

## FINAL EXAM FOR PHYSIOTHERAPY STUDENTS 2026

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## SOCIAL SCIENCES

### HEALTH AND SOCIETY

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.

SELECT THE ONE THAT IS BEST IN EACH CASE

1. 'Cultural relativism' is the idea that societies have to be studied in terms of their
- A. own meanings and values
  - B. family and kin relationships
  - C. artistic and literary production
  - D. religious and spiritual beliefs

ANSWER: A

2. What is behavior towards a group or individual which treats them differently from other groups or individuals called
- A. discrimination
  - B. attribution
  - C. cultural integration
  - D. assimilation

ANSWER: A

3. Which one of the followings is NOT an acculturation strategy?
- A. segregation
  - B. assimilation
  - C. annihilation
  - D. integration

ANSWER: C

4. Which one of the followings is NOT acceptable term?
- A. Handicapped
  - B. Disabled
  - C. Differently abled
  - D. Person with physical challenge

ANSWER: A

5. What is the name of the well-known document, which defines the concept of minority for international law?
- A. Kennedy study
  - B. Kyoto protocol
  - C. Amsterdam treaty
  - D. Capotorti report

ANSWER: D

6. Cultural anthropology is
- A. transnational.
  - B. interdisciplinary.
  - C. a natural science.
  - D. meta-analytic.

ANSWER: B

7. Which one is NOT a description of ethnocentrism?
- A. Judging another culture solely by the values and standards of one's own culture.
  - B. The main ethnicity of the society must be centrally organized and directed.
  - C. The belief in the inherent superiority of one's own ethnic group or culture.
  - D. All other groups are measured in relation to one's own.

ANSWER: B

8. Body image includes the social body, because.
- A. it builds a frame to perceive and interpret psychic and physical experiences.
  - B. the outer social environment disciplines, influences, and controls physical operation of an individual.
  - C. Both above
  - D. None of the above

ANSWER: C

9. Sociologists take the view that health and illness are ..... constructs just as much as they are medical ones.
- A. scientific
  - B. social
  - C. absolute
  - D. relative

ANSWER: B

10. Studying sociology provides us with
- A. self-enlightenment
  - B. self-understanding
  - C. both above
  - D. none of the above

ANSWER: C

11. Collecting data with focus group interviews
- A. qualitative research strategy
  - B. quantitative research strategy
  - C. Both above
  - D. None of the above

ANSWER: A

12. In premodern cultures transcendent explanations of illness gave importance of the ... dimension of disease
- A. spiritual
  - B. scientific
  - C. social
  - D. medical

ANSWER: A

13. The main variables employed in epidemiological research are.
- A. age, occupation, gender
  - B. education, occupation, race
  - C. socioeconomic status, occupation, gender, race
  - D. age, gender, race and social class or socioeconomic status

ANSWER: D

14. Three dimensions of the age with correlation of health condition can be defined:
- A. physical, psychic, cultural
  - B. biological, psychic, social
  - C. bone, skin, soul
  - D. x-ray, CT, MRI

ANSWER: B

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

15. Which of the followings are important features of cultural anthropology?
- A. holistic
  - B. cultural relativism
  - C. comparative approach
  - D. evolutionism

ANSWER: A, B, C

16. Body image includes.
- A. exact weight expressed in grams.
  - B. collective attitudes, emotions, fantasies of the body
  - C. different medical treatments.
  - D. one's perception on his/her physical appearance.

ANSWER: B, C, D

17. Participant observation
- A. is the unique and distinguished method of sociological research.
  - B. has been the central method for cultural anthropology.
  - C. is not used anymore.
  - D. one of the main features of anthropology.

ANSWER: B, D

Social identity...

- A. is the individual's self-concept derived from perceived membership of social groups.
- B. comes from our social security status.
- C. at the same time means exclusion and inclusion.
- D. is the basis for tax paying characteristics.

ANSWER: A, C

19. Quantitative methods are:
- A. usually presented in numbers.
  - B. mainly using textual information.
  - C. capable to predictions.
  - D. based on research tools like "narrative interview".

ANSWER: A, B, C

20. Medical Sociology
- A. has been developed during the 18th century.
  - B. investigates the social functions of health organizations and institutions.
  - C. mainly focuses on different medical treatments.
  - D. is the study of individual or group behaviors with the respect of health and illness.

ANSWER: B, C, D

21. Which factors help the higher health status of women?
- A. They have more rights in the society.
  - B. They are more conscious about their own health status.
  - C. Women are more likely to spend more money to prevent sickness.
  - D. They ask for medical help in earlier phase of a disease.

ANSWER: B, C, D

22. Which of the followings are NOT the pillars of „the sick role“?
- A. The stigmatization of the sick individual.
  - B. The sick individual is not responsible for his illness.
  - C. Self-help groups play important role in the social acceptance of the sick role.
  - D. The sick role can be defined exclusively by the doctor.

ANSWER: A, B, C

23. What are the basic social functions of the family?
- A. sexual regulations
  - B. reproduction
  - C. economic cooperation
  - D. socialization

ANSWER: A, B, C, D

24. It is quite difficult to recognize values of a society because
- A. they are not straight visible and clearly perceivable
  - B. they are indirectly form the attitudes and opinion of people
  - C. they are directly form the attitudes and opinion of people
  - D. they are tangible and obvious for all

ANSWER: A, B

25. Stereotype is
- A. rigid model of knowledge which belongs to the socially available images
  - B. a biased expression of an arbitrarily formulated judgement
  - C. mostly leading to discrimination.
  - D. strictly bound to prejudice, but it is not the same thing

ANSWER: A, D

26. Means of communication in relation to the body includes
- A. the shape and surface of the body
  - B. the size and clothing of the body
  - C. the inner functioning of the organs of the body
  - D. origination of the body.

ANSWER: A, B

27. The problem of disability lies not only in the impairment of function and its effects on us individually, but also, more importantly, in the area of our relationship with “normal” people
- A. according to the individual model of disability
  - B. according to the medical model of disability
  - C. according to the social model of disability
  - D. if we try to define disability in social terms

ANSWER: C, D

28. These are obligations of the sick person in Parson's theory:
- A. should stay at work as long as possible

- B. should try to get well
- C. should cooperate with the physician
- D. should seek alternative solutions

ANSWER: B, C

SELECT WHETHER THIS STATEMENT TRUE OR FALSE

29. Homogamy is a legally or socially recognized marriage between two persons of the same biological sex or social gender.

- A. True
- B. False

ANSWER: A

30. Epidemiological transition is used to demarcate the change from predominantly infectious causes of death to the degenerative diseases.

- A. True
- B. False

ANSWER: A

31. Some sociologists reject the notion that illness is a direct result of some form of disease; instead, they perceive it is a form of social deviance.

- A. True
- B. False

ANSWER: A

32. The term social mobility refers to the movement of individuals and groups between different socioeconomic positions.

- A. True
- B. False

ANSWER: A

33. Relative poverty means the lack of the minimum resources for living.

- A. True
- B. False

ANSWER: B

34. In closed societies an individual's position is often fixed at birth and there is little that he or she can do to change social status.

- A. True
- B. False

ANSWER: A

35. People are in anomie if they do not have the minimum resources to maintain human life.

- A. True
- B. False

ANSWER: B

36. Social dynamics is a system of social relations where these relations bond together different social positions of individuals.

- A. True
- B. False

ANSWER: B

37. Cultural differences and biological differences are largely dependent of one another.

A. True

B. False

ANSWER: B



## PUBLIC HEALTH AND EPIDEMIOLOGY

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

38. Which of the following structures contains genes for enzymes and antibiotic resistance?

- A. Plasmid
- B. peptidoglycan
- C. Capsule
- D. Plasma Membrane

ANSWER: A

39. Viruses are: select one answer

- A. Photosynthetic
- B. Uses nutrients from its external environment
- C. Eukaryotic microorganism
- D. Submicroscopic, acellular

ANSWER: D

40. Which of the following are prokaryotic:

- A. bacteria
- B. archaea
- C. protists
- D. Fungi

ANSWER: A, B

41. For microbial control, the term sterilization:

- A. The removal of pathogenic microorganisms
- B. The lowering of the microbial count
- C. The destruction of all forms of life
- D. The destruction of microorganisms only on the body surface

ANSWER: C

42. Psychrophilic bacteria are those bacteria that grow best:

- A. in oxygen- free environments
- B. at pH levels of 8 or above
- C. at cold temperatures
- D. only in the presence of viruses

ANSWER: C

43. Antibiotics that targets bacterial cell wall:

- A. Penicillins.
- B. Quinolones.
- C. Tetracyclines.

ANSWER: A

44. Bactericidal antibiotics:

- A. kills bacteria.
- B. Slows bacterial growth or reproduction.
- C. Removes attached bacteria.
- D. Kills all forms of microbial life.

ANSWER: A

45. All the following represent nonspecific mechanisms of body defense except:

- A. mucus that traps particles in the respiratory tract
- B. stomach acid
- C. IgM
- D. phagocytosis

ANSWER: C

46. Which of the following is not true of antibodies:

- A. They are also known as immunoglobulins.
- B. They are produced by T cells.
- C. They are composed of protein.
- D. They exist in five different types.

ANSWER: B

47. Antibiotic that targets bacterial cell wall:

- A. Penicillins.
- B. Polymixins.
- C. Quinolones.
- D. Tetracyclines.

ANSWER: A

48. For microbial control, the term sterilization suggests:

- A. the removal of pathogenic microorganisms
- B. the lowering of the microbial count
- C. the destruction of all forms of life
- D. the destruction of microorganisms only on the body surface

ANSWER: C

49. Anaerobic bacteria are those bacteria that grow best:

- A. in oxygen- free environments
- B. at pH levels of 8 or above
- C. at cold temperatures
- D. only in the presence of viruses

ANSWER: A

50. Immunity that develops as a result of an actual infection is called:

- A. natural passive acquired immunity.
- B. artificial active acquired immunity.
- C. natural active acquired immunity.
- D. artificial passive acquired immunity.

ANSWER: C

51. The Gram stain is an example of which of the following types of staining procedures?

- A. Simple
- B. Structural
- C. Differential
- D. Selective.

ANSWER: C

52. The atmosphere....:

- A. is a physically uniform, cover over the planet Earth
- B. has an exact border between the different layers
- C. is near 10.000 km high
- D. is not physically uniform but it has significant variations in temperature and pressure with altitude, which define a number of atmospheric layers

ANSWER: D

53. The permanent components of the outdoor-air are...:

- A. oxygen, nitrogen, argon
- B. nitrogen, Carbon-dioxide, Oxygen
- C. oxygen, nitrogen
- D. oxygen, nitrogen, argon, aerosols, nitrous-oxides

ANSWER: A

54. The ozone layer...:

- A. is stated in the lower part of the Troposphere
- B. has strong responsibility in the process of „greenhouse-effect“
- C. can prevent the living organism of Earth against the harmful UV radiation
- D. is resulted by air-polluting processes

ANSWER: C

55. Carbon-dioxide (CO<sub>2</sub>) in the atmosphere is responsible for...:

- A. the process „greenhouse-effect“
- B. Ozone-holes
- C. blocking the harmful UV radiation

ANSWER: A

56. Relative humidity is...:

- A. not informative parameter as the absolute humidity is
- B. whole amount of humidity in defined volume of air (for ex.: g/m<sup>3</sup>)
- C. 50% when precipitation (fog) is recognised
- D. a %-figure which shows what percentage of the maximum amount of water vapour is present in the air

ANSWER: D

57. Large UV exposure is a risk of

- A. Melanoma
- B. Lung cancer
- C. Leukemia
- D. Anaemia

ANSWER: A

58. Every year around 7 million deaths are due to exposure from...:

- A. household air pollution
- B. both outdoor and household air pollution
- C. outdoor air pollution
- D. industrial air pollution

ANSWER: B

59. Between 2030 and 2050, climate change is expected to cause approximately

- A. 250 000 additional deaths
- B. 7.000.000 additional deaths

- C. 70.000 additional deaths
- D. 25.000 additional deaths

ANSWER: A

60. Carbon-monoxide...:

- A. is produced by complete burning processes
- B. is typical emission by the biological processes of ruminant animals
- C. is strong greenhouse-gas
- D. combines with the haemoglobin in the red blood cells by 400 times stronger than the oxygen

ANSWER: D

61. The limit of PM<sub>10</sub> (according to WHO guideline)

- A. 10 µg/m<sup>3</sup> 24-hour mean
- B. 20 µg/m<sup>3</sup> 24-hour mean
- C. 30 µg/m<sup>3</sup> annual mean
- D. 50 µg/m<sup>3</sup> 24-hour mean

ANSWER: D

62. The most health-damaging particles are those

- A. with a diameter of 2.5 microns or less, ( $\leq$  PM<sub>2.5</sub>)
- B. with a diameter between 50-100 microns
- C. with a diameter of 50 microns or less ( $\leq$  PM<sub>50</sub>)

ANSWER: A

63. Los Angeles-type smog process...:

- A. happens in winter when the temperature is near  $-3 + 5^{\circ}\text{C}$  degrees
- B. happens when the relative humidity of air is more than 80%
- C. has typical polluting components as nitrous-oxides, ozone, carbon-hydrogen which relay on several chemical reaction by the effect of strong UV radiation
- D. causes health problems in case of large number of people because of high concentration of dusts and sulphur-acid

ANSWER: C

64. High formaldehyde concentration of the indoor-air:

- A. is produced by photochemical reactions
- B. is vapoured from the materials of furniture
- C. is emitted by using of projectors and photocopier machines
- D. is emitted by air-conditioner machines

ANSWER: B

65. Benzene...

- A. originates only from outdoor air
- B. originates from sources in-doors also such as attached garages
- C. can't cross the blood-brain barrier and the placenta
- D. only has non-carcinogenic effects

ANSWER: B

66. Methaemoglobinaemia:

- A. is caused by the high concentration of florid and iodine ions in the drinking water
- B. is the blue baby syndrome which is caused by the water-born bacterial infection

- C. (the blue baby syndrome) is caused by the high nitrate concentration of drinking water which can reducing the ability of haemoglobin to carry oxygen to cells
- D. toxic disease by the polluted water in cases of adults, because they have high sensitivity to nitrate

ANSWER: C

67. Typical water-born epidemic is:

- A. Cholera
- B. Flu
- C. Methaemoglobinaemia
- D. COVID-19

ANSWER: A

68. Chlorine is added to drinking water because of...:

- A. giving good taste to the drinking water
- B. indicating the organic pollution of the water
- C. disinfection against the bacteria, viruses and algae
- D. balancing of pH

ANSWER: C

69. Coliforms are:

- A. Protozoa
- B. Pathogenic bacteria
- C. Indicator bacteria group

ANSWER: C

70. Which is INCORRECT?

- A. Arsenic is naturally present at high levels in the groundwater in number of countries.
- B. Arsenic is highly toxic in its inorganic form.
- C. Short-term exposure to arsenic can cause methaemoglobinaemia
- D. Long-term exposure to arsenic can cause cancer and skin lesions

ANSWER: C

71. WHO and CE limit in case of Nitrate in drinking water

- A. 0,1 g/m<sup>3</sup>
- B. 70 µg/L
- C. 50 mg/L
- D. 10 µg/L

ANSWER: C

72. WHO and CE limit in case of Arsenic in drinking water

- A. 10 mg/l
- B. 1 mg/l
- C. 50 mg/l
- D. 10 µg/l

ANSWER: D

73. FALS statement in case of Trihalomethanes (THMs)

- A. THMs are disinfection by-products in drinking water
- B. Origin when chlorine is added to water that contains elevated levels of natural organic matter

- C. Origin when O<sub>3</sub> exposure is added to water that contains elevated levels of natural organic matter
- D. THMs have demonstrated carcinogenic activity in laboratory animals

ANSWER: C

74. Legionella pneumophila proliferates between

- A. 10-20°C
- B. 20-50°C
- C. 30-55°C
- D. 45-55°C

ANSWER: B

75. Legionnaires' disease...

- A. is a bacterial disease which can spread via aerosols (air conditioners, showers and warm water deposits)
- B. is a poisoning which caused by air conditioners and showers
- C. Bacterial infections of intestines which spreads via drinking water

ANSWER: A

76. The medical waste container (when is full and sealed and without cooling) can be stored on site for...

- A. 1 day
- B. 48 hours
- C. 3 days
- D. 3 hours
- E. 30 days

ANSWER: B

77. What about the „controlled circulations” in case of hospital building attributes?

- A. It means a ventilation system
- B. Eliminate contaminated water or fluid environmental reservoirs (e.g., in equipment or solutions) wherever possible
- C. Designing a "way-finding" process into every project
- D. Visitors should have a simple and direct route to each patient nursing unit without penetrating other functional areas

ANSWER: D

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

78. STDs are:

- A. Chlamydia trachomatis
- B. Neisseria gonorrhoeae.
- C. Trichomonas vaginalis
- D. Treponema pallidum.
- E. Scarlatina

ANSWER: A, B, C

79. Which of the following are airborne diseases?

- A. TB
- B. Influenza
- C. Amoebiasis

- D. Diphtheria
- E. Legionnaires' disease

ANSWER: A, B, D, E

80. Bacteria caused food-borne infectious disease by releasing toxin:

- A. B. cereus
- B. Toxoplasma gondii
- C. Salmonella sp
- D. Clostridium botulinum

ANSWER: A, D

81. Ionizing radiations are

- A. Beta rays
- B. Infrared light
- C. Radio waves
- D. Gamma rays

ANSWER: A, D

82. Fat-soluble vitamins are:

- A. Vitamin A
- B. Vitamin E
- C. Vitamin B<sub>1</sub>
- D. Vitamin K

ANSWER: A, B, D

83. The followings are true in case of Human Calici Virus Infection:

- A. One of the most frequent foodborn illnesses
- B. 70% of all foodborn hospital (nosocomial) infection
- C. The virus is out with faces and vomit
- D. Hand hygiene doesn't have an important role in case of prevention

ANSWER: A, B, C

84. Physical hazards in food

- A. Organic solvents in the food
- B. Toxin in the food
- C. Stone parts in the food
- D. Metal parts in the food

ANSWER: C, D

85. Main B<sub>12</sub> sources are...

- A. Salmon fish
- B. Drinking water
- C. Leafy vegetables
- D. Meat, liver

ANSWER: A, D

86. The main nutrients are:

- A. Carbon-hydrates
- B. Milk, bread, meat
- C. Vegetables
- D. proteins
- E. fats

ANSWER: A, D, E

87. The most frequent bacterial foodborne infections (in EU) are:

- A. Hepatitis „A” infection
- B. Campylobacter jejuni infection
- C. Salmonellosis
- D. Shigellosis
- E. Ergotism

ANSWER: B, C

88. The Protective environment (PE) isolation:

- A. The air pressure in the patient room must be +30 Pa higher than in case of corridor
- B. Is an isolation with positive pressure
- C. Is necessary in case patient with airborne infectious diseases
- D. The air pressure in the patient room must be -30 Pa lower than in case of corridor
- E. Is obligatory in case all standard patient rooms.

MEGADOTT VÁLASZ: A, B

89. In case of Airborne infection isolation (AII):

- A. The air pressure in the patient room must be lower with 30 Pa than the pressure at corridor
- B. The acceptable air changes per hour (ACH)  $\geq 12$
- C. Is under negative pressure, such that the direction of the air flow is from the room to the adjacent space (e.g., the corridor)
- D. All is refers to the isolation of patients infected with organisms spread via airborne droplet nuclei  $< 5 \mu\text{m}$  in diameter

ANSWER: A, B, D

90. The HEPA (High Efficiency Particulate Air) filters are:

- A. nanofilters
- B. effective (99,9%) in case of  $0,12 \mu\text{m}$  particles or above
- C. effective (99,9%) in case of  $0,3 \mu\text{m}$  particles or above
- D. microfilters

ANSWER: C, D

91. The Human immunodeficiency virus transmitted via:

- A. Anal or vaginal sex
- B. Blood transfusion
- C. Perinatal transmission
- D. Vectors

ANSWER: A, B, C

92. The nutritional types of pathogenic bacteria are as follows:

- A. Chemoautotrophs
- B. Heterotrophs
- C. Photoautotrophs
- D. Paratrophs

ANSWER: B, D

93. Intensity of immunoreaction depend on:

- A. Dose of antigen



- B. Penetration of antigen
- C. Adjuvants
- D. Genetical background

ANSWER: A, B, C

94. What diseases prevented via active immunisation?

- A. Diphtheria
- B. Pertussis
- C. Tetanus
- D. Cholera

ANSWER: A, B, C

95. Elements of secondary forces of epidemics:

- A. changing environment
- B. origin of transmission
- C. social factors
- D. form of transmission

ANSWER: A, C

96. Vaccination is a proper way for prevention in case of...?

- A. pertussis
- B. morbilli
- C. diphtheria
- D. campylobacteriosis
- E. salmonellosis

ANSWER: A, B, C

97. What kind of environmental factors can help the transmission of infectious diseases?

- A. air pollution
- B. climate changing
- C. migration of people
- D. growing populations

ANSWER: A, B, C

98. Which are the skin infections from the following?

- A. scabies
- B. varicella
- C. tetanus
- D. botulism

ANSWER: A, C

99. What are the consequences of healthcare-associated infections?

- A. high morbidity
- B. more serious diseases
- C. increasing mortality and lethality
- D. increasing costs

ANSWER: A, B, C, D

100. The origin of healthcare-associated pneumoniae:

- A. direct contacts
- B. oropharyngeal colonisation
- C. via food and drinks

- D. gastricus (retrograd) colonisation

ANSWER: B, D

101. Necessary equipments for isolation:

- A. personal equipments for patient care
- B. material conditions for hand disinfection
- C. material conditions for infectious waste collections
- D. equipments for individual protections

ANSWER: A, B, C, D

102. Which diseases increase susceptibility to healthcare-associated infections?

- A. chronic kidney failure
- B. diabetes
- C. malignant diseases
- D. pre-existing infections

ANSWER: A, B, C

103. Indicate which statements are true for the physical characteristics of the soil!

- A. The soil consists of three phases
- B. The phases of the soil interact with each other
- C. The smaller particles in the soil are more permeable to water
- D. The soil can be considered as a set of particles of different diameters

ANSWER: A, B D

104. Which of the following bacteria may be responsible for food poisoning?

- A. Clostridium botulinum
- B. Clostridium perfringens
- C. Streptococcus faecalis
- D. Staphylococcus aureus

ANSWER: A, B, D

105. Choose the characteristics of food poisoning!

- A. Caused by organic or inorganic toxins in food
- B. It can be caused by a toxin from a microorganism
- C. The disease occurs due to individual hypersensitivity
- D. Acute damage to health caused by the consumption of food contaminated with a live pathogen

ANSWER: A, B

106. Mark the correct statements!

- A. Iron deficiency causes anemia
- B. Iodine is primarily needed for proper tooth development
- C. Selenium is carcinogenic
- D. Zinc is necessary for the smooth functioning of the immune system

ANSWER: A, D

107. Mark the correct statements!

- A. Smoking increases cadmium exposure
- B. Cadmium has not been shown to be carcinogenic
- C. Cadmium is toxic to the kidneys, liver, bones and testes
- D. The use of cadmium-containing containers is prohibited!

ANSWER: A, C, D

108. Exotoxins are characterized by:
- A. The strongest poison
  - B. Thermally stable, enzyme refractors
  - C. Its effect occurs after an incubation period
  - D. Chemically phospholipids

ANSWER: A, C

109. Main characteristics of *Escherichia coli*:
- A. In the colon it is commensal and mutualistic in nature
  - B. Gram positive spore bacterium
  - C. Cell wall can be grouped based on O, surface K antigen
  - D. Urease is positive

ANSWER: A, C

110. What is true in case of the incubation period of infectious diseases?
- A. Duration of incubation period is typical of each communicable disease
  - B. Is relevant only to the spread of epidemics
  - C. Is affected by the amount of pathogens that enter the body
  - D. Is pathogen independent, the same for all infectious diseases

ANSWER: A, C

111. Direct routes of transmission of infectious diseases include:
- A. fecooralis spread
  - B. droplet infection
  - C. spread by water
  - D. propagation by vectors

ANSWER: A, B

112. What determines the possibility of the pathogen spreading?
- A. the manner of escape from the infected organism
  - B. environmental survival of the pathogen
  - C. the place and time of entry of the pathogen into the susceptible organism
  - D. from the current epidemiological situation
  - E. from the virulence of the pathogen

ANSWER: A, B, C

113. What are the food additives?
- A. food coloring
  - B. preservatives
  - C. antibiotics
  - D. pesticides

ANSWER: A, B

114. Purposes of vaccination:
- A. achieving herd immunity
  - B. reduction of individual susceptibility
  - C. interruption of the epidemic process
  - D. increase individual susceptibility

ANSWER: A, B, C

115. What are the forms of asymptomatic transmission?

- A. incubation support
- B. Reconvallent carrier
- C. chronic transmission
- D. pathogen-host condition

ANSWER: A, B, C, D

116. Choose the right statements about the ammonium content of drinking water.
- A. Contaminants for drinking water of anthropogenic origin only
  - B. In shallower waters it may be of agricultural or sewage origin
  - C. Human carcinogen
  - D. May be oxidized to nitrite during water treatment or in the distribution network

ANSWER: B, D

117. Which of the following are prokaryotic:
- E. A. bacteria
  - F. B. archaea
  - G. C. protists
  - H. D. Fungi

ANSWER: A, B

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

118. The inversion layer effectively shuts down convection because the cold air at the surface does not rise.

True: A

False: B

ANSWER: A

119. The inversion layer can cause air quality problems in cities since smog does not dissipate as it usually does.

True: A

False: B

ANSWER: A

120. Ultraviolet (UV) radiation is electromagnetic radiation, with wavelengths between 390 and 750 nm.

True: A

False: B

ANSWER: B

121. Experts believe that four out of five cases of skin cancer could be prevented, as UV damage is mostly avoidable.

True: A

False: B

ANSWER: A

122. Extreme high air temperatures contribute directly to deaths from cardiovascular and respiratory disease, particularly among elderly people.

True: A

False: B

ANSWER: A

123. Symptoms of bronchitis in asthmatic children aren't associated with long-term exposure to NO<sub>2</sub> because nitrous-oxides are chemically indifferent.

True: A

False: B

ANSWER: B

124. Methane is a „green-house“ gas.

True: A

False: B

ANSWER: A

125. O<sub>3</sub> triggers asthma, reduce lung function and cause lung diseases

True: A

False: B

ANSWER: A

126. Chronic exposure to PM<sub>10</sub> and PM<sub>2,5</sub> particles contributes to the risk of developing respiratory diseases only.

True: A

False: B

ANSWER: B

127. Benzene as an indoor pollutant typically originates from attached garages

True: A

False: B

ANSWER: A

128. WHO and CE limit in case of Arsenic compounds in drinking water is 50 mg/l

True: A

False: B

ANSWER: B

129. The medical waste container can be stored on site with cooling for 24 hours

True: A

False: B

ANSWER: B

130. Human papillomavirus (HPV) infection causes nearly all cases of cervical cancer.

True: A

False: B

ANSWER: A

131. Incidence is the occurrence of new disease within a defined period of observation in a specific population.

True: A

False: B

ANSWER: A

132. Decontamination is the treatment of an object or inanimate surface to make it steril.

True: A

False: B

ANSWER: B

133. Only sterilization kill or remove all microorganisms (including viruses).

True: A

False: B

ANSWER: A

134. A drug is modified by the presence of another agent, it is synergistic when the drug's effect is decreased.

True: A

False: B

ANSWER: B

135. The spread of respiratory infectious diseases is facilitated by the congested environment, the concentration of pathogens in the air, and the cold weather.

True: A

False: B

ANSWER: A

136. Microwave radiation is ionizing radiation.

True: A

False: B

ANSWER: B

137. According to the CLP Regulation, P-phrases are precautionary statements.

True: A

False: B

ANSWER: A

## BIOETHICS AND PROFESSIONAL ETHICS

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

138. Intentionally causing a person's death by performing an action such as by giving a lethal injection is...

- A. passive euthanasia.
- B. assisted suicide.
- C. euthanasia by action.
- D. euthanasia by omission.

Answer: C

139. Euthanasia can become a means of health care cost containment" is an argument,,,

- A. against euthanasia.
- B. pro euthanasia.
- C. for health economics.
- D. to support the principle of justice.

Answer: A

140. What is ethics often called?

- A. pragmatic philosophy
- B. practical philosophy
- C. original philosophy
- D. the source of all good

Answer: B

141. The "Will to Live" (or Living Will) is a legal document that you can sign which ...

- A. makes clear (in the form of written instructions to your health care agent) what medical treatment you would want if you can no longer speak for yourself.
- B. makes clear that you don't want to die in any circumstances.
- C. makes clear what is your opinion on active euthanasia.
- D. names someone who can kill you when you no longer express the wish to die.

Answer: A

142. The use of moral norms and concepts to resolve practical moral issues is called ...

- A. normative ethics
- B. metaethics
- C. descriptive ethics
- D. applied ethics

Answer: D

143. implies that an act is morally right if and only if that act causes "the greatest pleasure for the greatest number

- A. Utilitarianism
- B. Deontology
- C. The "golden rule" concept
- D. The doctrine of double effect

Answer: A

144. Fetus is an innocent human being'. Who favored this position?

- A. liberals

- B. conservatives
- C. feminists
- D. postmodernists

Answer: B

145. Utilitarianism is part of ... theory

- A. deontological
- B. universalism based
- C. consequentialism
- D. virtue

Answer: C

146. Pro- life' movement is related to the issue of ...

- A. euthanasia.
- B. surrogacy.
- C. abortion.
- D. cloning.

Answer: C

147. Euthanasia means: ...

- A. gentle and easy death.
- B. painless death.
- C. unexpected death.
- D. death.

Answer: A

148. The four major principles of medical ethics are ...

- A. beneficence, nonmaleficence, autonomy, and justice.
- B. privacy, autonomy, beneficence and justice.
- C. autonomy, beneficence, universality and justice.
- D. autonomy, beneficence, nonmaleficence and morality.

Answer: A

149. Which of these is NOT a direction of thinking/school in the abortion debate?

- A. conservative
- B. liberal
- C. religious
- D. moderate

Answer: C

150. Kantian ethical position is called: ...

- A. utilitarianism
- B. deontology
- C. consequentialism
- D. ethical relativism

Answer: D

151. Give to the equals equally, and to the unequals unequally according to their important inequalities", says ...

- A. the macro-allocation principles
- B. universal equality act
- C. the formal principle of justice



D. the virtue of temperance

Answer: B

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

152. Bioethics is a/an \_\_\_\_

- A. brach of normative ethics.
- B. theoretical ethics.
- C. applied ethics.
- D. interdisciplinary science.

Answers: A,C,D

153. The sanctity of life refers to ...

- A. the infinite, inexpressible value of life.
- B. that life is sacred and was given as present.
- C. the survival of the fittest idea.
- D. the the concept that we cannot save everybody\_

Answers: A, B

154. What is abortion?

- A. When a pregnancy is terminated.
- B. When the baby is born prematurely.
- C. Removal of an embryo or fetus from the uterus.
- D. Removal of a fully growned baby from the uterus.

Answers: A, C

155. The conservative and liberal thinkers are common in the views ...

- A. that there's no change in the moral status of the foetus during the whole gestation period.
- B. that a new-born baby has total and equal rights to life.
- C. that the foetus is morally not a human person until she starts moving in the womb.
- D. that terminating the pregnancy in the case of a Down-syndrome baby is acceptable.

Answers: A, B

156. The types of euthanasia are ...

- A. active
- B. passive
- C. direct
- D. indirect

Answers: A, B,C, D

157. A doctor who intended to relieve the patient's pain with large dose of morphine and merely foresaw the hastening of the patient's death would act permissibly. It's true according to ....

- A. deontology.
- B. the golden rule theory.
- C. consequentialism.
- D. the doctrine of double effect.

Answers: A, D

158. The justice principle could be understood as ...

- A. an allocation problem.
- B. mathematical problem.

- C. self-awareness problem.
- D. a discrimination problem.

Answers: A, D

159. The sanctity of life refers to ...

- A. the infinite, inexpressible value of life.
- B. the concept that we cannot save everybody.
- C. the survival of the fittest idea.
- D. that life is sacred and was given as present.

Answers: A, D

160. Consequentialism entails that you are just as morally culpable for the outcomes which you actively, directly and intentionally cause as those which you: ...

- A. allow to happen (i.e. are within your power to prevent).
- B. cause to happen through the will of another (e.g. providing the means/incentive/trigger for another person to commit murder).
- C. don't want to happen.
- D. wish to but not dare to do.

Answers: A, B

161. The purpose of hospice care is ...

- A. to improve the quality of life for people living with terminal illness.
- B. to short the life of people living with terminal illness.
- C. to prolong the life of people living with terminal illness.
- D. to use appropriate palliative therapy.

Answers: A, D

162. Descriptive ethics

- A. deals with the description of different ethical or moral norms in different societies.
- B. deals with the prescription of different ethical or moral norms in different societies.
- C. also known comparative ethics.
- D. is the branch of philosophical ethics that investigates the questions that arise regarding how one ought to act, in a moral sense.

Answers: A,C

163. Prescriptive ethics ...

- A. is an inquiry into the nature of ethics.
- B. is concerned with determining the nature of judgments of moral right or wrong, good and bad.
- C. is concerned with moral norms.
- D. has two central concepts: The right and the morally good.

Answers: C, D

164. Deontology ...

- A. is commonly contrasted to consequentialism.
- B. holds that action is more important than the consequences.
- C. holds that the consequences of one's conduct are the ultimate basis for any judgment about the rightness or wrongness of that conduct.
- D. holds the value of the consequences depends only on the pleasures and pains in the consequences.

Answers: A, B

165. Utilitarianism ...

- A. considers the interests of all humans equally.
- B. is a version of consequentialism.
- C. prescribe actions that maximize happiness and well-being for all affected individuals.
- D. is commonly contrasted to consequentialism.

Answers: A, B, C

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

166. Normative ethics intends to examine the moral principles of western cultures.

Correct answer: false

167. Ethics is often called “practical philosophy”.

Correct answer: true

168. Descriptive ethics deals with the description of different ethical or moral norms in different societies.

Correct answer: true

169. Bioethics is applied normative ethics and is multidisciplinary at the same time.

Correct answer: true

170. The principle of double effect was developed by Thomas Aquinas.

Correct answer: true

171. Beneficence is the most powerful bioethical principle.

Correct answer: false

172. The main concern in deontology is about the contradiction of duties.

Correct answer: true

## PHILOSOPHY OF HEALTH

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.

SELECT THE ONE THAT IS BEST IN EACH CASE

173. The truth claims of scientific statements depend on the

- A. paradigm
- B. perspective
- C. society
- D. scientist

ANSWER: A

174. "Man is an animal suspended in a web of significance" is

- A. a description of modern man.
- B. a definition of society.
- C. a definition of culture.
- D. medieval idea of politics.

ANSWER: C

175. What is good? is the central question of

- A. metaphysics
- B. ethics.
- C. aesthetics.
- D. epistemology.

ANSWER: B

176. Contingency is a(n)

- A. a way of believing.
- B. elemental experience of being.
- C. a unique stage of understanding.
- D. important question of art.

ANSWER: B

177. "Normal science" (Th. Kuhn) is based on

- A. a group of legitimated scientists.
- B. abnormal science.
- C. revolutions in science.
- D. disagreement in science.

ANSWER: A

178. Symbols are

- A. individual creatures.
- B. cultural creatures
- C. signs.
- D. not able to transfer feelings.

ANSWER: B

179. Every understandable knowledge is mediated by

- A. practice.
- B. feelings.
- C. books.
- D. language.

ANSWER: D

180. Our personal knowledge is .....determined.

- A. practically
- B. ultimately
- C. culturally
- D. partly

ANSWER: C

181. Proper alternative for subject-object dichotomy is

- A. intersubjectivity
- B. transculturality
- C. multiculturalism
- D. internationality.

ANSWER: A

182. "Tragedy of the commons" is a good model in

- A. ecology
- B. economy
- C. cybernetics
- D. genetics.

ANSWER: B

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

183. Which are the attributes of science

- A. The whole is more than the sum of its parts.
- B. Paradigmatic perspective.
- C. Holistic perspective.
- D. Deductive conclusion.

ANSWER: B, D

184. The concept of "west" based on

- A. Judeo-Christian tradition.
- B. Greeco-Roman philosophy.
- C. the concept of East.
- D. geographical traditions.

ANSWER: A, B

185. Homo Symbolicus is

- A. a model to describe humans as fundamentally different than other species.
- B. a picture of man as being enigmatic.
- C. claiming that meaning giving is a unique human feature.
- D. one of the archeologists' concept of ancient man.

ANSWER: A, C

186. The "Easter Islands" example is

- A. meant to demonstrate the difficulty of limitless development from limited resources.
- B. a basis of an ecological model.
- C. part of 19th century anthropological theory.
- D. a basis of an economical model.

ANSWER: A, B

187. Main functions of language are

- A. collective memory
- B. treatment.
- C. mode of communication
- D. basis of experiencing the world.

ANSWER: A, C, D

188. Main elements of tradition are

- A. habits
- B. objects
- C. values
- D. terms / concepts

ANSWER: A, C, D

189. The "Sunglass metaphor" is about

- A. understanding our own embeddedness into culture.
- B. the problem of multiple colors of man.
- C. showing the difficulty of understanding others.
- D. the various perspective we may take.

ANSWER: A, C

190. Comparing cultures

- A. is impossible in a general sense.
- B. is a useful task.
- C. is easy to manage.
- D. unnecessary task.

ANSWER: A, D

191. Science has

- A. the ability to reach ultimate truth.
- B. is not product of mankind.
- C. paradigmatic structure.
- D. not got cumulative characteristics only.

ANSWER: C, D

192. Moral (behavioural) science

- A. is impersonal.
- B. depends on the scholar.
- C. expressed in natural language.
- D. aims at giving natural laws.

ANSWER: B, C

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

193. Experience has linguistic structure as well.

- A. True
- B. False

ANSWER: A

194. There is a system that could improve itself in a limitless manner from limited resources.

- A. True

B. False

ANSWER: B

195. Following of one's own self-interest in a rational way is helpful for the community as well in the long run.

A. True

B. False

ANSWER: B

196. Intersubjectivity is a good solution to overcome the problems of object-subject dichotomy.

A. True

B. False

ANSWER: A

## HEALTH CARE LAW

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.

SELECT THE ONE THAT IS BEST IN EACH CASE

197. What was the first name of the discipline of health care rules?

- A. Medical Law
- B. Health Law
- C. Health Care Law
- D. Public Health

Answer: A

198. Which statement is false?

- A. Public health law is a part of all legal systems.
- B. Ethics has been an important driver in the development of health care law.
- C. Health care providers are more likely to get into trouble for malpractice than be sued for violating laws and regulation.
- D. The volume of litigation in the field of health care has increased significantly.

Answer: C

199. Which area is the earliest illustration of the interface between health and health regulation?

- A. Patients' rights
- B. Malpractice litigation
- C. Public health
- D. Professional regulation

Answer: C

200. The "Will to Live" (or Living Will) is a legal document which is connection with the patient right of...

- A. right to refuse of treatment
- B. right to health care
- C. right to be informed
- D. right to religious assistance

Answer: A

201. Which answer is false? The minimum requirement of right to health is:

- A. equality
- B. availability
- C. quality
- D. acceptability

Answer: A

202. Which is true?

- A. In every country the fundamental rules are contained in one document.
- B. There are a lot of countries that do not have a written constitution.
- C. In most countries the fundamental rules are contained in the written constitution.
- D. In a country the most important constitutional principles are to be found in many written constitutions.

Answer: C

203. No sanction without a breach means...

- A. nobody should be punished by police unless he/she had broken a law.



- B. everybody should be punished by state.
- C. nobody should be punished by state unless he/she had broken a law.
- D. everybody has the same law, so the same law should govern everyone.

Answer: C

204. The following are important features of health care law, except...

- A. It is an academic discipline.
- B. It is not a young branch of law.
- C. It is a mixed law from other legal disciplines.
- D. Health care law is peculiarly local in its character.

Answer: B

205. Which answer is false? Health care law has close links with principles of...

- A. Law of succession.
- B. Criminal law.
- C. Civil law.
- D. Family law.

Answer: A

206. The health care law regulates all of the following, except...

- A. the patients' rights.
- B. the structure of health service care.
- C. the consent to treatment.
- D. the criminal conducts of health care.

Answer: D

207. Important legal sources of health care law can be all of the following, except...

- A. the secondary legislation.
- B. the Acts of Parliament.
- C. the customs.
- D. the international agreements

Answer: C

208. The following are basic principles of human rights, except...

- A. protect only individuals.
- B. are guaranteed by international standards.
- C. cannot be waived or taken away.
- D. are universal.

Answer: A

209. The health care law became important branch of law...

- A. after the Industrial Revolution.
- B. after World War II.
- C. after World War I.
- D. in the 19th century.

Answer: B

210. Malpractice is

- A. type of tort.
- B. a religious norm.
- C. a criminal rule.
- D. a rule of equity

Answer: A

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

211. Law can regulate...
- A. the human conduct.
  - B. the conduct of animals.
  - C. the conduct of patients.
  - D. the conduct of children.

Answers: A, C, D

212. What are examples of non-economic damage?
- A. Severe pain
  - B. Medical expenses
  - C. Loss of a limb.
  - D. Travelling cost.

Answers: A, C

213. The form of consent can be...
- A. written.
  - B. non-verbal (implied-consent).
  - C. oral.
  - D. signed consent form with two witnesses.

Answers: A, B, C, D

214. Which are the legal sources of European Union in the field of health care law?
- A. decisions
  - B. regulations
  - C. founding treaties
  - D. directives

Answers: A, B, C, D

215. The minimum requirements in General Comment by Committee on Economic, Social and Cultural Rights are ...
- A. Active
  - B. Availability
  - C. Accessibility
  - D. Acceptability

Answers: B, C, D

216. Who are incompetent patients?
- A. 5-year-old child
  - B. patient in coma
  - C. blind patient
  - D. prisoner

Answers: A, B

217. The right to health has close links with ...
- A. right to education.
  - B. freedom from discrimination.
  - C. right to food.
  - D. right to information.

Answers: A, B, C, D

218. Minimum criterions of legal norms are...

- A. determining the conduct.
- B. description of standard conduct.
- C. consequence of conduct.
- D. personal scope.

Answers: A, B, C

219. Statute...

- A. is imperative.
- B. gives reasons.
- C. creates new law.
- D. applies an existing law to a particular set of circumstances.

Answers: A, C,

220. Judgement ...

- A. disclaims any attempt to create new law.
- B. gives reasons.
- C. applies an existing law to a particular set of circumstances.
- D. is imperative.

Answers: A, B, C

221. Which statements do belong to the Continental Law system?

- A. The law comes from the court.
- B. Lawyers think abstractly.
- C. Lawyers faced with a problem, even a new and unforeseen one.
- D. The reception of Roman law.

Answers: C, D

222. Which statements do belong to the English Common Law system?

- A. Lawyers think abstractly.
- B. It comes from the study.
- C. Lawyers are sceptical of every generalization.
- D. It is case law, not enacted law.

Answers: C, D

223. Special personal data can be...

- A. political opinions.
- B. religious or other similar beliefs.
- C. racial or ethnic origin.
- D. information about sexual life.

Answers: A, B, C, D

224. Elements of medical malpractice ...

- A. A duty was breached.
- B. Damages.
- C. The breach caused an injury for the patient.
- D. The patient died because of breach.

Answers: A, B, C

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

225. The statement of refusal of treatment may be withdrawn at any time, but it has to be written.  
Correct answer: false

226. Hungary legalized active and passive euthanasia  
Correct answer: false

227. Every patient can give legally consent to medical or dental treatment.  
Correct answer: false

228. Violations or lack of attention to human rights can have serious health consequences.  
Correct answer: true

229. The right to health does not mean the right to be healthy.  
Correct answer: true

230. The right to the highest attainable standard of health (referred to as “the right to health”) was first reflected in the WHO Constitution.  
Correct answer: true

231. The Bolam test means that a health worker is not guilty of negligence if he/she has acted in accordance with a practice accepted as proper by a responsible body of medical men skilled in that particular art.  
Correct answer: true

232. Children under 18 are fully incompetent patients in Hungary.  
Correct answer: false

233. The racial or ethnic origin is a special personal data.  
Correct answer: true

## HEALTH MANAGEMENT ISSUES FOR PHYSIOTHERAPIST

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

234. What is an unresk'd (health) need?
- A. The patient is unsure about the complaint, prefers not to go to the doctor
  - B. No complaints, the patient does not go to the doctor, but he may have a disease
  - C. The patient notices a complaint but does not go to the doctor
  - D. The patient consults a doctor but does not take treatment

ANSWER: B

235. What would you look at if you wanted to determine the value of human life according to the human capital approach?
- A. The size of the hazard supplement
  - B. Black market price for organs (e.g. kidneys)
  - C. Amount of damages
  - D. The size of the salaries

ANSWER: D

236. What is health demand?
- A. Recognized and well-realized health needs.
  - B. The need to which purchasing power and currency are attached in the healthcare market.
  - C. When the patient notices his complaints, but does not consult a doctor.
  - D. Aggregate gross earnings of healthcare workers.

ANSWER: B

237. What is the characteristic of moral risk?
- A. If a person does not feel the price of a service directly and immediately, it results in a quantity of consumption that exceeds their needs
  - B. If someone gives someone a gift that wouldn't go to a fair, it's a waste.
  - C. A two-player relationship where there is a conflict of interest between the opposing parties
  - D. A three-player relationship where all three actors may have different interests

ANSWER: A

238. What is typical of head quota funding?
- A. Pays the same amount for similar diseases
  - B. Pays a fixed amount per year
  - C. Pay a fixed amount for each day
  - D. Provides funding based on the number of people in a given area

ANSWER: D

239. Which of the following IS NOT a group?
- A. Maltese Charity
  - B. Football Club Barcelona
  - C. Barcelona - Spectators of a Liverpool football match.

D. Lecturers in the Department of Social Sciences

ANSWER: C

240. What are the 3 basic features of the organization?

- A. Division of labour, organizational communication, division of powers and responsibilities
- B. Strong hierarchy, solely shaped by communication, for-profit
- C. Voluntary participation, spontaneous cooperation, strong interpersonal relationships
- D. Task execution, power, profit

ANSWER: A

241. What does it mean when an organization is proactive?

- A. The organisation implementing the environmental change and the actions enforced by them
- B. The organisation is attempting to change or change the environmental conditionality
- C. Your organization was created only to perform a specific project
- D. The body of health organization

ANSWER: B

242. Which claim is true for the Hungarian healthcare market?

- A. It is financed directly by the consumer
- B. Only the solvent consumer can use the service
- C. Funded by the insurer (NEAK) or the consumer
- D. Reclamation is unlimited

ANSWER: C

243. Which health insurance model was introduced to nationalised hospitals?

- A. Bismarck (German) model
- B. American (mixed) model
- C. Out of pocket model
- D. Beveridge (English) model

ANSWER: D

244. Which is typical of the U.S. insurance model?

- A. Adopted in 1946.
- B. High proportion of uninsured populations
- C. Associated with Otto von Bismarck
- D. Insurance is a citizen's right.

ANSWER: B

245. What do meritoric goods mean?

- A. 10000000000000000
- B. Forgotten goods
- C. Valuable goods in themselves
- D. Own goods

ANSWER: C

246. What is the stabilisation function of the state?
- A. Promotes a more socially beneficial consumption of citizens
  - B. Promotes a more balanced income distribution
  - C. Avoiding economic swings
  - D. Describes the general rules of self-employment

ANSWER: C

247. What is cross-subsidy (or cross-subsidy)?
- A. Christmas support for Christian people
  - B. The insurer and the insured person jointly finance any benefits
  - C. Support or redeployed resources to ensure patients at higher risk
  - D. Economics name of premium for healthcare workers

ANSWER: C

248. What is the advantage of group work?
- A. Individual dominance
  - B. Group pressure
  - C. Multilateral problem zoom
  - D. Uncertain liability

ANSWER: C

## BASIC SCIENCES FOR PHYSIOTHERAPY

### ANATOMY

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

1. The most abundant connections between cells in the stratified non-keratinized and stratified keratinized epithelium are:

- A. intermediate junctions
- B. gap junctions
- C. desmosomes
- D. tight junctions

ANSWER: C

2. Large muscle fibers that are multinucleated, striated and voluntary are found:

- A. cardiac muscle tissue
- B. skeletal muscle tissue
- C. smooth muscle tissue
- D. the first, second and third answers are all correct

ANSWER: B

3. Menisci are found in the ....

- A. hip joint
- B. knee joint
- C. subtalar joint
- D. costovertebral joint

ANSWER: B

4. Borders of the subinguinal hiatus

- A. m. gluteus maximus
- B. inguinal ligament
- C. m. piriformis
- D. inferior ramus of the pubic bone

ANSWER: B

5. The common fibular artery is a branch of the:

- A. internal iliac artery
- B. femoral artery
- C. popliteal artery
- D. abdominal aorta

ANSWER: C

6. The paranasal sinuses are:

- A. frontal, mastoid, maxillary, tympanic cavity
- B. maxillary, ethmoidal, frontal, sphenoidal
- C. maxillary, common nasal cavity, sphenoid
- D. frontal, tympanic cavity, sphenoidal

ANSWER: B

7. The ribcage represents:

- A. 14 true ribs



- B. 10 false ribs
- C. 2 floating ribs
- D. 4 floating ribs

ANSWER: D

8. Which muscle is present on the anterior side of thigh?
- A. biceps femoris
  - B. quadriceps femoris
  - C. triceps brachii
  - D. triceps surae

ANSWER: B

9. What is the collective name for ankle bones?
- A. metatarsals
  - B. tarsals
  - C. carpals
  - D. metacarpals

ANSWER: B

10. What is the name of the longest muscle in the body?
- A. sartorius
  - B. soleus
  - C. gastrocnemius
  - D. gracilis

ANSWER: A

11. How many phalanges are present in each foot?
- A. 10
  - B. 15
  - C. 14
  - D. 12

ANSWER: C

12. Where are the cell bodies of sensory neurons that supply the skin of the lower limb?
- A. in the cervical and thoracic dorsal root ganglia.
  - B. in the lumbar and sacral dorsal root ganglia.
  - C. in the cervical and lumbar dorsal horns.
  - D. in the lumbar and sacral dorsal horns.

ANSWER: B

13. Which part of the spinal cord contains motor neurons?
- A. the dorsal horns
  - B. the ventral horns
  - C. the lateral horns
  - D. the dorsal funiculi
  - E. the lateral funiculi

ANSWER: B

14. Where do axons of the neurons in the facial motor nucleus terminate?
- A. in the mimetic muscles
  - B. in the facial skin
  - C. in the submandibular ganglion

- D. in the lacrimal gland
- E. in the solitary nucleus

ANSWER: A

15. At what level does the pathway for pain and temperature sensation for the lower limb cross the midline?
- A. corpus callosum
  - B. thalamus
  - C. medulla
  - D. cervical spinal cord
  - E. lumbosacral spinal cord

ANSWER: E

16. In injuries of the knee, the medial meniscus is frequently torn because it is firmly attached to which structure?
- A. anterior cruciate ligament
  - B. fibular collateral ligament
  - C. tibial collateral ligament
  - D. patellar ligament
  - E. patellar retinaculum

ANSWER: C

17. Which ligament of the knee joint is cord-like and locates on the lateral side?
- A. anterior cruciate ligament
  - B. fibular collateral ligament
  - C. tibial collateral ligament
  - D. patellar ligament
  - E. patellar retinaculum

ANSWER: B

18. The inhibitory synapses work with:
- A. adrenalin or noradrenalin
  - B. acetylcholine
  - C. GABA
  - D. dopamine
  - E. angiotensine

ANSWER: C

19. Damage to which root of a spinal nerve would interfere with motor function?
- A. dorsal
  - B. ventral
  - C. lateral
  - D. posterior

ANSWER: B

20. Epidural space is located between the:
- A. endorachis and the dura mater proper
  - B. dura mater and arachnoid layer
  - C. arachnoid and pia mater
  - D. dura mater and pia mater

ANSWER: A

21. Choose the TRUE statement concerning the sternoclavicular joint.
- A. The articular cavity is usually divided by a disc.
  - B. It is a hinge joint with restricted mobility.
  - C. One of its important ligaments is the coracoclavicular ligament.
  - D. It is formed between the acromial end of clavicle and the jugular notch of sternum.
  - E. Its movements are independent of the the shoulder joint.

ANSWER: A

22. Which of the following statements is FALSE concerning the radiocarpal joint?
- A. The articular head is composed of the scaphoid, lunate and pisiform bones.
  - B. It is an ellipsoid joint.
  - C. It is a biaxial joint.
  - D. There is an articular disc under the ulnar surface of the cavity.
  - E. Its strong palmar and dorsal radiocarpal ligaments stretch to root of the hand.

ANSWER: A

23. Which joint is responsible for mostly the pronation/supination of the forearm?
- A. Proximal radioulnar
  - B. Distal radioulnar
  - C. Humeroulnar
  - D. Radiocarpal
  - E. Intercarpal

ANSWER: A

24. Which ligament forms the vault of shoulder (humeral fornix)?
- A. Costoclavicular ligament
  - B. Acromioclavicular ligament
  - C. Coracohumeral ligament
  - D. Coracoacromial ligament
  - E. Acromiohumeral ligament

ANSWER: D

25. Which one of the following statements is TRUE concerning the pectoralis major muscle?
- A. It inserts on the deltoid tuberosity of the humerus.
  - B. It is responsible for the adduction and anteversion (flexion) of the abducted arm.
  - C. Together with the deltoid it forms the deltoideopectoral groove containing the axillary artery.
  - D. It is innervated by the radial artery.
  - E. It is covered by the thoracodorsal fascia.

ANSWER: B

26. Which statement is TRUE concerning the extensor muscles of the forearm?
- A. They are innervated by the median nerve.
  - B. Most of them originate from the medial epicondyle of humerus or from the adjacent areas.
  - C. Pronator quadratus is found in this group.
  - D. Palmaris longus is a member of this group.
  - E. Abductor pollicis longus is a member of this group.

ANSWER: E

27. Which nerve innervates the flexor muscles of the arm?
- A. Ulnar nerve
  - B. Axillary nerve

- C. Musculocutaneous nerve
- D. Radial nerve
- E. Subscapular nerve

ANSWER: C

28. Which muscle participates in the internal rotation of shoulder joint?

- A. Teres major
- B. Teres minor
- C. Infraspinatus
- D. Supraspinatus
- E. Brachialis

ANSWER: A

29. Which nerve innervates the skin on the dorsal surface of forearm?

- A. Ulnar nerve
- B. Musculocutaneus nerve
- C. Radial nerve
- D. Median nerve
- E. Axillary nerve

ANSWER: C

30. Which nerve passes through the cubital fossa?

- A. Radial nerve
- B. Median nerve
- C. Ulnar nerve
- D. Medial brachial cutaneous nerve
- E. Musculocutaneus nerve

ANSWER: B

31. Which bone represents the highest point of the transverse arch of foot?

- A. Medial and intermediate cuneiforms
- B. Cuboid
- C. Trochlea of talus
- D. Lateral cuneiform
- E. Navicular

ANSWER: A

32. Which ligament holds the head of the talus?

- A. Calcaneocuboidal ligament
- B. Posterior talocalcaneal ligament
- C. Long plantar ligament
- D. Plantar calcaneonavicular (spring) ligament
- E. Calcaneofibular ligament

ANSWER: D

33. Which one of the following is innervated by the deep fibular (peroneal) nerve?

- A. Fibularis (peroneus) longus
- B. Popliteus
- C. Tibialis posterior
- D. Quadratus plantae
- E. Tibialis anterior

ANSWER: E

34. Which one of the following statements is FALSE about the adductor muscles of the thigh?
- A. The deep femoral artery passes through the adductor canal.
  - B. The pectineus belongs to this muscle group.
  - C. The gracilis belongs to this muscle group.
  - D. Most of them are innervated by the obturator nerve.
  - E. They occupy the medial side of the thigh.

ANSWER: A

35. Which one of the following is the main flexor of the hip joint?
- A. Obturator externus
  - B. Obturator internus
  - C. Gluteus minimus
  - D. Iliopsoas
  - E. Tensor fasciae latae

ANSWER: D

36. Which one of the following statements is TRUE about the popliteal artery?
- A. It divides into a superficial and a deep tibial artery
  - B. It enters to the adductor canal.
  - C. It supplies the hip joint.
  - D. It locates in the popliteal fossa between the two heads of gastrocnemius muscle.
  - E. It gives off perforating arteries.

ANSWER: D

37. Which structure is NOT located in the subinguinal hiatus?
- A. Obturator artery
  - B. Femoral artery
  - C. Femoral vein
  - D. Iliopsoas
  - E. Femoral nerve

ANSWER : A

38. Which one of the following structures is an unpaired cranial bone?
- A. palatine bone
  - B. vomer
  - C. nasal bone
  - D. lacrimal bone
  - E. zygomatic bone

ANSWER: B

39. The lambdoid suture is found between the...
- A. frontal and parietal bones
  - B. two parietal bones
  - C. parietal and occipital bones
  - D. two frontal bones
  - E. two temporal bones

ANSWER: C

40. The nasolacrimal canal is a connection between the ...
- A. ...orbit and inferior nasal meatus
  - B. ...orbit and middle nasal meatus

- C. ...orbit and superior nasal meatus
- D. ...common nasal meatus and middle nasal meatus
- E. ...inferior nasal meatus and maxillary sinus

ANSWER: A

41. Which structure(s) connect(s) the orbit to the middle cranial fossa?
- A. only the foramen rotundum
  - B. infraorbital foramen and inferior orbital fissure
  - C. only the optic canal
  - D. superior and inferior orbital fissures
  - E. superior orbital fissure and optic canal

ANSWER: E

42. The muscles of mastication are innervated by the....
- A. mandibular nerve
  - B. vagus nerve
  - C. greater petrosal nerve
  - D. facial nerve
  - E. maxillary nerve

ANSWER: A

43. Choose the correct terms referring the parts of parietal pleura:
- A. mediastinal, endothoracic and pleural
  - B. endothoracic, costal and parietal
  - C. mediastinal, sternocostal and diaphragmatic
  - D. costal, mediastinal and diaphragmatic
  - E. diaphragmatic, sternocostal and lumbocostal

ANSWER: D

44. How many lobar bronchi can be found on the right side?
- A. 1
  - B. 2
  - C. 3
  - D. 4
  - E. 5

ANSWER: C

45. Choose the TRUE statement concerning the main (principal) bronchi.
- A. The left is more vertical than the right.
  - B. The right is more vertical than the left.
  - C. The right is more oblique than the left.
  - D. The right is more longer than the left.
  - E. The left has a bigger lumen.

ANSWER: B

46. Choose the TRUE statement concerning the main (principal) bronchi.
- A. The left is more vertical than the right.
  - B. It is more common for aspirated foreign bodies to enter the left than the right.
  - C. The right is more longer than the left.
  - D. It is more common for aspirated foreign bodies to enter the right than the left.
  - E. The left has a bigger lumen.

ANSWER: D

47. Choose the correct number regarding the number of bronchopulmonary segments of right lung:

- A. 7
- B. 9
- C. 10
- D. 6
- E. 12

ANSWER: C

48. Choose the nerve innervating the lungs parasympathetically:

- A. sympathetic plexus
- B. vagus nerve
- C. phrenic nerve
- D. hypoglossal nerve
- E. intercostal nerves

ANSWER: B

49. Which one of the following nerves innervate the diaphragm?

- A. vagus
- B. glossopharyngeal
- C. splanchnic nerves
- D. phrenic
- E. accessory

ANSWER: D

50. Where does the inferior vena cava pass through the diaphragm?

- A. lumbar part
- B. costal part
- C. central tendon
- D. sternocostal triangle (Larrey's cleft)
- E. lumbocostal (Bochdalek's) triangle

ANSWER: C

51. Where does the fertilization usually occur?

- A. On the fimbriae of uterine (Fallopian) tube
- B. In the uterine cavity
- C. In the infundibulum of uterine (Fallopian) tube
- D. In the isthmus of uterine (Fallopian) tube
- E. In the ampulla of uterine (Fallopian) tube

ANSWER: E

52. The umbilical cord normally contains:

- A. two umbilical veins and one umbilical arteries
- B. one umbilical artery and one umbilical vein
- C. two umbilical arteries and one umbilical vein
- D. two umbilical arteries and two umbilical veins
- E. three umbilical arteries and three umbilical veins

ANSWER: C

53. The urinary bladder:

- A. is preperitoneal

- B. is intraperitoneal
- C. is retroperitoneal
- D. is infraperitoneal
- E. has no peritoneal covering

ANSWER: D

54. The transverse colon is:

- A. retroperitoneal
- B. semi-intraperitoneal
- C. intraperitoneal
- D. infraperitoneal
- E. preperitoneal

ANSWER: C

55. The McBurney's point indicates the:

- A. beginning of the colon
- B. beginning of the vermiform appendix
- C. end of the colon
- D. end of the vermiform appendix
- E. end of the duodenum

ANSWER: B

56. Epithelial cells are attached to the basement membrane by:

- A. desmosome
- B. zonula occludens
- C. zonula adherens
- D. nexus
- E. hemidesmosome

ANSWER: E

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

57. The atlanto-occipital joint:

- A. is a biaxial joint
- B. is a hinge joint
- C. is a pivot joint
- D. is built up by the occipital condyles and the atlas

ANSWER: A, D

58. The somatic nervous system:

- A. regulates the function of the internal organs
- B. works on the striated muscle
- C. is voluntary.
- D. is involuntary
- E. is segmented.

ANSWER: B, C, E

59. The autonomic nervous system

- A. has sympathetic efferent functions
- B. has parasympathetic efferent functions
- C. is voluntary
- D. is involuntary



ANSWER: A, B, D

60. The dorsal root ganglia:

- A. are sensory ganglia
- B. represent multipolar neurons
- C. represent pseudounipolar neurons
- D. the peripheral fibers of the pseudounipolar neurons are coming from the spinal cord

ANSWER: A, C

61. The midbrain:

- A. is the upper part of the brainstem
- B. contains the nuclei of the III. And IV. cranial nerves
- C. the cerebral aqueduct passes through it
- D. is found caudally to the pons

ANSWER: A, B, C

62. The spinal cord:

- A. represents sympathetic and parasympathetic segments
- B. is covered by cranial dura mater
- C. the grey matter of it contains motor neurons, interneurons and sensory neurons
- D. the patellar reflex is one of its simplest reflexes

ANSWER: A, C, D

63. The grey matter of the cerebrum

- A. forms the cortex
- B. is found only on the surface of the hemispheres
- C. forms ganglia and nuclei in the white matter as well
- D. is a thick layer in the white matter

ANSWER: A, C

64. Ethmoidal bone:

- A. is part of the viscerocranium
- B. is part of the neurocranium
- C. represents the crista galli
- D. has lesser and greater wings

ANSWER: A, C

65. The hard palate is built up by:

- A. process of the maxilla
- B. horizontal plate of the palatine bone
- C. nasal bones
- D. processes of the ethmoideal bone

ANSWER: A, B

66. The anterior fontanel:

- A. is rhomboid shaped
- B. is triangular shaped
- C. is a soft area between frontal and occipital bones
- D. is a soft area between parietal and frontal bones

ANSWER: A, D

67. Leucocytes:

- A. represent a heterogeneous cell population
- B. are originating from the red bone marrow
- C. one type of them are platelets
- D. all of them are produced by lymph nodes

ANSWER: A, B

68. Lymphocytes:

- A. are originating from the red bone marrow
- B. can be T and B lymphocytes
- C. are members of the immune system
- D. can mature only in the thymus

ANSWER: A, B, C

69. The hyaline cartilage is composed of

- A. chondrons
- B. has large amount of glycoproteins in the extracellular matrix
- C. has large amount of Ca-salts in the extracellular matrix
- D. GAG molecules present in the extracellular matrix bind large amount of water.
- E. chondrocytes and collagen fibers

ANSWER: A, B, D, E

70. The bone tissue:

- A. is built up by osteons
- B. osteocytes are the dominant cells of it
- C. osteoclasts are taking part in remodelling the tissue
- D. contains reticulocytes in the periosteum

ANSWER: A, B, C

71. Glycoprotein molecules:

- A. have many carbohydrate side chains (GAG)
- B. are attached to hyaluronic acids
- C. have lipids in the central part of them
- D. can bind large amount of water
- E. are present in large number in cartilage

ANSWER: A, B, D, E

72. Smooth muscle:

- A. is composed of multinucleated giant cells
- B. is composed of spindle-shaped cells
- C. shows cross striation
- D. is present in the wall of internal organs

ANSWER: B, D

73. Macrophages:

- A. are derived from blood monocytes
- B. are antigen-presenting cells
- C. secrete antibodies
- D. are phagocytic cells

ANSWER: A, B, D

74. Choose the rotator cuff muscles

- A. infraspinatus

- B. subscapularis
- C. teres major
- D. supraspinatus
- E. teres minor

ANSWER: A, B, D, E

75. The contents of the posterior mediastinum are:

- A. azygos system
- B. thoracic duct
- C. sympathetic trunk
- D. trachea
- E. esophagus
- F. descending aorta
- G. vagus nerve

ANSWER: A, B, C, E, F, G

76. Which of these take part in the formation of Waldeyer lymphatic ring?

- A. parotid gland
- B. lingual tonsil
- C. sublingual gland
- D. palatine tonsil

ANSWER: B, D

77. Which ones of the following structures pass through the infrapiriform hiatus?

- A. Inferior gluteal artery
- B. Sciatic nerve
- C. Pudendal nerve
- D. Superior gluteal artery
- E. Femoral artery

ANSWER: A, B, C

78. Choose the TRUE statements concerning the femoral canal.

- A. It is a virtual space filled by connective and adipose tissue.
- B. The superior border of the femoral ring is formed by the inguinal ligament.
- C. The saphenous hiatus is the exit of it.
- D. The femoral ring corresponds to the lacuna musculonervosa of the subinguinal hiatus.
- E. It is located in the lateral aspect of the iliopectineal fossa.

ANSWER: A, B, C

79. Which structures are the contents of the adductor canal?

- A. Femoral artery
- B. Saphenous nerve
- C. Popliteal artery
- D. Great saphenous vein
- E. Obturator nerve

ANSWER: A, B

80. Which ones of the following joints contain articular disk?

- A. temporomandibular
- B. radiocarpal
- C. sternoclavicular
- D. sacroiliac

E. acromioclavicular

ANSWER: A, B, C, E

81. Which joints are classified as hinge?

- A. talocrural joint
- B. atlantoaxial joint
- C. intervertebral joints
- D. 1st metacarpophalangeal joint
- E. talocalcaneonavicular joint

ANSWER: A, D

82. Choose the TRUE statements.

- A. Tight joints are called amphiarthroses.
- B. The articular capsule has two layers, synovial and fibrous.
- C. The atlantooccipital joint is an ellipsoidal (condyloid) joint.
- D. The metacarpophalangeal joint of the thumb is a saddle joint.
- E. The articular lips are formed by hyalin cartilage.

ANSWER: A, B, C

83. Choose the characteristic features of the ball and socket joints.

- A. circumduction
- B. multiaxial joints
- C. collateral ligaments
- D. active or passive rotation
- E. restricted motility

ANSWER: A, B, D

84. Which segments of the spine show kyphosis?

- A. cervical
- B. sacral
- C. thoracic
- D. coccygeal
- E. lumbar

ANSWER: B, C, D

85. Choose the direct tributaries of the portal vein.

- A. left suprarenal vein
- B. left gastric vein
- C. inferior phrenic vein
- D. superior mesenteric veins
- E. right suprarenal vein

ANSWER: B, D

86. Which ones of the following vessels spring directly from the superior mesenteric artery?

- A. jejunal arteries
- B. ileal arteries
- C. sigmoid arteries
- D. superior rectal artery
- E. middle colic artery

ANSWER: A, B, E

87. Which ones of the following vessels spring directly from the celiac trunk?

- A. right gastric artery
- B. splenic artery
- C. gastroduodenal artery
- D. left gastric artery
- E. left gastroepiploic (gastroepiploic) artery

ANSWER: B, D

88. Which ones of the following vessels spring directly from the aortic arch?

- A. transverse cervical artery
- B. posterior intercostal artery
- C. internal carotid artery
- D. left common carotid artery
- E. left subclavian artery

ANSWER: D, E

89. Which ones of the following vessels spring directly from the thoracic aorta?

- A. musculophrenic arteries
- B. transverse cervical arteries
- C. mammary arteries
- D. posterior intercostal arteries
- E. bronchial branches

ANSWER: D, E

90. The only motor cranial nerves are ...

- A. CN. IV.
- B. CN. III.
- C. CN. XII.
- D. CN. VI.
- E. CN. VII.

ANSWER: A, C, D

91. Which nerves carry taste sensation?

- A. CN. IV.
- B. CN. V.
- C. CN. VII.
- D. CN. VIII.
- E. CN. IX.

ANSWER: C, E

92. Median n.:

- A. originate from the posterior cord
- B. it is branch of the cervical plexus
- C. it runs in the medial bicipitalis groove
- D. it pierces the coracobrachial m.
- E. it passes through the carpal tunnel

ANSWER: C, E

93. Radial artery:

- A. is branch of the brachial artery
- B. it is the pulse artery
- C. it crosses the snuff box
- D. it pierces the second interosseal space

ANSWER: A, B, C

94. Lumbricalis muscles:

- A. are thenar muscles
- B. flex the metacarpophalangeal joints of the hand
- C. originate from the tendons of the spf. flexor digitorum muscles
- D. they are 6

ANSWER: B, C

95. Shoulder (glenohumeral) joint:

- A. is multiaxial joint
- B. is biaxial joint
- C. one of the articular surface is the capitulum humeri
- D. is stabilized by the rotator cuff
- E. degree of its extension is 60°
- F. the articular cavity has a disc inside
- G. it is stabilized by the glenohumeral lig.

ANSWER: A, D, G

96. Extensor muscles of the forearm:

- A. are arranged in superficial and deep layers
- B. are innervated by the median nerve
- C. are innervated by the radial nerve
- D. are innervated by the ulnar nerve
- E. the median nerve runs between the superficial and deep extensor dig. muscle

ANSWER: A, C

97. Flexor muscles of the elbow joint:

- A. biceps brachii m.
- B. brachialis m.
- C. coracobrachialis m.
- D. brachioradialis m.
- E. flexor carpi radialis longus and brevis muscles

ANSWER: A, B, D

98. Nerves coming from the medial cord:

- A. radial nerve
- B. sup. ulnar collateral nerve.
- C. ulnar nerve
- D. lateral cutaneous antebrachial nerve
- E. medial cutaneous brachial nerve

ANSWER: C, E

99. The merocrine secretion:

- A. the secretory cells are dying during the secretion
- B. the secretory cells are renewing
- C. part of the cytoplasm is lost during secretion
- D. is continuous exocytosis
- E. is the typical secretory pathway of the sweat glands

ANSWER: D, E

100. The round ligament of the uterus:

- A. originates at the body of uterus
- B. originates at the uterine horns
- C. leaves the pelvis through the inguinal canal
- D. is located between the ovary and uterus
- E. is located between the uterine tube and ovary

ANSWER: A, C

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

101. The triceps muscle is innervated by the ulnar nerve

- A. True
- B. False

ANSWER: B

102. The long head of the biceps brachii passes over the upper end of the humerus INSIDE the capsule of the shoulder joint

- A. True
- B. False

ANSWER: A

103. The strong tendon which is located on the posterior aspect of the heel is named the calcaneal tendon

- A. True
- B. False

ANSWER: A

104. Biceps femoris belongs to the hamstring muscles

- A. True
- B. False

ANSWER: A

105. The medial bicipital groove contains the median nerve

- A. True
- B. False

ANSWER: A

106. The deltoideopectoral groove contains the cephalic vein

- A. True
- B. False

ANSWER: A

107. The basilic vein pierces the brachial fascia

- A. True
- B. False

ANSWER: A

108. The cephalic vein joins to brachial vein

- A. True
- B. False

ANSWER: B

109. The right coronary artery springs from the pulmonary trunk

- A. True
- B. False

ANSWER: B

110. The coronary sinus opens to the left atrium

- A. True
- B. False

ANSWER: B

111. The coronary arteries are originating from the left and right aortic sinuses

- A. True
- B. False

ANSWER: A

112. The descending aorta has thoracic and abdominal part

- A. True
- B. False

ANSWER: A

113. The liver is found under the left dome of the diaphragm

- A. True
- B. False

ANSWER: B

114. The testes descend through the inguinal canal to the scrotum

- A. True
- B. False

ANSWER: A

115. The ejaculatory duct opens to the prostatic urethra

- A. True
- B. False

ANSWER: A

116. The ovary is entirely covered by peritoneum

- A. True
- B. False

ANSWER: B

117. The kidneys are intraperitoneal organs

- A. True
- B. False

ANSWER: B

118. The medulla of the kidney contains the functional unit of the kidney

- A. True
- B. False

ANSWER: B

119. The functional unit of the kidney is the nephron

- A. True
- B. False

ANSWER: A

120. The pancreatic juice flows through the major duodenal papilla

- A. True
- B. False

ANSWER: A

121. The costodiaphragmatic recess is the deepest pleural recess

- A. True
- B. False

ANSWER: A

122. The coracoacromial ligament is the broadest ligament of the shoulder joint.

- A. True
- B. False

ANSWER: A

123. The elbow joint represents collateral ligaments.

- A. True
- B. False

ANSWER: A

124. The biceps brachii is the strongest flexor of the elbow joint.



- A. True
- B. False

ANSWER: B

125. The knee joint is a trochoginglimus type of joint.

- A. True
- B. False

ANSWER: A

126. The cruciate ligaments of the knee joint are functionally collaterals.

- A. True
- B. False

ANSWER: B

127. The talocrural joint is a biaxial joint.

- A. True
- B. False

ANSWER: B

128. The esophagus is lined by pseudostratified columnar epithelium.

- A. True
- B. False

ANSWER: B

129. The tongue represents mucosal folds, named papillae.

- A. True
- B. False

ANSWER: A

130. The taste sensation occurs only on the tongue.

- A. True
- B. False

ANSWER: B

131. The sympathetic segment of the spinal cord is mainly located at the level of thoracic vertebrae.

- A. True
- B. False

ANSWER: A

132. The celiac trunk carries oxygenated blood for the liver.

- A. True
- B. False

ANSWER: A

133. The gallbladder produces the bile.

- A. True
- B. False

ANSWER: B

134. The cerebrospinal fluid is produced by the choroid plexuses.

- A. True
- B. False

ANSWER: A

135. The spinal cord ends at the level of L4.

- A. True
- B. False

ANSWER: B

136. Spinal lordosis are presented at the cervical and sacral parts of the vertebral column.

- A. True
- B. False

ANSWER: B

137. The adipose capsule of the kidney keeps it in position.

- A. True
- B. False

ANSWER: A

138. The pyramidal tracts are responsible for the large, voluntary movements.

- A. True
- B. False

ANSWER: A

139. The spinothalamic tracts carry proprioceptive information.

- A. True
- B. False

ANSWER: B

140. The putamen and globus pallidus are members of basal ganglia.

- A. True
- B. False

ANSWER: A

141. Almost all sensory pathways are relayed via the thalamus and project to the cerebral cortex.

- A. True
- B. False

ANSWER: A

142. Major descending motor tracts from the cerebral cortex generally bypass the thalamus.

- A. True
- B. False

ANSWER: A

143. Oxitocin is a hypophyseal hormone.

- A. True
- B. False

ANSWER: B

144. TSH is produced in the thyroid gland.

- A. True
- B. False

ANSWER: B

145. Prolactin is a hypothalamic hormone.

- A. True
- B. False

ANSWER: B

146. One part of the cerebellum regulates the balance and eye movements.

- A. True
- B. False

ANSWER: A

147. The cerebellum is involved in planning and initiation of movements.

- A. True
- B. False

ANSWER: A

148. Vasopressin is stored by the hypophysis.

- A. True
- B. False

ANSWER: A

149. The vermis is a part of the cerebellum.

- A. True
- B. False

ANSWER: A

150. Extrapyramidal motor system is necessary for autonomic and learned motor processes.

- A. True
- B. False

ANSWER: A

## PHYSIOLOGY – PATHOPHYSIOLOGY

151. The pH
- A. indicates the negative concentration of logarithm
  - B. indicates positive logarithm
  - C. indicates the negative logarithm of hydrogen ion concentration
  - D. indicates the logarithm of hydroxyl ion concentration
  - E. none of the above

ANSWER: C

152. 40 percent of body weight
- A. bones
  - B. extracellular fluid compartment
  - C. blood plasma
  - D. intracellular fluid compartment
  - E. water content of newborns

ANSWER: D

153. Filtration and osmosis
- A. are accompanied with motion of solutes in a solution
  - B. occur through a semipermeable membrane
  - C. expansion to fill all of the available volume
  - D. are only pathological processes
  - E. occur within one compartments

ANSWER: B

154. When exsiccosis (dehydration) occurs,
- A. the EC volume is decreasing.
  - B. the EC volume is increasing.
  - C. concentration of ions is decreasing in the EC
  - D. edema develops.
  - E. intracellular volume increases.

ANSWER: A

155. Which of the following characteristics is shared by simple and facilitated diffusion of glucose
- A. requires  $\text{Na}^+$  gradient
  - B. is saturable
  - C. requires metabolic energy
  - D. is inhibited by the presence of galactose
  - E. occurs down on electrochemical gradient

ANSWER: E

156. Buffers
- A. are strong bases
  - B. are isosmotic solutions
  - C. prevent changes in pH when  $\text{H}^+$  ions are added to or removed from the solution
  - D. are organic solutions
  - E. are mixtures of metal ions

ANSWER: C

157. The permeability of a solute in a lipid bilayer will be increased by an increase in the

- A. molecular radius of the solute
- B. thickness of the bilayer
- C. lipophilicity of the solute
- D. hydrophilicity of the solute
- E. concentration difference of the solute across the bilayer

ANSWER: C

158. Acidosis

- A. increase in blood  $p\text{CO}_2$  level
- B. increase in hydroxyl ion concentration
- C. decrease in hydrogen ion concentration
- D. increase in bicarbonate ion concentration in the blood
- E. decrease in blood  $p\text{CO}_2$  level

ANSWER: A

159. Body temperature in humans

- A. is independent from the environmental temperature
- B. lower in newborns
- C. higher in the elderly
- D. is stable only in pathological conditions
- E. is continuously increasing because of overheating

ANSWER: A

160. Reticulocytes

- A. are released from damaged tissue
- B. are cells without nuclei
- C. are formed from megakaryocytes
- D. account for 20 per cent of red blood cells in the blood under physiological conditions
- E. actively divide

ANSWER: B

161. Athletes are often treated illegally with erythropoietin before racing

- A. to fasten wound healing
- B. to produce more muscle cells
- C. to increase oxygen supply by increasing red blood cell formation
- D. to reduce number of white blood cells
- E. to increase body temperature

ANSWER: C

162. Increased degradation of hemoglobin results in

- A. decreased number of white blood cells
- B. increased hemoglobin concentration in the feces
- C. decreased stercobilin concentration in feces
- D. decreased bilirubin conjugation in the liver
- E. increased indirect bilirubin concentration in the blood

ANSWER: E

163. Erythrocytes are removed from circulation

- A. in bone marrow
- B. in fetal yolk sac
- C. when their average age is 20 days
- D. in the spleen

E. when they are still nucleated

ANSWER: D

164. Yellow bone marrow contains high

- A. number of red blood cells.
- B. number of differentiated blood cells.
- C. number of undifferentiated blood cells.
- D. levels of lipids
- E. levels of proteins

ANSWER: D

165. Leukopoietins

- A. have impact mainly on erythropoiesis.
- B. are produced by kidney cells.
- C. are produced by various white blood an bone marrow cells.
- D. have impact mainly on platelet formation.
- E. are for example thrombopoietins.

ANSWER: C

166. Aplastic anemia is due to

- A. excess loss of red blood cells
- B. bone marrow lesions
- C. increased amount of yellow bone marrow
- D. amino acid deficiency
- E. incorrect hemoglobin synthesis

ANSWER: B

167. Characteristic to leukemia

- A. polyclonal blood cell formation
- B. regulated cell proliferation
- C. no immature cell types in the blood
- D. monoclonal blood cell formation
- E. normal WBC count

ANSWER: D

168. Increased degradation of hemoglobin results in

- A. decreased number of white blood cells
- B. increased hemoglobin concentration in the feces
- C. decreased stercobilin concentration in feces
- D. decreased bilirubin conjugation in the liver
- E. increased indirect bilirubin concentration in the blood

ANSWER: E

169. In normal human blood

- A. the eosinophil is the most common type of white blood cells.
- B. there are more red cells than thrombocytes
- C. there are four types of granulocytes.
- D. there are more lymphocytes than neutrophils
- E. there are more thrombocytes than red cells

ANSWER: B

170. Thrombus formation is initialized by

- A. exposure of collagen due to endothelial damage
- B. activation of Factor IX
- C. formation of activation complex
- D. low  $\text{Ca}^{2+}$  concentration
- E. none of the above

ANSWER: A

171. Which of the following characteristics is shared by lymphomas and lymphoid leukemias?

- A. Both produce excess amount of Bence-Jones protein.
- B. Both are malignant alterations of the lymphoid glands.
- C. Both are malignant transformations of lymphocytes.
- D. Both are reactive syndromes.
- E. Both are bone marrow diseases.

ANSWER: C

172. Kupfer cells and alveolar macrophages are

- A. protozoons
- B. monocytes
- C. neutrophils
- D. T cell lymphocytes
- E. B cell lymphocytes

ANSWER: B

173. Which of the following is true

- A. haemophilia A, B and C are hereditary diseases.
- B. haemophilia A is an acquired disease
- C. liver diseases never influence coagulation
- D. thrombocytopenia is overproduction of platelets
- E. thrombi are formed outside of blood vessels, only

ANSWER: A

174. HIV virus binds to

- A. plasma cells
- B. TH lymphocytes
- C. B lymphocytes
- D. macrophages
- E. monocytes

ANSWER: B

175. Plays major role in allergic reactions

- A. IgE
- B. IgD
- C. IgM
- D. IgB
- E. IgA

ANSWER: A

176. Phase of inflammation

- A. cellular responses to tissue damage
- B. tissue transplantation
- C. excessive blood loss
- D. increased direct bilirubin level

E. vascular coagulopathy

ANSWER: A

177. Thrombocytopenia results in

- A. decreased coagulation time
- B. decreased number of monocytes
- C. increased coagulation time
- D. formation of T cell lymphocyte clones
- E. increased platelet formation

ANSWER: C

178. Excitation is directly conducted to working fibers by

- A. atrio-ventricular node
- B. Tawara branches
- C. Purkinje fibers
- D. His-bundles
- E. anulus fibrosus

ANSWER: C

179. Right-sided heart failure results in

- A. stagnation in pulmonary circulation
- B. stagnation in systemic circulation
- C. necrosis of atrial muscle fibers
- D. rupture of aorta
- E. hereditary disorder

ANSWER: B

180. In the sinoatrial node pacemaker potential is attributable to

- A. an increase in  $K^+$  conductance
- B. an increase in  $Na^+$  conductance
- C. a decrease in  $Cl^-$  conductance
- D. a decrease in  $Ca^{2+}$  conductance
- E. Simultaneous increase in  $K^+$  and  $Cl^-$  conductance

ANSWER: B

181. Peripheral resistance is

- A. measured in capillaries.
- B. resistance of brain vessels
- C. resistance against low  $pO_2$ .
- D. developing in veins and venules.
- E. resistance built up in small arteries and arterioles.

ANSWER: E

182. Which of the following changes will result in an increase in myocardial  $O_2$  consumption?

- A. Decrease aortic pressure
- B. Decreased heart rate
- C. Decreased contractility
- D. Increased size of the heart
- E. Increased influx of  $Na^+$  during the upstroke of action potential

ANSWER: D

183. Which of the following is least likely to cause sustained hypertension?



- A. increased secretion of the adrenal medulla
- B. increased secretion of the adrenal cortex
- C. pheochromocytoma
- D. oral contraceptives (estrogen therapy)
- E. increased angiotensinogen concentration in the blood

ANSWER: E

184. Active forces contributing to lymphatic flow include

- A. cardiac function
- B. skeletal muscle function
- C. positive intrathoracic pressure
- D. lymphatic valves preventing retrograde flow
- E. specific gravity of the lymph

ANSWER: B

185. In highly trained athletes, the development of bradycardia may be due to

- A. less tendency of the person to react with anxiety or fear
- B. better peripheral circulation, especially to the muscles
- C. greater stroke volume per beat, with associated circulatory reflex feedback
- D. better relaxation of the heart muscle with each stroke
- E. increased oxygen intake with each respiratory effort

ANSWER: C

186. Cardiac tamponade is a result of

- A. dry pericarditis
- B. accumulation of fluid in the lungs
- C. accumulation of fluid in the pericardium
- D. formation of fibrin deposits in the pericardium
- E. valvular stenosis

ANSWER: C

187. Anaphylactic shock is due to

- A. marked vasodilation
- B. incomplete heart block
- C. tumor
- D. pulmonary embolism
- E. burns

ANSWER: A

188. Binding of  $O_2$  to  $Fe^{2+}$  ion is

- A. oxygenation
- B. oxidation
- C. reduction.
- D. irreversible
- E. very slow

ANSWER: A

189. Pneumothorax -

- A. expiratory muscle.
- B. the brake off of negative intrapleural pressure.
- C. abdominal respiration.
- D. physiological lung function.

E. relaxation of lung muscles.

ANSWER: B

190. CO<sub>2</sub> is transported in the blood

- A. bound to Fe<sup>2+</sup> ion
- B. by white blood cells
- C. bound to thrombocytes
- D. from the lung to the tissues
- E. in form of carbamino compounds

ANSWER: E

191. Which of the following is responsible for the movement of O<sub>2</sub> from the alveoli into the blood in the pulmonary capillaries?

- A. Active transport
- B. Filtration
- C. Secondary active transport
- D. Facilitated diffusion
- E. Passive diffusion

ANSWER: E

192. Carbohydrate degrading enzyme in the saliva

- A. ptyalin (amylase)
- B. maltase
- C. lactase
- D. lipase
- E. aminopeptidase

ANSWER: A

193. The satiety center in the hypothalamus is found in the

- A. n. dorsolateral
- B. n. ventrolateral
- C. n. ventromedial
- D. n. paraventricular
- E. n. accumbens

ANSWER: C

194. Type II epithelial cells are found in the

- A. trachea.
- B. alveoli
- C. bronchi
- D. bronchioles
- E. nasal cavity

ANSWER: B

195. Not synthesized in the body

- A. proteins
- B. essential amino acids
- C. amino acids
- D. lipids
- E. sugars

ANSWER: B

196. Pneumothorax
- A. expiratory muscle.
  - B. abdominal respiration.
  - C. atmospheric pressure in the intrapleural space
  - D. physiological lung function.
  - E. relaxation of lung muscles

ANSWER: C

197. When compared with the cones of the retina, the rods
- A. are more sensitive to low-intensity light
  - B. adapt to darkness before the cones
  - C. are most highly concentrated on the fovea
  - D. are primarily involved in color vision

ANSWER: A

198. Cutting which structure on the left side causes total blindness in the left eye?
- A. Optic nerve
  - B. Optic chiasm
  - C. Optic tract
  - D. Geniculocalcarine tract

ANSWER: A

199. Which of the following structures has a primary function to coordinate rate, range, force and direction of movement?
- A. Primary motor cortex
  - B. Premotor cortex and supplementary motor cortex
  - C. Prefrontal cortex
  - D. Basal ganglia
  - E. Cerebellum

ANSWER: E

200. Which of the following statements about the olfactory system is true?
- A. The receptor cells are neurons
  - B. The receptor cells are sloughed off and are not replaced
  - C. Axons of cranial nerve (CN) I are A-delta fibers
  - D. Axons from receptor cells synapse in the prepiriform cortex

ANSWER: A

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

201. Liquor (cerebrospinal fluid)
- A. ultrafiltrate of blood plasma
  - B. normally contains high number of red blood cells
  - C. diagnostic tool upon examination
  - D. responsible for O<sub>2</sub> supply of the blood

ANSWER: A, C

202. Activation of the sympathetic system result
- A. negative chronotropic effect on the heart.
  - B. systemic vasoconstriction
  - C. systemic vasodilation

D. increased blood pressure

ANSWER: B, D

203. Arteriovenous shunts are

- A. direct connection between arterioles to venules
- B. have thick muscular walls
- C. bypassing capillaries.
- D. open all the time

ANSWER: A, B, C

204. Distribution of circulating blood

- A. veins 54%
- B. capillaries 5%
- C. arteries 11%
- D. heart 12%

ANSWER: A, B, C, D

205. Antihypertensive agent

- A. ACE inhibitors.
- B. norepinephrine
- C. diuretics
- D. angiotensin II.

ANSWER: A, C

206. Hormone NOT formed in lung capillaries

- A. serotonin
- B. adrenaline
- C. noradrenaline
- D. angiotensin II

ANSWER: A, B, C

207. Which of the following increases respiratory frequency

- A. a decrease in pH
- B. A decrease in  $H^+$  concentration
- C. an increase in  $HCO_3^-$  concentration
- D. a decrease in  $CO_2$  partial pressure

ANSWER: A, C

208.  $CO_2$  is transported in the blood

- A. dissolved in plasma
- B. in the form of carbonic acid
- C. in the form of carbamino compounds
- D. in the form of carbon monoxide

ANSWER: A, B, C

209. Part of vital capacity

- A. residual volume
- B. tidal volume
- C. total lung capacity
- D. maximal inspiratory reserve

ANSWER: B, D

210. Which of the following would be expected to cause a reduction in pulmonary ventilation?

- A. fibrosis
- B. transection of both phrenic nerves
- C. silicosis
- D. emphysema

ANSWER: A, B, C, D

211. Secreted by stomach mucosa

- A. HCl
- B. gastrin
- C. pepsinogen
- D. bile

ANSWER: A, B, C

212. Secondary pneumonias are caused by

- A. Pneumococcus
- B. toxic agents
- C. mycosis
- D. circulatory failure

ANSWER: B, D

213. Anemic hypoxia is due to

- A. CO poisoning
- B. altitude sickness
- C. methemoglobinemia
- D. cyanide poisoning

ANSWER: A, C

214. Bolus is forwarded in the esophagus

- A. by active process
- B. only by gravity
- C. peristalsis
- D. by negative pressure of stomach

ANSWER: A, C

215. Bile

- A. is consisted of water by 97.5 %
- B. is stored in the small intestine
- C. is lowering surface tension
- D. is secreted to the circulation

ANSWER: A, C

216. Trypsinogen and chymotrypsinogen

- A. is activated in the duodenum
- B. are pancreatic enzymes
- C. are proteases
- D. are inactive

ANSWER: A, B, C, D

217. Toxic liver diseases:

- A. gall stone
- B. cirrhosis

- C. peptic ulcer
- D. necrosis

ANSWER: B, D

218. The symptoms of malabsorption disease is

- A. diarrhea
- B. oedema
- C. energy depletion
- D. increased vitamin B12 absorption

ANSWER: A, B, C

219. Macromolecules are absorbed in form of

- A. amino acids
- B. hexoses
- C. chylomicrons
- D. proteins

ANSWER: A, B, C

220. Polypeptides found in the autonomic nervous system include

- A. gonadotropin-releasing hormone (GnRH)
- B. neuropeptide Y
- C. gastrin-releasing peptide (GRP)
- D. vasoactive intestinal polypeptide (VIP)

ANSWER: A, B, C, D

221. Administration of a drug that blocks  $\beta$  adrenergic receptors would be expected to

- A. decrease the heart rate
- B. decrease the force of cardiac contraction
- C. decrease the secretion of renin from the kidneys
- D. decrease the secretion of insulin from the B cells in the pancreatic islets

ANSWER: A, B, C, D

222. Administration of a drug that blocks conversion of L-DOPA to dopamine would be expected to

- A. increase the diameter of the trachea and bronchi
- B. disrupt the function of the SIF cells in the sympathetic ganglia
- C. decrease peristaltic activity in the small intestine
- D. decrease the amount of norepinephrine in the circulating blood

ANSWER: B, D

223. Parts of regulatory circuits

- A. set point
- B. control mechanisms
- C. actual value
- D. concentration units

ANSWER: A, B, C

224. Intracellular concentrations of ions

- A. 142 mM of  $\text{Na}^+$  ion
- B. 15 mM of  $\text{Na}^+$  ion
- C. 4 mM of  $\text{K}^+$  ion
- D. variable mM of  $\text{Ca}^{++}$

ANSWER: B, D

225. The major elements of homeostasis are

- A. isosmosis
- B. isothermia
- C. isohydria
- D. isovolemia

ANSWER: A, B, C, D

226. Physiological concentrations of plasma ingredients

- A. 142 mM of  $\text{Na}^+$  ion
- B. 102 mM of  $\text{Na}^+$  ion
- C. 4.4 mM of  $\text{K}^+$  ion
- D. 5.8 mM of  $\text{K}^+$  ion

ANSWER: A, C

227. Typical membrane molecules

- A. receptors
- B. ion channels
- C. surface markers
- D. phospholipids

ANSWER: A, B, C, D

228. Active transport could be

- A. symport
- B. antiport
- C. electroneutral
- D. electrogenic

ANSWER: A, B, C, D

229. Erythropoiesis takes place in

- A. fetal spleen
- B. fetal liver
- C. fetal bone marrow
- D. fetal kidney

ANSWER: A, B, C

230. Buffers of the blood

- A. carbonic acid/bicarbonate
- B. protein/protein anion
- C. dihydrogen phosphate/hydrogen phosphate
- D. formic acid/formate

ANSWER: A, B, C

231. Hemocytopoietic stem cells are precursors of

- A. red blood cells
- B. thrombocytes
- C. megakaryocytes
- D. T lymphocytes

ANSWER: A, B, C

232. Hemoglobin

- A. consists of 4 polypeptide chain
- B. is a hemoproteid
- C. is responsible for oxygen transportation
- D. synthesized from porphobilinogen

ANSWER: A, B, C, D

233. What is required for erythropoiesis

- A. Vitamin B12
- B. Folic acid
- C. Vitamin B6
- D. Vitamin D

ANSWER: A, B, C

234. Anticoagulants that bind  $\text{Ca}^{2+}$

- A. sodium-oxalate
- B. sodium-citrate
- C. EDTA
- D. vitamin K

ANSWER: A, B, C

235. Correct order of activation of coagulation factors

- A. XIIa  $\Rightarrow$  XIa  $\Rightarrow$  IXa
- B. VIIa  $\Rightarrow$  Xa  $\Rightarrow$  IIa
- C. VIIa  $\Rightarrow$  Xa  $\Rightarrow$  thrombin
- D. Fibrin  $\Rightarrow$  thrombin  $\Rightarrow$  XIIIa

ANSWER: A, B, C

236. Plasma proteins are

- A. globulins
- B. albumin
- C. hormones
- D. enzymes

ANSWER: A, B, C, D

237. Endogenous activation steps

- A. exposure of collagen to blood
- B. activation of coagulation factor XII
- C. formation of activation complex
- D. release of tissue thrombokinase

ANSWER: A, B, C

238. Deficiency anemias are due to

- A. vitamin B12 deficiency
- B. folic acid deficiency
- C. iron deficiency
- D. polycythemia

ANSWER: A, B, C

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

239. Epinephrine decreases blood pressure.



- A. True
- B. False

ANSWER: B

240. Exercise does not change cardiac output.

- A. True
- B. False

ANSWER: B

241. Resting, normal blood pressure is 160/100 mmHg (systolic/diastolic blood pressure).

- A. True
- B. False

ANSWER: B

242. Hypoxia dilates coronary vessels.

- A. True
- B. False

ANSWER: A

243. Atrial natriuretic peptide is secreted in the heart.

- A. True
- B. False

ANSWER: A

244. Angiotensin II increases blood pressure.

- A. True
- B. False

ANSWER: A

245. Renin produces angiotensin II from angiotensin I.

- A. True
- B. False

ANSWER: B

246. Arterial blood pressure does not depend on cardiac output.

- A. True
- B. False

ANSWER: B

247. Plateau phase of ventricular action potential is maintained by calcium inflow.

- A. True
- B. False

ANSWER: A

248. Slow action potential does not involve calcium channels.

- A. True
- B. False

ANSWER: B

249. Thyroxine stimulates metabolic rate.

- A. True
- B. False

ANSWER: A

250. Thyroxine increases heart rate.

A. True

B. False

ANSWER: A

251. ADH/vasopressin is produced by the adenohypophysis.

A. True

B. False

ANSWER: B

252. ACTH increases plasma glucocorticoid level.

A. True

B. False

ANSWER: A

253. Mineralocorticoids are produced in the adrenal cortex zona glomerulosa.

A. True

B. False

ANSWER: A

254. Glucocorticoids are produced in the adrenal cortex zona fasciculata.

A. True

B. False

ANSWER: A

255. Mineralocorticoids stimulate  $\text{Na}^+$  - reabsorption in the kidneys.

A. True

B. False

ANSWER: A

256. Basal ganglia do not play role in the control of movements.

A. True

B. False

ANSWER: B

257. Corticospinal tract originates from the motor cortex.

A. True

B. False

ANSWER: A

258. Transmitter of the neuromuscular junction is acetylcholine.

A. True

B. False

ANSWER: A

259. Patella reflex is a myotatic reflex.

A. True

B. False

ANSWER: A

260. Inspiratory center stimulates the contraction of abdominal muscles.

A. True

B. False

ANSWER: B

261. Beta 2 agonists dilate bronchioli.

A. True

B. False

ANSWER: A

262. Thick ascending limb is impermeable to water.

A. True

B. False

ANSWER: A

263. Proximal tubule is permeable to water.

A. True

B. False

ANSWER: A

264. Hypovolemia stimulates release of ADH/vasopressin.

A. True

B. False

ANSWER: A

265. In hypovolemia urine volume decreases.

A. True

B. False

ANSWER: A

266. In hypervolemia urine volume decreases.

A. True

B. False

ANSWER: B

267. In the lungs  $O_2$  is diffused from the alveoli into the capillaries.

A. True

B. False

ANSWER: A

268. In the lungs  $CO_2$  is diffused from the alveoli into the capillaries.

A. True

B. False

ANSWER: B

269. Surfactant is produced by the alveolar epithelial cells.

A. True

B. False

ANSWER: A

270. Surfactant increases surface tension in alveoles.

A. True

B. False

ANSWER: B

271. Chemoreceptor stimulation increases ventilation.

A. True

B. False

ANSWER: A

272. Aldosterone stimulates reabsorption of Na<sup>+</sup> ions in the kidneys.

A. True

B. False

ANSWER: A

273. Insulin increases glucose uptake into muscle and fat cells via GLUT4 glucose transporter.

A. True

B. False

ANSWER: A

274. Insulin increases glucose uptake into brain cells via GLUT4 glucose transporter.

A. True

B. False

ANSWER: B

275. Insulin decreases blood glucose level.

A. True

B. False

ANSWER: A

276. Glucagon increases blood glucose level.

A. True

B. False

ANSWER: A

277. Epinephrine increases blood glucose level.

A. True

B. False

ANSWER: A

278. HCl is produced by the parietal cells of stomach.

A. True

B. False

ANSWER: A

279. Gastrin stimulates HCl production of stomach.

A. True

B. False

ANSWER: A

## APPLIED BIOLOGY

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.

SELECT THE ONE THAT IS BEST IN EACH CASE

280. What is created in the process of neurulation?

- A. neural tube
- B. third germ layer
- C. two haploid cells make a diploid cell
- D. the stomach

ANSWER: A

281. What is the correct order in which the following things happen?

- A. cortical reaction, gastrulation, acrosomal reaction, neurulation
- B. cortical reaction, acrosomal reaction, gastrulation, neurulation
- C. acrosomal reaction, cortical reaction, gastrulation, neurulation
- D. acrosomal reaction, gastrulation, neurulation, cortical reaction

ANSWER: C

282. Mesoderm is created in which process?

- A. neurulation
- B. segmentation (cleavage)
- C. gastrulation
- D. ovulation

ANSWER: C

283. What does "acrosomal reaction" mean?

- A) enzymes released from a modified lysosome in the head of the sperm cell start digesting the zona pellucida around the egg
- B) A reaction triggered by the first sperm cell touching the egg cell's membrane. It results in the zona pellucida becoming impenetrable so no more sperm cells can get through it.
- C) a pathological immune reaction caused by proteins present in the sperm cell's membrane
- D) an abnormality in the development of the fetal brain

ANSWER: A

284. What is the "zona pellucida"?

- A) a modified cell organelle in the sperm
- B) a layer in the brain cortex
- C) a layer of keratinized epithelium
- D) a protective fibrous shell surrounding the egg cell

ANSWER: D

285. What happens if the mother's diet doesn't have enough folate (folic acid) during pregnancy?

- A) it may cause macular degeneration and blindness
- B) it may disturb the development of the spine and spinal cord (spina bifida)
- C) the fetus's red blood cells fall apart
- D) increases the risk of Down's syndrome

ANSWER: B

286. What does "teratogenesis" mean?

- A) it's the geological process which created the Earth
- B) a process that leads to the death of the embryo

- C) another name for the intrauterine development
- D) abnormalities / changes of the intrauterine development and their consequences

ANSWER: D

287. What can be the consequences of the mother contracting toxoplasmosis during pregnancy?

- A) miscarriage / abnormalities in the brain development/ blindness
- B) haemolysis
- C) spina bifida
- D) abnormal limb development

ANSWER: A

288. Which is the most sensitive period of the intrauterine development, when teratogens are the most likely to cause congenital defects?

- A) pre-embryonic period (0-2. wk)
- B) embryonic period (2-8.wk)
- C) fetal period (3rd month and after)
- D) there is no change in sensitivity to teratogens during the 9 months of intrauterine development

ANSWER: B

289. In which case can Rh incompatibility happen and damage the developing embryo?

- A) if the mother is Rh- and the child is Rh+
- B) If the mother is Rh+ and the child is Rh-
- C) If the mother's immune system is compromised
- D) If the mother contracts toxoplasmosis during pregnancy

ANSWER: A

290. What is the difference between apoptosis and necrosis?

- A) nothing, they are two different names for the same process
- B) apoptosis doesn't cause inflammation
- C) the cells don't die during necrosis
- D) outside signals never play a role in apoptosis

ANSWER: B

291. When does crossing over happen?

- A) only in meiosis
- B) only in mitosis
- C) both in meiosis and mitosis
- D) neither in mitosis nor in meiosis

ANSWER: A

292. What is the role of lysosomes?

- A) photosynthesis
- B) ATP synthesis
- C) neutralizing free radicals
- D) intracellular digestion (breaking down macromolecules)

ANSWER: D

293. Which of the following lines best describes the structure of the cell membrane?

- A) There is a layer of proteins sandwiched between two layers of phospholipids
- B) there is a layer of phospholipids sandwiched between two layers of proteins
- C) different types of proteins create a bilayer
- D) proteins are embedded into a phospholipid bilayer in a mosaic

ANSWER: D

294. What is the function of mitochondria?

- A) protein synthesis
- B) ATP synthesis
- C) calcium storage
- D) detoxification

ANSWER: B

295. What is the role of the tRNA?

- A) transports amino acids to the ribosomes
- B) carries information from the nucleus to the ribosomes
- C) creates the peptide bond
- D) carries the ribosomes to the RER

ANSWER: A

296. When does the ribosome finish making the protein?

- A) when it reaches the end of the mRNA
- B) when it reaches a stop codon
- C) when it reaches an anticodon
- D) when it runs out of amino acids

ANSWER: B

297. Which ONE statement about protein synthesis is true?

- A) anticodon is a part of the mRNA
- B) all possible 64 triplets in the genetic code code for an amino acid
- C) the same triplet always codes for the same amino acid
- D) if I know the amino acid sequence of a protein, I can figure out the exact nucleotide sequence of the mRNA (and the gene) that coded it

ANSWER: C

298. What does the redundancy / degeneracy of the genetic code mean?

- A) that more than one triplet can code for the same amino acid
- B) that one triplet can code for more than one type of amino acid
- C) using two-letter words in the genetic code would be perfectly enough to code for all amino acids
- D) that simple organisms use less triplets than the more complicated ones

ANSWER: A

299. A human's somatic cell (such as a liver cell)...

- A) has 46 completely different chromosomes
- B) has 23 chromosomes
- C) has 46 chromosomes in 23 pairs
- D) has 2 chromosomes, either XX or XY

ANSWER: C

300. What does "autotroph" mean?

- A) an organism that can create complex organic substances from simple inorganic substances such as carbon dioxide
- B) an organism that needs to feed on complex organic molecules coming from plant or animal sources
- C) a cell organelle that was formed from the infoldings of the plasma membrane
- D) an organism that doesn't need energy to sustain its metabolism

ANSWER: A

301. Which are the four main biogenic elements?

- A) Cl,C,Na,H
- B) C, O, N, H
- C) C,O,He,Na
- D) Ca,O,N,He

ANSWER: B

302. What do you know about the origin of O<sub>2</sub> in Earth's atmosphere?

- A) it was already present in the atmosphere before the first living cells appeared
- B) the first heterotrophic prokaryotes started producing it
- C) the first autotrophic prokaryotes started producing it
- D) the first eukaryotic cells produced it with their mitochondria

ANSWER: C

303. What makes an amino acid "essential"?

- A) you can only find it in animal proteins, while non-essential ones come from plants
- B) the human body can't produce it, so we need to get it from our food
- C) only essential amino acids participate in making human proteins
- D) it can be found in essential oils, strengthens the immune system

ANSWER: B

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT **MORE** THAT ARE CORRECT

304. Which of the following are possible base pairs?

- A. A-T
- B. G-G
- C. A-U
- D. A-G

ANSWER: A, C

305. A nucleotide contains:

- A. pentose
- B. phosphate group
- C. purin / pirimidin base
- D. sulphate

ANSWER: A, B, C

306. An amino acid contains:

- A. amino group
- B. carboxyl group
- C. R side chain
- D. pirimidine

ANSWER: A, B, C

307. Which of the following conditions are caused by missing or extra sex chromosomes?

- A. Klinefelter's syndrome
- B. Down's syndrome
- C. Turner's syndrome



- D. red-green color blindness

ANSWER: A, C

308. Which of the following conditions are caused by missing or extra autosomes?

- A. Klinefelter's syndrome
- B. Down's syndrome
- C. Edwards' syndrome
- D. red-green color blindness

ANSWER: B, C

309. Which of the following is an example for an autosomal recessive trait?

- A. albinism
- B. cystic fibrosis
- C. achondroplasia
- D. red-green color blindness

ANSWER: A, B

310. In a family, the mother has blood type „O” and the father has blood type „AB”. What blood type(s) can their children have?

- A. A
- B. B
- C. AB
- D. O

ANSWER: A, B

311. Which of the following can be true for recombinant vaccines?

- A. they are produced by genetically modified cells
- B. they can contain viral proteins
- C. they can contain intact pathogens
- D. they can change your DNA

ANSWER: A, B

312. What allows two traits to be inherited independently from each other?

- A. mutations
- B. interchromosomal recombination
- C. natural selection
- D. intrachromosomal recombination (crossing over)

ANSWER: A, D

313. In a family, the mother has blood type „A” , and the father has blood type „B” . They already have a daughter with blood type „O”. What blood types are possible for their future children?

- A. A
- B. B
- C. O
- D. AB

ANSWER: A, B, C, D

314. What tissues / organs develop from the endoderm?

- A. muscles
- B. liver
- C. the inner lining of the digestive tract
- D. the brain and spinal cord

ANSWER: B, C

315. What tissues / organs develop from the ectoderm?

- A. muscles
- B. the epithelial layer of the skin
- C. the inner lining of the digestive tract
- D. the brain and spinal cord

ANSWER: B, D

316. What tissues / organs develop from the mesoderm?

- A. muscles
- B. liver
- C. bones
- D. the brain and spinal cord

ANSWER: A, C

317. Which of the following statements are true for mitosis?

- A. results in 2 diploid cells
- B. starts with a cell that has 23 chromosomes
- C. DNA is exchanged during this process (crossing over)
- D. it is the way body cells (somatic cells) divide

ANSWER: A, D

318. Which of the following statements are true for meiosis?

- A. results in haploid cells
- B. starts with a cell that has 46 chromosomes
- C. DNA is exchanged during this process (crossing over)
- D. the way body cells (somatic cells) divide

ANSWER: A, B, C

319. The following statements are true for euchromatin?

- A. contains DNA and proteins
- B. contains active genes
- C. an area where translation happens
- D. Barr body is a form of this

ANSWER: A, B

320. The following statements are true for heterochromatin?

- A. contains DNA and proteins
- B. contains active genes
- C. an area where translation happens
- D. Barr body is a form of this

ANSWER: A, D

321. Which of the following molecules are polysaccharides?

- A. glycogen
- B. starch
- C. cellulose
- D. lactose

ANSWER: A, B, C



## BASICS OF CLINICAL SCIENCES

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

322. What is the most important prevention method of respiratory non-communicable diseases (NCDs)?
- a. promoting healthy diet
  - b. improving the quality of air
  - c. promoting physical activity

ANSWER: B

323. What is the epidemiological definition of type 1 diabetes mellitus?
- A. Onset before age of 20 and need for insulin therapy within one year after diagnoses
  - B. Onset before age of 35 and need for insulin therapy within one year after diagnoses
  - C. Onset before age of 35
  - D. onset before age of 20 and no need for insulin therapy within one year after diagnoses

ANSWER: B

324. What is the main cause of death in women in all countries of Europe?
- A. Cardiovascular diseases
  - B. Cancer
  - C. Diabetes mellitus
  - D. Stroke

ANSWER: (A)

325. Which is not true for stroke?
- A. The leading cause of disability
  - B. Most of the cases are preventable through risk factor management
  - C. Higher dietary salt(sodium) intake is an important factor in stroke prevention

ANSWER: (C)

326. Which is the most common chronic disease in childhood globally?
- A. Inflammatory bowel diseases
  - B. Asthma
  - C. Cardiovascular diseases

ANSWER: (B)

327. What is not in the 5 most common site of cancer in males?
- A. Lung
  - B. Prostate
  - C. Colorectal
  - D. Bladder

ANSWER: (D)

328. Diagnostic step of internal medicine, except
- A. Medical history
  - B. Physical examination
  - C. Laboratory test
  - D. Instrumental examination
  - E. Patient education

ANSWER: (E)

329. Treatment of chronic heart failure

- A. Steroid
- B. Diuretics
- C. Antibiotics
- D. Fluid supplementation

ANSWER: (B)

330. Sign of liver failure

- A. Digital clubbing
- B. Barrel chest
- C. Ascites
- D. Butterfly rash

ANSWER: (C)

331. Measurement of blood pressure at internal medicine ward

- A. Invasive method
- B. Arterial canule
- C. Noninvasive method
- D. Pleural puncture

ANSWER: (C)

332. Type of ECG at internal medicine ward

- A. 12 lead
- B. 6 lead
- C. 24 lead
- D. 18 lead

ANSWER: (A)

333. Part of the heart cycle during P wave at ECG

- A. Atrial depolarisation
- B. Atrio-ventricular lead
- C. Ventricular depolarisation
- D. Ventriculo-atrial lead

ANSWER: (A)

334. Symptom of colorectal cancer, except

- A. Changes in stool passage
- B. Erythema
- C. Bloody stool
- D. Rectal bleeding

ANSWER: (B)

335. Diagnostic method of acute abdominal pain

- A. Native abdominal x-ray
- B. Chest ct
- C. Biopsy for histology
- D. Ecg
- E. Pet-ct

ANSWER: (A)

336. Symptom of hypothyreosis

- A. Tachycardia
- B. Weight loss
- C. Weight gain
- D. Insomnia

ANSWER: (C)

337. Endoscopic examination method, except

- A. Gastroscopy
- B. Ercp
- C. Spect
- D. Colonoscopy

ANSWER: (C)

338. Laboratory marker of renal function

- A. Creatinine
- B. Cholinesterase
- C. Amilase
- D. Ferritin

ANSWER: (A)

339. Most important endocrine regulation method

- A. Autonomy
- B. Negative feedback
- C. Immunity
- D. Induction

ANSWER: (B)

340. What we do not want from a drug?

- A. Prevention
- B. Diagnosis
- C. Cure
- D. Side effects

ANSWER: (D)

341. What agent is an indirect acting cholinergic agonist?

- A. pilocarpine
- B. physostigmine
- C. carbachol
- D. atropine}

ANSWER: (B)

342. What feature is not true to angiotensin converting enzyme inhibitors?

- A. characteristic side effects is cough
- B. good against hypertension
- C. has beneficial effect on the heart
- D. common abbreviation is ACE inhibitors
- E. increase the activity of renin-angiotensin system

ANSWER: (E)

343. Which is the bile acid resin?

- A. gemfibrozil

- B. atorvastatin
- C. ezetimibe
- D. cholestyramine
- E. nicotinic acid

ANSWER: (D)

344. Which sentence is wrong?

- A. Omalizumab binds to IgE.
- B. Omalizumab should be given subcutaneously.
- C. Cromoglycate has many serious side effects.
- D. Cromoglycate is an anti-inflammatory agent.
- E. Omalizumab does not need a daily administration.

ANSWER: (C)

345. What should be avoided if a patient has productive, wet cough?

- A. expectorant drugs
- B. using expectorant drugs before sleeping
- C. drinking a lot
- D. interactions with antibiotics
- E. drugs like guaifenesin, acetylcysteine, carbocysteine

ANSWER: (B)

346. What agent can be used in hypothyroidism?

- A. large dose of iodine (300mg/day)
- B. radioiodine
- C. small dose iodine
- D. thioamides
- E. perchlorate

ANSWER: (C)

347. What is not a typical side effect at NSAIDs?

- A. gastrointestinal mucosa damage
- B. impaired renal function
- C. pseudoallergy and hypersensitive reactions
- D. disturbed bleeding features
- E. erection disfunction

ANSWER: (E)

348. What is characteristic to regular insulin?

- A. it is a mixture with protamine
- B. effect onset is about 2 to 5 hours
- C. pharmacokinetics are independent from dose
- D. patient must eat 30 to 40 minutes after subcutaneous injection
- E. regular insulin has some modifications on the protein chain of the identical human insulin

ANSWER: (D)

349. Which agents are potassium sparing agents?

- A. carbonic anhydrase inhibitors
- B. loop diuretics
- C. thiazide diuretics
- D. aldosterone antagonists
- E. there was no good answer in the given list

ANSWER: (D)

350. What is a common feature of every anticoagulant and fibrinolytic agent?

- A. they may increase the risk of bleeding
- B. they can be used only in parenteral ways
- C. they act on the same receptor
- D. monitoring is obligated in every case
- E. protamine is the antidote

ANSWER: (A)

351. What are the main advantages of atypical antipsychotics?

- A. they can improve negative symptoms and reduce some side effects
- B. it is just chemical difference, without clinically relevant advantages
- C. their metabolism is not in the liver
- D. they have short half-life
- E. their full therapeutic effect is immediately appear

ANSWER: (A)

352. Public health focuses on

- A. Treatment
- B. Prevention
- C. Medication
- D. Basic medical practice

ANSWER: (B)

353. Focuses on the population, not individuals. Focuses on diseases and health within a group. Its tools are numbers. The statements above refer to:

- A. Education
- B. Epidemiology
- C. Statistics
- D. Basic medical practice

ANSWER: (B)

354. Tertiary prevention:

- A. Lifestyle changes (exercise, diet, avoiding tobacco use)
- B. Chest CT scans to screen for lung cancer in heavy smokers
- C. Rehabilitation paralytic disease after poliovirus infection
- D. Vaccination

ANSWER: (C)

355. It can be the longest of observational studies. Takes longer time and is more expensive. Gives information about relative risk (RR):

- A. Cohort studies.
- B. Case-control studies
- C. Intervention studies
- D. None of the above

ANSWER: (A)

356. Illustrates the changing structure of human populations:

- A. Demography
- B. Life expectancy
- C. Geography



D. Micrography

ANSWER: (A)

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

357. What are the risk factors for cardiovascular diseases?

- A. Physical inactivity
- B. Unhealthy diet
- C. Diabetes mellitus
- D. Obesity
- E. Smoking

ANSWER: (A,B,C,D,E)

358. What are the prevention strategies for cancer development?

- A. Vaccination against hbv and hpv
- B. Control occupational hazards
- C. Reduce exposure of non-ionizing radiation by sunlight (uv)
- D. Reduce exposure to ionizing radiation

ANSWER: (A,B,C,D)

359. What are the clinical impacts of diabetes mellitus?

- A. Increased cardiovascular mortality
- B. Leading cause of end-stage renal disease
- C. Leading cause of blindness in working-adults
- D. Leading cause of non-traumatic lower extremity amputations

ANSWER: (A,B,C,D)

360. What factors are important in stroke prevention and treatment?

- A. Healthy lifestyle
- B. Disease control of comorbidities (hypertension,diabetes, atrial fibrillation,hyperlipidemia)
- C. Early diagnosis and treatment

ANSWER: (A,B,C)

361. What are the risk factors for type 1 diabetes?

- A. Elderly age
- B. Genetics
- C. Too early introduction of cow's milk in infant feeding
- D. Vitamin d hypervitaminosis

ANSWER: (B,C)

362. What drives the increased prevalence in type 2 diabetes?

- A. Decreasing mortality
- B. Changes in population demographics
- C. Ratio of diagnosed/underdiagnosed cases
- D. Decreasing age at onset

ANSWER: (A,B,C,D)

363. Symptom of iron deficiency

- A. Diarrhea
- B. Hair loss
- C. Vision problems

- D. Blurred speech
- E. Anaemia

ANSWER: (B,E)

364. Most common cause of megaloblastic anaemia

- A. Iron deficiency
- B. B12 deficiency
- C. Hemolysis
- D. Folic acid deficiency
- E. Cholelith

ANSWER: (B,D)

365. Diagnosis of deep vein thrombosis

- A. D-dimer laboratory test
- B. Inr laboratory test
- C. Doppler ultrasound
- D. Troponin laboratory test
- E. Angiography

ANSWER: (A,C)

366. Complication of pneumonia

- A. Respiratory failure
- B. Arthrosis
- C. Abscess
- D. Liver failure

ANSWER: (A,C)

367. Inflammatory bowel disease

- A. Coeliac disease
- B. Irritable bowel syndrome
- C. Pseudomembranous colitis
- D. Ulcerative colitis
- E. Crohn's disease

ANSWER: (D,E)

368. Diagnostic method of lymphoma

- A. Pet-ct
- B. Lymphnode biopsy
- C. Bone marrow biopsy
- D. Ercp

ANSWER: (A,B,C)

369. Needed for red blood cell production

- A. Erythropoetin
- B. Vitamin b12
- C. Folic acid
- D. Iron

ANSWER: (A,B,C,D)

370. Complication of diabetes

- A. Neuropathy

- B. Retinopathy
- C. Nephropathy
- D. Angiopathy

ANSWER: (A,B,C,D)

371. Treatment options of hematological malignancies

- A. Polychemotherapy with/without irradiation
- B. Antibiotics
- C. Stem cell transplantation

ANSWER: (A,C)

372. Risk factors of lung cancer

- A. Smoking
- B. Genetical factors
- C. Chronic respiratory inflammation
- D. Inhaled carcinogenes

ANSWER: (A,B,C,D)

373. Causes of peptic ulcer

- A. Nsaid therapy
- B. Antibiotics
- C. Helicobacter pylori infection
- D. Beta-blocker therapy

ANSWER: (A,C)

374. Nosocomial infections

- A. Related to health care activities
- B. Banal infections
- C. Complicated diseases
- D. Multiresistant agents

ANSWER: (A,C,D)

375. What is true for thrombin?

- A. it can cleave fibrinogen
- B. it can activate upstream (coagulating) factors
- C. it has platelet activating features
- D. it can stimulate mitosis
- E. deactivates protein C

ANSWER: (A, B, C, D)

376. Which are the atypical antipsychotic?

- A. chlorpromazine
- B. chlorprotixene
- C. haloperidol
- D. clozapine
- E. quetiapine

ANSWER: (D, E)

377. What is characteristic to gabapentin?

- A. can be used in chronic pain
- B. can be used in postherpetic neuralgia

- C. highly metabolized
- D. no similarities can be seen with pregabalin
- E. it is one of those antiepileptic, that cause no sedation

ANSWER: (A, B)

378. What is NOT a contraindication of ergot alkaloids?

- A. if a triptan was used 25 hours before
- B. migraine
- C. serious cardiovascular disorders
- D. pregnancy
- E. breast feeding

ANSWER: (A, B)

379. Which one is not an analgesic agent?

- A. loperamide
- B. naltrexone
- C. meperidine
- D. fentanyl
- E. nalbuphine

ANSWER: (A, B)

380. How can be avoided to get rid of an agent, if the patient vomits, because of migraine?

- A. use nasal drugs
- B. use rectal drugs
- C. use only dihydroergotamine
- D. use only NSAIDs
- E. it is not a relevant question in migraine therapy

ANSWER: (A, B)

381. Cardiac cycle consists of:

- A. systole
- B. diastole
- C. intervening pause
- D. blood picks up oxygen and release carbon-dioxide
- E. oxygen is used at the systemic circulation

ANSWER: (A, B, C)

382. Which are cardiovascular diseases?

- A. hypertension
- B. angina
- C. congestive heart failure
- D. arrhythmia
- E. hyperlipidemia

ANSWER: (A, B, C, D, E)

383. Cardiovascular risk factors are:

- A. smoking
- B. alcoholism
- C. obesity
- D. daily doing some exercise
- A. avoidance of allergens

ANSWER: (A, B, C)

384. Physical determinants of health:

- A. Early childhood development
- B. Relationship
- C. Climate change
- D. Worksites, schools
- E. Housing
- F. Physical barriers
- G. Education

ANSWER: (C, D, E, F)

385. Demography is:

- A. The statistical study of a population
- B. Life expectancy
- C. Scientific study of human populations
- D. Studies the Earth and all of its natural change

ANSWER: (A, C)

386. Risk factors of chronic diseases:

- A. Genetics
- B. Lifestyle
- C. Infectious agents
- D. Mortality
- E. Fertility

ANSWER: (A, B, C)

387. Which of the following statements are not correct?

- A. Smallpox was an infectious disease unique to humans
- B. 1990: the WHO eradicates smallpox pandemic
- C. 1990: the WHO eradicates HIV/AIDS pandemic
- D. Hippocrates was the father of modern epidemiology

ANSWER: (B, C, D)

388. Main fields of public health:

- A. Treatment
- B. Medication
- C. Epidemiology
- D. Demography
- E. Sociology
- F. Medical Care

ANSWER: (C, D, E)

389. Incidence:

- A. Measures of change from non-disease to disease
- B. Measures new cases of a disease
- C. Total number of people in the population
- D. Measures all cases of a disease

ANSWER: (A, B)

390. Hemolytic anemia can occur:

- A. In case of iron deficiency

- B. In case of folic acid deficiency
  - C. In case of thalassemia
  - D. Serum of patient contains antibodies against erythrocytes
- ANSWER: (C, D)

391. True for type 2 diabetes mellitus:

- A. Patients are mainly obese
- B. Diet is not important
- C. They never get insulin
- D. Caused by insulin resistance

ANSWER: (A, D)

392. Leukocytosis can be caused by

- A. Inflammation
- B. Infection
- C. Bone marrow failure
- D. Addison's syndrome

ANSWER: (A, B)

393. What can cause the decrease of platelet number (thrombocytopenia)

- A. Pregnancy
- B. Malignant tumors
- C. Iron deficiency
- D. Heparin (heparin-induced thrombocytopenia = HIT)

ANSWER: (A, D)

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

394. Prevalence in epidemiology is a measure of the probability of occurrence of a given medical condition in a population within a specified period of time.

- A. TRUE
- B. FALSE

ANSWER: B

395. Mortality is the term used for the number of people who died within a population. (A-igaz)

- A. TRUE
- B. FALSE

ANSWER: A

396. Incidence in epidemiology is a measure of the probability of occurrence of a given medical condition in a population within a specified period of time.

- A. TRUE
- B. FALSE

ANSWER: A

397. Tobacco use, physical inactivity, unhealthy diet, harmful use of alcohol are the most important modifiable risk factors of non-communicable diseases.

- A. TRUE
- B. FALSE

ANSWER: A

398. Majority of stroke cases is caused by cerebral ischaemia.

- A. TRUE
- B. FALSE

ANSWER: A

399. Holter ECG is used for the diagnosis of hypertension.

- A. TRUE

B. FALSE

ANSWER: B

400. Meaning of „M” in TNM staging of tumors is metastasis.

A. TRUE

B. FALSE

ANSWER: A

401. Polychemotherapy is used for the treatment of deep vein thrombosis.

A. TRUE

B. FALSE

ANSWER: B

402. Major pathology in ischaemic heart diseases is that the need of oxygen exceed the transported oxygen level.

A. TRUE

B. FALSE

ANSWER: A

403. Drugs can be synthetic agents, chemicals from natural origin, but can not be made by genetic engineering.

A. TRUE

B. FALSE

ANSWER: B

404. If an antagonist binds to a receptor, it activates it.

A. TRUE

B. FALSE

ANSWER: B

405. We talk about mass transport, if an agent travels by blood flow

A. TRUE

B. FALSE

ANSWER: A

406. Epinephrine can be used in allergic crisis.

A. TRUE

B. FALSE

ANSWER: A

407. In the early stages of development, both birth and death rates are high

A. TRUE

B. FALSE

ANSWER: A

408. If the occurrence of a disease at higher than normal levels in a population then there is a pandemic

A. TRUE

B. FALSE

ANSWER: B

409. Population Health is a very old concept.

A. TRUE

B. FALSE

ANSWER: B

410. Hippocrates is the father of modern epidemiology

A. TRUE

B. FALSE

ANSWER: B

411. In the early stages of development, both birth and death rates are high

A. TRUE

B. FALSE

ANSWER: A

412. If the occurrence of a disease at higher than normal levels in a population then there is a pandemic

A. TRUE

B. FALSE

ANSWER: B

413. Population Health is a very old concept.

A. TRUE

B. FALSE

ANSWER: B



## BASICS OF NUTRITION

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

414. Which statement is correct according to WHO (European Region)?

- A. circa 8% of people are obese.
- B. over 50% of people are overweight or obese.
- C. about 20% of people are overweight or obese
- D. over 70% of people are overweight or obese.

ANSWER: B

415. Which sentence is correct?

- A. worldwide obesity has nearly tripled since 1975.
- B. in 2016, more than 2,5 billion adults were overweight.
- C. 5 million children (under the age of 5) were overweight or obese in 2019
- D. obesity non-preventable

ANSWER: A

416. Globally, what percentage of deaths were caused by obesity (in 2017)?

- A. 20%
- B. 15%
- C. 8%
- D. 5%

ANSWER: C

417. Which is the “normal range” according to the BMI?

- A. 17.00-18.49
- B. 18.50-24.99
- C. 16.00-16.99
- D. 25.00-29.99

ANSWER: B

418. What is the main problem with BMI?

- A. does not provide any insight about fat mass and fat-free mass in the body.
- B. too difficult to calculate.
- C. it's not enough to know the height and weight of the patient.
- D. without the basal energy expenditure, we can't calculate.

ANSWER: A

419. How much is the normal percentage of fat at females?

- A. 15%
- B. 20%
- C. 25%
- D. 30%

ANSWER: D

420. Usually, how many skinfolds thickness point should we measure?

- A. 5
- B. 4
- C. 3

D. 2

ANSWER: B

421. Which sentence is not correct from these?

- A. physical activity has significant health benefits.
- B. insufficient physical activity is one of the leading risk factors for death worldwide
- C. globally, 3 out of 5 adults is not active enough.
- D. more than 80% of the world's adolescent population is insufficiently physical active

ANSWER: C

422. Which nutrient has the highest energy content (kcal)?

- A. alcohol
- B. fat
- C. protein
- D. carbohydrate

ANSWER: B

423. Please complete the sentence: 5-10% loss of initial body weight results

- A. 20% lower risk of type 2 diabetes
- B. 35% lower risk of type 2 diabetes
- C. 40% lower risk of type 2 diabetes
- D. 60% lower risk of type 2 diabetes

ANSWER: D

424. Which is the number one cause of deaths worldwide?

- A. cancers
- B. cardiovascular disease
- C. HIV/AIDS
- D. diabetes mellitus

ANSWER: B

425. Which one is not correct about a healthy diet?

- A. diversity
- B. protect against malnutrition.
- C. sometimes might lead to overweight.
- D. protect against NCDs

ANSWER: C

426. In terms of a healthy, balanced diet, what is the maximum percentage of your daily energy intake that comes from added sugar?

- A. 5 %
- B. 10%
- C. 15%
- D. 20%

ANSWER: B

427. How much should be the daily total energy intake from fat by adults?

- A. 10%
- B. 25%
- C. 30%
- D. 45%

ANSWER: C

428. What could be the result of too much protein consumption?

- A. type 2 diabetes
- B. obesity
- C. CVD
- D. kidney problem

ANSWER: D

429. How much salt is allowed to be consumed daily?

- A. 2g
- B. 5g
- C. 8g
- D. 10g

ANSWER: B

430. Which sentence is incorrect if we investigate the health benefits of grains?

- A. helps to lower calorie intake
- B. reduce risk of heart disease
- C. whole grains may help with weight management
- D. fibers support digestion

ANSWER: A

431. What does lacto-vegetarian diet exclude?

- A. meat, eggs, dairy, but allows honey and fish
- B. meat, dairy, fish, but allows, eggs
- C. meat, fish, eggs, but allows dairy
- D. meat, fish, eggs, dairy products, honey, jelly

ANSWER: C

432. According to the WHO, how many vegetables and fruits should our diet contain per day?

- A. 300g per/day
- B. 600g per/day
- C. 400g per/day
- D. 250g per/day

ANSWER: C

433. Which food groups are the sources of incomplete protein?

- A. Meat and meat products
- B. Milk and dairy products
- C. Cereals and legumes
- D. Eggs

ANSWER: C

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

434. What allows the pollotarian vegetarian diet?

- A. to consume pork
- B. to consume fish
- C. to consume fruits
- D. to consume chicken

ANSWER: C, D

435. What elements should a vegan dieter pay even more attention to?

- A. calcium
- B. essential amino acids
- C. fibres and vitamin C
- D. B<sub>12</sub>

ANSWER: A, B, D

436. Which are the modifiable risk factors for CVDs?

- A. physical activity
- B. age
- C. gender
- D. obesity

ANSWER: A,D

437. Which could be a part of complex treatment for type 2 diabetes?

- A. medical treatment
- B. nutrigenomics
- C. nutrition therapy
- D. physical activity

ANSWER: A, C, D

438. Which food group are a part of MyPlate?

- A. Dairy
- B. Fruits
- C. Grains
- D. Drinks

ANSWER: A, B,C

439. Which of these could be elements of Nutritional Disorders?

- A. Sarcopenia
- B. Cachexia
- C. Overweight
- D. CVDs

ANSWER: A, B,C

440. Which of these could be elements of fat-free mass?

- A. Bone tissue
- B. Proteins
- C. Carbohydrates
- D. Water

ANSWER: A, B, D

441. Which of these could be elements of environmental factors (Obesogenic environment)?

- A. Transportation opportunities
- B. Neighbourhood safety
- C. Socioeconomic characteristics
- D. Food consumption

ANSWER: A, B

442. Which of these could be symptoms of diabetes mellitus?

- A. Hypertension
- B. Physical inactivity

- C. Always hungry
- D. Always thirsty

ANSWER: C, D

443. Which of these could be messages of MyPlate?

- A. Make half of your grains whole grains.
- B. Vary your protein routine.
- C. Move to high-fat milk and dairy products.
- D. Drink and eat less sodium and added sugar.

ANSWER: A, D

444. Which mineral is an electrolyte?

- A. sodium
- B. iron
- C. potassium
- D. iodine

ANSWER: A, B

445. Which mineral is essential that human body forms red cells?

- A. iron
- B. iodine
- C. calcium
- D. vitamin B6
- E. vitamin B12

ANSWER: A, D, E

446. Which is glycaemic carbohydrate?

- A. lignin
- B. starch
- C. glucose
- D. maltose

ANSWER: B, C, D

447. Which nutrient does not provide energy?

- A. alcohol
- B. vitamins
- C. minerals
- D. fiber
- E. proteins

ANSWER: B, C

448. Fruits are very good sources of:

- A. water soluble vitamins
- B. protein
- C. antioxidants
- D. fat

ANSWER: A, C

449. Which are the main nutrients in cereals?

- A. calcium
- B. protein
- C. fat

D. carbohydrate

ANSWER: B, D

450. Legumes are special among vegetables, because they have

- A. low water content
- B. very high protein content
- C. high polysaccharide content
- D. no fat content

ANSWER: A, B

451. Nutritional benefits of meat are:

- A. complete protein
- B. vitamin B2
- C. calcium
- D. iron

ANSWER: A, D

452. Vegetable oils are different from animal fats because they have:

- A. higher amount of polyunsaturated fatty acids
- B. no cholesterol
- C. higher amount of saturated fatty acids
- D. more vitamin E

ANSWER: A, B, D

453. Egg yolk compared to egg white has:

- A. higher fat content
- B. lower cholesterol content
- C. more protein
- D. less amount of water

ANSWER: A, C, D

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

454. BMI does provide information about fat mass and fat-free mass in the body.

- A. True
- B. False

ANSWER: B

455. Is malnutrition a nutritional disorder?

- A. True
- B. False

ANSWER: A

456. The balanced, healthy diet protects against malnutrition and NCDs.

- A. True
- B. False

ANSWER: A

457. Coconut oil is rich in SFA.

- A. True
- B. False

ANSWER: A

458. Vegans occasionally consume dairy products.

- A. True
- B. False

ANSWER: B

459. Generally used energy conversion factor for glycemic carbohydrates and proteins is 4 kcal/g.
- A. True
  - B. False

ANSWER: A

460. Dietary fiber are resistant to hydrolysis by our digestive enzymes, they pass the upper gastrointestinal tract and enter the colon substantially unmodified.
- A. True
  - B. False

ANSWER: A

461. Protein digestion starts in the mouth and is continued in the small intestine.
- A. True
  - B. False

ANSWER: B

462. High quality protein has an optimal indispensable amino acid composition for human needs and a high digestibility.
- A. True
  - B. False

ANSWER: A

463. Body does not store water-soluble vitamins, they can be flushed out with urine.
- A. True
  - B. False

ANSWER: A

## BEHAVIORAL SCIENCES FOR PHYSIOTHERAPIST

### BASICS OF PSYCHOLOGY

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

1. Which is a projective test?

- A. Minnesota Multiphasic Personality Inventory
- B. Rorschach test
- C. Wechsler's intelligence test
- D. Spielberger anxiety scale

ANSWER: B

2. Who introduced the term Superego?

- A. Sigmund Freud
- B. Abraham Maslow
- C. Albert Bandura
- D. Erik Erikson

ANSWER: A

3. A Which is not true to human development?

- A. Every kid is different and they go through different stages
- B. Behaviour in a given stage is relatively similar in everyone
- C. Behaviour in one stage is qualitatively different from a previous stage
- D. Cognitive development happens in stages

ANSWER: A

4. Schemas are...

- A. A basis for belonging to a group
- B. Mental representations of people, places, situations
- C. Increase cohesion
- D. Mostly emotional in origin

ANSWER: B

5. Which one is not a concept of Piaget?

- A. Accommodation
- B. Assimilation
- C. Separation anxiety
- D. Conservation

ANSWER: C

6. Which crisis is related to adolescence according to Erikson?

- A. Identity
- B. Autonomy
- C. Initiation
- D. Intimacy

ANSWER: A

7. Which is not an emotion?

- A. Sadness



- B. Disgust
- C. Joy
- D. Thirst

ANSWER: D

8. Erik Erikson's theory is a
- A. Cognitive theory
  - B. Psychosocial theory
  - C. Psychosexual development theory
  - D. Evolutionary theory

ANSWER: B

9. Who conducted the famous experiment with the artificial monkeys?
- A. Bowlby
  - B. Thomas és Chess
  - C. Harlow
  - D. James Marcia

ANSWER: C

10. Who introduced the famous pyramid of needs?
- A. Albert Bandura
  - B. Carl Rogers
  - C. Abraham Maslow
  - D. Erik Erikson

ANSWER: C

11. What does the extroversion introversion dimension mean?
- A. How much we pay attention to internal or external stimuli
  - B. How much we are governed by emotion
  - C. How easily we get anxious
  - D. How conventional a person is

ANSWER: A

12. What does a strange situation study by Mary Ainsworth investigate?
- A. Cognitive development
  - B. Innate temperamental differences
  - C. Language acquisition
  - D. Primary attachment to caretakers

ANSWER: D

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

13. Which are personality dimensions according to Eysenck?
- A. Extroversion
  - B. Intelligence
  - C. Emotional stability
  - D. Openness

ANSWER: A, C

14. Which are dimensions of the Big5 model?
- A. Extroversion

- B. Openness
- C. Perceptiveness
- D. Calmness

ANSWER: A, B

15. Which are theories of emotions?

- A. Schachter - Singer
- B. Lazarus
- C. James – Lange
- D. Maslow

ANSWER: A, B, C

16. Which are part of the lowest level of the Maslow pyramid of needs?

- A. Food
- B. Sleep
- C. Personal connections
- D. Creative hobbies

ANSWER: A, B

17. Which are true to a newborn baby?

- A. Can differentiate between different smells and tastes
- B. Sensitive to human language
- C. Pays attention to sounds
- D. Has comparable eyesight to an adult

ANSWER: A, B, C

18. Which ones are fundamental emotions?

- A. Anger
- B. Jealousy
- C. Disgust
- D. Anxiety

ANSWER: A, C

19. Which are true to human memory?

- A. It is reconstructive in nature
- B. Short-term memory has a capacity of around 7 items
- C. Is influenced by schemas
- D. Works the same way in every situation

ANSWER: A, B, C

20. According to Freud, the ID is...

- A. Destructive
- B. Mature
- C. Chaotic
- D. Fearful

ANSWER: A, C

21. Which types are in the Hippocrat-Galen personality theory?

- A. Sanguine
- B. Choleric
- C. Melancholic
- D. Phlegmatic

ANSWER: A, B, D

22. What's true to Erikson's first stage?

- A. Happens in the first 12-18 months of life
- B. Most important character is the mother
- C. The most important crisis is trust vs. mistrust
- D. Other children play a very important role in it

ANSWER: A, B, C

23. What are true to the humanistic perspective?

- A. Self-actualization is a key concept
- B. Personal experience is above all else
- C. Important figures are Carl Rogers and Abraham Maslow
- D. Personality development is governed by sexual impulses

ANSWER: A, B, C

24. What are basic therapeutic principles according to Rogers?

- A. Empathy
- B. Congruence
- C. Unconditional positive regard
- D. Happiness

ANSWER: A, B, C

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

25. Black and white thinking is a cognitive distortion.

- A. True
- B. False

ANSWER: A

26. The unconscious as a term was introduced by Freud

- A. True
- B. False

ANSWER: A

27. Emotion and mood are basically the same concepts.

- A. True
- B. False

ANSWER: B

28. Social learning theory states that learning can happen through observation alone

- A. True
- B. False

ANSWER: A

29. Behaviourism states that learning as operant conditioning happens through trial and error

- A. True
- B. False

ANSWER: A

HEALTH PSYCHOLOGY

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

30. What is a typical reaction in grieving?

- A. Can result in psychosis
- B. Usually accompanied by suppression of emotions
- C. Can last for 3-6 months
- D. Often results in somatic diseases

ANSWER: C

31. When is the suicide risk the biggest in depressed patients?

- A. Evening
- B. Dawn
- C. Morning
- D. Afternoon

ANSWER: B

32. What is depersonalization?

- A. Pain in the amputated limb
- B. Ambivalence in emotions
- C. Hearing voices
- D. Disruption of the self-schema

ANSWER: D

33. Which is not a symptom of depression?

- A. Inactivity
- B. Less need for sleep
- C. Lack of joy
- D. Fatigue

ANSWER: B

34. Which one is not a personality disorder?

- A. Antisocial
- B. Borderline
- C. Psychopathic
- D. Obsessive-compulsive

ANSWER: C

35. Which is not a symptom of a panic attack?

- A. Increased heart rate
- B. Derealization
- C. Acoustic hallucinations
- A. Lack of self-control

ANSWER: C

36. Which is not a sleep disorder?

- A. Insomnia
- B. Parasomnia
- C. Somnolentia
- D. Circadian rhythm disruption

ANSWER: C

37. The "C" personality type is characterized by...

- 1. Cardiovascular problems
- 2. Lung-related problems
- 3. Cancer
- 4. Depression

ANSWER: C

38. Which is typical to depression?

- A. Reliving traumas
- B. Increased pulse and heart rate in general
- C. Cognitive triad
- D. High-level coping

ANSWER: C

39. General adaptation syndrome was introduced by...

- A. Walter B. Cannon
- B. Claude Bernard
- C. Lazarus
- D. Selye János (Hans Selye)

ANSWER: D

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

40. In which disorders is suicide a risk factor?

- A. Depression
- B. Schizophrenia
- C. Anorexia
- D. Elderly dementia

ANSWER: A, B, C

41. What are the therapeutic principles according to Rogers?

- A. Empathy
- B. Unconditional positive regard
- C. Calmness
- D. Congruence

ANSWER: A, B, C, D

42. Which are true to the health psychology approach?

- A. Has its roots in ancient Greece?
- B. Was introduced around the 1<sup>st</sup> World War.
- C. Opposes the biomedical model.
- D. Engel was an important scientist in it.

ANSWER: A, C, D

43. Sleep problems can be caused by

- A. Dopamin
- B. Binge-eating disorders
- C. Depression
- D. Anorexia

ANSWER: B, C, D

44. What are true for specific phobias?
- A. The object of the fear is restricted to one object or situation
  - B. The object of the fear is mostly avoided
  - C. The fear is mostly reasonable because the object or situation is dangerous
  - D. Men are way more likely to suffer from the disorder

ANSWER: A, B

45. According to health psychology, chronic disorders are...
- A. Multicausal
  - B. Need complex treatment
  - C. Are always genetic in nature
  - D. Resistant to psychotherapy

ANSWER: A, B

46. What are bodily symptoms of stress?
- A. More effective digestion
  - B. Cortisol secretion
  - C. Adrenaline is suppressed
  - D. Muscle tension increases

ANSWER: B, D

47. Which are true to anorexia?
- A. Mostly adolescent girls are affected
  - B. Menstruation is unaffected
  - C. Body image disturbance is a symptom
  - D. Has a higher prevalence in rich countries

ANSWER: A, C, D

48. Which statements are true to addictions?
- A. Has no genetic component
  - B. The most important neurotransmitter involved is serotonin
  - C. It is usually indicative of a bigger, underlying problem
  - D. The family can help in the recovery of the patient

ANSWER: C, D

49. Which are true to cognitive-behavioural therapy?
- A. Focuses on faulty thinking patterns
  - B. Deals with early childhood experience
  - C. Very effective in dealing with eating disorders and mood disorders
  - D. Focuses on the emotional development of the person

ANSWER: A, C

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

50. Perceived control related to a disease influences the outcome of the treatment
- C. True
  - D. False

ANSWER: A

51. Anorexia is one of the most lethal psychiatric disorders
- A. True
  - B. False

ANSWER: B

52. Women are more likely to be affected by anxiety disorders than men

A. True

B. False

ANSWER: A

53. Placebo effect means that the patient actually gets better, but not because of the medication or the treatment.

A. True

B. False

ANSWER: A

54. Personal attitudes about the treatment have no effect on the outcome

A. True

B. False

ANSWER: B

## SOCIAL PSYCHOLOGY

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

55. Communication is congruent if
- A. the verbal channel is dominant
  - B. the non-verbal channel is dominant
  - C. if verbal and non-verbal content is similar
  - D. if verbal and non-verbal content is different

ANSWER: C

56. Reframing is a communication strategy in which
- A. we give a different meaning to a situation
  - B. we deliberately distort incoming information
  - C. we derail the communication with questions
  - D. keep asking questions to which the answer yes is expected

ANSWER: A

57. The famous „prison experiment“ was conducted by

- A. Zimbardo
- B. Bartlett
- C. Bandura
- D. Piaget

ANSWER: A

58. Who introduced the learning theory explanation of aggression?

- A. Sigmund Freud
- B. Abraham Maslow
- C. Albert Bandura
- D. Erik Erikson

ANSWER: C

59. Attribution is

- A. the social perception of a person
- B. a form of stereotype
- C. coming up with an explanation to another person's behaviour
- D. exercising authority in social situations

ANSWER: C

60. Fundamental attributional error

- A. happens due to cognitive dissonance
- B. we explain a person's behaviour with dispositional factors and not situational factors
- C. is based on a symmetry-principle
- D. never happens in adults only in kids

ANSWER: B

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

61. In Asch's study on conformity

- A. people never conform if they are sure in the right answer



- B. ambiguous stimuli are used
  - C. only women participated
  - D. people were less likely to conform if they could give their answers secretly
- ANSWER: B, D

62. According to Social Identity Theory
- A. people aim for positive distinctiveness
  - B. we see another group's members as unique individuals
  - C. group members with lower status are less likely to conform
  - D. people can form group identities based on almost anything
- ANSWER: A, D

63. In Bandura's BOBO doll studies
- A. children learned aggressive behaviour through observation
  - B. children were instructed by their parents
  - C. boys were more physically aggressive than girls
  - D. girls were altogether more aggressive than boys
- ANSWER: A, C

64. Which are true to aggression?
- A. There is a positive correlation between internalized media aggression and children's aggressive behaviour
  - B. Aggressive behaviour can be learned through observation
  - C. Expressing aggression can lead to the reduction of aggressive tendencies
  - D. Punishment always results in aggressive behaviour
- ANSWER: A, B

65. Which are true to conformity?
- A. only relevant in Western cultures
  - B. there is informational and normative conformity
  - C. low self esteem is in correlation with more conformity
  - D. conformity is a basic element of group formation
- ANSWER: B, C, D

66. Which are true to the minimal group paradigm?
- A. thinks of groups as the smallest unit
  - B. deals with stress inside one group
  - C. states that the smallest difference is enough for groups to form
  - D. believes that small groups do not form their own norms
- ANSWER: A, C

True or False?

67. Zimbardo's study was ethically controversial, problematic
- A. True
  - B. False
- ANSWER: A

68. According to Social Identity Theory people are divided into ingroup and outgroup members
- A. True
  - B. False
- ANSWER: A

69. Stereotypes can influence our behaviour even on an unconscious level

A. True

B. False

ANSWER: A

70. Milgram's study on authority was investigating animal behaviour

A. True

B. False

ANSWER: B

71. Zimbardo's study is a great example of how intergroup conflicts are formed

A. True

B. False

ANSWER: A

## PREVENTION AND HEALTH EDUCATION

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.

SELECT THE ONE THAT IS BEST IN EACH CASE

72. What is HAART?

- A. Highly Active Anti-Retroviral Therapy
- B. Heart And Abdominal Radiation Therapy
- C. Home Assessment of Abilities in Real Teamwork
- D. Highly Active Advanced Radiation Therapy

ANSWER: A

73. What is the second stage of the Maslow's Pyramid?

- A. The need for security
- B. Fruits and Vegetables
- C. Anger
- D. Autonomy versus shame and doubt

ANSWER: A

74. During which phase of alcoholism is physiologic dependence evident?

- A. Crucial phase
- B. Prelcoholic phase
- C. Chronic phase
- D. Prodromal phase

ANSWER: C

75. What is the "mean and sweet" cycle?

- A. An eating disorder which involves consuming junk food periodically
- B. A hormonal disorder which affects the menstrual period
- C. A multiple personality disorder
- D. The periodical outburst of aggression of the abusive controlling person

ANSWER: D

76. Which of the following cultural sensitivity level is characterized by racism, maintain stereotypes and unfair hiring practices?

- A. Cultural Incapacity
- B. Cultural Destructiveness
- C. Cultural Pre-competence
- D. Cultural Blindness

ANSWER: A

77. What is a T-helper cell?

- A. A type thyroid cell
- B. A type of lymphocyte
- C. A type of tumor cell
- D. A cell which helps to find the target for radiation therapy

ANSWER: B

78. Which prevention model involves the whole population and aims to prevent the development of a disease?

- A. Universal Prevention
- B. Selective Prevention

- C. Indicative Prevention
- D. Ordinary Prevention

ANSWER: A

79. HIV concentration is very high in which of the following body fluids?

- A. Tear
- B. Sweat
- C. Menstrual blood
- D. Saliva

ANSWER: C

80. What is HIV?

- A. Human Individual Variation
- B. Human Interaction Validity
- C. Human Immunodeficiency Virus
- D. Home Inappropriate Violence

ANSWER: C

81. Which one is known as the "good cholesterol"?

- A. Low Density Lipoprotein (LDL)
- B. Very Low Density Lipoprotein (VLDL)
- C. Chylomicrons
- D. High Density Lipoprotein (HDL)

ANSWER: D

82. Which cancer type is characterized by cancer of the lymphatic system?

- A. Carcinoma
- B. Sarcoma
- C. Leukaemia
- D. Lymphoma

ANSWER: D

83. Which one is the most common cancer type?

- A. Carcinoma
- B. Sarcoma
- C. Leukaemia
- D. Lymphoma

ANSWER: A

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

84. Which of the followings are not among the 7 warning signs of cancer?

- A. Lump in breast or other part of the body
- B. Significant hair loss
- C. Itchy skin
- D. Obvious change in moles

ANSWER: B, C

85. Left heart failure is causing what of the followings?

- A. Dispnea
- B. Pulmonary edema

- C. Nipple discharge
- D. Hives

ANSWER: A, B

86. Which of the followings are changeable risk factors for cardiac diseases?

- A. Family history
- B. Physical inactivity
- C. Smoking
- D. Alcohol abuse

ANSWER: B, C, D

87. How HIV can be transmitted?

- A. By mosquito bites
- B. By sharing needles
- C. By tissue transplant
- D. By unprotected sexual contact

ANSWER: B, C, D

88. Which of the followings are secondary prevention measures for malignant melanoma?

- A. Having annual dermatology screenings
- B. Regular checking of birth marks and skin abnormalities
- C. Avoiding direct sunlight
- D. Seeking for dermatology care if abnormality of the skin is detected

ANSWER: A, B, D

89. Which of the followings are associated with alcoholism?

- A. Hepatomegaly
- B. Acromegaly
- C. Stomach ulcer
- D. Extrapyrimaldal symptoms

ANSWER: A, C, D

90. Which specialists needs to be contacted if a neonate has developmental hip dysplasia?

- A. Pediatrician
- B. Breast-feeding counselor
- C. Orthopedic surgeon
- D. Home health nurse

ANSWER: A, C, D

91. Which parental characteristics are risk factors for committing child abuse?

- A. Low educational level
- B. Low self-esteem
- C. Negligence
- D. Multiparity

ANSWER: B, C

92. Which of the following types of abuse are part of Intimate Partner Violence?

- A. Sexual abuse
- B. Mental abuse
- C. Appearance abuse
- D. Economic abuse

ANSWER: A, B, D

93. Which of the following conditions may be prevented by regular screenings?

- A. Testicle cancer
- B. Skin cancer
- C. Cervical cancer
- D. Breast cancer

ANSWER: A, B, C, D

94. Which of the followings are risk factors for Coronary Artery Disease (CAD)?

- A. Elevated low-density-lipoprotein (LDL) levels
- B. Elevated high-density lipoprotein (HDL) levels
- C. Diabetes mellitus
- D. Allergy

ANSWER: A, C

95. Which of the followings are risk factors for alcoholism?

- A. Air pollution
- B. Stress
- C. Family history of alcoholism
- D. Thyroid dysfunction

ANSWER: B, C

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

96. Teamwork is always more successful than individual work

- A. True
- B. False

ANSWER: B

97. Abused children dose not have a higher chance to become abusive parents

- A. True
- B. False

ANSWER: A

98. Anorexia nervosa is more often observed in females than in males

- A. True
- B. False

ANSWER: A

99. A woman's chance for developing breast cancer increases most significantly between ages of 20 and 30

- A. True
- B. False

ANSWER: B

100. Psychotherapy is an important part of the treatment of cancer patients

- A. True
- B. False

ANSWER: A

## THEORETICAL BASICS OF PHYSIOTHERAPY INTERVENTIONS

### BODY AWARENESS

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.

SELECT THE ONE THAT IS BEST IN EACH CASE

1. What is the contraindication to DSGM?

- A. oxygen deficient nervous system damage
- B. orthopedic diseases
- C. post-traumatic conditions
- D. acute inflammatory conditions

Answer: D

2. Who was Kármán Györgyné?

- A. the introducer of aesthetic physical education in college studies
- B. choreographer
- C. ballet artist
- D. neurologist

Answer: A

3. What is not the primary goal of body-awareness?

- A. training and shaping one's own body.
- B. development of muscle strength endurance
- C. development of thinking-learning-fantasy
- D. enrichment of exercise material

Answer: B

4. Which principle does not characterize body-awareness?

- A. motion analysis synthesis
- B. principle of aesthetics
- C. does not correct, leave the movements free to perform.
- D. works with transitions between movements.

Answer: C

5. What is not typical of exercise tools used in body-awareness?

- A. due to their weight, they give resistance
- B. guide and facilitate the execution of the movement
- C. extend the movements in space
- D. they follow the principle of multidirectional influence

Answer: A

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

6. What types of movements are typical of body-awareness?

- A. conscious
- B. accurate
- C. economical
- D. aesthetic

Answer: A, B, C, D

7. What is the purpose of body-awareness?

- A. Training one's own body only

- B. Establishing correct posture in static situations
- C. Usage of the gymnastic material in the clinical practice
- D. Developing the right posture in dynamic situations

Answer: B, C, D

8. What is the method of body-awareness?

- A. only health considerations are taken into account
- B. developing body consciousness
- C. motion analysis
- D. physiotherapy and movement art

Answer: B, C, D

9. Who were the representatives of Basic Body Training Gymnastics?

- A. Dr. Dienes Valéria
- B. Dr. Bess Mensendieck
- C. Madzsarné Jászi Alice
- D. Kármán Györgyné

Answer: B, C, D

10. What is typical of Dr. Bess Mensendieck's gymnastics?

- A. conscious muscle activity
- B. keeping the feet in an angular position, basic position
- C. consideration of physical laws during movements
- D. isolation, "pelvic swing"

Answer: A, C, D

11. What characterizes the work of Madzsarné Jászi Alice?

- A. artistic physical education
- B. creation of hygienic gymnastics
- C. developing new ways of female physical culture
- D. laying the foundations for physiotherapy

Answer: A, B, C, D

12. What characterizes P. Berczik Sára's gymnastics?

- A. unity of aesthetics-rhythm-pedagogy
- B. building on absolute capabilities
- C. space-time-force harmony
- D. the principle of decoupling

Answer: A, C, D

13. Who was Dévény Anna?

- A. ballet artist
- B. choreographer
- C. master trainer
- D. physiotherapist

Answer: C, D

14. Who was Kármán Györgyné?

- A. movement artist
- B. doctor
- C. physiotherapist
- D. teacher



Answer: A, C, D

15. What are the primary tasks of body-awareness?

- A. increasing muscle strength
- B. increasing endurance
- C. developing muscle and body consciousness
- D. automizing correct posture

Answer: C, D

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

16. Bess Mensendieck's critique covered only sports movements and ballet.

- A. True
- B. False

Answer: B

17. Bess Mensendieck's gymnastics is based on physical laws.

- A. True
- B. False

Answer: A

18. According to Bess Mensendieck, the condition for a stable position is to place the feet in an angular position.

- A. True
- B. False

Answer: B

19. In Bess Mensendieck's gymnastics, the most important thing is the isolation and pelvic swing.

- A. True
- B. False

Answer: A

20. In her gymnastics, Bess Mensendieck did not place much emphasis on breathing, only posture.

- A. True
- B. False

Answer: B

21. In Bess Mensendieck's gymnastics, it is important to emphasize breathing, air diffusion through the pores of the skin.

- A. True
- B. False

Answer: A

22. Madzsarné Jászi Alice's gymnastics is characterized by an emphasis on breathing.

- A. True
- B. False

Answer: A

23. The gymnastics of Alice Jászi Madzsarné is characterized by a special class structure, which is still valid today.

- A. True
- B. False

Answer: A

24. The artistic gymnastics of P. Berczik Sára took into account only absolute abilities.

- A. True

B. False

Answer: B

25. The DSGM method only includes manual treatment.

A. True

B. False

Answer: B

## MASSAGE

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

26. Indirect, local/humoral effects of massage include...

- A. Release of vasoactive agents are inhibited.
- B. Reduced capillarization (anti-shunt effect)
- C. An increase of local microcirculation
- D. Oxygen and nutritive factor supply of striated muscle and other tissues get worsen.

ANSWER: C

27. Definition of massage...

- A. Mechanical stimuli applied on the surface of the body for a particular (therapeutic) goal using specific techniques. The therapeutic effect is the reward for the body
- B. Primarily heat is transferred when specific stimuli are applied on the surface of the body, moreover, in a very strict order, and as a result, a therapeutic effect is evolved
- C. A passive mechanotherapy procedure when the stimuli applied on the surface of the body for a particular (therapeutic) reason. The stimuli are conveyed by specific manipulations and techniques. This can replace active movement therapy as well.
- D. Kind of an active physical therapy procedure targeting the integrity of the soft tissues with adequate stimuli depending on their characteristics.

ANSWER: A

28. The characteristics of compression

- A. when applied the pressure in the tissues decreases
- B. stasis of fluid in the venous and lymphatic vessels occurs, hence making metabolism more efficient
- C. interstitial fluid volume decreases
- D. although it does not affect the absorption of congestive oedema, it is very pleasant, mentally relaxing

ANSWER: C

29. Which one is correct as basic technique of the massage?

- A. Stroking (frictio(n))
- B. Friction (effleurage)
- C. kneading (petrissage)
- D. Shaking (vibration) and hitting, cupping (tapwaterbent)

ANSWER: C

30. The effects of vibration

- A. an increase in muscle tone, in awareness, in ROM
- B. relaxation, analgesia, bronchial secretion
- C. stabilization, attention focus
- D. an increase of tolerance threshold, isometric diaphragm activation

ANSWER: B

31. Within the basic techniques of massage there is no...

- A. stroke (effleurage)
- B. friction
- C. kneading (petrissage)
- D. shaking and passive mobilization

ANSWER: D

32. The direct effects of massage

- A. direct remote effect
- B. it affects venous circulation with its effect on interstitial/tissue pressure.
- C. supports lymphatic circulation as primary goal, even at the cost of thromboembolism.
- D. there is none.

ANSWER: B

33. Purpose and effects of petrissage

- A. to increase muscle tone, awareness; to promote circulation
- B. to relax, to manage pain, to support bronchial secretion
- C. to maintain stabilization, to focus attention
- D. to increase the tolerance threshold, to isometrically activate diaphragm

ANSWER: A

34. Example for local humoral reaction:

- A. vasoactive agent release, independently from the intensity of the mechanical stimulus (as its cause)
- B. Relaxation, analgesia, bronchial secretion
- C. Under the influence of histamine, the arterioles and precapillary sphincters dilate.
- D. Bradykinin causes systemic vasodilation (global transatlantic general hyperaemia), edema and analgesic release.

ANSWER: C

35. About percussion... (which answer is the true?)

- A. muscle tone may increase
- B. percussion inhibits bronchial secretion when applied in the anterolateral, well-defined area of the neck with proper intensity
- C. invigorates as it has no stimulating effect
- D. we always end the massage with this grip, but only if the film recorder is on

ANSWER: A

36. Therapeutic effect achieved by friction ("rubbing")

- A. as a strong stimulus, it cannot have therapeutic effect
- B. through its direct mechanical action, the hitherto non-circulating capillaries of the skin open
- C. Regardless of tissue depth involved, this grip can educate life through cutaneo-muscular and cutaneo-visceral reflexes (so-called "rubbed" in Hungarian slang means "cunning")
- D. therapeutic effect develops only if the protective epithelium is not removed

ANSWER: B

37. The effects of vibration

- A. an increase in muscle tone, in awareness, in ROM
- B. relaxation, analgesia, bronchial secretion
- C. stabilization, attention focus
- D. an increase in excitability of nerve fibres

ANSWER: B

38. Sensors for noxious stimuli (nociceptors) may be adequately stimulated by...

- A. stroke, fine touch
- B. temperature above 25 oC without allodynia
- C. vibration

D. chemical substances, tissue hormones indicating tissue destruction (pl. histamine, substance-P, prostaglandins, bradykinin)

ANSWER: D

39. The routes of pain stimuli in the central nervous system (which answer is true?)

- A. In the anterolateral ascending tract of the spinal cord, where thin myelinated C and unmyelinated (A $\delta$ ) fibers conduct pain
- B. Stimuli conveyed by A $\delta$  fast-conducting fibers are painful thermal and painful mechanical stimuli that project diffuse, difficult-to-localize pain into the parietal cortical field after switching to specific nuclei in the thalamus (VPM)
- C. After switching in the VPL and DM nuclei of the thalamus, instinctive analysis and emotional charge of pain sensation develops in the frontal cortex, limbic cortex, as well as vegetative sympathetic reactions develop in hypothalamic nuclei.
- D. The role of higher centers in modifying pain perception can be also observed, e.g., in the case of the analgesic effect of distraction.

ANSWER: D

40. General effects of classical Swedish massage (which is not true?)

- A. The pulse rate (heart rate) increases, and respiration is optimized
- B. Muscle performance, resp. improvement of the physical and mental condition of the whole organization
- C. It has no effect on blood pressure, because the value by which it is increased is the same as the value by which it is decreased.
- D. Massage increases body temperature

ANSWER: C

41. The tone of muscles judged tight can be reduced...

- A. By inhibiting Golgi tendon organ, by activating muscle spindle
- B. By depressing the stimulus threshold for nociceptors
- C. By creating a relaxed posture and a mentally soothing environment; with proper cutaneous communication
- D. employing extremely cold or hot

ANSWER: C

42. Intermittent compression

- A. It should not be used in patients with disorders of the lymph and venous flow, with congestive edema
- B. Due to its pumping effect the venous and lymph flow get slowed down
- C. It should not be an introductory manipulation for hypersensitive skin (allodynia and hyperalgesia)
- D. Do not perform in case of Trendelenburg sign

ANSWER: C

43. The physiological effects of segment(al) massage (which is not true?)

- A. Capillary dilation, (venous) circulation enhancement, consequent increase in skin temperature, enhancement of segmental metabolism; enhancing connective tissue hydration.
- B. Reduction in muscle tone; pain alleviation
- C. in case of acute problems, the inflammatory substances can be optimized in a more vigorous execution of the technique.
- D. Elimination of alterations caused reflectively by the impaired organ.

ANSWER: C

44. Small basic sequence (pelvic sequence) of connective tissue (which is incorrect?)

- A. First pelvic strokes are delivered using a series of flat strokes and hooks to the sacrum
- B. Second pelvic strokes are delivered using strokes to the SI joint line
- C. filling-up the half of the sacrum (or rhomboid area) is the third pelvic stroke
- D. fourth pelvic strokes are along the crista ilei from ASIS to PSIS.

ANSWER: D

45. Dosing of connective tissue massage (which is incorrect?)

- A. The first 2-3 treatments last a good half an hour / 40 minutes; on consecutive days, practically, at the same time of day
- B. When connective tissue tension decreases, the treatment time can also be reduced to 20-30 minutes
- C. The frequency of the so-called 'maintenance treatments' is once a week to be sufficient.
- D. One treatment cycle means an average of 13-18 treatments, after which there is a 3-month break due to the emerging adaptation (i. e. the body is unable to respond to the stimuli of connective tissue massage)

ANSWER: C

46. Relating to the effects of massage technique 'effleurage' it can be stated..

- A. Making manual and psychological/mental contact, so-called 'cutaneous communication' is not required to be further maintained
- B. Venous and lymphatic circulation apparently decrease
- C. As a result of flawed/incorrect technical execution skin hyperemia occurs
- D. Transition between different techniques or manipulations; its effect is soothing, relaxing.

ANSWER: D

47. Characteristics of connective tissue massage

- A. Skin technique - targets the layer of muscle fascia
- B. Fascia technique - targets the subcutaneous layer of connective tissue
- C. Skin technique - performed with the whole palm
- D. Fascia technique - with the fingers III-IV, bending DIP joints (forming a 'hook')

ANSWER: D

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

48. The purposes of Swedish massage are...

- A. To interrupt the 'vicious circle' of pain
- B. To increase tissue metabolism
- C. To normalize muscle tone
- D. To challenge physical and mental condition of the body ("What does not kill you, makes you stronger")

ANSWER: A, B, C

49. Characteristics of segment massage

- A. Basic paradigm (underlying principle): skin, blood vessels, muscle, bone and internal organs are functionally related to each other.
- B. Pain, which can be interpreted as a viscerosomatic reflex, can be attenuated by analgesic effects (somato-visceral effect)
- C. In case of inflammation in gallbladder in the area of the adequate myotome as a Mackenzie zone (right rib cage, back and the intercostal muscles) hypertension can be detected and pain can be perceived.
- D. The primary therapeutic goal is to improve tissue viscoelasticity.

ANSWER: A, B, C

50. Characteristics of reflex massages

- A. Preparation of dorsal roots' means to apply special grips over the area innervated by the dorsal rami of spinal nerves that are: e.g. 'twisting', 'pleating', 'plucking', 'pine-tree', 'spinal-process-grip'
- B. Connective tissue massage technique targets subcutaneous connective tissue and deeper muscle fascia.
- C. The 'root-grips' are to prepare the relevant segments from the superficial to the deeper tissue layers in the area supplied by the dorsal rami of the spinal nerves
- D. dermatographia rubra (i. e. a reddish line on the skin) is a reflex effect, natural phenomenon

ANSWER: A, B, C, D

51. Characteristics of connective tissue massage

- A. Elizabeth Dicke began her work through her experiences with her own lower limb circulation problem
- B Basic assumption: changes in the equilibrium of the autonomic nervous system are caused by disturbances and dysfunction of internal organs
- C. Connective tissue zones in the pelvic area are: obstipation, lymphatic-vein zone, arterial foot zone, hypomenorrhoea zone, and bladder zone.
- D. Central sequences include 'pelvic sequence' (small basic sequence) and 'trunk sequence'; while 'lateral trunk sequence' and 'shoulder blade sequence' are peripheral sequences

ANSWER: A, B, C

52. Characteristics of connective tissue massage

- A. The sequence of treatment: we always start our treatment distal to the diagnostic zone
- B. Our primary goal is to make the so-called 'cutting sensation' being provoked
- C. Dermographia elevata (quadli) may occur in case an intense tension
- D. As the improvement progresses, skin reactions decrease

ANSWER: A, B, C, D

53. Characteristics of connective tissue massage

- A. The term 'irritations' refers to the so-called "reflex imbalances or shifts" which are always positive phenomena.
- B. You should never eliminate them quickly!!!
- C. Patients with angiopathias (blood vessel diseases) always have a skin reaction; its appearance is irrelevant from prognostic viewpoint.
- D. whereas in case patients with angiopathy the goal is an immediate and intense retuning of complete parasympathetic, it is not a hurdle if the patient started to feel dizzy, however should be laid in a horizontal position.

ANSWER: B, D

54. Melzack-Wall gate control

- A. spinal cord-level analgesia occurs during presynaptic inhibition
- B. The inhibitory neuron produces a neurotransmitter that reduces the activity of the T neuron
- C. Faster incoming information from thick myelinated fibers originated from skin mechanoreceptors closes the gate before nociceptive information conveyed by C-fibers
- D. Dull pain (C-fiber) can also be overridden by sharp pain (A-delta) too

ANSWER: A, B, C, D

55. Mechanoreceptors of the skin

- A. Merkel corpuscle end-organ - underlies the perception of form and roughness on the skin; a receptor involved in tactile recognition of edges, shapes; partially surrounding the epithelial cells with a saucer-like thickening)
  - B. Meissner corpuscle end-organ - participates in tactile sensation (of pressure, vibration); a nerve fiber end coiled just below the epithelial layer in an egg-shaped form
  - C. Vater-Pacinian corpuscles – underlie the perception of high frequency vibration; perception of pressure stimuli, vibration, even play a role in texture perception
  - D. Ruffini corpuscle end-organ – sensors of vibration; respond to skin displacement (skin stretch), but have not been closely linked to either proprioceptive or mechanoreceptive roles in perception
- ANSWER: A, B, C, D

56. Adequate stimulus of nociceptors may be
- A. ischemia (severe disruption of tissue blood supply)
  - B. painful mechanical stimulus (cutting, strong pressure)
  - C. very cold, resp. very hot
  - D. vibration
- ANSWER: A, B, C

57. Propagation of pain perception in the central nervous system
- A. in the anterolateral ascending tract of the spinal cord, where thin myelinated fibers A $\alpha$  and unmyelinated fibers (C) conduct pain
  - B. Stimuli driven by A $\alpha$  fast-conducting fibers are painful thermal and mechanical stimuli that project well-localized pain into the parietal cortical field after switching in the specific nuclei (VPL) of the thalamus.
  - C. After switching in the VPM and DM nuclei of the thalamus, instinctive analysis and emotional charge of pain sensation develops in the frontal cortex, limbic cortex, and hypothalamic nuclei, and vegetative sympathetic responses are initiated.
  - D. The role of higher centers in modifying pain perception can be observed, e.g. in analgesia through distraction (of attention).
- ANSWER: A, B, C, D

58. General effects of classical Swedish massage
- A. The heart rate increases, breathing is optimized
  - B. Muscle performance, resp. the physical and mental condition of the whole organization improve
  - C. Blood pressure regulation in either downward or upward direction (up- or down-regulation of blood pressure) can occur
  - D. Decrease in body temperature
- ANSWER: A, B, C

59. The tone of muscles deemed tight can be reduced
- A. By activating Golgi tendon organs (GTOs), avoiding muscle spindle activation
  - B. By raising the stimulus threshold for nociceptors
  - C. With proper cutaneous communication
  - D. By creating a relaxed posture and a mentally calming environment
- ANSWER: A, B, C, D

60. Intermittent compression technique
- A. It is used for disorders of venous and lymphatic circulation, congestive edema
  - B. Venous and lymphatic flow is accelerated due to pump function
  - C. It can also be an introductory manipulation for hypersensitive skin (allodynia and hyperalgesia)
  - D. Performing it in Trendelenburg position we can cause a more optimal effect
- ANSWER: A, B, C, D



61. Physiological effects of segment(al) massage

- A. Capillary dilation, (venous) circulation enhancement, consequent increase in skin temperature, promotion of segmental metabolism; enhancing connective tissue hydration
- B. reduction of muscle spasm
- C. pain relief
- D. elimination of reflex changes caused by the affected organ

ANSWER: A, B, C, D

62. The system of manipulations and techniques of segment massage

- A. Basic techniques are the basic techniques of Swedish massage (effleurage (stroking), friction (rubbing), petrissage (kneading), vibration)
- B. Complementary/supplementary techniques (e.g., special treatment of the subscapular musculature by lifting the shoulder blade; intermittent compression technique of the chest; shaking-up the pelvis)
- C. Special techniques are applied at the region innervated by dorsal rami of spinal nerves (paravertebral area) as an introductory treatment; aiming at treating specific derivatives of embryonic primary germ layers with particular grips/techniques; proceeding from superficial to deeper tissue
- D. Extremities are never treated.

ANSWER: A, B, C

63. Principles of connective tissue massage treatment

- A. Treatment should be initiated proximal to the diagnostic zone
- B. Patients' subjective pain perception should be monitored; by repeatedly relying on their feedbacks during the treatment.
- C. There is no need to take a break between movement therapy and connective tissue massage.
- D. One hour of rest is required after treatment

ANSWER: B, D

64. Indications for connective tissue massage

- A. arrhythmias of vegetative origin (functional heart complaints)
- B. sleep disorders, psychosomatic diseases
- C. COPD
- D. dysmenorrhea

ANSWER: A, B, C, D

65. Dosage of connective tissue massage

- A. The first 2-3 treatments last a good half hour / 40 minutes; on consecutive days, at the same time of the day
- B. When connective tissue tension decreases, the treatment time can also be reduced to 20-30 minutes
- C. The so-called maintenance treatments three times a week are sufficient
- D. One treatment cycle comprises of 13-18 sessions, after which there is a 3-month break due to the emerging adaptation (i. e. the body is unable to respond to the stimuli of connective tissue massage)

ANSWER: A, B, C, D

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

66. Within physiotherapy, massage can be regarded as an active procedure, of which diverse system (manipulations and techniques) targets the soft tissues of the body.

ANSWER: FALSE

67. Massage practices a stimulating effect on the body; directly through reflex mechanisms and indirectly through its mechanical effects.

ANSWER: FALSE

68. 19th century is called the “Swedish era” in the history of massage, as by collecting and organizing classical massage techniques, the Swedish Pehr Ling gave shape to a therapeutic procedure followed by the Dutch Metzger, the German Mosengeil, and then Hoffa and his disciples.

ANSWER: TRUE

69. Basic techniques of Swedish massage are 1) effleurage; 2) petrissage; 3) friction; 4) tapotement; and 5) vibration

ANSWER: TRUE

70. Head and Mackenzie’s research laid the foundations for connective tissue massage, while Elizabeth Dicke and Teirich Leube developed the concept of segmental massage.

ANSWER: FALSE

71. Cutaneous communication is one of the most important factors in creating and maintaining a therapeutic context, as in addition to the fact that the skin is our largest sensory organ, touch also mediates its long-rooted but human-specific nature through its bio-psycho-social dimensions.

ANSWER: TRUE

72. Intermittent compression or “variable pressure technique” is used for disorders of venous and lymphatic circulation as an adjunct or supplementary technique to classical Swedish massage.

ANSWER: TRUE

73. The dosage of massage is a key factor; the use of inappropriate dosage can be just either ineffective or can be also harmful when applied more vigorous/intense way. It can cause overdose, similarly to the use of any other physiotherapeutic modality.

ANSWER: TRUE

74. The connective tissue zones on the sacrum are: bladder zone, hypomenorrhoea zone, constipation zone, venous lymphatic zone..

ANSWER: FALSE

75. Vigorous hacking (percussion) on the fibers of upper trapezius muscle is not recommended due to its tonic enhancing effect; instead focal compressions applied at the pain threshold intensity can be useful to painful muscle nodes / myogeloses, even when the patient is mentally unstable

ANSWER: FALSE

## PASSIVE MOBILIZATION

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.

SELECT THE ONE THAT IS BEST IN EACH CASE

76. Information gathered from passive movement assessment?

- A. AROM
- B. PROM
- C. circulation
- D. muscle strength

ANSWER: B

77. Bone-to-bone end-feel:

- A. knee flexion
- B. hip extension
- C. elbow extension
- D. glenohumeral joint internal rotation

ANSWER: C

78. Contraindications of passive mobilization:

- A. geriatrics
- B. re-education of movement patterns
- C. coordination control
- D. possibility of subluxation

ANSWER: D

79. Tissue approximation end-feel:

- A. knee extension
- B. glenohumeral joint abduction
- C. elbow flexion
- D. wrist ulnar deviation

ANSWER: C

80. Aim of passive mobilization:

- A. weight loss
- B. improve and/or stabilize ROM
- C. to form capsular patterns
- D. prevention of increase in muscle mass

ANSWER: B

81. Cervical spine physiological lateral flexion ROM:

- A. 90°
- B. 45°
- C. 120°
- D. 20°

ANSWER: B

82. Which is the primary passive movement direction of the shoulder complex when side lying is possible for the patient:

- A. abduction
- B. stabilizing the scapula
- C. small circles with the scapula

D. fast depression

ANSWER: C

83. Why is external rotation of the humerus advised during glenohumeral joint abduction?

A. to relieve stress on the olecranon

B. to increase circulation

C. to allow for more space for the lesser tubercle

D. to increase muscle mass

ANSWER: C

84. Which muscle is stretched at hand dorsiflexion?

A. m.biceps brachii

B. m.extensor digitorum

C. m.extensor indicis

D. m.flexor digitorum superficialis

ANSWER: D

85. Passive movement of hip flexion is not possible in the following position:

A. supine

B. side lying

C. prone

D. standing

ANSWER: C

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

86. What are the aims of passive mobilization?

A. increase and/or stabilize ROM

B. to form capsular patterns

C. contracture prevention

D. to increase further hypertrophy

ANSWER: A, C

87. The principles of passive mobilization examination and therapy include:

A. Correct and ergonomic position of the physiotherapist.

B. Correct and ergonomic position of the patient.

C. Correct use of gravity assisted positions.

D. Work flow on limbs is from distal to proximal

ANSWER: A, B, C

88. Passive mobilization of the elbow joint includes:

A. supination

B. external rotation

C. pronation

D. internal rotation

ANSWER: A, C

89. The indications of passive mobilization include:

A. to decrease the speed of losing muscle mass

B. to maintain muscle mass and strength

C. to reduce pain

D. to test for subluxations

ANSWER: A, B, C

90. Passive mobilization of the rib cage should be done as part of:

- A. core stability exercises
- B. patient assessment
- C. carpal tunnel syndrome treatment
- D. pulmonary disorders

ANSWER: B, D

91. Passive mobilization of the knee joint includes:

- A. mobilization of the kneecap
- B. mobilization of the tibiofemoral joint
- C. moving the joint in anatomical planes
- D. noting any abnormal end-feels

ANSWER: A, B, C, D

92. Passive mobilization is:

- A. part of patient examination
- B. a way to assess muscle strength of the patient
- C. fast
- D. slow

ANSWER: A, D

93. Abnormal end-feels:

- A. bone-to-bone
- B. capsular
- C. tissue stretch
- D. empty

ANSWER: B, D

94. Passive movement assessment gives information on the following:

- A. PROM
- B. quality of movement
- C. pain
- D. movement of associated joints

ANSWER: A, B, C, D

95. Passive mobilization of the lumbar spine in side lying includes:

- A. palpation of lumbar vertebrae
- B. determining neutral position by flexing the hips and the knees to 60°
- C. determining neutral position by flexing the hips and the knees to 45°
- D. aligning the ear-shoulder-hip line

ANSWER: A, D

## STRETCHING AND SOFT TISSUE TECHNIQUES

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

96. Triggering inverse myotatic reflex / autogenous inhibition (AI)...

- A. muscles showing myogenic contracture can be extended beyond the range of passive stretching through their activation by isotonic concentric way that causes inhibition of the muscle spindle
- B. in the case of AI reflex activation, the phenomenon of co-contraction occurs; the outcome is the result of mutually inhibiting and stimulating circuits
- C. Firing of the Golgi tendon organ during the isometric activation of the contracted muscle prevents injury to the antagonists
- D. The stimulus threshold of Golgi's tendon organ is higher than that of the muscle spindle, therefore it can be stimulated by a more persistent, more intense tension.

ANSWER: D

97. Characteristics of phasic muscles (Janda's concept):

- A. Phasic muscles contain a higher proportion of fast-contracting muscle fibers with dominantly oxidative metabolism
- B. Phasic muscles contain a higher proportion of myoglobin-rich red fibers
- C. The primary function of phasic muscles is stabilization
- D. The primary function of phasic muscles is to provide mobility

ANSWER: D

98. Interpretation of the stress-strain curve

- A. a long-term/permanent deformation of the material occurs in the plastic phase
- B. the section of the curve denoted 'plastic phase' is located after the adaptation phase but before the elastic limit
- C. at the beginning of the elastic phase, the optimal tensile force damages the tissues
- D. in the plastic phase, the intensity of the applied stress is ideally a multiple of the elastic limit

ANSWER: A

99. Effects of long-term immobilization on connective tissue are...

- A. Increased formation of elastic fibers
- B. Dehydration of ground substance of the connective tissue
- C. The production of GAGs is accelerated, leading to lasting cross-links between collagen molecules
- D. Prolonged immobilization results in a decrease in the connective tissue of the collagen fibers (fibrosis)

ANSWER: B

100. Choose the muscle which does not belong to the type II (i.e. phasic) functional system (Janda)!

- A. mm. glutei
- B. m. tensor fasciae latae
- C. m. peroneus longus
- D. mm. rhomboidei

ANSWER: B

101. Which statement made about the factors influencing muscle strength is NOT true:

- A. when the sarcomere unit has been completely shortened, the force exerted by the contractile elements increases

- B. In the pre-stretched state, the muscle shows a greater increase in tension during contraction
- C. the maximum force exerted by the contractile elements is created according to the resting length of the muscle
- C. when sarcomeres have been completely shortened, cross-bridge connection cannot be established

ANSWER: A

102. When testing its myogenic contracture, which direction of movement is NOT restricted by the upper trapezius muscle?

- A. shoulder girdle depression
- B. contralateral flexion of the neck and head
- C. contralateral neck and head rotation
- D. shoulder girdle retraction

ANSWER: C

103. Select INCORRECT answers for either contracture or restricted direction of movement

- A. contracture is always determined by the direction of action of the affected shortened muscle
- B. shortened iliopsoas muscle will cause limitation of flexion in the hip joint
- C. when the rectus femoris muscle is shortened, a flexion contracture develops in the hip joint
- D. shortening of ischiocrural muscles is associated with knee extension deficit

ANSWER: B

104. Select the FALSE ANSWER for structural changes caused by long-term immobilization.

- A. the number of sarcomeres increases
- B. the number of sarcomeres decreases
- C. muscle atrophy
- D. the ratio of connective tissue to muscle fiber increases

ANSWER: A

105. Select the INCORRECT ANSWER in the relationship between muscle length and muscle strength.

- A. the muscle fiber is capable of maximum tension around its optimal length
- B. the magnitude of active tension is determined by the number of actin-myosin bridges
- C. as the sarcomere length changes, the force exerted by the contractile elements changes
- D. in the case of too long sarcomere, the actin-myosin components are not able to slide, so they overlap

ANSWER: D

106. Interpretation of the stress-strain curve

- A. in the elastic phase, a permanent deformation of the material occurs
- B. at the beginning of the plastic phase, due to the optimal tensile force, the deformation of the tissues leads to a permanent elongation of the collagen fiber due to the mechanical energy uptake and conversion
- C. in the 'drastic phase' changes occur at the molecular level: cross-linkages form between collagen molecules
- D. the take up the slack is created in the elastic limit

ANSWER: B

107. The true statement for Golgi tendons is:

- A. they are located in the muscle fibers
- B. their stimulus threshold is low
- C. these receptors are part of a defense mechanism

D. stimulate muscle or synergistic muscle contraction

ANSWER: C

108. What muscle activities are induced during stretching?

A. during active stretching, the goal is not to trigger reflex mechanisms

B. isotonic muscle activity during active stretching elicits the reflex of autogenous inhibition

C. isometric muscle activity during active stretching induces the inverse myotatic reflex

D. pre-stretch during passive stretching induces the myotatic reflex

ANSWER: C

109. The receptor of which activation elicits the stretch reflex is...

A. Golgi stretch receptor

B. Muscle spindle

C. Golgi tendon organ

D. Golgi shear receptor

ANSWER: B

110. Contracture of a particular origin can be identified as..

A. dermogenic

B. discogenic

C. amniogenic

D. of psychosomatic origin

ANSWER: A

111. Which of the following statements about the factors influencing muscle strength is true?

A. the skeletal muscle is capable of producing supramaximal active isometric tension in a pre-stretched state

B. in the pre-stretched state, the muscle shows a greater increase in tension during contraction

C. the optimal length of the muscle is twice the resting length of the muscle; then the muscle fibers are able to reach maximum tension

D. the active tension is realized by the tension of the non-contractile elements

ANSWER: B

112. Which one of the following statements is FALSE?

A. Even in a pre-stretched state, a decreased tension can occur in the muscle

B. When the sarcomere has been completely shortened, the force exerted by the contractile elements increases

C. if the sarcomere has been completely shortened, cross-bridges cannot be established

D. the maximum force exerted by the contractile elements is created according to the resting length of the muscle

ANSWER: B

113. In the case of flexion contracture of the elbow, what direction of movement would become restricted?

A. elbow extension

B. elbow flexion, supination

C. there would not be any limitation, only pain felt when bending elbows

D. elbow flexion, pronation

ANSWER: A

114. The function of the phasic muscles (type II function system, Janda) is NOT characterized by:

A. phasic muscles contain a higher proportion of slow-twitch, oxidative muscle fibers



- B. they get tired quickly
  - C. they are slowly activated
  - D. their dysfunction is characterized by traits as hypotonic/inhibited, elongated/overstretched
- ANSWER: A

115. Select the WRONG answer from the structural changes caused by immobilization.

- A. the amount of perimysium increases
- B. the number of sarcomeres decreases
- C. muscle atrophy
- D. the ratio of connective tissue to muscle fibers decreases and its amount increases

ANSWER: D

116. What contractures of different origins can you identify?

- A. Tonogen
- B. A kind of contracture of unknown origin that even though has been existing for more than 12 months, reacting very readily for manual treatment (i. e. soft tissue mobilization)
- C. is of syngeneic origin
- D. pseudo-myostatic

ANSWER: D

117. Select the possible origins of contractures from the list

- A. paragenous
- B. of psychosomatic origin
- C. of syngeneic origin
- D. pseudo-myostatic

ANSWER: D

118. Non-physiological end-feel that may be an indication for stretching:

- A. bony / hard
- B. soft
- C. springy block
- D. less flexible,

ANSWER: D

119. Interpretation of the stress-strain curve

- A. the optimal tensile force can be placed at the end of the plastic phase
- B. in the elastic phase, only short-term (a few hour-long) tissue deformation occurs
- C. the point where the collagen fiber has been taken up the slack but no elongation has yet occurred is called the elastic limit
- D. creates a load / stress / percentage deformation per unit area along the length of the tissue

ANSWER: D

120. Principles of stretching

- A. Always treat in a position (of the patient) that is precisely the same position was occupied during flexibility test
- B. Instead of tissue pre-heating, analgesic icing can be used, even at a price that makes the connective tissue rigid
- C. stretching always precedes joint mobilization
- D. in order to increase efficiency, the full function of the muscle to be treated should be considered

ANSWER: D

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

121. During manual active stretching.

- A. Applying the hold-relax (HR) technique, autogenic inhibition is triggered by isometric operation of the shortened/hyperactive muscle
  - B. After activating the muscle, a relaxation phase of 4 seconds is used
  - C. Reciprocal inhibition is achieved by isotonic concentric action of the antagonist muscle
  - D. Active techniques should always be preferred, there are no contraindications or exceptions. Never
- ANSWER: A, B, C

122. When the flexibility of ischiocrural muscles is tested..

- A. the patient is lying on his back, the upper limb of the untested side is in full extension
  - B. the lower limb bent at the knee is moved to a 90-degree flexion position of the hip joint
  - C. the lower limb extended in the knee is moved to a 90-degree flexion position of the hip joint
  - D. there is a large degree of shortening when the lack of knee extension is 30 degrees
- ANSWER: B, D

123. The therapeutic effect of stretching is assumed due to the following physiological effects:

- A. reciprocal inhibition of muscle addressed
  - B. an increase in sarcomeres is expected
  - C. spinal analgesia happens
  - D. viscoelastic properties of the tissues improve
- ANSWER: A, B, C, D

124. Interpretation of the stress-strain curve

- A. the optimal tensile force can be placed at the beginning of the plastic phase
  - B. upon reaching the plastic phase, irreversible tissue deformation and injury occur
  - C. the point where the collagen fiber has become tensed but no elongation has yet occurred, is called 'toe'-point
  - D. stress relaxation results in tissue elongation with a continuous increase in force; larger length will be gained
- ANSWER: A, C

125. Rules of manual passive stretching

- A. Repetition rate during manual passive stretching is 4-5 cycle/muscle/session
  - B. The intensity of passive stretching depends on the patient's tolerance, and the degree/severity of contracture
  - C. passive stretching does not require active cooperation from the patient
  - D. the duration of each cycle of the passive stretching is at least 20 to 30 seconds
- ANSWER: A, B, C, D

126. Flexibility test of upper trapezius...

- A. If the shoulder girdle remains in the elevated position (applying overpressure), the shortening is large/severe
  - B. if the shoulder girdle remains in the horizontal plane (applying overpressure) then the shortening is light/less severe
  - C. if the shoulder girdle can be brought below the horizontal plane, the muscle can be stretched well, i. e. its flexibility is acceptable
  - D. the patient's head must be stabilized during the test
- ANSWER: A, B, C, D

127. Characteristics of the phasic (type II functioning system, Janda) muscles

- A. they get tired quickly
- B. they are slowly activated
- C. their dysfunction is characterized by hypotonic/inhibited, elongated/overstretched
- D. contain a higher proportion of slow-twitch, oxidative muscle fibers

ANSWER: A, B, C

128. Principles of stretching

- A. accurate and safe gripping techniques
- B. physiologically appropriate posture of the physiotherapist (ergonomic)
- C. the patient's relaxed position
- D. proper preparation of tissues (electrotherapy, thermotherapy, massage can be used separately or in combination with each other)

ANSWER: A, B, C, D

129. Golgi Tendon Organs are characterized by:

- A. their stimulus threshold is high
- B. they are located at the muscle-tendon transition/junction
- C. stimulate inhibition of muscle or synergistic muscles
- D. these receptors are part of the afferent arc of the stretch-reflex

ANSWER: A, B, C

130. During the flexibility testing of iliopsoas muscle..

- A. According to V. Janda, muscle flexibility is "0" if – after applying passive overpressure – , the hip joint of the tested limb let the femur lower below the level of the table, making sure that the lumbar spine rests firmly on the support surface.
- B. the physiotherapist is located at the patient's head in a step position
- C. slight (less severe) shortening is determined if the femur can be passively pushed to the plane of the table
- D. the appropriate grip during the test: one hand is above the patella and the other hand is above the ankle joint

ANSWER: A, C

131. Contraindications to stretching

- A. If the shortened tissue structure provides joint stability
- B. Lack of joint play
- C. Joint instability, hypermobility
- D. In the case of a tension headache indicating a warm front

ANSWER: A, B, C

132. Identify each pathological end feels which may interfere with the stretching of the named muscle (end-feel of a particular joint; muscle intended to be stretched)

- A. hard / bony - in humeroulnar extension; m. biceps brachii
- B. hard - in radiocarpal dorsal flexion; forearm flexors
- C. elastic - ankle in dorsal flexion; m. triceps surae-ra
- D. empty - knee extension; mm. ischiocrurales

ANSWER: B, D

133. Characteristics of the function of proprioceptors are

- A. Proprioceptors inform about intraarticular pain in the joint
- B. The Golgi Tendon Organ is an essential receptor for muscle length correction
- C. Inside the muscle spindle small, so-called extrafusar fibers are found

D. If the muscle is stretched, a receptor potential is created at the ends of the tendon weaving the tendon tissue at the musculotendinous junction

ANSWER: A, C

134. Statements specific to manual active stretching:

A. During manual active stretching, the shortened muscle is passively stretched to the first tissue barrier (tension causes a stop)

B. resistance performed by the patient is associated with isometric muscle activity on the part of the patient's shortened muscle

C. active stretching is a reflex mechanism induced by reciprocal inhibition by the isotonic work of the antagonist muscles;

D. active, resistive action of the antagonist muscles is used only if the C-R technique provokes too intense pain

ANSWER: A, B, C

135. According to Janda's concept, statements characteristic of postural muscles are

A. they get tired more slowly

B. they are activated later

C. in the case of their dysfunction they are characterized by hypertension, shortening

D. they contain a higher proportion of fast-twitch, glycolytic muscle fibers

ANSWER: A, C

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

136. Flexible soft tissues are resilient, elastic, provide physiological range of motion (ROM), painless structures due to lack of tissue damage.

ANSWER: TRUE

137. Soft tissue shortening as a negative adaptation phenomenon can be the result or consequence of prolonged immobilization, trauma, inflammation, circulatory disturbances, surgeries, burns and connective tissue diseases.

ANSWER: TRUE

138. Adequate mechanical stimulation is essential to maintain the tissue integrity of soft tissues.

ANSWER: TRUE

139. The lack of mechanical stimulation leads to the following processes influencing each other through feedback loops (i. e. vicious circle): ground substance dehydrates, lubricant production decreases, abnormal cross-links form, and then restrictive tissues develop.

ANSWER: TRUE

140. Viscosity is the property of the material against shear forces as counter-acts/damps these forces; internal friction of the viscous fluid, which is brought about against deformation or reshaping. Its sheer mechanical model is a spring.

ANSWER: FALSE

141. Elasticity is the property of soft tissues to return to their original state after the action of a deforming force on them ceases; its sheer mechanical model is a dashpot.

ANSWER: FALSE

142. In the interstitial spaces of restricted tissues, the metabolism deteriorates due to vasoconstriction, and in this lactate-acidotic environment, firing of chemical nociceptors and the resulting dull, burning pain causes a relative immobilization, consequently.

ANSWER: TRUE

143. By stress relaxation we mean the phenomenon that if a force of the same magnitude (stress) acts on a viscoelastic material for a long time, its resistance to strain decreases; that is, a decrease in stress due to a constant deforming force occurs.

ANSWER: TRUE

144. The phenomenon of 'creep' means the continuous deformation that occurs when stress is raised to the same level before stress relaxation happens (i.e., stress is raised back to a constant stress level). This phenomenon underlies the emergence of new tissue length. In other words, permanent deformation caused by constant stress.

ANSWER: TRUE

145. Muscle fibers can be classified into three main categories based on 1) their twitching nature (fibers that are slow or fast activating pattern and capable of long-term or short-term contraction) and 2) their metabolism (oxidative, glycolytic, or mixed metabolism).

ANSWER: TRUE

## ELECTRO-BALNEO-HYDRO-CLIMATOTHERAPY

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.

SELECT THE ONE THAT IS BEST IN EACH CASE

146. Which of the following facts primarily indicates special galvanic/stabile DC current treatment?

- A. neuralgias
- B. myalgia
- C. metal implants
- D. bone fractures

ANSWER: A

147. Appropriate but outdated current form of intact, innervated though atrophied muscle is:

- A. the rectangular pulsed current
- B. the triangular pulsed current
- C. the exponential pulsed current
- D. surge of alternating triangular pulsed current

ANSWER: A

148. Muscle to be treated with a triangular current shape:

- A. the totally denervated muscle
- B. the intact antagonist muscle
- C. the partially denervated muscle
- D. the hypotrophized muscle

ANSWER: A

149. Muscle to be treated with the pulsed current of a shape triangular

- A. the muscle whose twitch is most pronounced for this type of current
- B. if the muscle is intact based on findings of its S/D curve
- C. if we have no other idea
- D. a muscle that has lost its innervation

ANSWER: D

150. Muscle to be treated with the pulsed current of a shape triangular

- A. is a muscle of mild degeneration because only this type can selectively responds to this form of current
- B. which does not show accommodation and therefore has an alpha factor greater than 2.8
- C. which cannot adapt to a slowly rising (slowly ramping) impulse, in other words, its adaptation quotient is 1
- D. which muscle if indirectly stimulated gets into a tetanic spasm

ANSWER: C

151. Muscle to be treated with the pulsed current of a shape triangular are

- A. the bipennate type muscles
- B. only those muscles that have been permanently rebuilt (their structure turned into connective tissue) according to their S/D curve data (no contractile elements remained)
- C. muscles that are completely denervated but can be directly stimulated
- D. we do not treat with such a form of current; instead, a series of square pulses is used, the envelope of which has a triangular profile

ANSWER: C

152. Muscle to be treated with the pulsed current of a shape triangular are
- A. a muscle that showed a prompt twitch for the mid-frequency rapid test
  - B. muscles that showed a complete tetanic spasm for the Lange test
  - C. any muscle (even in the frame of electrogymnastics) if the patient tolerates the pain
  - D. if we consider it justified after recording the full S/D curve

ANSWER: D

153. Which physiotherapy procedure would you use to reduce inflammation?
- A. Pulsed galvanic treatment
  - B. Interference treatment
  - C. Nonthermal ultrasound treatment
  - D. Hyase iontophoresis

ANSWER: C

154. Which physiotherapy procedure would you use to reduce inflammation?
- A. cryogel wrap, but only in chronic proliferative inflammation
  - B. LLLT - photobiomodulation in conjunctivitis
  - C. thermal ultrasound treatment (in continuous mode, possibly with 1:1 pulse ratio, at higher intensity)
  - D. Heparin iontophoresis

ANSWER: D

155. Which physiotherapy procedure is suitable for reducing inflammation?
- A. neofaradic current
  - B. selective stimulation current therapy
  - C. acetic acid iontophoresis for open wound
  - D. non-thermal ultrasound treatment

ANSWER: D

156. Advantages of TENS treatment:
- A. Significant muscle stimulation is achieved
  - B. Short, a max. 5-10 minute-long treatment time
  - C. Drug intake is more favorable
  - D. Different frequencies produce different physiological effects

ANSWER: D

157. Compare TENS treatment t HVPC (which statement is not true)?
- A. in the very acute phase, the management of edema reduction is more successful with HVPC because the required constant polarity difference between the electrodes is not met for all TENS
  - B. HVPC is suitable for iontophoresis, TENS is not
  - C. TENS is not recommended to support wound healing, while HVPC, in addition to microcurrent therapy, is
  - D. HVPC is typically suitable for muscle strengthening, while TENS can only be considered as an adequate therapy for denervated muscle

ANSWER: D

158. What is the accommodation quotient?
- A. for threshold current, the shortest pulse duration corresponding to twice the rheobase
  - B. alpha value
  - C. for threshold current, the shortest pulse duration corresponding to half the rheobase
  - D. the quotient of the actual treatment time (the realized) and the required treatment time

ANSWER: B

159. What is the accommodation threshold?

- A) in the case of threshold current, the shortest pulse duration corresponding to twice the rheobase
- B) the intensity value in the nominator of the fraction that provides the alpha value
- C) in the case of threshold current, the shortest pulse duration corresponding to half of the rheobase
- D) treatment time

ANSWER: B

160. What is the rheobase? (select the WRONG answer)

- A. Threshold current intensity that excites minimal detectable action potential
- B. the minimum required current to bring the excitable tissue into a state of excitability
- C. the strength of the current of just tolerable intensity, i.e. the well-measurable threshold intensity of the pain limit
- D. sensory fibers also have a rheobase, but cannot be detected with the naked eye

ANSWER: C

161. When carrying out muscle electrodiagnostics, how can you define rheobase ? (what is the CORRECT answer?)

- A. for threshold current, the shortest pulse duration that causes minimal twitch
- B. also known as an alpha value, which is a number measured in mA or mV
- C. In practice (and traditionally) threshold value determined using a rectangular pulse of 1000 ms; commonly expressed in mA
- D. intensity or potential difference required for a minimum twitch due to a slowly rising/ramping triangular pulse of 1000 ms

ANSWER: C

162. When carrying out muscle electrodiagnostics, how can you define accommodation threshold ? (What is the CORRECT answer?)

- A. for threshold current, the shortest pulse duration that causes minimal twitch
- B. also known as an alpha value, which is a number measured in mA or mV
- C. In practice (and traditionally) threshold value determined using a rectangular pulse of 1000 ms; commonly expressed in mA
- D. intensity or potential difference required for a minimum twitch due to a slowly rising/ramping triangular pulse of 1000 ms

ANSWER: D

163. In interferential current treatments, the following AMF values have their exact biological effects:

- A. 90-100 Hz edema reduction
- B. 0-100 Hz thermal effect
- C. 50-100 Hz vasodilation
- D. 1-50 Hz: muscle contraction

ANSWER: D



164. Underlying neurophysiology and causes of Wedensky inhibition – select WRONG answer
- A. As the rate of stimulation increases above 1000 Hz, successive stimuli fall within the absolute, and eventually the relative refractory period of the preceding action potential.
  - B. A larger than normal flow of current is necessary to stimulate a refractory neuronal membrane
  - C. the sensitivity of the nerve decreases
  - D. Prolonged stimulation at a supramaximal frequency (that is producing stimulus asynchronous firing) will eventually cause the axon to cease conducting.

ANSWER: A

165. Which iontophoresis has a specific anti-inflammatory effect?

- A. Hyase
  - B. di-Adreson / Prednisolone
  - C. Heparin
  - D. Potassium iodate
- A. ANSWER: B

166. Among the following drugs that can also be used for iontophoresis, in addition to their anti-inflammatory effect, they are mainly used for their antibacterial effect:

- A. Potassium iodate
- B. di-Adreson / Prednisolone
- C. Heparin (Contratubex, in Dolobene)
- D. Hyase

ANSWER: A

167. Which drug combination can be used in iontophoresis to deliver drugs from the cathode?

- A. acetic acid, dexamethasone
- B. lidocaine, dexamethasone
- C. Heparin and procaine
- D. Potassium iodate, salicylic acid (Na-salicylate)

ANSWER: D

168. Which drug solution(s) can be administered from the anode?

- A. Phenylbutason
- B. Voltaren / Diclophenac
- C. Hydrocortison
- D. Di Adreson / Prednisolone

ANSWER: D

169. In the case of galvanic current treatment, it is NOT necessary to determine:

- A. the treated body part
- B. the placement and size of the electrodes
- C. duration, number and frequency of treatments
- D. the intensity applied

ANSWER: D

170. Which diadynamic current form (s) has/have a pronounced edema-reducing effect?

- A. LP
- B. DF
- C. MF
- D. CP

ANSWER: D

171. Which statement is correct?

- A. Fast pain arises when the skin is irritated with chemicals, e. g. strong acid.
- B. Slow pain is mediated by A $\delta$  (type III) nociceptive afferents.
- C. Fast pain is often described as a burning sensation and persists after the painful stimulus is removed
- D. Slow pain is mediated by C (type IV) nociceptive afferents

ANSWER: D

172. Excitatory neurotransmitters in the central terminals of primary afferent nociceptors are the following ones, with the SOLE EXCEPTION OF:

- A. glutamate
- B. GABA
- C. CGRP
- D. substance P

ANSWER: B

173. Sensitization of primary nociceptive afferents means

- A. decreased spontaneous activity
- B. decrease in threshold of response to noxious stimuli
- C. increase in responsiveness to the same noxious stimuli (i.e. allodynia)
- D. response of nociceptors to normally nonpainful stimuli (i.e. hyperalgesia)

ANSWER: B

174. The gate-control theory of pain - select the INCORRECT STATEMENT

- A. large diameter, non-nociceptive primary afferents fibers sent input to the dorsal horn
- B. sending innocuous stimuli via A $\delta$  fibers interfere with the transmission of pain between nociceptors and dorsal horn neurons
- C. by inhibiting or "gating" activity in nociceptors
- D. sharp, pricking pain can be overcome by stimuli of C fibre nociceptors

ANSWER: D

175. The gate-control theory of pain - select the INCORRECT STATEMENT

- A. vigorous physical activity and stress also activates descending pain inhibiting pathways
- B. endogenous opioid system act peripherally after the release of systematic norepinephrine and endorphins, not at all centrally, spinal cord-level
- C. inhibitory spinal gate effect is under control descending from higher brain centers
- D. descending pathways can be activated by both cognitive and subconscious activity at these supraspinal centers

ANSWER: B

176. Vector techniques can be characterized with the following statements (select the BEST OPTION)

- A. One of the possible objectives is to increase the effective stimulated area
- B. Isoplanar vector mode provides an optimal stimulation in every direction
- C. both A. and B.
- D. none of them is true.

ANSWER: C

177. High frequency electrotherapy (select the BEST OPTION)

- A. SWD (short wave diathermy): 27.12 MHz treatment

- B. MW (microwave treatment): 2450 MHz treatment
- C. both A. and B.
- D. none of them is true

ANSWER: C

178. Which statement is true (select the BEST OPTION)

- A. SWD can be applied in a form of capacitive method/condenser field therapy and as inductive method/coil field therapy
- B. MW can be applied in a form of inductive, capacitive, moreover, of radiation field therapy.
- C. A. and B.
- D. none of them

ANSWER: A

179. Characteristics of high frequency treatments are (which statement is true?)

- A. Generally, the electrodes make direct contact with the area to be treated
- B. No sensation of current can be felt, rather unbearable heat
- C. Sequence of warming: bone, muscle, nerve tissue, fat tissue
- D. Profoundly lying tissues, muscles, internal organs get more intensely heated than the subcutaneous fatty tissue

ANSWER: D

180. Laser therapy (LLLT) indications are (select BEST OPTION)

- A. open wounds; soft tissue injuries
- B. inflammatory arthropathies; pain
- C. both
- D. none of them

ANSWER: C

181. Physiological effects based on endogenous heat production using SWD:

- A. Pain management: due to enhanced circulation; decrease of muscle spasm; improved nerve conductivity
- B. In case chronic proliferative inflammation – helps to break demarcation down, helps to increase extensibility of collagenous fibers
- C. both
- D. none of them

ANSWER: C

182. According to recommendations, when should be finished selective stimulation current therapy? (select the CORRECT ANSWER!)

- A. Electrical stimulation of the affected muscle must be continued till its 'temps utile' diagnostic utilization time reaches the normal interval
- B. Electrical stimulation of the affected muscle must be continued till its 'optimum phase time' (=therapeutic utilization time) reaches the value of double the chronaxie
- C. Electrical stimulation of the affected muscle must be continued till its Accomodation Quotient (Q factor) would be equal to contralateral intact identical muscle
- D. Electrical stimulation of the affected muscle must be continued till its Chronaxie would be equal to the 'temps utile' of the contralateral intact muscle

ANSWER: C

183. Which statement is the most correct?
- A. Possible benefits of electrotherapy is underestimated
  - B. Possible benefits of electrotherapy is overestimated
  - C. Electrotherapy is an active movement therapy
  - D. Only evidence based electrophysical agents/modalities should be chosen for the sake and benefit of patients

ANSWER: D

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

184. In case of inflammatory disease, which physiotherapy procedure would you use?
- A. Ascending galvanic treatment
  - B. Interferential current treatment with relatively large AMF in isoplanar mode
  - C. C) lidocaine iontophoresis from the cathode
  - D. thermal ultrasound treatment to melt the inflammatory lobe in chronic musculoskeletal disease

ANSWER: B, D

185. Which physiotherapy procedure would you use to reduce inflammation?
- A. descending galvanic treatment
  - B. medicinal mud packing in case of chronic pelvic inflammation
  - C. nonthermal ultrasound treatment
  - D. dexamethasone iontophoresis

ANSWER: A, B, C, D

186. Which physiotherapy procedure is not suitable for reducing inflammation?
- A. neopharadic current
  - B. cryogel
  - C. acetic acid iontophoresis for open wound
  - D. non-thermal ultrasound treatment

ANSWER: A, C

187. Advantages of TENS treatment over galvanic treatment:
- A. can produce action potential on thick myelinated fibers,
  - B. the use of biphasic, symmetrical pulses does not result in electrolysis as an electrochemical effect and consequent persistent hyperaemia, and more safety and comfort for the skin
  - C. pulses of different frequencies, of different intensities cause different physiological effects
  - D. drug intake is more favorable

ANSWER: A, B, C

188. Disadvantages of TENS treatment compared to galvanic (stable DC) treatment:
- A. Not suitable for the reduction of inflammation based on its effect on vasodilation and tissue metabolism
  - B. the use of biphasic, symmetrical pulses does not result in electrolysis as an electrochemical effect and consequent persistent hyperaemia, resulting in skin sparing
  - C. not suitable for drug administration (by iontophoresis)
  - D. pulses of different frequencies and intensities produce different physiological effects

ANSWER: A, C

189. Advantages of TENS treatment over Traebert (2-5 ultrastimulating current) treatment:
- A. can also be used for postoperative analgesia

- B. can also be used for post-traumatic pain relief
- C. different modes (CO, APL; Burst and MO) are suitable for different physiological and therapeutic effects
- D. drug administration is more favorable

ANSWER: A, B, C

190. Advantages of TENS treatments over diadynamic currents:

- A. Significant muscle stimulation can also be achieved without causing an unpleasant sensation of current
- B. treatment time is more diverse; from a short, max. 5-10-minute-treatment up to 1-1.5 hour-long session with the appropriate parameters are also possible to be delivered
- C. the large variability of the selectable parameters provides a personalized treatment option
- D. more suitable for drug administration (iontophoresis)

ANSWER: A, B, C

191. Typical for interferential current treatments:

- A. a deeper effect compared to the low frequency
- B. in the case of the bipolar (premodulated) technique, unipolar electrode application is possible
- C. the advantage of four-electrode, two-channel application is that a larger area can be handled and the maximum current density is not observed near electrodes
- D. the alternating polarity carrier frequency current eliminates the electrolytic effect

ANSWER: A, B, C, D

192. Typical for interferential current treatments:

- A. also suitable for iontophoresis after rectification, which can be observed in practice in the treatment sequence used as a combination of premodulated interference and sonophoresis
- B. in the case of the bipolar technique it is possible to choose a unipolar electrode application, the advantage of which is targeted tissue treatment (eg pain point)
- C. the advantage of four-electrode, two-channel method is that a larger area can be treated and the current density is observed not near electrodes (but deeper in the tissue)
- D. a more superficial but less pleasant effect compared to the low frequency

ANSWER: A, B, C

193. Underlying neurophysiology and causes of Wedensky inhibition

- A. As the rate of stimulation increases above 1000 Hz, successive stimuli fall within the relative, and eventually the absolute refractory period of the preceding action potential.
- B. A larger than normal flow of current is necessary to stimulate a refractory neuronal membrane
- C. the sensitivity of the nerve decreases
- D. Prolonged stimulation at a supramaximal frequency (that is producing stimulus asynchronous firing) will eventually cause the axon to cease conducting

ANSWER: A, B, C, D

194. Gildemeister effect and underlying mechanism

- A. Rapid stimulation of a motor nerve with large although comfortable interferential currents will result in an asynchronous depolarization of individual motor units.
- B. The rate of firing of the neuron is independent of the frequency of the applied stimulus, instead is dictated by the duration of the refractory period.
- C. This asynchronous depolarization of individual motor units – opposite to low-frequency neuromuscular stimulation – mimics the pattern observed during a normal (physiologic) voluntary contraction.
- D. Decreased sensitivity is due to Gildemeister effect

ANSWER: A, B, C

195. Which iontophoresis has an anti-inflammatory effect?

- A. Hyase
- B. Prednisolone
- C. Heparin
- D. Diclophenac

ANSWER: B, D

196. Which iontophoresis uses a steroid anti-inflammatory drug?

- A. Hyase
- B. di-Adreson / Prednisolone
- C. Heparin
- D. Hydrocortisone

ANSWER: B, D

197. Which iontophoresis treatment affects nociceptive pain?

- A. lidocaine / procaine
- B. di-Adreson / Prednisolone
- C. Na-salicylate
- D. hyaluronidase

ANSWER: A, B, C

198. What are the indication areas for TENS treatment?

- A. reduction of tumor pain
- B. Reduction of isomatrophy
- C. postoperative analgesia
- D. n. facialis paresis

ANSWER: A, C,

199. Selective stimulus current therapy should not be continued if:

- A. the accommodation quotient of the treated muscle is the same as that of the intact side (identical sound) muscle
- B. no improvement despite treatment
- C. we experience an unavoidable shortcut toward other muscles during treatment (i. e. breakdown)
- D. muscle paralysis no longer exists

ANSWER: A, B, C, D

200. The adequate treatment is NOT selective stimulus current therapy if:

- A. the accommodation quotient of the treated muscle is the same as that of the identical muscle of the intact side
- B. We want to improve muscle endurance in intact muscle
- C. We want to strengthen a painful, spastic muscle
- D. A case of hypotrophy due to inactivity is confirmed

ANSWER: A, B, C, D

201. Which diadynamic current form (s) exhibits an edema-reducing effect?

- A. DF
- B. LP
- C. MF
- D. CP

ANSWER: B, D

202. What physiotherapy modality would you treat a young athlete with who has sprained his ankle 5 days before, his outer ankle area is swollen, painful, hematomas are present?

- A. DF – up to pain threshold
- B. LP – sensory threshold
- C. MF – above motor threshold
- D. CP – comfortable low level

ANSWER: B, D

203. According to frequency intervals we can define physiological effects exerted by electrical pulsed currents (select true answers)

- A. 0.5 Hz – 10 Hz : activation of parasympathetic
- B. 5 – 20 Hz: pain reduction, promotion of circulation
- C. 20 – 25 Hz: activation of sympathetic
- D. 100 Hz: decreasing sympathetic tone; pain reduction

ANSWER: B, D

204. Contraindications to Short Wave Therapy

- A. metal implants
- B. thrombosis
- C. pregnancy
- D. chronic arthritis

ANSWER: A, B, C

205. Select the true statements. Precautions when Microwave Treatment is in action

- A. needs electromagnetic shadowing, i.e. Faraday-cage
- B. Patient is not allowed to stay in the treatment room during intervention
- C. Copper covering on testicular tissue, protective goggles to prevent cataract is mandatory
- D. Children and pregnant women is not at risk

ANSWER: A, C

206. Pertaining to ultrasound (US) treatment, true statements are:

- A. Because the absorption (penetration) is exponential, there is (in theory) no point at which all the energy has been absorbed
- B. There is certainly a point at which the US energy levels are not sufficient to produce a therapeutic effect
- C. The half value depth is represents the depth in the tissues at which half the surface energy is available.
- D. Half value depth depends on the compounds of each tissue and also on different US frequencies.

ANSWER: A, B, C, D

207. Near field / Interference field / Fresnel zone

- A. The behavior of the US in this field is far from regular, with areas of significant interference.
- B. The US energy in parts of this field can be many times greater than the output set on the machine
- C. Peak intensity within near field can be possible as much as 12 to 15 times greater as for be a reason why steady, static mode is inadvisable
- D. Underwater US treatment employs far field, while most gel-coupled contact mode works within near field).

ANSWER: A, B, C, D

208. Far Field / Fraunhofer zone – select the TRUE answers

- A. The US beam in this field is more uniform and gently divergent.
- B. There is no therapeutic applications, where this field is used.
- C. For the purposes of subaqueous therapeutic applications, this field can be effective
- D. The US beam in this field is less uniform and gently convergent.

ANSWER: A, C

209. Beam Nonuniformity Ratio (BNR)

- A. One quality indicator for US applicators (transducers).
- B. It describes numerically the ratio of the intensity peaks to the mean intensity.
- C. It would be approximately 4 - 6
- D. The peak intensity is 40 or 60 times greater than the mean intensity (because BNR is  $\log I^{\text{peak}}$ .)

ANSWER: A, B, C

210. Low-frequency motor-level stimulation may be effective for pain control in..

- A. rheumatoid arthritis
- B. osteoarthritis
- C. myofascial trigger point syndromes
- D. diabetic neuropathy

ANSWER: A, B, C, D

211. High-frequency sensory-level stimulation may be effective for pain control in...

- A. rheumatoid arthritis
- B. osteoarthritis
- C. myofascial trigger point syndromes
- D. diabetic neuropathy

ANSWER: A, B, C

212. When one form of TENS does not appear to be adequate for pain control, several options available to the clinician covered by MO (modified) TENS.

- A. changing the level frequency of TENS (sensory vs. motor vs. noxious)
- B. changing the of TENS (high frequency vs. low frequency)
- C. electrode replacement (changing the location of electrodes)
- D. changing width of impulse

ANSWER: A, B, C, D

213. *Acute* pain

- A. is protective
- B. serves as a warning sign that the body is experiencing actual or potential tissue damage,
- C. usually the result of an injury that can be pinpointed to time and place;
- D. it occurs immediately at the time of injury and usually goes away once healing is completed

ANSWER: A, B, C, D

214. *Chronic* pain

- A. is nonprotective, 'makes no sense'
- B. serves no biological purpose, outlasts normal tissue healing time
- C. is greater than would be expected from the extent to the injury,
- D. occurs in the absence of identifiable damage.

ANSWER: A, B, C, D

215. Primary pain afferents



- A. are pseudounipolar meaning contain an axon that has split into two branches
- B. with cell bodies located in the dorsal root ganglia (for the head)
- C. Nociceptors convey noxious information via A $\alpha$  or C fibres
- D. with cell bodies located trigeminal ganglia (for trunk and extremities)

ANSWER: A, C

216. Chemicals released at the site of tissue inflammation that activate primary nociceptors

- A. serotonin (5-HT),
- B. bradykinin,
- C. substance P,
- D. hydrogen ions, potassium ions

ANSWER: A, B, C, D

217. Ultrasound was chosen for the treatment of knee joint MCL (medial collateral ligament) acute injury. The size of our irradiator/head is half of the size of the area to be treated. The set values of treatment parameters are:

- A. frequency of US: 3 MHz
- B. intensity: 0.2 W/cm<sup>2</sup>
- C. pulse ratio: 1:4
- D. treatment time: 10 minutes

ANSWER: A, B, C, D

218. Ultrasound was chosen for the treatment of a chronic lesion involving anterior capsule of the shoulder (GH joint). The size of our irradiator/head is one third of the size of the area to be treated. The set values of treatment parameters are:

- A. frequency of US: 1 MHz
- B. intensity: 0.5 W/cm<sup>2</sup>
- C. pulse ratio: 1:1
- D. treatment time: 6 minutes

ANSWER: A, B, C, D

219. Must be considered in the development of an electrotherapy plan of care:

- A. Material from which the electrodes are fabricated
- B. Electrode size and shapes
- C. Location of the electrodes with respect to relevant tissues
- D. Placement of the electrodes with respect to each other

ANSWER: A, B, C, D

220. Unipolar application means:

- A. when the sizes of electrodes are not equal
- B. the smaller one represents higher current density,
- C. and therefore it is called different or active electrode.
- D. the larger electrode represents dissipative or indifferent electrode.

ANSWER: A, B, C, D

221. Sensitization of nociceptors may be produced by

- A. cytokines, prostaglandins,
- B. substance P,
- C. leukotrienes,
- D. H<sup>+</sup>(hydrogen ions)

ANSWER: A, B, C, D

222. Localization of electrodes when electrotherapy is in process means
- A. Longitudinal placement means parallel with the longitudinal axis of the trunk or limbs,
  - B. Transversal if their position relative to each other are perpendicular to the main axis of the trunk or of the extremity
  - C. Quadripolar type 1: transregionally applied electrodes surround a region of the body so that each electrode is next to an oppositely charged one
  - D. Quadripolar type 2: when two channels are crossing each other; typically, this is the traditional 4-pole method in interferential current therapy

ANSWER: A, B, C, D

223. Longitudinal ascending electrode application means

- A. Proximal: +; distal: -
- B. Distal: anode; proximal: cathode
- C. Proximal: anode; distal: cathode
- D. Distal: positive; proximal: negative

ANSWER: B, D

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

224. Ultrasound in human body: Decreasing protein content gives increasing absorption –

True: A

False: B

ANSWER: B

225. Ultrasound in human body:

Increasing water content means decreasing absorption capacity

True: A

False: B

ANSWER: A

226. Ultrasound in human body:

Decelerate diffusion– adverse effect of sonophoresis

True: A

False: B

ANSWER: B

227. Pulse ratio (pulse: interpulse interval) of applied ultrasound according to tissue state:

For an acute condition: 1:4; 1:3

True: A

False: B

ANSWER: A

228. Pulse ratio (pulse: interpulse interval) of applied ultrasound according to tissue state:

For a subacute condition: 1:3/2/1

True: A

False: B

ANSWER: A

229. Pulse ratio (pulse: interpulse interval) of applied ultrasound according to tissue state:

For a chronic condition: 1:1 or continuous

True: A

False: B

ANSWER: A

230. Proper intensity at the site of the lesion for US application:  
When tissue state is acute, then intensity required at the lesion is  $0.1 - 0.3 \text{ W/cm}^2$

True: A

False: B

ANSWER:A

231. Proper intensity at the site of the lesion for US application:  
When tissue state is chronic, then intensity required at the lesion is  $0.1 - 0.3 \text{ W/cm}^2$

True: A

False: B

ANSWER: B

232. Underlying principles when characterizing parameters of the pulsed current for treating with  
Pulse duration is shorter in case of an acute and longer in case of a chronic painful condition

True: A

False: B

ANSWER:B

233. Underlying principles when characterizing parameters of the pulsed current for treating with  
Frequency is lower in case of an acute and higher in case of a chronic painful condition.

True: A

False: B

ANSWER: B

234. Underlying principles when characterizing parameters of the pulsed current for treating with  
Intensity is lower (at sensory threshold) in case of an acute and higher (at tolerance threshold) in case of a chronic painful condition.

True: A

False: B

ANSWER: A

235. Underlying principles when characterizing parameters of the pulsed current for treating with  
Frequency of treatment (i. e. repetition within a certain period) is several times a day in case of an acute and several times a week in case of a chronic painful condition

True: A

False: B

ANSWER: A

236. Underlying principles when characterizing parameters of the pulsed current for treating with  
Treatment time (i. e. duration of a single session) is longer in case of an acute and shorter in case of a chronic painful condition

True: A

False: B

ANSWER: B

237. Balneotherapy is the use of pure tap water for medicinal purposes.

True: A

False: B

ANSWER: B

238. Hydrotherapy is the combined application of physical energy (mechanical and thermal) and chemical energy (soluble chemicals in the form of medicinal water).

True: A

False: B

ANSWER: B

239. Several types of therapeutic intervention takes place in balneotherapy, e. g., mud pack/wrap or application of medicinal clays/mud.

True: A

False: B

ANSWER: A

240. Several types of therapeutic intervention takes place in balneotherapy, e. g., drinking medicinal water, inhalation of nebulized medicinal water (i. e. after converting to a fine spray)

True: A

False: B

ANSWER: A

241. Electrodes are conductive material that serves as the interface between a stimulator and the body tissue.

True: A

False: B

ANSWER: A

242. Sensitization of nociceptors may be produced by chemical substances released with tissue injury or inflammation

True: A

False: B

ANSWER: A

243. Bipolar application means the two electrodes are of the same size

True: A

False: B

ANSWER: A

## ELECTRODIAGNOSTICS

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

244. Indirect stimulation so-called „nerve-point“ of *sciatic nerve* is located...

Medially from tuber ischii (long head of m. biceps femoris), lateral to gluteus maximus

True: A

False: B

ANSWER: B

245. A distal nervous stimulation point of sciatic nerve is located at the beginning of popliteal fossa (at the caudomedial edge of biceps femoris in midline (often can be stimulated both of the branches before division)

True: A

False: B

ANSWER: A

246. Stimulation point for tibial nerve is found in the midline of the popliteal fossa (proximal stimulation point)/ in the middle of hams

True: A

False: B

ANSWER: A

247. Stimulation point for tibial nerve is found posterior to malleolus lateralis (distal stimulation point) /behind lateral malleolus

True: A

False: B

ANSWER: A

248. Common peroneal nerve can be stimulated via its nerve point located medial to biceps brachii which forms craniolateral edge of regio genus posterior

True: A

False: B

ANSWER: B

249. Behind and just distal to the head of fibula, a second nerve point of common peroneal nerve is detectable

True: A

False: B

ANSWER: A

250. As a distal nerve stimulation point of common peroneal nerve, its deep peroneal branch can be stimulated from the point located lateral to tendon of TA in the level of ankle joint

True: A

False: B

ANSWER: A

251. Somatosensory evoked potential testing assesses the integrity of the descending somatomotor pathways.

True: A

False: B

ANSWER: A

252. BAEP testing are electric waveforms recorded above the specific brain region elicited in response to specific light stimuli.

True: A

False: B

ANSWER: B

253. VEP testing are bioelectric signals recorded during electrical activity in occipital lobe cortex in responses to sound

True: A

False: B

ANSWER: B

254. Fasciculation is an involuntary muscle twitch and relaxation localized in a smaller area

True: A

False: B

ANSWER: A

255. Fasciculation could be visible as subcutaneous phenomenon

True: A

False: B

ANSWER: A

256. In case deeper muscle fibres, fasciculation can be observed only using EMG

True: A

False: B

ANSWER: B

257. Fasciculation is originated from the spontaneous depolarization of alpha motor neurons

True: A

False: B

ANSWER: A

258. During EEG, the dominant rhythm on both sides, on OCCIPITAL REGION can be detected.

True: A

False: B

ANSWER: A

259. The frequency of this dominant rhythm in case of most adults is between 9 – 11 Hz

True: A

False: B

ANSWER: A

260. The PARIETAL DOMINANT RHYTHM can be detected mainly by eyes-closed, if studied person is properly RELAXED

True: A

False: B

ANSWER: B

261. When eyes are opened this OCCIPITAL DOMINANT rhythm is generally disorganized. In anterior regions can be observed an alpha frequency, too. However, at a lower voltage and less continuously as in the posterior regions.

True: A

False: B

ANSWER: A

262. In anterior region a certain low voltage 18 - 22 Hz activity can generally be recorded

True: A

False: B

ANSWER: A

263. During TMS, magnetic stimulation occur in a non-invasive and painless way. As a result, neurons start to fire. Using strong, time varying magnetic fields generated by a stimulating coil and placed above closely to the intended site of stimulation.

True: A

False: B

ANSWER: A

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

264. Nerves listed below originate from plexus sacralis (L4-S3) (multiple choice)

- A. n. gluteus superior; n. gluteus inferior
- B. n. genitofemoralis; n. obturatorius; n. cutaneus femoris lateralis
- C. n. cutaneus femoris posterior; n. ischiadicus; n. peroneus communis; n. tibialis
- D. n. femoralis

ANSWER: A, C

265. Nerves listed below originate from plexus lumbalis (L1-L4) (multiple choice)

- A. n. gluteus superior; n. gluteus inferior
- B. n. genitofemoralis; n. obturatorius; n. cutaneus femoris lateralis
- C. n. cutaneus femoris posterior; n. ischiadicus; n. peroneus communis; n. tibialis
- D. n. femoralis

ANSWER: B, D

266. Objectives and application of EVOKED POTENTIAL testings are...

- A. To detect subclinical changes/alterations
- B. To explore and determine structural deficits and its degree of severity, e.g., differentiate between axon lesion and demyelination
- C. To monitor clinical condition, therapeutic effects and their prognostic evaluation
- D. Not always applicable method, even CT or MR is less rigorous if contraindications are the issue

ANSWER: A, C

267. Characteristics of the different types of brain-waves – which statements are true?

- A. Beta (13-30 Hz) created in the vigilant state
- B. Theta (4-7 Hz) unconscious, deep sleeping
- C. Alpha (8-12 Hz) are generated in relaxed, peaceful state ; it indicates relaxation in the whole body during transition between vigilant state and sleeping
- D. Delta (1-3 Hz), dominate the state of deep meditation, sleeping and total rest  
The brain can evoke realistic pictures and ideas when dreaming

ANSWER: A; C

268. According to their frequencies, different waves are registered in EEG (which are NOT CORRECT?)

- A. delta < 8-13 Hz (Berger)
- B. theta = 4-7 Hz
- C. alpha = 4 Hz
- D. D. beta > 13 Hz

ANSWER: A, C

269. Concept of Hufschmidt (select the true statements)

- A. Purpose is to reduce spasticity through stimulation of antagonists
- B. Purpose is to reduce spasticity through stimulation of agonists
- C. Consequence: the reduced muscle tone enables patient's participation in ergotherapy
- D. Purpose is to recreate optimal circumstances for passive movement therapy

ANSWER: A, C

270. Methods according to Hufschmidt concept

- A. Strong, rectangular-shaped pulse is applied on the antagonists (0.2-0.4 ms)

- B. As a result, tetanic-like contraction is produced (to treat hypotonia/reduced muscle tone)
- C. Short, high intensity pulse to treat the spastic agonist, results in the activation of GTO and triggering autogenous inhibition
- D. Applied parallelly – as two-channel Hufschmidt – Jantsch treatment –, agonists and antagonist muscle stimulation with a minimal asynchronicity (shift time elapsed 100-300 ms), more effective and functional change can be produced

ANSWER: A, B, C, D

271. Electrotherapy in case of central spastic paresis (1)

- A. Central paresis is rarely treated with electrotherapy.
- B. Many clinicians's attitude toward the entire spectrum of electrotherapy is explicitly dismissive in this specific area, considering it as absolute contraindication. (Vogedes, 2000).
- C. Until the '60-s, used to be regarded as contraindication.
- D. In 1950, Lee – administering a tetanic-like muscle contraction producing electrical treatment in 15 min – was able to produce detensioning (muscle tone reduction) in the treated spastic muscle, lasting for several hours

ANSWER: A, B, C, D

272. Electrotherapy in case of central spastic paresis (2)

- A. Many clinicians's attitude toward the entire spectrum of electrotherapy is explicitly dismissive in this specific area, considering it as absolute contraindication. (Vogedes, 2000).
- B. Until the '60-s, it would be regarded as contraindication.
- C. In 1950, Lee – administering a tetanic-like muscle contraction producing electrical treatment in 15 min – was able to produce detensioning (muscle tone reduction) in the treated spastic muscle, lasting for several hours
- D. Retesting it by Newman four years later, Lee's observed phenomenon was confirmed.

ANSWER: A, B, C, D

273. Different stimulation patterns and methods of stimulation in case of CNS injury

- A. Pattern of a two-channel-current applied by Hufschmidt (generated by Spasmotron-device) (1966).
- B. Pattern of Jantsch stimulation current (1974)
- C. Four channel stimulation current pattern according to Edel et al. (1993)
- D. Four-channel EMG triggered FES

ANSWER: A, B, C, D

274. The reason and benefit of applying 2 EMG diagnostic channels for the EMG-triggered stimulation and for the biofeedback are...

- A. for protection against associated reactions (associative movements)
- B. for spasticity-control
- C. helps to accurately implement and perform optimally 'functional' or even 'vital' movements
- D. patients' willingness to achieve their goal through alternative or compensatory motor strategies should be navigated toward movement patterns most similar to physiological ones

ANSWER: A, B, C, D

275. EMG-triggered FES device uses 4 stimulation channels...

- A. to stimulate more optimally the paretic limb musculature
- B. to assist rather a complex movement, not only strengthen 'selectively'
- C. to offer functional assistance for the paretic limb (to facilitate physiologic movements)
- D. to help the re-integration of the re-learned movement pattern

ANSWER: A, B, C, D



276. Therapeutic goals of Functional Electrical Stimulation are..
- A.** To reduce spasticity
  - B.** To increase the necessary muscle power for self-sufficiency
  - C.** Ergotherapy – to functionally develop the paretic upper limb
  - D.** to facilitate movement patterns that resemble ones most physiological

ANSWER: A, B, C, D

277. Indication of FES
- A.** Brain diseases/disorders or injuries (e.g., stroke, brain damages caused by other factors)
  - B.** Spinal cord injuries or disorders (e.g.: incomplete spinal cord lesion)
  - C.** Regenerative peripheral nerve injury/Denervated muscles
  - D.** Incontinence

ANSWER: A, B, C, D

278. Contraindications of FES
- A.** Pacemaker and/or in proximity of any other implanted (electrical) devices
  - B.** In proximity to metal implants
  - C.** Pregnancy
  - D.** In case of infectious disease and fever

ANSWER: A, B, C, D

279. Contraindications of FES
- A.** In proximity to inflamed or swollen skin
  - B.** If thrombosis was diagnosed or inflamed vein was detected in the area to be treated
  - C.** Trans-thoracic application of the electrodes (heart rhythm can be disturbed); and close to carotid artery
  - D.** In case of suspected inguinal or scrotal hernia: stimulation of abs

ANSWER: A, B, C, D

280. Characteristics of the CENTRAL facial nerve lesion
- A.** Pertains to spastic paresis
  - B.** Pertains to flaccid paresis
  - C.** Facial nerve lesion is incomplete, because only branches to the nose and mouth are involved, not to the forehead
  - D.** Complete; total disruption of the nerve (all 3 branches) can cause loss of movement (no activity in muscles of expression) within the affected half of the face

ANSWER: A, C

281. Characteristics of the PERIPHERAL facial nerve lesion
- A.** Refers to spastic paresis
  - B.** Refers to flaccid paresis
  - C.** Facial nerve lesion is incomplete, because only branches to the nose and mouth are involved, not to the forehead
  - D.** Complete; total disruption of the nerve (all 3 branches) can cause loss of movement (no activity in muscles of expression) within the affected half of the face

ANSWER: B, D

282. Facial nerve (VII) in the periphery
- A.** The n. travels from the pons through the facial canal in the temporal bone and exits the skull at the stylomastoid foramen.
  - B.** Motor nerve of the muscles of expression in the area of head and face

- C.** Apart from muscles of expression it innervates the retroauricular muscles, the platysma, the posterior belly of the m. digastricus, the m. stylohyoid muscle, and the m. stapedius
- D.** Its secretomotor fibres innervate lacrimal gland, submandibular, and sublingual salivary gland), furthermore small salivary glands of the nose and palate

ANSWER: A, B, C, D

283. Electrical stimulation of facial nerve

- A.** Because the face is extremely sensitive to the electrical current, the maximum output must be set at 10 mA during selective stimulation treatment
- B.** Electrode application is used as unipolar technique
- C.** The positive, indifferent anode should be placed in front of ear on the affected site
- D.** The different cathode – as a point electrode/probe – stimulates the 3 major branches of the facial nerve sequentially, or the affected muscles themselves should be treated one by one, selectively

ANSWER: A, B, C, D

284. Anatomy and injury of glossopharyngeal nerve (IX)

- A.** The nerve leaves the skull through the central part of the jugular foramen.
- B.** It supplies motor fibers to stylopharyngeus muscle, the only motor component of this cranial nerve
- C.** Unilateral damage of the nerve can cause soft palate asymmetry, difficulty in swallowing, tasting and phonation
- D.** Objectives of electrical stimulation are to improve, and, if possible, to restore muscle function after nerve injury

ANSWER: A, B, C, D

285. Involving phrenic nerve paresis

- A.** Injuries of the cervical region of the spinal cord, or the nerve roots, or along the course of the peripheral nerve can cause paresis of the diaphragm, consequently restricted function of breathing.
- B.** When cervical spine injury caused difficulty of breathing: electrostimulation of phrenic nerve helps to maintain diaphragm activity
- C.** Incapability of spontaneous breathing due to high Cx injury can be managed by phrenic nerve pacemaker implant; stimulating the diaphragm directly
- D.** Indirect method of electrostimulation is by way of external stimulation of phrenic nerve. Following the course of the nerve, unipolar electrode application should be chosen

ANSWER: A, B, C, D

286. Pelvic floor muscle impairment covers areas of

- A.** Weakness impairment
- B.** Endurance impairment
- C.** Pain and hypertonic impairment
- D.** Coordination impairment

ANSWER: A, B, C, D

287. The goals and modes of electrostimulation of pelvic floor muscles

- A.** To improve muscle function of pelvic floor (e. g., stress incontinence)
- B.** To decrease hyperactivity of detrusor muscle
- C.** Direct stimulation for pelvic floor muscle through a probe placed into the vagina or the anus
- D.** Indirect stimulation through pudendal nerve (transcutaneously) – evoked inhibiting reactions on efferent motor nerves resulted by the activation/stimulation of of the afferent nerves

ANSWER: A, B, C, D

288. Stimulation of peristalsis of the intestines can be characterized as follows:

- A. Intensity: max. 2-5 mA !
- B. Frequency: 20-40 Hz (below 50 Hz)
- C. A cure comprises of a daily 30 min session for 2-3 weeks
- D. Both striated (exterior) sphincter muscle and smooth intestine muscles can be stimulated through an intrarectally introduced electrode

ANSWER: A, B, C, D

289. Select the correct statements.

- A. When intestinal tract is externally stimulated, electrode should be positioned as follows: active (cathode) on abdominal wall, inactive (anode) over Lx
- B. When intestinal tract is externally stimulated, current intensity must be kept below motor threshold
- C. When rectum/anus is internally stimulated, a special intraluminal electrode/probe is used
- D. Indication of internal stimulation of rectum/anus is fecal incontinence

ANSWER: A, B, C, D

290. Therapeutic goals of electrostimulation for pelvic floor musculature dysfunction are:

- A. To improve muscle function of pelvic floor (e. g., in case stress incontinence)
- B. To decrease hyperactivity of detrusor muscle
- C. Direct stimulation for pelvic floor muscle through a probe placed into the vagina or the anus
- D. Indirect stimulation through pudendal nerve (transcutaneous); inhibition on efferent motor nerves is produced by the stimulation of the responsible afferent nerves

ANSWER: A, B, C, D

291. Purpose and technique of electrotherapy for perineal muscles:

- A. To teach the sensation of pelvic floor muscle function
- B. During stimulation of perineal muscles, the detrusor muscle activity gets inhibited
- C. EMG is used to control electrical activities of muscles
- D. To treat urge incontinence, when overactive bladder wall is responsible for the symptoms

ANSWER: A, B, C, D

292. Possibilities for electrical stimulation of the urinary bladder

- A. Stimulation of the urinary bladder wall, via implanted electrode
- B. Stimulation of pelvic nerves supplying bladder: there is a need for abdominal surgical intervention
- C. Stimulation of Lx nerve roots; electrodes are implanted after laminectomy; possible alternatives are intra-, extradural (intra- or epidural treatment)
- D. Stimulation of spinal cord: through intraspinally implanted electrodes at the level of S2

ANSWER: A, B, C, D

293. Describe circumstances of external stimulation for urinary bladder

- A. Anode: at Lx or on sacrum; 200 cm<sup>2</sup>
- B. Cathode: suprapubic; 100 cm<sup>2</sup>
- C. Common electric parameters: 200 ms triangle or exponential impulse interrupted with 500-1000 ms interpulse duration
- D. Intensity: above sensory threshold, below motor threshold

ANSWER: A, B, C, D

294. Magnetotherapy (ems/electromagnetic stimulation) for pelvic floor dysfunction

- A. A cutting edge method to improve pelvic floor muscle function; exerts beneficial effect on detrusor hyperactivity
- B. Position and state of the patient: sitting, fully clothed
- C. Required: 20 sessions, 20 minutes per session
- D. Alternating extremely high intensity electromagnetic field provoke action potentials in nerves related to pelvic floor muscles up to 8 cm deep, and as a result, muscle contractions arise

ANSWER: A, B, C, D

295. Elements of EMG

- A. Insertional activity a short, irregular burst caused by mechanical damage to muscle fibers
- B. There is none or decreased if needle electrode is not in the muscle tissue
- C. There is none or decreased if needle electrode is in connective tissue (in case severe myopathy, denervation)
- D. If increased, it could be the sign of mild onset of denervation

ANSWER: A, B, C, D

296. Fasciculation potential

- A. Spontaneous discharge of of a motor unit or part of it
- B. Compared to the signals of intentionally activated motor unit, fasciculation is not rhythmic
- C. It indicates hyperexcitability of nerve fibers
- D. Most commonly in motoneuron disease can be detected

ANSWERS: A, B, C, D

297. Characterize fibrillation potential

- A. action potentials of some motor nerve fibers
- B. they always have a positive start, except near the end plate
- C. It signs denervation of muscle fibers
- D. Near the end plate it interferes with its insertional activities

ANSWER: A, B, C, D

298. Spontaneous activities are

- A. endplate activity
- B. fibrillation potential
- C. fasciculation potential.
- D. myotonic discharge

ANSWER: A, B, C, D

299. Motor Unit (Action) Potential

- A. The summation of the action potential produced by synchronously discharging motor fibres belonging to a motor unit
- B. Only the smaller motor units can be tested this way as they are activated first (Henneman's size principle)
- C. MUAP is usually examined by mild intentional innervation, when even the individual potentials are easy to identify
- D. Summation of potentials in the approx. 10 cm vicinity of the recording needle electrode

ANSWER: A, B, C,

300. Neurophysiological findings of deceleration of conduction and/or conduction block can clinically be characterized:

- A. By atrophy, but not by paresis
- B. Neither by atrophy nor paresis
- C. Both by atrophy and paresis
- D. By paresis, but not by atrophy

ANSWER: B, D

301. SD curve analysis – rectangular curve characteristics

- A. Rheobase – intensity needed to produce a minimum twitch; the preset value of the rectangular-shape pulsed current duration is 1000 ms
- B. Temps utile – shortest pulse duration enough to produce the same characteristic minimum twitch with rheobase intensity
- C. Chronaxie – is the minimum time required for an pulsed current double the strength of the rheobase to cause minimum twitch;
- D. Chronaxie is used to determine pulse duration for selective electrical current treatment

ANSWER: A, B, C

302. SD curve analysis – diagnostic parameters – select correct statements

- A. Accomodation quotient – intensity needed to produce a minimum twitch using triangular-shape pulsed current of a duration 1000 ms
- B. Optimum phase time – deepest point of the triangular curve; in other words, the longest triangular pulsed current with the minimum intensity that can produce minimum twitch
- C. Chronaxie – is the minimum time required for an pulsed current double the strength of the rheobase to cause minimum twitch;
- D. Chronaxie is used to determine pulse duration for selective electrical current treatment

ANSWER: A, B, C

303. Characteristics of peripheral nerve injury *Neurapraxia (Class I)*

- A. Temporary interruption of conduction without loss of axonal continuity.
- B. There could be a physiologic block of nerve conduction in the affected axons.
- C. It is the mildest type of peripheral nerve injury.
- D. There are sensory-motor problems distal to the site of injury.

ANSWER: A, B, C, D

304. Neurapraxia

- A. Recovery of nerve conduction deficit is full, and requires days to weeks.
- B. There is no spontaneous recovery from nerve conduction deficit.
- C. EMG shows lack of fibrillation potentials (FP) and positive sharp waves.
- D. EMG shows fibrillation potentials (FP) and positive sharp waves

ANSWER: A, C

305. Axonotmesis (Class II) nerve injury means

- A. It involves loss of the relative continuity of the axon and its covering of myelin,
- B. The connective tissue framework of the nerve (the encapsulating tissue, the epineurium and perineurium) are preserved.
- C. Wallerian degeneration occurs distal to the site of injury.
- D. There are sensory and motor deficits distal to the site of lesion.

ANSWER: A, B, C, D

306. Axonotmesis shows the following clinical findings

- A. Nerve conduction distal to the site of injury (3 to 4 days after injury) cannot be observed.

- B.** EMG shows fibrillation potentials (FP), and positive sharp waves (2 to 3 weeks post-injury).
- C.** Axonal regeneration occurs and recovery is possible without surgical treatment.
- D.** Sometimes surgical intervention is required because of scar tissue formation.

ANSWER: A, B, C, D

307. Neurotmesis (Class III)

- A.** It is a total severance or disruption of the entire nerve fiber.
- B.** Neurotmesis may be partial or complete.
- C.** Wallerian degeneration occurs distal to the site of injury.
- D.** There is connective tissue lesion that may be partial or complete.

ANSWER: A, B, C, D

308. Neurotmesis (Class III)

- A.** Sensory-motor problems and autonomic function defects are severe.
- B.** There is no nerve conduction distal to the site of injury (3 to 4 days after lesion).
- C.** EMG and NCS findings are as axonotmesis.
- D.** Because of lack of nerve repair, surgical intervention is inevitable.

ANSWER: A, B, C, D

309. A physiologic conduction block – type B can be characterized

- A.** focal conduction block;
- B.** pathological basis: intraneural edema; metabolic block;
- C.** increased endoneurial fluid pressure
- D.** little or no fiber pathology; prognosis: recovery in days or weeks

ANSWER: A, B, C, D

310. A focal demyelination (myelin damage) is characterized by

- A.** „structural” conduction block,
- B.** focal lack of myelin sheath
- C.** can be expressed in decreased nerve conduction velocity through the injured site
- D.** Seddon's neurapraxia and first-degree are the same

ANSWER: A, B, C, D

311. A physiologic conduction block - type A can be characterized

- A.** focal conduction block;
- B.** pathological basis: intraneural ischemia, metabolic (ionic) block;
- C.** no nerve fibre pathology
- D.** PROGNOSIS: excellent, immediately reversible

ANSWER: A, B, C, D

312. Which statements are true?

- A.** Chronaxie is the shortest duration of an electrical stimulus where the threshold amplitude is twice the rheobase;
- B.** Chronaxie is the minimum time required for an electric current double the strength of the rheobase to stimulate a muscle or a neuron;
- C.** It is a measure of the excitability of nerve or muscle tissue;
- D.** Chronaxie is characteristic of types and/or condition of the nerve or muscle cells in the tissue.

ANSWER: A, B, C, D

313. Select the true statements

- A.** In CNS lesions, inhibitory descending pathways are commonly injured,

- B. Inhibitory descending pathways are responsible to control the excitability of alphaMN and motor nerve fibre.
- C. The correlation of the accommodation threshold and rheobase is altered
- D. AQ is higher than normal mainly due to the decreased rheobase.

ANSWER: A, B, C, D

314. Alpha factor

- A. The ratio of two measured values;
- B. The numerator: Accommodation Threshold
- C. In other words, is named AQ
- D. The denominator: Rheobase

ANSWER: A, B, C, D

315. Which statements are correct? During S/D curve analysis...

- A. The current intensity high enough/effective to cause twitching (minimal contraction) related to different pulse duration is to be determined
- B. Just above motor threshold, minimally sufficient stimulus should be applied
- C. In particular, following a descending order the stimulus duration is set (i. e. 1000, 500, 200, 100, 50, 20, 10, 5, 2, 1, 0.5, 0.05 ms are chosen for each durations)
- D. Practically, we plot a graph in coordinate system with D abscissa (X axis) and S ordinate (Y axis) using the determined strength-duration pairs

ANSWER: A, B, C, D

316. During S/D curve analysis when rectangular impulses are applied

- A. In intact muscles, a lower current intensity represents rheobase
- B. In intact muscles, a higher current intensity represents rheobase
- C. In denervated muscles, of which excitability is poorer, a higher current intensity is needed
- D. In denervated muscles, of which excitability is better, a lower current intensity is needed

ANSWER: A, C

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

317. The level of umbilicus determines principal dermatome of...

- A. T10
- B. L4
- C. C7
- D. D.S4

ANSWER: A

318. The area of foot determines principal dermatome(s) of..

- A. L4 L5 S1
- B. L1- L4
- C. C T12
- D. C7

ANSWER: A

319. Comparing and contrasting central and peripheral paresis, the true statement is

- A. Extension of paresis: restricted to the area supplied by the nerve in case of central
- B. The paretic musculature is massy in terms of extension if peripherally injured
- C. Muscle tone is reduced or decreased in case of peripheral paresis
- D. muscle tone is increased during diaschisis, later decreased in central paresis

ANSWER: C

320. Comparing and contrasting central and peripheral paresis, the true statement is
- A. Deep tendon reflex (DTJ) is sluggish or diminished (i. e. hypo- or areflexia) in case of peripheral paresis
  - B. When the paresis is central, perturbation of sensory function has distinct boundaries according to the particular nerve or radix (in other words a dermatomal pattern can be observed due to radicular involvement or patch-like pattern of sensory perturbation reflecting to peripheral nerve involvement)
  - C. Superficial reflexes also diminish in affected dermatome in case central paresis
  - D. There is no fasciculation in lower motor neuron (peripheral ) lesion

ANSWER: A

321. Neurophysiological findings of axon loss can be clinically characterized:
- A. By atrophy, but not by paresis
  - B. Neither by atrophy nor paresis
  - C. Both by atrophy and paresis
  - D. By paresis, but not by atrophy

ANSWER: C

322. The shape of the Motor Unit Potential – Select the correct statement
- A. The normal motor unit potential is triphasic
  - B. The beginning is negative
  - C. followed by a positive peak
  - D. ends with a slight negative deflection

ANSWER: A

323. Select the incorrect answer: The shape of MUAP is influenced by factors, like
- A. the distance between the electrode and the muscle fibers
  - B. the spatial position of the discharging fibers
  - C. the temperature of the muscle
  - D. the type of the surface electrode

ANSWER: D

324. Select the incorrect answer: The duration of MUAP
- A. is the time elapsed from leaving baseline and returning to it again
  - B. its values are varying depending on the muscle
  - C. in normal muscle it is between 50 -150 ms
  - D. in normal muscle it is between 5-15 ms

ANSWER: C

325. Which is the incorrect statement pertaining to the duration of MUAP?
- A. the bigger is the motor unit and the more active muscle fibers are near the recording surface, the longer is the duration
  - B. the bigger is the motor unit and the less active muscle fibers are near the recording surface, the longer is the duration
  - C. the duration is physiological when it differs from the normal value by less than 20%
  - D. the duration is pathological when it differs from the normal value by 20%

ANSWER: B

326. Which is the incorrect statement: The amplitude of MUAP...
- A. ...is measured from peak to peak



- B. ...is measured from the positive peak to the baseline
- C. ...is determined by the action potential of the 3-4 nearest muscle fibers
- D. ...can vary in the same muscle in different needle positions

ANSWER: B

327. Which statement is incorrect?

- A. The SFEMG is an elective electrophysiological method for recording the action potentials of single muscle fibers
- B. Physiological and morphological data can be collected this way from the muscle fibers, the motor endplate and the axon terminals
- C. the only disadvantage of SFEMG is – compared to MacroEMG –, that it can not be used for the measure of jitter
- D. the selectivity of SFEMG is achieved with a special needle electrode (SFEMG-electrode)

ANSWER: C

328. Select the incorrect statement

- A. During repetitive stimulation of the intramuscular axon it can be observed that the latency of the muscle fiber action potential recorded with a single fiber needle electrode varies from discharge to discharge
- B. During maximal voluntary effort when the needle electrode is placed between two muscle fibers belonging to the same motor unit, two potentials are recorded
- C. During repetitive discharging the distance between the two action potentials also changes
- D. The variability of the interpotential interval (IPI) results from the different distances that the electric impulse has to achieve from the axonal bifurcation to the muscle fiber is called jitter.

ANSWER: B

329. Select the correct statement? The jitter partly originates from

- A. the change of the axo-axonal transmission time
- B. the change of the conduction time of the axon terminal and the muscle fiber
- C. the variability of the conduction velocity of the axon terminal
- D. the artefact of SFEMG

ANSWER: B

330. All statements are incorrect, except of

- A. Myopathies can affect jitter in both directions: an increase can be observed in degenerating or regenerating muscle fibers and a decrease is caused by split muscle fibers
- B. Neuropathies can affect jitter in both directions: an increase can be observed in degenerating or regenerating nerve fibers and a decrease is caused by reinnervating collaterals of nerve fibers
- C. Myopathies cannot affect jitter.
- D. Myopathies can affect jitter only in one direction: a decrease caused by split muscle fibers; however, an increase cannot be observed neither in degenerating nor regenerating muscle fibers

ANSWER: D

331. Which statement is incorrect?

- A. The needle EMG examination cannot assess anatomic size or degree of tension of a motor unit.
- B. In EMG studies, the term "size" of a motor unit usually refers to the amplitude of the motor unit action potential (MUAP).
- C. The Henneman's size principle is also true to a limited extent for the EMG study.
- D. The earlier recruited type II fibers, especially the FF type, have smaller diameter muscle fibers generating higher potentials than the larger, slow twitch type I units.

ANSWER: D

332. Which sentence describes how the interference pattern comes off?

- A. With minimal effort of muscle contraction, a single motor unit is seen firing.
- B. The first motor units that are getting recruited arise from the small and relatively slow conducting type I motor units exclusively.
- C. Type II motor units are recruited later
- D. With increasing effort, the firing frequency of individual motor units increases and progressively more and larger units are activated, with no possibility for the single motor units to be detected separately

ANSWER: D

333. Which statement is incorrect?

- A. An incomplete interference pattern typically signifies a decreased number of MUAPs being activated with maximal effort
- B. Incomplete interference pattern may be suggestive of a myogenic lesion resulting in a decreased number of functional motor units
- C. However, incomplete interference may occur with incomplete effort of muscle contraction, too, possibly as a result of poor cooperation or pain
- D. In myopathic conditions, the interference pattern is typically complete, even though low-amplitude MUAPs may be noted on the recordings

ANSWER: B

334. SD curve analysis – Select the incorrect statement

- A. Rheobase is the required intensity of a triangle-shaped electrical pulse of 1000 ms duration to produce action potential
- B. If motor nerve is tested, a muscle twitch of minimum will signify the visually perceptible phenomenon of the depolarization
- C. Rheobase intensity could vary from site to site, from muscle to muscle, and be affected by the temperature of the tested muscle, the fatigue due to vigorous physical activities, etc.
- D. Independently from any other parameters determined within the same clinical study, rheobase alone cannot be informative enough to make our clinical decision, regarding adequate therapy.

ANSWER: A

335. Which is the incorrect statement?
- A. Rheobase is the required amplitude of electrical current produced by rectangular-shaped pulse of 1000 ms to overcome resting potential
  - B. If motor nerve is tested, a muscle twitch of minimum will signify the visually perceptible phenomenon of the depolarization
  - C. Rheobase intensity has a reference value of 2.3 -2.5 mA
  - D. Independently from any other parameters determined within the same clinical study, rheobase alone cannot be informative enough to make our clinical decision, regarding adequate therapy

ANSWER: C

336. Which parameters are originated from SD curve analysis?
- A. Rheobase; tolerance treshold; accomodation quotient
  - B. Polarity; dermogram; alpha-value
  - C. AQ; chronaxie; reaction time
  - D. 'temps utile' (utilization time); optimum phase time; accomodation quotient

ANSWER: D

337. SD curve analysis
- A. Chronaxie is the intensity by which the rheobase duration is twice as effective
  - B. Chronaxie is half of the duration by which minimum muscle twitch produces the maximum performance
  - C. Chronaxie is the duration of the rectangular-shape pulsed current causing minimum twitch by setting double rheobase intensity, expressed in milliseconds
  - D. Chronaxie is the intensity of the rectangular shape pulsed current causing a minimum twitch by setting double the temps utile for pulse duration

ANSWER: C

338. Selective electrical stimulation for peripheral paresis – treatment parameters are:
- A. Intensity, pulse duration, interpulse interval; size of electrodes
  - B. Pulse duration; duty cycle; frequency of the current; neofaradic reaction
  - C. Interpulse interval; optimum phase time, temps' utile; chronaxie
  - D. Ramp up duration ('shape of pulse'); pulse duration; interpulse interval; polarity; intensity

ANSWER: D

339. Selective electrical stimulation for peripheral paresis – treatment parameters are:
- A. Rheobase; accomodation quotient; optimum phase time
  - B. Temps utile; diagnostic utilization time; physiologic utilization time; frequency
  - C. Ramp up time ('shape of pulse'); pulse duration; interpulse interval; polarity; intensity
  - D. Interpulse interval; optimum phase time, temps utile; chronaxie;

ANSWER: C

340. Neurapraxia –select the incorrect answer
- A. The endoneurium, perineurium, and the epineurium remain intact.
  - B. There is no Wallerian degeneration.
  - C. Conduction is intact in the distal segment and proximal segment
  - D. Conduction occurs across the area of injury.

ANSWER: D

341. Which statement is incorrect?
- A. The minimum duration needed for a stimulus of rheobase intensity that is just sufficient to produce excitation, i.e. 'temps utile' (TU) or utilization time

- B. The longest duration of the minimum-peak-intensity triangular impulse that is just sufficient to produce excitation is called 'optimum phase time'/OPT,
- C. duration of stimulus which optimally produce contraction during therapy is derived from OPT
- D. duration of stimulus which optimally produce contraction during therapy is originated from TU

ANSWER: D

342. Which statement is not true?

- A. Excitability can be interpreted as the concentration of blocked Na-K-ATPase (sodium-potassium ATPase ion channel)
- B. Voltage gated ion channels are responsible for the propagating action potential.
- C. If there is partial denervation (peripheral nerve injury in form of demyelinating process (neurapraxia), conduction block could be developed because of the deconcentrated ion channels.
- D. Therefore, the best indicator of ion channel density and functionality (and consequently, of the excitability) is chronaxie.

ANSWER: A

343. Which statement is incorrect? Relating to the SD curve...

- A. Denervated muscle cannot accommodate;
- B. The two curves are parallel, and close to each other;
- C. A shift toward the upper-right quadrant of the coordinate system can be observed.
- D. Both lower intensity and shorter pulse duration is needed to make the muscle contracted.

ANSWER: D

344. Which statement is incorrect? Relating to the SD curve...

- A. Denervated muscle cannot accommodate;
- B. The two curves are parallel, and close to each other;
- C. Both higher intensity and longer pulse duration are needed to make the muscle contracted.
- D. Utilization time is consequently shorter.

ANSWER: D

## PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.

SELECT THE ONE THAT IS BEST IN EACH CASE

345. In Lifting (PNF) the movement pattern of the leading arm is:

- A. Flexion – Abduction - External Rotation
- B. Flexion - Adduction – External Rotation
- C. Flexion – Adduction – Internal Rotation
- D. Flexion – Abduction – Internal Rotation

ANSWER: A

346. In Chopping (PNF) the movement pattern of the leading arm is:

- A. Extension- Adduction- Internal Rotation
- B. Extension- Abduction – External Rotation
- C. Extension – Abduction – Internal Rotation
- D. Extension – Adduction – External Rotation

ANSWER: C

347. How does the Physiotherapist prepare the Flexion- Abduction – External Rotation (PNF)upper extremity pattern?

- A. with passive preparation
- B. with passive protraction
- C. with proximal protraction
- D. with proximal stability

ANSWER: B

348. Special techniques in PNF, except:

- A. Rhythmic Reversal
- B. Rhythmic Initiation
- C. Rhythmic Stabilization
- D. Stabilizing Reversal

ANSWER: A

349. Special PNF technique:

- A. Irradiation
- B. Approximation
- C. Repeated stretch
- D. Traction

ANSWER: C

350. False statement about approximation:

- A. It's joint compression.
- B. We always apply in closed chain.
- C. It's effective to facilitate weight-bearing.
- D. The receptors of approximation are the Golgi tendon organs.

ANSWER: D

351. Irradiation is the \_\_\_\_\_ of the \_\_\_\_\_ to stimulation.

- A. spread, repetition
- B. speed, muscle strength
- C. speed, reflex

D. spread, response

ANSWER: D

352. Types of the verbal instructions in PNF:

- A. preparation, action, correction
- B. action, reaction, correction
- C. reaction, correction, relaxation
- D. contraction, transaction, retraction

ANSWER: A

353. The joint positions in lumbrical grip:

- A. MCP extension, PIP, DIP flexion
- B. MCP extension, PIP, DIP extension
- C. MCP flexion, PIP, DIP extension
- D. MCP flexion, PiP, DIP flexion

ANSWER: C

354. Which one is not a basic procedure for facilitation?

- A. Manual contact
- B. Positioning
- C. Resistance
- D. Rhythm

ANSWER: D

355. Upper extremity pattern in D1 diagonal:

- A. Flexion – Adduction – External Rotation with elbow flexion
- B. Flexion – Abduction -External Rotation with elbow extension
- C. Extension – Adduction – External Rotation
- D. Extension – Adduction – Internal Rotation

ANSWER: A

356. Upper extremity pattern in D2 diagonal:

- A. Flexion – Adduction- External Rotation
- B. Flexion – Abduction- Internal Rotation
- C. Extension – Adduction – Internal Rotation
- D. Flexion – Abduction – Internal Rotation with elbow extension

ANSWER: C

357. True statement about the Ruffini endings:

- A. They have high threshold.
- B. They adapting fast.
- C. They are in the fibrous layer of the joint capsule.
- D. Greatest distribution in the distal joints.

ANSWER: C

358. True statement about the Pacinian corpuscles:

- A. Greatest distribution in the distal joints.
- B. They have high threshold.
- C. They adapting slowly.
- D. They are the smallest proprioceptors.

ANSWER: A

359. True statement about the Golgi ligament endings:  
 A. They adapting fast.  
 B. They have full spectrum mechanical threshold.  
 C. They are exteroceptors.  
 D. Their stimulus is the perpendicular pressure on the capsule.  
 ANSWER: B
360. Which one is not a phase of Mat activities?  
 A. Mobility – moving into a position  
 B. Skill  
 C. Mobility on stability – moving in a stable position  
 D. Rhythmic Initiation  
 ANSWER: D
361. Who was the physiotherapist who developed the PNF concept?  
 A. Bertha Bobath  
 B. Maggie Knott  
 C. Margaret McKenzie  
 D. Marge Maitland  
 ANSWER: B
362. „Squeeze my hand, pull up and across your nose.” Which PNF pattern’s verbal instruction is this?  
 A. Flexion – Adduction- External Rotation with elbow extension  
 B. Flexion – Adduction – External Rotation  
 C. Flexion – Adduction – External Rotation with elbow flexion  
 D. Flexion- Adduction- Internal Rotation with elbow extension  
 ANSWER: B
363. Which movement pattern is useful to facilitate the patient to roll forward from supine to prone?  
 A. Upper extremity: Flexion- Adduction- External Rotation  
 B. Scapula: anterior depression  
 C. Pelvis: posterior elevation  
 D. Neck extension  
 ANSWER: A
364. Which movement pattern would you choose to facilitate the patient to roll from supine to side-lying?  
 A. Upper extremity: Flexion – Adduction – External Rotation  
 B. Upper extremity: Extension – Adduction- Internal Rotation  
 C. Lower extremity: Flexion – Adduction – Internal rotation  
 D. Scapula: anterior elevation  
 ANSWER: B

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

365. False statements about scapular anterior elevation (PNF):  
 A. The starting position of the pattern is posterior depression.  
 B. The reference point can be the temporal part of the patient’s head.  
 C. The components of the movement pattern are elevation and retraction.

D. Its a trunk pattern.

ANSWER: C, D

366. True statements about scapula anterior elevation (PNF):

- A. The starting position of the pattern is posterior elevation.
- B. It is not a trunk pattern.
- C. This pattern is connected to the D1 diagonal, Extension-Adduction-Internal Rotation pattern.
- D. The components of the movement pattern are elevation and protraction.

ANSWER: B, D

367. In symmetrical reciprocal exercise (PNF):

- A. The pelvis and the scapula move in the same diagonal.
- B. The scapula and the pelvis move in different diagonal.
- C. The pelvis and the scapula move in the same direction.
- D. The scapula and the pelvis move in the opposite direction.

ANSWER: A, D

368. In asymmetrical exercise (PNF):

- A. The scapula and the pelvis move in the same diagonal.
- B. The pelvis and the scapula move in different diagonal.
- C. The scapula and the pelvis move in the same direction.
- D. The pelvis and the scapula move in the opposite direction.

ANSWER: B, D

369. True statements about the Resistance (PNF):

- A. It facilitates the ability of the muscle relaxation.
- B. It increases the motor control.
- C. It helps the patient gain and awareness of a motion.
- D. It increases the muscle strength.

ANSWER: B, C, D

370. False statement about the lumbrical grip:

- A. It doesn't hurt for the patient.
- B. It can't stabilize the joint.
- C. It is on same side as the direction of movement.
- D. The therapist can move her own hand as well.

ANSWER: B, C

371. True statements about the lower extremity patterns in PNF:

- A. We never squeeze the foot.
- B. Flexion lower extremity patterns activate the ventral muscle chain.
- C. We usually give big resistance.
- D. In supine position the proximal stability is essential.

ANSWER: A, B, D

372. Indications of the lower extremity patterns in PNF:

- A. Incoordination
- B. Joint restrictions
- C. Functional problems
- D. Muscular weakness

ANSWER: A, B, C, D



373. True statement about the upper extremity patterns in PNF:  
A. The name of the pattern is the end position of the GH joint.  
B. The distal components are the wrist and the fingers.  
C. The resistance is always optimal.  
D. The distal grip is usually baby-holding.  
ANSWER: A, B, C
374. What are the phases of Mat activities in PNF?  
A. Skill  
B. Stability – stabilizing in the new position  
C. Mobility on stability – moving in the stable position  
D. Mobility – moving into a position  
ANSWER: A, B, C, D
375. Tools in PNF to increase the stability:  
A. Stabilizing reversal  
B. Approximation  
C. Dynamic Reversal  
D. Rhythmic Stabilization  
ANSWER: A, B, D
376. Contraindications of Repeated stretch in PNF:  
A. Weakness  
B. Decreased awareness of desired motion  
C. Joint instability  
D. Pain  
ANSWER: C, D
377. Indications of Rhythmic Stabilization in PNF:  
A. Cerebellar involvement  
B. Decreased balance  
C. Weakness in the antagonistic muscle group  
D. Joint instability  
ANSWER: B, C, D
378. Indications of Rhythmic Initiation in PNF:  
A. Difficulties in initiating motion  
B. Uncoordinated motion  
C. Decreased eccentric control  
D. The patient's movement is too slow or too fast  
ANSWER: A, B, D
379. Which muscles are involved in the PNF posterior elevation scapular pattern?  
A. M. Trapezius  
B. M. Serratus anterior (lower part)  
C. M. Levator Scapulae  
D. M. Latissimus dorsi  
ANSWER: A, C
380. Which statements are correct in scapular posterior depression (PNF)?  
A. The PT stands behind the patient (side-lying)

- B. The PT gives the resistance on the acromion
- C. The reference point of the movement is the patient's temporal part
- D. The PT stands in stride position

ANSWER: A, D

381. False statements about the Dynamic Reversal:

- A. There is no pause between the two directions
- B. There is a very little pause between the two directions
- C. Agonist special technique
- D. We can increase mobility with it

ANSWER: C, B

382. Which movement patterns would you choose for a patient with increased thoracic kyphosis?

- A. Scapular anterior elevation
- B. Scapular posterior depression
- C. Lifting
- D. Chopping

ANSWER: B, C

383. What are the steps of gait facilitation?

- A. Shifting the bodyweight
- B. Approximation
- C. Quick stretch
- D. Traction

ANSWER: A, B, C

384. True statements about the PNF anterior elevation pelvis pattern:

- A. The reference point can be the patient's elbow
- B. The physiotherapist's hands are on the patient's iliac crest.
- C. The starting position is posterior elevation.
- D. The physiotherapist is in stride position behind the patient.

ANSWER: A, B, D

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

385. Approximation is joint traction.

True: A

False: B

ANSWER: B

386. The physiotherapist can increase the mobility of a bodypart with dynamic reversal.

True: A

False: B

ANSWER: A

387. Herman Kabat was the physiotherapist who developed the PNF concept.

True: A

False: B

ANSWER: B

388. The opened lumbrical grip is the „hamburger grip“.

True: A

False: B

ANSWER: A

389. The proprioceptors in the human body can't sense the position of the extremities.

True: A

False: B

ANSWER: B

390. Manual contact is a basic procedure for facilitation in the PNF concept.

True: A

False: B

ANSWER: A

391. Pain inhibits the effective movement.

True: A

False: B

ANSWER: A

392. Irradiation is the spread of the response to stimulation.

True: A

False: B

ANSWER: A

393. Stabilizing reversal is an agonist PNF special technique.

True: A

False: B

ANSWER: B

394. „Baby-holding“ is the distal grip of the Upper Extremity patterns in PNF.

True: A

False: B

ANSWER: B

## FUNCTIONAL ANALYSIS AND ASSESSMENT OF MUSCULOSKELETAL SYSTEM

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.

SELECT THE ONE THAT IS BEST IN EACH CASE

395. Activity in the peroneus longus produces subtalar \_\_\_\_\_ and ankle \_\_\_\_\_.

- A. pronation / dorsiflexion
- B. pronation / plantar flexion
- C. supination / dorsiflexion
- D. supination / plantar flexion

ANSWER: B

396. Which of the following is NOT TRUE?

- A. The lateral meniscus is separated from the LCL and lateral capsule by the popliteus muscle tendon
- B. The function of the menisci deepens the fossa of the tibia and increase congruency of the tibia and femur
- C. The menisci provide stability to the tibiofemoral joint and provides shock absorption and lubrication to the knee
- D. The menisci reduces friction during movement and improves weight distribution
- E. The medial meniscus is connected to ACL and LCL by tendon of semimembrabosus muscle

ANSWER: E

397. The knee flexors show activity during gait cycle, in which phase:

- A. Hamstrings contract eccentrically during initial contact for increasing knee stability
- B. Hamstrings eccentrically control knee flexion in propulsion phase
- C. Hamstrings contract continuously concentrically during midswing
- D. Hamstrings contract eccentrically during deceleration phase
- E. Hamstrings contract concentrically during deceleration phase

ANSWER: D

398. What is the distal attachment (insertion) of the iliopsoas muscle?

- A. lesser trochanter of femur
- B. greater trochanter of the femur
- C. lineaaspera of femur
- D. femoral neck
- E. intertrochanteric groove

ANSWER: A

399. The popliteus is called the “key to the knee” because it:

- A. Locks the knee into full extension
- B. Locks the knee by internal rotation of the joint
- C. Unlocks the knee by external rotation of the joint
- D. Unlocks the knee in full flexion
- E. None of the above

ANSWER: E

400. The ligament which prevents forward (anterior) displacement of the tibia at the knee joint in extended position is the:

- A. anterior cruciate ligament anteromedial bundle
- B. fibular collateral ligament

- C. posterior cruciate ligament anterolateral bundle
- D. tibial collateral ligament anterior part
- E. anterior cruciate ligament posterolateral bundle

ANSWER: A

401. When a person stands in anatomical position, the body's center of gravity is located at the level of:
- A. the fourth lumbar vertebral segment
  - B. the mid-thoracic region
  - C. the second sacral vertebral segment
  - D. the umbilicus
  - E. the lumbosacral joint

ANSWER: C

402. Which of these ligaments helps MOST to limit abduction at the hip joint?
- A. pubofemoral
  - B. iliofemoral
  - C. ischiofemoral
  - D. ligamentum teres femoris
  - E. scarotuberous

ANSWER: A

403. Excessive antversion is often associated with an abnormal gait pattern called \_\_\_\_\_ that is a walking pattern with exaggerated \_\_\_\_\_ of the leg.
- A. toeing-in gait, internal rotation
  - B. toeing-in gait, external rotation
  - C. toeing-out gait, internal rotation
  - D. toeing-out gait, external rotation
  - E. toeing-in gait, adduction

ANSWER: A

404. Which of the following *arthrokinematics* occur during *flexion* of the knee, from a femoral-on-tibial perspective? Think of slowly descending to a seated position.
- A. anterior roll, anterior slide, and external rotation of the knee (via internal rotation of the femur)
  - B. posterior roll, anterior slide, and internal rotation of the knee (via external rotation of the femur)
  - C. posterior roll, posterior slide, and external rotation of the knee (via internal rotation of the femur)
  - D. anterior roll, posterior slide, and internal rotation of the knee (via external rotation of the femur)
  - E. posterior roll, posterior slide, and external rotation of the knee (via external rotation of the femur)

ANSWER: B

405. What muscle attaches to the *styloid process* of the fifth metatarsal?
- A. peroneus brevis
  - B. peroneus longus
  - C. peroneus tertius
  - D. tibialis posterior
  - E. tibialis anterior

ANSWER: A

406. The dorsiflexors muscles are *active* during which times of the gait cycle?

- A. concentrically from heel strike to foot-flat
- B. eccentrically during swing phase
- C. eccentrically from heel strike to foot-flat
- D. concentrically during midstance only
- E. eccentrically during midswing, and concentrically in initial contact

ANSWER: C

407. Function of tensor fascia latae muscle:

- A. Hip abduction, flexion and external rotation
- B. Hip abduction, flexion and internal rotation
- C. Hip adduction, flexion and internal rotation
- D. Hip adduction, flexion and external rotation

ANSWER: B

408. Resting position of the scapula:

- A. 10 to 25 degrees anterior to transverse plane
- B. 20 to 25 degrees anterior to transverse plane
- C. 30 to 45 degrees anterior to transverse plane
- D. 45 to 50 degrees anterior to transverse plane

ANSWER: C

409. Patella functions, EXCEPT

- A. increases moment arm of quads about knee joint, increasing leverage
- B. protects front of knee, spreads force of impact over larger area
- C. creates sliding see saw, modulating forces of quad tendon and patellar tendon (from tibia)
- D. increases anterior stability of tibia

ANSWER: D

410. The acetabulum faces \_\_\_\_, \_\_\_\_, and lateral.

- A. anterior, superior
- B. anterior, inferior
- C. posterior, superior
- D. posterior, inferior

ANSWER: B

411. Which muscle IS NOT considered part of the pes anserinus group?

- A. Biceps femoris
- B. Gracilis
- C. Semitendinosus
- D. Sartorius

ANSWER: A

412. All of the following muscles internally rotate the knee EXCEPT:

- A. Biceps femoris
- B. Gracilis
- C. Sartorius
- D. Popliteus

ANSWER: A

413. Which muscle *plantarflexes* the talocrural joint and *everts* the subtalar joint?

- A. anterior tibialis
- B. posterior tibialis
- C. peroneus longus
- D. extensor digitorum longus

ANSWER: C

414. Which arch of the foot is supported primarily by the spring ligament?

- A. medial longitudinal
- B. lateral longitudinal
- C. transversal arch
- D. transversal arch of mid foot

ANSWER: A

415. The closed-packed (most stable) position at the *talocalcaneonavicular (TCN) joint* is

- A. dorsiflexion
- B. plantar flexion
- C. eversion
- D. inversion

ANSWER: D

416. The long head of the biceps brachii acts as an elbow flexor and shoulder flexor. When the shoulder joint is placed in the maximum \_\_\_\_\_ position and the elbow joint \_\_\_\_\_, the biceps brachii would present its active insufficiency.

- A. extension, extends
- B. extension, flexes
- C. flexion, extends
- D. flexion, flexes

ANSWER: D

417. The area bounded by tendon of \_\_\_\_\_ and \_\_\_\_\_ is called anatomical snuff box.

- A. extensor carpi radialis and extensor carpi ulnaris
- B. extensor pollicis longus and extensor pollicis brevis
- C. flexor carpi radialis and flexor carpi ulnaris
- D. flexor pollicis longus and flexor pollicis brevis

ANSWER: B

418. The action of the lumbrical muscle is \_\_\_\_\_ of the metacarpophalangeal joint and \_\_\_\_\_ of the proximal interphalangeal joint.

- A. flexion, flexion
- B. flexion, extension
- C. extension, flexion
- D. extension, extension

ANSWER: B

419. Which of the following joints may be a sellar joint on upper extremities?

- A. glenohumeral joint
- B. sternoclavicular joint
- C. inferior radioulnar joint
- D. humeroradial joint

ANSWER: B

420. If we rotate our arm externally in 90 degrees of shoulder abduction, the head of humerus

\_\_\_\_\_ :

- A. slides posteriorly
- B. glides posteriorly
- C. rolls posteriorly
- D. spins posteriorly

ANSWER: D

421. Which ligament becomes taut at the extremes of *eversion and plantarflexion* at the talocrural joint?

- A. anterior talofibular ligament
- B. posterior talofibular ligament
- C. calcaneal fibular ligament
- D. deltoid ligament

ANSWER: D

422. Function of rhomboids:

- A. scapular elevation, adduction and upward rotation
- B. scapular depression, adduction and upward rotation
- C. scapular elevation, adduction and downward rotation
- D. scapular adduction and downward rotation

ANSWER: C

423. Pronator teres muscle is innervated by:

- A. radial nerve
- B. ulnar nerve
- C. median nerve
- D. musculocutaneus nerve

ANSWER: C

424. Role of coracohumeral ligament is:

- A. to prevent anterior displacement of humeral head
- B. to limit flexion and abduction
- C. to prevent inferior displacement of humeral head
- D. to limit external and internal rotation

ANSWER: C

425. Concerning the cervical vertebrae, the right description is:

- A. all cervical vertebrae have vertebral body and articular process.
- B. the first cervical vertebra has no transverse foramen.
- C. the end of the spinous process of the cervical vertebrae bifurcated entirely.
- D. the articular facets are relatively horizontal.
- E. the first cervical vertebra is called axis.

ANSWER: D

426. Inferior angle of scapula marks the level of

- A. the 2th rib
- B. the 7th rib
- C. the spine of the 2nd thoracic vertebra



- D. the spine of the 7th thoracic vertebra
- E. the spine of the 10th thoracic vertebra

ANSWER: D

427. Which ligaments associate with the lamina of vertebral arch adjacently?

- A. anterior longitudinal ligament
- B. posterior longitudinal ligament
- C. ligamenta flava
- D. interspinal ligament
- E. supraspinal ligament

ANSWER: C

428. The scalenus:

- A. the scalene fissure is formed by scalenus anterior and scalenus medius only.
- B. the scalenus anterior insert in the second rib.
- C. the scalenus medius insert on the first rib.
- D. the scalenus arise from the body of the cervical vertebrae
- E. the scalenus is not related to the respiratory movement

ANSWER: C

429. Which muscle pull the scapula forward and hold the scapula against the chest wall?

- A. transverses thoracis
- B. subclavius
- C. longissimus thoracis
- D. pectoralis minor
- E. serratus anterior.

ANSWER: E

430. Concerning triceps surae, the right description is:

- A. the gastrocnemius lies deeply to the soleus.
- B. its tendon inserts on the calcaneus bone.
- C. it can extend the ankle joint.
- D. the gastrocnemius arises from the posterior surfaces of the tibia and fibula
- E. the soleus arises from the medial and lateral condyles of the femur

ANSWER: B

431. Which nerve injured can lead to “wristdrop”?

- A. musculocutaneous nerve
- B. median nerve
- C. ulnar nerve
- D. axillary nerve
- E. radial nerve

ANSWER: E

432. The medial wall of axilla is bounded by

- A. pectoralis major, pectoralis minor
- B. intertubercular sulcus of the humerus, the two heads of biceps and the coracobrachialis.
- C. Trilateral foramen and quadrilateral foramen.
- D. Lateral wall of chest and serratus anterior.
- E. Humerus and triceps brachii.

ANSWER: D

433. The following structure which is the branch of artery palpable deep to the inguinal ligament
- A. anterior tibial a.
  - B. femoral a.
  - C. popliteal a.
  - D. profunda femoris artery
  - E. peroneal a.

ANSWER: B

434. Activity in the flexor digitorum longus produces subtalar \_\_\_\_\_ and ankle \_\_\_\_\_.
- A. pronation / dorsiflexion
  - B. pronation / plantar flexion
  - C. supination / dorsiflexion
  - D. supination / plantar flexion
  - E. pronation/ supination

ANSWER: D

435. The knee flexors show activity during gait cycle, in which phase:
- A. Hamstrings contract eccentrically during initial contact for increasing knee stability
  - B. Hamstrings eccentrically control knee flexion in propulsion phase
  - C. Hamstrings contract continuously concentrically during midswing
  - D. Hamstrings contract eccentrically during deceleration phase
  - E. Hamstrings contract concentrically during deceleration phase

ANSWER: D

436. Function of anterior deltoid muscle:
- A. flexion and external rotation at GH joint
  - B. adduction of GH joint between 0-40 degrees of abduction
  - C. abduction of GH joint from neutral position
  - D. internal rotation and flexion at GH joint
  - E. abduction of GH joint from 40 degrees of abducted position

ANSWER: D

437. The ligament which prevents forward (anterior) displacement of the femur at the knee joint is the:
- A. anterior cruciate ligament
  - B. transverse ligament
  - C. posterior cruciate ligament
  - D. tibial collateral ligament
  - E. popliteal ligament

ANSWER: C

438. Which of these ligaments helps most to prevent overextension (hyperextension) at the hip joint?
- A. pubofemoral
  - B. iliofemoral
  - C. ligamentum teres femoris
  - D. scarotuberous

ANSWER: B

439. When you stand on one foot, the free limb has a tendency to drop. Which of the following

prevents this from happening?

- A. biceps femoris
- B. gluteus maximus
- C. piriformis
- D. gluteus medius
- E. iliacus

ANSWER: D

440. The carpal bone forming part of the floor of the anatomical snuff box which is most often fractured is the:

- A. Triquetral Bone
- B. Pisiform Bone
- C. Scaphoid Bone
- D. Lunate Bone
- E. Trapezium Bone

ANSWER: C

441. Structures attach to lateral menisci, EXCEPT

- A. popliteal tendon
- B. LCL
- C. ACL
- D. coronal ligament
- E. PCL

ANSWER: B

442. The longitudinal axis of the head of the humerus is how many degrees from the axis of the neck?

- A. 120°
- B. 125°
- C. 130°
- D. 135°

ANSWER: D

443. Increasing muscle mass and tone is the aim of many people who work out at the gym. This is done by contracting the muscle against resistance. If you want to increase the muscle mass of the latissimus dorsi muscle, which of the following actions would you be most likely to perform?

- A. depression of the scapula
- B. abduction of the arm
- C. extension of the arm
- D. flexion of the arm
- E. lateral rotation of the arm

ANSWER: C

444. The closed-packed (most stable) position at the subtalar joint is

- A. dorsiflexion
- B. plantar flexion
- C. eversion
- D. inversion

ANSWER: D

445. Which of the following arthrokinematics occur during full extension of the knee in open kinematic chain?

- A. anterior roll, anterior slide, and external rotation of the knee
- B. posterior roll, posterior slide, and internal rotation of the knee
- C. anterior roll, posterior slide, and external rotation of the knee
- D. anterior roll, posterior slide, and internal rotation of the knee

ANSWER: A

446. Secondary (accessory) muscles in inspiration, EXCEPT:

- A. latissimus dorsi
- B. pectoral major
- C. serratus anterior
- D. internal oblique abdominal

ANSWER: D

447. Extension of the thoracic region is limited by EXCEPT,

- A. contact of the spinous processes,
- B. zygapophyseal facets and capsules
- C. tension in the anterior longitudinal ligament,
- D. tension abdominal muscles.
- E. active tension of back muscles

ANSWER: E

448. Which structures are not in the cubital fossa?

- A. brachial artery
- B. median nerve
- C. tendon of biceps brachii
- D. ulnar nerve
- E. brachial vein

ANSWER: D

449. Which synergism is needed for SCOM muscle to provide full flexion of cervical spine:

- A. contraction of longus capitis, longus colli to prevent extensory effect of SCOM
- B. contraction of rectus capitis posterior major to limit extension at AO and AA joints
- C. contraction of erectors spine group to keep thoracic region in straight and stable position
- D. contraction of rectus capitis anterior and lateralis to prevent extensory effect of SCOM at lower cervical region

ANSWER: A

450. The teres major inserts to

- A. lesser tubercle
- B. crest of the lesser tubercle
- C. base of the intertubercular groove
- D. crest of the greater tubercle
- E. greater tubercle

ANSWER: B

451. What is the role of abdominal muscles in inspiration?

- A. Elongated abdominal muscles decrease intraabdominal pressure which lets to move downward the descending diaphragm.

- B. During inspiration, the diaphragm's central tendon descends until it is fixed or stabilized by abdominal muscle contraction which pushes upward on the descending diaphragm.
- C. All abdominal muscles contract with maximal effort to stabilize the central tendon.
- D. The abdominal muscles does not play role in inspiration because the major function of the abdominals to assist with forced expiration

ANSWER: B

452. All of the following muscle externally rotate the GH joint except:

- A. Anterior part of deltoid muscle
- B. Long head of biceps muscle
- C. Teres minor muscle
- D. Infraspinatus muscle

ANSWER: A

453. Which of the following statement is TRUE about cervical rotation?

- A. 40° to 45° of axial rotation occurs in each direction at atlantoaxial joint
- B. 40° to 45° of axial rotation occurs in each direction at atlantooccipital joint
- C. Approximately 60° of axial rotation occurs from C2-C7 segments.
- D. The site of maximum motion occurs between C4 and C6.

ANSWER: A

454. Function of alar ligament, EXCEPT:

- A. To limit flexion
- B. To limit rotation
- C. To prevent distraction of C1-C2
- D. To limit extension

ANSWER: D

455. What role do the interclavicular ligament play in the SC joint stability?

- A. to check excessive elevation or upward glide of the clavicle
- B. to check excessive depression or downward glide of the clavicle
- C. to check excessive rotation of the clavicle

ANSWER: B

456. What is the function of the sternoclavicular ligament at the SC joint?

- A. to check inferior and superior movement of the head of the clavicle.
- B. to support of capsule and to check rotation movement of the head of the clavicle.
- C. to support of capsule and to check anterior and posterior movement of the head of the clavicle.

ANSWER: C

457. Which of the following arthrokinematics occur during protraction of the SC joint?

- A. The clavicular convex surface slides anteriorly on the concave manubrium and first costal cartilage in the same direction as the lateral end of the clavicle.
- B. The clavicular concave surface slides anteriorly on the convex manubrium and first costal cartilage in the same direction as the lateral end of the clavicle.
- C. The clavicular concave surface slides posteriorly on the convex manubrium and first costal cartilage in the opposite direction as the lateral end of the clavicle.

ANSWER: B

458. What role does the coracoclavicular ligament play in the AC joint stability?

- A. This ligament prevents the superior dislocation of the clavicle on the acromion and limits the rotation of the scapula.
- B. This ligament prevents the inferior dislocation of the clavicle on the acromion and limits the depression of the scapula.
- C. This ligament prevents the superior dislocation of the clavicle on the acromion and limits the depression of the scapula.

ANSWER: A

459. Which muscle retracts the scapula?

- A. Rhomboid muscles
- B. Lower and upper part of Trapezius muscle
- C. Lower part of Serratus muscle
- D. Levator scapulae

ANSWER: A

460. All of the following muscles downwardly rotate the scapula except:

- A. Rhomboid
- B. Pectoralis minor
- C. Middle part of trapezius
- D. Levator scapulae

ANSWER: C

461. When the forearm is supinated, all of the following movements are involved EXCEPT

- A. The head of the radius rotates within the annular ligament
- B. The head of the radius spins on the capitulum of the humerus
- C. The head of the ulna spins on the trochlea of the humerus
- D. The ulnar notch of the radius rotates around the head of ulna

ANSWER: C

462. Concerning with the movements of the humeroulnar joint, which of the following statements is WRONG?

- A. The functional range of elbow flexion is around 30-130° where most activities of daily living can be accomplished.
- B. Elbow extension is accomplished by extension of the ulna relative to the humerus associated with posterior glide of the olecranon process of the ulna on the humerus.
- C. Elbow extension is limited by the huge mass of the triceps brachii.

ANSWER: C

463. What role do the glenoid labrum play in the glenohumeral joint (GH) stability?

- A. The glenoid labrum separates the supraspinatus tendon and head of the humerus from the acromion.
- B. The glenoid labrum protects the top of the humeral head from direct trauma from above.
- C. The glenoid labrum widens the cavity only slightly but deepens it appreciably so as to make the articular surfaces more congruent.

ANSWER: C

464. Which of the following arthrokinematics occur during abduction of glenohumeral joint?
- A. Inferior rolling and superior gliding
  - B. Superior rolling and inferior gliding
  - C. Superior rolling and superior gliding

ANSWER: B

465. What ligament becomes taut at the extension of the glenohumeral joint?
- A. Posterior part of the coracohumeral ligament
  - B. Anterior part of the coracohumeral ligament
  - C. Upper part of the glenohumeral ligament

ANSWER: B

466. What ligament becomes taut at the internal rotation of the glenohumeral joint?
- A. Internal rotation tenses up all three parts of the glenohumeral ligament
  - B. Internal rotation tenses up all two parts of the coracohumeral ligament
  - C. Internal rotation tenses up posterior fibers inferior glenohumeral ligament

ANSWER: C

467. What accounts for the static stability of the GH joint when the arm is at the side?
- A. Contraction of the deltoid muscle causes the humeral head to translate superiorly
  - B. The passive tension of in the capsule and coracohumeral ligament counteract the effect of gravity.
  - C. Supraspinatus muscle plays a significant role in stabilizing the humerus to the glenoid fossa against the gravity.

ANSWER: B

468. The members of the rotator cuff muscles:
- A. Deltoid, infraspinatus, supraspinatus, teres minor and subscapularis muscle
  - B. Infraspinatus, supraspinatus, teres minor and subscapularis muscle
  - C. Infraspinatus, supraspinatus, teres major and subscapularis muscle

ANSWER: B

469. What accounts for the static stability of the GH joint when the arm is at the side? What happens if you excessively load the hanging (dependent) arm?
- A. The contraction (active tension) of the anterior deltoid muscle, long head of the biceps muscle and supraspinatus muscle are recruited. (vertical upward pull)
  - B. The passive tension of in the capsule and coracohumeral ligament counteract the effect of gravity.
  - C. The glenohumeral ligaments play a significant role in stabilizing the humerus to the glenoid fossa against the gravity.

ANSWER: A

470. Identify the functions of the rotator cuff muscles in the dynamic stabilisation?
- A. The supraspinatus muscle compresses the humeral head directly into the glenoid fossa, subscapularis, infraspinatus and teres minor produce an inferior directed translation force on the humerus head. Infraspinatus and teres minor rotate the humeral head externally.

- B. The deltoid muscle compresses the humeral head directly into the glenoid fossa, subscapularis, infraspinatus and teres minor produce an superior directed translation force on the humerus head. Infraspinatus and teres minor rotate the humeral head externally.
- C. The supraspinatus muscle compresses the humeral head directly into the glenoid fossa, subscapularis, infraspinatus and teres major produce an inferior directed translation force on the humerus head. Infraspinatus and teres minor rotate the humeral head internally.

ANSWER: A

471. Radial deviation of the wrist may be achieved by the following muscles EXCEPT

- A. extensor carpi radialis longus
- B. extensor carpi ulnaris
- C. extensor pollicis longus
- D. flexor carpi radialis

ANSWER: B

472. The teres minor muscle runs from the inferior lateral border of the scapula to the greater tubercle of the humerus. When it acts as an external rotator of the humerus, the scapula has to be fixed by the rhomboid muscles. The rhomboid muscles, therefore, is acted as the \_\_\_\_\_ of the teres minor.

- A. stabilizer
- B. neutralizer
- C. agonist
- D. antagonist

ANSWER: A

473. Which of the following statements about the radiocarpal joint is NOT TRUE?

- A. The radiocarpal joint provides flexion/extension, radial/ulnar deviation and circumduction so that it is defined as a 3 degree-of-freedom joint.
- B. The radiocarpal joint only articulates with radius so that removal of the ulna head does not affect wrist motions theoretically.
- C. The distal component of the radiocarpal joint consists three carpal bones. They are scaphoid, lunate, and triquetrum.
- D. The carpal bones in the proximal row contact together to form a biconvex articular surface.

ANSWER: A

474. By comparing the flexor carpi ulnaris with the flexor carpi radialis, which of the following statements is NOT TRUE?

- A. Both muscles serve as the flexors of the wrist.
- B. Both muscles come from the common tendon which is located at the medial epicondyle of the humerus.
- C. Both muscles pass through the carpal tunnel.
- D. The flexor carpi ulnaris is attached at the pisiform bone while the flexor carpi radialis is attached at the base of the second metacarpal bone.

ANSWER: C

475. Which of the following motions may be associated with anterior slide when an individual stands in the anatomic position?

- A. extension of the humeroradial joint



- B. flexion of the radiocarpal joint
- C. abduction of the 1<sup>st</sup> carpometacarpal joint
- D. external rotation of the glenohumeral joint

ANSWER: D

476. By comparing the superior radioulnar joint with the inferior radioulnar joint, which of the following statements is NOT TRUE?
- A. The superior radioulnar joint consists of the head of the radius while the inferior radioulnar joint consists of the head of the ulna.
  - B. The superior radioulnar joint shares the same capsule with the humeroulnar joint while the inferior radioulnar joint shares the same capsule with the radiocarpal joint.
  - C. Both joints provide pronation and supination of the forearm.
  - D. The interosseus membrane is one of the checking factors for the motions of both joints.

ANSWER: B

477. The carrying angle of the elbow is a valgus angulation because \_\_\_\_\_.
- A. the trochlea of the humerus extends farther distally than does the capitulum.
  - B. the capitulum of the humerus extends farther distally than does the trochlea
  - C. the lateral epicondyle of the humerus extends farther distally than does the capitulum
  - D. the capitulum of the humerus extends farther distally than does the lateral epicondyle

ANSWER: A

478. Which of the following structures will not be involved if the pressure of the carpal tunnel increases?
- A. median nerve
  - B. flexor carpi ulnaris
  - C. flexor pollicis longus
  - D. flexor digitorum profundus

ANSWER: B

479. Which of the following joints is a condyloid joint?
- A. first carpometacarpal joint
  - B. first interphalangeal joint
  - C. first metacarpophalangeal joint
  - D. radiocarpal joint

ANSWER: C

480. The radiocarpal joint is composed of the following articulations EXCEPT \_\_\_\_\_.
- A. the articulation between the radius and the scaphoid
  - B. the articulation between the ulna and the triquetrum
  - C. the articulation between the radius and the lunate
  - D. the articulation between the radius and the triquetrum

ANSWER: B

481. With which of the following wrist positions the grip strength is the greatest?
- A. 0° of wrist flexion
  - B. 20° of wrist extension
  - C. 40° of wrist flexion

D. 20° of wrist flexion

ANSWER: B

482. According to the convex-concave rule, extension of the radiocarpal joint is associated with \_\_\_\_\_ gliding of the proximal carpal row moving on the distal radius. Likewise, radial deviation of the radiocarpal joint is associated with \_\_\_\_\_ gliding of the proximal carpal row moving on the distal radius.

- A. dorsal, radial
- B. dorsal, ulnar
- C. palmar, radial
- D. palmar, ulnar

ANSWER: D

483. The long head of the triceps brachii acts as an elbow extensor and shoulder extensor. When the shoulder joint is placed in the maximum \_\_\_\_\_ position and the elbow joint \_\_\_\_\_, the triceps brachii would present its active insufficiency.

- A. extension, extends
- B. extension, flexes
- C. flexion, extends
- D. flexion, flexes

ANSWER: A

484. If the scapulothoracic joint were fused in neutral position, what range of elevation (through flexion) would still be available to the upper extremity actively?

- A. 30°
- B. 60°
- C. 120°
- D. 150°

ANSWER: B

485. All of the following muscles extend the GH joint except:

- A. Latissimus muscle
- B. Teres major
- C. Long head of triceps brachii
- D. Subscapularis muscle

ANSWER: D

486. Identify the scapular upward rotation that takes place at the scapulothoracic joint?

- A. The glenoid fossa tilts upward and the inferior angle of the scapula moves away from the vertebral column
- B. The glenoid fossa tilts downward and the inferior angle of the scapula moves away from the vertebral column
- C. The glenoid fossa tilts anteriorly and the inferior angle of the scapula moves away from the vertebral column

ANSWER: A

487. The anconeus muscle acts as an elbow \_\_\_\_\_ and a dynamic stabilizer to provide resistance against \_\_\_\_\_ stresses.

- A. extensor, varus
- B. extensor, valgus
- C. flexor, varus
- D. flexor, valgus

ANSWER: A

488. The long head of the biceps brachii is attached by a long tendon arising from \_\_\_\_.

- A. the coracoid process of the scapula
- B. the acromion process of the scapula
- C. the supraglenoid tubercle of the scapula
- D. the spine of the scapula

ANSWER: C

489. Approximately \_\_\_\_ degrees of shoulder flexion is accomplished by the scapular movement which occurs because of motions permitted at the sternoclavicular, acromioclavicular, and scapulothoracic articulations.

- A. 30
- B. 60
- C. 90
- D. 120

ANSWER: B

490. Internal rotation of the glenohumeral (shoulder) joint is associated with \_\_\_\_ glide of the humeral head on the glenoid cavity.

- A. superior
- B. inferior
- C. anterior
- D. posterior

ANSWER: D

491. Concerning with the function of the serratus anterior muscle, which of the following statements is WRONG?

- A. The serratus anterior and upper trapezius act together to form a force couple for upward rotation of the scapula.
- B. The levator scapula acts as the antagonist of the serratus anterior by lifting the superior medial angle.
- C. Contraction of the serratus anterior is important in reaching or pushing movement.
- D. Paralysis of the serratus anterior results in winging scapula which is characterized by posterior displacement of the medial border of the scapula.

ANSWER: B

492. Supination of subtalar joint in standing position (close kinematic chain) is composed by :

- A. calcaneal adduction, plantarflexion, and inversion
- B. talar abduction, dorsiflexion, and calcaneal inversion
- C. talar abduction, and calcaneal inversion and dorsiflexion
- D. calcaneal inversion, and talar plantarflexion and abduction

ANSWER: B

493. Axis of rotation of subtalar joint:
- A. 42 degrees from the horizontal plane and 16 degrees from the sagittal plane
  - B. 52 degrees from horizontal plane and 57 degrees from the sagittal plane
  - C. 15 degrees from horizontal plane and 9 degrees from the sagittal plane
  - D. 14 degrees from transverse plane and 15 degrees from frontal plane

ANSWER: A

494. Which ligament becomes taut at the extremes of *inversion and plantar flexion* at the talocrural joint?
- A. anterior talofibular ligament
  - B. posterior talofibular ligament
  - C. calcaneal fibular ligament
  - D. deltoid ligament

ANSWER: A

495. The closed-packed (most stable) position at the *talocrural joint* is
- A. dorsiflexion
  - B. plantar flexion
  - C. eversion
  - D. inversion

ANSWER: A

496. Which joint is supported primarily by the bifurcate ligament?
- A. subtalar
  - B. calcaneocuboid
  - C. metatarsophalangeal
  - D. talocrural

ANSWER: B

497. Which of the following *arthrokinematics* occur during *dorsiflexion* of the talocrural joint? (during mid stance phase of walking WITH THE FOOT FIXED TO THE GROUND!!!)
- A. anterior roll and anterior slide of the leg relative to a fixed talus.
  - B. anterior roll and posterior slide of the leg relative to a fixed talus.
  - C. anterior roll and anterior slide of the talus relative to a fixed leg.
  - D. anterior roll and posterior slide of the talus relative to a fixed leg.

ANSWER: A

498. Which statement is true regarding *eversion of the subtalar joint*?
- A. Eversion occurs during early-to-mid stance as a way to increase the stability/rigidity of the foot.
  - B. Eversion occurs during early-to-mid stance as a way to increase the flexibility/pliability of the foot.
  - C. Eversion occurs during late stance as a way to increase the flexibility/pliability of the foot.
  - D. Eversion occurs during late stance as a way to increase the stability/rigidity of the foot.

ANSWER: B

499. Which muscle *dorsiflexes* the talocrural joint and *inverts* the subtalar joint?
- A. anterior tibialis

- B. posterior tibialis
- C. peroneus longus
- D. extensor digitorum longus

ANSWER: A

500. Which situation would most likely tear (injure) the *medial collateral ligament*?

- A. Valgus strain performed in complete knee extension
- B. Valgus strain performed in complete knee flexion
- C. Varus strain performed in complete knee extension
- D. Varus strain performed in complete knee flexion

ANSWER: A

501. Which two structures attach to the *head of the fibula*?

- A. biceps femoris and lateral collateral ligament
- B. biceps femoris and medial collateral ligament
- C. semitendinosus and lateral collateral ligament
- D. semimembranosus and lateral collateral ligament

ANSWER: A

502. The medial collateral ligament and the medial meniscus often become injured *at the same time* because:

- A. they are not attached to each other
- B. they are attached to each other
- C. they both are stretched (pulled apart) during a varus strain (adduction) to the knee.
- D. they both have a good blood supply

ANSWER: B

503. The following tendon and muscle reinforce the *medial region* of the capsule of the knee:

- A. ACL and biceps femoris
- B. medial collateral ligament and gracilis
- C. medial collateral ligament and popliteus
- D. lateral patellar retinacular fibers and iliotibial tract

ANSWER: B

504. Which of the following statement is true regarding the medial and lateral menisci?

- A. the medial meniscus is small and round compared to the larger, oval-shaped lateral meniscus
- B. the lateral meniscus attaches to the lateral collateral ligament.
- C. the medial meniscus attaches to the anterior cruciate .
- D. the menisci have excellent source of blood supply and therefore heal very quickly.
- E. ALL OF THE ABOVE ARE FALSE

ANSWER: E

505. Which combination of muscle actions occur while slowly lowering to a seated position from standing?

- A. Rectus femoris actively contracts across the hip/ hamstring muscles actively contract across the knee.
- B. Hamstrings are eccentrically active across the hip/ vastus medialis is eccentrically active across the knee.

- C. Hamstrings actively contract across the hip/ vastus lateralis passively elongates across the knee.
- D. Rectus femoris passively elongates across the hip/ vastus medialis actively contracts across the knee.

ANSWER: B

506. The quadriceps muscles act as important shock absorbers at the knee. To do this, how and when are these muscles active in walking?

- A. Active eccentrically in the early part of stance phase.
- B. Active eccentrically during early swing phase
- C. Active concentrically in the early part of stance phase
- D. Active concentrically through the entire gait cycle.

ANSWER: A

507. A frontal plane angle of *95 degrees* formed between the neck and shaft of the femur is called:

- A. coxa valga
- B. coxa vara
- C. femoral anteversion
- D. D femoral retroversion

ANSWER: B

508. Which of the following statements about the articular congruence of the hip joint is NOT TRUE?

- A. In neutral position, articular cartilage from the head of the femur extends anteriorly and lesser extent superiorly.
- B. Maximal articular contact of the head of the femur with the acetabulum is obtained when the femur is flexed, abducted and laterally rotated slightly. This position is its close packed position.
- C. In fully extension with slight abduction and internal rotation all of three ligaments are elongated. This position is its close packed position.

ANSWER: A

509. The function of iliolumbar ligament is:

- A. To prevent anterior displacement of L4 and L5 vertebrae
- B. To decrease lumbar lordosis
- C. To limit lumbar extension
- D. To control posterior rotation of iliac bone

ANSWER: A

510. Thoracolumbar fascia:

- A. Increased tension of fascia helps to maintain erect position of lumbar spine
- B. Transmits tension from a contraction of the rectus abdominis muscle to the spinous processes
- C. Contraction of transversus abdominis muscle tightens the fascia
- D. Increased tension of thoracolumbar fascia plays role in stabilization of pelvis

ANSWER: C

511. Which of the following statement about lumbopelvic rhythm is true?
- A. If hip flexion is limited a person can perform full range forward bending with excessive lumbar flexion
  - B. Typical lumbopelvic rhythm consist of about 40° of flexion of the lumbar spine and 70° of flexion at the hips.
  - C. Limited lumbar flexion is compensated with excessive hip flexion during forward bending.
  - D. Typical lumbopelvic rhythm consist of about 70° of flexion of the lumbar spine and 40° of flexion at the hips.

ANSWER: B

512. What is the facet joint orientation in the lumbar region?
- A. sagittal
  - B. frontal
  - C. horizontal
  - D. vertical

ANSWER: A

513. What is the facet joint orientation in the thoracal region?
- A. sagittal
  - B. frontal
  - C. horizontal
  - D. vertical

ANSWER: B

514. What is the facet joint orientation in the cervical region?
- A. sagittal
  - B. frontal
  - C. horizontal
  - D. vertical

ANSWER: C

515. Hip extensors are active during lumbar extension because:
- A. Contraction of hip extensor increases lumbar lordosis
  - B. Contraction of hip extensor stabilizes the origination of erector spine group
  - C. Contraction of hip extensor decreases lumbar lordosis and protects lumbar discs
  - D. Contraction of hip extensor prevents hip movements during lumbar extension

ANSWER: B

516. How does the facet joint orientation in the cervical region affect motion in that region?
- A. lateral flexion and rotation of the cervical vertebrae are most free
  - B. flexion and extension of the cervical vertebrae are most free
  - C. extension is more limited in cervical region than flexion
  - D. all motions are permitted in cervical region

ANSWER: D

517. Which of the following statements about lumbar spine mobility is NOT TRUE?
- A. During flexion and extension, the greatest mobility of the spine occurs between L4 and S1, which is also the area that most support the body weight.

- B. Lateral flexion of the lumbar vertebrae is most free in the upper lumbar region and progressively diminish in the lower region.
- C. The amount of actual intervertebral motion during axial rotation is extremely limited in the lumbar region.
- D. Rotation of the lumbar vertebrae are most limited in the upper lumbar region.

ANSWER: A

518. The anterior pelvic tilt extends the lumbar spine. This action tends to shift the nucleus pulposus \_\_\_\_\_ and \_\_\_\_\_ the diameter of the intervertebral foramina.

- A. anteriorly, increases.
- B. posteriorly, increases.
- C. anteriorly, decreases.
- D. posteriorly, decreases.

ANSWER: C

519. When the trunk rotates to the a side, which of the following combinations of muscles activates?

- A. ipsilateral obliquus externus abdominis and ipsilateral obliquus internus abdominis
- B. ipsilateral obliquus externus abdominis and contralateral obliquus internus abdominis
- C. contralateral obliquus externus abdominis and ipsilateral obliquus internus abdominis
- D. contralateral obliquus externus abdominis and contralateral obliquus internus abdominis.

ANSWER: C

520. Which of the following statements is TRUE about the function of the erector spine muscle group?

- A. bilateral contraction of the erector spinae the rotation of the trunk.
- B. the erector spinae can anteriorly tilt the pelvis, decreasing the lumbar lordosis.
- C. unilateral contraction of the erector spinae, the laterally located iliocostalis muscles are the most effective lateral flexors of the erector spine group.
- D. the iliocostalis lumborum assist slightly with counter side axial rotation.

ANSWER: C

521. The body of the typical thoracal spine has \_\_\_\_\_ transverse and anterior diameters and the anterior height of the vertebra is \_\_\_\_\_ than posterior height.

- A. equal, greater
- B. non-equal, greater
- C. equal, lesser
- D. non-equal, lesser

ANSWER: A

522. Function of transversospinal group in spine:

- A. Contracting unilaterally, the transversospinal muscles laterally flex the spine and assist with contralateral axial rotation.
- B. Contracting bilaterally, the transversospinal muscles flex the axial skeleton.
- C. Contracting unilaterally, the transversospinal muscles laterally flex the spine and assist with ipsilateral axial rotation.
- D. Contracting bilaterally, the trasversospinal muscles control of gross movements of the entire axial skeleton than control of finer movements at the individual intervertebral junctions



ANSWER: A

523. Function of quadratus lumborum muscle.

- A. Flexion of the lumbar region
- B. Unilateral action is lateral flexion and contralateral rotation of thorax
- C. Pelvis elevation on contralateral side
- D. Vertical stabilization of the lumbar spine, including the lumbosacral junction.

ANSWER: D

524. Flexors of lumbar spine, except:

- A. Rectus abdominis
- B. External oblique abdominal
- C. Transversus abdominis
- D. Internal oblique abdominal

ANSWER: C

525. Flexion of lumbar spine (forward bending of trunk from standing position) is limited by:

- A. Passive tension of hamstring muscles
- B. Active concentric contraction of erector spinae group
- C. Increased tension of iliopsoas muscle
- D. Weakness of abdominal muscles

ANSWER: A

526. Which of the following statements is not TRUE about the kinematics of rib motions?

- A. The costovertebral and costotransversal joints have a common axis, which passing through the center of both joints.
- B. The alignment of the common axis lies at the neck of the rib.
- C. The common axis of motion for the upper ribs lies nearly in the sagittal plane. The upper ribs move upward and forward in a pump handle motion.
- D. The common axis of motion for the lower ribs lies closer to the sagittal plane. The lower ribs move upward and laterally in a bucket handle motion.

ANSWER: C

527. Which of the following statements is not TRUE about the diaphragm?

- A. the diaphragm is a dome-shaped musculofibrous septum, which separates the thoracic from the abdominal cavity.
- B. The sternal part arises from the back of the xiphoid process, the costal part from the inner surfaces of the cartilages and adjacent portions of the lower six ribs
- C. the lumbar part from the anterolateral surfaces of the bodies and disks of L4 to L5 and from the aponeurotic arcuate ligaments.
- D. The three part converge to be inserted into a central tendon.

ANSWER: C

528. What is the distal attachment (insertion) of the gluteus medius muscle?

- A. lesser trochanter of femur
- B. greater trochanter of the femur
- C. linea aspera of femur
- D. femoral neck

ANSWER: B

529. We learned in class that standing on one limb causes compression forces on the hip of about three times body weight. We also learned that this force is due to
- A. force from the hip abductor muscles only
  - B. force from body weight only
  - C. forces from both hip abductor muscles and body weight, but mostly hip abductor muscles
  - D. forces from both the hip abductor muscles and body weight, but mostly body weight

ANSWER: C

530. Anteversion is used to describe the deformity when:
- A. the angle of inclination is greater than normal (average =  $150^\circ$ )
  - B. the angle of inclination is less than normal (average =  $150^\circ$ )
  - C. the angle of torsion is less than normal (average =  $15^\circ$ )
  - D. the angle of torsion is greater than normal (average =  $15^\circ$ )

ANSWER: D

531. The Trendelenburg gait is characterized by the pelvis dropping to the unsupported leg. Which of the following muscles may be weak or paralyzed?
- A. gluteus medius of the stance leg
  - B. gluteus medius of the unsupported leg
  - C. gluteus maximus of the stance leg
  - D. gluteus minimus of the unsupported leg

ANSWER: A

532. Which of the following statements is NOT TRUE about uncovertebral joints?
- A. fibrocartilage structure
  - B. uncinat processes are on posterolateral edge of the superior rim projects upwards to articulate with the body above.
  - C. uncovertebral joints play role in stabilizing the lower cervical spine
  - D. uncovertebral joints play role in increasing the mobility of the lower cervical spine.

ANSWER: D

533. Which of the following statements is not TRUE about atlanto-axial joint structure?
- A. The axis has a large, tall body that serves as a base for the upwardly projecting dens (odontoid process).
  - B. The dens axis provides a rigid vertical axis for rotation of the atlas and head.
  - C. The spinous process of the axis is bifid and very broad and serves as an attachment for many muscles, such as the semispinalis cervicis.
  - D. The superior articular processes are large flat to slightly concave facing cranially and laterally.

ANSWER: D

534. Which of the following statements is NOT TRUE about the kinematics of the atlanto-occipital joints?
- A. Primary movement is flexion and extension, secondary movement is rotation.
  - B. The convex occipital condyles roll backward in extension and forward in flexion, the condyles simultaneously slide in the direction opposite to the roll.

- C. Tension in the tectorial membrane, articular capsules, and atlanto-occipital membranes limits the extent of the roll of the condyles.
- D. Flexion at the atlanto-occipital joint is limited by osseous contact of the anterior ring of the foramen magnum on the dens and the extension is checked by the tectorial membrane.

ANSWER: A

535. All of the following statements are true about the Anterior Longitudinal Ligament EXCEPT
- A. connect the vertebral bodies with discs along the anterior surface of the spine
  - B. much larger and stronger in the cervical spine
  - C. well developed and thick in the lumbar and thoracic spine
  - D. prevent hyperextension

ANSWER: B

536. If lumbosacral angle decreases  $<30^\circ$ , what happens to the position of the lumbar spine??
- A. lordosis decreases
  - B. lordosis increases.
  - C. spine extends.
  - D. pelvis tilts anteriorly

ANSWER: A

537. Which statement is NOT TRUE about nutation and counternutation?
- A. nutation of sacral base moves anteriorly and inferiorly
  - B. nutation of sacral apex moves superiorly and anteriorly
  - C. counternutation of iliac bone rotates anteriorly
  - D. counternutation sacral base moves posteriorly and superiorly

ANSWER: B

538. The vertebral bodies separated by the intervertebral disk, form
- A. an amphiarthrosis
  - B. a plane joint
  - C. a condyloid joint
  - D. a sellar joint

ANSWER: A

539. When is stress on intervertebral discs higher?
- A. Stress is significantly higher with flexion as compared to rotation.
  - B. Stress is significantly higher with compression which is the most common form of loading on the spine.
  - C. Stress is significantly higher during distraction of spine
  - D. Stress is significantly higher with extension of spine

ANSWER: A

540. Which statement is NOT TRUE according to Sternocleidomastoid function?
- A. bilaterally extends cranium upper cervical spine
  - B. bilaterally increases cervical lordosis
  - C. unilaterally flexes mid-lower cervical spine
  - D. unilaterally rotates head and cervical spine to same direction

ANSWER: D

541. Function of Facet Joints? EXCEPT
- A. Weight bearing
  - B. Glide movement
  - C. Limit movement
  - D. Limit axial compression on intervertebral disc

ANSWER: D

542. What vertebrae are at level of highest point of iliac crest?
- A. L2-L3
  - B. L4-L5
  - C. S1-L5
  - D. S2

ANSWER: B

543. Cervical ROM. Greatest axial rotation is at \_\_\_\_\_.
- A. C1-C2
  - B. C3-C5,
  - C. C5-C7
  - D. C7-T1

ANSWER: A

544. Tissues that stabilize the AC Joint, EXCEPT
- A. Superior and inferior AC joint capsular ligaments
  - B. Deltoid and upper trapezius
  - C. Coracoclavicular ligament
  - D. Coracoacromial ligament

ANSWER: D

545. SCAPULOHUMERAL RHYTHM. During shoulder abduction from 90 degrees to 180 degrees 30 degrees of scapulothoracic upward rotation occurs. Why it happens?
- A. During this phase, the 30 degrees of upward rotation occurs predominantly through a synchronous 20 to 25 degrees of clavicular elevation at the SC joint *and* 5 to 10 degrees of upward rotation at the AC joint.
  - B. During this phase, as the serratus anterior muscle rotates the scapula upward, the coracoclavicular ligament is drawn taut and the created tension within the stretched ligament rotates the clavicle in a posterior direction, allowing the AC joint to complete full upward rotation of the scapula.
  - C. During this phase, the clavicle elevates only an additional 25 degrees at the SC joint, which will elongate costoclavicular ligament maximally, consequently the scapula upwardly rotates at the AC joint 20 to 25 degrees.

ANSWER: B

546. Muscles of the hypothenar eminence are innervated by the:
- A. median nerve
  - B. ulnar nerve
  - C. radial nerve
  - D. median and ulnar nerves

ANSWER: B

547. A physical sign known as "winged scapula" suggests the loss of function to which of the following muscles?

- A. rhomboid major
- B. levator scapulae
- C. serratus anterior
- D. trapezius

ANSWER: C

548. Which test is used to examine ulnar nerve injury?

- A. Watson test
- B. Froment test
- C. Finkelstein test
- D. Adson test

ANSWER: B

549. Functions of Medial Collateral Ligament at elbow joint, EXCEPT:

- A. stabilizes the elbow against valgus torques
- B. limits extension at the end of the elbow extension
- C. guides joint motion throughout extension
- D. provides some resistance to longitudinal distraction of joint surfaces.

ANSWER: C

550. Why elbow flexion is 180 degrees, theoretically (without soft tissues)? How does the structure of the distal radius determine range of flexion at elbow?

- A. The medial aspect of the trochlea extends more distally than does the lateral.
- B. The configuration of the trochlear groove determines the pathway of the forearm during flexion and extension.
- C. The distal end of the humerus bulges anteriorly and inferiorly at an angle of 45° to the shaft
- D. The trochlear notch of the ulna projects anteriorly and superiorly at an angle of 15° to the ulnar shaft.

ANSWER: C

551. Proximal radioulnar joint is a \_\_\_\_\_.

- A. Ball and socket joint
- B. Pivot joint
- C. Trochleoginglymoid joint
- D. Plane joint

ANSWER: B

552. Triceps brachii is innervated by \_\_\_\_\_.

- A. Radial nerve
- B. Musculocutaneous nerve
- C. Axillary nerve
- D. Long thoracic nerve

ANSWER: A

553. Which muscle has major stabilizing function in atlanto-axial joint?

- A. Obliquus capitis inferior
- B. Rectus capitis anterior minor
- C. Scalenus
- D. Longus colli cervicis

ANSWER: A

554. What is the most common pathology underlying rotator cuff disorders in the nonathlete?
- A. Deltoid atrophy
  - B. Subacromial impingement
  - C. Acromioclavicular arthritis
  - D. Bicipital tendon disorder

ANSWER: B

## MUSCULOSKELETAL PHYSIOTHERAPY

### ORTHOPEDICS AND ORTHOPEDIC PHYSIOTHERAPY

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

1. Disuse atrophy is the result of:

- A. internal fixation of fractures
- B. microgravity
- C. prolonged immobilization
- D. there is no identifiable aetiological factor

ANSWER: B, C

2. Scoliosis may be the consequence of

- A. neurofibromatosis
- B. congenital disorders
- C. metastatic tumor of the vertebra
- D. wrong posture

ANSWER: A, B, D

3. The following statements are true in scoliosis

- A. conservative treatment should never be used
- B. Harrington rods are used in operative correction
- C. Rib hump is part of the clinical appearance
- D. It is a 3-dimensional deformity

ANSWER: B, C, D

4. Consequences of spina bifida may be

- A. meningocele
- B. myelomeningocele with intact skin
- C. sacralisation of the 5th lumbar vertebra
- D. open myelomeningocele

ANSWER: A, B, D

5. Osteoporosis may be a consequence of

- A. steroid therapy
- B. immobilization following trauma
- C. intestinal malabsorption
- D. hormonal changes

ANSWER: A, B, C, D

6. In CDH

- A. the male/female ratio is 1/6
- B. sonography should not be used before the age of 6 months
- C. hour glass deformity of the capsule makes open reduction of the hip necessary
- D. irreducible hip dislocation should not be treated surgically until the age of 1 year

ANSWER: A, C

7. Typical signs in infantile cerebral palsy:

- A. floppy infant
- B. cog-wheel type of spasticity

- C. clasp- knife type of spasticity
- D. scissoring gait is unusual

ANSWER: A, C

8. Congenital (developmental) disorders of the skeleton:

- A. intrauterine damage may be a causative factor
- B. phocomelia is a type of transversal defect
- C. phocomelia is a type of longitudinal defect
- D. surgical correction should be done only after skeletal maturity

ANSWER: A, B

9. Osteochondritis dissecans is typical in the following locations:

- A. acetabulum
- B. talus
- C. femoral condyle
- D. navicular bone of the foot

ANSWER: B, C

10. Intervertebral disc disease can be the result of

- A. sprain of the spine with oedema around the disc
- B. all cases of segmental disorder of the spine
- C. osteoporosis
- D. osteophyte formation may be an associated phenomenon

ANSWER: A, D

11. Spinal stenosis can be caused by

- A. fracture of vertebral body
- B. tumour
- C. scoliosis
- D. Calvé's disease of the vertebral body

ANSWER: A, B

12. Typical clinical and radiological signs of spinal tuberculosis are:

- A. increased lordosis of the lumbar spine
- B. Pott's gibbus
- C. cold abscess
- D. spinal cord compression

ANSWER: B, C, D

13. Typical signs in postmenopausal osteoporosis :

- A. ankle pain
- B. sympathetic hyperactivity
- C. back pain
- D. loss of body height

ANSWER: C, D

14. Etiology of low back pain may be the following:

- A. intervertebral joint arthrosis
- B. tumors of the vertebral body
- C. inflammatory diseases of pelvic organs
- D. low back pain is always a transient condition.



ANSWER: A, B, C

15. Osteochondritis dissecans is typical in the following locations:

- A. acetabulum
- B. talus
- C. femoral condyle
- D. navicular bone of the foot

ANSWER: B, C

16. Treatment of cartilage surface defect of the femoral condyle is:

- A. mosaic plasty according to Hangody, if the defect is not larger than 4cm.
- B. total joint replacement is the only option
- C. microfracture of the chondral defect
- D. cartilage tissue culture is only in a clinical trial phase.

ANSWER: A, C

17. Typical signs in acquired flat foot - tibialis posterior dysfunction syndrome:

- A. too many toes sign
- B. tibialis posterior tendon remains intact
- C. flat foot is a fixed deformity in these cases
- D. operative management is never a treatment of choice

ANSWER: A, C

18. The following statements are true in Dupuytren's contracture of the hand :

- A. in the aetiology of all cases there is some kind of trauma
- B. fixed flexion contracture of fingers is a typical phenomenon
- C. conservative management is also an option
- D. radical excision of palmar aponeurosis is the only treatment of choice

ANSWER: B, C

19. The following statements are true in carpal tunnel syndrome :

- A. ulnar and median nerves are compressed
- B. wasting of both hypothenar and thenar muscles are equally possible
- C. wasting of thenar muscles is a typical sign
- D. sensory loss of 1-7 digital nerves is a typical sign

ANSWER: C, D

20. Typical symptoms and signs in osteoarthritis, or arthrosis of the hip are:

- A. morning pain
- B. no typical radiological changes
- C. hip movements are painful, but not limited.
- D. limping gait

ANSWER: A, D

21. In avascular necrosis of the femoral head:

- A. plain x-ray signs are typical in advanced stages
- B. hip pain is increasing with the stages of the disease
- C. MR is used only in exceptional cases
- D. conservative management is the first treatment of choice in all stages of the disease

ANSWER: A, B

22. The following statements are true in the management of hip osteoarthritis:

- A. preexisting deformities (ie. coxa vara) can be surgically corrected even if range of movements are  $<90^\circ$
- B. corrective osteotomy of pre-existing deformities can be performed only on the femoral side
- C. cemented total hip replacement is recommended mostly  $> 60$  years of age
- D. indication of uncemented hip replacement depends upon the condition of the bone stock

ANSWER: C, D

23. Signs of acquired flat foot in adults are:

- A. Calcaneo-varus position of the hindfoot
- B. „too many toes” sign
- C. tibialis posterior tendon dysfunction is a typical phenomenon
- D. peroneus longus tendon dysfunction is also a typical phenomenon

ANSWER: B, C

24. Morphological changes in acquired flat foot are:

- A. Achilles tendon rupture
- B. tibialis posterior tendon rupture
- C. talo-navicular subluxation
- D. medial arches of the foot are restored in flexible flat foot when standing on toes

ANSWER: B, C, D

25. The following statements are true in the first stage of reflex sympathetic dystrophy (RSD):

- A. pathological fractures occur more frequently
- B. intense pain
- C. raised skin temperature
- D. increased sympathetic activity

ANSWER: B, C, D

26. Management of reflex sympathetic dystrophy:

- A. decreasing sympathetic hyperactivity in all stages
- B. if peripheral nerve injury results in neuroma formation, it must be surgically treated even in the 1st stage
- C. in the 1st stage of RSD operative management of posttraumatic deformities is recommended
- D. TENS is a useful technique in the first stage of the disease

ANSWER: A, B, D

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.

SELECT THE ONE THAT IS BEST IN EACH CASE

27. Rocker bottom foot is the result of

- A. vertical talus
- B. is a typical phenomenon in club foot
- C. it corrects itself spontaneously
- D. only corrective osteotomy is the treatment of choice

ANSWER: A

28. Hyperlax joints are

- A. always painful
- B. without any consequence
- C. prone to inflammation
- D. more vulnerable

ANSWER: D

29. Osteosclerosis is a typical phenomenon in

- A. Paget's disease
- B. rickets
- C. postmenopausal women
- D. renal osteodystrophy

ANSWER: A

30. Myelodysplasia

- A. it becomes manifest in teenager age group
- B. hip dislocation may not be part of the clinical presentation
- C. neurological disorders are not part of the clinical spectrum
- D. prolapse of the neural tube is due to the lack of closure of vertebral lamina

ANSWER: D

31. „Scottie dog” appearance is typical in

- A. myelodysplasia
- B. scoliosis
- C. spondylolysis
- D. Scheuermann's disease of the spine

ANSWER: C

32. Calvé disease of the spine (vertebra plana – flat vertebra)

- A. leads to permanent deformity of the spinal column
- B. it is often found in scoliosis
- C. it is a traumatic disorder of the spine
- D. it is an aseptic necrosis of the vertebral body

ANSWER: D

33. In poliomyelitis

- A. muscle wasting is localised only on the lower extremities
- B. recovery is to be expected within 1 month
- C. physiotherapy is unnecessary in the acute phase
- D. tendon transfer may be necessary, when the acute phase is over

ANSWER: D

34. In Perthes disease of the hip:

- A. the boy/girl ratio is 1/1
- B. the boy/girl ratio is 4/1
- C. age: above 12 years
- D. shape of the femoral head remains the same during the disease

ANSWER: B

35. In club foot disorder:

- A. midfoot and forefoot are in pronation and valgus
- B. congenital heart defect may be an associated disorder
- C. treatment should begin only after 6 months
- D. only surgical correction should be applied

ANSWER: B

36. Primary bone tumours:

- A. 10% of all tumours

- B. Night pain is typical in all primary bone tumours
- C. Aggressive infiltration of surrounding tissues is sign of malignancy
- D. Pathological fractures occur only in metastatic tumours

ANSWER: C

37. Callotasis means

- A. asymmetrical arrest of epiphyseal growth
- B. spontaneous correction of leg length
- C. callus distraction
- D. premature closure of growth plate

ANSWER: C

38. Typical radiological changes in rickets (rosary rickets ) are visible

- A. on the ribs
- B. in the spinal canal
- C. at the head of the humerus
- D. on the metacarpal bones

ANSWER: A

39. Blue sclera is typical in

- A. Marphan's syndrome
- B. Spondylo-epiphyseal dysplasia
- C. tarda form of osteogenesis imperfecta
- D. storage disorders of the skeleton

ANSWER: C

40. Risser's sign is used to the assessment of

- A. bone density
- B. skeletal maturity
- C. severity of scoliosis
- D. bone dysplasia

ANSWER: B

41. Hairy patch over the lumbo- sacral junction is typical of:

- A. neurofibromatosis causing scoliosis
- B. has no diagnostic significance.
- C. spina bifida
- D. sacralisation of the 5th lumbar vertebra

ANSWER: C

42. The following statement is true in genu varum

- A. the popular name is knock knee
- B. it is a prearthrotic condition
- C. „giving way” is a typical complaint
- D. total knee replacement is the only surgical treatment

ANSWER: B

43. In case of Scapula elevate which muscle is shortened:

- A. m. trapezius sup.
- B. m. trapezius inferior
- C. m. latissimus dorsi
- D. m. pectorals

ANSWER: A

44. There is a physiological valgus position in the

- A. shoulder joint
- B. elbow joint
- C. MP joints
- D. ankle joint

ANSWER: B

45. In case of tennis elbow the pain is felt around the

- A. medial epicondyle
- B. the olecranon
- C. lateral epicondyle
- D. in the fossa cubiti

ANSWER: C

46. In case of Dupuytren contracture

- A. the IV-V fingers are in flexion contracture
- B. the I-II fingers are in flexion contracture
- C. the thumb is in adduction contracture
- D. the abductors of the thumb is shortened

ANSWER: A

47. In case of Rotator cuff injury which active movement is painful

- A. end range abduction
- B. mid range abduction
- C. starting of abduction
- D. the whole range of abduction

ANSWER: B

48. Measuring of real leg length

- A. navel to med malleolus
- B. symphysis to med malleolus
- C. SIAS to med malleolus
- D. SIAS to lat malleolus

ANSWER: C

49. In case of genu valgum

- A. tibia goes lateral compared to femur
- B. tibia moves forward in the sagittal plane
- C. tibia goes medial compared to femur
- D. calcaneus is more lateral compared to tibia

ANSWER: A

50. Arthrosis of the medial side of the knee joint can be a result of

- A. genu valgum
- B. genu varum
- C. habitual patella dislocation
- D. ruptured ACL

ANSWER: B

51. The Trendelenburg sign is positive when

- A. the crista iliaca tilts forward on the concerned side
- B. the crista iliaca goes down on the tested side
- C. the crista iliaca gets higher on the tested side
- D. the pelvis tilts anteriorly

ANSWER: C

52. In case of pes planovalgus we need to strengthen:

- A. the extensors of the toes and tibialis ant
- B. the peroneus brevis
- C. short flexors of the foot and tibialis post.
- D. the dorsalflexors of the ankle joint

ANSWER: C

53. In case of pes planovalgus the position of the calcaneus is

- A. physiological
- B. lateral from the axis of the LE
- C. medial from the axis of the LE
- D. anterior from the axis of the LE

ANSWER: B

54. In case of pes planovalgus under the age of 6, we suggest

- A. supination heel shoes
- B. pronation heel shoes
- C. inner support in the shoes
- D. to do nothing

ANSWER: A

55. In case of pes equinovarus

- A. the medial ligaments are longer
- B. the lateral ligaments are shortened
- C. the lateral ligaments are longer
- D. peroneus muscles are tight

ANSWER: C

56. in case of hip arthrosis

- A. hip joint becomes loose
- B. we need to stretch the m. iliopsoas
- C. we need to stretch the m. gluteus medius
- D. physiotherapy can not help

ANSWER: B

57. Capsular pattern of the hip joint is

- A. ext – int.rot – abd – flex
- B. flex – add – int.rot
- C. abd. – int.rot – flex
- D. abd – ext.rot – ext.

ANSWER: A

58. In case of hip arthrosis, the X-ray shows

- A. increased interarticular gap
- B. necrosis of the femur head
- C. uneven joint contour lines

D. no change on the joint surfaces

ANSWER: C

59. Which statements is true?

- A. In case of slouched posture, the pelvis is shifted backwards.
- B. In case of slouched posture, the thoraces is shifted posterior.
- C. In case of slouched posture, lumbar lordosis decreases.
- D. In case of slouched posture, the head is positioned to one side.

ANSWER: B

60. Which statements is true?

- A. In case of muscle disbalance we have to strengthen weak muscles first.
- B. In case of muscle disbalance we have to stretch short muscles first.
- C. In case of muscle disbalance we may give only concentric strengthening exercise.
- D. In case of muscle disbalance we may not use soap note to examine the patient.

ANSWER: B

61. Which statements is true?

- A. On flexion loading nucleus pulposus migrates posterior.
- B. On flexion loading Lig. Longitudinal Post. loosens.
- C. On extension loading facet joint surfaces open.
- D. On extension loading nucleus pulposus migrates posterior.

ANSWER: A

62. Which statements is true?

- A. spondylolysis is a segmental disorder.
- B. spondylolysis is when the arcus vertebrae remains open at the posterior side
- C. spondylolysis is when side of arcus vertebrae is open
- D. spondylolysis is the horizontal slide of the vertebrae.

ANSWER: C

63. Which statements is true?

- A. Disc hernia cannot cause leg pain.
- B. Disc hernia causes leg pain only if there are osteophytes.
- C. Disc hernia does not influence active range of motion.
- D. Disc hernia may cause muscle weakening.

ANSWER: D

64. Which statements is true?

- A. Following spine surgery the patient has to stand up the next day in every case.
- B. Following spine surgery we give only vascular and breathing exercise on the next day.
- C. Following spine surgery the patient has to avoid flexion loading for a while.
- D. Following spine surgery our main goal is to restore mobility.

ANSWER: C

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

65. In case of postural pain there is no pathological change in the tissues

- A. True
- B. False

ANSWER: A

66. In case of postural pain the main treatment goal is to correct the posture

- A. True
- B. False

ANSWER: A

67. In case of postural dysfunction we need to stretch the shortened tissues

- A. True
- B. False

ANSWER: A

68. In case of postural dysfunction we may use only active stretching techniques

- A. True
- B. False

ANSWER: B

69. When active stabilization of the lumbar spine is the main goal of the treatment, then we need to start by strengthening the m.erector spinae

- A. True
- B. False

ANSWER: B

70. In case of instability of the lumbar spine the SLR test will be positive

- A. True
- B. False

ANSWER: B

71. When m. gluteus maximus weakens the Trendelenburg sign will be positive

- A. True
- B. False

ANSWER: B

72. In lateralized patella syndrome chondromalacia patellae can be a consequence

- A. True
- B. False

ANSWER: A

73. In lateralized patella syndrome the end range of the extension is the most painful movement

- A. True
- B. False

ANSWER: B

74. Coxa vara infantum is a consequence of abnormal collodiaphyseal angle.

- A. True
- B. False

ANSWER: A

75. The frequency of primary cox arthrosis increases with age

- A. True
- B. False

ANSWER: A

76. The first sign of cox arthrosis is initial pain after rest.

- A. True



B. False

ANSWER: B

77. Typical location of pain in cox arthrosis is around the SI joint

A. True

B. False

ANSWER: B

78. Cox arthrosis pain cannot give referred pain to the knee

A. True

B. False

ANSWER: B

79. In case of hip arthrosis pain, we suggest using the cane in the hand of the effected side

A. True

B. False

ANSWER: B

80. After TEP surgery of the hip, patient must avoid extending the hip joint over the neutral position.

A. True

B. False

ANSWER: B

81. In case of lateralized patella strengthening of the m. vastus medialis is best done in the mid range of extension.

A. True

B. False

ANSWER: B

82. Hyperpressure patella syndrome can be a consequence of muscle disbalance.

A. True

B. False

ANSWER: A

83. In case of hyperpressure patella syndrome we have to avoid passive medial mobilization of the patella.

A. True

B. False

ANSWER: B

84. In case of hyperpressure patella syndrome the pain is felt on the anterior side of the knee.

A. True

B. False

ANSWER: A

85. In chondromalatia patellae the most painful activity is walking down the stairs.

A. True

B. False

ANSWER: A

86. Active physiotherapy can correct genu varum.

- A. True
- B. False

ANSWER: B

87. For equinovarus position of the foot we need to strengthen the m. tibialis anterior in order to correct the position.

- A. True
- B. False

ANSWER: B

88. In pes planus stretching of the plantar flexor muscles will help.

- A. True
- B. False

ANSWER: B

89. In case of Tennis Elbow we need to work on keeping the mobility of the elbow joint.

- A. True
- B. False

ANSWER: B

90. Golf elbow can be a consequence of overloading the flexor muscles of the wrist.

- A. True
- B. False

ANSWER: A

91. In case of Tennis elbow the resisted wrist extension examination will be painful.

- A. True
- B. False

ANSWER: A

92. De Quervain syndrome is the inflammation of the m. adductor pollicis .

- A. True
- B. False

ANSWER: B

93. In case of pes planus the calcaneus often gets into a varus position.

- A. True
- B. False

ANSWER: B

**Single-choice**

1. What type of stability is provided by plate osteosynthesis?

- A. Stability for movement
- B. Stability for weight bearing
- C. Adaptive stability
- D. Rotational stability

ANSWER: A

2. How may the patient bear weight after Gamma nailing?

- A. Full weight bearing
- B. Weight of the limb only
- C. Simulated gait
- D. Crutch walking without weight bearing

ANSWER: A

3. What is used as first aid for tension pneumothorax?

- A. Mechanical ventilation
- B. A needle is inserted into the intercostal space
- C. The patient is intubated
- D. Breathing exercises

ANSWER: B

4. What is the most common source of bleeding in blunt abdominal trauma?

- A. Liver rupture
- B. Mesenteric injury
- C. Retroperitoneal haemorrhage
- D. Splenic rupture
- E. Bladder rupture

ANSWER: D

5. What is the simplest and most commonly used examination method for diagnosing intra-abdominal bleeding?

- A. Abdominal X-ray
- B. Diagnostic peritoneal lavage
- C. Abdominal ultrasonography
- D. Abdominal CT examination

ANSWER: C

6. The current treatment of a flexion fracture-dislocation of the cervical spine is:

- A. Application of a diadem plaster cast
- B. Wearing a Schanz collar
- C. Anterior spinal fusion
- D. Traction treatment

ANSWER: C

7. During physiotherapy for stable spinal fractures, which direction of movement is permitted last?

- A. Extension
- B. Rotation
- C. Lateral flexion
- D. Flexion

ANSWER: D

8. After reduction of a traumatic anterior shoulder dislocation, which movement must be avoided during the maximum-protection phase of physiotherapy?

- A. Internal rotation of the shoulder
- B. Shoulder abduction
- C. Shoulder flexion
- D. All three

ANSWER: D

9. When should early Sudeck syndrome be suspected during the examination of a patient with an upper-limb injury?

- A. The patient does not use the injured limb
- B. The skin is warmer and more sensitive in the injured area
- C. A decrease in range of motion is observed
- D. Muscle atrophy is observed

ANSWER: B

10. In musculocutaneous nerve injury, which muscle requires selective electrical stimulation?

- A. M. brachioradialis
- B. M. supinator
- C. M. biceps brachii
- D. M. Anconeus

ANSWER: C

11. Select the muscle innervated by the median nerve.

- A. M. abductor pollicis longus
- B. M. opponens digiti minimi
- C. M. palmaris longus
- D. M. flexor carpi ulnaris

ANSWER: C

12. Which muscle is expected to atrophy following a proximal median nerve injury?

- A. M. brachialis
- B. M. supinator
- C. M.pronator teres
- D. M. opponens digiti minimi

ANSWER: C

13. What is the Moberg pick-up test?

- A. A test of ulnar nerve sensory function

- B. A test of radial nerve sensory function
- C. A test of median nerve motor function
- D. A test of median nerve sensory function

ANSWER: D

14. Select the muscle innervated by the ulnar nerve.

- A. M. palmaris longus
- B. M. supinator
- C. M. adductor pollicis
- D. M. flexor carpi radialis

ANSWER: C

15. Which muscle is expected to atrophy following radial nerve injury?

- A. M. supinator
- B. M. opponens digiti minimi
- C. M. opponens pollicis
- D. M. palmaris longus

ANSWER: A

16. How is the motor function of the radial nerve tested?

- A. By pronation of the forearm
- B. By supination of the forearm
- C. By flexion of the elbow
- D. By adduction of the thumb

ANSWER: B

17. Which muscles exert shear forces on anterior pelvic ring fractures?

- A. Hip flexors
- B. Hip extensors
- C. Hip abductors
- D. Hip adductors

ANSWER: D

18. Which complication is common after a femoral neck fracture?

- A. Avascular necrosis of the femoral head
- B. Non-union
- C. Implant loosening
- D. Inflammation

ANSWER: A

19. In a femoral shaft fracture treated with locked intramedullary nailing, what enables early mobilisation?

- A. Adequate biomechanical stability of the implant
- B. A complete plaster cast
- C. Six weeks of bed rest
- D. Completion of bone healing

ANSWER: A

20. Which tendon graft is not routinely used for anterior cruciate ligament reconstruction?

- A. Semitendinosus tendon
- B. Quadriceps tendon
- C. Palmaris longus tendon
- D. Patellar tendon (bone-patellar tendon-bone graft)

ANSWER: C

21. A football player sustained a twisting knee injury and the knee became “locked”. What is the most likely injury?

- A. Medial collateral ligament rupture
- B. Meniscal injury
- C. Fracture of the intercondylar eminence
- D. Patellar dislocation

ANSWER: B

22. In displaced patellar fractures, which movement facilitates the effect of tension-band wiring?

- A. Extension
- B. Internal rotation
- C. Flexion
- D. External rotation

ANSWER: C

23. What is one of the primary goals of rehabilitation in the early postoperative phase after anterior cruciate ligament reconstruction?

- A. Achieving full flexion as soon as possible
- B. Restoring full extension and activating the quadriceps
- C. Achieving full weight bearing within 24 hours
- D. Resuming sports activities as soon as possible

ANSWER: B

24. What is the primary purpose of continuous passive motion (CPM) after ACL reconstruction?

- A. Increasing muscle strength
- B. Gradually restoring joint range of motion
- C. Eliminating muscle atrophy
- D. Improving proprioception

ANSWER: B

25. In patients with an amputation, the residual limb is optimal when:

- A. The surgical scar is located laterally
- B. The amputation is as close as possible to a joint
- C. The skin and subcutaneous connective tissue are intact
- D. The patient has no phantom sensation

ANSWER: C

26. Select the incorrect statement.

- A. A nerve injury may be a complication of shoulder dislocation



- B. The regeneration rate of a peripheral nerve is 0.1 mm per day
- C. Grip function depends on the extension range of the wrist
- D. The elbow is prone to flexion contracture

ANSWER: B

27. Select the incorrect statement.

- A. The thumb is moved by nine muscles
- B. The flexor pollicis brevis has dual innervation
- C. The Froment sign is tested in a patient with an ulnar nerve injury
- D. The ninhydrin test is used in peripheral nerve assessment

ANSWER: A

28. Select the incorrect statement.

- A. Two-point discrimination at the fingertip is 1–2 mm
- B. The structure of the nails changes after peripheral nerve injury
- C. The condition of the skin does not change after peripheral nerve injury
- D. Muscles atrophy after peripheral nerve injury

ANSWER: C

29. Select the incorrect statement.

- A. The biceps brachii is innervated by the radial nerve
- B. The brachioradialis is innervated by the radial nerve
- C. The pronator teres is innervated by the median nerve
- D. The supinator is innervated by the radial nerve

ANSWER: A

30. Select the incorrect statement.

- A. The triceps brachii is innervated by the radial nerve
- B. The adductor pollicis is innervated by the radial nerve
- C. The abductor pollicis longus is innervated by the radial nerve
- D. The extensor pollicis longus is innervated by the radial nerve

ANSWER: B

31. Select the incorrect statement.

- A. The abductor digiti minimi is innervated by the ulnar nerve
- B. The first dorsal interosseous muscle is innervated by the ulnar nerve
- C. The flexor carpi ulnaris is innervated by the ulnar nerve
- D. The abductor pollicis brevis is innervated by the ulnar nerve

ANSWER: D

32. Select the incorrect statement.

- A. Radial nerve injury may be a complication of a humeral shaft fracture
- B. A patient with radial nerve injury cannot extend the wrist
- C. A patient with radial nerve injury cannot extend the metacarpophalangeal joints
- D. A patient with radial nerve injury cannot adduct the thumb to the index finger

ANSWER: D

33. Select the incorrect statement.

- A. Pölchen exercises may also be used in acute deep-vein thrombosis to improve venous circulation.
- B. After injuries around the wrist, forearm supination and pronation may decrease
- C. The interosseous membrane becomes taut during supination
- D. Grip strength is provided primarily by the long flexor muscles

ANSWER: A

34. Which consideration is incorrect in the treatment of unstable pelvic fractures?

- A. Positioning control
- B. Maintaining range of motion in unaffected joints
- C. Immediate performance of the full range of hip motion
- D. Preparation of the gait pattern

ANSWER: C

Multiple-choice questions

1. Select the components of physiotherapy for an unconscious patient.

- A. Pressure-ulcer prevention
- B. Maintaining the position assumed by the patient
- C. Airway clearance
- D. Protecting the patient from external auditory and visual stimuli

ANSWER: A, C

2. Symptoms of traumatic (haemorrhagic) shock include:

- A. Thready pulse
- B. Pale, sweaty skin
- C. Blood pressure below 100 mmHg
- D. Pulse below 100/min

ANSWER: A, B, C

3. Which of the following interventions may help prevent Sudeck reflex dystrophy?

- A. Gentle, pain-free reduction
- B. Administration of sedatives and analgesics
- C. Early follow-up examination and cast replacement
- D. Removal of the plaster cast

ANSWER: A, B, C

4. Which are symptoms of stage I Sudeck reflex dystrophy?

- A. Pain
- B. Warm skin
- C. Restricted movement
- D. Skin hypersensitivity

ANSWER: A, B, C, D

5. Which options are used in the treatment of burn disease?

- A. Shock management

- B. Necrectomy
- C. Early plastic surgical coverage
- D. Antibiotic treatment

ANSWER: A, B, C, D

6. Select the treatment options for a fracture-dislocation of the cervical spine.

- A. Reduction and anterior spinal fusion
- B. Reduction and Halo fixator immobilisation
- C. Reduction and traction treatment
- D. Early functional treatment

ANSWER: A, B, C

7. Select the factors that determine the types of spinal injuries.

- A. Direction, site and magnitude of the applied force
- B. Position of the affected region
- C. Material properties of the tissues
- D. Time elapsed since the injury

ANSWER: A, B, C

8. Primary complications of spinal injuries may include:

- A. Plegia
- B. Injury to the pelvic organs
- C. Transverse spinal cord lesion
- D. Hypovolaemic shock

ANSWER: A, C

9. A plaster corset is no longer used for every stable vertebral fracture because:

- A. Muscles become markedly hypotrophic during prolonged immobilisation
- B. Movement therapy cannot be started while wearing the corset
- C. Prolonged immobilisation restricts breathing
- D. Stable vertebral fractures never require any immobilisation

ANSWER: A, C

10. Which are components of physiotherapy for rib fractures?

- A. Elevating the end of the bed
- B. Teaching the correct technique of thoracic breathing
- C. Assisting expectoration with various physiotherapy methods
- D. Applying an elastic bandage to the patient's lower limbs

ANSWER: A, B, C, D

11. Select the treatment options for a Bennett fracture.

- A. Reduction by traction and percutaneous pinning
- B. Plaster immobilisation
- C. Plate or screw osteosynthesis
- D. Functional treatment

ANSWER: A, B, C

12. Select the treatment of flexor tendon injuries in "no man's land" of the hand.

- A. Plaster immobilisation of the wrist and MCP joints in flexion without exercises
- B. Protected active and controlled passive exercises
- C. Early active exercises
- D. After three weeks, active, passive and underwater exercises without immobilisation

ANSWER: B, D

13. Which are treatment options for an unstable pelvic fracture in young patients?

- A. Posterior stabilisation with a sacroiliac screw
- B. Conservative treatment
- C. Anterior stabilisation with a plate
- D. Mobilisation with weight bearing

ANSWER: A, C

14. Select the physiotherapy interventions used after hip dislocation.

- A. Circulation-enhancing exercises
- B. Simulated gait with crutches without weight bearing
- C. Active exercises of the hip joint
- D. Weight bearing after six weeks

ANSWER: A, B, C

15. For which type of femoral neck fracture may conservative treatment be considered?

- A. Garden V
- B. Garden III
- C. Garden IV
- D. Garden I

ANSWER: D

16. Why is a brace preferred after knee injuries?

- A. It limits flexion only to the required extent
- B. It is very easy to put on and remove
- C. It prevents lateral movements
- D. It prevents full extension

ANSWER: A, C

17. Which may be the most common complications of lower-leg fractures?

- A. Quadriceps muscle hypotrophy
- B. Patellar adhesions
- C. Loss of terminal extension
- D. Flexion contracture

ANSWER: A, B, C, D

18. Select the treatment options for a non-displaced patellar fracture.

- A. The patient may walk with full weight bearing
- B. Full-flexion exercises (squats) are performed
- C. Ankle and hip exercises are performed

D. The limb is immobilised in a Böhler cast

ANSWER: A, C

19. Which are treatment methods for unstable closed lower-leg fractures?

A. External fixation

B. Circumferential plaster cast

C. Locked intramedullary nailing

D. Intramedullary splinting

ANSWER: A, C

20. What may be the consequences of delayed recognition of an Achilles tendon rupture?

A. Impaired triceps surae function

B. Quadriceps weakness

C. Scar-tissue formation

D. Restriction of all movements of the subtalar joint

ANSWER: A, C

21. Which may be the most common complications of injuries around the ankle?

A. Equinus position

B. Adhesion of the extensor hallucis longus

C. Post-traumatic flatfoot

D. Injury to the peroneus longus muscle

ANSWER: A, B, C, D

22. Select the treatment options for burn disease.

A. Administration of fluids and albumin

B. Necrectomy

C. Sterile dressing changes

D. Plaster immobilisation of the injured limb

ANSWER: A, B, C

23. Select the treatment options for rib fractures.

- A. Analgesia and breathing exercises
- B. Mechanical ventilation in every case
- C. Surgical treatment
- D. Bandaging the chest

ANSWER: A, C

24. Select the treatment options for clavicular fractures.

- A. Figure-of-eight bandage
- B. Functional treatment
- C. Immobilisation with a triangular sling
- D. Reduction and plaster immobilisation

ANSWER: A, B, C

25. Which are treatment methods for fractures of the proximal humerus?

- A. Early functional treatment
- B. Thoracoabduction plaster cast
- C. Osteosynthesis providing stability for movement
- D. External fixation

ANSWER: A, C

26. Treatment of flexor tendon injuries in “no man’s land” of the hand. Select the correct combination.

- A. Primary direct tendon repair is performed
- B. A plaster cast is applied in the functional position for three weeks
- C. Protected early active exercises are performed
- D. Active PIP and DIP joint movements are not permitted

ANSWER: A, C

27. Which are treatment methods for pertrochanteric fractures?

- A. Traction treatment



- B. Dynamic hip screw
- C. Küntscher nailing
- D. Cephalomedullary nail

ANSWER: B, D

28. Which are the goals of early rehabilitation after anterior cruciate ligament reconstruction?

- A. Restoring full extension as soon as possible
- B. Activating the quadriceps femoris muscle
- C. Reducing pain and swelling
- D. Achieving full flexion as soon as possible

ANSWER: A, B, C

29. Which statements are true about a syndesmotic positioning screw in Weber C ankle fractures?

- A. It ensures syndesmotic stability during healing
- B. It facilitates anatomical healing of the syndesmosis
- C. Removal of the screw is mandatory in every case
- D. No ankle movement may be performed while the screw remains in place

ANSWER: A, B

### True–False questions

1. One of the most important elements of the bony stability of the elbow is the articulation between the humeral trochlea and the trochlear notch of the ulna.

- A. True
- B. False

ANSWER: A

2. During rehabilitation after elbow injuries, aggressive stretching reduces the risk of myositis ossificans.

- A. True
- B. False

ANSWER: B

3. The interosseous membrane plays a role in force transmission between the radius and ulna.

A. True

B. False

ANSWER: A

4. The triangular fibrocartilage complex (TFCC) plays an important stabilising role in the distal radioulnar joint.

A. True

B. False

ANSWER: A

5. In a non-displaced scaphoid fracture, the initial radiograph always demonstrates the fracture.

A. True

B. False

ANSWER: B

6. The pelvic ring may be regarded biomechanically as a closed kinetic chain.

A. True

B. False

ANSWER: A

7. In an unstable pelvic ring injury, the risk of hypovolaemic shock must be considered.

A. True

B. False

ANSWER: A

8. Increased capillary permeability and fluid loss play an important role in the development of burn disease.

A. True

B. False

ANSWER: A

9. The aims of first aid for burns include reducing tissue damage and preventing infection.

A. True

B. False

ANSWER: A

10. The remodelling phase of soft tissues is generally completed during the first week after injury.

A. True

B. False

ANSWER: B

11. In a cervical whiplash injury, rapid hyperextension is followed by rapid hyperflexion; therefore, both the anterior and posterior structures of the spine may be injured.

A. True

B. False

ANSWER: A

12. In cervical distortion, prolonged use of a Schanz collar for several months promotes faster functional recovery.

A. True

B. False

ANSWER: B

13. Knee stability is provided exclusively by the ligaments; the muscles have no stabilising role.

A. True

B. False

ANSWER: B

14. The menisci are passive stabilisers of the knee.

A. True

B. False

ANSWER: A

15. Primary brain injury results directly from trauma, whereas secondary brain injury may be caused by hypoxia, ischaemia and increased intracranial pressure, among other factors.

A. True

B. False

ANSWER: A

16. Cerebral concussion always involves demonstrable permanent morphological damage to the brain tissue.

A. True

B. False

ANSWER: B

17. A considerable proportion of severe head injuries occur as part of polytrauma.

A. True

B. False

ANSWER: A

18. Polytrauma is present when at least two body regions or organ systems are injured and at least one injury, either alone or in combination with the others, causes a life-threatening condition.

A. True

B. False

ANSWER: A

19. The prophylactic tasks of trauma physiotherapy include the prevention of thromboembolic and respiratory complications.

A. True

B. False

ANSWER: A

20. The primary aim of the minimum-protection phase is to biologically accelerate the healing of the injured tissue, while restoration of function is only a secondary consideration.

A. True

B. False

ANSWER: B

## RHEUMATHOLOGY AND PHYSIOTHERAPY IN RHEUMATHOLOGY

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

94. Which joint is the mostly affected in case of JIA?

- A. hand's small joints
- B. hip
- C. ankle
- D. knee

ANSWER: D

95. In which colours the Raynaud's phenomenon doesn't appear?

- A. purple
- B. blue
- C. red
- D. white

ANSWER: A

96. Which of the following diseases can be related to Sjörgen's sy?

- A. Gout
- B. RA
- C. SPA
- D. JIA

ANSWER: B

97. Which of the following doesn't belong to the suggested types of exercises in case of SLE?

- A. aerob training
- B. muscle strenghtening
- C. anaerob training
- D. ROM improvement

ANSWER: C

98. Which of the following symptoms does NOT refer to the SLE?

- A. photosensitivity
- B. neurological disorders
- C. tightened skin
- D. serositis

ANSWER: C

99. Ankylosing spondylitis is a type of \_\_\_\_\_ that affects the \_\_\_\_\_

- A. Infection that affects the spine
- B. Arthritis that affects the knees

- C. Inflammation that affects the brain
- D. Arthritis that affects the spine

ANSWER:D

100. Which of the following is correct about Osteoarthritis?

- A. It is a progressive disease
- B. It is a non-inflammatory disease
- C. It affects diarthrodial joints
- D. All of the above

ANSWER:D

101. The chief pathologic features of Osteoarthritis are

- A. Autoimmune damage to the synovium, destruction of articular cartilage by pannus
- B. Degeneration of articular cartilage, destruction of the bone under the cartilage
- C. Thinning of the joint capsule
- D. Autoimmun inflammation

ANSWER: B

102. Which measurement not consist the BASMI?

- A. Lateral lumbar flexion
- B. Modified Schober
- C. Tragus- wall distance
- D. Chest expansion

ANSWER: D

103. All of the following features are seen in osteoarthritis except:

- A. bony spurs
- B. destruction of the synovial membrane with pannus formation
- C. fissuring of the articular cartilage
- D. presence of subchondral bone cysts
- E. fragments of articular cartilage in joint space

ANSWER: B

104. Where does inflammation usually begin in an individual with ankylosing spondylitis?

- A. hips first and then thoracic spine
- B. peripheral joints and then proceeds to the vertebrae
- C. sacroiliac joints with progression up the spine
- D. costovertebral joints with progression down the spine
- E. cervical and thoracic vertebrae, causing kyphosis

ANSWER: C

105. What limits joint movement in osteoarthritis?

- A. wider joint space
- B. significant swelling of joint capsule
- C. fibrosis involving the joint ligaments
- D. osteophytes and irregular cartilage surface
- E. decreased amount of synovial fluid in the cavity

ANSWER: D

106. What is contraindicated in RA in the II. Seyfried stage in the hand?

- A. grip strengthening
- B. mobilisation
- C. axial correction
- D. splinting

ANSWER:A

107. Which muscles we need to strengthen in RA?

- A. m. peroneus brevis
- B. m. tibialis longus
- C. m. flexor hallucis longus
- D. m. peroneus longus

ANSWER:D

108. What are the functional stages in RA?

- A. No limitation of ADL
- B. Limitation of avocational
- C. Limitation of vocational
- D. All

ANSWER: D

109. The affected nerve in Carpal tunnel syndrome?

- A. nervus ulnaris
- B. nervus medianus
- C. nervus radialis
- D. plexus brachialis

ANSWER: B

110. Affected muscles in tennis elbow?

- A. EPL
- B. m. extensor digiti minimi
- C. ECRL, ECRB
- D. m. brachioradialis

ANSWER: C

111. Which measurements are contraindicated in acute inflammation?

- A. special tests
- B. muscle strength
- C. PROM
- D. all

ANSWER: D

112. What is true for SLR test?

- A. test for sciatic nerve irritation
- B. patient is in prone
- C. knee is flexed
- D. cervical spine is flexed

ANSWER:A

113. Prefer to strengthen in OP posture:

- A. m. iliopsoas
- B. Hamstring

- C. m. pectoralis minor
- D. m. romboideus major

ANSWER: D

114. What is the T score level in osteopenia?

- A. from 1,1 to 2,5
- B. from -2,5
- C. from -1,0 to -2,5
- D. from 2,5

ANSWER: C

115. L5 myotom

- A. m. iliopsoas
- B. m. biceps femoris
- C. m. tibialis posterior
- D. m. extensor hallucis longus

ANSWER:D

116. L4 dermatom, sensory loss

- A. tight anterior part
- B. foot lateral part
- C. Achilles
- D. foot medial part, shin medial part

ANSWER:D

117. Which statements are characteristic for degenerative disorders?

- A. they are of mechanic origin
- B. they are caused mostly by physiological aging of the tissues
- C. pain caused by them is load-dependent and relieves by rest
- D. all above

ANSWER: D

118. For non-steroidal antiinflammatory drugs (NSAIDs) is NOT true, that

- A. they are acting with the blockade of the ciklooxigenase and the inhibition of prostaglangine production
- B. most common side effects of NSAIDs are gastrointestinal problems
- C. they are effective for neuropathic pain
- D. topical products are also available

ANSWER: C

119. Trendelenburg sign is:

- A. steppage gait
- B. skin lesion in SLE
- C. drop of pelvis when lifting leg opposite to weak gluteus medius
- D. hyperostosis on X-ray

ANSWER: C

120. The patient has low back pain irradiating into the right thigh. By physical examination we can detect diminishing of the patella reflex, numbness on the ventral side of the thigh, muscle weakness at the tibialis anterior. The patient has most probably:

- A. S1 radiculitis
- B. piriformis tunnel syndrome



- C. L4 radiculitis
- D. L5 radiculitis

ANSWER: c

121. The patient has neck pain irradiating into the left arm. By physical examination we can detect diminishing of the biceps reflex, numbness on the radial side of the forearm and thumb, and muscle weakness of the wrist extensors. The patient has most probably:

- A. carpal tunnel syndrome
- B. C6 radiculitis
- C. scalenus syndrome
- D. C7 radiculitis

ANSWER: b

122. Diagnostic laboratory finding in osteoarthritis:

- A. aCCP antibody positivity
- B. elevated muscle enzymes (CK, LDH)
- C. there is no specific change
- D. raised inflammatory parameters (ESR, CRP)

ANSWER: C

123. Analysis of the synovial fluid is NOT useful for:

- A. detecting crystals
- B. microbiological culturing when infection is suspected
- C. measuring uric acid level
- D. distinguishing degenerative and inflammatory effusion (based on the WBC count)

ANSWER: C

124. To assess thoraco-lumbar function we can measure:

- A. lumbar flexion by Schober
- B. chest expansion
- C. middle finger to floor distance
- D. all above

ANSWER: D

125. Middle-aged woman wakes up during the night for pain in the hands and forearms, numbness of the I-III fingers of the hands, sometimes symmetric. She jiggles the hands for a few minutes and the numbness disappears, pain relieves. What is this typical for?

- A. small joint synovitis, e.g. rheumatoid arthritis
- B. carpal tunnel syndrome
- C. thoracic outlet syndrome
- D. cervical disc herniation

ANSWER: B

126. Which of the following durations is generally considered to define chronic low back pain?

- A. > 4 weeks
- B. > 6 weeks
- C. > 2 months
- D. > 3 months

ANSWER: D

127. What is not typical in osteoporotical posture?
- A. retracted shoulders
  - B. abducted scapulae
  - C. scapulae are in external rotated position
  - D. shoulders are in internal rotation

ANSWER: A

128. Impingement syndrome
- A. is the tear of supraspinatus tendon
  - B. a tunnel syndrome
  - C. is the anatomic or functional compression of the rotator cuff tendons and the subacromial bursa between the coracoacromial arc and the humeral head
  - D. needs mostly surgical treatment

ANSWER: C

129. It's NOT true for lateral humeral epicondylitis:
- A. is golf elbow
  - B. is tennis elbow
  - C. is an enthesitis because of overuse
  - D. is improving for local corticosteroid injection

ANSWER: A

130. The young woman has Raynaud's phenomenon, dry eyes, dry mouth, enlargement of the parotid gland, polyarthritis, purpures on the legs. These features are most characteristic for:
- A. Polymyalgia rheumatica
  - B. Sjögren's syndrome
  - C. Systemic sclerosis
  - D. Rheumatoid arthritis

ANSWER: B

131. What are the most important measurements in Ankylosing Spondylitis by the recommendation?
- A. tragus occiput distance
  - B. abdominal expansion
  - C. hip ROM
  - D. shoulder ROM

ANSWER: A

132. The stages in ALS, EXCEPT:
- A. Functional
  - B. Chronic
  - C. Statical
  - D. Dynamic

ANSWER: B

133. How much is the normal rate of chest expansion?
- A. less than 5 cm
  - B. less than 3 cm
  - C. more than 5 cm
  - D. more than 3 cm

ANSWER:C

134. What is SOAP note?

- A. Subjective, Objective, Assessment, Planning
- B. Subjective, Objective, Assessment, Palpation
- C. Subjective, Occupational therapy, Assessment, Planning
- D. Subjective, Objective, Application, Positioning

ANSWER: A

135. You have a young female patient, attending regularly for physiotherapy because of her scoliotic back pain. Once you notice skin lesions, some of her fingers are white, she has joint pain, seems to be tired. What do you think?

- A. She has fibromyalgia.
- B. She has features suspicious for autoimmune disease, she should be referred to rheumatologist/immunologist.
- C. She is pregnant.
- D. She has psoriasis.

ANSWER: B

136. What is the typical sign of osteoarthritis?

- A. pain at night
- B. redness
- C. all joints are effected
- D. one side is effected

ANSWER: D

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

137. Which statements are characteristic for inflammatory disorders?

- A. they are of autoimmune or immune-mediated origin
- B. they are caused mostly by physiological aging of the tissues
- C. pain persists or increases at night /when resting, often awakens one during the night
- D. osteoarthritis is an inflammatory disorder

ANSWER: A,C

138. Inflammatory disorders are:

- A. Fibromyalgia
- B. Spondylarthrosis
- C. Rheumatoid arthritis
- D. Osteoarthritis

ANSWER: B,C

139. 36 yrs. old man wakes up regularly for low back pain early in the morning. Pain is irradiating into the gluteal regions, the back side of thighs. There is a long lasting stiffness of spine in the morning, but exercise improves pain. Taking ibuprofen (NSAID) is relieving. What do you think about this?

- A. The patient may have lumbago, lumbar MRI is needful.
- B. Physiotherapy is contraindicated.
- C. Criteria for inflammatory back pain are fulfilled, sacroiliitis is suspectable.
- D. Further investigations (X-ray, sacroiliacal MRI, laboratory tests) are required.

ANSWER: C,D

140. DMARD is:

- A. dermatomuscular autoimmune rheumatic disease
- B. slow acting, remission inducing medication
- C. disease modifying antirheumatic drug
- D. abbreviation of an imaging technique

ANSWER: B,C

141. Joint involvement characteristic for rheumatoid arthritis:

- A. sacroiliac joint
- B. wrist
- C. distal interphalangeal joints
- D. metacarpophalangeal joints

ANSWER: B, D

142. For conventional radiography it's true:

- A. not easily available and expensive
- B. behind the times
- C. shows the shadow of the bony, calcified tissues
- D. it is an exposure to radiation

ANSWER: C,D

143. Common features of autoimmune diseases are:

- A. tunnel syndromes
- B. Raynaud's phenomenon
- C. skin symptoms
- D. osteoarthritis

ANSWER: B,C

144. Physical therapy in active inflammatory stage of polymyositis:

- a) in active stage physiotherapy is contraindicated
- b) passive mobilisation
- c) electrotherapy
- d) breathing therapy

ANSWER: B,D

145. The role of physiotherapist in patient with systemic sclerosis:

- A. Contracture prevention
- B. Muscle strength conservation
- C. Physiotherapy of blood vessels
- D. Breathing exercises

ANSWER: A,B,C,D

146. Correct statements for polymyalgia rheumatica:

- A. is a disease mostly of young women
- B. symptoms are pain, aching and morning stiffness in the shoulder girdle and often in the pelvic girdle
- C. skin symptoms are characteristic
- D. evidence for inflammation in the laboratory test

ANSWER: B,D

147. Juvenile idiopathic arthritis

- A. is an umbrella term, which covers quite different groups of childhood arthritides
- B. affects children 4-14 years
- C. 50% of the patients have seropositive polyarticular form (like RA in adulthood)
- D. the most severe form is systemic JIA, with fever, rash, polyarthritis

ANSWER: A,D

148. Enthesitis:

- A. is mostly of mechanic origin (overuse)
- B. is an autoimmune disorder
- C. may be feature of systemic inflammatory diseases e.g. spondylarthritides
- D. is the inflammation of the muscle

ANSWER: A,C

149. Tunnel syndrome is

- A. inflammation in the tendon sheath
- B. caused by compression of a nerve
- C. characterized by sensory changes
- D. muscle weakness, atrophy may be detectable

ANSWER: B,C,D

150. Fibromyalgia is characterised by

- A. widespread pain
- B. somatic symptoms
- C. increased physical activity
- D. sleep disturbances

ANSWER: A,B,D

151. Fibromyalgia patient needs

- A. sleeping pill
- B. aerobic exercise
- C. antidepressant medication
- D. cognitive behavioural therapy, relaxation

ANSWER: B,C,D

152. Inflammatory disorders are:

- A. Fibromyalgia
- B. Spondylarthritis
- C. Rheumatoid arthritis
- D. Osteoarthritis

ANSWER: B,C

153. What is not preferred in ACUTE OP?

- A. support of breathing technique
- B. support of blood circulation
- C. painkillers
- D. posture correction

ANSWER: D

154. Diagnostics of gout may rely on,

- A. MSU crystals confirmed by polarized microscopy
- B. MRI
- C. ultrasonography
- D. double-energy CT (DECT)

ANSWER: A,C,D

155. Characteristic to rheumatoid arthritis

- A. Asymmetric polyarthritis
- B. DIP joints involved
- C. wrist, MCP- and PIP joints involved, among possible others
- D. elevated CRP, raised erythrocyte sedimentation rate (ESR)

ANSWER: C+D

156. The therapy of rheumatoid arthritis should

- A. be administered as early as possible.
- B. contain long term corticosteroids
- C. contain classical synthetic DMARDS (e.g. methotrexate) as first drug of choice
- D. contain targeted therapies (biologics, signal inhibition) as first drug of choice

ANSWER: A, C

157. Which of the followings are radiological signs of ankylosing spondylitis?

- A. Sacroiliitis is usually the first manifestation and is symmetrical and bilateral.
- B. At end-stage, the SI joint may be seen as a thin line or not visible
- C. Syndesmophytes (paravertebral ossification running parallel to the spine) are common in ankylosing spondylitis.
- D. Diffuse syndesmophytic ankylosis can give a „bamboo spine“ appearance in ankylosing spondylitis.

ANSWER: A, B, C, D

158. Which statement is correct?

- A. Osteoporosis is a systemic, progressive disease of the bone.
- B. Osteoporosis is characterized by an equal decrease of organic and inorganic bone mass.
- C. Osteoporosis is characterized by an unequal decrease of organic and inorganic bone mass.
- D. Osteoporosis is characterized by microarchitectural damage and deterioration of bone quality.

ANSWER: A, B, D

159. What movement is contraindicated in RA foot?

- A. claw
- B. tip toe with weight bearing
- C. dorsiflexion
- D. plantarflexion

ANSWER: A,B

160. What are the modified version of Schober test in osteoporosis?

- A. All fours pose
- B. Sitting
- C. Side position
- D. Standing

ANSWER:A,C

161. What movement is contraindicated in RA wrist?

- a) compression
- A. dorsiflexion
- B. DF
- C. radial deviation

ANSWER: A,B,C,D

162. What are the causes of secondary osteoarthritis?

- A. injury
- B. overweight
- C. axial deformity
- D. inflammation

ANSWER: A,B,C,D

163. The diagnostics of rheumatoid arthritis is based on

- A. joint involvement
- B. serology (anti-CCP, RF)
- C. acute-phase reactants
- D. radiography (e.g. X-ray)

Answer: A, B, C

164. To assess thoraco-lumbar function we can measure

- A. chest expansion
- B. muscle strength of the arms
- C. middle finger to floor distance
- D. lumbar flexion by Schober

Answer: A, C, D

165. Characteristic clinical features of systemic lupus erythematosus:

- A. butterfly erythema of the cheeks
- B. Raynaud's phenomenon
- C. low back pain
- D. joint symptoms (polyarthritis or articular pain)

Answer: A, B, D

166. Subdeltoideal bursitis

- A. is a typical symptom of thoracic outlet syndrome
- B. leads to painful and restricted abduction of the arm
- C. treatment options are NSAID, corticosteroidal injections, physiotherapy
- D. is a life threatening condition

Answer: B, C

167. What are Seyfried stages in the hand?

- A. Active correction
- B. Active correction with weightbearing
- C. Passive correction + Active hold
- D. Passive correction + not able to keep

ANSWER: A,C,D

168. What are the Seyfried stages in the foot?

- A. Active correction with weightbearing
- B. Active correction without weightbearing or passive correction with weightbearing
- C. Passive correction, but the patient not able to keep it
- D. No correction

ANSWER: A,B,D

169. What are the Seyfries stage in the larger joints?

- A. The patient can be able to move the affected joint against resistance without pain
- B. The patient can be able to move the affected joint without resistance without pain
- C. The patient can be able to move the affected joint without resistance, without gravity, with pain ankylosis
- D. The patient cannot be able to move the affected joint either without gravity, pain during the movement

ANSWER: A,B,D

170. What are typical hand deformity in Rheumatoid arthritis?

- A. swan neck deformity
- B. „Z” thumb
- C. Boutonnière deformity
- D. Hallux rigidus

ANSWER: A,B,C,

171. What are typical foot deformity in Rheumatoid arthritis?

- A. talus medial tilt
- B. drop foot
- C. collapsed arches
- D. hallux valgus or rigidus

ANSWER: A,C,D

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

172. Genetical factors hasn't got effect for Rheumatoid arthritis

True: A

False: B

ANSWER: B

173. In acute inflammation we can know the level of CRP and ESR rate of the patient, for diagnosis

True: A

False: B

ANSWER:A

174. Localised osteoporosis can occur after steroid injections.

True: A

False: B

ANSWER: A

175. Physical activity has its effects on bone density only during puberty.

True: A

False: B

ANSWER: B



176. Symptoms of arthralgia and arthritis are the same.  
True: A  
False: B  
ANSWER: B
177. Weight does not have an effect on the development of bone structure.  
True: A  
False: B  
ANSWER: B
178. Unlike JIA, RA has no effect on synovial membrane.  
True: A  
False: B  
ANSWER: B
179. Gout is a crystalline arthritis caused by hyaluronic acid.  
True: A  
False: B  
ANSWER: B
180. In the third functional stage of RA, patients have difficulties in vocational and avocational activities as well.  
True: A  
False: B  
ANSWER: A
181. The aim of therapy is to increase the spinal mobility in OP.  
True: A  
False: B  
ANSWER: B
182. Doing end range extension in the knee when it is in acute stage of RA can decrease the effects of inflammation.  
True: A  
False: B  
ANSWER: B
183. Osteoarthritis and Rheumatoid arthritis never occur at the same time in one patient.  
True: A  
False: B  
ANSWER: B
184. Thanks to the new therapies, there aren't any patients in the third stage of AS.  
True: A  
False: B  
ANSWER: B
185. In Rheumatoid arthritis the MTP and DIP joint level are most affected.  
True: A  
False: B  
ANSWER: B

186. In case of osteoporosis we can do exercises in prone position, because it is harmless to the spine.  
True: A  
False: B  
ANSWER: B
187. In case of AS measuring spinal movements is essential for evaluating BASFI score.  
ANSWER: True: A  
False: B  
ANSWER: B
188. Breathing exercises are important parts of the treatment of both OP and AS.  
True: A  
False: B  
ANSWER: A
189. Chest expansion should be between 5-8cms.  
True: A  
False: B  
ANSWER: A
190. In case of hip OA, Trendelenburg sign is usually negative both sides.  
True: A  
False: B  
ANSWER: B
191. The fan-test is performed on the feet in case of RA to determine the degree of the deformities.  
True: A  
False: B  
ANSWER: B
192. TUG, 6-minute walking test and FRT are all dynamic tests for osteoporotic patients.  
ANSWER: True: A  
False: B  
ANSWER: B
193. The daylight sign is performed on the feet in case of RA to see the effects of subluxation of the MTP joints.  
True: A  
False: B  
ANSWER: A
194. Valgus positioned knees mean that around the lateral epicondyle of the femur the amount of cartilage tissue is decreased.  
True: A  
False: B  
ANSWER: A
195. Weight doesn't have an impact on the development of osteoarthritis.  
True: A

False: B  
ANSWER: B

## EXERCISE PHYSIOLOGY AND CARDIORESPIRATORY PHYSIOTHERAPY IN ACUTE AND CHRONIC CONDITIONS

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

1. The immediate source of energy for all cellular activity, including the contraction of muscle fibers is:

A. Phosphocreatine (PCr).  
B. Adenosine triphosphate (ATP).  
C. Adenosine diphosphate (ADP).  
D. Glucose

ANSWER: B

2. Which bioenergetic pathway is sometimes called the “anaerobic” pathway?

A. Phosphagen.  
B. Oxidative.  
C. Nonoxidative.  
D. Aerobic.

ANSWER: C

3. The primary advantage of which bioenergetic pathway is that it can produce large amounts of ATP to sustain prolonged exercise, without producing fatiguing by-products?

A. Oxidative.  
B. Nonoxidative.  
C. Anaerobic.  
D. Phosphagen.

ANSWER: A

4. Within a skeletal muscle fiber, large amounts of calcium are stored in the

A. Nuclei.  
B. Mitochondria.  
C. Myosin.  
D. Sarcoplasmic reticulum.

ANSWER: D

5. During long duration exercise of submaximal intensity (e.g., marathon running), which type of muscle fibers are primarily recruited?

A. Type I.  
B. Type IIA.  
C. Type IIX.  
D. Type IIB.

ANSWER: A

6. The ATPase that is used to produce a muscle fiber twitch by way of sliding filaments is found

A. On actin.  
B. On myosin cross-bridge heads.  
C. Within the sarcoplasmic reticulum.  
D. Within nuclei.

ANSWER: B

7. The capacity of endurance training to increase the amount of ATP produced by oxidative phosphorylation is owing to

- A. Increased mitochondrial content.
- B. Increased muscle fiber size.
- C. Increased size of the sarcoplasmic reticulum.
- D. Decreased capillarity.

ANSWER: A

8. A single motor neuron and all the muscle fibers it innervates comprise a

- A. Muscle unit.
- B. Motor unit.
- C. Fascicle.
- D. Sarcomere.

ANSWER: B

9. Both resistance training and endurance training result in which of the following conversions of muscle fiber type?

- A. Type II→Type I.
- B. Type I→Type II.
- C. Type IIX→Type IIA.
- D. Type IIA→Type IIX.

ANSWER: C

10. During maximal intensity exercise, minute ventilation can increase by

- A. 50%.
- B. 100%.
- C. 5-fold.
- D. 20–25-fold.

ANSWER: D

11. Under resting conditions, stroke volume in a typical male (70 kg) is about

- A. 70 mL.
- B. 40 mL.
- C. 100 mL.
- D. 120 mL.

ANSWER: A

12. The amount of blood ejected from the heart per minute is referred to as

- A. Stroke volume.
- B. Heart rate.
- C. Cardiac output.
- D. End-diastolic volume.

ANSWER: C

13. The Frank-Starling mechanism plays a vital role in determining ...

- A. End-diastolic volume.
- B. Stroke volume.
- C. Heart rate.
- D. Myocardial oxygen consumption.

ANSWER: B

14. During maximal intensity aerobic exercise, cardiac output increases by in an untrained individual.

- A. 50%.
- B. 2-fold.
- C. 5- to 6-fold.
- D. 10- to 12-fold.

ANSWER: C

15. Which of the following adaptations would NOT be expected to occur as a result of long-term aerobic training?

- A. Decrease in resting heart rate.
- B. Increase in resting stroke volume.
- C. Increase in resting cardiac output.
- D. Increase in maximal heart rate.

ANSWER: C

16. While performing a running workout of submaximal intensity, which of the following responses would be expected to occur?

- A. Increase in end-diastolic volume.
- B. Decrease in end-diastolic volume.
- C. Decrease in ejection fraction.
- D. Decrease in cardiac output.

ANSWER: A

17. Compared with running, swimming will result in even if exercise intensity is the same.

- A. A higher heart rate.
- B. A lower heart rate.
- C. A lower cardiac output.
- D. A higher cardiac output.

ANSWER: B

18. The processes of vasoconstriction and vasodilation, which regulate blood flow to a given muscle mass, occur at the

- A. Arteries.
- B. Arterioles.
- C. Venules.
- D. Veins.

ANSWER: B

19. During aerobic exercise, which of the following responses would NOT be considered normal?

- A. Increased systolic blood pressure.
- B. Increased pulse pressure.
- C. Increased mean arterial pressure.
- D. Increased diastolic blood pressure.

ANSWER: D

20. Which of the following statements regarding blood pressure and resistance exercise) is correct?

- A. People with even mild cardiovascular disease should never perform resistance exercise.
- B. Blood pressure elevations are highest during isometric muscular actions.
- C. Blood pressure elevations during resistance exercise are independent of the muscle mass involved.

- D. Typically, blood pressure elevations seen during maximal resistance exercise are less than those observed during maximal aerobic exercise.

ANSWER: A

21. The reason that men have higher hematocrit and hemoglobin levels than women is

- A. Men produce more testosterone than women.
- B. Men have greater muscle mass than women.
- C. Unlike men, women experience menstrual blood loss.
- D. Men generally train harder than women.

ANSWER: A

22. The cells of the blood that are often referred to as “white” blood cells are the

- A. Platelets.
- B. Erythrocytes.
- C. Plasmacytes.
- D. Leukocytes.

ANSWER: D

23. WHO recommends a minimum of minutes of physical activity on most days of the week to achieve significant health benefits and protection from chronic diseases, such as coronary heart disease.

- A. 30.
- B. 60.
- C. 10.
- D. 90.

ANSWER: A

24. Which of the following is the definition of power?

- A. (mass) · (acceleration)
- B. (force) · (distance)
- C. (force) · (velocity)
- D. (torque) · (time)

ANSWER: C

25. Which of the following substances can be metabolized anaerobically?

- A. glycerol
- B. glucose
- C. amino acids
- D. free fatty acids

ANSWER: B

26. Which of the following reactions is the primary cause of metabolic acidosis (i.e., the decrease in intramuscular pH during high-intensity, fatiguing exercise)?

- A.  $\text{ATP} \rightarrow \text{ADP} + \text{P}_i + \text{H}^+$
- B.  $\text{pyruvate} + \text{NADH} \rightarrow \text{lactate} + \text{NAD}^+$
- C.  $\text{ADP} + \text{creatine phosphate} \rightarrow \text{ATP} + \text{creatine}$
- D.  $\text{fructose-6-phosphate} \rightarrow \text{fructose-1,6-bisphosphate}$

ANSWER: A

27. Which of the following energy systems produces ATP at the quickest rate?

- A. phosphagen
- B. aerobic glycolysis

- C. fat oxidation
- D. fast glycolysis

ANSWER: A

28. Approximately how many net ATP are produced via the oxidative energy system from the metabolism of one glucose molecule?

- A. 27
- B. 34
- C. 38
- D. 41

ANSWER: C

29. Which of the following energy substrates cannot be depleted during extreme exercise intensities or durations?

- A. creatine phosphate
- B. glycogen
- C. water
- D. ATP

ANSWER: D

30. After a bout of resistance training, acute hormonal secretions provide all of the following information to the body EXCEPT

- A. amount of physiological stress
- B. metabolic demands of exercise
- C. type of physiological stress
- D. energy expended.

ANSWER: D

31. Which of the following is NOT a function of growth hormone?

- A. increase lipolysis.
- B. decrease collagen synthesis.
- C. increase amino acid transport.
- D. decrease glucose utilization.

ANSWER: B

32. Which of the following hormones has the greatest influence on neural changes?

- A. growth hormone
- B. testosterone
- C. cortisol
- D. IGF

ANSWER: B

33. The order of motor unit recruitment during a skeletal muscle contraction of increasing force is:

- A. Type IIx → Type IIa → Type I
- B. Type IIa → Type IIx → Type I
- C. Type I → Type IIx → Type IIa
- D. Type I → Type IIa → Type IIx

ANSWER: D

34. Force production by a skeletal muscle can be increased by:

- A. Recruiting more motor units



- B. Increasing the frequency of stimulation of a motor unit by the  $\alpha$ -motor neuron
- C. Setting the muscle at its optimal length
- D. All of the above

ANSWER: D

35. Protein is not really a fuel source for exercise as all proteins are performing some function in the body. However, during exercise some protein is broken down to provide energy in the form of ATP. During prolonged submaximal exercise protein may provide what percentage of the energy expended?

- A. 5-10%
- B. 10-15%
- C. 15-20%
- D. None, protein is only broken down to provide energy during maximal exercise.

ANSWER: A

36. During exercise, non-insulin mediated glucose uptake by skeletal muscle is facilitated by:

- A. A fall in blood insulin concentration
- B. A fall in blood glucose concentration
- C. Increased insertion of GLUT4 receptors in the muscle fiber membrane
- D. all of the above

ANSWER: C

37. The neurotransmitter released at the neuromuscular junction of a motor unit is always:

- A. norepinephrine
- B. epinephrine
- C. acetylcholine
- D. cyclic AMP

ANSWER: C

38. Skeletal muscles are the target organ of the:

- A. autonomic nervous system
- B. somatic nervous system
- C. sympathetic nervous system
- D. parasympathetic nervous system

ANSWER: B

39. A typical value for the respiratory exchange ratio at rest is:

- A. 0.58 – 0.60
- B. 0.68 – 0.70
- C. 0.78 – 0.80
- D. 0.88 – 0.90

ANSWER: C

40. The difference between the oxygen required to support a given exercise intensity and the actual oxygen consumption at the start of exercise is known as the:

- A. EPOC
- B. oxygen deficit
- C. lactate threshold
- D. maximum oxygen uptake

ANSWER: B

41. Which of the following would have the least effect on muscle anaerobic capacity?

- A. Resting muscle glycogen concentration
- B. Resting muscle PCr concentration
- C. Muscle glycolytic enzyme activity
- D. Muscle buffering capacity

ANSWER: A

42. In a sport such as soccer, the energy required to restore muscle PCr stores following a short intense sprint is derived from:

- A. The high-energy phosphate system.
- B. Anaerobic glycolysis.
- C. The oxidation of muscle glycogen.
- D. All of the above.

ANSWER: C

43. Sprint interval training has been shown to result in:

- A. Increases in muscle glycogen content.
- B. Increases in maximal muscle oxidative enzyme activity.
- C. Increases in maximal muscle glycolytic enzyme activity.
- D. All of the above.

ANSWER: D

44. Which of the following would have the least effect on the maximal anaerobic capacity of a muscle?

- A. An increase in muscle glycogen concentration
- B. An increase in muscle PCr concentration
- C. An increase in muscle Na<sup>+</sup>/K<sup>+</sup> pump capacity
- D. An increase in muscle buffering capacity

ANSWER: A

45. Which is true of the pulmonary circuit?

- A. Blood oxygen content is higher in the pulmonary vein than in the pulmonary artery.
- B. Blood is pumped through it by the left ventricle.
- C. Resting blood pressure in the pulmonary artery is normally equal to that in the aorta.
- D. The cardiac output into the pulmonary circuit is approximately 1/6 of that into the systemic circuit.

ANSWER: A

46. Compared to the resting state, which is true of the cardiac cycle during exercise?

- A. Even though heart rate increases, systole and diastole remain the same.
- B. Systole remains the same but diastole decreases.
- C. Systole increases and diastole remains the same.
- D. Both systole and diastole decrease, but there is a greater decrease in diastole.

ANSWER: D

47. If all other variables remain constant, which of the following is not true of the amount of fluid that would flow through a vessel?

- A. Doubling its length would result in half as much flow.
- B. Doubling the viscosity of the fluid would result in half as much flow.
- C. Doubling the radius of the vessel would result in 4 times more flow.
- D. Doubling the radius of the vessel would result in 16 times more flow.

ANSWER: C

48. Which is true of arterial blood pressure during progressive dynamic exercise?
- A. There is a progressive increase in systolic blood pressure and mean blood pressure but diastolic pressure changes very little.
  - B. There is a progressive increase in systolic, diastolic and mean blood pressure.
  - C. Systolic blood pressure increases but diastolic and mean blood pressures decrease.
  - D. The decrease in diastolic blood pressure counterbalances the increase in systolic blood pressure, so that mean pressure stays approximately the same.

ANSWER: A

49. Which is true of blood flow into the coronary arteries at rest?
- A. It is greatest during the systolic phase of the cardiac cycle.
  - B. It is greatest during the diastolic phase of the cardiac cycle.
  - C. It is equivalent to approximately 20% of the cardiac output.
  - D. It is equivalent to approximately 40% of the cardiac output.

ANSWER: B

50. When an individual is in the upright position, which of the following is true regarding the ventilation-perfusion ratio at rest?
- A. It would be evenly distributed throughout the lung.
  - B. Alveoli at the top of the lung tend to be over-perfused and under-ventilated.
  - C. Alveoli at the bottom of the lung tend to be over-perfused and under-ventilated.
  - D. Alveoli in the middle portion of the lung are under-perfused and over-ventilated.

ANSWER: C

51. In a normal individual at rest, the venous-arterial difference in  $\text{CO}_2$  content is closest to \_\_\_\_\_ volumes %.
- A. 5
  - B. 10
  - C. 15
  - D. 20

ANSWER: A

52. A person performs progressive exercise from rest to 70%  $\text{VO}_2$  max. Which is true regarding the increase in ventilation that occurs?
- A. It is caused by a proportionally equal increase in tidal volume and frequency.
  - B. It is caused by a proportionally greater increase in frequency than in tidal volume.
  - C. It is caused by a proportionally greater increase in tidal volume than in frequency.
  - D. It increases linearly with time until about 50% of  $\text{VO}_2$  max and then increases much more rapidly.

ANSWER: C

53. An trained person is running at an intensity that requires 100% of his  $\text{VO}_2$  max. The oxygen used by his respiratory muscles would be approximately \_\_\_\_\_% of his total oxygen uptake.
- A. 2
  - B. 4
  - C. 10
  - D. 20

ANSWER: C

54. Which type of training would be least effective in increasing muscle capillary density?
- A. Continuous endurance training
  - B. Endurance interval training

- C. Sprint interval training
- D. Heavy resistance training

ANSWER: A

55. A trained and an untrained person are exercising in the same room and at the same absolute power output. Which of the following is true?

- A. To help prevent dehydration, the athlete allows her core temperature to increase to a greater extent than the untrained subject before she begins sweating.
- B. Skin blood flow will increase earlier in the untrained subject than in the athlete.
- C. Sweating and increased skin blood flow will occur earlier in the athlete than in the untrained subject.
- D. None of the above.

ANSWER: C

56. Trained person undergoes a progressive exercise test until he reaches his  $\text{VO}_2$  max. Which of the following is true?

- A. His ventilation has reached the maximum level that can be achieved.
- B. His blood lactate concentration has reached its maximal level.
- C. His heart rate has reached its maximal level.
- D. All of the above.

ANSWER: C

57. In a normal individual at rest, about \_\_\_\_\_% of the total oxygen that is delivered to the cells is taken up.

- A. 25
- B. 35
- C. 50
- D. 90

ANSWER: A

58. Once stimulated, the time course for the formation and maturation of a red blood cell is approximately:

- A. 1-3 days.
- B. 5-7 days.
- C. 2 weeks.
- D. 1 month.

ANSWER: B

59. Which of the following increases oxygen unloading in the muscle during exercise?

- A. An increase in muscle temperature
- B. An increase in muscle  $\text{CO}_2$  production
- C. An increase in  $\text{H}^+$  concentration
- D. All of the above

ANSWER: D

60. As a result of strength training, the change in muscle tissue least likely to occur is:

- A. Increased number of myosin filaments.
- B. Increased size (diameter) of myosin filaments.
- C. Increased number of myofibrils.
- D. Increased size (diameter) of myofibrils.

ANSWER: B

61. In regard to adaptations to strength training, it is possible that:

- A. The number of capillaries per muscle fiber will increase without an increase in capillary density.
- B. Mitochondrial volume density within muscle fibers will decrease.
- C. The concentration of PCr within muscle fibers will increase.
- D. All of the above could occur.

ANSWER: D

62. Which of the following effects of strength training would not act to increase the force of a brief (1-2 s) maximal contraction?

- A. Increased size of myofibrils
- B. Increased muscle concentration (storage) of PCr
- C. Increased number of myofilaments
- D. Increased number of myofibrils

ANSWER: B

63. In regard to muscle architectural adaptations to strength and power training, it is true that:

- A. Resistance training typically increases muscle fiber pennation angle (PA) due to fiber hypertrophy.
- B. Sprint and explosive training may increase muscle fiber length (FL), which increases muscle contraction velocity.
- C. An increase in FL can minimize or prevent the increase in PA resulting from fiber hypertrophy.
- D. All of the above are true.

ANSWER: D

64. Isometric training would be expected to increase electrically evoked whole muscle:

- A. Peak isometric force.
- B. Isometric rate of force development.
- C. Peak concentric power.
- D. All of the above.

ANSWER: D

65. Adaptations in tendons in response to strength and power training may include:

- A. An increase in tendon cross-sectional area.
- B. An increase in tendon stiffness.
- C. An increase in tendon strain tolerance.
- D. All of the above.

ANSWER: D

66. In response to strength training, it is true that:

- A. High volume strength training suppresses capillary neoformation.
- B. Neoformation of capillaries may occur without a change in capillary density.
- C. An increase in the capillary/muscle fiber ratio always leads to an increase in capillary density.
- D. None of the above are true.

ANSWER: B

67. An increase in maximal motor unit firing rates after a strength training program could result in an increase in the:

- A. Peak force of an isometric contraction.
- B. Rate of force development of an isometric contraction.
- C. Peak force of a low velocity eccentric contraction.

D. All of the above.

ANSWER: D

68. In a set of several repetitions to failure in weight training, it is true that:

- A. Blood pressure reaches the highest level during the first repetition, after which blood pressure gradually decreases as the heart adjusts to the exercise.
- B. The muscle force developed per repetition decreases during the set as repetition speed becomes slower.
- C. Motor unit activation is greatest in the first one or two repetitions, after which it declines due to motor unit drop-out and decreased motor unit firing rates.
- D. All of the above are true.

ANSWER: B

69. In regard to principles of strength training, it is true that:

- A. In weight training, progression can be achieved only by increasing the weight lifted.
- B. In isokinetic training, progression can be achieved only by increasing the number of repetitions done per set.
- C. One basis for specificity of movement pattern in training is that some motor units within a muscle may be preferentially activated in a particular anatomical movement.
- D. All of the above are true.

ANSWER: C

70. In regard to specificity of strength and power training, it is true that:

- A. One basis for specificity of velocity is that training with fast contractions may cause exclusive activation of FF motor units.
- B. Specificity of load may be more important for increasing strength than muscle mass.
- C. If a sport action emphasizes concentric contractions, there is no value in using supplementary high force eccentric training.
- D. None of the above are true.

ANSWER: B

71. In regard to the effectiveness of the number of "work" or "training" sets of repetitions done per muscle group/exercise, it is not true that:

- A. One set increases strength and muscle size.
- B. Three sets are more effective than one set for increasing strength and muscle size.
- C. Four sets produce four times the training effect of one set.
- D. None of the above are true.

ANSWER: C

72. In strength and power training, the optimal training frequency per muscle group/exercise is closest to \_\_\_\_\_ days per week.

- A. 2
- B. 4
- C. 6
- D. 7

ANSWER: A

73. The main advantage of using a circuit over a straight set system in weight training is that the circuit system:

- A. Produces twice the training stimulus for increased strength and muscle mass.
- B. Allows for shorter interset rest periods, and thus shortens the duration of training sessions.
- C. Allows for an increased training frequency per muscle group/exercise.

D. Prevents muscle glycogen depletion during a training session.

ANSWER: B

74. In regard to a period of detraining, it is true that:

- A. Muscle mass is lost at a greater rate than strength.
- B. Type 2x fibres are converted to type 1 fibres.
- C. In retraining after a period of detraining, muscle mass is regained at a slower rate than during the initial period of training.
- D. All of the above are true.

ANSWER: A

75. To retain training adaptations, the best approach in maintenance training is to:

- A. Maintain the same training frequency and number of sets for each exercise but reduce the intensity.
- B. Reduce the number of sets and intensity but maintain the training frequency.
- C. Reduce the number of sets and training frequency but maintain intensity.
- D. Reduce intensity, frequency and the number of sets.

ANSWER: C

76. Strength training is least likely to enhance endurance performance by:

- A. Increasing maximal aerobic power.
- B. Inducing a transition from 2x to 2A muscle fibres.
- C. Increasing exercise efficiency.
- D. Inducing tendon adaptations that enhance stretch-shortening cycle potentiation.

ANSWER: A

77. The possibility of adaptation interference caused by concurrent strength and endurance training can be reduced by:

- A. Using a maintenance program for strength while emphasizing endurance, and vice versa.
- B. Doing strength and endurance training on different days of the week.
- C. Doing strength and endurance training at different times of the day, with hours of rest between sessions.
- D. All of the above.

ANSWER: D

78. When one is performing a box-to-box plyometric drop jump, in order to generate sufficient force in a limited amount of time (<200 ms), which muscle fibers are bypassed through the principle of selective recruitment?

- A. I
- B. IIa
- C. IIx
- D. IIc

ANSWER: A

79. Following prolonged periods of detraining in strength/power athletes, which of the following physical characteristics will likely show the largest reduction as a consequence of the removal of an anaerobic training stimulus?

- A. total fat mass
- B. fast-twitch fiber cross-sectional area
- C. slow-twitch fiber cross-sectional area
- D. total Type I muscle fiber content

ANSWER: B

80. Following a period of chronic high-intensity resistance training, a variety of physiological adaptations take place in a number of systems within the body that promote improved athletic performance in strength/power activities. If an elite athlete were to undergo 12 weeks of heavy strength training, which of the following adaptations would NOT be expected consequent to this type of anaerobic exercise?

- A. a transition from Type IIx to Type IIa muscle fiber
- B. increased pennation angle in certain muscle groups
- C. reduced sarcoplasmic reticulum and T-tubule density
- D. elevated sodium–potassium ATPase activity

ANSWER: C

81. A 17-year-old high school cross-country runner has been training aerobically for six months in preparation for the upcoming season. Which of the following adaptations will occur in the muscles during that time?

- A. increased concentration of glycolytic enzymes
- B. hyperplasia of Type II fibers
- C. transformation from Type I to Type II fibers
- D. hypertrophy of Type I fibers

ANSWER: D

82. The amount of blood ejected from the left ventricle during each beat is the

- A. cardiac output
- B. a-v O<sub>2</sub> difference
- C. heart rate
- D. stroke volume

ANSWER: D

83. Which of the following does NOT normally increase during an aerobic exercise session?

- A. end-diastolic volume
- B. cardiac contractility
- C. cardiac output
- D. diastolic blood pressure

ANSWER: D

84. The mean arterial pressure is defined as the

- A. average blood pressure throughout the cardiac cycle
- B. average of the systolic and diastolic blood pressures
- C. average systolic blood pressure during exercise
- D. average of blood pressure and heart rate

ANSWER: A

85. Which term is used to describe angina pectoris that occurs at rest without a precipitating event?

- A. Silent.
- B. Stable.
- C. Variant.
- D. Typical.

ANSWER: C

86. Risk Factors for Thoracic Outlet Syndrome, EXCEPT:

- A. certain occupations that involve positioning the arm



- B. fracture of the clavicle, trauma to the shoulder, hyperextension injuries of the neck
- C. abnormal fibromuscular bands present at birth that irritate or compress the brachial plexus
- D. Raynaud disease

ANSWER: D

87. Sign and Symptom of *costoclavicular space* - Thoracic Outlet Syndrome:

- A. Paresthesia (burning, prickling, or tingling sensation)
- B. Coldness in the hand/finger
- C. Headache involving the occipital
- D. Pain that may radiate posteriorly to the back, across the shoulders, upper chest, and down the outer arm

ANSWER: B

88. Signs and Symptoms of Subcoracoid space - Thoracic Outlet Syndrome, EXCEPT:

- A. Progression of ischemia (lack of oxygen supply) of the limb causes tissue damage, ulcerations at the tips of the fingers.
- B. Venous distention, visible superficial veins may also be present.
- C. There may be numbness and tingling of the ear, cheek, back of the shoulder, or outer arm.
- D. Swelling of the joints on affected arm

ANSWER: D

89. What term is used to refer to a group of pulmonary disorders characterized by limitations in airflow that are not fully reversible?

- A. Bronchitis.
- B. Asthma.
- C. Emphysema.
- D. Chronic obstructive pulmonary disease.

ANSWER: D

90. The primary effects of chronic exercise training on blood lipids include

- A. Decreased triglycerides and increased high density lipoproteins.
- B. Decreased total cholesterol and low-density lipoproteins.
- C. Decreased high-density lipoprotein and increased low-density lipoproteins.
- D. Decreased total cholesterol and increased high density lipoproteins.

ANSWER: A

91. Which physiologic responses would be expected to occur under conditions of high ambient temperature?

- A. Increased maximal oxygen uptake.
- B. Decreased heart rate at rest.
- C. Increased heart rate at submaximal workload.
- D. Decreased maximal heart rate.

ANSWER: C

92. Which of the following statements is true concerning the pathophysiology of coronary artery disease?

- A. Injury to the artery wall begins in the media.
- B. Platelets and thrombi form in the adventitia.
- C. The endothelium takes up lipids, especially low-density lipoproteins.
- D. Atherosclerotic lesions are formed in the intima.

ANSWER: D

93. A cardiac patient is taking a  $\beta$ -blocker medication. During an exercise test, you would expect
- A. ST segment depression because  $\beta$ -blockers depress the ST segment on the resting ECG.
  - B. An increase in the anginal threshold compared with a test without the medication.
  - C. No change in heart rate or blood pressure compared with a test without the medication.
  - D. A slight decrease or no effect on blood pressure compared with a test without the medication.

ANSWER: B

94. The loss of elasticity (or “hardening”) of the arteries is known as

- A. Atherosclerosis.
- B. Arteriosclerosis.
- C. Atheroma.
- D. Adventitia.

ANSWER: B

95. A transient deficiency of blood flow to the myocardium resulting from an imbalance between oxygen demand and oxygen supply is known as

- A. Infarction.
- B. Angina.
- C. Ischemia.
- D. Thrombosis.

ANSWER: C

96. Which of the following drugs is used during acute MI to dissolve blood clots, restore blood flow, and limit myocardial necrosis?

- A.  $\beta$ -blockers.
- B. Thrombolytic agent’s therapy.
- C. Sestamibi.
- D. Coronary artery bypass graft surgery.

ANSWER: B

97. All of the following are suggestive of cardiovascular and pulmonary disease except

- A. A sharp, jabbing pain in the side when running.
- B. Dyspnea during strenuous exertion.
- C. Syncope during moderate-intensity exercise training.
- D. Substernal burning that occurs during exertion and dissipates with rest.

ANSWER: B

98. Modifiable primary risk factors for coronary artery disease include:

- A. Hypertension, dyslipidemia, advancing age, and tobacco smoking.
- B. Homocysteine, lipoprotein (a), C-reactive protein, and gender.
- C. Obesity, diabetes mellitus, tobacco smoking, and sedentary lifestyle.
- D. Tobacco smoking, dyslipidemia, hypertension, and homocysteine.

ANSWER: C

99. What is the current state of knowledge on progression or regression of atherosclerosis in human coronary arteries?

- A. Regression of atherosclerosis has been observed in clinical studies.
- B. Regression of atherosclerosis has yet to be observed in clinical studies.
- C. Progression of atherosclerosis begins at puberty.

- D. There is no difference in the rate of progression or regression between those who undergo usual medical care and those who aggressively control risk factors.

ANSWER: A

100. What is the correct term and definition to describe a potential complication that may occur after an acute myocardial infarction (MI)?

- A. Expansion—another MI.
- B. Aneurysm—bulging of the ventricular wall.
- C. Extension—left ventricular dilation.
- D. Rupture—coronary artery breaks open.

ANSWER: B

101. The goal of risk stratification is to

- A. Determine prognosis.
- B. Assess disease severity.
- C. Confirm diagnosis.
- D. Increase the safety of exercise participation.

ANSWER: D

102. A classic sign of subendocardial ischemia is:

- A. Angina.
- B. ST segment depression.
- C. ST segment elevation.
- D. A pathologic Q wave.

ANSWER: B

103. Which of the following statements concerning the surgical treatment of coronary artery disease is true?

- A. A coronary artery stent carries a lower rate of revascularization than does percutaneous transluminal coronary angioplasty.
- B. Atherectomy is a prerequisite requirement for percutaneous transluminal coronary angioplasty.
- C. Venous grafts are significantly superior to arterial grafts in terms of patency.
- D. Long-term outcome of laser angioplasty is unknown and, thus, rarely used.

ANSWER: A

104. The relationship between heart rate (HR) and oxygen consumption in pulmonary cases is:

- A. Nonlinear.
- B. Linear.
- C. Exponential.
- D. No relationship.

ANSWER: B

105. Body fat appears to be most dangerous when,

- A. Weight for height exceeds 20% above recommended.
- B. Body fat exceeds 25% for males and 30% for females.
- C. Central (android) obesity is present.
- D. Body mass index exceeds 25 kg/m<sup>2</sup>.

ANSWER: C

106. All of the following are possible causes of restrictive lung disease except

- A. Scoliosis.
- B. Obesity.
- C. Muscular dystrophy.
- D. Cigarette smoke.

ANSWER: D

107. Which answer below best describes the condition of asthma?

- A. Narrowing of the bronchial airways.
- B. Alveolar destruction.
- C. Ventilatory dead space.
- D. Respiratory muscular atrophy.

ANSWER: A

108. The criteria for the diagnosis of metabolic syndrome includes the following

- A. Elevated total cholesterol, obesity, diabetes, and physical inactivity.
- B. Central obesity, elevated low-density lipoprotein cholesterol, diabetes, and physical inactivity.
- C. Low high-density lipoprotein cholesterol, cigarette smoking, hypertension, and physical inactivity.
- D. Central obesity, elevated triglycerides and low high-density lipoprotein cholesterol, hypertension, and insulin resistance.

ANSWER: C

109. All of the following risk factors for coronary artery disease can be modified by a regular and appropriate exercise training program except

- A. Advancing age.
- B. Diabetes mellitus.
- C. Hypertension.
- D. High-density lipoprotein cholesterol.

ANSWER: A

110. Emerging risk factors for coronary artery disease include

- A. Advancing age, family history, and male gender.
- B. Impaired fasting glucose, obesity, and hypertension.
- C. Lipoprotein (a), advancing age, and male gender.
- D. Homocysteine, lipoprotein (a), and fibrinogen.

ANSWER: D

111. Which of the following is Not an appropriate treatment activity for inpatient rehabilitation of a patient on the second day after coronary artery bypass graft (CABG) surgery?

- A. Limit activities as tolerated to the development of self-care activities, ROM for extremities, and low-resistance activities.
- B. Limit upper body activities to biceps curls, horizontal arm adduction, and overhead press using 3 kgs weights while sitting on the side of the bed.
- C. Progress all activities performed from supine to sitting to standing.
- D. Measure vital signs, symptoms, RPE, fatigue, and skin color and perform ECG before, during, and after treatments to assess activity tolerance.

ANSWER: B

112. Which of the following situations indicates progression to independent and unsupervised exercise for a patient after CABG surgery in an outpatient program?
- A. The patient exhibits mild cardiac symptoms of angina, occurring intermittently during exercise and sometimes at home while reading.
  - B. The patient has a functional capacity of >8 MET with hemodynamic responses appropriate to this level of exercise.
  - C. The patient is noncompliant with smoking cessation and weight loss intervention programs.
  - D. The patient is unable to palpate HR, deliver RPEs, or maintain steady workload intensity during activity.

ANSWER: B

113. Which of the following issues would you include in discharge education instructions for a patient with congestive heart failure to avoid potential emergency situations related to this condition at home?
- A. Record body weight daily, and weight gains to a physician.
  - B. Note signs and symptoms (e.g., dyspnea, intolerance to activities of daily living), and report them to a physician.
  - C. Do not palpate the pulse during daily activities or periods of light-headedness, because an irregular pulse is normal and occurs at various times during the day.
  - D. Both A and B.

ANSWER: B

114. What is the expected outcome of effective exercise training in a pulmonary rehabilitation program for patients with chronic obstructive pulmonary disease (COPD)?
- A. Reduced need for supplemental oxygen
  - B. Reduced dyspnea
  - C. Improved radiologic status of the lung fields
  - D. Slowed loss of forced expiratory volume

ANSWER: B

115. A patient is receiving cardiac rehab and has a heart rate of 110 during moderate intensity exercise. The patient reports a 16 on the Borg RPE scale. Which class of heart medications is MOST likely present?
- A. Beta Blockers
  - B. Angiotensin-Converting Enzyme (ACE) Inhibitors
  - C. Calcium Channel Blockers
  - D. Angiotensin II Receptor Blockers

ANSWER: A

116. Initial training sessions for an individual with severe chronic obstructive pulmonary disease (COPD) most likely would NOT include:
- A. Continuous cycling activity at 70% of VO<sub>2</sub> max for 30 minutes.
  - B. Use of dyspnea scales, RPE scales, and pursed-lip breathing instruction.
  - C. Intermittent bouts of activity on a variety of modalities (exercise followed by short rest).
  - D. Encouraging the patient to achieve an intensity either at or above the anaerobic threshold.

ANSWER: A

117. Symptoms of claudication include:
- A. Cramping, burning, and tightness in the calf muscle, usually triggered by activity and relieved with rest.
  - B. Acute, sharp pain in the calf on palpation at rest.

- C. Crepitus in the knee during cycling.
- D. Pitting ankle edema at a rating of 3+.

ANSWER: A

118. Treatment for claudication during exercise includes all of the following EXCEPT
- A. Daily exercise sessions.
  - B. Intensity of activity to maximal tolerable pain, with intermittent rest periods.
  - C. Cardiorespiratory building activities that are non-weight-bearing if the plan is to work on longer duration and higher intensity to elicit a cardiorespiratory training effect.
  - D. Stopping activity at the onset of claudication discomfort to avoid further vascular damage from ischemia.

ANSWER: D

119. During an exercise test, a patient exhibits angina symptoms and a 1-mm down-sloping ST-segment depression at a HR of 129 bpm. His peak exercise target HR should be set at
- A. 128 bpm.
  - B. 109–119 bpm.
  - C. 129 bpm.
  - D. 125–128 bpm.

ANSWER: B

120. Which of the following tests and measures would be BEST to perform to assess the patient's lower extremity vascular status?
- A. Ankle-brachial index
  - B. Blood pressure
  - C. Auscultation for abnormal heart sounds
  - D. Capillary nail refill test

ANSWER: A

121. Special precautions for patients with hypertension include all of the following EXCEPT
- A. Avoiding muscle strengthening exercises that involve low resistance.
  - B. Avoiding activities that involve the Valsalva maneuver.
  - C. Monitoring for arrhythmias in a person taking diuretics.
  - D. Avoiding exercise if resting systolic BP is >200 mmHg or diastolic BP is >115 mmHg

ANSWER: A

122. According to the most recent *Clinical Guidelines for the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*, recommendations for practical clinical assessment include:
- A. Determining total body fat through the BMI to assess obesity.
  - B. Determining the degree of abdominal fat and health risk through waist circumference.
  - C. Using the waist-to-hip ratio as the only definition of obesity and lean muscle mass.
  - D. Both A and B.

ANSWER: D

123. A 77 old age patient reports intermittent and variable lower extremity pain starting at the buttocks and the posterior calf (pain in the right side greater than in left). The lower extremity pain began gradually during walking, and this pain reduced after walking stop. Which of the following interventions with the goal of decreasing symptoms would be BEST to initiate for the patient's report of lower extremity pain?
- A. Continuous treadmill walking

- B. Water aerobics
- C. Interval walking training
- D. Resistive training for lower limb

ANSWER: C

124. An individual with type 1 diabetes mellitus checks her fasting morning glucose level on her whole-blood glucose meter (fingerstick method), and the result is 253 mg/dL (14 mmol/L). A urine test is positive for ketones before her exercise session. What action should you take?

- A. Allow her to exercise as long as her glucose is not >300 mg/dL (17 mmol/L).
- B. Do not allow her to exercise this session and notify her physician of the findings.
- C. Give her an extra carbohydrate snack and wait 5 minutes before beginning exercise.
- D. Readjust her insulin regimen for the remainder of the day to compensate for the high morning glucose level.

ANSWER: B

125. All of the following are special considerations when prescribing exercise for a person with arthritis EXCEPT

- A. The possible need to splint painful joints for protection.
- B. Periods of acute inflammation result in decreased pain and joint stiffness.
- C. The possibility of gait abnormalities as compensation for pain or stiffness.
- D. The need to avoid exercise of warm, swollen joints.

ANSWER: B

126. Which of the following is an appropriate exercise for persons with diabetes and loss of protective sensation in the extremities?

- A. Prolonged walking.
- B. Jogging.
- C. Step-class exercise.
- D. Swimming.

ANSWER: D

127. A person taking a calcium-channel blocker will likely exhibit which of the following responses during exercise?

- A. Hypertensive response.
- B. Increased ischemia.
- C. Improved anginal thresholds.
- D. Severe hypotension.

ANSWER: C

128. During the cool-down phase of an exercise session, participants should be encouraged to

- A. Rehydrate.
- B. Decrease the intensity of activity quickly to decrease cardiac afterload.
- C. Limit the cool-down period to 5 minutes.
- D. Increase the number of isometric activities.

ANSWER: A

129. Muscular endurance training is best accomplished by

- A. Performing four to six repetitions per set.
- B. Using high resistance.
- C. Incorporating high repetitions.

D. Performing isometric exercises only.

ANSWER: C

130. Transitional care exercise and rehabilitation programs are NOT appropriate for

- A. Persons with functionally limiting chronic disease.
- B. Persons with comorbid disease states.
- C. Asymptomatic persons with a functional capacity of 10 MET.
- D. Persons at 1 week after CABG surgery.

ANSWER: C

131. A specific benefit of regular exercise for patients with angina is

- A. Improved ischemic threshold at which angina symptoms occur.
- B. Increased myocardial oxygen demand at the same submaximal levels.
- C. Eradication of all symptoms.
- D. Elevation of BP.

ANSWER: A

132. Which of the following is NOT a benefit of increased flexibility?

- A. Increased muscle viscosity, allowing easier and smoother contractions.
- B. Reduced muscle tension and increased relaxation.
- C. Improved coordination by allowing greater ease of movement.
- D. Increased ROM.

ANSWER: A

133. Which of the following statements regarding warmup is FALSE?

- A. Muscle blood flow is increased as a result of warm-up.
- B. A gradual increase in HR occurs as a result of warm-up.
- C. Peripheral vasoconstriction occurs as a result of warm-up.
- D. Between 5 and 10 minutes should be allotted for a warm-up period.

ANSWER: C

134. Which of the following statements regarding cooldown is FALSE?

- A. The emphasis should be large muscle activity performed at a low to moderate intensity.
- B. Increasing venous return should be a priority during cool-down.
- C. The potential for improving flexibility may be improved during cool-down as compared with warm-up.
- D. Between 1 and 2 minutes are recommended for an adequate cool-down.

ANSWER: D

135. All of the following are examples of aerobic exercise modalities EXCEPT

- A. Weight training.
- B. Walking.
- C. Bicycling.
- D. Stair climbing.

ANSWER: A

136. A target HR equivalent to 85% of HRR for a 25-yearold man with a resting HR of 75 bpm would be equal to

- A. 195 bpm.
- B. 166 bpm.
- C. 177 bpm.
- D. 102 bpm.



ANSWER: C

137. The recommended cardiorespiratory exercise training goal for apparently healthy individuals should be

- A. 15 minutes, six times per week, at 90% of HRR.
- B. 30 minutes, three times per week, at 85% of HRR.
- C. 60 minutes, three times per week, at 85% of HRR.
- D. 30 minutes of weight training, three times per week, at 60% of HRR.

ANSWER: B

138. In an effort to improve flexibility, physiotherapist recommends:

- A. Proprioceptive neuromuscular facilitation.
- B. Ballistic stretching.
- C. The plough and hurdler's stretches.
- D. Static stretches held for 10–30 seconds/repetition.

ANSWER: D

139. Which of the following statements regarding exercise for the elderly is FALSE?

- A. A decrease in maximal HR is responsible for reductions in the maximal oxygen consumption as persons age.
- B. A loss of fat-free mass is responsible for the decrease in muscular strength as persons age.
- C. The physiotherapist recommends a cardiorespiratory training intensity of 50%–70% of HRR for older adults.
- D. Resistance exercise training is not recommended for older adults.

ANSWER: D

140. Which of the following medications have been shown to be most effective in preventing or reversing exercise-induced asthma?

- A.  $\beta_2$ -agonists.
- B.  $\beta$ -blockers.
- C. Diuretics.
- D. Aspirin.

ANSWER: A

141. The exercise leader or health and fitness specialist should modify exercise sessions for participants with hypertension by

- A. Shortening the cool-down to <5 minutes.
- B. Eliminating resistance training completely.
- C. Prolonging the cool-down.
- D. Implementing high-intensity (>85% of HRR), short-duration intervals.

ANSWER: C

142. The goal for the obese exercise participant should be to

- A. Sweat as much as possible.
- B. Exercise at 85% of HRR.
- C. Perform resistance exercise three to five times per week.
- D. Expend 300–500 calories per exercise session.

ANSWER: D

143. Which of the following statements regarding exercise for persons with controlled cardiovascular disease is TRUE?

- A. Resistance exercise training is dangerous and should be avoided.

- B. A physician-supervised exercise test is not necessary to establish exercise intensity.
- C. Anginal pain is normal during exercise, and participants should be pushed through the pain.
- D. Exercise intensity should be set at a HR of 10 bpm less than the level at which signs or symptoms were evidenced during an exercise test.

ANSWER: D

144. All of the following factors are important to consider when determining exercise intensity EXCEPT

- A. An individual's level of fitness.
- B. The risk of cardiovascular or orthopedic injury.
- C. Any previous history participating in organized sports.
- D. Individual preference and exercise objectives.

ANSWER: C

145. When determining the intensity level, the RPE is a better indicator than percentage of maximal HR for all of the following groups EXCEPT

- A. Individuals on  $\beta$ -blockers.
- B. Aerobic classes that involve excessive arm movement.
- C. Individuals older than 65 years.
- D. Individuals involved in high-intensity exercise.

ANSWER: D

146. Using the original Borg scale, it is recommended that the exercise intensity elicit an RPE within the range of

- A. 8–12.
- B. 12–16.
- C. 14–18.
- D. 6–10.

ANSWER: B

147. The MINIMAL duration of exercise necessary to achieve improvements in health for deconditioned individuals is

- A. 20 minutes continuously.
- B. 30 minutes continuously.
- C. Multiple sessions of >10 minutes in duration throughout the day.
- D. Two sessions of 20 minutes throughout the day.

ANSWER: C

148. Which of the following is a method of strength and power training that involves an eccentric loading of muscles and tendons followed immediately by an explosive concentric contraction?

- A. Super sets.
- B. Split routines.
- C. Plyometrics.
- D. Periodization.

ANSWER: C

149. The safety of resistance exercise is dependent on all of the following EXCEPT

- A. Having a trainer.
- B. Proper breathing.
- C. Speed of movement.
- D. Body mechanics.

ANSWER: A

150. The recommended muscular strength and endurance training program for apparently healthy individuals should be:

- A. One set of 8–12 repetitions, 8–10 separate exercises, 2 days/week.
- B. Two sets of 6–8 repetitions, 8–10 separate exercises, 2 days/week.
- C. One set of 8–12 repetitions, 8–10 separate exercises, 4–5 days/week.
- D. Two sets of 6–8 repetitions, 8–10 separate exercises, 4 days/week, and alternating days for legs and upper body.

ANSWER: A

151. Which the following statements regarding intensity of resistance training is FALSE?

- A. The number of repetitions to volitional fatigue will vary inversely with resistance.
- B. It is necessary to determine the 1-RM to establish training intensity.
- C. Exercise to volitional fatigue is not dangerous from a musculoskeletal standpoint provided that good exercise form is maintained.
- D. Exercise intensity should be similar for male and female participants.

ANSWER: B

152. The recommended cardiorespiratory endurance exercise training program for older individuals should be:

- A. 40%–60% of HRR, 40–60 % of  $VO_{2max}$  minutes continuously, 3 days/week.
- B. 50%–70% of HRR, 20–30 minutes (multiple sessions of 5–10 min), 3 days/week.
- C. 40%–60% of maximal HR, 20–30 minutes (multiple sessions of 5–10 min), 3 days/week.
- D. 50%–70% of HRR, 20–30 minutes continuously, 3 days/week.

ANSWER: A

153. The mode of ventilation which allows the patient to breathe spontaneously at his or her own respiratory rate and depth between the ventilator breaths is...

- A. Controlled Mandatory Ventilation
- B. Synchronous Intermittent Mandatory Ventilation
- C. Assist Control Mode
- D. Pressure Control Mode

ANSWER: A

154. One of the following modes of ventilation reduces the work of breathing by overcoming the resistance created by ventilator tubing.

- A. Controlled Mandatory Ventilation
- B. Synchronous Intermittent Mandatory Ventilation
- C. Assist Control Mode
- D. Pressure Support Mode

ANSWER: D

155. CPAP and BiPAP modes are usually used...

- A. in conjunction with bronchodilators and steroids
- B. to delay intubation
- C. as a weaning protocol
- D. All of the above

ANSWER: D

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

156. Which of the following hormones enhance(s) muscle tissue growth?

- A. growth hormone
- B. cortisol
- C. IGF-I
- D. progesterone

ANSWERS: A,C

157. Following resistance training, augmented neural drive to the working musculature is the result of

- A. increased agonist muscle recruitment
- B. muscle hypertrophy
- C. improved firing rate
- D. greater synchronization

ANSWERS: A,C,D

158. What are the possible causes of Thoracic Outlet Syndrome?

- A. Postural misalignment
- B. Shortened muscle length primarily on the scalene, sternocleidomastoid, and pectoralis muscles.
- C. Cervical rib and band syndrome
- D. Certain occupations that involve positioning the arm in such a way that can cause compression of the space between the neck and shoulder.

ANSWERS: A,B,C,D

159. Which statements are true?

- A. The last cartilage ring by the basis of trachea is the bifurcation, which is the carina.
- B. The right main bronchus branches off from trachea 20-30, the left 45-55 degrees.
- C. The inner surface of trachea is covered with mucus membrane, the outermost layer is connective tissue sheath and above this there are cartilaginous rings.
- D. The lower angle of the left main bronchus results in greater of foreign body passage into here.

ANSWERS: A,B

160. A 72-year-old male with diabetes, neuropathy, and peripheral vascular disease presents with recent right below knee amputation (1 week ago) secondary to infection in the foot. Acute care physical therapy was able to mobilize the patient to wheelchair mobility and limited hopping 20 meters with a walker. His cardiovascular status is stable, and the patient has only minimal pain, controlled with medications. As you examine the patient, what are the most critical muscles in the lower limb and the upper limb to prepare for prosthetic ambulation?

- A. Hip extensors and knee extensors,
- B. Hip abductors.
- C. Elbow extensors,
- D. Pectoralis muscles and latissimus.

ANSWERS: A,B,C,D

161. A physiotherapist obtains the past medical history of a patient recently referred to physiotherapy after being diagnosed with adhesive capsulitis. Which medical conditions should be associated with an increased incidence of adhesive capsulitis?

- A. diabetes mellitus
- B. haemophilia

- C. Pancoast tumor in lung
- D. osteomalacia

ANSWERS: A,C

162. The injury of blood-gas barrier can be caused by:

- A. > 30 Hg mm pulmonary hypertension during congestive heart failure.
- B. Decreased respiratory volume and airway pressure caused by high altitude.
- C. Positive pressure ventilation which damages 2 type pneumocytes.
- D. Excessive airway pressure during positive pressure ventilation.

ANSWERS: A,D

163. What can be the adverse responses to inpatient exercise leading to exercise discontinuation in early phase of cardiac rehabilitation?

- A. Systolic blood pressure decreases more than 10 mmHg
- B. Marked dyspnea
- C. Sudden headache
- D. Heart rate raised more than 15 beats per min from resting heart rate.

ANSWERS: A,B,C

164. Which kind of tests should be used to determine intensity of aerobic endurance training in cardiac rehabilitation?

- A. Maximal oxygen consumption with graded exercise stress test
- B. Calculation of peak oxygen consumption based on 6-minute walking test.
- C. Evaluation of 1 repetition maximum (1RM) on large muscle groups
- D. Calculation of peak oxygen consumption with Duke activity scale

ANSWERS: A,B,D

165. True for bronchial asthma:

- A. The hyperresponsiveness of airways is in the background.
- B. The airway inflammation is permanent, the symptoms are temporally.
- C. Exercise-induced asthma is rare in asthmatics, especially after participation in outdoor activities in cold weather.
- D. Smooth muscle spasm, hypersecretion and mucus membrane edema cause irreversible obstruction.

ANSWERS: A,B

166. The main Goals of Treatment for Thoracic Outlet Syndrome:

- A. Relieve and eliminate compression of the nerves and/or blood vessels in the thoracic outlet region.
- B. Control and minimize pain and other signs and symptoms associated with TOS
- C. Correcting muscle imbalance in the cervicospinal region
- D. Increasing collateral circulation by strengthening of arm and scapular muscles

ANSWERS: A,B,C

167. Dyspnea associated with emphysema is the result of:

- A. Destruction of the alveoli
- B. Reduced elasticity of the lungs
- C. Increased effort to exhale trapped air
- D. Prolonged inspiratory period

ANSWERS: A,B,C,D

168. When the diagnosis of COPD is considered the patient should also be questioned about:

- A. occupational history
- B. dyspnea according to the MRC dyspnea scale
- C. pets
- D. ankle swelling

ANSWERS: A,B,C,D

169. Which is not the symptom of pulmonary embolism?

- A. sudden onset of dyspnea
- B. peripheral edema
- C. chest pain
- D. high fever

ANSWERS: B,C

170. Signs and Symptoms of *scalene triangle* - Thoracic Outlet Syndrome:

- A. Swelling of the entire affected arm, forearm, and hand
- B. Fatigue of the arm with exercise
- C. Pain that may radiate posteriorly to the back, across the shoulders, upper chest, and down the outer arm
- D. Pallor (paleness of the limb)

ANSWERS: B,C,D

171. Clinical Signs and Symptoms of ACUTE Venous Disorders (DVT):

- A. Swelling of the extremity
- B. Tenderness of the calf muscles that increases when the ankle is dorsiflexed
- C. Inflammation and discoloration of the extremity
- D. Pain in evening

ANSWERS: A,B,C,D

172. Clinical Signs and Symptoms of CHRONIC Venous Disorders:

- A. Dependent edema associated with standing and sitting for prolonged periods of time
- B. Usually worse at early morning
- C. Aching or tiredness in the legs
- D. Increased pigmentation and stasis of the limb

ANSWERS: A,C,D

173. Goals of physiotherapy in early phase of cardiac rehab (in-patient phase):

- A. Prevention of complication from bed rest
- B. Maintaining mobility
- C. Increasing physical activity level
- D. Increasing aerobic endurance

ANSWERS: A,B,C

174. The intensity recommendations for Physiotherapy in early rehabilitation, that follow reflect the advised upper intensity limits, EXCEPT:

- A. To tolerance if asymptomatic
- B. RPE 13 on a scale of 6–20
- C. Post-MI: HR 120 beats/min or  $HR_{rest} + 30$  beats/min
- D. 2–4 times/Day for the first 3 days of the hospital stay

ANSWERS: A,C,D

175. Pursed lip breathing in sitting position while leaning forward on the arms relieves symptoms of dyspnea for patient with:

- A. Pneumonia
- B. Congestive heart failure
- C. Orthopnea
- D. Chest pain

ANSWERS: B,C

176. Practical indications for considering using of an interval training approach in pulmonary rehabilitation?

- A. Marked oxygen desaturation during exercise ( $SpO_2 < 85\%$ )
- B.  $FEV_1 < 60\%$  from predicted
- C. Total time of constant work rate is shorter than 20 minutes
- D. Intolerable dyspnea during continuous endurance training

ANSWERS: A,B,C,D

177. What are the risk factors of deep venous thrombosis?

- A. Recent surgical procedures
- B. Arteriosclerosis
- C. Immobilization or inactivity
- D. Malignant diseases

ANSWERS: A, C,D

178. True for using PEP mask:

- A. It is useful for respiratory muscle training and airway clearance at the same time.
- B. Inspiratory valve is used with higher resistance (smaller size), and expiratory valve is used with smaller resistance (bigger size).
- C. The resistor capable of developing 10-20 cm  $H_2O$ .
- D. It is not able to use collateral ventilation.

ANSWERS: A,C

179. Oscillatory PEP devices...

- A. Primary function is chest mobilization by moving and vibrating a large volumes of air with expiration.
- B. It develops the strength-endurance of respiratory muscle by working with continues resistance.
- C. It helps expectoration, using after inhalation.
- D. The frequency of vibration is 10-30 Hz.

ANSWERS: C,D

180. The pulmonary rehabilitation...

- A. cannot stop the progression of disease.
- B. almost half of the patients have COPD.
- C. the myocarditis is a relative contraindication.
- D. Upper extremity training has very important role.

ANSWERS: A,D

181. During cough...

- A. ...in the irritation phase an abnormal stimulus provokes sensory fibers to send impulses the mesocephalic cough center in the brain.
- B. ... the compression phase is normally about 0,2 seconds.
- C. ... the pleural and alveolar pressure may increase above even 100 Hg mm.

D. ...there are three distinct phases to a normal cough.

ANSWERS: B,C

182. Elements of airway clearance technique

- A. postural drainage
- B. chest clapping
- C. manual chest compression
- D. PEP

ANSWERS: A,B,C

183. During forced expiration

- A. Dynamic airway compression appears peripherally from equal pressure point.
- B. Dynamic airway compression moves to the periphery just in the opposite direction of the flow of expiration.
- C. Airway collapse appears.
- D. In stenosis the air accelerates locally.

ANSWERS: B,C,D

184. Active cycle of breathing technique (ACBT)

- A. The 4 components of ACBT: "huff", chest expansion, breathing control, positioning.
- B. At the end of chest expansion the collateral ventilation may open.
- C. Patients with hypersensitive airways may have bronchospasm.
- D. The 4 components of ACBT can be repeated in two sessions.

ANSWERS: B,C

185. During mechanical coughing

- A. 30-50 water cm positive pressure lasts at least 5-6 seconds.
- B. 30-50 water cm negative pressure lasts 2-3 seconds.
- C. A cycle contains 5 in- and expiration, which can be repeated at least 5 times.
- D. In case of cardiac instability can be used, but only controlling pulse and saturation.

ANSWERS: C,D

186. Autogenic drainage (AD)

- A. AD try to avoid airway collapse and bronchospasm by controlled expiration.
- B. During expiration the speed of air is growing exponentially.
- C. AD can be done in any body position.
- D. During AD with the breathing we move from inspiratory reserve volume to expiratory reserve volume.

ANSWERS: A,B,C

187. Contraindications of positive expiratory pressure

- A. active haemoptoe
- B. hemodynamically instability
- C. nasal bleeding
- D. chronic sinusitis

ANSWERS: A,B

188. The 4 phases of coughing

- A. irritation
- B. expiration
- C. compression
- D. expulsion



ANSWERS: A,C,D

189. Well-controlled asthma is characterized by:

- A. Patients have minimal or no nocturnal or daily symptoms
- B. they do not need to use beta-2-agonist
- C. the disease does not limit the functional capacity
- D. the PEFR or FEV1 is above 60%, and the fluctuation is less than 10%

ANSWERS: A,B,C

190. The mechanisms responsible for a reduction in CVD events are varied, and include:

- A. Reduction in myocardial oxygen demand at rest and at submaximal workloads
- B. Increases an ischemic and angina threshold.
- C. Reduction in platelet aggregation.
- D. Improved endothelial-mediated vasomotor tone.

ANSWERS: A,B,C,D

191. Indications for stopping an exercise session are the following:

- A. Signs of confusion or inability to concentrate.
- B. Dizziness.
- C. Convulsions.
- D. Systolic BP is raising to 180 mmHg

ANSWERS: A,B,C,

192. Indications for stopping an exercise session are the following:

- A. Physical injury.
- B. Nausea.
- C. Physical or verbal manifestations of severe fatigue.
- D. The patient requests to stop.

ANSWERS: A,B,C,D

193. Absolute contraindications of exercise training:

- A. Significant ischemia, recent myocardial infarction (within 2 days)
- B. Stable angina
- C. Uncontrolled cardiac dysrhythmias causing symptoms
- D. Chronic heart failure

ANSWERS: A, C

194. What are the effects of non-invasive ventilation?

- A. It helps to remove excessive sputum.
- B. It helps to avoid intubation.
- C. It reduces the work of breathing.
- D. It reduces complications of positive pressure ventilation.

ANSWERS: B, C

195. What are the tasks of Physiotherapists in ICU?

- A. weaning from the ventilator
- B. early rehabilitation/mobilization program
- C. positioning to protect joints, prevent contractures and improve muscle tone
- D. promote functional independence and improve exercise tolerance

ANSWERS: A, B, C, D

196. What are the most common pulmonary complications after abdominal surgery?

- A. Atelectasis about sputum retention
- B. Lower lobe pneumonia
- C. Bronchospasm
- D. Intrapulmonary hematoma

ANSWERS: A, B

197. What are the contraindications of early mobilization out of bed and physical activities of patients in ICU?
- A. Heart rate is higher than 130 beats/min.
  - B. Respiratory rate is higher than 20 breaths/min.
  - C. Intracranial pressure is higher than 12 cmH<sub>2</sub>O
  - D. Oxygen saturation is lower than 90%

ANSWERS: A, D

198. What are the advantages of positioning in ICU?
- A. Positioning has a marked influence on gas exchange because of unevenly damaged lungs
  - B. Side lying reduces lung densities in the upper most lung
  - C. Right side lying increases oxygenation of arterial blood
  - D. Simply turning from supine to side lying can clear atelectasis from dependent regions

ANSWERS: A, B, D

199. What are the contraindications of early mobilization out of bed and physical activities of patients in ICU?
- A. Heart rate is higher than 130 beats/min.
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  - C. Intracranial pressure is higher than 12 cmH<sub>2</sub>O
  - D. Oxygen saturation is lower than 90%

ANSWERS: A, D

200. Regarding the Berlin definition for acute respiratory distress 'syndrome (ARDS):
- A. The timing of ARDS must occur within 5 days of a known clinical insult and new or worsening respiratory symptoms.
  - B. Bilateral opacities are evident on chest imaging, which are not attributable to effusions, lobar collapse or pulmonary nodules.
  - C. The respiratory failure seen cannot be fully explained by cardiac failure or fluid overload. ARDS is classified into mild and severe according to the PaO<sub>2</sub>/FiO<sub>2</sub> ratio.
  - D. Severe ARDS is defined by a PaO<sub>2</sub>/FiO<sub>2</sub> ratio of <150mmHg with a positive end-expiratory pressure (PEEP) >5cmH<sub>2</sub>O.

ANSWERS: B, C

201. In biphasic positive airway pressure (BIPAP):
- A. The ventilator generates a dual CPAP level with an upper and lower pressure set by the user
  - B. Patients may freely generate spontaneous breaths in the low pressure phase only
  - C. Patients are allowed to exhale even during the high pressure phase
  - D. Airway Pressure Release Ventilation is an extreme concept of BIPAP with a very short low pressure phase

ANSWERS: A, C, D

SELECT WHETHER THESE STATEMENTS **TRUE OR FALSE**

202. An increase in caloric expenditure through exercise, combined with a reduction in caloric intake, results in a caloric deficit.

True: A

False: B

Answer: A

203. Short duration exercise and a caloric deficit result in reduction of overall body fat and a likely reduction in central fat deposits.

True: A

False: B

Answer: B

204. Decreased body fat, especially reduced central obesity can reduce risk factors for CAD, including dyslipidemia, type 2 DM, and hypertension.

True: A

False: B

Answer: A

205. A combination of exercise and diet is best for initial and long-term weight loss and maintenance of target weight.

True: A

False: B

Answer: A

206. Exercise can improve insulin production and glucose metabolism in people with type 1 DM.

True: A

False: B

Answer: B

207. In people with type 2 DM, exercise can enhance fat loss, resulting in improved insulin sensitivity and glucose metabolism.

True: A

False: B

Answer: A

208. Exercise can favorably alter other risk factors typically associated with DM, including dyslipidemia and hypertension, and thus decrease the overall risk of CAD.

True: A

False: B

Answer: A

209. Exercise training reduces hyperglycemia, can lower the risk of microvascular complications (e.g., retinopathy, nephropathy, autonomic neuropathy).

True: A

False: B

Answer: A

210. An average reduction of about 5–7mmHg in both systolic and diastolic blood pressure has been observed in patients with hypertension after an acute bout of exercise and as a result of chronic cardiorespiratory endurance and resistance exercise training.

True: A

False: B

Answer: A

211. Blood pressure remains decreased for up to 1 week long following an acute bout of exercise.

True: A

False: B

Answer: B

212. Exercise can reduce total peripheral resistance, and thus reduce blood pressure.

True: A

False: B

Answer: A

213. Exercise can reduce blood pressure through effecting weight loss and reducing risk factors for metabolic syndrome, which can affect vascular function.

True: A

False: B

Answer: A

214. The parietal pleura produces 20 ml pleural fluid per day in the intrapleural space.

True: A

False: B

Answer: B

215. The costo-diaphragmatic angle is 60 degrees in healthy population.

True: A

False: B

Answer: B

216. The apex of lung is 1-2 cm above the lateral third of clavicle.

True: A

False: B

Answer: B

217. The horizontal fissure in the right side as the part of the visceral pleura separate from each other the upper and middle lobes.

True: A

False: B

Answer: A

218. The function of the fluid in the pleural cavity is to decrease friction between pleural membranes.

True: A

False: B

Answer: B

219. The ventilation is 70 % bigger at the base then apical.

True: A

False: B

Answer: B

220. The function of diaphragm is not excluding condition of the survival.

True: A

False: B

Answer: B

221. The transvers abdominal muscle has the most important function during the forceful expiration among the 4 abdominal muscle.

True: A

False: B

Answer: A

222. The secondary elevation of body temperature can be caused by inflammatory and non-inflammatory disease as well.

True: A

False: B

Answer: A

223. In COPD more than 15 hours long supplemental O2 does not improve more the survival. So, 15 hours enough.

True: A

False: B

Answer: B

224. The pursed lips breathing is used for accelerating the expiratory flow among COPD patients.

True: A

False: B

Answer: B

225. Jugular venous distension is a sign of left heart failure.

True: A

False: B

Answer: B

226. Haemoptoe is massive when more than 300 ml are evacuated per day.

True: A

False: B

Answer: A

227. The increased ventilation due to fever may lead to respiratory insufficiency among cardiopulmonary patients.

True: A

False: B

Answer: A

## NEUROLOGY AND NEUROLOGICAL PHYSIOTHERAPY

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

1. What type of brain injury is a stroke classified as?

- A. Traumatic Brain Injury (TBI)
- B. Acquired Brain injury (ABI)
- C. Both a and b
- D. None of the above

ANSWER: B

2. Which of the following outcome measures would be least used in the TBI/ABI population?

- A. Glasgow Coma Scale
- B. Hohen and Yahr
- C. Ranchos Los Amigos
- D. Functional Independence Measure

ANSWER: B

3. Which of the following outcome measures would be most likely used to assess the cognition of the patient?

- A. MMSE
- B. Timed up and Go test (TUG)
- C. FIM
- D. Modified Ashworth Scale

ANSWER: A

4. A 76-year-old female patient had CVA 3 days ago. She presented contralateral hemiparesis and hemisensory loss mainly in her lower limb and urinary incontinence. Given the following information, what type of stroke did she most likely suffer?

- A. TIA
- B. Lacunar
- C. Anterior Cerebral Artery (ACA)
- D. Middle Cerebral Artery (MCA)

ANSWER: C

5. A 42-year-old man admitted to an acute care hospital 10 days ago with left middle cerebral artery (MCA) syndrome. Which of the following signs and symptoms correlates with MCA?

- A. Hemiparesis on the right upper extremity and face. Right hemisensory loss mainly in the upper extremity and face. Global aphasia. Unilateral neglect.
- B. Hemiparesis on the left upper extremity and face. Left hemisensory loss mainly in the upper extremity and face. Global aphasia. Unilateral neglect.
- C. Right hemiparesis and hemisensory loss mainly in the lower limb and urinary incontinence.
- D. Left hemiparesis and hemisensory loss mainly in the upper limb and urinary incontinence.

ANSWER: A

6. You examine a patient after middle cerebral artery (MCA) stroke. Based on this diagnosis you expect that the patient will present:

- A. Contralateral hemiparesis and hemisensory loss, with the leg more involved than the upper limb.
- B. Ipsilateral facial paralysis and ataxia of limbs.

- C. Contralateral hemiplegia and thalamic pain.
- D. Contralateral hemiparesis and hemisensory loss, with upper limb more involved than the leg.

ANSWER: D

7. You completed coordination testing on a 56-year-old woman, and find that she is positive for rebound phenomenon on the right side. Which of the following correlates to motor coordination problems in her case?
- A. Ipsilateral cerebellar stroke
  - B. Contralateral cerebellar stroke
  - C. Ipsilateral cerebrum stroke
  - D. Contralateral cerebrum stroke

ANSWER: A

8. A patient is experiencing sensory changes after right CVA. During testing, the patient unable to detect pinprick or temperature in the left hand. Given the following information, what does the patient experiencing?
- A. Causalgia
  - B. Analgesia
  - C. Hypalgesia
  - D. Abarognosis

ANSWER: B

9. A patient recovering from stroke is having difficulty bearing weight on the right leg. The patient is unable to move the tibia forward, and shortens the end of stance phase on the right. What is the patient's problem?
- A. Weakness of hip extensors.
  - B. Spasticity of the plantarflexors.
  - C. Spasticity of the dorsiflexors.
  - D. Weakness of the anterior tibialis muscle.

ANSWER: B

10. A patient is recovering from stroke and shows good recovery in the lower extremity. During gait you see knee hyperextension in the affected side. What is most likely the patient's problem?
- A. Weakness of the quadriceps.
  - B. Contracture of the hip extensor muscles.
  - C. Weakness of the hip adductor muscles.
  - D. Weakness of the hip extensors and external rotators.

ANSWER: D

11. A patient is recovering from stroke and shows good recovery in the left lower extremity. During gait you see knee hyperextension in the left side. An appropriate physiotherapy intervention for the left lower extremity might include:
- A. Squeezing a ball between the bent knees in supine position.
  - B. Walking backwards uphill.
  - C. Stepping up on a chair with the unaffected leg and stepping in and out on it, while the affected leg is maintained in extension.
  - D. Practicing sit to stand.

ANSWER: C

12. A patient is recovering from stroke. The physiotherapist instructs the patient to get dressed for the therapy session. The PT gives the patient sweatpants, t-shirt, and socks. The therapist

observes the patient who put the sweatpants on his head. The therapist suspects the patient may have:

- A. Unilateral neglect
- B. Sensory ataxia
- C. Pusher syndrome
- D. Apraxia

ANSWER: D

13. During a finger-to-nose test the patient hesitates in getting started and then unable to control the movement and overshooting the finger. What is most likely the patient's impairment?

- A. Dysmetria
- B. Dyssynergia
- C. Abareognosis
- D. Dysdiadochokinesia

ANSWER: A

14. A patient suffered CVA 3 months ago. Her left upper limb is flaccid, no movement occurred so far. In this case which intervention is contraindicated?

- A. Approximation of the shoulder in prone on elbow position with support.
- B. Drinking from a bottle using both hands.
- C. Traction and passive manipulation of the shoulder.
- D. Extended arm weight bearing in sitting with shoulder external rotation.

ANSWER: C

15. During examination of a stroke patient, he presents problem with articulation. You ask the patient to stick out the tongue to midline and move it to side to side. You observe that his tongue is deviated to the left and cannot move it to the right. These findings suggest involvement of the:

- A. Vagus nerve
- B. Glossopharyngeal nerve
- C. Facial nerve
- D. Hypoglossal nerve

ANSWER: D

16. During examination of a stroke patient, you ask him to shrug shoulders and turn head against resistance. You observe that he has asymmetry in the trapezius and cannot complete the task to the right side. These findings suggest involvement of the:

- A. Facial nerve
- B. Hypoglossal nerve
- C. Spinal component of Accessory nerve
- D. Trigeminal nerve

ANSWER: C

17. During evaluating gait of a chronic stroke patient with left hemiplegia, you observe foot drop during mid-swing on the left. The most likely cause of this discrepancy is:

- A. Excessive extensor synergy
- B. Excessive flexor synergy
- C. Decreased sensation of the ankle.
- D. Decreased contraction of the ankle dorsiflexors

ANSWER: D



18. You examine a chronic stroke patient who is able to stand independently. When you ask him to close the eyes, he immediately loses balance and has to take a step and grab your arm to keep from falling. You document these findings as:

- A. Pronator drift
- B. Positive Romberg test
- C. Ataxia
- D. Negative Romberg test

ANSWER: B

19. You mobilize an acute stroke patient in the ICU. She was able to communicate with you easily the day before and participate in some assisted ROM exercises. You note that her speech has changed, does not understand the task, and cannot remember of you. What is the most important action of you to take in this case?

- A. Assess the patient's cranial nerve function.
- B. Speak louder to the patient.
- C. Call the doctor.
- D. Check the patient's blood pressure before continuing the mobilization.

ANSWER: C

20. You completed coordination testing on a 56-year-old woman and find that she is positive for dysdiadochokinesia on the right side. Which of the following correlates to motor coordination problems in her case?

- A. Ipsilateral cerebrum stroke
- B. Contralateral cerebrum stroke
- C. Ipsilateral cerebellar stroke
- D. Contralateral cerebellar stroke

ANSWER: C

21. You decide to use the Dynamic Gait Index to examine the gait of a chronic stroke patient. This evaluates the patient's ability to:

- A. Modify gait in response to changing task demands.
- B. Safely move around in a close environment.
- C. Safely move around in an open environment.
- D. Maintain speed of gait in different directions.

ANSWER: A

22. A patient had stroke 4 months ago. He demonstrates good return in the right lower limb, but he has sensory aphasia which does not show much development. You focus on improving balance and independent gait. What is the best strategy to use during physical therapy?

- A. Use more verbal cues and emphasize more repetition.
- B. Demonstrate the task to the patient with using gestures.
- C. Consult to the speech therapist to teach the patient using communication board.
- D. Ask the family to present during the sessions.

ANSWER: B

23. During gait analysis of a chronic stroke patient with plastic AFO on the left foot, you observe lateral trunk bending toward the left during midstance. What is the best intervention to correct this problem?

- A. Hip flexor strengthening on the left side.
- B. Hamstrings strengthening on the left side.
- C. Hip abductors strengthening on the left side.
- D. Walking backwards downhill.

ANSWER: C

24. An elderly patient shows significant proprioceptive loss mostly in the distal part of both lower limbs. What is the best strategy to assist this patient in compensatory gait training?

- A. Practice walking on smooth surface.
- B. Look at the feet while placing on the ground.
- C. Use metronome for external cue during walking.
- D. Use AFO on both ankles.

ANSWER: B

25. You examine a stroke patient in the stroke unit. While doing the preliminary tests, you notice the patient's slow and hesitant speech. The patient is able to use only one-two words and his expressions are awkward, but the comprehension is good. What are these difficulties consistent with?

- A. Wernicke's aphasia
- B. Dysarthria
- C. Broca's aphasia
- D. Dysphagia

ANSWER: C

26. An elderly patient at risk for falls has undergone outpatient exercise program focused on standing balance training and strengthening exercises. Which of the following measures could show the best the improvement of balance?

- A. Borg Scale
- B. 10-meter walk test
- C. Romberg test
- D. Berg Balance Test

ANSWER:D

27. You examine a patient with possible graphesthesia. After explaining the procedure, you ask the patient to shut her eyes. What is your next step?

- A. Draw a series of letters on the patient's hand to identify.
- B. Place different objects in the patient's hand to manipulate.
- C. Place tuning fork on a bony part of the fingers.
- D. Place differently weighted, but same size objects in the patient's hand.

ANSWER: A

28. A chronic traumatic brain injury (TBI) patient is unable to step up on the next stair while practicing stair climbing. What is the therapist's best intervention in this case?

- A. Practicing sit to stand.
- B. Practicing step-ups on a low step between parallel bars.
- C. Standing up from half-kneeling between parallel bars.
- D. Walking downstairs.

ANSWER: B

29. You completed coordination testing on an 80-year-old man and find that he is positive for dysmetria on the left side. Which of the following correlates to motor coordination problems in his case?

- A. Ipsilateral cerebrum stroke
- B. Contralateral cerebrum stroke
- C. Ipsilateral cerebellar stroke
- D. Contralateral cerebellar stroke

ANSWER: C

30. A patient suffered traumatic brain injury (TBI) 4 weeks ago. The patient is disoriented, has poor attention, loss of memory, and no emotional control. He is not able to learn new skills. Which possible recovery stage the patient is after diffuse axonal injury?

- A. Confusional stage.
- B. Minimally responsive stage.
- C. Emerging independence.
- D. Moderate responsive stage.

ANSWER: A

31. A traumatic brain injury (TBI) patient had brain surgery 3 days ago. A cerebrospinal fluid (CSF) drain was placed in the patient's ventricle. The intracranial pressure (ICP) is 25 mmHg. The patient experiencing severe headache, irritability, blurred vision, and vomiting. What is the therapist best course of action?

- A. Lowering the head and turn the patient to the side.
- B. Elevate the head to 30° and call medical assistance.
- C. Elevate the head to 30° and check the blood pressure.
- D. Lowering the head and start deep breathing exercises.

ANSWER: B

32. A patient is recovering from traumatic brain injury (TBI) and the therapist is wishing to use behavior modification techniques to help reintegration and shape the behavioral responses. What is the best form of intervention in this case?

- A. Blame the patient every time when an unwanted behavior occurs.
- B. Use frequent compliment and reinforcements for all correct behaviors.
- C. Give the patient enough time for correct the behavior by himself.
- D. Encourage the care givers to tell the patient which behaviors are proper and which are not.

ANSWER: B

33. A 45-year-old man recovering from traumatic brain injury (TBI). He has difficulties in feeding due to unstable sitting posture. The physiotherapist decides that modification is necessary to provide optimal function. Which is the first body segment the physiotherapist should correct?

- A. Head
- B. Trunk
- C. Pelvis
- D. Shoulders

ANSWER: C

34. A 45-year-old woman with multiple sclerosis (MS) experience moderate fatigue during a 30-minute training. Two days later the patient reports that after the last session she was so exhausted that was not able to get out of bed for a day. What is the physiotherapist's best strategy in this case?

- A. Treat the patient in warm, relaxing environment.
- B. Change the environment and use aqua-therapy in a warm pool instead.
- C. Change the practice schedule to interval training.
- D. Stop the training for 2 weeks.

ANSWER: C

35. A patient with Parkinson's disease (PD) shows typical gait pattern with festinating gait and poor movement. What would be the most beneficial intervention for this patient?

- A. Locomotor training on the ground using body weight support harness.

- B. Mini wall squads with a small ball between the knees.
- C. Walking backward slowly downhill.
- D. Treadmill training using body weight support harness.

ANSWER: D

36. A 34-year-old woman is recovering from T1 incomplete (AIS B) spinal cord injury (SCI). She has loss of motor function, proprioception, and vibration on the same side and loss of pain, temperature, and simple tactile sensation of the opposite side to the injury. Based on the current information under which clinical syndrome would you categorize as?

- A. Posterior Cord Syndrome
- B. Brown-Sequard Syndrome
- C. Central Cord Syndrome
- D. Anterior Cord Syndrome

ANSWER: B

37. A 34-year-old woman had car accident 2 days ago. She has T1 spinal cord injury. She is in the ICU and you examine the patient. The patient has absent reflexes, flaccidity, loss of sensation and motor function below the lesion, but higher than a day before. Based on the given information what is the possible reason of these clinical findings?

- A. Vertebral instability.
- B. Spinal shock
- C. Incomplete spinal cord lesion.
- D. Autonomic dysreflexia.

ANSWER: B

38. A physiotherapist is treating a 56-year-old man with incomplete (AIS B) T4 spinal cord injury (SCI). The PT focus on improving sitting balance in short sitting position, but forgot to put abdominal binder on the patient. The patient experiences lightheadedness, blurred vision, and his face is pale. What is the possible reason having these signs and symptoms?

- A. Autonomic dysreflexia
- B. Deep vein thrombosis.
- C. Postural hypotension.
- D. Pressure sore.

ANSWER: C

39. A physiotherapist is examining for fall risk of an 82-year-old woman with Parkinson's disease (PD) who had few falls in the past month. What is the most common risk factor associated with falls in this age?

- A. Putting socks on while sitting on the edge of the bed.
- B. Turning around and sitting down in a chair.
- C. Stepping on a step stool to reach an object above the head.
- D. Walking with a rollator with manual breaks.

ANSWER: B

40. A patient is complaining about rapidly progressive symmetrical weakness in both lower limbs which started in the feet a week ago, and now the whole legs are weak and part of the trunk as well. The patient experiencing abnormal sensations of tingling and burning of the affected body parts. What are these signs and symptoms characteristics of?

- A. Secondary progressive multiple sclerosis (MS)
- B. Amyotrophic lateral sclerosis (ALS)
- C. Guillain-Barre syndrome (GB)
- D. Primary progressive MS

ANSWER: C

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

41. Which of the following outcome measures would be most likely used to assess the balance of the patient?
- A. Berg Balance Scale
  - B. Functional Reach Test
  - C. Dynamic Gait Index
  - D. Balance Evaluation Systems Test (BEST)

ANSWER: A, D

42. You are examining a patient after stroke. When tested for two-point discrimination of the affected hand, the patient is unable to tell it is one or two points what he is feeling. The impaired function is in the:
- A. Cerebrospinal tract.
  - B. Spinocerebellar tract.
  - C. Dorsal column/lemniscal pathways.
  - D. Somatosensory cortex
  - E. Rubrospinal tract
  - F. Thalamus.

ANSWER: C, D

43. Heterotrophic ossification is often seen after brain injury and spinal cord injury. Which of the following is a sign or symptom of HO?
- A. Swelling.
  - B. Pain with movement
  - C. Decreased ROM.
  - D. Local cyanosis.
  - E. Soft end feel.
  - F. Increased ROM.

ANSWER: A, B, C

44. While practicing initial standing with a chronic stroke patient, you observe that the patient is pushing strongly backward near the posterior limit of stability. The most likely cause of this is:
- A. Spasticity of the gastrocnemius-soleus.
  - B. Spasticity of the hip flexors.
  - C. Contracture of the hip adductors.
  - D. Contracture of the hamstrings.

ANSWER: A, B

45. The patient has left-sided neglect with left hemiplegia. Which intervention is the best to improve the involvement of the left side during movement?
- A. Rolling to the left and sit up from side-lying.
  - B. Rolling to the right and sit up from side-lying.
  - C. Sitting, weight bearing on the left extended arm, while reaching to an object with the right hand on the left side.
  - D. Bridging with both arms extended next to the trunk.

ANSWER: A, C

46. You are examining a patient recovering from stroke. He has flaccid paresis on her left side, but already has slight catch in the elbow flexors during quick stretch. Based on the pathological pattern, which muscles do you expect to also have increased resistance in the next few weeks or months?
- A. Shoulder adductors
  - B. Forearm pronators
  - C. Wrist flexors
  - D. Finger flexors.
  - E. Forearm supinators
  - F. Shoulder flexors
  - G. Shoulder abductors and retractors

ANSWER: A, B, C, D

47. A patient recovering from stroke. He has minimal weakness and spasticity in the lower limb and able to walk independently. While you are observing the patient's walk, you notice a hip hiking on the affected side during swing phase. What is the best intervention in this case?
- A. Walking upstairs.
  - B. Mini wall squads while holding a ball between the knees.
  - C. Marching while sitting on a therapy ball.
  - D. Practicing sit to stand, unaffected leg placed forward.

ANSWER: A, C

48. A chronic stroke patient has difficulties with stair climbing. During walking up, the patient is able to place the affected foot on the next stair, but unable to put weight on it and ascend. What is the best intervention in this case?
- A. Bridging exercises.
  - B. Marching forward and backward.
  - C. Mini wall squads.
  - D. Sit to stand, unaffected leg placed forward.

ANSWER: C, D

49. What are the characteristics of upper motor neuron lesion (UMN) diseases?
- A. Lesion above the anterior horn cells of the spinal cord or motor nuclei of the cranial nerves.
  - B. Spastic paresis and positive Babinski sign.
  - C. Present in TBI and ALS
  - D. Affects nerve fibers below the anterior horn cells of the spinal cord.
  - E. Fasciculations and hyporeflexia.
  - F. Present in Guillain-Barré syndrome and Cauda equina syndrome.

ANSWER: A, B

50. A patient recovering from traumatic brain injury (TBI). You examine his muscle tone before and after the session. What is the best assessment in this case?
- A. Berg Balance Scale
  - B. Modified Ashworth Scale
  - C. Tardieu Scale
  - D. 9-Hole Peg test

ANSWER: B, C

51. A 35-year-old traumatic brain injury (TBI) man is in the Acquired Brain Injury Unit with decreased response level. What is the best intervention in this case?
- A. Maintain ROM.
  - B. Provide sensory stimulation for arousal to elicit movement.

- C. Promote early upright positioning for improved arousal.
- D. Prevent contracture development

ANSWER: A, B, C, D

52. A 56-year-old woman suffered traumatic brain injury (TBI) 6 weeks ago. She has mid-level recovery at the moment. What is the physiotherapist's best intervention in this case?

- A. Provide structure, prevent overstimulation for confused and agitated patient.
- B. Limit the task-specific training to familiar activities and offer options.
- C. Challenge the patient with new tasks.
- D. Provide frequent orientation to time, place, task, and your name.

ANSWER: A, B, D

53. A 21-year-old traumatic brain injury (TBI) patient is already in high level recovery. What is the best physiotherapy management in this case?

- A. Provide lot of verbal assistance and gestures during strengthening training.
- B. Promote independence in functional tasks, for example ADLs in real life environments.
- C. Improve postural control, symmetry and balance.
- D. Assist the patient in behavioral, cognitive, and emotional reintegration without giving honest feedback.

ANSWER: B, C

54. A patient recovering from a complete (AIS A) spinal cord injury (SCI) with C6 tetraplegia. The baseline blood pressure of the patient is 90/60 mmHg. The patient is practicing prone on elbow and pivot on the Bobath bed. Suddenly the patient is complaining of pounding headache, chills, and lightheadedness. The physiotherapist notices redness of the skin above the lesion, and check the blood pressure right away, which is 150/90. What is the physiotherapist's best course of action in this case?

- A. Sit the patient up and put legs down.
- B. Check the catheter bag, loose clothing, and call for help.
- C. Lay the patient down and check the catheter bag.
- D. Lay the patient down, elevate legs and call for help.
- E. Place the patient in supported half sitting position and monitor his breathing.

ANSWER: A, B

55. A patient with complete (AIS A) SCI (C6) is practicing transfer preparatory exercises. Which intervention would be the best to improve transfers with a sliding board?

- A. Supine on elbow pivot.
- B. Prone on elbow.
- C. Long sitting push-ups.
- D. Rolling from supine to side lying.
- E. Rolling from supine to prone uphill with wrist weight.

ANSWER: B, C

56. During examination of the sensory system a patient complains of a dull and aching pain in the upper limb. She is unable to discriminate the stimulus as sharp or dull and to tell it is one or two points what he is feeling. Based on these findings which pathway would be affected?

- A. Dorsal column-medial lemniscal
- B. Lateral corticospinal
- C. Lateral spinothalamic
- D. Anterior corticospinal
- E. Anterior spinothalamic

ANSWER: C, E

57. A patient with multiple sclerosis (MS) has strong spasticity in the antigravity muscles. What would you expect during inspection?

- A. Kyphotic upper spine and forward head in sitting.
- B. Laterally tilted pelvis and windswept position of the lower limbs in sitting.
- C. Sacral sitting with posterior pelvis tilt.
- D. Hip abduction and external rotation in sitting.

ANSWER: A, C

58. A 51-year-old man is in the rehabilitation unit after a motor vehicle accident. According to the ASIA Scale he has C6 complete spinal cord injury (AIS A) categorized as Anterior Cord Syndrome. What would you expect during examination of the patient?

- A. Loss of motor function and loss of the pain and temperature below the level of the lesion.
- B. Preserved proprioception, kinesthesia and vibratory sense below the level of the lesion.
- C. Loss of proprioception below the lesion, vibratory sense and kinesthesia is intact.
- D. Loss of motor function and temperature sensation below the lesion. Sensation of pain is intact.

ANSWER: A, B

59. A 30-year-old man after a skiing related L2-3 complete spinal cord injury (AIS A) is starting his rehabilitation. The accident happened 12 weeks ago. You are assessing the patient's muscle tone and deep tendon reflexes (DTR) in the lower limbs. What would you expect during the assessment of the patient?

- A. Flaccid paresis.
- B. Absent DTR.
- C. Increased muscle tone.
- D. Decreased DTR.
- E. Clonus.
- F. Increased DTR.
- G. Decreased muscle tone.

ANSWER: A, B

60. An 18-year-old man 6 weeks after shallow water diving accident with C6 incomplete (AIS C) spinal cord injury (SCI) starting the rehabilitation. He has spasticity below the lesion, but able to move the limbs. He has no trunk control. The muscle strength below the lesion is 2-3/5. What would be the preferred activities to begin to practice?

- A. Rolling
- B. Prone on elbow
- C. Supine on elbow
- D. Long sitting push-ups

ANSWER: A, B, C, D

61. A patient with complete C3 lesion has total paralysis of trunk, upper and lower extremities. What are the expected functional outcomes in this case?

- A. Independent breathing, total assist in bed mobility.
- B. Independent eating with equipment, independent in power wheelchair.
- C. Ventilator dependent, total assist in bed mobility.
- D. Total assist in eating, total assist in standing.
- E. May be able to breath without ventilator, total assist in bed mobility.

ANSWER: C, D

62. A patient has complete C5 lesion. What are the expected functional outcomes and possible movements in this case?



- A. Shoulder flexion, abduction, and extension; elbow flexion and supination.
- B. Low endurance and vital capacity secondary to paralysis of intercostals.
- C. Independent use of powered wheelchair and basically independent use of manual wheelchair.
- D. Require some assist in bed mobility

ANSWER: A, B, C, D

63. A patient has complete T6 lesion. What are the expected functional outcomes and possible movements in this case?

- A. Compromised vital capacity and endurance.
- B. Independent use of wheelchair.
- C. Independent standing in standing frame.
- D. Independent ambulation

ANSWER: A, B, C

64. A patient with incomplete (AIS C) C7 spinal cord injury has started rehabilitation 12 weeks ago. He is already independently able to sit up from side lying and rolling. He has moderate spasticity in the limbs. The muscle strength of the lower limbs is 2-3/5. What is the best possible intervention of the patient in this case?

- A. Activity based training including all fours, kneeling.
- B. Standing, and PNF trunk and lower limb patterns.
- C. Practicing independent standing in standing frame and upper limb strengthening exercises.
- D. Wheelchair exercises.
- E. Selective triceps, biceps, and quadriceps strengthening exercises.

ANSWER: A, B

65. A patient was recovering from a cold and had experienced left earache in the past 2 days. The patient woke up today with flaccid left facial muscles and increased drooling. The physiotherapist suspects Bell's palsy and examine the followings:

- A. Trigger points over the temporomandibular joint (TMJ).
- B. Taste over the anterior tongue.
- C. Taste over the posterior tongue.
- D. Corneal reflex.
- E. Eyebrows rise and cheeks puff.

ANSWER: B, E

66. The physiotherapist is observing the locomotion of a patient with a 12-year history of Parkinson's disease (PD). The PT is watching for:

- A. Increased wide base of support.
- B. Decreased trunk rotation.
- C. Loss of synkinesis.
- D. Trendelenburg sign.
- E. Shorter steps.

ANSWER: B, C, E

67. A middle-aged heavy weight boxer is in the rehabilitation unit. He suffered severe TBI 3 weeks ago. During the examination of the patient what kind of impairments you would most likely find?

- A. Behavioral.
- B. Emotional.
- C. Cognitive.
- D. Functional.

ANSWER: A, B, C, D

68. A patient with traumatic brain injury (TBI) is in the ICU. He is in decorticate posture and his primitive reflexes are reappeared. What is the best position of the head for this patient to decrease abnormal posturing in supine?

- A. Neutral position.
- B. Roll placed behind the neck to support head and neck curvature.
- C. Roll placed parallel to head to prevent lateral flexion and rotation.
- D. Flexed position.

ANSWER: A, B, C

69. A physiotherapist is treating a patient with amyotrophic lateral sclerosis (ALS). The patient has minimal functional limitations in the upper limb and moderate limitations in the lower limbs. He is experiencing fasciculations in the limbs often. What is the preferred intervention in this case?

- A. Prevent further deconditioning and disuse atrophy while avoiding overwork damage in weak denervated muscle.
- B. Mild aerobic activities, such as swimming, walking, and stationary bike in intervals.
- C. Isometric and concentric exercises only. Heavy eccentric exercise should be avoided.
- D. Teaching energy conservation activities.

ANSWER: A, B, C, D

70. Common impairments associated with amyotrophic lateral sclerosis (ALS) are the followings:

- A. Muscle weakness, hyporeflexia, hypotonicity, atrophy, muscle cramps, fasciculations.
- B. Dysphagia, dysarthria, pseudobulbar affect.
- C. Exertional dyspnea, nocturnal respiratory difficulty, orthopnea, hypoventilation.
- D. Fatigue, decreased ROM, deconditioning.

ANSWER: A, B, C, D

71. A physiotherapist is taking the history of a patient with multiple sclerosis (MS). In the medical history the pathophysiological changes are most likely the followings:

- A. Loss of saltatory conduction due to demyelination.
- B. Inefficient conduction.
- C. Conduction block.
- D. Abnormal evoked response potentials (motor, sensory, visual)
- E. No inflammation and edema around the lesion in the spinal cord and brain.

ANSWER: A, B, C, D

72. A physiotherapist examines a patient with a 10-year history of multiple sclerosis (MS). The patient's clinical symptoms are paresthesia, ataxia, spastic paraparesis, increased deep tendon reflex (DTR), nocturia, and Charcot's triad. The elements of the Charcot's triad are the followings:

- A. Nystagmus.
- B. Double vision.
- C. Scanning speech.
- D. Intention tremor.

ANSWER: A, C, D

73. A patient with MS is participating in group exercise in an outpatient clinic. She has spastic paraparesis and sensory ataxia, but able to ambulate independently. The physiotherapy intervention is including strengthening and conditioning exercises as well. A well-structured exercise/training for weakness should contain the followings:

- A. Low and moderate intensity exercises as tolerated.
- B. Delicate balance between rest and exercise. Shorter exercise and 1-5 minutes rest.

- C. Avoidance of overwork and overheating.
- D. Short periods of aerobic exercises regularly.
- E. High intensity continuous training.

ANSWER: A, B, C, D

74. What are the cardinal features of Parkinson's disease?

- A. Rigidity
- B. Freezing
- C. Bradykinesia
- D. Micrographia
- E. Tremor
- F. Postural instability

ANSWER: A, C, E, F

75. A physiotherapist examines an elderly patient with Parkinson's disease (PD). The therapist observes the difficulties/impairments in motor planning of the patient. What would the physiotherapist see in case of impaired motor planning?

- A. Start hesitation.
- B. Fatigue
- C. Freezing episodes
- D. Tremor
- E. Poverty of movement
- F. Excessive sweating

ANSWER: A, C, E

76. In several neurological disease overwork of the patient would be worsening the symptoms. Which of the following neurological diseases correlates to this statement?

- A. Amyotrophic lateral sclerosis (ALS)
- B. Spinal cord injury (SCI)
- C. Multiple sclerosis (MS)
- D. Myasthenia gravis

ANSWER: A, C, D

77. A physiotherapist examines a patient with possible hyperkinetic disorder. While observing the locomotion of the patient the PT is watching for:

- A. Abnormal postural reactions.
- B. Increased peripheral movements.
- C. Increased lateral sway
- D. Decreased base of support (BOS)
- E. Chorea

ANSWER: A, B, C, E

78. A 52-year-old man with demyelinating inflammatory polyradiculopathy is in the recovery phase for 2 weeks. The patient regained some neck, shoulder, elbow, wrist, trunk, and hip movement. What is the best possible intervention for this patient?

- A. Tilt table for weight bearing.
- B. High repetition exercises.
- C. Non-fatiguing exercises tailored to the patient's strength.
- D. Low repetition exercises.

ANSWER: A, C, D

79. A physiotherapist (PT) examines a 43-year-old woman who experience rapid weakness after several household activities, such as emptying the dishwasher, unloading the washing machine, and ironing. The patient lives on the 3<sup>rd</sup> floor. She is complaining about extreme weakness when walking upstairs. She feels much better after an hour rest. What is the physiotherapist's best course of action in this case?
- A. The PT suspects myasthenia gravis, but diagnosing medical conditions is out of the physiotherapy scope of practice, therefore the PT would not do any therapeutic interventions after the examination.
  - B. The PT tells the patient the suspected diagnosis and continue with functional exercises after the examination.
  - C. The PT ask for referral to a neurologist.
  - D. The PT ask for referral to a neurosurgeon.

ANSWER: A, C

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

80. A 64-year-old patient postpolio patient with independent ambulation with AFOs since his age 8, is recently complaining of new walking difficulties, and had to start using crutches. The physiotherapist suspects postpolio syndrome.

- A. True
- B. False

ANSWER: A

81. Independent community ambulation is realistic functional expectation for a patient with the highest level of L4-5 in complete spinal cord injury (AIS A)

- A. True
- B. False

ANSWER: A

82. A young male patient suffered traumatic brain injury (TBI) a week ago. He is in the ICU lying supine in decorticate position. It is most likely the consequence of damage of the brainstem.

- A. True
- B. False

ANSWER: B

83. The clinical manifestation of amyotrophic lateral sclerosis (ALS) varies, depending on the localization and amount of motor neuron loss, the extent and combination of lower motor neuron (LMN) and upper motor neuron (UMN) loss, and the progression.

- A. True
- B. False.

ANSWER: A

84. Respiratory impairments in ALS are related to loss of respiratory muscle strength and decrease in vital capacity (VC). When the VC is less than 25% to the predicted 30% it indicates significant risk of respiratory failure or death.

- A. True
- B. False.

ANSWER: A

85. Relapsing-remitting is the most common type of multiple sclerosis (MS).

- A. True
- B. False

ANSWER: A

86. About 20% of relapsing-remitting MS develops secondary progressive disease during the first 10 years.

- A. True
- B. False

ANSWER: B

87. Submaximal level (50-70%) of exercises is the safest in multiple sclerosis (MS).

- A. True
- B. False.

ANSWER: A

88. For patients with sensory and cerebellar ataxia is beneficial to use weight belts and vest for proprioceptive awareness, also wrist and ankle weights.

- A. True
- B. False.

ANSWER: A

89. Speech is impaired in 40-50 % of patients and is the result of primary symptoms of Parkinson's disease (PD).

- A. True
- B. False

ANSWER: B

90. Random fluctuations in motor performance, termed "on-off" phenomenon, occur in about 70 % of patients, treated for more than 2 years with Levodopa (L-dopa) and it can be very disabling.

- A. True
- B. False

ANSWER: B

91. Patients with all kinds of neurological disease always need to exercise as hard as it is possible in order to activate neuroplasticity, therefore regeneration of the central nervous system (CNS) will occur.

- A. True
- B. False

ANSWER: B

92. Huntington's disease is a progressive degenerative disease of the basal ganglia (BG), results by hypoactivity in the BG circuitry.

- A. True
- B. False

ANSWER: B

93. Ocular myasthenia means myasthenic crisis with respiratory failure.

- A. True
- B. False

ANSWER: B

94. The diagnosis of postpolio syndrome relies almost entirely on clinical information.

- A. True
- B. False

ANSWER: A

95. In postpolio syndrome fasciculations sometimes can be observed in atrophic muscles, as a result of upper motoneuron injury.

- A. True
- B. False

ANSWER: B

96. The common cause of multiple sclerosis (MS) is campylobacter jejuni.

- A. True
- B. False

ANSWER: B

97. Guillain-Barre syndrome can be characterized as reactive self-limited autoimmune disease with a good overall prognosis.

- A. True
- B. False

ANSWER: A

98. In rehabilitation of patients with spinal cord injury (SCI), with using activity-based therapies, the goal is to drive changes in the nervous and muscular system by repetitive activation of the neuromuscular system above and below the injury level.

- A. True
- B. False

ANSWER: A

99. Complete vertebrobasilar occlusion may lead to locked-in syndrome, which means the patient cannot move, cannot talk, can only blink.

- A. True
- B. False

ANSWER: A

## BOBATH CONCEPT

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.

SELECT THE ONE THAT IS BEST IN EACH CASE

100. Changes in coordination after stroke due to proprioceptive loss would lead to:

- A. Cerebellar ataxia.
- B. Sensory ataxia.
- C. Bradykinesia.
- D. Choreaethetosis.

ANSWER: B

101. When a physiotherapist facilitates sensorimotor control, the knowledge of stages of motor control is important. Which is the proper order of the stages of motor control?

- A. Stability (static postural control), mobility, controlled mobility (dynamic postural control), skill.
- B. Mobility, stability (static postural control), controlled mobility (dynamic postural control), skill.
- C. Mobility, controlled mobility (dynamic postural control), stability (static postural control), skill.
- D. Stability (static postural control), mobility, skill, controlled mobility (dynamic postural control),

ANSWER: B

102. After few weeks of teaching a patient how to ambulate with crutches, a physiotherapist gives only occasional feedback, when consistent error appears. Why?

- A. This is the cognitive phase of motor learning; therefore, the PT need to tell the patient about his/her mistake nicely.
- B. This is the associative phase of motor learning; therefore, the movement becomes more accurate and much less verbal information is needed.
- C. This is the autonomous phase of motor learning; therefore, less motivation necessary
- D. This is the multitasking phase of motor learning; therefore, self-confidence is important.

ANSWER: B

103. A 72-year-old man had left CVA 3 months ago. He has right hemiparesis and strong pathological extensor synergies in the lower limbs. Which activity would be the best to break up this pathological pattern?

- A. Prone on elbow position weight shifting exercises to the right.
- B. Sitting on physio-ball and marching.
- C. Bridging and pelvic elevation.
- D. Supine position, hip abduction and adduction.

ANSWER: C

104. A post-stroke patient practices sitting with the PT. Which activity would be the best to correct the sitting posture?

- A. Scooting.
- B. Giving verbal cues to the patient.
- C. Giving manual cues on the lumbosacral and sternal region.
- D. Demonstrating the movement to the patient.

ANSWER: C

105. Which is the right order of passive mobilization after stroke?

- A. Distal to proximal.
- B. Does not matter.
- C. Proximal to distal.
- D. Arms, legs, trunk, head..

ANSWER: C.

106. Which is the most difficult, still the most effective position of the developmental sequencing to improve balance, trunk stability, and strength of the lower limb after stroke?
- A. All four position.
  - B. Kneeling.
  - C. Prone on elbow.
  - D. Half-kneeling.

ANSWER: D

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

107. Basic functions and activities in acute phase of stroke are the followings:
- A. Positioning
  - B. Bed mobility
  - C. Rolling
  - D. Passive mobilization
  - E. Breathing.

ANSWER: A, B, C, D, E

108. Why positioning is important in the acute phase of stroke?
- A. Decrease swelling.
  - B. Improve circulation.
  - C. Prevent pressure sore.
  - D. Maintain ROM.

ANSWER: A, B, C, D

109. A physiotherapist practicing sit-to-stand with a patient after CVA. Before standing the patient is stamping the heel on the floor. Why?
- A. Stimulate tone and activity in a hypotonic leg before standing.
  - B. Active dorsiflexion is stimulated before standing.
  - C. Decrease spasticity.
  - D. Warm up the lower limbs.

ANSWER: A, B

110. Facilitation techniques after stroke are the followings:
- A. Quick stretch until the patient recruits enough muscle.
  - B. Slow rhythmic rotation.
  - C. Vibration.
  - D. Tapping.

ANSWER: A, C, D

111. How would you improve sensory functions after stroke?
- A. Stroking
  - B. Stretch
  - C. Superficial and deep pressure
  - D. Approximation



ANSWER: A, B, C, D

112. Which position would be used to facilitate balance reactions?

- A. Sitting
- B. Standing.
- C. Kneeling.
- D. Supine.

ANSWER: A, B, C

113. In sitting retraining balance reactions with weight transferred far over the hemiplegic side, the expected movement of the lower limbs are:

- A. External rotation of the hip on the affected side.
- B. Internal rotation of the hip on the affected side.
- C. Internal rotation of the hip on the good side.
- D. External rotation of the hip on the good side.

ANSWER: A, C

114. A physiotherapist's goal is to improve weight bearing on the affected side. Which of the following exercises would be the best to reach that goal?

- A. In sitting position, placing a small ball under the unaffected foot.
- B. In sitting position, crossing the unaffected leg over the affected leg.
- C. In sitting position, placing a small ball under the affected foot.
- D. In sitting position, reaching to an object with the unaffected upper limb placed next to the affected side.

ANSWER: A, B, D

115. While practicing locomotion with stroke patients, which exercises would be beneficial to improve gait?

- A. Walking sideways.
- B. Walking backwards.
- C. Cross stepping.
- D. Walking forward.

ANSWER: A, B, C, D

116. Which are the most frequent pathological changes in the shoulder after stroke?

- A. Shoulder-hand syndrome (complex regional pain syndrome)
- B. Painful shoulder.
- C. Subluxation.
- D. Fracture.

ANSWER: A, B, C

117. Which of the followings are standardized tests and measures for examination of patients with stroke?

- A. NIH Stroke Scale.
- B. Fugl-Meyer Assessment of Physical Performance (FMA)
- C. Stroke Impact Scale.
- D. UPDRS

ANSWER: A, B, C

118. Abnormal flexor synergy components in the upper limbs following stroke are the followings:

- A. Scapular retraction/elevation.

- B. Shoulder abduction and internal rotation.
- C. Elbow flexion.
- D. Forearm supination.

ANSWER: A, C, D

119. Abnormal extensor synergy components in the upper limbs following stroke are the followings:

- A. Scapular protraction
- B. Shoulder adduction and internal rotation.
- C. Elbow extension
- D. Wrist extension

ANSWER: A, B, C

120. Lesions of the premotor frontal cortex left inferior parietal lobe or corpus callosum can produce apraxia. The characteristics of ideomotor apraxia are the followings:

- A. Inability to produce movements on command.
- B. Ability to produce movements on command.
- C. Ability to do habitual tasks automatically.
- D. Cannot lift the arm to the top of the head on command, but able to comb the hair automatically.

ANSWER: A, C, D

121. In pusher syndrome following stroke, the patient's weight is shifted to:

- A. The unaffected side in sitting.
- B. The affected side in standing.
- C. The affected side in sitting.
- D. The unaffected side in standing.
- E. The midline.

ANSWER: B, C

122. A 56-year-old patient with possible unilateral neglect is referred to the physiotherapist. Which is the best examination to support this hypothesis?

- A. 9-hole peg test
- B. Star cancellation test
- C. Whispering to the patient from the affected side.
- D. Representative drawing.

ANSWER: B, D

123. Which of the followings called deep tendon reflexes (DTR)?

- A. Achilles reflex.
- B. Plantar (Babinski) reflex.
- C. Patellar reflex.
- D. Jaw reflex.

ANSWER: A, C, D

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

124. Patients with hemiplegia typically fall in the direction of the affected side.

- A. True
- B. False

ANSWER: A

125. Only reflex inhibiting patterns will inhibit the atypical movement patterns and decrease the spasticity permanently.
- A. True
  - B. False

ANSWER: B

126. Assisted movement should be replaced with the patient's own active motion as soon as possible.
- A. True
  - B. False

ANSWER: A

127. In chronic phase of stroke, in order to improve weight bearing, strengthen hip extensors and rotators of the affected leg, the patient bears weight on the hemiplegic leg alone while standing up from a high plinth or sitting back on it again. During the exercise the knee remains slightly flexed throughout the activity.
- A. True
  - B. False

ANSWER: A

128. While facilitating balance reactions in sitting, with weight transferred to the good side, the therapist stimulates activity of the trunk side flexors.
- A. True
  - B. False

ANSWER: A

129. When a patient is kicking a ball to the affected side it would encourage him/her turning the head to the affected side and intrinsic muscle activity would be stimulated in the weightbearing foot.
- A. True.
  - B. False

ANSWER: A

## PSYCHIATRIC PHYSIOTHERAPY

1. How do we define relaxation?
  - A. Healthier lifestyle, harmonious mental functioning, self-regulation.
  - B. Relaxation is a summary name for psychophysiological, self-regulating, self-soothing methods of different techniques, which serve the organization of psycho-physiological processes, a healthier lifestyle of the personality.
  - C. Healthy autonomic bodily function through regular sports and active learning.
  - D. Social sensitivity to the environment.

Answer: B

2. What does interactive relaxation mean?
  - A. Independently available tension reduction practice.
  - B. Automobilisation with respiratory exercises and skill development exercises.
  - C. Passive relaxation method.
  - D. Through mutual cooperation, through mutual influence relaxation, tension-reducing, anxiety-relieving active relaxation method.

Answer:D

3. What is the definition of Autogenic training?
  - A. Available resting state through regular active concentration.
  - B. Physical-mental-spiritual harmony created by passive concentration, by self-force, step by step through systematic practice.
  - C. A method of relaxation available through external influence, conditional on music.
  - D. A relaxation method that avoids the harmonisation of visceral organs.

Answer: B

4. What is the benefit of progressive relaxation?
  - A. Unconditional acceptance and empathy.
  - B. The interaction between practitioners increases.
  - C. Regular exercise promotes social support
  - D. The patient can more easily experience the experience of relaxation.

Answer: D

5. What does passive concentration mean?
  - A. Without prior orientation, he idly accepts impacts and becomes sensitive to them through focus.
  - B. A prerequisite for progressive relaxation.
  - C. An active method of birthing preparation.
  - D. The organization of relaxation experiences into a common experience.

Answer: A

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

6. What are the relaxation methods?
  - A. progressive relaxation
  - B. Pilates
  - C. interactive relaxation
  - D. autogenic training

Answer: A, C, D

7. What are the effects of relaxation?

- A. balance, harmony
- B. re-tuning the organization.
- C. self-knowledge
- D. increase of tension.

Answer: A,B,C

8. What are the characteristics of progressive relaxation?

- A. toning practices of visceral organs
- B. It realizes the rest of the body by influencing skeletal muscle and motor functions
- C. relaxation exercise in different posture positions
- D. short-term strain of muscles

Answer: B,C,D

9. What are the contraindications of autogenic training?

- A. schizophrenia
- B. paranoid disorders
- C. latent psychosis
- D. anxiety disorders

Answer: A,B,C

10. What types of behavior should be avoided with the patient?

- A. Understatement of symptoms because it creates tension in the patient.
- B. Giving advice: "if I were you, I'd do that." gather yourself."
- C. excessive empathy, identification
- D. clear communication, acceptance

Answer: A,B,C

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

11. Autogenic training is a passive relaxation method, which is a self-immersive, regular, training exercise.

- A. True
- B. False

Answer: A

12. In the case of latent psychosis, relaxation is used because it reduces the patient's anxiety.

- A. True
- B. False

Answer: B

13. Regular relaxation exercises make the body more balanced and harmonious.

- A. True
- B. False

Answer: A

## PEDIATRIC PHYSIOTHERAPY

Each of the questions or incomplete statements below is followed by four answers or competitions. select the one that is best in each case

1. What is the correct sentence for sternocleidomastoid muscle damage?
  - A. It is a neonatal injury and the head bends on the same side and turns on the other side.
  - B. It is not a neonatal injury and the head bends on the same side and turns on the other side.
  - C. It is a neonatal injury and the head bends on the other side and turns on the other side.
  - D. It is a neonatal injury and the head bends on the same side and turns on the same side.

ANSWER: A

2. What is the correct sentence for neonatal asphyxia?
  - A. The most sensitive organs are the brain and intestines.
  - B. The most sensitive organs are the brain and liver.
  - C. The most sensitive organs are the kidneys and stomach.
  - D. The most sensitive organs are the kidneys and intestines.

ANSWER: A

3. What is the correct sentence for a normal newborn?
  - A. He was born at 39 weeks, with 3000 grams.
  - B. He was born at 36 weeks, with 3000 grams.
  - C. He was born at 39 weeks, with 2000 grams.
  - D. He was born at 36 weeks, with 2000 grams.

ANSWER: A

4. Which congenital disorder requires immediate, urgent care?
  - A. Labium leporinum - lip cleft
  - B. Choanal atresia – nasal occlusion
  - C. Spina bifida
  - D. Gastro oesophageal reflux (GOR)

ANSWER: B

5. What are the main symptoms of Myelo Meningo Cele?
  - A. Vomit, constipation, urinary incontinence.
  - B. Vomit, lower extremity paralysis, micturition problem.
  - C. Lower extremity paralysis, constipation, urination problem
  - D. Vomit, Lower extremity paralysis, constipation

ANSWER: C

6. What congenital heart diseases cause left to right shunt?
  - A. Ventricular Septal Defect (VSD), and coarctatio aortae.
  - B. VSD and Fallot tetralogy.
  - C. VSD and Atrial septal defect
  - D. Left ventricular hypertrophy.

ANSWER: C

7. What is the correct sentence?

- A. In fetal life, the site of oxygen uptake is the placenta.
- B. In fetal life, the site of oxygen uptake is the lungs.
- C. In fetal life, the site of oxygen uptake is the bone marrow.
- D. In extrauterine life, the site of oxygen uptake is the placenta.

ANSWER: A

8. What are not the typical symptoms of PKU (phenyl keton uria)?

- A. Light hair and skin.
- B. Eczematoid rash
- C. Spasticity, hyperreflexia, convulsions.
- D. Vomit, constipation

ANSWER: D

9. What are not the causes of Occasional seizures?

- A. Febrile seizure,
- B. Hypocalcaemia
- C. Epilepsy
- D. Toxic hazards

ANSWER: C

10. What is the most serious infant epilepsy?

- A. Grand mal – large seizures.
- B. Petit mal – small seizures
- C. BNS epilepsy (Blitz-Nick Salaam seizure)
- D. Focal epilepsy

ANSWER: C

11. Fetal circulation

- A. Venous blood flow through pulmonary artery to pulmonary circulation.
- B. There is no flow in pulmonary artery, because the lungs doesn't function in fetal life.
- C. There is a relative oxygen rich blood in pulmonary artery and it flows to the aorta through ductus arteriosus.
- D. There is venous blood in pulmonary artery, and it flows to aorta through ductus arteriosus.

ANSWER: C

12. Changes of vital signs from newborn to adulthood

- A. HR: 100-140 → 70, BP: 80/40 → 110/70, RR: 30-40 → 12
- B. HR: 100-110 → 70-80, BP: 130/90 → 110/70, RR: 30-40 → 12
- C. HR: 100-140 → 70, BP: 110/70 → 110/70, RR: 20-25 → 12
- D. HR: 90-100 → 70, BP: 80/40 → 110/70, RR: 30-40 → 12

ANSWER: A

13. Which is false?

- A. There are very few contraindications to activity in asthmatic patients
- B. Almost half of the asthmatic patients have exercise induced bronchoconstriction (EIB).
- C. The direct reasons for EIB are the cooling and drying processes in airways.
- D. Exercise training has no effect on lung volumes or bronchial hyper-responsiveness.

ANSWER: B

14. Which is true in cystic fibrosis?

- A. Blocking the exocrine movement in pancreas may causes damage or pancreatitis

- B. Early symptoms are the changes in the architecture of the lung.
- C. Genetic testing is not excluding the diagnosis for sure.
- D. When oxygen saturation is below 95% during exercise, supplementary oxygen must be used.

ANSWER: A

15. Choose the false information related to leg length discrepancy:

- A. appears after the period of symmetrical joint inflammation
- B. causes gait asymmetry
- C. appears after the period of asymmetrical joint inflammation
- D. therapy depends on the degree of the discrepancy

ANSWER: A

16. Which disease's childhood onset is more aggressive than the adult form?

- A. CSLE
- B. JIA
- C. SSc
- D. Juvenile Dermatomyositis

ANSWER: A

17. Which juvenile disease has the symptom of non-erosive inflammation?

- A. CSLE
- B. JIA
- C. Reactive Arthritis
- D. Septic Arthritis

ANSWER: A

18. Which statement is false?

- A. Juvenile Dermatomyositis is characterized by muscle weakness and specific organ failure.
- B. Lipodystrophy means the slow and progressive decrease of subcutaneous fat.
- C. The JSSc is primarily the disease of the skin.
- D. For the diagnose of JSSc one maior and two minor criteria are needed.

ANSWER: C

19. Chose the false statement in connection with Septic Arthritis.

- A. From the symptoms of inflammation, rubor and calor are not true for S.A.
- B. Active and Passive ROM are decreased as well.
- C. Both pitching and diarrhoea can be a symptom.
- D. Causes severe pain.

ANSWER: A

20. Chose the true statement in connection with Reactive Arthritis.

- A. affects mostly the hands' small joints
- B. is connected to a previous extra-articular infection
- C. has unknown aetiology
- D. caused by an infected agent in the synovium

ANSWER: B

21. Which is NOT a subgroup for JIA?

- A. Enthesitis related Arthritis
- B. oligoarthritis
- C. monoarthritis
- D. undifferentiated arthritis



ANSWER: C

22. Which subtype of JIA doesn't have the symptom of asymmetrical arthritis?

- A. RF- polyarthritis
- B. enthesitis related arthritis
- C. oligoarthritis
- D. RF+ polyarthritis

ANSWER: D

23. In which color does the Raynaud phenomenon not appear?

- A. white
- B. purple
- C. red
- D. blue

ANSWER: B

24. What is the most common cause of death among children from 5 to 14 years of age?

- A. Accident
- B. Circulatory system disease
- C. Perinatal mortality
- D. Cancer

ANSWER: A

25. At what age is the highest accident rate?

- A. 4-6 years
- B. 2-3 years
- C. 7-14 years
- D. 0-1 years

ANSWER: B

26. From a traumatology point of view, the specific characteristics of the child can be said to be the distribution of the force causing the injury on a given surface compared to adults:

- A. Same
- B. Larger
- C. Smaller

ANSWER: C

27. What can be said about the specialty of pediatric physiotherapy compared to adults?

- A. The recovery time is longer and the ability to regenerate is better
- B. Recovery time is longer and regeneration capacity is worse
- C. Recovery time is shorter and regeneration capacity is worse
- D. Recovery time is shorter and regeneration capacity is better

ANSWER: D

28. What is typical of torticollis?

- A. Cervical muscle hypotension, DECREASE IN ROM, depressive position of the shoulder
- B. Spasm of the neck muscles, decrease in ROM, depressive position of the shoulder
- C. Spasm of the neck muscles, growth of ROM, detached position of the shoulder
- D. Spasm of the neck muscles, decrease in ROM, elated position of the shoulder

ANSWER: D

29. Which is one of the most specific childhood fracture types?

- A. Green-stick fracture
- B. Femur fracture
- C. Lumbar vertebral fracture
- D. Talus Fracture

ANSWER: A

30. Which IS NOT one of the failure of bone healing?

- A. Growth disorders
- B. Refracture
- C. False joints
- D. Plastic deformity

ANSWER: D

31. In osteochondrosis capitis femoris juvenilis the unloading orthosis positions the hip in:

- A. abduction and lateral rotation
- B. medial rotation and extension
- C. medial rotation and abduction

ANSWER: C

32. If you measure on the X-ray that the thoracal kyphosis is more than 40 of degrees, which orthosis do you recommend a 14 years old patient?

- A. shoulder girdle retraction strap
- B. I would not recommend an orthosis, physiotherapy would be enough
- C. Gschwend corset

ANSWER: C

33. Which are the correct treatment aims in a case of a 13 years old idiopathic scoliotic female patient with 26 degree of Cobb main curve?

- A. swimming
- B. intensive correctional physiotherapy according Schroth
- C. opertaional correction
- D. intensive correctional physiotherapy according Schroth and Cheneau corset

ANSWER: D

34. Which disorder is not a "left-right" shunt problem?

- A. ASD
- B. Fallot Tetralogy
- C. VSD
- D. Patent Ductus Arteriosus botalli

ANSWER: B

35. Which two blood vessels are connected by the ductus venosus aranti in fetal life?

- A. between the Truncus pulmonalis and aorta
- B. between the IVC and umbilical vein
- C. between the SVC and pulmonary artery
- D. between the ductus botalli and Truncus pulmonalis

ANSWER: B

36. For which disorder is it important to keep the ductus arteriosus open until surgery?

- A. VSD
- B. Coarctation of the Aorta

- C. ASD
- D. Transposition of the great arteries

ANSWER: B

37. What is the most common cause of childhood heart failure?

- A. Cardiomyopathia
- B. ASD
- C. arrhythmia
- D. myocarditis

ANSWER: A

38. Which statement is true?

- A. VSD is a hole in the septum between the right and left atrium.
- B. Children with an ASD always have symptoms.
- C. Fallot Tetralogy is a „right-left shunt“ problem.
- D. Early mobilization is not important.

ANSWER: C

39. Characteristics of rehabilitation after heart surgery. Which statement is false?

- A. important the early mobilization!
- B. the treatment plan is not individualized
- C. increasing the range of motion of the upper limbs
- D. increase physical activity

ANSWER: B

40. What is true about asymmetrical tonic neck reflex (ATNR)?

- A. When turning the head, associated upper extremity extension on the face side and flexion of the upper extremity on the skull side.
- B. Cause the arms and legs to flex or extend, depending on the head position.
- C. When turning the head, associated upper extremity flexion on the face side and extension of the upper extremity on the skull side.
- D. When the child is in supine, the ATNR causes an increase in extensor tone, whereas when the child is in prone, it causes an increase in flexor tone.

ANSWER:A

41. What is true about tonic labyrinthine reflex (TLR)?

- A. When turning the head, associated upper extremity extension on the face side and flexion of the upper extremity on the skull side.
- B. Cause the arms and legs to flex or extend, depending on the head position.
- C. When turning the head, associated upper extremity flexion on the face side and extension of the upper extremity on the skull side.
- D. When the child is in supine, the TLR causes an increase in extensor tone, whereas when the child is in prone, it causes an increase in flexor tone.

ANSWER: D

42. What is true about symmetric tonic neck reflexes (STNR)?

- A. When turning the head, associated upper extremity extension on the face side and flexion of the upper extremity on the skull side.
- B. Cause the arms and legs to flex or extend, depending on the head position.
- C. When turning the head, associated upper extremity flexion on the face side and extension of the upper extremity on the skull side.

- D. When the child is in supine, the TLR causes an increase in extensor tone, whereas when the child is in prone, it causes an increase in flexor tone.

ANSWER: B

43. How long asymmetrical tonic neck reflex is typically present?

- A. From birth to 2 months
- B. From birth to 4 months.
- C. From birth to 8 months.
- D. From 2 to 6 months.

ANSWER: B

44. What is feedback means?

- A. information during the movement
- B. proactive strategy based on experience
- C. information after the movement
- D. autonomic regulation during movement

ANSWER: A

45. Continue the sentence: When the complexity of the task is equal to the skills...

- A. then the movement is difficult and looks atypical.
- B. then the movement is easy and looks typical
- C. then the movement looks ok.
- D. then the movement cannot be executed.

ANSWER: C

46. Continue the sentence: When the complexity of the task is higher than the skills...

- A. then the movement is difficult and looks atypical.
- B. then the movement is easy and looks typical
- C. then the movement looks ok.
- D. then the movement cannot be executed.

ANSWER: A

47. Continue the sentence: When the complexity of the task is lower than the skills...

- A. then the movement is difficult and looks atypical.
- B. then the movement is easy and looks typical
- C. then the movement looks ok.
- D. then the movement cannot be executed.

ANSWER: B

48. Voluntary grasp typically begins at:

- A. at 2 months of age.
- B. at 4 months of age.
- C. at 6 months of age.
- D. at 8 months of age.

ANSWER: C

49. What is the right order of motor control development?

- A. stability, stability on mobility, mobility on stability, skill.
- B. mobility, stability, controlled mobility, skill.
- C. stability, mobility, controlled mobility, skill.
- D. mobility, controlled mobility, stability, skill.

ANSWER: B

50. You need to assess an 8-month-old child. You expect the following (choose the right answer):

- A. asymmetric tonic neck reflex
- B. backward protective reaction in sitting
- C. sideward protective reaction in sitting
- D. tonic labyrinthine reaction

ANSWER: C

51. How many times should elementary movement patterns be practiced a day in order to prevent the development of atypical movement patterns?

- A. 2
- B. 3
- C. 6
- D. 7

ANSWER: C

52. In case of atypical development, what would lack of abdominal control and increased extension of lumbar spine lead to?

- A. posterior pelvic tilt.
- B. pelvis control by fixing with hip flexors
- C. overusing hip abductors
- D. over elongation of upper trunk

ANSWER: B

53. In general, what would lesion in the cortex lead to?

- A. dystonia
- B. spasticity
- C. ataxia

ANSWER: B

54. In general, what would lesion in the brain stem lead to?

- A. dystonia
- B. spasticity
- C. ataxia

ANSWER: A

55. In general, what would lesion in the cerebellum lead to?

- A. dystonia
- B. spasticity
- C. ataxia

ANSWER: C

56. In myelomeningocele which is the primarily affected system?

- A. urologic system
- B. musculoskeletal system
- C. nervous system

ANSWER: C

each of the questions or incomplete statements below is followed by suggested answers or completions. select more that are correct

57. Which muscle/muscle groups would you focus on in physiotherapy for conservative treatment of patella dislocation?

- A. M. quadriceps- vastus medialis strengthening
- B. Strengthening of core stabilizers
- C. Strengthening of hip abductors and external rotators
- D. Strengthening hamstrings

ANSWER: A, B, C

58. What are the most common injuries requiring physiotherapy for birth injuries?

- A. Torticollis
- B. Calcaneus fractures
- C. Peripheral nerve injuries
- D. Shoulder fractures

ANSWER: A, C

59. What are the special tasks of physiotherapy during the healing period of tissues?

- A. Maintaining muscle tone
- B. The use of an adequate regeneration stimulus is the exercise in the own function of damaged tissue.
- C. Prevention and treatment of movement restriction
- D. Building up useful para-coordination

ANSWER: A, B, C

60. Which is not typical in childhood fracture care?

- A. More frequent surgical care than conservative
- B. Frequent surgical care for the treatment of the
- C. Anatomical repositioning is not important for operational care
- D. The velour nailing is contraindicated.

ANSWER: A, B, C

61. Non-characteristic co-injury in the fracture of the distal end of the humerus:

- A. N. radialis
- B. N. ulnaris
- C. N. medianus
- D. N. musculocutaneus

ANSWER: B, D

62. In case of the Ortolani sign, on which hip movements occurs reposition?

- A. medial rotation
- B. flexion
- C. adduction
- D. abduction

ANSWER: B, D

63. Which are the presumption signs in luxation coxae congenita?

- A. fault asymmetry
- B. shortened leg in lateral rotation
- C. abduction restriction
- D. pain on pressure

ANSWER: A, B, C

64. In luxation coxae congenita in conservative therapy the following hip positions are necessary:

- A. hip flexion
- B. hip medial rotation
- C. hip abduction
- D. knee flexion

ANSWER: A, C, D

65. In spina bifida occulta

- A. the skin is open above the defected segment
- B. closing defect of the arcus vertebrae occurs
- C. L5-S1 is most often involved

ANSWER: B, C

66. Which are the treatment aims in spondylolisthesis?

- A. core control development
- B. practicing of extension
- C. hip contracture elimination
- D. transversus abdominis strengthening

ANSWER: A, C, D

67. Which answers are correct in congenitalis torticollis?

- A. the deformity occurs because of the trauma of a m. scalenus
- B. because of the shortening of m. sternocleidomastoideus same sided rotation and same sided lateral flexion of the neck is visible
- C. because of the shortening of m. sternocleidomastoideus contralateral rotation and same sided lateral flexion of the neck is visible
- D. because of intrauterine position, or trauma during birth, hematoma, and scars develop in the muscle

ANSWER: C, D

68. Which answers are correct in Scheuermann disease?

- A. genetical factors are present
- B. endplate defects of the vertebral is visible on the X-ray
- C. the disc can prolapse in the vertebral body
- D. the effected part of the spine is getting kyphotic

ANSWER: A, B, C, D

69. Which are the aims in physiotherapy for Scheuermann disease?

- A. strengthening of m.rectus abdominis
- B. reaching a more elongated position
- C. to get the affected part of the spine more mobile
- D. strengthening in the most corrected position

ANSWER: B, C, D

70. In idiopathic structural scoliosis the treatment aims are:

- A. stop the progression
- B. obtaining a compensated posture
- C. optimization of the thoracalis kyphosis decreasing, and the lumbar lordosis decreasing.
- D. obtaining the biggest correction until the end of ossification

ANSWER: A, B, C, D

71. In luxation patellae habitualis:

- A. the patella stands slight lateral

- B. m.quadriceps vastus lateralis and tractus iliotibialis is overtensed
- C. strengthening of m.quadriceps vastus medialis is not necessary, because the muscle is hypertrophic
- D. retropatellar pain is common

ANSWER: A, B, D

72. In osteochondrosis tuberositas tibiae we can decrease the pulling effect of ligamentum patellae with:

- A. helping the tibia passively and actively into medial rotation
- B. leg axis corrections
- C. practicing tibia lateral rotations
- D. squats

ANSWER: A, B

73. In pes equinovarus deformity:

- A. the peroneus muscle group is shortened
- B. contractures in all joints of the leg is visible
- C. appears more often in girls
- D. correctional plaster according Kite are effected

ANSWER: B, D

74. In the conservative therapy of pes equinovarus:

- A. CPM machine can be used
- B. taping can be effective as additional therapy
- C. involving the parents for home therapy is not important
- D. elektrotherapy of the peroneus muscle is necessary

ANSWER: A, B, D

75. After anterior shoulder luxation operation in the postoperative phase:

- A. the maximal protection phase duration is 9 weeks
- B. for 6 weeks abduction over 60 degrees, and lateral rotation over 30 degrees are contraindicated
- C. from the 3. day Liotard exercises, pendulum and ropepulling exercises are allowed

ANSWER: B, C

76. List what disorders make up the Fallot Tetralogy

- A. Pulmonary valve stenosis.
- B. Ventricular septal defect.
- C. Overriding aorta.
- D. Right ventricular hypertrophy

ANSWER: A, B, C, D

77. Which of the following disorders typical symptom is cyanosis?

- A. Patent ductus arteriosus Botalli
- B. ASD
- C. Fallot tetralogy
- D. Transposition of the great arteries

ANSWER: C, D

78. What are the directional concepts of development? Mark the right answers!

- A. cephalocaudal
- B. distal to proximal
- C. fine to gross



- D. specific to mass
- E. proximal to distal
- F. gross to fine
- G. mass to specific

ANSWER: A, E, G

79. Choose the right sentences about cognition and motivation in childhood!

- A. Motor development, motor control and motor learning depend on the person's intellectual ability.
- B. Impairments in cognitive ability can affect an individual's ability to learn to move.
- C. A child with mental retardation has the ability to learn movement skills at the same rate as a child of normal intelligence.
- D. The learning of motor skills is often as delayed as the learning of another knowledge.

ANSWER: A, B, D

80. What are the signs of possible developmental delay of an infant by 1 month?

- A. Sucks poorly and feeds slowly
- B. Lower jaw shakes constantly when the infant is crying.
- C. Does not respond to loud sounds or bright light.
- D. Does not focus on and follow a nearby object moving side to side.

ANSWER: A, C, D

81. What are the signs of possible developmental delay of an infant by the end of 3<sup>rd</sup> month?

- A. Moro reflex is present.
- B. Does not notice his own hands by 2 months.
- C. Does not grasp and hold objects.
- D. Does not coo or babble.

ANSWER: B, C, D

82. What are the signs of possible developmental delay of an infant by the end of 4<sup>th</sup> month?

- A. Head flops back when pulled up to sitting by his or her hands
- B. Does not turn head to locate sounds.
- C. ATNR reflex is present.
- D. Does not smile spontaneously.

ANSWER: A, B, D

83. What are the signs of possible developmental delay of an infant by the end of 5<sup>th</sup> month?

- A. Tonic neck reflexes are absent.
- B. Cannot maintain head up when placed on stomach or in supported position
- C. Does not reach for objects
- D. Does not roll in both direction

ANSWER: B, C, D

84. What are the signs of possible developmental delay of an infant by the end of 7<sup>th</sup> month?

- A. Reaches with 1 hand only
- B. Cannot sit with help by 6 months
- C. Does not follow objects at a distance
- D. Cannot stand up by himself.

ANSWER: A, B, C

85. What are the signs of possible developmental delay of a child by the end of 12<sup>th</sup> month?

- A. Does not creep on all fours
- B. Cannot stand when supported

- C. Does not search for toy hidden while he or she watches
- D. Does not follow simple instructions

ANSWER: A, B, C

86. Which statements of the following are true?

- A. The development of the brain never stops in infancy. It develops typically or atypically no matter what.
- B. The impairment of the brain during pregnancy or perinatally not necessarily leads to further impairment in the development of the brain.
- C. There cannot be atypical neurological signs and symptoms without any proof by MRI, CT or Ultrasound.
- D. Based on the examination there are several possible outcomes in regard to diagnostic and prognostic point of view.

ANSWER: A, B, D

87. Which are the following elementary movement patterns parts of verticalization?

- A. sitting
- B. elementary crawling uphill or downhill
- C. sitting in the „space“
- D. “push” to sitting
- E. elementary rolling from supine to side-lying and to prone
- F. elementary or “assisted” crawling
- G. “pull” to sitting
- H. elementary walking

ANSWER: A, C, D, G

88. What elements will initiate the elementary movement patterns?

- A. gravity
- B. approximation
- C. movement of the head
- D. Golgi-tendon organs

ANSWER: A, C

89. During clinical observation, development of compensation depends on what?

- A. the extent of the baby’s neurological insult
- B. intelligence
- C. motivation
- D. caregiver’s attitude

ANSWER: A, B, C

90. What would be the consequences of atypical development of neck and head control?

- A. due to lack of neck/head flexor and extensor balance the baby will stabilize with high guard position of the scapula.
- B. the baby will compensate with hyperextension of the neck
- C. will interfere with the development of visual motor control
- D. will develop scapular depression

ANSWER: A, B, C

91. Which of the following are part of the treatment of neck hyperextension in atypical development?

- A. Elongation of head and neck extensors, while activating the head and neck flexor muscles (chin-tuck) (supine, sitting or side-lying)

- B. Head and neck alignment and control should be addressed in all positions.
- C. Start with the secondary impairment
- D. Decrease scapular elevation by increasing active scapular depression

ANSWER: A, B, D

92. What would be the consequences of atypical development of shoulder and upper extremity control?

- A. it will lead to lack of independent, dissociated humeral movements.
- B. the scapulae and the humeri are not free to be used for elbow, wrist, and hand position and control
- C. forearm weight bearing is easy.
- D. lack of ability to transition to quadrupled position

ANSWER: A, B, D

93. Which of the following are part of the treatment of shoulder and upper extremity control?

- A. Head, neck, thoracic spine, and shoulder girdle should be addressed together in functional context.
- B. Movements should be addressed in age-appropriate positions and transitions
- C. Increase active scapula-humeral mobility, especially during reaching in all directions
- D. Increase active thoracic flexion

ANSWER: A, B, C

94. Which of the following are part of the prenatal factors developing cerebral palsy?

- A. Maternal diabetes, epilepsy
- B. RH incompatibilities
- C. Low birth weight
- D. Prolonged labor
- E. Breech birth
- F. bradycardia
- G. Intraventricular hemorrhage
- H. Brain infections: Meningitis, Encephalitis
- I. Seizures

ANSWER: A, B, C

95. Which of the following are part of the perinatal factors developing cerebral palsy?

- A. Maternal diabetes, epilepsy
- B. RH incompatibilities
- C. Low birth weight
- D. Prolonged labor
- E. Breech birth
- F. bradycardia
- G. Intraventricular hemorrhage
- H. Brain infections: Meningitis, Encephalitis
- I. Seizures

ANSWER: D, E, F

96. Which of the following are part of the postnatal factors developing cerebral palsy?

- A. Maternal diabetes, epilepsy
- B. RH incompatibilities
- C. Low birth weight
- D. Prolonged labor
- E. Breech birth
- F. bradycardia
- G. Intraventricular hemorrhage

- H.** Brain infections: Meningitis, Encephalitis
- I.** Seizures

ANSWER: G, H, I

97. What are the neurological problems of cerebral palsy?

- A.** muscle weakness
- B.** contractures
- C.** visual problems
- D.** hearing loss
- E.** abnormal muscle tone
- F.** loss of sensation
- G.** deformities
- H.** pathological reflexes

ANSWER: A, E, F, H

98. What of the following statements part of the Gross Motor Function Classification System LEVEL 3?

- A.** Decreased speed, balance and coordination
- B.** Can participate in standing transfers
- C.** Can walk and climb stairs with a railing
- D.** Might be able to walk stairs with a railing
- E.** Cannot sit or stand independently
- F.** Uses assistive mobility devices to walk on level surfaces
- G.** Difficulty with uneven surfaces, inclines and crowds
- H.** Could propel a manual wheelchair with some assistance

ANSWER: D, F, H

99. What is Bobath Concept?

- A.** A problem-solving approach for assessment and treatment of individuals with neurological conditions
- B.** A motor relearning approach, which can only work on high functioning individuals
- C.** It is provided a new reference that viewed children with CP as having difficulty with postural control and movement against gravity

ANSWER: A, C

100. If your patient with cerebral palsy is learning how to move through space, he is starting to move from kneeling to standing and lateral walking. What game you will encourage the parents to play at home? (select all that apply)

- A.** emptying drawers and taking toys from the floor to a higher table
- B.** drawing sitting in a chair
- C.** with balls in the floor
- D.** with cars that travel on an imaginary road in the wall

ANSWER: A, D

101. If your patient with myelomeningocele at L2 is learning trunk control, which position would you avoid during treatment?

- A.** ring sitting
- B.** W sitting
- C.** frog-legged position in supine and prone

ANSWER: A, B, C

102. In case of which disease can we use loading exercises in chronic stage?

- A. JIA
- B. CSLE
- C. Septic Arthritis

ANSWER: A, B, C

103. Contraindications of physiotherapy after SDR surgery for 6 weeks

- A. Passive trunk rot and latflex.
- B. Passive hip flex above 90°
- C. Rigorous hamstring stretching
- D. Electric therapy
- E. Hippo therapy
- F. Swimming and contact sport
- G. muscle strengthening
- H. proprioceptive training

ANSWER: A, B, C, D, E, F

104. What kind of exercise is permitted after burn injury, prior to grafting?

- A. Passive mobilization
- B. Active/assisted exercises
- C. Positioning/Splinting
- D. Constructive play

ANSWER: A, B, C, D

105. Which measurement tools can be used among children with muscular dystrophies?

- A. Chop-intend (>2 years only if they are not able to sit without support)
- B. HFMSE (>2 years who is able to sit alone)
- C. RULM (>2 years who is able to sit next to a table)
- D. QUEST
- E. GMFCS
- F. MACS

ANSWER: A, B, C

106. Physiotherapy goals in general among children with muscular disorders

- A. prevent or reduce joint contractures,
- B. maintain or improve cardiorespiratory and muscle strength.
- C. adapt activities or the child's home/ school environments to promote movement and mobility skills.
- D. increase daily activities.

ANSWER: A, B, C, D

107. Physiotherapy management of muscular dystrophes

- A. gentle passive stretching
- B. games and fun tasks to promote strenght
- C. reduce a risk of obesity
- D. avoid over exercise and fatigue
- E. respiratory exercise
- F. rigorous muscule and trunk strenghtening

ANSWER. A, B, C, D, E

108. Role of orthoses in CP

- A. improving posture

- B. improving upper limb function
- C. improving walking efficiency
- D. preventing or slowing development of contractures
- E. preventing or slowing hip migration
- F. relieving discomfort or pain

ANSWER: A, B, C, D, E, F

109. Spasticity measurement tools

- A. Modified Asworth scale
- B. Modified Tardieu Index
- C. Active Range of Motion
- D. Oxford Scale

ANSWER: A, B

110. Spasticity management methods

- A. Oral medication
- B. physiotherapy in general
- C. Botulinum toxin-A (Btx-A)
- D. Intrathecal baclofen pump (ITB)
- E. Ortopedic surgery
- F. Selective dorsal rhizotomy (SDR)

ANSWER: A, C, D, E, F

111. Elements of physiotherapy before SDR surgery

- A. measurement of gross motor function
- B. muscle strenghtening
- C. release of contracture
- D. increase selective movement control
- E. increase walking ability

ANSWER: A, B, C, D, E

SELECT WHETER THESE STATEMENTS TRUE OR FALSE

112. In children, due to the characteristic of the bone, there are less chance of rib fractures, rather than damage to the lungs and abdomen.

True: A

False: B

ANSWER: A

113. In the case of Klumpke type plexus brachial injury, active finger movements are retained.

True: A

False: B

ANSWER: B

114. The weakest point of the bone in growth is at the junction of metaphysis and physis.

True: A

False: B

ANSWER: A

115. Surgical treatment of the radius distal end fracture is carried out percutan nail and external fixation.

True: A

False: B

ANSWER: A

116. In case of osteochondral talus fracture, 6 weeks of unloading is required.

True: A

False: B

ANSWER: A

117. Simplicity and functionality are the primary objectives when fitting with prosthesis young children.

True: A

False: B

ANSWER: A

118. In functional scoliosis torsion of the trunk is visible beneath the lateral flexion of the spine.

A. true

B. false

ANSWER: B

119. Cerebral palsy is a progressive condition which worsens over time.

A. true

B. false

ANSWER: B

120. Local osteoporosis can occur after local steroid injections.

True: A

False: B

ANSWER: A

121. Local osteoporosis only appears in children, in case of adults only generalised osteoporosis is possible.

True: A

False: B

ANSWER: B

122. Physical activity has its effects on bone mass only in puberty.

True: A

False: B

ANSWER: B

123. The Ca content of bones starts to increase after puberty.

True: A

False: B

ANSWER: B

124. Symptoms of arthralgia and arthritis are the same.

True: A

False: B

ANSWER: B

125. When there is no bleeding and the graft is a healthy pink colour walking is commenced, with vascular support on the lower limbs.

True: A

False: B

ANSWER: A

126. Walking commences initially for a few minutes only and is progressed according to the condition of the graft. It is recommended that the child keep moving when weight bearing to help prevent venous pooling in the limbs.

True: A

False: B

ANSWER: A

127. Jump knee: the ankle is in equinus, the knee and hip are in flexion, there is an anterior pelvic tilt and an increased lumbar lordosis.

True: A

False: B

ANSWER: A

128. Crouch gait: excessive dorsiflexion or calcaneus at the ankle in combination with excessive flexion at the knee and hip.

True: A

False: B

ANSWER: A

129. Pressure Therapy - Compression garments should be used as soon as the wound is closed.

True: A

False: B

ANSWER: A

130. Pressure Therapy - Burn scars should be treated with first-line therapy of silicone gel sheeting and pressure garments.

True: A

False: B

ANSWER: A

131. Children with Congenital Myasthenic Syndrome (CMS) may fatigue quickly. It is therefore important to keep the number of assessments performed to a minimum.

True: A

False: B

ANSWER: A

132. Spasticity in children with cerebral palsy is best treated by a multidisciplinary medical and surgical team.

True: A

False: B

ANSWER: A

133. Through the enhancement of antagonists and the new motor abilities learned in the meantime, spasticity is prolonged in the treated muscles even after the BoNT-A effect has ceased.

True: A

False: B

ANSWER: A

134. Physiotherapy should start after 3-4 month when BoNT-A effect has ceased.

True: A

False: B

ANSWER: B



## GERIATRICS

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

1. Which is not true for geriatric patients?

- A. This group of patients is characterized by a high degree of frailty, vulnerability and multimorbidity.
- B. Diseases can occur abnormally in old age
- C. There is no uniform pattern in aging
- D. Immobility requires only functional stimulation

ANSWER: D

2. Which balance exercise is not recommended for elderly patients:

- A. Standing closed feet
- B. One leg standing on an unstable surface without clinging
- C. Tandem position
- D. One-legged position with or without clinging

ANSWER: B

3. In case of immobilization syndrome, non-typical change:

- A. Orthostatic hypotension
- B. Cardiac reserve decreases
- C. Thromboembolic complications
- D. The heart rate decreases with movement

ANSWER: D

4. It is not recommended for the movement therapy of an immobilized patient:

- A. Forcing the vertical position
- B. Adapted cardio training
- C. Breathing exercises
- D. Forcing flexion exercises in the hip and knee joints.

ANSWER: D

5. Which test does not include standing-sitting from the chair?

- A. Barthel index
- B. BERG test
- C. Tin test
- D. SPPB

ANSWER: A

6. Which statement is not typical of dementia?

- A. Abnormal brain syndrome causing continuous degeneration,
- B. It is associated with a decrease in cognitive functions,
- C. It does not cause a change in personality, only causes behavioral change in
- D. It is followed by rapid biological decline.

ANSWER: C

7. It is examined by the Katz index:

- A. Bathing
- B. Walking speed

- C. Clamping force
- D. Muscle mass

ANSWER: A

8. Uncharacteristic changes in the musculoskeletal system in the case of immobilization syndrome:

- A. Atrophy, decreased muscle strength in antigravity muscles and then in arm and hand muscles
- B. Osteoporosis
- C. Lower limb extension contracture
- D. Fatigue

ANSWER: C

9. What is not characteristic of changes in the respiratory system in immobilization syndrome

- A. Breathing on the back becomes shallow, Diaphragm is compressed, Chest volume decreases
- B. Gas exchange in the alveoli deteriorates, carbon dioxide accumulates
- C. Vital capacity decreases, respiratory rate increases
- D. Functional residual capacity increases

ANSWER: D

10. What does not cause instability in old age:

- A. Osteoporosis
- B. Dementia
- C. Parkinson-syndrome
- D. Cystocele

ANSWER: D

11. Which is not one of the chronic diseases in the elderly?

- A. Hypertonia
- B. Arthrosis
- C. Cardiovascular diseases
- D. Varicella

ANSWER: D

12. Which common health problem in the elderly is called a “silent epidemic”?

- A. Visual decline
- B. Hearing loss
- C. Dizziness
- D. Osteoporosis

ANSWER: D

13. The symptom is subjective, the disease is objective. Choose the symptom from the list below!

- A. Chronic pain syndrome
- B. Pain in right shoulder and hand, fingers
- C. High blood pressure
- D. Osteoporosis with fractures

ANSWER: B

14. What does it mean to have “tailored exercise” for the elderly? Which is the wrong answer?

- A. Know of all the illnesses of the elder that you will not harm any of them with the given practice!
- B. You have to know all the illnesses of the elderly in order to achieve improvement in their condition in spite of them.

- C. Tell the exercise in words that the elderly person understands and hears well. Introduce it!
- D. The exercises which were known by the elderly people for 30-40 years ago are also useful.

ANSWER: D.

15. From what signs do you notice in a group treatment that one of the participants is tired or have pain while moving? Which is the wrong answer?

- A. It does not matter if they practice tired. They are there to work out.
- B. They make movement by para-coordinating it, not by working the right muscles.
- C. The extent and / or speed of movement may decrease because of fatigue.
- D. The participant's face becomes grimmer, and a grimace may appear on it. The movement is not pleasant.

ANSWER: A.

16. Does a physiotherapist not only "exercise" the patient, but also teach him or her how to adapt to and improve the mobility during the recovery? These are the following tips. Which one is wrong?

- A. Begin to activate the muscles with a slow, small, outward movement.
- B. Pain inhibits muscle function, so DO NOT reach the limit of pain WHEN EXERCISING.
- C. Pain must be tolerated; it cannot be helped.
- D. There are aids which can help the patient to perform the daily necessary activities painlessly.

ANSWER: C.

17. A lot of elderly people walk with bent backs, slightly bent hips and knees. Which muscles stretched and weakened? Which is the wrong answer?

- A. Stretched and weakened: musc. gluteus maximus, musc. gluteus medius.
- B. Stretched and weakened: musc. vastus lateralis, musc. vastus medialis.
- C. Stretched and weakened: middle and lower part of trapezius, m. romboideus, m. serratus ant.
- D. Stretched and weakened: musc. pectoralis maior.

ANSWER: D.

18. A lot of elderly people walk with bent backs, slightly bent hips and knees. Which muscles are increased in tone and shortened? Which is the wrong answer?

- A. Increased toned and shortened: m. iliopsoas, a m. rectus femoris, m. quadratus lumb.
- B. Increased toned and shortened: upper part of trapezius
- C. Increased toned and shortened: musculorum abdominalis
- D. Increased toned and shortened: m. levator scapulae, m. pectoralis major, a mm. scaleni

ANSWER: C.

19. In what ways can you understand with the elderly patient how to perform an exercise best? Which is the wrong answer?

- A. Explain to the elderly in an understandable way what we want to achieve with that practice
- B. We show the exercise and then they can imagine and control their muscles more easily
- C. Guess what practice would work better if they could not do it right after the presentation. Maybe it would be better to break it down into parts, it should start with the easier
- D. Speak hard to pay more attention and do what you say and show!

ANSWER: D.

20. In order to correctly define the practices of elderly patients, we need to know about all the illnesses of the patient and the medication they are taking before starting the treatment. Which is the wrong statement?

- A. With the heart rate achieved during the movement we can determine:  $220 - \text{years of age} \times \text{the recommended intensity in \%}$  Eg:  $(220-70) \times 60\% = 90$  / min heart rate = medium load, adequate
- B. By teaching subjective judgment of movement strength: (Subjective judgment is important when a patient is taking a pacemaker that affects their heart rate and therefore, we cannot judge the intensity of activity based on heart rate) The Borg scale should feel "a little heavy". movement strength of the patient.
- C. The speech test helps to subjectively assess the appropriate (moderate) strength of movement. This means doing the movement with such intensity that you can still talk in the meantime.
- D. The more intensely you activate your muscles, the faster your strength develops.

ANSWER: D.

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

21. The TUG test :

- A. 4 meter walking test
- B. We use a chair without armrests
- C. Indicates a mild mobility problem above 30 seconds
- D. During the test, the patient walks as quickly but safely as possible

ANSWER: B, D

22. Cardiovascular changes in old age:

- A. Vascular wall thickens, blood vessel dilates
- B. The amount of blood flowing through the whole body is halved
- C. Systolic RR decreases
- D. Heart rate increases

ANSWER: A, B

23. Which does not belong to 5 i:

- A. Iatrogenia
- B. Indisposition
- C. Instability,
- D. Insomnia

ANSWER: B, D

24. Pseudodementia includes:

- A. Depression
- B. Alzheimer's disease
- C. schizophrenia
- D. Parkinson-sy

ANSWE: A, C

25. Characteristics of subcortical dementia:

- A. Aphasia
- B. Apraxia
- C. Behavioral change
- D. The use of the learned knowledge is lost

ANSWER: C,D

26. Part of the sarcopenia examination:

- A. 5 lineup test
- B. 3 meter walk

- C. Measuring hand force
- D. Tandem standing

ANSWER: A, C, D.

27. Characteristics of incontinence in old age:

- A. Functional incontinence can also develop due to dementia
- B. Stress incontinence is most commonly at this age
- C. It often develops in men due to prostate problems.
- D. PFMT should not be used in men

ANSWER: A, C

28. Which can cause urge incontinence in old age?

- A. Sclerosis multiplex
- B. Parkinson-sy
- C. Stroke
- D. Increased abdominal pressure in COPD

ANSWER: A, B, C

29. Elements of individual physiotherapy for dementia

- A. Complex exercises
- B. Assisted active exercises
- C. The use of tools (ball, thera band) is not recommended
- D. Self-practice is not expected

ANSWER: B, D

30. We talk about frailty if:

- A. There was a weight gain of more than 5 kg last year
- B. Clamping force for women drops below 20 kg
- C. Walking speed stagnates
- D. Low activity level (equivalent to sitting or mostly lying down)

ANSWER: B, D

31. What movements should a patient with osteoporosis only perform?

- A. Walk with a straight posture, embossed chest, shoes with elastic soles, stepping rhythmically. If you get tired, slow down and then, after a while, continue as vigorously as they did before they slowed down.
- B. Sit with your back straight, with your head extended, as you move your arms
- C. Do not perform a trunk bending exercise (or work) while standing or sitting in an OP! Stretch the back muscles and round the trunk while lying on its side.
- D. If their shoes need to be tied, bend forward, and tie them. They do not have to put their shoes on the chair!

ANSWER: A, B, C.

32. Relationship between disease processes: Diabetes and weight: 80-85% of patients with type 2 diabetes are overweight. Choose the correct answers!

- A. Obese people should exercise as vigorously as possible on a regular basis.
- B. Choose a movement for the patient that is also suitable for your joint problems.
- C. For obese and diabetics, moderate-intensity but more prolonged exercise is recommended.
- D. Moderate intensity is characterized by 40-60% of aerobic capacity and 50-70% of maximum heart rate.

ANSWER: B, C, D.

33. About the exercise of a hypertensive patient. What kind of exercise is recommended? What are the correct answers?

- A. A sweaty, fast run is recommended.
- B. Exercise at moderate intensity for 35-40 minutes per day is recommended.
- C. Activities that do not involve a sudden increase in blood pressure are recommended. (Eg pressing and straining sports is not recommended because it raises blood pressure)
- D. The hypertensive patient should start exercising only after medical examination and recommendation.

ANSWER: B, C, D.

34. Choose the special test methods to diagnose sarcopenia:

- A. DEXA: Dual Energy X-ray Absorptiometry (Beam Photon Absorption), A radiation load reaches the patient, but a tenth as much as a chest RTG. Physical basis: the photon beam is created using an X-ray tube and special filters.  
BIA: (Bioelectrical Impedance Analysis)  
Electrical flow is different in different tissues because it has different resistance to muscle tissue and different to adipose tissue. Thus, when examining the total body composition, we can also measure the weight and ratio of fat and soft tissue (muscle).
- B. A fist clamping force measuring device is used to measure muscle strength.
- C. Physical performance tests: 1.) Balance measurement: stop stably for 10 seconds in different foot positions. 2.) Walking speed: 4 meters should be done at normal pace and time is measured in seconds. 3.) Getting up from a chair. They need to get up 5x fast and measure the time in seconds.
- D. Manual muscle testing, on a scale of 0-5 per muscle group.

ANSWER: A, B, C.

35. Treatment of sarcopenia.

- A. Sarcopenia is currently incurable, but exercise and nutrition therapy can help restore muscle mass and strength, or slow down deterioration.
- B. Lifestyle changes and regular medical checkups are important.
- C. The most important thing is to increase and maintain physical activity.
- D. A lot of watching TV also helps according to those who like to watch TV.

ANSWER: A, B, C.

36. "The process of physiotherapy for an elderly patient begins and continues with communication." In the answer, mark what you agree with!

- A. For the first time, we get to know the patient and his or her illness, which is why he or she needs our help. From medical papers we are informed and make a note of the present functional state.
- B. Starting from the present state, we work together to create a long-term plan that we want to get to. Together, because that patient also has a plan, he or she must be an active part of the process!
- C. This will make the patient understand that they must go step by step. They don't have to practice what they can't do right now, but some parts of it!
- D. Notice that if the patient has accepted our advice and it has made them better, we will praise them. If they can simply hold a quadriceps innervation through exercises for the next day, not just for 5 seconds, but for 10 seconds, then that is the result of their practice.

ANSWER: A, B, C, D.

37. We need to teach many older people to be as self-sufficient as possible after an injury or a stroke with a lot of patience and a lot of practice. This includes initially turning to the side in bed, sitting on the edge of a bed, transferring to a chair. etc. under the direction of a

physiotherapist. The staff caring for this patient or the family member should also learn how to provide safe assistance. Such as: What are the correct answers?

- A. Transfer the patient sitting on the edge of the bed to a chair or room toilet: with the help of a straight spine and a leg placed in a large straddle-stand, set up the patient by moving his weight. If the patient is unable to turn his body towards the chair, place a turn-table under his or her foot before standing up.
- B. Older people often find it difficult to understand and learn that their movement habits, which they have been accustomed to for many years, need to be changed - adapting to changes in their bodies.
- C. You have to assess the patient's momentary abilities to see if he has enough strength and skill for something. The patient is not always able to realistically assess and judge this.
- D. If the elderly patient protests, "Don't help! I know it alone!" . leave it,

ANSWER:A, B, C.

38. When performing balance exercises, great care must be taken to perform the exercises safely. For example:

- A. Standing on one leg: He stands with his back to the wall, a chair in front, he keeps his torso stable, first the toe of the unloaded leg is still below. Only lift it slowly a little higher when you feel stable. Slowly put your foot back next to the other All along without momentum. With the other foot in the same way.
- B. Start as in the previous exercise. Hold the trunk, hips stably over loaded foot. He slides the toes of the other foot forward on the floor, then draws a circle in a side plane and closes the foot. It relaxes a bit by bending the sole with heel lifting. Continue placing the weight on the other foot and the toes of the other foot slide forward, then sideways, then close. Keep the trunk stable throughout. The patient can put his palm on the back of the chair in front of him at any time.
- C. Many times patients want to show that they are skillful and will continue even if they are already doing it wrong. Is that correct?
- D. Music with the right rhythm, known to the elderly, has a positive effect. Dance and walking exercises to music can also play a role in developing balance. But safety must still be kept in mind!

ANSWER:A, B, D.

39. From 24 hours a day, our body is in an upright position for about 14-16 hours. From the following, choose the ergonomically correct work and the tasks leading to it!

- A. Adjust the height-adjustable chair so that your weight is on your sciatic bone at the front of the chair and you can slide your forearms straight on the table - lowered shoulder! - back and forth. This way you can read with your back to read at the table, write on a laptop, peel potatoes and chop vegetables at the kitchen table, etc. And not standing with your back bent!
- B. If you work on a laptop, it is correct to place books under the laptop so that the top edge of your screen is at eye level, about 40 cm from your eyes.
- C. If your laptop is properly positioned, you will also need an external keyboard, sliding close to yourself on the desktop so that your trunk stays upright, you can type on the keyboard with your shoulders lowered. (These must also be taught to our older patients!)
- D. The tasks of a physiotherapist include patient education! It is useless for the patient to do exercises if he does not pay attention to his posture during his daily activities! We also need to motivate him! Even watching TV should be sitting with your back straight and not sitting in the armchair with your back bent!

ANSWER: A, B, C, D.

40. Most accidents and fractures occur at home, where older people spend most of their lives. The safe furnishing of the apartment is important. By making small changes in the apartment, we can achieve a reduction in the number of fractures. Mark the following that you would recommend to your elderly acquaintance.

- A. Use a non-slip mat in the tub, handrails near the tub and shower. Create a non-slip floor in the bathroom and wipe it off immediately if it gets wet.
- B. Place a light switch in your bedroom near your bed. Have a phone near your bed so you can call for help if you need it. Attach the carpet to the floor and do not use many small carpets!! Let the road from the bedroom to the bathroom be lit at night! have a flashlight next to your bed in case of a power failure!
- C. There should be handrails on both sides of the stairs leading to your apartment. There should be lighting at the lower and upper steps. Apply a non-slip mat to the stairs.
- D. Do not wear long nightgowns, clothes, coats. Wear comfortable footwear with elastic, non-slip soles and good ankle fastening, avoid high heels!

ANSWER: A, B, C, D.

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

41. The activity of the II. type (white) muscle fibers decrease faster than type I (red) muscle fibers' activity.

- A. TRUE
- B. FALSE

ANSWER: A

42. The II. type muscle fibers tend to shorten, type I. to elongate.

- A. TRUE
- B. FALSE

ANSWER: B

43. Capacity constraint in all cases causes multimorbidity in old age.

- A. TRUE
- B. FALSE

ANSWER: B

44. Apraxia is a disorder of the recognition of familiar objects

- A. TRUE
- B. FALSE

ANSWER: B

45. Multimodal exercises improve static balance, functional mobility, and gait quality

- A. TRUE
- B. FALSE

ANSWER: A

46. On the consequences of multimorbidity: in the reduction of functionality, the effects of diseases can be summed up, and even intensified by synergism, they can cause disability, e.g. Visual disturbance + osteoarthritis → fall → femoral neck fracture → immobilization

- A. TRUE
- B. FALSE

ANSWER: A.

47. It is important that the staff caring for the elderly in the hospital use all the activities performed with the patient in the agreed manner with the same verbal instructions - so that the patient remembers the correct movement.

- A. TRUE
- B. FALSE

ANSWER: A.



48. The elderly patient should walk with two sticks until the next medical check-up because the tibial fracture is not yet loadable. The patient goes shopping the next day, but only goes with a stick to hold the bag in the injured side's hand. He doesn't notice that his body is completely asymmetrical, he tilts so much to the stick side. Is it okay for the patient to ignore the medical instruction?

A. TRUE

B. FALSE

ANSWER: B.

49. Older people also need to learn movements (we need to teach!) to prepare their body for movement after rest: Lie on your back, first arm and leg movement, then turn sideways, hang your legs out of bed, push your trunk into your sitting position - So wait a few minutes for the blood pressure to have time to get used to the vertical posture.

A. TRUE

B. FALSE

ANSWER: A.

50. The movements of the neck should be practiced only in a sitting position, with the back straightened, together with the movement of the arms, - stopping slightly in the middle position. Do not make a head circumference!

A. TRUE

B. FALSE

ANSWER: A

## PHYSIOTHERAPY IN OBSTETRICS AND GYNECOLOGY

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

1. Aerobic exercise reduces blood flow to the pregnant woman's heart and brain.

True: A

False: B

ANSWER: B

2. During uncomplicated pregnancy the postural training should always involve some pelvic tilt exercise.

True: A

False: B

ANSWER: A

3. During pregnancy the centre of gravity shifts downward and forward because of the enlargement of the uterus.

True: A

False: B

ANSWER: B

4. Inferior vena cava compression is a relative obstruction of venous return which leads to decreased cardiac output and orthostatic hypotension

True: A

False: B

ANSWER: B

5. After C-section preventive exercises can be started no earlier than 24 hours after the surgery.

True: A

False: B

ANSWER: B

6. Ligamentum teres uteri pain is very common in the first trimester and can be eliminated by lower limb low-impact exercises.

True: A

False: B

ANSWER: B

7. Fluid retention may occur during the 3rd trimester, which can lead to a variety of nerve compression syndromes

True: A

False: B

ANSWER: A

8. In pubic symphysis dysfunction management, the followings are required: pelvic floor and transverse abdominal muscle contraction when changing position for stabilization, gluteus medius exercises with hip abduction for strengthening and crossed leg piriformis muscle stretching

True: A

False: B

ANSWER: B

9. Most common postural compensations to maintain balance and stability during pregnancy: spine curvatures are flattening, and knees are getting hyperflexed as a compensation to maintain balance.

True: A

False: B

ANSWER: B

10. Because of hormonal effect there is a systemic decrease in ligamentous tensile strength during pregnancy.

True: A

False: B

ANSWER: A

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.

SELECT THE ONE THAT IS BEST IN EACH CASE

11. Exercise during pregnancy: Discourage breath-holding and avoid activities that tend to elicit the Valsalva maneuver because...

- A. this may cause a shear force on the lumbar vertebrae
- B. this may provoke diastasis recti
- C. this may lead to undesirable downward forces on the uterus
- D. this may cause increased oxytocin synthesis

ANSWER: C

12. Which answer is appropriate?

- A. Diastasis recti is only a cosmetic factor which affects physical appearance by the forward bulged belly which usually heals by itself after couple of weeks postpartum
- B. Diastasis recti is a separation between the rectus abdominis and the external oblique muscle because of the growing fetus
- C. Diastasis recti weakens the most important stabilizers of the front side of the trunk, therefore immediate sit ups and curl ups are needed in order to achieve full recovery
- D. Diastasis recti prevalence is 100% after the 35th week of pregnancy

ANSWER: D

13. Urinary tract infections during pregnancy are common because of the following:

- A. Underwater exercises during pregnancy are getting popular which always lead to infections
- B. B) The ureters enter the bladder at a perpendicular angle which can lead to reflux and infection
- C. C) Most common reason for urinary tract infection is lack of exercise during pregnancy and weakened pelvic floor muscles
- D. D) Episiotomy and pelvic floor muscle dysfunction leads to the most common urinary tract infections which needs to be cured immediately

ANSWER: B

14. Changes of the cardiovascular system during pregnancy. Find the only appropriate answer:

- A. blood volume increases, cardiac output decreases
- B. blood volume decreases, cardiac output increases
- C. heart rate decreases, cardiac output increases
- D. cardiac output increases, blood pressure decreases

ANSWER: D

15. Which ones are absolute contraindications to exercise during pregnancy?

- A. Pre-eclampsia, rupture of membranes, vaginal bleeding, or severe respiratory disorder
- B. Pre-eclampsia, severe anemia, obesity
- C. Pre-eclampsia, maternal heart disease, obesity, overheating,
- D. Pre-eclampsia, thyroid disease, low blood pressure, migraine

ANSWER: A

16. Which statement is correct regarding postural back pain management during pregnancy?

- A. Deep-heating agents, TENS and electrical stimulation is an ideal therapeutic treatment choice for pain relief

- B. Traditional low back exercises, regular posture correction and proper body mechanics can be the solution
- C. Only ergonomic advices are appropriate for low back pain management during pregnancy due to joint laxity
- D. Intense stretching of the shortened muscles and effective regular strengthening exercises of the weakened muscles are the key

ANSWER: B

17. Find the only proper statement about menopause

- A. At the menopause, the ovaries lose much of their function, there is a fall in hormone production, notably melatonin
- B. As oxytocin protects the heart and bones, postmenopausal the risks of osteoporosis and heart disease increase
- C. Menopause is a challenging period for women as they can suffer from hot flashes, lack of energy, depression but luckily menopause has no direct effect on the musculoskeletal system
- D. As a physiotherapist you should plan a combination of exercises that include both resistance and weight-bearing exercises as it is the best choice to optimize strength and function during menopause even though the patient had never exercised before

ANSWER: D

18. Find the only correct answer:

- A. Forward head posture is a normal accompanying during pregnancy which usually does not need any therapeutic intervention as automatically solves after delivery
- B. Forward head posture has an essential effect on full body posture therefore can increase pain and discomfort in the low back and hip
- C. Forward head posture is the most common reason for knee hyperextension during pregnancy therefore it is a must to treat
- D. Even though forward head posture is very common in the population it has no clear effect on the shoulder girdle and upper back structure

ANSWER: B

19. Pregnancy is a very special period of life, however in some cases it can be also very challenging, thus ....

- A. If the pregnant woman has never exercised before pregnancy, she should go through her pregnancy without exercising
- B. If the pregnant woman enjoyed martial arts with great pleasure before her pregnancy, then as a physiotherapist you should encourage her to keep on to this exercise during pregnancy as it's already well-tried
- C. Complains like tiredness, high HR and harden belly during exercises happen, but as a physiotherapist it is your task to explain to the pregnant woman that these are normal reactions to exercise and will be eliminated soon
- D. Physiotherapists should educate pregnant women on specific safety precautions, activities to avoid and on signs and symptoms that indicate they should stop exercising and consult their healthcare provider

ANSWER: D

20. Select the only incorrect statement!

- A. Relaxation breathing is a deep breath that increases intraabdominal pressure which helps the uterus to relax
- B. Pushing breathing is produced by voluntary contraction of the abdominal muscles and the diaphragm

- C. Additional relaxation techniques during labor are massage, listening to music, special labour positions or contracting then relaxing muscles
- D. A newborn is premature if his/her weight is less than 2500 g, even if born after 37th week

ANSWER: A

21. Exercises in the first trimester if she is a sporting or athlete:

- A. She can continue all the sport specific trainings without limitation
- B. Only boxing or martial art exercises should be avoided
- C. High impact and intensity exercises are a must in order to avoid deteriorating fitness
- D. Should rest if feel tired or HR is too high, feel pain or harden belly

ANSWER: D

22. Most proper first trimester exercises:

- A. Breath technics, relaxation technics, preparation exercises for labour
- B. Powerful muscle strengthening to prepare the mother to be able to carry the infant after delivery
- C. Maintenance of cardiovascular fitness and improvement of body awareness, posture, coordination
- D. Kegel exercises must be started and practiced from the very first sign of pregnancy

ANSWER: C

23. What are the risk factors of pelvic floor muscle dysfunction?

- A. childbirth, obesity, high calorie intake for long time of period, inactive lifestyle, chronic diarrhea
- B. childbirth, obesity, high caffeine intake, smoking, chronic cough, chronic constipation
- C. childbirth, obesity, breast removal surgery, 1-2 hour of walking daily, anemia
- D. childbirth, over-practiced Kegel exercises, poor cardiovascular condition, allergy

ANSWER: B

24. Stress incontinence occurs when:

- A. a person recognizes the need to urinate, but cannot physically make it to the bathroom
- B. when the patient's bladder is always full so that it frequently leaks urine
- C. the bladder is isolated from cortical control
- D. this may happen when the pressure within the abdomen is increased

ANSWER: D

25. What type on incontinence can occur while using jumping rope?

- A. stress incontinence
- B. overflow incontinence
- C. reflex/neurogenic incontinence
- D. functional incontinence

ANSWER: A

26. What is the proper care of the incision of the C-section?

- A. intensive scar tissue mobilization from the first day, stretching, high impact trunk activities
- B. all upper extremities exercise should be avoided including elongation
- C. support incision with pillow when coughing or breastfeeding
- D. always keep the knees bended while lying on your back

ANSWER: C

27. Choose the only correct statement about inferior vena cava compression syndrome!

- A. Occurs when the gravid uterus compresses the inferior vena cava when a pregnant woman is in a sitting position, leading to decreased venous return centrally

- B. If a woman develops symptoms, she should change her position or be moved into the left lateral position and the symptoms will resolve rapidly
- C. Symptoms of the inferior vena cava compression syndrome are the following: vomiting, fever, cyanosis and intense coughing
- D. supine position usually helps reducing the severity of symptoms

ANSWER: B

28. What is the only incorrect answer regarding to postural back pain?

- A. Symptoms worsen with muscle fatigue, from static postures, can worsen during the day
- B. Symptoms can be eased with specific exercise therapy, rest or frequent change of position
- C. Contraindicated treatments during pregnancy: deep-heating agents, electrical stimulation, traction
- D. forward head posture has little or no effect on postural back pain

ANSWER: D

29. Choose the only incorrect statement regarding to maternal response to exercise!

- A. Aerobic exercises do not reduce blood flow to the brain and heart
- B. Pregnant women reach the maximum exercise capacity at a lower work level
- C. Hypoglycemia occurs more readily therefore adequate CH intake is needed
- D. The maternal respiration rate appears to hardly adapt to any exercises

ANSWER: D

30. What are the contraindications to exercise? Choose the incorrect statement!

- A. Leakage of amniotic fluid, persistent pain (chest, pelvic, low back, abdominal), vaginal bleeding
- B. Uterine contractions if persisting during the exercise session, irregular heartbeat, tachycardia
- C. Depression, insomnia, food intolerance, headache
- D. Difficulty in walking, dizziness, faintness, vaginal bleeding

ANSWER: C

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

31. Choose the appropriate answers in connection with the first trimester.

- A. The first trimester is from 0-9 weeks of pregnancy
- B. Common symptoms are fatigue, more frequent urination, nausea/vomiting („morning” sickness)
- C. Uterus becomes an abdominal organ
- D. The fetus is 10-16cm, 40g, can turn its head, swallows, has a beating heart and kicks, which can be felt by the mother

ANSWERS: B,C

32. Find the correct answers in connection with the placenta:

- A. allows transfer of oxygen from the mother to the fetus and the transfer of waste products and carbon dioxide back from the fetus to the maternal blood
- B. acts as a barrier to certain noxious substances
- C. produces hormones to maintain the pregnancy
- D. provides nutrition for the fetus

ANSWERS: A,B,C,D

33. Choose the right statements regarding musculoskeletal changes during pregnancy

- A. Lumbar and cervical lordosis increase, knees hyperflexed
- B. The centre of gravity shifts upward and forward
- C. Thoracic kyphosis increase, shoulder girdle and upper back become flat

D. Thoracolumbar fascia loosens which leads to decreased ability of effective trunk stabilization  
ANSWERS: B, D

34. Choose the right statements regarding cardiovascular changes during pregnancy  
A. the heart increases in size and becomes elevated from pre-pregnancy position  
B. Blood volume increases throughout pregnancy and returns to normal by 6 to 8 weeks after delivery  
C. Cardiac output increases, blood pressure decreases  
D. Venous pressure in lower extremities increases during standing  
ANSWERS: A, B, C, D,

35. What are the functions of the pelvic floor muscles?  
A. Maintains continence  
B. Provides support for the pelvic organs  
C. Withstand increases in intra-abdominal pressure  
D. Secure big stability for lower extremity movement  
ANSWERS: A,B,C

36. Caesarean Childbirth is often performed when a vaginal delivery would put the baby or mother at risk, such as:  
A. mother's fear of vaginal childbirth and pain  
B. problems with the placenta, umbilical cord or shape of pelvis  
C. high blood pressure in the mother  
D. breech birth  
ANSWERS: B, C, D

37. Find the most common high risk pregnancy conditions:  
A. Preterm rupture of membranes  
B. Incompetent cervix, placenta praevia  
C. Pregnancy-related hypertension or pre-eclampsia  
D. Faulty posture, disc herniation  
ANSWERS: A,B,C

38. Choose the proper exercise programs with high-risk pregnancies  
A. Relaxation techniques, bed mobility and transfer activities  
B. Teaching log roll techniques for safe transfer  
C. Trunk exercises, abdominal muscle strengthening, antigravitation muscle trainings  
D. Ambulation if allowed, circulatory support exercises  
ANSWERS: A,B,D

39. Suggested activities for the patient following a C-section:  
A. Instruct the woman to begin preventive exercises as soon as possible during the recovery period (ankle pumping, ROM exercises, walking)  
B. Jogging as soon as possible to increase stamina and power and avoid loss of muscle fibre substance  
C. Lower limb reinforcement in the first 3 days against resistance to build up strength and muscle strength endurance and avoid thrombosis  
D. Initiate pelvic floor exercises to regain tone and control of the muscles of the perineum  
ANSWERS: A,D

40. Which of the following conditions are cases when you should be precautionary while leading an exercise therapy/physiotherapy?

- A. extreme obesity
- B. diastasis recti
- C. extreme fatigue
- D. anemia

ANSWERS: A,B,C,D

41. Find the correct statements!

- A. Diastasis recti is a separation between the two sides of the rectus abdominis muscle because of the change of the mother's posture and daily activity
- B. Diastasis recti is a symptom that only affects pregnant women
- C. Diastasis recti can be palpated and seen
- D. Diastasis recti can lead to functional limitations, it is not only an aesthetic factor

ANSWERS: C,D

42. Which exercises should be avoided when sacroiliac or pelvic girdle pain occurs?

- A. excessive, full range of hip abduction or hyperextension
- B. swinging 1 leg out of bed
- C. single-leg weight bearing exercises
- D. crossing the legs when sitting or during exercise

ANSWERS: A,B,C,D

43. Find the proper statements regarding to varicose veins:

- A. Symptoms can be: heaviness, aching discomfort
- B. Pregnant women are more susceptible to deep vein thrombosis
- C. it is highly recommended to reduce physical activity, such like walking, biking, swimming if you have varicose veins
- D. only upper extremity exercises should be continued

ANSWERS: A,B

44. Find the proper statements regarding to joint laxity:

- A. if the woman received proprioceptive training before pregnancy, she is not affected by the effects of joint laxity
- B. all joint structures are at increased risk of injury during pregnancy and early postpartum period
- C. swimming and biking are the two exercises which should be avoided due to joint laxity
- D. Non-weight bearing and less stressful aerobic activities should be performed

ANSWERS: B,D

45. Choose the true statements:

- A. Fluid retention may occur during the 3rd trimester, which can lead to a variety of nerve compression syndromes
- B. Most common reasons of nerve compression syndromes in lower extremities are the following: weight of the fetus, fluid retention, hormonal changes
- C. Nerve Compression Syndromes exercises should be the following: postural correction, manual techniques, stretching, mobilization, ergonomic assessment
- D. Joint laxity and diastasis recti leads to nerve compression syndromes

ANSWERS: A,B,C

46. Choose the proper statements about the labour:

- A. Labour has 5 stages, all 5 stages has its unique characteristics
- B. During labour, the fetus has specific rotation movements before expulsion which lets him/her go through the birth canal
- C. Placental stage is the first stage of the labour



- D. Most important pain relief techniques during labour are proper breathing techniques, special positions, massage, contract and then relax the muscles or listening to music

ANSWERS: B,D

47. Post-natal exercises. Find the proper statements!

- A. In the early stage mobilization, breathing exercise, exercise to improve circulation, postural training and isometric muscle works should be completed
- B. Late stage starts from the 6th day till the 6th week after delivery
- C. In most cases after the 6th week of delivery woman is allowed to start complex exercises and can return to sport
- D. Mum-baby gymnastic promotes the development of proper mother-baby attachment while we can perform exercises that benefit both the child and the mother

ANSWERS: A,B,C,D

48. Find the correct statements regarding to pregnancy

- A. In the 3rd trimester diaphragm breathing is more common due to the enlargement of the uterus
- B. Round ligament pain is most common in the third trimester
- C. 38 to 42 week is considered full term pregnancy
- D. Weight gain during pregnancy mostly consist of the following: fetus, placenta, blood and fluids, uterus and breasts, muscle and fat, amniotic fluid

ANSWERS: B,C,D

49. Which statements are true regarding to the pulmonary system changes during pregnancy?

- A. The anteroposterior and transverse chest diameters decreases by around 2-5 cm
- B. The total chest circumference increases by circa 5-7 cm
- C. The diaphragm is elevated by around 4 cm
- D. The O<sub>2</sub> consumption decreases by circa 15-20%

ANSWERS: B,C

50. During pregnancy there are significant changes in posture and balance. What are the reasons?

- A. The center of gravity shifts upward and backward which leads to a wide-based walking pattern
- B. The center of gravity shifts upward and backward which leads to knee hyperextension and increased lumbar lordosis
- C. The enlargement of the uterus and breasts changes the center of gravity, which requires postural compensations to maintain balance and stability
- D. The change of the lumbar lordosis curve has an effect on the pelvis, the hip and the whole lower extremities as well.

ANSWERS: C,D

## SUPPORTIVE TECHNIQUES IN PHYSIOTHERAPY

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY FOUR ANSWERS OR COMPETITIONS.  
SELECT THE ONE THAT IS BEST IN EACH CASE

1. What are the aims and tasks of using orthosis?

- A. load, support, fixation
- B. unloading, correction, support, fixing
- C. relief, support, fixation

ANSWER: B

2. Body worn devices include:

- A. prosthetic limb
- B. cane
- C. wheelchair
- D. bathroom seat

ANSWER: A

3. The most stable walking aid

- A. cane
- B. crutches
- C. walker
- D. wheelchair

ANSWER: C

4. Electric wheelchair recommended

- A. For anyone who has difficulty in walking
- B. Who can't communicate
- C. For blinded people
- D. Who can't use any of his hands

ANSWER: D

5. Epitheses are characterized by:

- A. Play a functional role
- B. For cosmetic purposes
- C. Mass production
- D. Made of wood

ANSWER: B

6. Active orthosis

- A. They are used by own muscle strength of the patient only
- B. Used for neurological problems
- C. Cheap
- D. Light

ANSWER: B

7. Accessible entrance is characterized by:

- A. Preferably the side entrance
- B. Min. 40 cm passing width
- C. The height of the door opener is determined by the anthropometric symbols of the standing women

D. preferably the main entrance should be accessible

ANSWER: D

8. For the "accessibility" of the hearing impaired

- A. The Braille writing
- B. Sign language
- C. White stick
- D. Long hand

ANSWER: B

9. In terms of stability, which is the correct order, from the most stable to the less stable:

- A. Walkers, armpit crutches, elbow crutches
- B. Cane, elbow crutches, walkers, armpits crutches
- C. Walkers, cane, elbows crutches, armpit crutches

ANSWER: A

10. Three-point gait order:

- A. Two crutches - damaged limb- intact limb
- B. Damaged limb - two crutches - intact limb
- C. one crutch — damaged limb — another crutch+intact limb
- D. two crutches — intact limb — damaged limb

ANSWER: A

11. When adjusting the elbow crutch correctly, the position of the upper limb:

- A. Stretched elbow
- B. 60 degree elbow flexion
- C. Elevated shoulder
- D. Slightly bent elbow

ANSWER: D

EACH OF THE QUESTIONS OR INCOMPLETE STATEMENTS BELOW IS FOLLOWED BY SUGGESTED ANSWERS OR COMPLETIONS. SELECT MORE THAT ARE CORRECT

12. Which are the active upper limb prostheses?

- A. working arms
- B. Bioelectric prostheses
- C. beautician prostheses
- D. self-operated mechanical prostheses

ANSWER: B, D

13. After amputation, prosthetic limb care is not typical

- A. The type of prosthesis is determined by the physical condition of the individual
- B. The type of prosthesis is determined by the patient's mental state
- C. Number of missing limbs
- D. Recommended for everyone

ANSWER: A, B, C

14. Accessibility is important for

- A. For disabled people
- B. For moms with prams
- C. For the elderly
- D. For the blinded people

ANSWER: A, B, C, D

15. Characteristics of assistive aids:

- A. Low contact surface, loose fit
- B. Rehabilitative purposes
- C. Technical in nature, aimed the disability.
- D. Individual production

ANSWER: A, B, C

16. Relieves the lower limb from wearing body weight by placing the weight load above the injury. Possible load-carrying surfaces

- A. Tuber ischiadicum
- B. Femur condyluses
- C. Mandibula - os occipitale
- D. Malleolis

ANSWER: A, B, C

17. Typical of a one-legged stick:

- A. Increases the safety and stability of the walk
- B. Increases the support surface
- C. Provides sensory feedback
- D. Suitable for full relief

ANSWER: A, B, C

18. The advantage of walking with foot contact over walking without contact with the ground:

- A. Helps blood circulation,
- B. Helps prevent hip and knee joint flexion contractura
- C. Helps to maintain a normal gait form,
- D. For all patients are suitable

ANSWER: A, B, C

19. Accessible is a building that

- A. Accessible to all
- B. It has enough space for transport
- C. Includes signaling system for the blind
- D. No level difference

ANSWER: A, B, C

20. Increases with age in adulthood

- A. Demand for light
- B. Lung capacity
- C. The hearing threshold
- D. Sense of balance

ANSWER: A, C

SELECT WHETHER THESE STATEMENTS TRUE OR FALSE

21. Knee elastic compression orthosis are suitable for the treatment of unstable knees.

True: A

False: B

ANSWER: B

22. AFO for peroneal palsy is a fixing orthosis.

True: A

False: B

ANSWER: B

23. When walking up stairs, the correct order is: intact limb - damaged limb+aid.

True: A

False: B

ANSWER: A

24. When seating correctly in a wheelchair, the hips must be in an 110 degree flexed position.

True: A

False: B

ANSWER: B

25. Biofeedback may provide information on neuromuscular and autonomic activities.

True: A

False: B

ANSWER: A

26. Women's dimensions should be taken into account when designing barrier free environment.

True: A

False: B

ANSWER: B

27. The principle of accessible design: products should be suitable for all after adaptation.

True: A

False: B

ANSWER: B

28. Gap theory is a theory designed to overcome the difference between the user's level of ability and the functional level expected by the environment.

True: A

False: B

ANSWER: A

29. Accessibility applies only to the elimination of spatial barriers.

True: A

False: B

ANSWER: B

30. Universal design is the same as accessible design.

True: A

False: B

ANSWER: B