



AMREF INTERNATIONAL UNIVERSITY

SCHOOL OF MEDICAL SCIENCES

DEPARTMENT OF REHABILITATION MEDICINE

BACHELOR OF SCIENCE IN PHYSIOTHERAPY

END OF TRIMESTER EXAMINATIONS JANUARY TO APRIL 2024

UNIT CODE: PHT 236

UNIT NAME: MUSCULOSKELETAL 1

DATE: 16TH APRIL 2024

TIME: 6PM-8PM

INSTRUCTIONS

1. All students will have two (2) hours to complete the examination
2. Attempt all questions as per the instruction
3. It is the student's responsibility to report any page and number missing in this paper.
4. Check that the paper is complete
5. Total number of pages is 15 including the cover.
6. Read through the paper quickly before you start.
7. Upon finishing the exam paper, on submission, the message 'Your examination has been submitted' will appear.

TOTAL: _____/52

PERCENT: _____/100%

POINTS EARNED TOWARDS FINAL GRADE _____/70

1. You are assessing a patient with the complaint of neck pain. On a postural inspection, you note the patient has rounded shoulders and a forward head with upper cervical hyper extension. You would like to assess possible causative factors for the patient's posture. Which of the following muscles would you like to perform a length assessment?
 - A. Suboccipitalis and pectoralis minor
 - B. Longus coli and pectoralis major
 - C. Sternocleidomastoid and rhomboids
 - D. Scalenes and levator scapula

2. An 18- year-old patient arrives for a physical therapy appointment 15 minutes late. The patient traveled 50 minutes to the appointment. The therapist decides to perform the evaluation within the remaining 30 minutes. As she reviews the intake paperwork, she is trying to determine which examination procedures are a priority. The patient presents with the diagnosis of lateral ankle sprain sustained in a rugby game 2 days ago. The patient has no past medical history. Which examination procedure would not be a priority?
 - A. Edema assessment
 - B. Ankle range of motion assessment
 - C. Balance assessment
 - D. Dermatome assessment

3. A patient is referred to physical therapy with the diagnosis of low back pain. The patient presents with an anterior pelvic tilt. The physical therapist believes the abnormal posture may be due to shortened lower extremity musculature. Shortening of which muscles may influence this posture?
 - A. Hamstrings
 - B. Iliopsoas
 - C. Gluteus maximus
 - D. Piriformis

4. You are evaluating a 92-year-old, female patient. She fell at home 2 weeks ago fracturing her pelvis. In addition to the innominate and acetabular fracture, her pubis

synthesis was dislocated. After a week stay in the hospital, she was discharged home. She is non-weightbearing (NWB) on the right lower extremity. She has a history of osteoporosis with 5 thoracic vertebrae fractures. In planning your examination, you make note of the patient's precautions based on her fracture location and past medical history. Which of the following procedures would be contraindicated to perform with this patient?

- A. sensation testing of lower extremity dermatomes and myotomes
 - B. integumentary/skin checks of bony prominences
 - C. vital sign assessment
 - D. manual muscle testing of the hip adductors and hip flexors
5. You are evaluating a patient with low back pain. On postural assessment, you note the patient has a significant decrease in lumbar lordosis. Which of the following findings would you associate with this posture?
- A. Posterior pelvic tilt and tight hamstrings
 - B. Anterior pelvic tilt and tight hip flexors
 - C. Posterior pelvic tilt and tight hip flexors
 - D. Anterior pelvic tilt and tight hamstrings
6. You are evaluating a patient 4 weeks following a knee surgery. He is now ambulating with a straight cane and plans to return to his volunteer position providing tours of historic downtown buildings. You want to complete a measure of his functional gait speed. Which of the following tests would NOT be valid measure for gait speed?
- A. Berg balance test
 - B. 10 meter walk test
 - C. Six minute walk test
 - D. Time Up and Go (TUG)
7. You are evaluating a patient with a history of falls and neuropathy bilateral lower extremities. On assessment, you note the patient is unable to perform single leg stance on the right without loss of balance towards the right. You must provide moderate assistance to maintain the patient in an upright position. Which of the following gait patterns would be consistent with this finding?
- A. Shuffled gait pattern with increased base of support

- B. Trendelenburg gait
 - C. Hip circumduction during right lower extremity swing through
8. A patient is being evaluated with the complaint of shoulder pain. A therapist observes a 50% active range of motion (AROM) limitation when the patient attempts to elevate the affected shoulder into flexion or abduction. On the attempt, the patient leans to the contralateral (opposite) side. Passive range of motion (PROM) is also limited 50% with a firm end feel. Which of the following conditions is most likely based on this description?
- A. Adhesive capsulitis (glenohumeral capsular restriction)
 - B. A loose body within the joint (bony block)
 - C. Humeral fracture
 - D. Rotator cuff tear (contractile tissue)
9. When measuring elbow flexion range of motion with a goniometer, where should the therapist align the fulcrum of the goniometer?
- A. At the lateral epicondyle of the humerus
 - B. At the lateral midline of the humerus
 - C. At the olecranon
 - D. At the radial head
10. A patient is positioned for manual muscle testing with the muscle contraction occurring in the horizontal plane. She is able to move the joint through the full available range of motion, however, is unable to create any movement against resistance. What grade of muscle strength should be assigned?
- A. 1
 - B. 2
 - C. 3
 - D. 4
11. A patient is able to move the joint through the full available range of motion against gravity and hold the standard manual muscle test position against moderate resistance for 5 seconds. What numerical muscle grade should be given for this test?

- A. 2
- B. 3
- C. 4
- D. 5

12. You are assessing a patient with a gait deviation. The patient ambulates with both knees flexed 25 degrees throughout the gait cycle. You would like to assess the influence of muscle length on the patient's flexed knee posture. Which of the following positions would you place the patient's lower extremity?

- A. The patient is positioned supine with the legs free to hang over the edge of the table. The patient holds the non-tested leg in hip and knee flexion and allows tested leg to fall toward table.
- B. The patient is positioned prone. The therapist performs passive flexion of the tested limb's knee.
- C. The patient is positioned supine. The therapist performed passive flexion of the hip with the knee in full extension.
- D. The patient is standing. With the tested limb in slight hip extension, 30-40 degrees of knee flexion, and heel flat on the floor, the patient shifts weight forward onto the opposite limb.

13. Which muscle is being tested in the following description? The patient is seated with the elbow flexed 70-90 degrees and the forearm fully supinated. Pressure is applied at the distal forearm into elbow extension.

- A. Brachialis
- B. Brachioradialis
- C. Biceps brachii
- D. Triceps

14. A therapist describes the end feel of passive knee flexion as firm. What does a firm end feel signify?

- A. a brief involuntary muscle spasm
- B. bone on bone approximation
- C. capsular restraint
- D. a limitation in motion due to pain

15. When manual muscle testing a single joint muscle, where in the range should strength be tested?
- A. At the end of the joint motion
 - B. At mid-range of the joint motion
 - C. At the beginning of the joint motion
 - D. The joint's position is not accounted for when testing strength
16. If a patient is unable to hold the standard manual muscle test position against gravity, what is the best alternate position available?
- A. The horizontal plane
 - B. The vertical plane
 - C. The sagittal plane
 - D. The frontal plane
17. A patient experienced a distal tibia fracture and just had a short leg cast removed after 6 weeks of immobilization. She demonstrates a global decrease in ankle active and passive range of motion, but denies pain. Which of the following end feels are you most likely to find?
- A. Spasm
 - B. Empty
 - C. Capsular/ firm
 - D. Soft tissue approximation
18. You are assessing a patient following ankle sprain. If the patient's ankle dorsiflexion passive range of motion was greater than his active range of motion which of the following could be the cause?
- A. Muscular tightness
 - B. Capsular tightness
 - C. Muscular weakness
 - D. Capsular laxity

19. You are evaluating a patient with neck pain. On the intake paperwork, the patient notes severe pain of 10 on a 1-10 scale when the pain is at its worst. You want to determine the irritability of the pain before proceeding with the examination. Which of the following questions would assist you the most with this determination
- A. Ask the patient about aggravating factors for the symptoms and the timeframe for symptom reproduction
 - B. Ask the patient for his/her current pain level
 - C. Ask the patient about weight loss and appetite
20. A patient presenting with low back pain is described as having an anterior pelvic tilt. An anterior pelvic tilt is best described by which of the following options?
- A. Flattened lumbar lordosis, hips in neutral or relative extension, lengthened iliopsoas, and shortened hamstrings and abdominals
 - B. Increased lumbar lordosis, hips in relative flexion, lengthened hamstrings and abdominals, and shortened iliopsoas, rectus femoris, and lower back extensors
 - C. Flattened lumbar lordosis, hips in flexion, shortened iliopsoas, lengthened low back extensors and flexed knees
 - D. No curvature noted throughout the spine.
21. Constitutional symptoms suggest there is a possible systemic cause to the patients symptoms. Which of the following would be considered a constitutional symptom?
- A. localized low back pain
 - B. a leg length discrepancy
 - C. nausea and weight loss
 - D. poor posture
22. Which of the following sensory systems does NOT provide input to the central nervous system for balance?
- A. Olfactory
 - B. Visual
 - C. Somatosensory
 - D. Vestibular

23. A patient demonstrates limited active range of motion (AROM) into ankle dorsiflexion when the knee is extended. Passive range of motion (PROM), in this same position, is within normal limits (WNL). Which of the following tests would provide the therapist with the most information about the cause of the limitation of active range of motion?
- A. Strength testing of the anterior tibialis muscle
 - B. Muscle length testing of the gastrocnemius muscle
 - C. Strength testing of the gastrocnemius muscle
 - D. Muscle length testing of the anterior tibialis muscle
24. During surgery to remove an apical lung tumor, the long thoracic nerve was injured. Muscle testing of the serratus anterior demonstrates its strength to be 3+/5. What is the BEST initial exercise for this patient?
- A. Standing wall push-ups
 - B. Standing arm overhead lifts using hand weights
 - C. Supine arm overhead lifts using weights
 - D. Sitting arm overhead lifts using a pulley
25. A patient presents with weakness with myotome testing of the right upper extremity. The patient is unable to maintain a flexed elbow against the therapists pressure towards elbow extension. Which of the following dermatomal patterns coincides with this pattern of weakness?
- A. medial end of clavicle
 - B. Lateral elbow
 - C. fifth digit/ little finger
 - D. medial elbow
26. A patient presents with decreased sensation of bilateral feet. The loss of sensation is in the entire area that a sock would cover. What is the most likely cause of this distribution of sensory loss?
- A. L5 dermatome sensation loss
 - B. Sciatic nerve sensation loss
 - C. Peripheral neuropathy
 - D. Lesion of the spinal cord

27. You are evaluating a patient with a significant thoracic kyphosis and forward head posture. He reports a frequent loss of balance with falls in the anterior/forward direction. What is the ideal skeletal alignment to maintain balance in standing with minimal effort?
- A. The body's center of mass should be slightly posterior to the base of support
 - B. The body's center of mass should be slightly anterior to the base of support
 - C. The body's center of mass should be over the base of support
 - D. The position of the center of mass does not contribute to balance
28. A patient demonstrates painful and limited active range of motion into hip flexion. With passive range of motion, hip flexion is within normal limits and painfree. Which of the following tissues would appear to be the limiting factor for active range of motion into hip flexion?
- A. Contractile tissue (muscle)
 - B. Ligament
 - C. Cartilage
 - D. Joint capsule
29. Which of the following is typical of the range of motion assessment in normal, pain free joints?
- A. Passive range of motion is slightly greater than active range of motion
 - B. More range is available in sitting compared to supine positioning
 - C. Passive and active range of motion must always be performed in supine or prone
 - D. End feels are always elastic or capsular
30. You are assessing a patient with chronic low back pain. He demonstrates significantly limited range of motion into flexion and extension. When using a tape measurer to determine thoracolumbar range of motion, what landmarks should be utilized?
- A. Inferior: S2, Superior: C7
 - B. Inferior: T12, Superior: C7
 - C. Inferior: L4, Superior: C7

D. Inferior: S2, Superior: T2

31. You are assessing a 65-year old patient with right hip pain. When performing a range of motion measurement of hip internal rotation, the patient complains of pain. You document an active range of motion measurement (AROM) of 25 degrees. What is the most appropriate interpretation of the finding?
- A. The patient demonstrates limited hip internal rotation
 - B. The patient demonstrates the normal expected AROM
 - C. The patient demonstrates excessive hip internal rotation
 - D. Range of motion is unable to be assessed due to pain
32. You are examining a patient with the diagnosis of right foot drop. The inability to dorsiflex the right ankle began 3 months ago following a complex tibial fracture. Which of the following examination procedures would provide you the most information about the neurological integrity of muscles responsible for ankle dorsiflexion?
- A. sensation testing
 - B. manual muscle testing
 - C. range of motion assessment
 - D. pulse assessment
33. A physiotherapist is treating a woman diagnosed with primary osteoporosis. She has sustained two vertebral fractures and has undergone a vertebroplasty procedure. Which of the following are considered risk factors for development of primary osteoporosis?
- A. Excessive weight bearing activities
 - B. Obesity
 - C. Loss of estrogen (Menopause)
 - D. Heart Disease
34. You are assessing a patient with the complaint of pain in the left buttock. Palpation in the region reveals pain midway between the sacral border and greater trochanter. You place the patient's lower extremity in hip flexion, external rotation

and horizontal adduction across the body. The patient reports an intense pulling sensation in the hip when placed in this position. Which tissue is implicated by the above description?

- A. The femoroacetabular joint capsule
- B. The piriformis muscle
- C. The hamstring muscle
- D. The greater trochanteric bursa

35. Your patient is an 8-year-old boy. He fractured his radius 2 days ago and was placed in a long arm case today. His mother asks if he will be able to participate in rugby in 2 weeks. The most appropriate response is which of the following?

- A. Yes, he will be out of the case and using his arm in 2 weeks.
- B. He will probably still be casted or splinted. He will not be able to fully participate at the start of rugby in 2 weeks
- C. Bones do not heal within specific timeframes. It is impossible to estimate healing time and return to activities.
- D. None of the above

36. A physiotherapist is evaluating a patient with a delayed union fracture of the humerus. Which of the following factors influence the rate and quality of bone healing?

- A. Blood Supply
- B. Type of Fracture
- C. Immobilization
- D. All of the above

37. Which of the following conditions is associated with "softening" of the bone resulting in deformity, osteopenia and fracture in adults?

- A. Osteomalacia
- B. Osteitis deformans
- C. Poliomyelitis
- D. Osteoporosis

ANSWER: A

38. You are treating a 12 y/o female diagnosed with scoliosis. She had radiographs performed to monitor the progression of the curve. A Cobb angle of 20 degrees requires which of the following procedures?
- A. Surgery
 - B. Bracing
 - C. Exercise as indicated
 - D. Bed rest
39. You are evaluating a 3-year-old male with idiopathic scoliosis. His referral notes the presence of hip dysplasia on the right. You note on assessment of his gait pattern that he maintains his center of gravity over the left hip. Which of the following physical laws supports application of selected stresses to bone to promote optimal production and reorganization of the tissue?
- A. Cosine Law
 - B. Joule's Law
 - C. Wolfe's Law
 - D. Law of bone regeneration
40. After sustaining a midshaft femoral fracture, a patient developed pneumonia during his hospital admission. Several days later, he developed an infection at the fracture site. What medical term is used to describe this condition?
- A. Spondylitis
 - B. Osteomyelitis
 - C. Osteitis
 - D. Spondylolithesis
41. Your future patient (scheduled for an evaluation tomorrow) crushed his right forearm between two railroad cars during routine maintenance. The comminuted fracture was repaired during surgery. Which of the following complications may you note during the evaluation?
- A. Vascular Injury
 - B. Nerve Injury
 - C. Soft Tissue Injury
 - D. All of the above

42. Which tissue is the primary tissue involved in the initial pathology of osteoarthritis?
- A. Articular cartilage
 - B. Synovial membrane
 - C. Bursa
 - D. Collateral Ligaments
43. Your patient is a 50-year-old female with a current exacerbation of her rheumatoid arthritis (RA). Her knees are swollen, hot and painful. What activities would you expect in the immediate plan of care?
- A. strengthening including squats and lunges with heavy weight
 - B. aggressive range of motion activities
 - C. stretching of joints with limited range of motion
 - D. education on joint protection and energy conservation
44. You are working with a patient recently diagnosed with osteoarthritis of the knee following radiographs (X rays) performed at the hospital. Radiographic findings associated with osteoarthritis include which of the following?
- A. Decreased joint space
 - B. Dislocations of joints
 - C. Stress fractures
 - D. Malalignment of long bones
45. Which of the following peripheral nerves is commonly affected with the diagnosis of leprosy?
- A. Common peroneal nerve
 - B. Sciatic nerve
 - C. Musculocutaneous nerve
 - D. Long thoracic nerve

46. Your patient has been diagnosed with Leprosy. You note multiple neuropathy on examination and gait impairments related to the presence of foot deformities. Which of the following treatments are recommended for patients presentation and diagnosis?
- A. Muscle strengthening
 - B. Range of motion activities to decrease and prevent contractures
 - C. Gait training
 - D. All of the above
47. Which of the following is NOT a phase of poliomyelitis?
- A. Pre-paralytic Phase
 - B. Acute Stage
 - C. Convalescent Stage
 - D. Burn out phase
48. How long is the stage of recovery in Poliomyelitis? During what timeframe can you expect to see gains in neurological function?
- A. 1 year
 - B. 2 years
 - C. 5-10 years
 - D. over 10 years
49. Testing motion: cervical flexion, contralateral lateral flexion (side bending), ipsilateral rotation, and shoulder depression.
- A. Scalenes
 - B. Sternocleidomastoid
 - C. Levator scapula
 - D. Upper trapezius
50. You are evaluating a 95-year old patient. His primary goal is to dress and toilet independently. He reports he can no longer put on his shoes in a seated position. On range of motion assessment, you note hip flexion to 115 degrees and external rotation to 35 degrees. You then assess muscle strength. Which muscle is being tested in the

following lower extremity position? Hip flexion, hip abduction and hip external rotation with knee flexion.

- A. A) Tensor Fascia Latae
- B. B) Hamstrings
- C. C) Sartorius
- D. D) Iliopsoas

51. You are examining a patient with the diagnosis of right foot drop. The inability to dorsiflex the right ankle began 3 months ago following a complex tibial fracture. Which of the following examination procedures would provide you the most information about the neurological integrity of muscles responsible for ankle dorsiflexion?

- A. A) sensation testing
- B. B) manual muscle testing
- C. C) range of motion assessment
- D. D) pulse assessment

52. An ambulatory patient has been referred to physical therapy with a history of frequent falls. He is 50 years old. The physical therapist performs a single-limb stance test with eyes open. He is able to stand on his right lower extremity for 30 seconds prior to losing his balance. He is able to stand on his left lower extremity for 2 seconds prior to losing his balance. What is the correct interpretation of this test?

- A. The patient has an increased fall risk.
- B. The patient has good balance.
- C. The patient does not understand the instructions provided.
- D. The patient has strong lower extremity strength