Adapted Physical Education National Standards
Standard 3: Exercise Science

Practice Questions

Written by Former Master’s and Doctoral Students
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Revised (2009):
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1. Understand the measurement of energy expenditures and work may be affected by alterations in physiology or anatomy for individuals with disabilities

1.1. Persons with quadriplegia demonstrate energy levels which are _______ compared to persons with paraplegia (Kelly, 2006, p. 22)
   a. the same
   b. lower
   c. higher
   d. significantly higher

1.2. Upper body output for persons with quadriplegia is usually _______ compared to levels for paraplegia (Durstine, et al, 2003, p. 248)
   a. minimal
   b. higher
   c. lower
   d. none of the above

2. Understand the effect of body mass on energy expenditures for individuals with disabilities such as obesity

2.1. Weight bearing exercise such as running for an individuals who is obese would require (Kelly, 2006, p. 22)
   a. more energy expenditure
   b. less energy expenditure
   c. no energy expenditure
   d. none of the above

2.2. Weight bearing exercise such as running for an individual who is obese may cause damage to which body part(s)? (Durstine, et al, 2003, p. 153-154)
   a. ankles
   b. hips
   c. knees
   d. a and c

3. Understand metabolic rates may be affected by various syndromes metabolic and orthopedic disabilities

3.1. Down Syndrome affects activity level and weight management causing metabolic rates to (Kelly, 2006, p. 22)
   a. remain unchanged
   b. minimal increase
   c. decrease
   d. increase significantly
3.2. Prader-Willi Syndrome affects activity level and weight management causing weight levels to (Kelly, 2006, p. 22)
   a. remain unchanged
   b. minimal increase
   c. decrease
   d. increase significantly

4. Understand how various disabilities may affect energy sources 3.01.03.01

4.1. Persons with McArdle’s syndrome are unable to utilize glycogen causing participation in short term activities to (Kelly, 2006, p. 22)
   a. increase
   b. remain the same
   c. insufficient data to determine
   d. decrease

4.2. Spinal cord injury may decrease the amount fuel produced by (Durstine et al., 2003, p. 248)
   a. protein
   b. liquids
   c. carbohydrates
   d. fats

5. Understand how various disabilities may affect neural and endocrine control of metabolism 3.01.04.01

5.1. A diabetic who exercises regularly will see that his need for insulin (Jackson, Morrow, Hill, & Dishman, 2005, p. 240)
   a. goes away
   b. remains unchanged
   c. increases
   d. decreases

5.2. Do not inject insulin into ____ that will be active during exercise (Durstine et al., 2003, p. 35)
   a. muscle tissue
   b. fat tissue
   c. cartilage
   d. none of the above

6. Understand how disabilities may alter normal neural control of movement 3.02.01.01

6.1. Multiple sclerosis affects the ability to perform activities due to (Durstine et al, 2003, p. 267)
   a. increased fat deposits
   b. delayed nerve transmissions
   c. limited reaction time
   d. none of the above
6.2. Multiple sclerosis symptoms which may affect single session of exercise response are (Durstine et al, 2003, p. 267)
   a. spasticity
   b. muscle weakness
   c. numbness
   d. all of the above

7. Understand voluntary control of movement may be altered by various syndromes, metabolic and orthopedic disabilities 3.02.02.01

7.1. A weight training program for a person with cerebral palsy would best use (Durstine, et al., 2003, p. 290)
   a. free weight/bar bells
   b. free weight/dumb bells
   c. weight machines
   d. all of the above

7.2 The factors that decrease the efficiency of exercise in individuals with Parkinson’s disease are (Durstine, et al., p. 296)
   a. movement disorders
   b. muscular rigidity
   c. all of the above
   d. none of the above

8. Understand how reflexes can be affected by various disabilities 3.02.03.01

8.1. Reflexes are _____ changes in muscle tone (Winnick, 2005, p. 67)
   a. involuntary
   b. voluntary
   c. controlled by brain stem
   d. all the above

8.2. Individuals with muscular dystrophy have their ability to perform certain activities affected by disorders which are (Durstine et al., 2003, p. 256)
   a. skeletal-muscular
   b. neuromuscular
   c. neuro-skeletal
   d. cardio-neuro

9. Understand how various syndromes, metabolic and orthopedic disabilities may alter skeletal muscle structure and function 3.03.01.01

9.1. Hypotonic are muscle tones that (Jackson et al., 2005, p. 46)
   a. atrophy
   b. have a high degree of strength
   c. lack strength
   d. have involuntary movements
9.2. Duchenne’s muscular dystrophy is predisposed to (Durstine et al., 2003 p. 254)
   a. cardiac muscle degeneration
   b. skeletal muscle degeneration
   c. striated muscle degeneration
   d. all of the above

10. Understand how various syndromes, metabolic and orthopedic disabilities may alter metabolic and mechanical efficiency 3.03.02.01

10.1. Always position a student properly so that _____ is correct. (Durstine et al., 2003, p. 5)
   a. stability
   b. muscle tone
   c. alignment
   d. all the above

10.2. If a student is not positioned correctly the problems will (Durstine et al., 2003, p. 5)
   a. Decrease
   b. persist
   c. increase
   d. Both b and c

11. Understand how various syndromes, metabolic and orthopedic disabilities may affect muscular strength and function 3.03.03.01

11.1. A person with a neuromuscular condition will have his/her strength (Durstine et al., 2003, p. 21)
   a. remain about the same
   b. increase gradually
   c. decrease gradually
   d. restored

11.2. With neuromuscular impairment, conditioning includes (Durstine et al., 2003, p. 21)
   a. motor function
   b. muscles
   c. nerves
   d. all of the above

12. Understand how the overload specificity principles apply to people with disabilities 3.03.04.01.

12.1. A person with degenerative Muscular dystrophy ________benefit from weight training (Durstine et al., 2003, p. 255-256)
   a. may not
   b. never
   c. always
   d. insufficient data to determine
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12.2. Down syndrome is a ______ disorder which may cause delays in physical and intellectual development. (French, 2005)
   a. hormonal  
   b. sex linked  
   c. chromosomal  
   d. none of the above

13. Understand how flexibility training applies to individuals with disabilities 3.03.05.01.

13.1. A fitness program which did not stress flexibility would be for (French, 2005)
   a. Muscular dystrophy  
   b. Spina bifida  
   c. Down syndrome  
   d. Cerebral Palsy

13.2. A fitness program for people who are hypertonic and should emphasize flexibility would be best for (French, 2005)
   a. Muscular dystrophy  
   b. Spina bifida  
   c. Down syndrome  
   d. Cerebral Palsy

14. Understand how congenital defects or syndromes such as congenital heart defects, aortic stenosis, atrial septal defects and Marfan syndrome may alter the anatomy and function of the cardiovascular system 3.04.01.01

14.1. Arrange activities performed in the following positions from least to most strenuous (Kelly, 2006, p. 24)
   a. recumbent, sitting, standing  
   b. sitting standing, recumbent  
   c. standing, sitting, recumbent  
   d. all are equally difficult

14.2. It would be recommended to incorporate which of the following in a training program for afore mentioned conditions (Kelly, 2006, p. 24)
   a. low intensity exercises  
   b. rest periods  
   c. decrease intensity if hot and/or humid  
   d. all of the above

15. Understand how the variability of the cardiac cycle applies to individuals with congenital defects, such as syndromes or orthopedic disabilities 3.04.02.01
15.1. Persons with congenital heart defects may have limited aerobic capacity because of: (Durstine et al., 2003, p. 20)
   a. inadequate carbon dioxide in the blood
   b. inadequate oxygen in the blood
   c. oversupply of oxygen in the blood
   d. all of the above
   e. none of the above

15.2. For a person with congenital heart defects a training program should (Durstine et al., 2003, p. 20)
   a. increase exercise time before increasing intensity
   b. decrease exercise time before decreasing intensity
   c. increase intensity before increasing exercise time
   d. all of the above

16. Understand how oxygen consumption may or may not be different between individuals with disabilities and individuals without disabilities 3.04.03.01

16.1. Spina bifida is a developmental defect whereby the (French, 2005)
   a. cranial vertebrae fails to close correctly
   b. lower medulla center fails to close correctly
   c. spinal column fails to close correctly
   d. none of the above

16.2. Individuals with spinal cord injuries will have lower oxygen consumption due to (Durstine et al., 2003, p. 248)
   a. atrophy of ligaments
   b. chromosomal disfunctions
   c. neurocardio defect
   d. small muscle mass

17. Understand how the various orthopedic disabilities and metabolic disease such as diabetes results in neural and vascular damage that may affect circulation 3.04.04.01

17.1. An individual with diabetes may have damage that could affect circulation due to (Durstine et al., 2003, p. 248)
   a. hormonal damage
   b. sex linked damage
   c. chromosomal damage
   d. neural and vascular damage
   e. none of the above

17.2. By definition vasodilatation is: (Merriam-Webster’s New Collegiate Dictionary, 1991, p. 1305)
   a. reduction of blood vessels
   b. decrease of blood vessels
   c. reduction of white blood cells
   d. enlargement of blood vessels
   e. none of the above
18. Understand how congenital defects, syndromes and orthopedic disabilities may interfere with cardiorespiratory dynamics 3.04.05.01

18.1. During physical activity, individuals with Down syndrome and spinal cord injuries tend to experience heart rates that are (Durstine et al., 2003, p. 305)
   a. reduced
   b. increased
   c. remain about the same
   d. none of the above

18.2. Increased heart rates are experienced by which of the following during physical activity? (Durstine et al., 2003, p. 305)
   a. Down syndrome
   b. quadriplegic
   c. a paraplegic
   d. none of the above
   e. all of the above

19. Understand that individuals with disabilities are often at a higher risk for cardiovascular heart disease 3.04.06.01

19.1. Individuals with disabilities usually have a _____ blood cholesterol (Kelly, 2006, p. 25)
   a. higher
   b. lower
   c. about the same
   d. none of the above

19.2. Persons with disabilities are ______ to have cardiovascular disease (Kelly, 2006, p. 25)
   a. less likely
   b. more likely
   c. about the same
   d. none of the above

20. Understand how orthopedic or chronic obstructive pulmonary disease (COPD) conditions can interfere with the functions of the respiratory system 3.05.01.01

20.1. A student with asthma should avoid exercise when it is (Durstine et al., 2003, p. 107)
   a. damp and hot
   b. wet and cold
   c. wet and hot
   d. dry and cold
20.2. An exercise that is highly suggested for students with asthma is (Durstine et al., 2003, p. 105)
   a. jogging
   b. swimming
   c. weight training
   d. soccer

21. Understand how chronic obstructive pulmonary disease (COPD) and orthopedic disabilities, particularly those that cause ventilatory muscle dysfunction, may interfere with the respiratory system function 3.05.02.01

   21.1. Be aware that persons with asthma may panic because they feel they are not getting enough (Durstine et al., 2003, p.105)
       a. food
       b. water
       c. sunlight
       d. air

   21.2. Chronic obstructive pulmonary disease (COPD) may cause disruptions the functions of which system? (Durstine et al., 2003, p. 92)
       a. circulatory
       b. respiratory
       c. skeletal
       d. muscular

22. Understand how chronic obstructive pulmonary disease (COPD) and orthopedic disabilities may interfere with control of ventilation 3.05.03.01

   22.1. Persons with higher level spinal injuries often lack the _______ control for ventilation (Durstine et al., 2003, p. 248)
       a. personal
       b. psychological
       c. muscle
       d. emotional

   22.2. Try to develop intact accessory ______ through physical activity and respiratory training (Durstine et al., 2003, p. 243)
       a. systems
       b. ligaments
       c. phases
       d. muscles

23. Understand how individuals with disabilities have specific nutritional needs 3.06.01.01

   23.1. Patients with diabetes should monitor intake of (Durstine et al., 2003, p. 133)
       a. fats
       b. Enzymes
       c. milk
       d. sugar
23.2. People with hypertension should decrease intake of (Durstine et al., 2003, p. 77)
   a. sodium
   b. water
   c. alcohol
   d. a and c

24. Understand the differences in percent body fat among individuals with disabilities such as mild, moderate, severe, and profound intellectual disability 3.07.01.01

24.1. The common equation used to measure body fat percentages for individuals with intellectual disability is (Durstine et al., 2003, p. 1)
   a. Howard
   b. Duke University
   c. Oxford Limited
   d. Kelly-Rimmer

24.2. The diagnosis of individuals with intellectual disabilities is based on (Durstine et al., 2003, p. 304)
   a. adaptive skills and IQ
   b. cognitive reserve and IQ
   c. foundation skills and IQ
   d. all of the above

25. Describe which individuals with disabilities in general are overweight, over fat, underweight, or thin 3.07.02.01

25.1. When determining which persons with a disability are thin, overweight, underweight, or over fat consider: (Durstine et al., 2003, p. 149)
   a. body density
   b. daily caloric intake
   c. frame size
   d. all of the above

25.2. Refrain from the use of skin fold calipers over (Jackson et al., 2005, p. 101)
   a. paralyzed muscle
   b. scar tissue
   c. fat folds
   d. a and b

26. Understand the factors that are associated with the treatment of obesity in individuals with disabilities such as exercise, nutrition, and behavioral intervention 3.07.03.01

26.1. A weight reduction program may include all of the following (Jackson et al., 2005, pp. 161-162)
   a. behavior intervention
   b. nutrition
   c. exercise
   d. all of the above
26.2. A weight reduction program should not exceed losing 1 kg per (Jackson et al., 2005, p. 162)
   a. day
   b. week
   c. month
   d. hour

27. Understand how individuals with disabilities such as asthma, orthopedic involvement may be susceptible to thermal change conditions 3.08.01.01

27.1. For individuals with asthma, monitor respiration at high altitudes due to (Winnick, 2005, p. 312)
   a. reduced oxygen pressure
   b. increased oxygen pressure
   c. reduced carbon dioxide pressure
   d. increased carbon dioxide pressure

27.2. When performing an activity persons with muscular dystrophy should (Durstine et al., 2003, p. 258)
   a. be dehydrated
   b. be hydrated
   c. be oxygenated
   d. none of the above

28. Understand the impact of high and low pressure environment on individuals with disabilities 3.08.01.02

28.1. Having cystic fibrosis results in chronic infections of (French, 2005)
   a. liver
   b. kidneys
   c. mouth
   d. lungs

28.2. In a reduced oxygen pressure environment patients with should take caution and be monitored (French, 2005)
   a. cystic fibrosis
   b. cerebral palsy
   c. Asthma
   d. a and c

29. Benefit of exercise training for individuals with exercise induced asthma 3.09.01.01

29.1. A conditioning program for a individuals who use wheelchairs may include (Winnick, 2004 p. 256)
   a. resistance machines
   b. progression
   c. specificity and over
   d. all the above
29.2. Which type of asthma does not occur on an hourly basis? (Durstine et al., 2003, p. 105)
   a. regional asthma
   b. altitude asthma
   c. exercise induced asthma
   d. advanced asthma

30. Describe the programmatic differences between fitness, physical activity, and a rehabilitation program for individuals with disabilities such as cerebral palsy 3.09.02.0

30.1. Which is not usually included in a fitness program? (Jackson et al., 2005, p. 4)
   a. cardiorespiratory
   b. muscular strength
   c. flexibility
   d. none of the above

30.2. A rehabilitation program for individuals with disabilities should be done with assistance from: (Kelly, 2006, p. 28)
   a. adapted physical educator
   b. general physical educator
   c. parents
   d. allied medicine

31. Understand that heart rate depends on injury level of individuals with disabilities such as spinal cord injuries 3.09.03.01

31.1. Individuals who use their upper bodies for fitness and exercise activities without using their legs cannot elevate their heart rates to the typical heart rate zone due to (Durstine et al., 2003, p. 248)
   a. fatigue
   b. smaller amount of muscle mass involved
   c. poor muscle tone
   d. none of the above

31.2. When planning activities for individuals who are obese, it is important to emphasize (Durstine et al., 2003, p. 153)
   a. the activity being performed
   b. the intensity
   c. the duration
   d. none of the above

32. Understand differences in maximum MET levels between persons with and without disabilities 3.09.04.01
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32.1. Individuals utilizing braces and crutches would have a higher MET level than an individual using a wheelchair because (Jackson et al., 2005, p. 159)
   a. more muscle groups are being used.
   b. there is not evidence of a poor circulatory system.
   c. exercise intensity is higher.
   d. none of the above.

32.2. The categorization for exercise intensity in METs is adjusted ________ with age to account for the general “aging effect.” (Jackson et al., 2005, p. 159)
   a. higher
   b. lower
   c. accordingly
   d. none of the above

33. Understand that the Karvonen formula may be for individuals with disabilities such as Down syndrome who may have chronotropic incompetence or low motivational levels 3.09.05.01

33.1. The exercises prescribed for individuals with disabilities such as Down syndrome should be rated by using (Durstine et al., 2003, p. 308)
   a. rate of perceived exertion.
   b. METs
   c. maximal oxygen consumption
   d. both a and b

33.2. When prescribing an exercise program, it is important to be aware of (Jackson et al., 2005, p. 10)
   a. temperature
   b. high humidity
   c. medications
   d. all of the above

34. Understand the importance of Rate of Perceived Exertion when gauging exercise intensity in individuals with disabilities such as Type I diabetes mellitus, and individuals on beta blockers 3.09.06.01

34.1. Rate of Perceived Exertion will allow for individuals to (Sherrill, 2004, p. 375)
   a. evaluate their perceived level of exercise.
   b. determine their duration of exercise activities.
   c. predict their maximal heart rate rather than estimating using a target heart rate zone.
   d. all of the above.

34.2. The greatest value of the Rate of Perceived Exertion scale is that (Sherrill, 2004, p. 375)
   a. it has guidelines that are easily understood regarding exercise intensity.
   b. it evaluates the perceived level of exercise.
   c. it is measurable.
   d. none of the above.
35. Understand the different testing protocols for persons with disabilities such as intellectual disability and spinal cord injuries 3.09.07.01

35.1. To determine the sub maximal test for an individual using a manual wheelchair, you would use (Durstine et al., 2003, p. 292)
   a. Pacer shuttle test.
   b. ergometer or arm crank
   c. bench press
   d. none of the above

35.2. The Pacer shuttle run is an excellent tool to use for individuals with disabilities because it (Sherrill, 2004, p. 364)
   a. starts off easy and progressively gets harder
   b. does not require preparation
   c. provides minimal results
   d. none of the above

36. Understand the types of muscular strength and endurance and flexibility tests used for individuals with disabilities 3.09.08.01

36.1. Which type of exercise would be use to measure abdominal muscle endurance? (Sherrill, 2004, p. 363)
   a. curl ups
   b. push ups
   c. V sit stretch
   d. none of the above

36.2. Which test offer accommodations for individuals with disabilities? (Sherrill, 2004, p. 362)
   a. The President’s Council on Physical Fitness and Sports
   b. The Pacer
   c. FitnessGram
   d. all of the above

37. Understand the concept of reversibility and how it applies to individuals with disabilities such as post – injured SCI 3.09.09.01

37.1. Cardiorespiratory training programs for wheelchair users (Winnick, 2005, p. 519)
   a. shuttle runs
   b. ergometers
   c. curl-ups
   d. none of the above

37.2. Prevention of upper extremity overuse for individuals with a spinal cord injury would include (Durstine et al, 2003, pp. 248-249)
   a. varying exercise modes from week to week.
   b. strengthening muscles of the upper back and posterior shoulder
   c. stretching the muscles of anterior shoulder and chest.
38. Understand the physiological differences in aerobic capacity and body composition between males and females with disabilities such as intellectual disability 3.09.10.01

38.1. Which test procedure is used to measure body composition for both males and females? (Sherrill, 2004, p. 376)
   a. BMI
   b. Hydrostatic underwater weighing
   c. Skinfold measurement
   d. All of the above
   e. None of the above

38.2. The desirable average body fat content for men and women would be for athletes (Sherrill, 2004, p. 376)
   a. 10-15%; 20-25%
   b. 15-20%; 30-40%
   c. 5-13%; 12-22%
   d. 15-20%; 35-30%

39. Understand pathokinesiology and its relationship to altered human movement patterns caused by disabilities 3.10.01.01

39.1. Preferred walking speed is a good indicator of debilitating effects caused by (Sherrill, 2004, p. 306)
   a. knee injury
   b. general decline in physical performance of elderly adults
   c. both a and b
   d. none of the above

39.2. As walking speed increases, which factors are increased? (Sherrill, 2004, p. 306)
   a. stride length
   b. joint angular velocities
   c. activation levels of numerous muscles
   d. all of the above

40. Understand pathbiomechanics and its relationship to kinesiological movement in individuals with disabilities 3.10.02.01

40.1. Increasing the speed of movement results in (Durstine et al., 2003, p. 118)
   a. decreased rates of oxygen consumption
   b. increased rates of oxygen consumption
   c. minimal oxygen consumption
   d. none of the above

40.2. Movement kinetics are affected by (Sherrill, 2004, p. 269)
   a. ground reaction forces
   b. mechanical power
   c. both a and b
   d. none of the above
41. Understand specific biomechanical properties such as static movement, static tension, static stretch, equilibrium, and relationships to movement and activities for individuals with disabilities 3.10.03.01

41.1. Overall spasticity of the body is decrease by (Sherrill, 2004, p. 267)
   a. rotation of the trunk.
   b. stretching of the lower extremities
   c. stretching of the upper extremities
   d. none of the above

41.2. Rotating and rocking movements are important for warm-up and relaxation for (Sherrill, 2004, p. 267)
   a. hypertension
   b. hypotension
   c. spasticity
   d. none of the above

42. Understand mechanics of dynamic movement, equilibrium, dynamic stretch and dynamic tension and the relationship to movement of activities for individuals with disabilities 3.10.04.01

42.1. Impaired balance and equilibrium are common among individuals who are (Sherrill, 2004, p. 286)
   a. hearing impaired
   b. learning disabled
   c. developmentally delayed
   d. all of the above

42.2. To aid in developing balance, one would (Sherrill, 2004, p. 288)
   a. lower the center of gravity
   b. raise the center of gravity
   c. maintain a constant posture that does not decrease or increase the center of gravity
   d. constantly change a posture that decreases and increases the center of gravity

43. Understand effects of time and space upon motion, calculation of mechanical efficiency and their relationship to movement and motor performance for individuals with disabilities 3.10.05.01

43.1. It is important to remain ________ with individuals with disabilities because it may take longer to perform a task. (Winnick, 2005, p. 4)
   a. professional
   b. patient
   c. aware
   d. positive
43.2. Being able to use time wisely requires the ability to (Sherrill, 2004, pp. 197-198)
   a. focus on goals.
   b. focus on objectives
   c. focus on priorities
   d. all of the above

44. Understand forces that affect movement and motion and the relationship to movement and motor performance for individuals with disabilities

44.1. It is more difficult for individuals with neuromuscular disorders to start and stop activities because of (Durstine et al., 2003, p. 21)
   a. lack of muscle strength
   b. lack of muscle coordination
   c. lack of muscle endurance
   d. lack of muscle flexibility

44.2. Joint range of motion may be restricted by (Jackson et al., 2005, pp. 196-197)
   a. stiffness
   b. swelling
   c. pain
   d. all of the above

45. Understand the anatomical positions of the body and how these positions are used for studying movement of individuals with disabilities

45.1. Because the human body is three dimensional, planes can be used as points of reference; the three planes most commonly referred are (AAOS, 1991, p. 125)
   a. proximal, distal, medial
   b. medial, lateral, anterior
   c. anterior, posterior, midline
   d. coronal, sagittal, transverse

45.2. _________ refers to a location on an extremity that is nearer to the trunk, and to any location on the trunk that is nearer to the midline or to the point of reference named (AAOS, 1991, pg. 126)
   a. proximal
   b. distal
   c. midline
   d. posterior portion

46. Understand body segmental planes, axes, frontal/transversal aces, sagittal plane, principle (cardinal) planes, transverse plane and segmental movements with body movement and their relationship to movement for individuals with disabilities
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46.1. The elbow is __________ to the shoulder but __________ to the wrist and hand (AAOS, 1991, p. 126)
   a. medial, lateral
   b. distal, proximal
   c. anterior, posterior
   d. frontal, sagittal

46.2. Which movements are done on the frontal plane (AAOS, 1991, p. 125)
   a. shoulder and hip abduction and adduction
   b. rotation of joints
   c. extension and flexion
   d. none of the above

47. Understand instances where anatomical constraints of certain individuals with disabilities may cause movement to be in different axes of rotation.

47.1. __________ are individual constraints related to the body’s structure, such as muscle mass and leg length (Haywood & Getchell, 2005, p. 7)
   a. functional constraints
   b. environmental constraints
   c. structural constraints
   d. task constraints

47.2. A __________ is a characteristic of the individual, environment, or task that either facilitates or restricts movements (Haywood & Getchell, 2005, p. 7)
   a. constraint
   b. motor development
   c. physical growth
   d. motor behavior

48. Understand the use of statics, dynamics, kinematics, kinetics, body axes, plane, balance, and equilibrium, for studying and planning movement activities for individuals with disabilities.

48.1. The __________ might be described as the system that gives us “body sense” and it is vital to our ability to position ourselves and move in our environment (Haywood & Getchell, 2005, p. 163)
   a. kinesthetic system
   b. proprioceptive system
   c. both a and b
   d. none of the above

48.2. Which perceptual systems are involved in maintaining posture and balance (Haywood & Getchell, 2005, p. 186)
   a. vision
   b. kinesthetic input from the body’s proprioceptors
   c. kinesthetic input from the vestibular system
   d. all of the above
49. Understand Newton’s Laws (1,2,3) levers, vectors, forces, pulley system, mass/weight/stability, gravity, inertia, momentum, torque, velocity, acceleration and relationship to movement for individuals with disabilities.

49.1. The mechanical advantage the muscle fibers gain by where the force is applied in relation to an axis of rotation is (Haywood & Getchell, 2005, p. 253)
   a. strength
   b. leverage
   c. motor units
   d. muscle mass

49.2. __________ strength is the exertion of force without a change in muscle length, that is, without movement of a limb (Haywood & Getchell, 2005, p. 253)
   a. ballistic
   b. isotonic
   c. isokinetic
   d. isometric

50. Understand the concepts of balance, equilibrium, and stability in planning activity programs for individuals with disabilities.

50.1. __________ are the automatic postural responses elicited by sensory input that signals that the head or trunk is not in midline (Sherrill, 2004, p. 284)
   a. standing upright
   b. righting reactions
   c. overflow
   d. falling

50.2. In regards to assessment of postural reactions, identify one of the three categories of reactions (Sherrill, 2004, p. 284)
   a. righting
   b. parachute
   c. equilibrium
   d. all of the above


51.1. For rotation to occur, what type of force must be applied (AAOS, 1991, p. 76)
   a. force magnitude
   b. eccentric force
   c. resistance
   d. none of the above
51.2. Starting, stopping, and changing directions are examples of what force during physical activity (AAOS, 1991, p. 78)
   a. law of inertia
   b. linear displacement
   c. angular motion
   d. linear motion

52. Apply fluid mechanics principles of buoyancy to individuals with disabilities.

52.1. Lowering the legs to a deeper position while swimming will cause (Sherrill, 2004, pp. 469-470)
   a. flotation
   b. decrease body drag
   c. increase body drag
   d. none of the above

52.2. The greater peripheral distribution of body fat in women compared to men causes a woman’s legs to (Sherrill, 2004, p. 463)
   a. float lower in the water
   b. float higher in the water
   c. sink
   d. become imbalanced

53. Understand that individuals with disabilities such as scoliosis demonstrate abnormal orthopedic development.

53.1. _________ is a decrease or absence of the normal anteroposterior curves and is the opposite condition from lordosis (Sherrill, 2004, p. 399)
   a. flat back
   b. abdominal weakness
   c. visceroptosis
   d. scoliosis

53.2. Among the most common keynote positions for scoliosis are (Sherrill, 2004, pg. 400)
   a. adam’s position
   b. hanging with both arms from a horizontal bar
   c. symmetrical arm raise from a standing position
   d. all of the above

54. Understand that certain characteristics of disabilities associated with abnormal bone growth and conditions make individuals prone to bone injury.

54.1. Chest defects limit respiratory capacity and aerobic endurance, and spinal defects are common with individuals with osteogenesis, that are partly from _________ caused by lack of exercise. (Sherrill, 2004, p. 658)
   a. osteoporosis
   b. intellectual disability
   c. child abuse
   d. stability
54.2. Associated problems with achondroplasia are (Sherrill, 2004, p. 656)
   a. lumbar lordosis
   b. ability to compete in activities
   c. waddling gait
   d. a & c

55. Describe the effects of decreased activity or lack of exercise on bone mineralization of individuals with disabilities associated with bone growth problems and/or deformities.

55.1. This defect makes bone and cartilage soft and brittle, while causing skin and ligaments to be overly elastic and hyperextensible in osteogenesis imperfecta (Sherrill, 2004, p. 658)
   a. over-productivity of red blood cells
   b. collagen fibers found in connective tissue
   c. inflamed muscle fibers
   d. organ dysfunction

55.2. __________, the destruction of the growth center of the hip joint caused by insufficient blood supply occurs most often between the ages of 4 and 8 years (Sherrill, 2004, p. 660)
   a. osgood-schlatter disease
   b. slipped femoral epiphysis
   c. perthes’ condition
   d. scheuermann’s disease

56. Understand common causes of various types of bone fractures such as greenstick, avulsion, longitudinal, and transverse in individuals with disabilities.

56.1. A __________ occurs through weak or diseased bone and is produced by minimal force (AAOS, 1991, p. 215)
   a. stress fracture
   b. compound fracture
   c. comminuted fracture
   d. pathologic fracture

56.2. A __________ occurs only in children and is an incomplete fracture that passes only part way through the shaft of the bone (AAOS, 1991, p. 215)
   a. simple fracture
   b. greenstick fracture
   c. compound fracture
   d. epiphyseal fracture

57. Understand general deviations in basic deviations in basic behavioral properties of muscle tissue found among individuals with disabilities such as hypotonicity.
57.1. Which is responsible for varying degrees of muscle paralysis (Sherrill, 2004, p. 622)
   a. spinal cord injuries
   b. detraining
   c. decreased muscle activity
   d. none of the above

57.2. Maximal oxygen uptake __________ throughout adulthood, related to a decrease in maximum heart rate and in muscle mass (Haywood & Getchell, 2005, p. 243)
   a. increase
   b. decrease
   c. stay the same
   d. none of the above

58. Understand the relationship between force and muscle tissue as they relate to individuals with disabilities such as cerebral palsy, degenerative muscle conditions, and spina bifida.

58.1. In Duchenne’s muscular dystrophy, the __________ occurs when fat and connective tissue replace degenerating muscle fibers, which progressively become smaller, fragment, and then disappear (Sherrill, 2004, p. 646)
   a. contractures
   b. foot drop
   c. hypotrophy
   d. hypertrophy

58.2. Which exercise(s) would benefit muscle strength for individuals with multiple sclerosis (Sherrill, 2004, p. 378)
   a. isotonic
   b. isometric
   c. isokinetic
   d. all of the above

59. Understand force – length relationship (isometrics) with individuals with disabilities such as cerebral palsy, degenerative muscle conditions and spina bifida.

59.1. The Valsalva Maneuver should be discouraged in those with a cardiovascular disease because of (Sherrill, 2004, p. 380)
   a. resulting exaggerated diastolic blood pressure response
   b. resulting exaggerated systolic blood pressure response
   c. both a and b
   d. none of the above

59.2. When type of muscle contractions result in no apparent change in the length of the muscle, and no movement occurs (AAOS, 1991, p. 723)
   a. isometric
   b. isokinetic
   c. both a and b
   d. none of the above
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60. Understand force – time relationship with individuals with disabilities such as cerebral palsy, degenerative conditions, spina bifida, and intellectually disabled.

60.1. The force or tension that a muscle or muscle group can exert against a resistance is (AAOS, 1991, p. 730)
   a. muscle power
   b. muscle strength
   c. muscle endurance
   d. muscle weakness

60.2. When force is applied to a body, it has two effects: the first is external and causes the body to accelerate; the second is internal and produces deformation. Deformation is: (AAOS, 1991, pg. 84)
   a. state of mechanical strain in the body
   b. acceleration of internal structures
   c. break-down of chemical
   d. all of the above

61. Understand that faulty biomechanics adversely impacts the strength of some individuals with disabilities.

61.1. The athlete, in performing intense activity, uses large muscular forces that place significant biomechanical loads on the (AAOS, 1991, p. 84)
   a. bones and joints
   b. ligaments and tendons
   c. capsules and muscles
   d. all of the above

61.2. Most of our actions involve forces that act through a lever arm, producing a moment of _________ (AAOS, 1991, p. 84)
   a. acceleration
   b. torque
   c. inertia
   d. deformation

62. Understand that the ability of some individuals with disabilities to generate power is compromised due to the faulty mechanics.

   a. body composition
   b. muscle strength and endurance
   c. flexibility
   d. cardiorespiratory endurance
62.2. Which is not a recommendation for resistance training in youth? 
(a. equipment should be adapted to children  
b. adequate warm-up is necessary 
c. proper form and correct technique must be emphasized  
d. use excessive loading)

63. Understand that faulty biomechanics adversely impact the endurance of some individuals with disabilities.

63.1. __________, the most common type of motor disorder, is abnormal muscle tightness and stiffness characterized by hypertonic muscle tone during voluntary movement; about 65% of people with CP have this as their predominant type (Sherrill, 2004, p. 678) 
(a. spasticity  
b. athetosis  
c. overflow disorder  
d. ataxia)

63.2. __________ is a combined disturbance of balance and coordination generally characterized by hypotonia or low postural tone (Sherrill, 2004, p. 679) 
(a. nausea  
b. spasticity  
c. ataxia  
d. athetosis)

64. Understand sensory receptors in muscles for individuals with disabilities such as cerebral palsy, Down syndrome, and muscular dystrophy.

64.1. In Down’s syndrome, deficits in balance and coordination can be explained not only by physical constraints (e.g. shortness of stature, limbs and feet) but also by __________ dysfunction (Sherrill, 2004, p.571) 
(a. footwear  
b. cardiac  
c. central nervous system (CNS)  
d. none of the above)

64.2. In Duchenne muscular dystrophy, __________ of the Achilles tendons force children to walk on their toes and increase still further the risk of falling (Sherrill, 2004, p. 646) 
(a. flexibility  
b. hypertrophy  
c. contractures  
d. foot drop)
65. Understand difference for sensory receptors in tendons among individuals with disabilities, such as cerebral palsy and muscular dystrophy.

65.1. A _________ is surgical sectioning of a tendon. It is primarily used to lengthen the Achilles tendon, thereby reducing toe-walking caused by abnormal tightness (Sherrill, 2004, p. 688).
   a. parapodium
   b. tenotomy
   c. myotomy
   d. neurectomy

65.2. A _________ is surgical relocation of the origin of a muscle, also a technique to ameliorate adduction and flexion deformities (Sherrill, 2004, p. 688).
   a. tenotomy
   b. tendon transplant
   c. myotomy
   d. arthrodesis

66. Understand structure and functions of vestibular, cutaneous, visual, and auditory receptors in individuals with disabilities.

66.1. Individuals may demonstrate diminished balance skills due to (Sherrill, 2004, p. 270).
   a. vestibular impairment
   b. visual impairment
   c. tactile impairment
   d. all of the above

66.2. When working with a student with impaired kinesthetic awareness, the adapted physical educator should (Sherrill, 2004, p. 270).
   a. teach movement drills that emphasize exact repetition of a movement
   b. teach movement drills that emphasize a variety of movement
   c. teach games that require movement that targets a stationary point
   d. both a and c

67. Understand joint anomalies in individuals with disabilities such as arthritis and cerebral palsy.

67.1. What is one of the best activities an adapted physical educator could utilize when working with individuals with arthritis or cerebral palsy (Sherrill, 2004, p. 455).
   a. swimming
   b. basketball
   c. roller skating
   d. none of the above
67.2. The purposes of movement for the child with rheumatoid arthritis are (Sherrill, 2004, p. 652)
   a. relief of pain and spasm
   b. prevention of flexion contractures and other deformities
   c. maintenance of strength, particularly in the extensor muscles
   d. all of the above

68. Understand specific disabilities associated with too much or too little of joint mobility, such as cerebral palsy, juvenile arthritis, osteoarthritis, osteoarthritis, rheumatoid arthritis, osteogenesis imperfecta, lax ligaments, and neuromuscular control.

68.1. Joint problems in arthritis are (Sherrill, 2004, p. 651)
   a. pain
   b. symptoms of inflammation
   c. decreased range of motion (ROM)
   d. all of the above

68.2. When working with an individual with osteogenesis imperfecta, the adapted physical educator should include activities (Sherrill, 2004, p. 658)
   a. increase range of motion
   b. strengthen muscles
   c. a & b
   d. none of the above

69. Understand specific disabilities associated with hypo and hyper joint flexibility such as cerebral palsy and Down’s syndrome.

69.1. Individuals with atlantoaxial instability should not participate in which activities (Sherrill, 2004, p. 574)
   a. gymnastics
   b. soccer
   c. diving
   d. all of the above

69.2. __________ is an orthopedic problem present in approximately 17% of persons with Down’s syndrome; forceful forward or backward bending of the neck may dislocate the atlas, causing damage to the spinal cord (Sherrill, 2004, p. 574)
   a. comorbid condition
   b. atlantoaxial instability
   c. cerebral palsy
   d. hypoplastic

70. Understand various approaches such as passive stretching, active static stretching, and proprioceptive neuromuscular facilitation to increasing flexibility of individuals with disabilities.
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70.1. Activities that elicit or reinforce abnormal movement patterns are contraindicated. Which is not a contraindicated activity in regards to individuals with cerebral palsy (Sherrill, 2004, p. 686)

a. creeping on all fours  
b. rhythmic activities  
c. “w” sitting position  
d. bridging in supine

70.2. The adapted physical educator should apply various approaches to increasing flexibility of specific disabilities such as (AAOS, 1991, pg. 734)

a. passive stretching  
b. active static stretching  
c. proprioceptic neuromuscular facilitation  
d. all of the above

71. Understand how individuals with contractures, such as cerebral palsy, benefit from both active and passive techniques.

71.1. Dynamic (ballistic) stretching exercise should be used by the adapted physical educator when working with which of the following (AAOS, 1991, p. 734)

a. individuals with cerebral palsy  
b. individuals with Down syndrome  
c. individuals with osteogenesis imperfecta  
d. none of the above

71.2. Which of the following is no longer considered an appropriate stretching modality (AAOS, 1991, p. 734)

a. ballistic movement  
b. active  
c. passive  
d. none of the above

72. Understand how deviations such as atlantoaxial instability, scoliosis, lordosis, kyphosis, and growth plate irregularities such as Scheurmann Disease affect anatomical structure and movement capabilities of the neck and upper extremities.

72.1. When working with individuals with kyphosis, the adapted physical educator should (Sherrill, 2004, p. 397)

a. provide exercises that increase flexibility of the chest muscles  
b. encourage abdominal strengthening exercises  
c. both a and b  
d. none of the above
72.2. **__________,** also called swayback or hollow back, is an exaggeration of the normal posterior concave curve in the lumbar region; it not only affects the five lumbar vertebrae but also throws the pelvis out of correct alignment (Sherrill, 2004, p. 396)
   a. kyphosis
   b. lordosis
   c. Scheuermann’s disease
   d. osteoporosis

73. **Understand restrictions such as limited range of motion can affect basic functions of the neck and upper extremities.**

73.1. Soft tissues injuries of the neck include (AAOS, 1991, p. 511)
   a. cervical strains and sprains
   b. cervical intervertebral disc herniation
   c. forced lateral deviation
   d. all of the above

73.2. **__________** within the muscles, particularly the triceps, biceps, and brachial muscles, can be painful and result in restricted motion and disability of the arm (AAOS, 1991, p. 270)
   a. ulnar arteries
   b. radial nerve
   c. olecranon bursa
   d. contusion

74. **Recognize neck and upper extremity function in terms of size, disk arrangement, compression/tensile/shear forces, and structure in relationship to neck and upper extremity movements in individuals with disabilities.**

74.1. Individuals with **__________** lack the arm and shoulder strength to use a manual chair in sport events, so activities must be devised that can be done from a motorized chair (Sherrill, 2004, p. 629)
   a. shock absorption
   b. T2-T5 complete lesions
   c. C1 to C5 lesions
   d. C5 and above complete lesions

74.2. True kyphosis is associated with degenerative disease of the **__________,** which is the fibrocartilage padding between vertebral bodies (Sherrill, 2004, p. 396)
   a. trapezius
   b. intervertebral disks
   c. splenius capitis
   d. levator scapulae

75. **Understand problems such as hypertonic muscles associate with muscles that are active during neck and upper extremity movement.**
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75.1. A limp caused by asymmetry in extension and is associated with stroke, traumatic brain injury, and Class 7 cerebral palsy is defined as (Sherrill, 2004, p. 678)
   a. hemiplegic gait
   b. scissors gait
   c. overflow disorder
   d. fluctuating muscle tone

75.2. __________, in regards to spasticity, causes muscles to feel and look stiff (Sherrill, 2004, p. 678)
   a. hypotonic state
   b. hypertonic state
   c. contractures
   d. valgus position

76. Understand causes and characteristics of neck and upper extremity injuries such as soft tissue injuries, ruptured/herniated disc, fractures, dislocations, and tendinitis.

76.1. Blunt trauma to the front of the neck can cause injury to the __________ and result in acute airway obstruction (AAOS, 1991, p. 511)
   a. spine
   b. larynx and/or trachea
   c. brachial plexus
   d. cauda equina

76.2. Characteristics of neck and upper extremity injuries can include which of the following (AAOS, 1991, pp. 518-519)
   a. stiffness
   b. pain
   c. reduced range of motion
   d. all of the above

77. Understand how deviations such as scoliosis, lordosis, anterior pelvic tilt, kyphosis, growth plate irregularities such as Scheuermann’s disease affect load-bearing and movement capabilities of the spine and pelvic girdle.

77.1. The adapted physical educator should make sure when working with an individual with Scheuermann’s disease during the active phase, that the individual is wearing (Sherrill, 2004, p. 661)
   a. a helmet
   b. a hyperextension brace
   c. a knee brace
   d. elbow pads

77.2. Individual differences in leg alignment and in locomotor patterns are largely dependent upon the (Sherrill, 2004, p. 406)
   a. tibial torsion
   b. hip joint
   c. footwear
   d. bone strength
78. **Understand restriction that can affect basic functions such as compression, flexion, extension, hyperextension, lateral flexion, and rotation of the spine and pelvic girdle for individuals with disabilities.**

78.1. Paresis is defined as (Sherrill, 2004, p. 305)
   a. complete paralysis of a muscle
   b. muscle weakness caused by partial paralysis
   c. constant, purposeless motion
   d. none of the above

78.2. Individuals with upper and lower spinal paresis lose functional support, stability, and mobility at which point (Sherrill, 2004, p. 617)
   a. above the level of the lesion
   b. at the level of the lesion only
   c. below the level of the lesion
   d. all of the above

79. **Understand vertebral structure in terms of size, disc, compression, shear forces and pelvic girdle structure in relationship to spinal and lower extremity movements for individuals with disabilities.**

79.1. Identify the following problems that can affect basic functions of the spine and pelvic girdle (AAOS, 1991, p. 511)
   a. trauma
   b. disc compression
   c. neuromuscular conditions
   d. all of the above

79.2. Which of the following are contraindicated activities for individuals with disabilities affecting the spinal cord (Sherrill, 2004, p. 574)
   a. heading a soccer ball
   b. ballistic movements
   c. gymnastics
   d. all of the above

80. **Understand actions of muscles of upper and lower extremities, spine and abdomen in trunk action for individuals with disabilities.**

80.1. It is important to conduct postural screening early in order to (Sherrill, 2004, p. 391)
   a. prevent further deformity
   b. prevent alignment
   c. prevent muscle increase
   d. both a and c
80.2. The extensors of the neck and back, called the __________, are the target of most postures training (Sherrill, 2004, p. 391)
   a. flexors
   b. sacral spine
   c. paresis
   d. antigravity muscles

81. Understand causes and characteristics of spinal injuries such as soft tissue injuries, herniated disc, and fractures.

81.1. The highest number of spinal cord injuries is cause by (Sherrill, 2004, p. 622)
   a. sport injuries
   b. motor vehicle accidents
   c. falls
   d. violence

81.2. __________ is a forward deviation of the shoulder girdle that brings the acromion process (shoulder tips) in front of the normal gravitational line (Sherrill, 2004, p. 404)
   a. quadriplegia
   b. lordosis
   c. kyphosis
   d. round shoulders

82. Understand how deviations in anatomical structure affect movement capabilities of the pelvis, hip joint, and ankle joint for individuals with disabilities.

82.1. Tibial torsion often accompanies (Sherrill, 2004, p. 407)
   a. knock-knees
   b. flat feet
   c. pronated feet
   d. all of the above

82.2. Coxa valga is also known as (Sherrill, 2004, p. 406)
   a. congenital dislocation of the hip
   b. osteoarthritis
   c. bowlegs
   d. knock knees

83. Understand how deviations in alignment of the lower extremity can affect both lower and upper extremities for individuals with disabilities.

83.1. A waddling gait is caused by which of the following (Sherrill, 2004, p. 406)
   a. coxa vara
   b. coxa valga
   c. tibial torsion
   d. a & b
83.2. Genu Varum is also known as (Sherrill, 2004, p. 406)
   a. bowlegs
   b. knock knees
   c. hyperextended knees
   d. tibial torsion

84. Understand how weight bearing stance and gait are affected when some muscle groups are too active for individuals with disabilities.

84.1. Waddling gaits caused by the hip joint conditions coxa vara and coxa valga cannot be corrected by which of the following (Sherrill, 2004, p. 406)
   a. exercise
   b. surgery
   c. casting
   d. bracing

84.2. Exercises that help with problems associated with ankle and foot abnormalities such as pronation and supination would not include (Sherrill, 2004, p. 410)
   a. toe-curling exercises
   b. plantar flexion and inversion
   c. eversion movements and dorsiflexion exercises
   d. non-weight bearing exercises

85. Understand causes and characteristics of lower extremity injuries such as soft tissue injuries, fractures, dislocations, and tendonitis for individuals with disabilities.

85.1. Which of the following can be causes of lower extremity injuries to individuals with disabilities (Sherrill, 2004, p. 407-409)
   a. obesity
   b. abnormal formation of bones
   c. neuromuscular conditions like cerebral palsy
   d. all of the above

85.2. The __________ is a polycentric hinge joint that bears the body’s weight during locomotion (AAOS, 1991, pg. 136)
   a. tibial collateral ligament
   b. tibiofemoral joint
   c. greater trochanter
   d. umbilicus
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References


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