



**AMREF INTERNATIONAL UNIVERSITY**  
**SCHOOL OF HEALTH SCIENCES**  
**DEPARTMENT OF REHABILITATION MEDICINE**  
**BACHELOR OF SCIENCE IN PHYSIOTHERAPY**  
**END OF TRIMESTER EXAMINATIONS**

**UNIT CODE: PHT 232**

**DATE: 17<sup>th</sup> APRIL 2025**

**TIME: 9am-11am**

**UNIT NAME: THERAPEUTIC EXERCISES AND EXERCISE PRESCRIPTION**

**INSTRUCTIONS**

1. All students will have two (2) hours to complete the examination
2. This is a Physical examination: Follow instructions per section
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 7 including the cover.
6. Read through the paper quickly before you start.

**Section A. Multiple choice questions. Answer all the questions (30 Marks)**

1. What is the primary goal of therapeutic exercise?
  - a) To increase muscle mass only
  - b) To restore physical function and improve overall health
  - c) To prompt physical activity post-injury
  - d) To prevent all movement-related injuries
  
2. Which of the following is an absolute contraindication for therapeutic exercise?
  - a) Severe joint pain
  - b) Unstable angina
  - c) Poor posture
  - d) infected wounds
  
3. Which type of muscle contraction occurs without a change in muscle length?
  - a) Isotonic
  - b) Concentric
  - c) Eccentric
  - d) Isometric
  
4. What is the primary role of proprioception in movement control?
  - a) Enhancing muscle function
  - b) Assessing joint flexibility
  - c) Providing body awareness and balance
  - d) Reducing metabolic fatigue
  
5. In balance testing, which test assesses an individual's ability to reach forward while maintaining balance?
  - a) Romberg test
  - b) Functional Reach Test
  - c) Talar Tilt Test
  - d) Anterior Drawer Test
  
6. What does the Modified Clinical Test of Sensory Interaction on Balance (mCTSIB) evaluate?
  - a) Cardiorespiratory endurance
  - b) Muscle fatigue levels
  - c) Sensory input integration for balance control
  - d) Hand-eye coordination

7. Which of the following is NOT a component of strength assessment?
- a) Manual Muscle Testing (MMT)
  - b) Isometric Testing
  - c) Equipment-Based Testing
  - d) Visual Field Testing
8. Which of these exercise tests evaluates dynamic balance?
- a) Romberg Test
  - b) Single-Leg Stance Test
  - c) Timed Up and Go (TUG) Test
  - d) Six-Minute Walk Test
9. What is the recommended frequency of moderate-intensity aerobic exercise per week?
- a) 30 minutes per week
  - b) At least 150 minutes per week
  - c) 300 minutes per week
  - d) None, as it depends on age
10. Which principle explains the gradual increase of exercise intensity for strength improvement?
- a) Specificity Principle
  - b) Reversibility Principle
  - c) Progressive Overload Principle
  - d) Maintenance Principle
11. What is the Borg Rating of Perceived Exertion (RPE) primarily used for?
- a) Evaluating joint flexibility
  - b) Assessing exercise intensity based on perception
  - c) Measuring maximal strength output
  - d) Calculating respiratory rate
12. Which of the following factors can negatively affect range of motion (ROM)?
- a) Proper warm-up
  - b) Joint inflammation
  - c) Increased flexibility
  - d) Improved neuromuscular control

13. Which of the following exercises is an example of an open kinetic chain (OKC) movement?
- a) Seated knee extension
  - b) Squats
  - c) Push-ups
  - d) Deadlifts
14. Which energy system is primarily used in high-intensity, short-duration activities like sprinting?
- a) Aerobic system
  - b) ATP-PC system
  - c) Glycolytic system
  - d) Oxidative phosphorylation
15. Which test is most appropriate for evaluating lower limb proprioception?
- a) Functional Reach Test
  - b) Goniometry
  - c) Six-Minute Walk Test
  - d) Single-Leg Stance Test
16. What is the primary concern when prescribing resistance exercises for elderly patients?
- a) Increasing power output
  - b) Preventing falls and fractures
  - c) Maximizing hypertrophy
  - d) Enhancing agility drills
17. In post-operative ACL rehabilitation, which phase focuses on restoring functional movement patterns?
- a) Acute phase (0-2 weeks)
  - b) Early strengthening (2-6 weeks)
  - c) Functional strengthening (6-12 weeks)
  - d) Return-to-sport phase (6+ months)
18. What does the term “eccentric strengthening” refer to?
- a) Contraction of the muscle while shortening
  - b) Contraction of the muscle without movement
  - c) Contraction of the muscle while lengthening
  - d) Alternating concentric and isometric contractions

19. What is the primary function of cardiovascular fitness testing?
- a) Assessing muscle mass
  - b) Determining neuromuscular endurance
  - c) Evaluating oxygen uptake and exercise tolerance
  - d) Measuring joint stability
20. What is the primary benefit of plyometric training in rehabilitation?
- a) Increasing joint laxity
  - b) Enhancing power and neuromuscular coordination
  - c) Improving cardiovascular endurance
  - d) Reducing muscle hypertrophy
21. Which test is most suitable for assessing cardiovascular endurance?
- a) Timed Up and Go (TUG) Test
  - b) Single-Leg Stance Test
  - c) Six-Minute Walk Test
  - d) Functional Reach Test
22. What is the recommended rest period between sets for maximal strength training?
- a) 15-30 seconds
  - b) 30-60 seconds
  - c) 2-3 minutes
  - d) 5-7 minutes
23. Which of the following is an early rehabilitation goal after total knee replacement (TKR)?
- a) Restoration of gentle movement
  - b) Restoring knee extension and reducing swelling
  - c) Performing high-impact exercises
  - d) Weight-bearing activities
24. Which of the following contributes most to chronic overuse injuries?
- a) High-intensity interval training
  - b) Repetitive microtrauma without adequate recovery
  - c) Sudden trauma to the muscle
  - d) Lack of proprioceptive exercises

25. In aquatic therapy, what effect does buoyancy have on rehabilitation?
- a) Decreased joint stress
  - b) Reduces weight-bearing forces
  - c) Allows movement in water
  - d) Increases circulation
26. Which muscle is most important for stabilizing the knee joint in ACL rehabilitation?
- a) Quadriceps
  - b) Vastus medialis
  - c) Tibialis anterior
  - d) Soleus
27. What is the primary function of dynamic stretching before an exercise session?
- a) Reduce muscle hypertrophy
  - b) Increase flexibility and activate muscles
  - c) Prevent strength gains
  - d) Reduce muscle metabolism
28. What is the primary purpose of gait training in post-stroke rehabilitation?
- a) Improve upper limb coordination
  - b) Strengthen abdominal muscles
  - c) Restore functional walking ability and stability
  - d) Reduce cardiovascular endurance
29. Which of the following is an advantage of eccentric training in injury prevention?
- a) Reduces tendon stiffness
  - b) Increases muscle strength while lengthening under tension
  - c) Prevents all muscle strains
  - d) Eliminates the need for warm-ups
30. What is the recommended exercise intensity for aerobic training in healthy adults based on heart rate reserve (HRR)?
- a) 10-20% HRR
  - b) 30-40% HRR
  - c) 50-85% HRR
  - d) 90-100% HRR

### **Section B: Short Answer Essays (4 Marks Each)**

1. Explain the key differences between open kinetic chain (OKC) and closed kinetic chain (CKC) exercises, giving examples of each.
2. Outline the impact of eccentric training on injury prevention and rehabilitation.
3. Describe the role of aerobic exercise in improving cardiorespiratory endurance and its application in rehabilitation.
4. Discuss the impact of inadequate rest and recovery on muscle performance and injury risk.
5. Describe the physiological adaptations that occur in response to aerobic training over a prolonged period.

### **Section C: Long-Form Essays. Attempt any two of the following questions (20 Marks Each)**

1. Explain different types of resistance exercises, their benefits, and considerations in rehabilitation settings.
2. Analyze the role of rest and recovery in rehabilitation, highlighting the physiological processes involved.
3. Discuss the integration of static and dynamic balance training in physiotherapy, focusing on strategies for different patient populations.