus medialis
  - B. Vastus intermedius
  - C. Vastus lateralis
  - D. Vastus superious

**135. What position should the patient be in for palpation of the Pes Anserine tendons?**

- A. Sitting on a table with the legs bent at 90 degrees
- B. Standing with leg completely extended
- C. Supine with legs resting on a pillow
- D. Prone with legs resting on a pillow

**136. Which ligament of the knee that can be palpated is commonly injured with a valgus force to the knee?**

- A. Medial collateral ligament
- B. Lateral collateral ligament
- C. Anterior cruciate ligament
- D. Posterior cruciate ligament

**137. Which type of knee injury will be associated with medial joint line tenderness?**

- A. Medial meniscus damage
- B. Lateral meniscus damage
- C. IT band tightness
- D. Anterior cruciate ligament damage

**138. Which of the following is not a subdivision of the stance phase of gait?**

- A. Heel strike
- B. Foot flat
- C. When the foot is not in contact with the ground
- D. Midstance

**139. Which bone ends as the lateral malleolus?**

- A. Tibia
- B. Fibula
- C. Radius
- D. Ulna

**140. How many tarsal bones make up the ankle?**

- A. 3
- B. 5
- C. 7
- D. 9

**141. What joint is distal to the talocrural joint?**

- A. Midtarsal joint
- B. Calcaneocuboid joint
- C. Talonavicular joint
- D. Subtalar joint

**142. Which foot joint is responsible for increasing stability of the midfoot during weight-bearing activity?**

- A. Calcaneocuboid joint
- B. Talocrural joint
- C. Midtarsal joint
- D. Subtalar joint

**143. Which of the following is not an important muscle in the anterior compartment of the lower leg?**

- A. Tibialis anterior
- B. Gastrocnemius
- C. Extensor digitorum longus
- D. Extensor hallucis longus

**144. Which of the following is not part of the superficial layer of the posterior compartment of the lower leg?**

- A. Gastrocnemius
- B. Soleus
- C. Plantaris
- D. Tibialis anterior

- 145. Which of the following muscles does not contribute to Plantarflexion?**
- A. Gastrocnemius
  - B. Soleus
  - C. Extensor digitorum longus
  - D. Tibialis posterior
- 146. Which of the following is not one of the four ligaments referred to as the deltoid ligament?**
- A. Posterior tibiotalar ligament
  - B. Anterior tibiotalar ligament
  - C. Tibiocalcaneal ligament
  - D. Achilles tendon
- 147. Where can the posterior tibial artery be palpated in the lower leg?**
- A. Posterior to the medial malleolus
  - B. Anterior to the medial malleolus
  - C. Superior to the medial malleolus
  - D. Inferior to the medial malleolus
- 148. Bone tenderness with palpation of the distal tibia and medial malleolus can indicate which type of fracture?**
- A. Fibular
  - B. Femoral
  - C. Calcaneous
  - D. Tibial
- 149. What bone articulates with all three cuneiform bones?**
- A. Calcaneus bone
  - B. Navicular bone
  - C. Talar heads
  - D. Cuboid bone



**150. Which of the following muscles is not innervated by the deep fibular nerve?**

- A. Tibialis anterior
- B. Extensor digitorum longus
- C. Gastrocnemius
- D. Fibularis tertius