



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

**END OF TRIMESTER EXAMINATIONS JANUARY TO APRIL 2025**

**UNIT CODE: PHT 232**

**UNIT NAME: Therapeutic exercise and prescription exercise (Upgrading)**

**DATE: X APRIL 2025**

**TIME:**

**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.**
- 7. Upon finishing the exam paper, on submission, the message 'Your examination has been submitted' will appear.**

**TOTAL: \_\_\_\_\_/70**

**PERCENT: \_\_\_\_\_/100%**

**POINTS EARNED TOWARDS FINAL GRADE \_\_\_\_\_/70**

**Multiple choice questions. Answer all the questions. (50 Marks)**

1. What determines the load a muscle must overcome during activity?
  - A) The weight lifted.
  - B) The distance the weight is from the spine.
  - C) The moment arm.
  - D) The weight lifted times the moment arm
  
2. Which spinal muscle appears active in virtually all spinal movements?
  - A) Multifidus
  - B) latissimus
  - C) Quadratus lumborum
  - D) Psoas
  
3. Which muscle group is an example of triangulation of forces to create stability?
  - A) Psoas, quadratus, deep erector spinae
  - B) Internal oblique, external oblique and transversus abdominus
  - C) Latissimus, multifidus, psoas
  - D) Psoas, iliacus, gluteus maximus
  
4. Sit ups are an excellent way to train the abdominals.
  - A) True
  - B) False
  
5. The primary problem following a spinal injury is
  - A) Diagnosis is difficult.
  - B) Neuromotor control deficits.
  - C) Strength deficits.
  - D) Sciatica
  
6. One difference in training the extremities versus training the spine is
  - A) In training the spine the therapist does not train specific muscles
  - B) The early stages of spine training does not emphasize strength
  - C) Capacity is emphasized more in the extremities than the spine
  - D) There is really no substantial differences in training extremities versus the spine
  
7. What phrase describes spinal rehabilitation the best.
  - A) Train movement not muscle
  - B) No pain, no gain
  - C) Both phrases are right
  
8. What is the most important factor in spinal rehabilitation?
  - A) Strength
  - B) Power
  - C) Endurance
  - D) Tolerance
  
9. Muscle strength cannot predict who will have future back troubles.
  - A) True
  - B) False
  
10. Which statement about core ratios is correct?
  - A) Flexor strength should be equal to or greater than extensor strength
  - B) Side bridge to extensor strength should be within 5%
  - C) Right side bridge to left side bridge should be within 5%
  - D) Right side bridge to left side bridge should be within 25%

11. What is the Force Moment?
- A) The amount of weight being lifted
  - B) The magnitude of the force it takes to overcome an external load.
  - C) The distance from the applied force to the muscle insertion.
  - D) The time it takes to overcome an external load.
12. What makes extremity and spinal rehabilitation alike?
- A) The goal is restoration of strength
  - B) Both emphasize phasic exercises
  - C) Both rely on rapid response to external loads
  - D) Functional movement patterns must be restored during rehabilitation
13. How many degrees of freedom does the spine have?
- A) 3
  - B) 6
  - C) 9
  - D) 12
14. The basic structure of the spine makes it a very stable.
- A) True
  - B) False
15. The thoracic extensors can produce a greater moment than the multifidus muscle.
- A) True
  - B) False
16. Basically, the stability of the spine depends on
- A) Spinal architecture
  - B) Rotators and intertransversarii
  - C) Muscles tensioning fascia
  - D) Muscle strength
17. Which abdominal muscle functions like two separate muscles?
- A) Internal Oblique
  - B) External Oblique
  - C) Transversus Abdominus
  - D) Rectus Abdominus
18. Which muscle can create excessive compressive forces to the spine during training?
- A) Multifidus
  - B) Latissimus
  - C) Quadratus lumborum
  - D) Psoas
19. When choosing between a submaximal and maximal exercise test, a fitness professional should consider the client's:
- a) Age only
  - b) Fitness level and health status
  - c) Motivation level only
  - d) Availability of equipment only
20. You sprained your ankle and the initial swelling has gone down. What stage of healing are you likely in if you are now experiencing increased mobility but some tenderness?
- a) Acute
  - b) Subacute
  - c) Chronic

d) Recovery

21. While developing an exercise program prescription, health professionals must consider the following EXCEPT?
- Fitness level
  - Fitness goals
  - Nutrition level
  - Exercise preferences
22. Which of the following is the LEAST method of teaching exercises?
- Mental imaginary
  - Manual cues
  - Visual feedback
  - Verbal cues
23. If you're looking to improve the functional excursion of your ankles for better balance, you might focus on exercises that:
- Strengthen the quadriceps muscles.
  - Increase dorsiflexion
  - Target the hamstrings for hamstring flexibility.
  - Develop isometric core strength.
24. A person has undergone surgery on their elbow. Their doctor recommends passive ROM exercises after the incision heals. What is the PRIMARY benefit of these exercises?
- Help maintain the patient's awareness of movement
  - To decrease scar tissue formation
  - To improve cardiovascular fitness
  - To maintain and improve mobility of the contractile tissues
25. A patient is recovering from a shoulder injury and has some limitations in moving their arm due to weakness. Which of the following describes a situation where active-assisted ROM exercises would be beneficial?
- The patient has full pain-free range of motion in their shoulder.
  - The patient has significant pain when attempting to move their shoulder actively.
  - The patient can move their shoulder through a small range of motion on their own.
  - The patient's shoulder is completely immobilized in a shoulder sling
25. The following are specific goals for active range of motion exercises. Which one is NOT?
- Improve balance and body's awareness to its position
  - Provide sensory feedback from the contracting muscles.
  - Maintain physiological elasticity and contractility of the participating muscles.
  - Improve blood circulation during the exercises to prevent complications

26. An 80-year-old female patient with a fractured hip is admitted in the hospital. The orthopedic surgeon as requested for physiotherapy. The patient reports sharp pain in her hip during AAROM exercises. Which of the following is an important precaution to take when initiating AAROM exercises for this patient?
- Use heavy weights to increase resistance
  - Provide maximum support to minimize movement
  - Encourage the patient to push through the pain
  - Allow the patient to perform exercises independently
27. During the acute stage, the primary goal of treatment is to:
- Improve flexibility
  - Reduce inflammation and pain
  - Increase strength
  - Regain full range of motion
28. Sarah, a 48-year-old woman, complains of pain and stiffness in her right shoulder for the past 6 months. The pain makes it difficult for her to reach behind her back and fasten her bra. On examination, the physical therapist finds a limited range of motion in Sarah's right shoulder, particularly with reaching movements. What is the MOST likely indication for joint mobilization in this scenario?
- Reduce inflammation in the shoulder joint
  - Strengthen the muscles around the shoulder
  - Improve flexibility and range of motion in the shoulder joint
  - Active ROM to improve limitation of the shoulder joint
29. David, a 23-year-old construction worker, sprained his ankle playing basketball two weeks ago. The pain and swelling have mostly subsided, but his ankle feels stiff and he isn't confident walking on uneven surfaces. Which of the following forms of exercise is suited for David?
- Joint mobilization with stretching exercises
  - Joint mobilization only
  - Joint mobilization with resisted exercises
  - None of the above
30. During soft tissue healing, what can happen to collagen fibers if they are not adequately stressed?
- They dissolve and disappear.
  - They become more flexible and elastic.
  - They adhere to surrounding tissue and form a restricting scar.
  - They break down and weaken the healing tissue.
31. During a bicep curl exercise, which of the following exercises targets the bicep muscle most effectively with proper alignment?
- Standing bicep curl with palms facing down (supinated grip)
  - Standing bicep curl with palms facing up (pronated grip)
  - Seated bicep curl with dumbbells
  - Hammer curl with palms facing inwards
32. You're a fitness instructor creating an exercise program for a client with a body weight of 70 kg. You want to determine appropriate starting weights for resistance exercises which will be done using weights. What is the appropriate starting weight for performing bench press?

- a) 35Kg
  - b) 21Kg
  - c) 25Kg
  - d) 31Kg
33. A young athlete with a complete ACL tear surgically repaired 6 weeks ago is undergoing physiotherapy. Which of the following exercises should the physiotherapist likely AVOID incorporating into the rehabilitation program at this stage?
- a) Hamstring isometric exercises
  - b) Quadriceps strengthening exercises with a resistance band
  - c) Light stationary cycling
  - d) Quadriceps strengthening exercises with heavy weights
34. John recently recovered from a sports injury that limited his range of motion. His doctor recommends exercises to regain strength and flexibility without putting stress on his healing muscles. What would be the best exercise option for John?
- a) Resistance exercises
  - b) Aquatic exercises with resistance bands
  - c) Plyometric exercises
  - d) Active ROM exercises
35. The following are contra-indications of resistance exercise. Which of the following is NOT?
- a) Severe cardiopulmonary disease
  - b) Acute inflammation of the joint
  - c) Patient with sedentary lifestyle
  - d) Severe joint and muscle pain
36. After an injury, inflammation subsides and tissue repair begins. How many weeks does this subacute stage typically last?
- a) Less than 1 week
  - b) 2-3 weeks
  - c) Approximately 1 week
  - d) More than 6 weeks
37. When looking at the strength of a muscle, which strength curve should be greater?
- a) Concentric
  - b) Eccentric
  - c) Isometric
  - d) Isotonic
38. In cardio training, if diastolic raises 10 mm then you should:
- a) Rest patient 10 minutes and begin again
  - b) Use caution and continue
  - c) Stop exercise for the day
  - d) Send patient to emergency room
39. What term is best used to in describing the Overload Principle?
- a) Weight
  - b) 1 RM
  - c) Fatigue

- d) Pain
40. Your patient has been doing a variety of shoulder exercises and have been progressing steadily. They come for their regularly scheduled visit and report that pain is increasing. You should:
- a) Stop exercise until the pain goes away
  - b) Continue the principle of “no pain, no gain”
  - c) Change the type of exercise
  - d) Consider regression
41. When developing a strengthening program for your patient you determine their 10 RM load for their biceps brachii. The load you should begin exercising them with is:
- a) 20-40 percent 10 RM
  - b) 40-60 percent 10 RM
  - c) 60-80 percent 10 RM
  - d) 10 RM exactly
42. In attempting to gain strength in muscles, the minimum number of days those muscles should be worked each week is
- a) 1-2
  - b) 2-3
  - c) 3-4
  - d) 4-5
43. Phase three spinal rehabilitation concentrates on
- a) Core muscle activation
  - b) Functional rehabilitation and balance
  - c) Strengthening major muscle groups
  - d) Coordination of spinal stabilizers while moving other body parts
44. The principle of consecutiveness means:
- a) Systematic increase in challenge
  - b) Perfect practice technique with repetition, rest and recovery
  - c) Specificity of training
  - d) The first step is to design a single workout then the second step deal with progression from one session to the next
45. A physical therapist is planning a rehabilitation program for a patient. Which situation is MOST likely appropriate for initiating passive ROM exercises?
- a) The patient has regained full strength and is pain-free with active movements.
  - b) The patient has sustained a recent ligament tear in their knee and experiences significant pain with movement.
  - c) The patient is an athlete and wants to improve their flexibility for optimal performance.
  - d) The patient has been diagnosed with osteoporosis and needs to maintain bone density.
46. Which of the following is NOT a benefit of performing passive ROM exercises?
- a) Maintaining joint mobility and flexibility

- b) Reducing muscle atrophy (wasting)
  - c) Improving blood circulation
  - d) Increasing muscle strength
47. A 65-year-old woman with osteoporosis is looking to improve bone density. Which type of exercise is MOST appropriate?
- a) Stretching
  - b) Yoga
  - c) Resisted exercise
  - d) Walking
48. Which of the following is a CONTRAINDICATION for stretching exercises?
- a) Mild discomfort or tightness
  - b) Recent surgery or wound healing
  - c) Lack of proper warm-up before stretching
  - d) All of the above.
49. The following are determinants of stretching exercises. Which one is NOT?
- a) Alignment and stabilization of the body being stretched
  - b) Mode of stretch
  - c) Volume
  - d) Duration of stretch
50. A physical therapist is evaluating a patient with a history of knee pain and stiffness following a knee sprain. The patient has difficulty bending and straightening their knee fully. Which of the following is the MOST ideal indication for joint mobilization in this scenario?
- a) Pain reduction
  - b) Improved balance
  - c) Increased muscle strength
  - d) Improved joint range of motion