



**AMREF INTERNATIONAL UNIVERSITY  
SCHOOL OF MEDICAL SCIENCES  
DEPARTMENT OF REHABILITATION MEDICINE  
BACHELOR OF SCIENCE IN PHYSIOTHERAPY**

**END OF TRIMESTER EXAMINATIONS January to April 2026**

**UNIT CODE: PHT 236**

**UNIT NAME: Musculoskeletal disorders 1**

**DATE: 10th APRIL 2026**

**TIME: 11:15AM-1:15AM**

**INSTRUCTIONS**

- 1. All students will have two (2) hours to complete the examination**
- 2. This is an online exam, 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 8 including the cover.**
- 6. Read through the paper quickly before you start.**

**Section A. - Multiple choice question. Answer all the question**

1. A 72-year-old female with osteoporosis presents with a C2 fracture after a minor fall. Given the anatomy of C2, which combination of forces most likely caused this?
  - A. Pure axial loading
  - B. Compression with hyperflexion or hyperextension
  - C. Lateral flexion with rotation
  - D. Distraction with shearing
2. Which level of the cervical spine is considered "sub-axial" in the classification of fractures?
  - A. C1 only
  - B. C1 to C2
  - C. C3 to C7
  - D. C1 to C7
3. A patient presents with a burst fracture of the cervical spine. What is the defining mechanical characteristic of this fracture type?
  - A. The bone is broken on only one side
  - B. The vertebrae are crushed in all directions
  - C. It results strictly from minor trauma in osteoporosis
  - D. It always involves the C1 vertebra due to axial loading
4. According to Kim DH and Vaccaro AR (2006), which of the following is a key goal of strengthening exercises in the rehabilitation of osteoporotic compression fractures?
  - A. To maximize cervical range of motion
  - B. To improve lumbar stabilization by strengthening the lower back muscles
  - C. To focus solely on the upper trapezius for neck support
  - D. To increase the speed of walking.
5. Which joint acts as a primary shock absorber between the spine and the lower limbs?
  - A. Hip joint
  - B. Knee joint
  - C. Sacroiliac joint
  - D. Ankle joint
6. Which bones fuse during the late teenage years to form the hip bone?
  - A. Ilium, Ischium, Pubis
  - B. Sacrum and Coccyx
  - C. Femur and Acetabulum
  - D. Pubis and Sacrum

7. For extra-articular fractures, when is physiotherapy typically indicated post-operatively?
  - A. After 6 weeks
  - B. Day 1 post-op
  - C. After callus formation is visible on X-ray
  - D. Only after full weight-bearing is achieved
8. When performing myotome testing for the C5 nerve root, which movement is the patient instructed to perform?
  - A. Upper cervical flexion
  - B. Shoulder abduction
  - C. Elbow flexion
  - D. Thumb extension
9. Which myotome is correctly matched with its strongest associated movement?
  - A. C1 - Upper cervical extension
  - B. C7 - Elbow extension
  - C. L3 - Ankle dorsiflexion
  - D. S1 - Great toe extension
10. Which specific anatomical structure is associated with potential entrapment of the Ulnar nerve?
  - A. Ligament of Struthers
  - B. Arcade of Frohse
  - C. Guyon's canal
  - D. Pronator Teres
11. During a Slump Test to assess sciatic nerve tension, which of the following is NOT part of the progression?
  - A. Cervical flexion
  - B. Knee extension
  - C. Ankle plantarflexion
  - D. Ankle dorsiflexion
12. Why is myotome testing considered more complex than dermatome testing?
  - A. Because myotomes require a pin and cotton wool
  - B. Because skeletal muscles are innervated by nerves from more than one spinal level
  - C. Because there are more myotomes than dermatomes
  - D. Because myotomes only test involuntary movements

13. For how many years are patient care notes considered legal documents after treatment is terminated?
- A. 3 years
  - B. 5 years
  - C. 7 years
  - D. 10 years
14. Which of the following factors is consistently associated with an increased risk of fracture-healing complications?
- A. Low protein diet
  - B. NSAID use
  - C. High vitamin D intake
  - D. Regular physical activity
15. The "fracture healing triad" consists of:
- A. Reduction, Casting, Surgery
  - B. Reduction, Immobilization, Rehabilitation
  - C. Diagnosis, Treatment, Follow-up
  - D. Assessment, Intervention, Evaluation
16. A "firm end feel" during the assessment of a one-joint muscle likely indicates:
- A. Bone-on-bone contact
  - B. Muscle tension
  - C. Fluid in the joint
  - D. Complete muscle tear
17. Muscle length testing consists of movements that:
- A. Decrease the distance between origin and insertion
  - B. Increase the distance between origin and insertion
  - C. Shorten the muscle in the direction of its action
  - D. Assess the muscle's ability to contract against resistance
18. Why are composite tests considered "not accurate" for measuring a single muscle's length?
- A. They are too difficult to perform
  - B. They look at movement across more than one muscle or joint
  - C. They require expensive equipment
  - D. They only measure involuntary movements

19. In a clavicle fracture, which muscle is responsible for pulling the medial fragment superiorly?
- A. Upper trapezius
  - B. Pectoralis major
  - C. Sternocleidomastoid
  - D. Deltoid
20. In scaphoid fractures, the risk of avascular necrosis increases if the fracture is:
- A. Distal
  - B. Proximal
  - C. Transverse
  - D. Non-displaced
21. A student therapist is performing a mobilization "into resistance" for a stiff joint. The patient complains of a "sharp, familiar pain" during the glide. Does this application meet the criteria for a successful Mulligan mobilization?
- A. Yes, because mobilizations must be performed into resistance to change joint mechanics.
  - B. Yes, provided that the range of motion has improved by at least 10 degrees.
  - C. No, because while mobilizations are performed into resistance, they must remain entirely pain-free.
  - D. No, because resistance should always be avoided when performing apophyseal glides.
22. A 42-year-old patient presents with an acute, sudden onset of sharp central low back pain after bending over to tie their shoes this morning. The pain is constant, and the patient is currently stuck in a slight "shifted" lumbar posture. According to the McKenzie classification, which syndrome is most consistent with this presentation?
- A. Dysfunction Syndrome
  - B. Postural Syndrome
  - C. Derangement Syndrome
  - D. Adherent Nerve Root
23. A patient with Recurrent Syndrome reports that their back pain returns every few months, usually after long periods of sitting at work. They describe the pain as a dull ache that is slowly increasing in frequency. Between these acute episodes, they have full, pain-free ROM. What is the primary focus of a McKenzie-based intervention for this patient?
- A. Intensive core strengthening to stabilize a hypermobile segment.
  - B. Passive modalities to reduce acute inflammation during each flare-up.
  - C. Education on "Slouch-Overcorrect" and maintaining the lumbar lordosis to prevent mechanical relapse.
  - D. Grade V high-velocity thrust manipulation to the sacroiliac joint.

24. A patient presents with shoulder pain rated at 8/10. During the physical exam, you observe that the patient winces and stops moving into abduction well before reaching the end-range of available passive motion. There is intense pain even while the arm is resting in the patient's lap. How should this tissue irritability be classified and what is the primary treatment implication?
- A. Moderate Irritability; focus on end-range stretching to regain lost mobility.
  - B. High Irritability; focus on pain modulation and avoiding provocative end-range movements.
  - C. High Irritability; progress immediately to overpressure at end-range to "break through" the pain.
  - D. Low Irritability; prescribe high-intensity strengthening to desensitize the nervous system.
25. A 55-year-old patient with a history of hypertension describes a "throbbing and pounding" sensation in their calf that worsens with activity. During the physical exam, you note that the pain does not change with spinal movements. From the provided information here in the question which system is the most likely source of the symptoms?
- A. Neurogenic disorder
  - B. Musculoskeletal disorder
  - C. Vascular disorder
  - D. Emotional disorder
26. A patient following a car accident describes their neck pain as "sharp, stabbing, and burning," often accompanied by a "scalding" sensation down the arm. They deny any "dull or aching" feelings. Which of the following best categorizes this patient's pain profile?
- A. A typical musculoskeletal strain of the trapezius.
  - B. A neurogenic disorder, likely involving nerve root irritation.
  - C. A vascular disorder involving the vertebral artery.
  - D. An emotional disorder resulting from the trauma of the accident.
27. A patient presents with chronic neck pain following a motor vehicle accident and has recently filed a lawsuit against the other driver. During testing, they demonstrate inconsistent effort and report agonizing pain during light palpation of the skin. This behavior is a known category of symptom magnification associated with?
- A. Psychosomatic overlay
  - B. Acute tissue infection
  - C. Involvement in litigation
  - D. Undiagnosed vertebral fracture

28. During a palpation assessment of the upper trapezius, the patient does not report pain, but as you increase pressure, you observe them squinting their eyes and tightening their facial muscles. They do not move their shoulder away from your hand. According to the tenderness scale, how should this be documented?
- A. Grade I Tenderness
  - B. Grade II Tenderness
  - C. Grade III Tenderness
  - D. Grade 0 Tenderness
29. Which sub-phase of the stance cycle begins immediately when the opposite foot leaves the ground (Opposite Toe-Off) and ends when the heel of the reference limb rises from the walking surface?
- A. Initial Contact
  - B. Loading Response
  - C. Mid-stance
  - D. Terminal Stance
30. A patient is struggling with "Limb Clearance" during the swing phase. You observe that their knee flexion is insufficient during the first segment of the swing cycle (immediately after the toe leaves the ground). Which sub-phase are you analysing?
- A. Pre-swing
  - B. Initial Swing
  - C. Mid-swing
  - D. Terminal Swing

**Section B. Short structured questions. Answer all the questions (20 Marks)**

31. Describe the difference between red flag and constitutional symptoms giving example to each one of them (4 Marks)
32. Compare and contrast the phenomena of centralization and peripheralization within the context of the McKenzie Method (MDT). Your answer should include a definition of each term, their prognostic significance, and how they guide clinical decision-making during repeated movement testing (6 Marks)
33. Define the five grades of the Maitland Joint Mobilization scale. For each grade, specify the amplitude of the movement and the clinical significance of each grade (10 Marks).

**Section C. Long structured question. Answer any two of the 3 the question (20 Marks)**

34. Define and describe the three primary mechanical syndromes identified in the McKenzie classification system. For each syndrome, specify the hypothesized mechanical cause and the typical pain behaviour (10 Marks)
35. Describe the step-by-step clinical procedure for performing the following two hamstring length tests. For each test, specify the patient's starting position, the therapist's hand placement, and the "end-feel" or stopping point of the movement.
- a) Straight Leg Raise (SLR) Test (5 Marks)
  - b) 90-90 Knee Extension (Active/Passive Knee Extension) Test (5 Marks)
36. A 45-year-old patient presents with suspected cervical radiculopathy. You are required to perform a focused neurological screening of the C5 spinal nerve root. Name and describe the exact clinical procedure for performing the following three components of the C5 screening.
- a) The Myotome (3 Marks)
  - b) The Reflex testing. (4 Marks)
  - c) The Dermatome (3 Marks).