



AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCES
DEPARTMENT OF REHABILITATIVE MEDICINE
BACHELOR OF SCIENCE IN PHYSIOTHERAPY
END OF TRIMESTER EXAMINATIONS MAY TO AUGUST 2023

UNIT CODE: PHT 327:
UNIT NAME: NEUROREHABILITATION 2

DATE: 16TH AUGUST 2023

TIME: 6PM-8PM

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 10 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.

All the Best!!

TOTAL: _____/70

PERCENT: _____/100%

POINTS EARNED TOWARDS FINAL GRADE _____/70

1. Which of the following interventions would be the LEAST effective to address functional movement in individuals with Parkinson's disease?

- A) Dual tasking
- B) Performing forced exercise
- C) Practicing small amplitude movements
- D) Walking with external visual cues

2. Which of the following responses is best to manage an individual who is classified as RLASCF Level IV?

- A) Allow the person as much freedom of movement as is safe
- B) Employ an authoritative, loud voice to command behavior
- C) Invite family members and friends to attend session to provide maximum stimulation
- D) Persevere in encouraging completion of a task before moving to the next

3. Which of the following Glasgow Coma Scale scores would indicate a MODERATE brain injury?

- A) 3
- B) 6
- C) 11
- D) 15

4. A 34-year-old male sustained a traumatic brain injury in a head-on collision where he was ejected from the vehicle. During the initial evaluation, he withdraws from noxious stimulation applied to the distal extremities, and he turns his head in the direction of auditory stimulation. What Rancho Los Amigos Scale of Cognitive Functioning level represents the findings in this case?

- A) Level I – No Response
- B) Level II – Generalized Response
- C) Level III – Localized Response
- D) Level IV – Confused & Agitated

5. Which of the following diagnostic groups almost always requires palliative care (Classification 4 of the Dietz model)?

- A) Glioblastoma
- B) Meningioma
- C) Oligodendroglioma

D) Vestibular Schwannoma

6. Which of the following guidelines is NOT appropriate for a person during the acute post-surgical management following a tumor resection?

- A) Avoid the Valsalva maneuver
- B) Encourage early mobility
- C) Monitor ICP level
- D) Stay in a head-down position

7. Which of the following signs/symptoms would indicate an increase in intracranial pressure (ICP) in an individual with a central nervous system tumor?

- A) Atrophy of CN II, irritability, hypotension
- B) Headache, nausea, swelling of distal extremities
- C) Fatigue, irritability, tachycardia
- D) Nausea, headache, swelling of CN II

8. A 40-year-old female with relapsing-remitting multiple sclerosis calls her physiotherapist to report a new onset 2 days ago of foot drop impairing foot clearance during swing after a 6-month remission. What is the appropriate response by the therapist?

- A) Initiate overground gait training with fast walking to facilitate trailing limb posture and increased hip flexor power
- B) Practice stepping over obstacles to facilitate timing of tibialis anterior activation
- C) Recommend initiating therapy in 2 weeks with goal then of returning to baseline
- D) Use functional electrical stimulation to the tibialis anterior muscle during treadmill training

9. A 33-year-old female with a diagnosis of multiple sclerosis comes to your clinic in Nairobi on a hot day in March, presenting with inadequate single limb support on the right due to impaired activation of the gluteus medius. Which of the following intervention plans is MOST appropriate?

- A) Part practice emphasizing increased step length with the unaffected left LE in a massed practice format
- B) Side stepping exercise overground or on the treadmill at a moderate pace in a distributed practice format
- C) Unilateral stepping on a treadmill at a fast speed x30 minutes to increase BDNF production
- D) Walking practice outdoors on variable terrains emphasizing hip stability with manual resistance at the pelvis

10. Which of the following cases of individuals with multiple sclerosis has the best prognosis for recovery?

- A) 20-year-old male with no remission of initial impairments
- B) 25-year-old female with only one impairment in the first year
- C) 40-year-old male with short duration between exacerbations
- D) 50-year-old female with exacerbations lasting more than 2 months

11. Which of the following exercise guidelines is appropriate for individuals with multiple sclerosis?

- A) At least 30 minutes of aerobic exercise and strength training twice a week
- B) At least 30 minutes of heavy resistance training 4 days per week
- C) No more than 20 minutes of aerobic training once a week
- D) No more than 20 minutes of resistance training once a week

12. What basal ganglia disorder has signs and symptoms related to EXCESSIVE OUTPUT from the motor areas of the cerebral cortex?

- A) Huntington's Disease
- B) Lewy Body Dementia
- C) Multiple System Atrophy
- D) Progressive Supranuclear Palsy

13. Which of the following strategies/goals would be appropriate for a person with the progressive form of multiple sclerosis?

- A) Avoid deconditioning
- B) Avoid mobility aids
- C) Bedrest during active stages
- D) Return to baseline

14. A child presents with distal, symmetrical stocking-glove sensory and motor impairments. Based on this information, what is the most likely health condition?

- A) Amyotrophic lateral sclerosis
- B) Charcot-Marie-Tooth
- C) Guillain-Barre Syndrome
- D) Spinal Muscular Atrophy Type III

15. An individual with Type III Spinal Muscular Atrophy has difficulty walking. Her gait pattern is characterized by backward trunk lean throughout the stance phase. Which of the following impairments might best explain this gait pattern?

- A) Impaired cutaneous sensation of the foot
- B) Impaired proprioception of the ankle and knee
- C) Spasticity in gluteus maximus
- D) Weakness in gluteus maximus

16. Which of the following impairments explains most of the postural abnormalities associated with post-polio syndrome?

- A) Asymmetrical muscle weakness
- B) Dysesthesia in distal extremities
- C) Impaired proprioception in proximal joints
- D) Spasticity in proximal muscles

17. Which of the following is an appropriate consideration when planning physiotherapy interventions for a person with a neurodegenerative condition?

- A) Allow exercise but avoid overwork by keeping a moderate intensity
- B) Avoid exercise that causes immediate feelings of post-exercise fatigue
- C) Encourage bedrest to allow muscle to regenerate
- D) Encourage distributed practice of high-intensity exercise as this decreases recovery time

18. For a person diagnosed with ALS, the tests for cranial nerves IX and X were abnormal. Which of the following might be a key patient-identified-problem?

- A) Choking when eating
- B) Double vision when reading
- C) Dizziness with head motion
- D) Facial weakness and drooling

19. Maria is a 30-year-old female with a diagnosis of Guillain Barre Syndrome, rapid onset 6 months ago. She reached the plateau phase at about 4 weeks, followed by slow recovery of extremity strength and sensation starting proximally. Initial long term goals have been met. Continued impairments include decreased strength in the lower extremities (distal > proximal), limiting her gait due to foot drop. She reports she is unable to

work at her job due to her inability to tolerate standing for a full shift. At this point, which of the following would be an appropriate choice by her physiotherapist?

- A) Avoid eccentric exercises due to the potential to cause muscle damage
- B) Continue strengthening and endurance exercises, setting new long term goals
- C) Plan for discharge as further progress will be limited and original long term goals have been met
- D) Refer to primary physician for potential plasmapheresis treatment

20. For individuals with unilateral vestibular hypofunction, which of the following nystagmus patterns would be expected when performing a horizontal head shaking test?

- A) Downbeating nystagmus
- B) Nystagmus beating away from the neural intact side
- C) Nystagmus beating towards the neural intact side
- D) Upbeating nystagmus

21. An individual reports a true vertigo when rolling in bed that lasts for a few minutes. The physical exam reveals the following findings: Dix-Hallpike Right is negative, Left shows down-beating left rotational nystagmus lasting 20 seconds with patient-reported vertigo. What is the most likely diagnosis for this individual?

- A) Left Anterior Canalolithiasis
- B) Left Horizontal Cupulolithiasis
- C) Left Posterior Canalolithiasis
- D) Left Posterior Cupulolithiasis

22. What function do gaze stability exercises promote in individuals with unilateral vestibular hypofunction?

- A) Adaptation of the vestibulo-ocular reflex (VOR)
- B) Improved visual sensory organization
- C) Increased motion sensitivity

23. Which of the following is the most appropriate outcome measure regarding the fear of falling?

- A) Activities-specific Balance Confidence Scale
- B) Berg Balance Scale
- C) BESTest
- D) Parkinson's Fatigue Scale

24. What mechanism of vestibular system recovery is targeted by exercises that promote the desensitization of dizziness symptoms when exposed to provoking stimuli or moving targets?

- A) Adaptation
- B) Canalith repositioning
- C) Habituation
- D) Substitution

25. Which of the following procedures is the most appropriate for an individual with geotropic nystagmus lasting less than 30 seconds bilaterally with the right side being more robust than the left on the Horizontal Roll Test?

- A) Left BBQ Roll
- B) Left Epley Canalith Repositioning
- C) Right BBQ Roll
- D) Right Epley Canalith Repositioning

26. Which of the following impairments is most likely to facilitate functional movement for an individual with a spinal cord injury?

- A) Ankle plantar flexion contracture
- B) Finger extensor contracture
- C) Hip flexion contracture
- D) Thoracolumbar fascia contracture

27. An individual with an acute SCI, classified as AIS-B and bilateral sensory and motor C6, has difficulty transitioning supine to sidelying due to the lack of upper extremity excursion. Based on this information, what muscles should be targeted to achieve the best outcomes?

- A) Biceps brachii, serratus anterior, anterior deltoid
- B) Cervical flexors, latissimus dorsi, serratus anterior
- C) Serratus anterior, anterior deltoid, pectoralis major
- D) Triceps brachii, pectoralis major, cervical flexors

28. An individual with an SCI classified as AIS-B at bilateral sensory and motor C7 has difficulty maintaining the long-sitting position. What is a potential hypothesized impairment that would account for this movement observation?

- A) Flexibility: passive straight leg raise 0-60 degrees

- B) ROM in shoulder: extension 0-40 degrees
- C) Strength: wrist extensors 3/5 and biceps brachii 3/5
- D) Timing and sequencing of hip flexors and extensors

29. What are the instructions for teaching the head-hip relationship during a seated transfer from a wheelchair to a mat table?

- A) Move the head down and away from the surface you are transferring toward
- B) Move the head up and away from the surface you are transferring toward
- C) Move the head down and toward the surface you are transferring toward
- D) Move the head up and toward the surface you are transferring toward

30. An individual with an acute SCI classified as AIS-B and bilateral sensory and motor C6 has insufficient lift when attempting to scoot on the mat in a long sitting position. Of the choices provided, which is the best intervention strategy to address the movement problem?

- A) Strengthening the latissimus dorsi
- B) Strengthening the triceps and deltoids
- C) Stretching the middle deltoid and wrist flexors
- D) Stretching the shoulder flexors to 180 degrees of flexion

31. What is the frequency that an individual with a SCI should be instructed to perform a weight shift in the wheelchair?

- A) 5-10 min
- B) 15-30 min
- C) 45-60 min
- D) 1-2 hours

32. An individual with a chronic spinal cord injury classified as AIS-B bilateral T3 exhibits the following signs during an outpatient physiotherapy session: blood pressure 150/100, heart rate 55, flushed and sweaty face, and complaint of headache. What should be the first and most appropriate response from the therapist?

- A) Encourage the patient to take a non-steroidal anti-inflammatory drug (NSAID) as soon as he returns home
- B) Ensure patient is hydrated by offering water during a rest period
- C) Find and remove any obnoxious stimulus immediately
- D) Instruct the patient to resume taking diuretics to decrease blood pressure

33. TRUE OR FALSE? The presence of sensation at any spinal level increases the likelihood of motor return following an acute spinal cord injury.

A) True

B) False

34. Which of the following interventions would be the most effective choice for addressing gait festination in individuals with Parkinson's Disease?

A) Balance training

B) Nordic walking

C) Strength training

D) Voluntary exercise

35. Sandip is a 24-year-old male with a T5 spinal cord injury, AIS-A, after a tackle in a rugby game 3 weeks ago. He is being treated in an inpatient rehabilitation setting, and he becomes faint/light-headed when he is assisted into a wheelchair. What is an appropriate response by the physiotherapist?

A) Proceed with LE AROM exercise/leg pumps to increase blood pressure

B) Remove noxious stimulus to avoid adverse effects of autonomic dysreflexia

C) Return the patient to bed as he does not tolerate therapy

D) Trial application of abdominal binder and ace wrap the legs while he is upright

36. Which of the following conditions is most likely to be characterized by a posterior leaning posture?

A) Huntington's Disease

B) Lewy Body Dementia

C) Multiple System Atrophy

D) Progressive Supranuclear Palsy

37. Which of the following intervention strategies would specifically address freezing of gait demonstrated by individuals with Parkinson's Disease?

A) Dual tasking

B) Metronome cues

C) Power stance practice

D) Strength training

38. A 22-year-old man with traumatic brain injury is classified as RLASCF III. He is unable to verbally communicate. What are the signs that he is agitated and needs a break from physiotherapy?

- A) Closes eyes and increases respiratory rate
- B) Opens eyes and follows commands
- C) Stares at the ceiling and reduces respiratory rate
- D) Tracks objects in room and withdraws from stimulus

39. A 30-year-old male sustained a TBI in a motor vehicle accident two months ago. He has slightly impaired dynamic standing balance and can only walk short distances secondary to hip pain. The physical examination reveals limited hip AROM in all planes, and there is warmth, redness and swelling in the area of the hip.

Based on this information, what is the most likely cause of the problem?

- A) Contracture formation
- B) Degenerative joint disease
- C) Heterotopic ossification
- D) Neuropathy

40. Which of the following interventions would be the most salient for stimulating arousal of an individual in a coma following a brain injury?

- A) Keeping the television on all day
- B) Performing gentle PROM exercises in bed
- C) Placing the patient in an upright, seated instead of supine position
- D) Providing verbal cues for desired activity without being repetitious