



**AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCE
DEPARTMENT OF REHABILITATION MEDICINE
BACHELOR OF SCIENCE IN PHYSIOTHERAPY
END OF SEPT-DECEMBER 2024 TRIMESTER EXAMINATIONS**

UNIT CODE: PHT 118 UNIT NAME: Health and Fitness

DATE: Tuesday/ 3rd/ December

TIME: TWO HOURS

START: 2PM STOP : 4PM

INSTRUCTIONS (physical exams)

- 1. Do not write on this question paper**

(Marks and questions distribution as per program curriculum.)

1. This exam is marked out of 70 marks
2. This Examination comprises 3 Sections
3. This exam shall take 2 Hours

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

1. Which of the following statements is TRUE about the relationship between physical fitness and health?
 - A. Physical fitness is not related to health.
 - B. Physical fitness is only related to the prevention of hypokinetic diseases.
 - C. Physical fitness is a strong indicator of overall health and well-being.
 - D. Physical fitness is only related to the ability to perform daily activities.

2. A patient with a history of ankle instability would likely benefit most from exercises that improve:
 - A. Power and speed
 - B. Balance and coordination
 - C. Reaction time and agility
 - D. All of the above

3. Which of the following is NOT a benefit of flexibility?
 - A. Prevents muscles from shortening due to inactivity
 - B. Assists in the prevention of injury
 - C. Determines bone mass
 - D. Keeps the body from getting stiff

4. What is the primary difference between absolute and relative muscular endurance?
 - A. Absolute endurance measures the total number of repetitions at a given resistance, while relative endurance measures repetitions at a percentage of 1-RM.
 - B. Absolute endurance is assessed using dynamometers, while relative endurance is assessed using tensiometers.
 - C. Absolute endurance is only relevant for static strength, while relative endurance is relevant for dynamic strength.
 - D. Absolute endurance is primarily used in sports, while relative endurance is primarily used in rehabilitation.

5. Which of the following is NOT a dimension of wellness?
 - A. Financial
 - B. Physical
 - C. Cognitive
 - D. Emotional

6. Which dimension of wellness is concerned with the functional health of the body, involving regular exercise, balanced diet, and avoiding harmful substances?
 - A. Emotional wellness
 - B. Social wellness
 - C. Physical wellness
 - D. Spiritual wellness

7. Which of the following statements best encapsulates the multifaceted nature of mental health?
- A. Mental health is solely about the absence of mental disorders.
 - B. Mental health is a state of well-being that encompasses emotional, psychological, and social dimensions.
 - C. Mental health is primarily concerned with cognitive abilities.
 - D. Mental health is synonymous with resilience and the ability to handle stress.
8. In clinical practice, a closed kinetic chain exercise is typically defined as one where:
- A. The distal segment is free to move
 - B. Resistance is applied to the proximal segment
 - C. Resistance is applied to the distal segment
 - D. The distal segment is fixed and no movement occurs
9. A patient is performing a leg extension exercise against resistance. As the patient pushes against the weight, the weight pushes back with an equal and opposite force. This is an example of which of Newton's laws?
- A. Newton's First Law of Motion
 - B. Newton's Second Law of Motion
 - C. Newton's Third Law of Motion
 - D. Law of Conservation of Energy
10. A patient with a spinal cord injury is learning to perform a sit-to-stand transfer. Which principle of the law of gravity should be considered to minimize the risk of falls?
- A. The force of gravity is directly proportional to mass.
 - B. The force of gravity is inversely proportional to the square of the distance between two objects.
 - C. The force of gravity acts towards the center of the Earth.
 - D. The force of gravity is constant regardless of location.
11. Which of the following statements is incorrect regarding accessory motions?
- A. They are involuntary movements that accompany physiological movements.
 - B. They are essential for full-range physiological movement.
 - C. They can be produced by an external force.
 - D. They are not affected by joint compression or distraction.
12. Which of the following statements is true about explicit learning?
- A. It involves unconscious retrieval of skills from implicit memory.
 - B. It is primarily associated with declarative knowledge.
 - C. It progresses with minimal increase in verbal knowledge.
 - D. It is more automatic than implicit learning.

13. Which of the following stages of learning is characterized by a high degree of conscious effort and explicit learning?
- A. Associative stage
 - B. Autonomous stage
 - C. Cognitive stage
 - D. Acquisition stage
14. A learner who is able to perform a skill with minimal cognitive monitoring and is less affected by environmental factors is likely in which stage of learning?
- A. Associative stage
 - B. Autonomous stage
 - C. Cognitive stage
 - D. Retention stage
15. The clinical implication of the reflex theory is:
- A. Motor control is solely determined by reflexes.
 - B. Rehabilitation should focus on decreasing the effects of reflexes.
 - C. Rehabilitation should focus on increasing or decreasing the effects of reflexes.
 - D. Reflexes are not involved in motor control.
16. According to the passage, the optimal duration of a warm-up before physical activity is:
- A. 15 minutes.
 - B. 30 minutes.
 - C. 45 minutes.
 - D. Dependent on individual factors like age and fitness level.
17. According to the SAID principle, what is necessary for a training effect to occur?
- A. The system must be exercised at a level below its current capacity.
 - B. The system must be exercised at a level beyond its current capacity.
 - C. The system must be exercised at a level equal to its current capacity.
 - D. The system must be exercised at a level that is slightly below its current capacity.
18. During an eccentric contraction:
- A. The muscle shortens while developing tension.
 - B. The muscle lengthens while developing tension.
 - C. There is no change in muscle length.
 - D. The muscle contracts without producing tension.
19. Studies have suggested that after the age of 25, a person's maximal strength decreases by approximately.
- A. 1% per year
 - B. 2% per year
 - C. 3% per year
 - D. 4% per year

20. The maximum rate at which oxygen can be taken in and used during exercise is referred to as.
- A. VO₂ max
 - B. Cardiac output
 - C. Tidal volume
 - D. Residual volume
21. Which of the following is a key factor in developing good foot-eye coordination for sports like football?
- A. Increased muscle strength in the lower extremities
 - B. Improved proprioception in the feet
 - C. Enhanced cognitive function
 - D. All of the above
22. Which of the following systems is primarily responsible for balance control in a healthy individual standing on a firm surface?
- A. Vestibular system
 - B. Visual system
 - C. Somatosensory system
 - D. All of the above
23. According to the FITT principle, which of the following factors is considered when prescribing exercise intensity for a beginner?
- A. Previous exercise experience
 - B. Age
 - C. Weight
 - D. Height
24. A patient, new to exercise, has expressed a desire to start a walking program. They have limited time and prefer outdoor activities. Using the FITT principle, develop a personalized exercise plan for this patient. Consider their fitness level, goals, and preferences.
- A. Start with 30 minutes of walking at a moderate pace, 3 days per week. Gradually increase duration and intensity as tolerated.
 - B. Begin with 10 minutes of walking at a slow pace, 5 days per week. Increase duration by 5 minutes every week.
 - C. Start with 60 minutes of walking at a brisk pace, 2 days per week. Maintain this intensity and duration for the first month.
 - D. Begin with 45 minutes of walking at a moderate pace, 7 days per week. Decrease duration and intensity if needed.

25. A patient has recently recovered from a minor injury and is eager to return to their previous exercise routine. How would you apply the FITT principle to gradually increase their exercise intensity and duration without risking reinjury? Consider the patient's healing process and individual needs.
- A. Start with high-intensity exercises to quickly regain strength and endurance.
 - B. Begin with low-intensity exercises and gradually increase intensity and duration over several weeks.
 - C. Maintain the same intensity and duration as before the injury to prevent muscle loss.
 - E. Avoid all physical activity until the injury is completely healed.
26. Nutrient-dense foods are characterized by:
- A. High calorie content and low vitamin and mineral content
 - B. High vitamin and mineral content and low-calorie content
 - C. High fat and sugar content
 - D. Low protein content
27. What is the primary goal of periodization in conditioning?
- A. To prevent injuries
 - B. To reduce training time
 - C. To achieve peak performance
 - D. To increase muscle mass
28. What principle of training states that the positive effects of training are lost when training stops?
- A. Progression
 - B. Reversibility
 - C. Individuality
 - D. Specificity
29. In a rehabilitation setting, the rate of progression of exercise should be:
- A. Determined solely by the therapist
 - B. Based on the patient's tolerance to the exercise
 - C. As aggressive as possible
 - D. Independent of the healing process
30. How does the frequency of exercise relate to intensity and duration?
- A. Higher frequency requires lower intensity and duration
 - B. Higher frequency requires higher intensity and duration
 - C. Frequency is independent of intensity and duration
 - D. Frequency is only related to duration

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

31. List the three stages of learning (3 marks)
32. Distinguish implicit learning from explicit learning (6 Marks)
33. Discuss the 3 different types of skeletal muscles (6 Marks)
34. Explain the components of mental fitness (5 Marks)

Section C. Answer one of the following questions

35. The American College of Sports Medicine's ACSM's in guidelines for exercise for testing and prescription has provided FITT-VP which is an acronym for components of fitness. It has been used to develop and prescribe personalized exercise program. Using FITT-VP develop a personalized exercise program for Alexia who is recovering from a major injury. Alexia is standout athlete in high school, excelling in both basketball and track and field. (20 Marks)
36. Discuss the principles of training and give examples to each of the principle (20 Marks)