MSc Physiotherapy
Test bank

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Tartalom

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RESEARCHE METHODOLOGY

SINGLE CHOICE

1. What does the term "variable" mean?
A. It refers to a logically related group of attributes.
B. It refers to the questions asked in research.
C. It refers to the responses to the research
D. It refers to the number of participants in the research.
ANSWER: A

What is meant by a closed question?
A. A question type where the respondent can formulate the answer in his/her own words.
B. A type of question where the respondent is asked to indicate a characteristic of him or her based on predetermined answers.
C. A type of question where the respondent can indicate more than one answer.
D. A type of question where the respondent can only select one answer.
ANSWER: B

3. Which of the following is NOT a condition for causality?
A. The cause precedes the effect in time.
B. There is empirical evidence of causality between cause and effect.
C. This causality cannot be explained by other factors.
D. The temporality of the data in the study must match.
ANSWER: D

4. What is the level of measurement where we only know the difference between the item?
A. nominal
B. ordinal
C. ratio scale
D. interval
ANSWER: A

5. Which is the level of measurement where we only know the order between items, but the values are NOT numerical values?
A. nominal
B. ordinal
C ratio scale
D. interval
ANSWER: B

6. What is the logic of hypothesis testing?
A. Until a hypothesis is proven, we can claim that a difference/correlation exists.
B. It is sufficient to make a hypothesis without knowing the data.
C. In all cases, we assume that there is a correlation/difference and this must be disproved
D. There is always a correlation, you just have to find the right numbers.
ANSWER: A

7. What is the median?
A. middle value
B. most common value
C. the first value
D. last value
ANSWER: A

8. What is a mode?
A. middle value
B. most common value
C. first value
D. last value
ANSWER: B

9. What is true about the null hypothesis?
A. It is always true, it cannot be disproved
B. Until disproved, it must be accepted.
C. Until it is proven, it cannot be true.
D. It cannot be proved
ANSWER: B

10. Which of the following is the strongest scientific evidence?
A. Case study
B. Meta-analysis
C. Case-control study
D. Animal study
ANSWER: B

11. Which of the following is considered a literature source?
A. A comment on a social networking site
B. An article published in a news portal
C. Private correspondence
D. Work e-mail
ANSWER: B

12. When is research considered reliable?
A. If you repeat your research and get similar/slightly different results
B. When more than 500 people participate in the research
C. When our results support our hypotheses
D. If the research is really on the subject of the study.
ANSWER: A

13. When is research considered valid?
A. If we repeat our research we get similar/slightly different results
B. When more than 500 people participate in the research
C. When our results support our hypotheses
D. If the research is relay on the subject of the study.
ANSWER: D

14. How is research different from a survey?
A. They are no different, they point to the same thing
B. Research may involve more people
C. In research, we have prior expectations about the results
D. A survey can involve more people
ANSWER: C

15. A sample is representative of the population if
A. it is probability sampled
B. If it reflects well the aggregate characteristics of the population, we sample by quota along certain variables
C. Results from the responses are what was expected
D. If it consists of people who are competent in what we are asking them about
ANSWER: B

16. The population,is....
A. The group from whom the questionnaire is asked
B. The theoretically defined set of items to be tested
C. The list of items from which a sample is taken
D. The population of the country where the survey is being conducted
ANSWER: C

17. The parameter....
A. Summary characteristic of a variable in the sample
B. Summary characteristic of a variable in the population
C. The response probability of a question in a questionnaire
D. Formula for calculating the sampling error
ANSWER: B

18. We want to take a sample of 50 persons from a population of 5000 using a random starting point systematic sampling. What will be the sampling interval?
A. 50
B. 100
C. 150
D. 200
ANSWER: B

19. The elements or group of elements to be taken into account in the selection of the sample at each stage of the sampling procedure .....
A. The sampling unit
B. The population
C. The stratification variable
D. Group of informants
ANSWER: C

20. In multistage cluster sampling, the sampling error can be reduced by.....
A. Asking fewer questions to the respondent
B. Narrow the sampling frame
C. Selecting many groups and relatively few items from each group
D. Selecting few groups and relatively many items from each group
ANSWER: A

21. CAWI means.....
A. Web based interview
B. Face to face interview
C. Telephone interview
D. In depth interview
ANSWER: A

22. List of items from which we actually sample....
A. The basic set
B. The subpopulation
C. The sample list
D. The sampling frame
ANSWER: A

23.
A. Summary characteristic of a variable in a sample
B. Summary characteristic of a variable in the population
C. The numerical value assigned to the attributes of a variable
D. Formula for calculating sampling error
ANSWER: C

24. The units from which information is collected ..... are called
A. sample subjects
B. people
C. respondents
D. people
ANSWER: C

25. What is the scientific paradigm?
A. A schema that organizes our view of a set of facts into a framework
B. A technical description of the parameters of research
C. A theoretical description of research
D. Statistical procedure
ANSWER: A

26. At what level of measurement is the following variable: religious denomination
A. Nominal
B. Ordinal
C. Interval
D. Proportional scale
ANSWER: A

27. At what level of measurement is the following variable: height (cm)
A. Nominal
B. Ordinal
C. Interval
D. Proportional scale
ANSWER: C

28. When it is not possible to manipulate the independent variable for ethical or practical reasons, which experiment can the researcher use?
A. Artificial experiment
B. Natural experiment
C. Hybrid experiment
D. No other experiment can be used
ANSWER: B

29. What is operationalisation?
A. Statistical analysis
B. Research methodology
C. The creation and writing down of concrete and precise definitions
D. Programming a questionnaire survey
ANSWER: C.

30. What is CATI?
A. Telephone questionnaire using a computer system
B. Asking a questionnaire in tabular form using a computer system
C. Online questionnaire using a computer system
D. Personal questionnaire using a computer system
ANSWER: A

MULTIPLE CHOICE

1. A questionnaire survey is conducted to examine the number of abortions in Hungary between 1990 and 2012. What kind of research can be done?
A. Cross-sectional
B. Ethnographic
C. Observational
D. Trend
ANSWER: A, D

2. Which of the following types of qualitative research?
A. Individual in-depth interview
B. Ethnographic interview
C. Questionnaire
D. Focus group
ANSWER: A, B, D

3. We can study the coffee consumption habits of university students .....
A. By questionnaire research
B. Observation
C. Focus group research
D. In-depth individual interviews
ANSWER: A, B, C, D

4. Which concept needs to be conceptualised?
A. Exercise frequency
B. Broccoli
C. Kidney function
D. Coffee unit
ANSWER: A, D

5. A study can be...
A. Exploratory
B. Descriptive
C. Comparative
D. Explanatory
ANSWER: A,B,C, D

6. A study can be .....
A. Cross-sectional
B. Longitudinal
C. Short
D. Long
ANSWER: A, B

7. Which of the following can be units of analysis?
A. Individuals
B. Groups
C. Organisations
D. Products
ANSWER: A, B, C, D

8. What are the criteria for causality?
A. The cause precedes the effect in time
B. There is an empirical relationship between the two variables
C. An empirical relationship between two variables can be explained by the effect of a third variable
D. An empirical relationship between two variables cannot be explained by the effect of a third variable
ANSWER: A, B, D

9. What properties should a variable have?
A. Attributes must be complete
B. Attributes must be partial
C. There must be overlap between the attributes that make up the variable
D. The attributes that make up the variable must be mutually exclusive
ANSWER: A, D

10. Which of the following are included in probability sampling?
A. Simple random sampling
B. Systematic sampling
C. Stratified sampling
D. Multistage cluster sampling
ANSWER: A,B,C, D

TRUE OR FALSE

1. A representative sample can be achieved with a high number of elements.
A. True
B. False
ANSWER: B

2. Hypotheses are scientific assumptions based on prior empirical knowledge.
A. True
B. False
ANSWER: A

3. In the case of market research, pharmacovigilance requires that positive adverse reactions to a medicinal product should be reported.
A. True
B. False
ANSWER: A

4. Focus group is a quantitative research method.
A. True
B. False
ANSWER: B

5. A pilot interview is a test interview prior to live research.
A. True
B. False
ANSWER: A

6. Questionnaire research should only include closed questions.
A. True
B. False
ANSWER: B

7. Multicollinearity means that we can explain causation by one factor.
A. True
B. False
ANSWER: B

8. Nominal variables can be ordered in series.
A. True
B. False
ANSWER: B

9. Reliability means that if I repeat my research, I will get similar results.
A. True
B. False
ANSWER: A

10. We talk about primary research when we analyse existing data.
A. True
B. False
ANSWER: B

MANAGEMENT OF HEALTH CARE INSTITUTIONS, QUALITYMANAGEMENT

SINGLE CHOICE

1. What is an unrecognized (health) need?
A. The patient is uncertain about the complaint and chooses not to see a doctor
B. There is no complaint, and the patient does not see a doctor although they might have a disease
C. The patient has a complaint but does not see a doctor
D. The patient sees a doctor but chooses not to have treatment
ANSWER: B

2. What would you examine to establish the value of life based on the human capital approach?
A. The amount of hazard pay
B. The price of organs (e.g., kidney) on the black market
C. The amount of indemnifications
D. The amount of salaries
ANSWER: D

3. What is demand for healthcare?
A. Recognized and experienced demand for healthcare
B. Demand associated with spending power and currency on the healthcare market
C. When the patient has complaints but does not see a doctor
D. The aggregated gross income of healthcare workers
ANSWER: B

4. What are the 3 main characteristics of an organization?
A. Division of labor, organizational communication, division of scope and responsibility
B. Strong hierarchy, exclusively formal communication, profit oriented
C. Voluntary participation, spontaneous operation, strong interpersonal relationships
D. Task performance, power, profit
ANSWER: A

5. What does it mean if an organization is proactive?
A. The organization follows environmental changes and implements the changes forced by these
B. The organization makes an effort to change or modify environmental conditions
C. The organization was established exclusively for a specified project
D. The organization is specifically a healthcare organization
ANSWER: B

6. Which statement is generally true about the Hungarian healthcare market?
A. It is directly financed by the patients
B. Only solvent patients may use the service
C. It is financed by the insurance company (National Health Insurance Fund of Hungary) or the patients
D. It has unlimited advertisement capacity
ANSWER: C

7. The main duty of physiotherapists and physical therapists to apply their knowledge in a way to promote:
A. The patients' healing and health promotion
B. Recognition and medical treatment of the patients' diseases
C. Informing the patients on the potential risks of surgery
D. Analyzing the patient's radiographs
ANSWER: A

8. What is the principal purpose of quality data collection and assessment?
A. Achieving cost-effectiveness
B. Decreasing fluctuation
C. Achieving patient satisfaction
D. Improving the quality of care
ANSWER: D

9. What should data be like in order to have informative value in terms of quality-of-care assessment and the necessary development?
A. Organized
B. Relevant
C. Clean
D. Comparable
ANSWER: B

10. Which of the data obtained during quality measures should be dealt with?
A. Those which can be recognized
B. Those which can be grouped
C. Those which can be changed
D. Those which can be interpreted
ANSWER: C

11. Who is the most interested party in the quality improvement of healthcare?
A. Population
B. Patients
C. The state
D. The Chamber of Hungarian Health Care Professionals (CHHCP)
ANSWER: A

12. The best known and most used version of professional methods used during quality improvement is ..... cycle.
A. ABDP
B. DCPA
C. CDAP
D. PDCA
ANSWER: D

MULTIPLE CHOICE

1. Which of the below are considered as private healthcare costs?
A. Payment of the (full) price of the healthcare service directly by the patient
B. Reimbursement for the hospital by a market-based insurance company
C. Monthly payment by the National Health Insurance Fund of Hungary for the hospitals
D. Informal payments (gratuity)
ANSWER: A, D

2. What equals to one QALY?
A. One person's one year in 100% quality of life
B. One kidney patient's one year in 50% quality of life
C. One liver patient's two years in 50% quality of life
D. Two person's three years in 25% quality of life
ANSWER: A, C

3. What are the characteristics of a centralized healthcare system?
A. The role of citizens is subordinate
B. Financing is the result of a governmental decision
C. Financing is decided based on the individual decisions of people
D. There is no mandatory health insurance
ANSWER: A, B

4. What are the economic effects of health on the individual?
A. It affects the participation of the employee in the labor market
B. It affects the time of the individual's retirement
C. Its effect provides a good mood
D. It affects the physical environment of the individual
ANSWER: A, B

5. Which of the following belong to the general characteristics of health needs?
A. The need is not objective but culture-dependent
B. It can be easily expressed in money
C. It cannot be perfectly known
D. It is not the need that appears as an everyday problem
ANSWER: A, C, D

6. What are the possible types of gratuity?
A. Genuine gratitude
B. Forward payment as a preparation for the next healthcare professional-patient encounter
C. Case financing
D. Civil disobedience
ANSWER: A, B

7. Health data must be stored in such a way to avoid...
A. Data sharing
B. Data damage
C. Data loss
D. Data copy
ANSWER: B, C

8. What are Hungarian Health Care Standards are appropriate for?
A. Quality control
B. Following-up processes
C. Internal audit
D. External audit
ANSWER: A, B, C

9. What is TQM considered?
A. Human power supply
B. Quality management system
C. Management practice
D. Management philosophy
ANSWER: C, D

10. What can the indicators measure from the following?
A. Anything requested by the quality inspector
B. Health status
C. The heart rate of a rested healthcare professional
D. The quality of a service
ANSWER: B, D

11. The characteristics of a good indicator include:
A. Easy to understand
B. Sensitive to changes
C. Representative
D. May be used on multiple levels of care
ANSWER: A, B, C, D

What can quality management be about in addition to the correction of the explored errors?
A. Management
B. Change
C. Human power
D. Development
ANSWER: A, B, D

TRUE-FALSE

1. Price elasticity of demand shows how much the demand for a given product changes as a result of a unit price change.
   TRUE

2. There is no difference in the willingness to retire between sick and healthy people.
   FALSE

3. Stakeholders are the top managers of n organization.
   FALSE

4. No one can be excluded from the consumption od public goods.
   TRUE

5. The effectiveness of teams in improved by team members with different personalities.
   TRUE

6. For patients, quality mainly and primarily means effectiveness and saving.
   FALSE

7. A non-appropriate care may be productive and effective, for instance if an appendectomy or invasive examination is performed in vain.
   TRUE

8. Effectiveness is the ratio of cost and achieved results.
   TRUE

9. The right of free choice of doctor is a patient right included in the Health Act.
   FALSE

10. Patient safety is not affected by the fact whether the physiotherapist had enough time to rest before treatment.
    FALSE

11. Cost-sharing is a type of private healthcare costs, therefore visit fee should be considered as a Co-Payment.
    TRUE

12. Knowingly undertaken risks are typical in case of health insurance; therefore, it is difficult to create a well-priced health insurance product.
    TRUE

13. Economy directly affects our health in a shorter term because each citizen would affect an insurance in lieu of a mandatory health insurance.
    FALSE

14. The right of free choice of doctor and institute are patient rights enshrined in law; therefore, they must not be limited.
    FALSE

15. The essence of clinical efficacy is achieving the greatest possible health gain by a given health care procedure according to the available resources, because proven effective health technologies are available in healthcare and their cost-effectiveness is known.
    TRUE

16. Evidence-based healthcare can be interpreted more widely and also means more in terms of healthcare quality insurance than evidence-based medicine, since healthcare is a complex process where not only doctors, but other healthcare professionals are also participating.
    TRUE

LEGAL, BIOETHICAL AND ADMINISTRATIVE KNOWLEDGE

LEGAL PART

SINGLE CHOICE

1. Does the foetus have legal capacity as a foetus?
A. yes, from conception
B. yes, from the end of the 12th week of pregnancy
C. yes, from the end of the 24th week of pregnancy
D. does not have
ANSWER: D

2. If the competent patient causes damage to the healthcare provider, what are the legal consequences?
A. nothing
B. a penalty
C. finding of a violation of the law
D. payment of compensation for the damage caused
ANSWER: D

3. By default, who are the patients who can make their own decisions about their health care?
A. minors who are not under guardianship
B. mature minors
C. competent adults
D. anyone
ANSWER: C

4. Who has access to the medical records of an incompetent patient?
A. Person directly involved in his or her care.
B. Employee of the health care provider who have a medical degree, but no other
C. All employee of the health care provider, as this is the only way to ensure the safety of the patient.
D. Close relatives of the patient.
ANSWER: A

5. Who has the right to information?
A. All patients, it can never be restricted.
B. All natural and legal persons.
C. All patients, the information level is depending on their age and mental state.
D. Patients with capacity to reason.
ANSWER: C

6. Who can exercise the right to refuse care independently?
A. Any health care worker providing care to a patient or any patient with capacity.
B. Any competent patient.
C. Minors over the age of 16.
D. Any patient of legal age.

ANSWER: B

7. Who of the following patients is definitely incompetent?
A. A patient who is under the influence of a mind-altering drug.
B. A patient who has been convicted of a felony and is being transferred from a correctional facility.
C. A 17-year-old patient.
D. A blind person.
ANSWER: A

8. Who may impose a restrictive method or procedure on a patient if the patient engages in conduct dangerous to self or others?
A. Only the patient's attending physician.
B. A health care worker directly involved in the patient's care.
C. The patient's attending physician, in exceptional cases covered by law, a specialist nurse.
D. It would be contrary to human dignity and therefore a restrictive method cannot be imposed on the patient.
ANSWER: C

9. Which of the following is a patient right that cannot be restricted under any circumstances?
A. right to information
B. right to health care
C. right of access
D. the right to human dignity
ANSWER: D

10. Who owns the medical records?
A. the sectoral ministry responsible for health
B. patient
C. the health care provider involved in the patient's care
D. the patient or the patient's legal representative
ANSWER: C

11. Which is the oldest patient right?
A. the right to medical confidentiality
B. right to information
C. right to human dignity
D. right of access
ANSWER: A

12. Which of the following forms of legal liability is certainly dangerous to society?
A. misdemeanour
B. tort
C. offence against personality
D. employment liability
ANSWER: A

13. When does a foreign patient have patient rights in domestic health care?
A. does not have patient rights never
B. always has patient rights
C. if Hungary has an agreement with the country of nationality
D. only if the patient comes from an EU Member State
ANSWER: B

14. Which is definitely harmful to society?
A. torts
B. wrongful conduct
C. breach of ethical rules
D. criminal offence
ANSWER: D

15. Which patient right is not closely linked to the right to information?
A. Right to self-determination
B. Right to leave a healthcare institution
C. Right to refuse treatment
D. Right to human dignity
ANSWER: D

MULTIPLE CHOICE

16. Elements of medical malpractice:
A. wrongful conduct
B. damage
C. intention
D. causal link between the damage and the wrongful conduct
ANSWER: A, B, D

17. True for hospital rules…
A. It applies to all natural persons in the hospital (not only to health care workers and patients).
B. No legal consequence in the hospital rules.
C. Hospital rules are social norms.
D. Exceptionally, the hospital's rules may be contrary to the health care act by parliament.
ANSWER: A, C

18. Who have patient rights?
A. a patient in a coma
B. foreign patients
C. a patient without health insurance
D. an unemployed patient
ANSWER: A, B, C, D

19. Which of the following is not a penalty?
A. payment of a damage fee
B. compensation
C. disqualification from employment
D. serving a term of imprisonment
ANSWER: A, B

20. Which of the following patients has patient rights?
A. a patient in a closed mental hospital
B. a patient sentenced to imprisonment to be served
C. a foetus in utero
D. stateless patient
ANSWER: A, B, D

TRUE OR FALSE

21. All patients born alive have legal capacity, but not all patients with legal capacity have legal competency.
ANSWER: TRUE

22. A new-born baby does not yet have patient's rights, but his or her parents do.
ANSWER: FALSE

23. A healthcare worker must never refuse to provide healthcare to a patient.
ANSWER: FALSE

24. Violations of the right to human dignity fall within the scope of violations of personality rights.
ANSWER: TRUE

25. If the minor marries with official permission, he or she becomes a person with legal capacity and is responsible for his or her own health care.
ANSWER: TRUE

ETHICS PART

SINGLE CHOICE

1. “Give to the equals equally, and to the unequal unequally according to their important inequalities”, says
A. the macro-allocation principle
B. the universal equality act
C. the formal principle of justice
D. the virtue of temperance
ANSWER: C

2. Which of these is NOT a direction of thinking/school in the abortion debate?
A. conservative
B. liberal
C. religious
D. moderate
ANSWER: C

3. Utilitarianism is part of _____theory?
A. deontological
B. universalism based
C. virtue
D. consequentialism
ANSWER: D

4. _____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

5. Which of these is NOT a bioethical principle?
A. double effect
B. respect of autonomy
C. beneficence.
D. justice
ANSWER: A

6. Which of these is NOT part of autonomous decision-making?
A. autonomy of thinking
B. autonomy of willing
C. autonomy of acting
D. autonomy of believing
ANSWER: D

7. Which of these is NOT a field of ethics?
A. metaethics
B. practical ethics
C. descriptive ethics
D. normative ethics
ANSWER: B

8. _____blends law, philosophy, insights from the humanities and medicine to bear on the complex interaction of human life, science, and technology.
A. Bioethics
B. Metaethics
C. Nursing ethics
D. Normative ethics
ANSWER: A

9. Intentionally causing a person's death by performing an action such as giving a lethal injection is?
A. passive euthanasia
B. assisted suicide
C. euthanasia by action
D. euthanasia by omission
ANSWER: C

10. The “Will to Live” (or Living Will) is a legal document that you can sign that
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

MULTIPLE CHOICE

11. 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 it to happen.
D. wish to but not dare to do.
ANSWER: A, B

12. 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 a present
ANSWER: A, D

13. The justice principle could be understood as
A. mathematical problem
B. an allocation problem
C. self-awareness problem
D. a discrimination problem
ANSWER: B, D

14. A doctor who intended to relieve the patient's pain with a 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 doctrine of double effect
C. consequentialism
D. the golden rule theory
ANSWER: A, B

15. 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.
ANSWER: A, B

TRUE OR FALSE

16. Prioritisation on the basis of age is morally justifiable.
ANSWER: FALSE

17. Triage sorts or grades persons according to their needs and the probable outcomes of intervention
ANSWER: TRUE

18. Moderate way thinkers could provide a rationally based argumentation that could serve as a ground for a rationally and morally defensible abortion policy.
ANSWER: TRUE

19. Heart-beating of the foetus inevitably proves that she is a human person already.
ANSWER: FALSE

20. Normative ethics intends to examine the moral principles of western cultures.
ANSWER: FALSE

21. Moral absolutism means that there should be universal values valid for everyone
ANSWER: TRUE
22. Principlism is subject to the critique of being insensitive to value differences in different cultures/societies.
ANSWER: TRUE

23. Negative responsibility claims that there's no moral difference between killing and letting die if the intention is the same.
ANSWER: TRUE

24. Bioethics is applied normative ethics and is multidisciplinary at the same time.
ANSWER: TRUE

25. Beneficence is the most powerful bioethical principle.
ANSWER: FALSE

PEDAGOGY

SINGLE CHOICE

1. Meaning of pedagogy
   A. educational theory
   B. didactics
   C. educational science
   D. social science
   ANSWER: C

2. According to the short definition of education
   A. purposeful personality formation
   B. family pattern copying
   C. lifelong learning
   D. school socialization
   ANSWER: A

3. Number of imprinting periods in childhood
   A. two
   B. three
   C. four
   D. five
   ANSWER: C

4. Part of the educational process
   A. upbringing and socialization
   B. the family and the community
   C. learning and teaching
   D. the parent and the teacher
   ANSWER: C

5. According to the principle of bipolarity
   A. learning is a lifelong process
   B. the choice of methods is conscious
   C. education is a two-person activity
   D. back and forth effects prevail in pedagogy
   ANSWER: D

6. Differentiation in practice means that
   A. we apply individual treatment
   B. we choose an appropriate evaluation system
   C. we distinguish between family and school education
   D. we consciously plan the methods used
   ANSWER: A

7. The main purpose of reward/punishment
    A. achieving teacher credibility
    B. proof of parental authority
    C. the development of self-esteem
    D. practicing persuasion
    ANSWER: C

MULTIPLE CHOICE

1. The cold-restrictive attitude of educators
    A. punishment-centric
    B. rule-follower
    C. authoritarian
    D. expectant
    ANSWER: A, B, C, D

2. The cold-indulgent parenting attitude can lead to the following forms of behavior
    A. antisocial behavior
    B. introversion
    C. aggressive behaviors
    D. assertiveness
    ANSWER: A, C

3. Recommended conditions for applying the reward
    A. frequent
    B. adequate for a given personality
    C. confirmatory
    D. useful only at a certain age
    ANSWER: A, B, C

4. The method of persuasion
    A. education and upbringing method as well
    B. can be used at any age
    C. is based on cognitive and emotional elements
    D. they affect both verbally and nonverbally
    ANSWER: A,C,D

5. The common features of upbringing and socialization include a
    A. awareness
    B. can only take place in an institution
    C. lifelong process
    D. bipolar
    ANSWER: C, D

6. It has a role in shaping a person's personality
    A. socialization mechanisms
    B. conscious educational influences
    C. genetic determination
    D. an individual's ability to self-develop
    ANSWER: A,B,C,D

TRUE OR FALSE

1. According to the view of biological determinism, our qualities are already decided in the germ cells.
   ANSWER: TRUE

2. Upbringing is a narrower concept than education.
   ANSWER: FALSE

3. The warm-restrictive attitude of educators causes frequent performance anxiety in the child.
   ANSWER: TRUE

4. The regular application of creating decision situations develops willpower.
   ANSWER: TRUE

5. The primary scene of socialization is the peer group and the school.
   ANSWER: FALSE

6. Skills are automated abilities.
   ANSWER: TRUE

SINGLE CHOICE

1. Whose name is associated with the Reflex theory?
A. Turvey
B. Schmidt
C. Sherrington
D. Shumway-Cook
ANSWER: C

2. What does the concept of saturation mean?
A. lack of response
B. peak point
C. fullness
D. articular traction
ANSWER: C

3. In the case of collateral 'sprouting' or sprouting....
A. the cortical representation of the fingers of the hand is precisely determined.
B. neurons of intact areas begin to grow protrusions towards the denervated region.
C. A network of inhibitory GABA interneurons plays an important role.
D. a cortical region formed for a specific task takes over the functions of another region.
ANSWER: B

4. According to Constraint-Induced Movement Therapy, which gender is included in the transfer techniques?
A. Home Repetition
B. Home Diary
C. Home Practice
D. Home Skill Assignment
ANSWER: A

5. What is VBM short for?
A. Vertical-Body Mass
B. Volumetric-Based Morphometric Analysis
C. Vertical-Bilateral Movement
D. Voxel-Based Morphometry
ANSWER: D

6. True for the modules of the human nervous system:
A. is the basis of plasticity at the elementary level.
B. they are also capable of independent, independent operation.
C. axon collateralization.
D. in the case of genetic disorders, latent relationships may be exposed in them.
ANSWER: B

7. Which statement about Reflex theory is not true?
A. Control of movements is based on the stimulus-response reaction.
B. According to the theory, the task of the physiotherapist is to inhibit primitive reflexes.
C. It is the combination of reflexes that creates the actions.
D. was developed in 1932 by Sir Charles Sherrington.
ANSWER: D

8. It is true for collateral 'sprouting', or sprouting:
A. A form of systemic plasticity.
B. Neurons of the intact area can grow dendrites.
C. As a result of sensory deprivation or learning, latent relationships become functional.
D. The neurons involved in this block the horizontal connections between the pyramidal cells.
ANSWER: B

9. Which statement characterizes Shumway-Cook's theory?
A. Movement is controlled exclusively by cortical centers.
B. It assumes the interaction of environment and person.
C. A person's interaction with newer elements of the environment is used to control movement.
D. There is a subordinate or superior relationship between the systems.
ANSWER: B

10. Which statement is true in relation to control parameters?
A. the therapist will have to change them in many cases if the therapy is adjusted
B. it is not worth changing them as the therapy progresses
C. inability to induce spontaneous behavioural change
D. the self-organization of the nervous system is not affected
ANSWER: A

11. Which theory claims that in the case of abnormal motion, the fault lies in the Central Pattern Generator (CPG)?
A. the Ecological Theory
B. Theory of B. Schmidt
C. the Theory of Dynamical Systems
D. the Hierarchical Theory
ANSWER: B

12. Which stage of Fitts and Posner's model is characterized by a decrease in the importance of visual control?
A. Autonomous
B. Associative
C. Cognitive
D. Reactive
ANSWER: B

13. 'Natural plasticity' or natural plasticity:
A. The essence of A. is that after a stroke, the brain is reorganized.
B. plays an important role in ontogenesis.
C. is actually the same as intramodal plasticity.
D. forms the basis of the closed genetic program.
ANSWER: B

14. 'Shaping' or shaping is a behavioral therapy procedure that...
A. should not be used during movement therapy.
B. when performing an erroneous movement, verbally, emphatically draws the patient's attention to the inaccuracy.
C. it is important to give the patient feedback on his performance, but strictly only with a positive approach.
D. application, in the case of animals, is still in question.
ANSWER: C

15. The Voxel-Based Morphometry (VBM)
A. its basic units are the 'pixels'
B. describes a particular brain region with coordinates and typical locations.
C. is not suitable for detecting changes in the size of different brain areas.
D. examines with so-called 'voxels', volumetric units.
ANSWER: D

16. In the case of the phenomenon of 'learned- nonuse' or learned-elimination:
A. the cortical representation zone of the affected limb increases.
B. it is an irreversible process.
C. less effective behavior will be reinforced.
D. compensatory movements do not appear.
ANSWER: C

17. With regard to cross-modal plasticity, it is true that...
A. the process takes place within a specific region of perception.
B. plays no role in the fact that the hearing of the blind is more refined than that of the visual ones.
C. is a form of plasticity at the elementary level.
D. a cortical region formed for a specific task can take over the functions of another region.
ANSWER: D

18. Whose name is associated with the Hierarchical Theory?
A. Adams, 1971
B. Bernstein, 1867
C. Sherrington, 1906
D. Schmidt, 1976
ANSWER: A

19. Which authors are credited with the Ecological Theories of Motor Control?
A. Fitts and Posner
B. Gibson and Pick
C. Shumway and Cook
D. Kelso and Tuller
ANSWER: B

20. Which statement is not true for procedural learning?
A. Fast
B. Unconsciously acquired
C. Facts and memory of events
D. Occurs during repeated times
ANSWER: C

MULTIPLE CHOICE

1. The following is not true for the autonomous phase of motor learning:
A. Building and developing strategies.
B. It is over when, based on what has been seen, the individual is able to carry out the task.
C. The basic elements of movement are present continuously and at a high level.
D. Movements are efficient.
ANSWER: A, B

2. Constraint-Induced Movement Therapy may have synonymous names:
A. GMI
B. CI- Therapy
C. Taub therapy
D. CIMT
ANSWER: B, C, D

3. It is true for the "learned-nonuse" or "learned-elimination" phenomenon, except:
A. irreversible process
B. less effective behavior will be reinforced
C. the size of the cortical representation zones does not change
D. the patient experiences unsuccessful motor attempts as punishment
ANSWER: A, C

4. What are the forms of elementary plasticity?
A. collateralis sprouting
B. intramodal plasticity
C. unmasking
D. crossmodal plasticity
ANSWER: A, C

5. The following is true for the Motor Activity Scale:
A. It is a very important element of CIMT
B. asks about both quality and quantity
C. only considers the quality of movement
D. the patient also shows what he was unable to do
ANSWER: A, B, D,

6. It is true for brain plasticity:
A. It provides the appropriate stable background for the functionality of the nervous system.
B. Continuous process.
C. It plays a critical role during phylogeny.
D. It aims to optimize brain networks.
ANSWER: A, B, C, D

7. The "malignant" manifestation of brain plasticity:
A. Focal Hand Dystonia
B. The phenomenon of "learned-nonuse" or "learned-elimination" after a stroke
C. Adaptive plasticity
D. Tinnitus
ANSWER: A, B, D

8. Components of the CI-Therapy protocol:
A. Home Diary
B. Contract between relative and patient
C. Conduct contract
D. Home practice
ANSWER: A, B, C, D

9. The following is true for pediatric CIMT:
A. A video recording must be made during the patient examination.
B. Glass wool orthosis is used.
C. Basically, it does not differ from adult treatment.
D. It is better to withdraw the parent from the treatments because it would reduce the effectiveness of the therapy.
ANSWER: A, B

10. The following is true for Mirror Therapy:
A. It should not have any side effects.
B. Used only for CRPS.
C. It needs a mirror.
D. Part of GMI.
ANSWER: C, D

11. Possible forms of neuroplasticity:
A. short-term plasticity
B. elementary plasticity
C. long-term plasticity
D. system-level plasticity
ANSWER: A, B, C, D

12. Characteristic of Gentile's two-phase model:
A. A task can be open, semi-open or closed.
B. The environment can be people or objects, but the supporting surface should also be included here.
C. The body can be in motion or standing still.
D. He considers it important whether the environment is constant or changing during practice.
ANSWER : B, C, D

13. The second phase of Bernstein's model is characterized by:
A. This is the so-called "advanced" level.
B. It is characterized by more economical and coordinated movement.
C. Motion is simplified by reducing the DOF.
D. It is able to adapt to the changing environment while performing the movement.
ANSWER: A, B

14. It is characteristic of the third phase of Bernstein's model, except:
A. The "beginner" section
B. Energy intensive
C. We simplify movement
D. The individual is most effective at this stage
ASNWER: A, B, C

15. Which statements characterize declarative learning?
A. Memory of facts and events
B. Consciously acquired
C. Slow
D. More generalizable knowledge
ANSWER: A, B, D

16. Which statements characterize procedural learning?
A. Skill memory
B. Memory of facts
C. Memory of events
D. Memory of procedures
ANSWER: A, D

17. What does the concept of transfer mean?
A. The ability to apply knowledge acquired in one task condition in a new task situation.
B. When a plateau of improvement has been reached during practice.
C. Training progresses during practice.
D. Changing the patient's position, e.g. transfer from bed to wheelchair.
ANSWER: A, D

18. What are the practical factors affecting motor learning:
A. constant or variable practice
B. random or repeated practice
C. partial or comprehensive practice
D. mental mapping
ANSWER: A, B, C, D

19. Which is not true about saturation?
A. It means saturation.
B. In this case, we reach the plateau of improvement during practice.
C. After that, training can still be effective.
D. The number of errors is expected to decrease as the training continues.
ANSWER: C, D

20. Who has not developed a model for motor learning?
A. Knott
B. Bernstein
C. Fitts
D. Posnaire
ANSWER: A, D

TRUE OR FALSE

1. In the early associative phase of motor learning, the basic elements of the movement appear regularly.
A. True
B. False
ANSWER:B

2. The challenge of the cognitive stage of motor learning is to get a feel for how to do the task.
A. True
B. False
ANSWER:B

2. In the autonomous phase of motor learning, attention can already be directed to achieving greater ROM.
A. True
B. False
ANSWER: A

4. Is it true that the dominant sensory system of the cognitive phase of motor learning is the proprioceptive system?
A. True
B. False
ANSWER: B

5. Selective stabilization and pre-programmed cell selection are synonymous concepts.
A. True
B. False
ANSWER: A

6. Use-related cortical plasticity can also appear in adulthood.
A. True
B. False
ANSWER: A

7. Invertebrates and lower vertebrates are characterized only by a closed genetic program.

A. True
B. False

ANSWER: A

8. Kelso and Tuller developed a theory of Dynamic Systems in 1984.

A. True
B. False

ANSWER: A

9. Arborization is the temporary overgrowth of dendrites.

A. True
B. False

ANSWER: A

10. The first stage of Fitts and Posner's three-stage model is characterized by the fact that most of the movements are consciously controlled.

A. True
B. False

ANSWER: A

NEUROPSYCHOLOGY

SINGLE CHOICE

1. Patients with homonym hemianopia are usually aware of their condition (no anosognosia)
A. Yes
B. No
ANSWER: A

2. Choose the correct statements for prosopagnosia:
A. Also called face blindness
B. Can be caused by lesions of the prefrontal cortex
C. The patient is unable to identify simple objects
D. A disorder of the dorsal stream
ANSWER: A

3. Choose the correct statements for prosopagnosia:
A. Also called face blindness
B. Can be caused by lesions of the prefrontal cortex
C. The patient is unable to identify simple objects
D. A disorder of the dorsal stream
ANSWER: A

4. Match the type of apraxia with the following definition:
Impairment in planning and carrying out sequences of actions requiring the use of various objects in the correct order necessary to achieve an intended purpose.
A. Ideomotor apraxia
B. Construction apraxia
C. Limb-kinetic apraxia
D. Ideational apraxia
E. Orofacial apraxia
F. Apraxia of speech
G. Dressing apraxia
ANSWER: D

5. Match the type of apraxia with the following definition:
An impairment in the timing, sequencing, and spatial organization of gestural movements. The movements are incorrectly produced, but the goal of the action can usually be recognized since the conceptual knowledge is intact.
A. Ideomotor apraxia
B. Construction apraxia
C. Limb-kinetic apraxia
D. Ideational apraxia
E. Orofacial apraxia
F. Apraxia of speech
G. Dressing apraxia
ANSWER: A

6. Match the type of speech/language disorder with the following definition:
The abnormal articulation of sounds or phonemes, or more precisely,
abnormal neuromuscular activation of the speech muscles, affecting the speed, strength, timing, range, or accuracy of movements involving speech. It can affect not only articulation but also phonation, breathing, or prosody (emotional tone) of speech.
A. Aphasia
B. Apraxia of speech
C. Dysarthria
ANSWER: C

7. Match the type of aphasia with the following definition:
The most severe form of aphasias with impairments in all aspects of language skills across comprehension and production.
A. Broca's aphasia
B. Wernicke's aphasia
C. Global aphasia
D. Anomic aphasia
ANSWER: C

8. Match the type of aphasia with the following definition:
The mildest of the aphasias, with relatively preserved speech and comprehension but difficulty in word finding.
A. Broca's aphasia
B. Wernicke's aphasia
C. Global aphasia
D. Anomic aphasia
ANSWER: D

MULTIPLE CHOICE

1. Allopsychic orientation refers to the patient's knowledge of
A. Space (where are we?)
B. Time (year/month/day)
C. Personal data (who are you?)
D. Recognising the situation
ANSWER: A, B, D

2. Choose the correct statements for homonym hemianopia:
A. Indicative of a lesion involving the visual pathway posterior to the chiasm
B. Is basically a spatial-attentional problem
C. Involves the complete loss of vision on the contralesional visual field
D. Involves the partial loss of vision on the ipsilesional visual field
E. Can co-occur with neglect syndrome
ANSWER: A, C, E

3. Choose the correct statements for the ventral visual stream:
A. Plays an important role in object recognition
B. Involves the inferior temporal lobe
C. Damage to the ventral stream can cause Balint-Holmes syndrome
D. Damage to the ventral stream can cause problems in spatial orientation
ANSWER: A, B

4. Choose the correct statements for the dorsal visual stream:
A. Damage to the dorsal stream can cause Balint-Holmes syndrome
B. Plays an important role in object recognition
C. Involves the inferior temporal lobe
D. Damage to the dorsal stream can cause problems in topographical orientation
ANSWER: A, D

5. Choose the correct statements for apperceptive agnosia:
A. The patient is unable to identify, copy, or match a drawing
B. The patient is able to copy and match the object, despite the inability to identify it
C. A disorder of the relatively early stages of visual processing
D. A disorder of the ventral stream
ANSWER: A, C, D

6. Choose the correct statements for associative agnosia:
A. The patient is unable to identify, copy, or match a drawing
B. The patient is able to copy and match the object, despite the inability to identify it
C. A disorder of the relatively early stages of visual processing
D. A disorder of the ventral stream
ANSWER: B, D

7. Symptoms of Gerstmann syndrome include:
A. Problems with object recognition
B. Left-right disorientation
C. Perseveration
D. Agraphia
E. Acalculia
F. Finger agnosia
ANSWER: B, D, E, F

8. Choose the correct statements for optic ataxia:
A. Affects the ability to interact with objects presented in the visual modality
B. Lack of ability to perceive more than a single object at a time
C. One of the main symptoms of neglect syndrome
D. One of the main symptoms of Balint-Holmes syndrome
ANSWER: A, D

9. Choose the correct statements for hemispatial neglect syndrome:
A. Is basically a spatial-attentional problem
B. Involves the loss of vision in the contralesional visual field
C. Causes reduced awareness of stimuli presented in the contralesional visual field
D. More prevalent among right hemisphere injured patients
E. Vision can be completely intact
ANSWER: A, C, D, E

10. Symptoms of "personal" hemispatial neglect syndrome include:
A. Problems with dressing up
B. Problems with spatial orientation
C. Lack of exploration of the patient's own body contralateral to the damaged hemisphere
D. Asomatognosia
E. Patients may fail to react to visual or acustic stimuli presented in the contralesional visual field
F. Problems with reading or copying a figure
ANSWER: A, C, D

11. Choose the correct statements for visual extinction:
A. Visual extinction can always be detected in neglect syndrome patients
B. Visual extinction is the unawareness of contralesional stimuli in the presence of competing ipsilesional stimuli
C. Patient with visual extinction can correctly detect a single stimulus presented in either hemifield
E. Visual extinction is a subtype of neglect syndrome where the patient perceives his/her limbs as missing or having disappeared from awareness
ANSWER: B, C

12. Select the core components of executive functioning according to Miyake's model
A. Emotional control
B. Updating
C. Inhibition
D. Planning
E. Organization
F. Self-monitoring
G. Shifting
ANSWER: B, C, G

13. Choose the correct statements for apraxia:
A. Inability to correctly perform learned skilled movements even though the patient has normal sensation and is strong and coordinated
B. Primary functions of sensation and motor control are impaired
C. Apraxia is associated with object recognition disorder
D. Patients may spontaneously perform gestures that they cannot perform on command
ANSWER: A, D

14. Choose the correct statements for Mild Cognitive Impairment (MCI):
A. An in-between state of normal cognitive aging and dementia
B. Patients with MCI do not have significant impairment in their abilities to perform activities of daily living
C. The cognitive deficits associated with Mild Cognitive Impairment cannot be detected by means of neuropsychological testing
D. Neuropsychiatric symptoms of MCI may include agitation, aggression, delusions including paranoia, hallucinations, anxiety, apathy, social withdrawal, and reduced speech output
ANSWER: A, B

15. Choose the correct statements for Alzheimer's disease (AD):
A. Late onset neurocognitive disorder (>60-65 years)
B. AD causes cognitive problems, without behavioral or emotional disorders
C. Caused by abnormal build up of proteins in and around brain cells
D. In case of an early diagnosis, the progression of the disease can be slowed
ANSWER: A, C, D

16. Choose the correct statements for frontotemporal dementia:
A. Late onset neurocognitive disorder (>60-65 years)
B. Starts with either language or behavioural symptoms
C. The most common type of dementia
D. The patient is unaware of the behavioural symptoms (anosognosia)
ANSWER: B, D

17. Choose the correct statements for vascular dementia:
A. The most common type of dementia
B. Caused by abnormal build up of proteins in and around brain cells
C. Computed tomography is usually sufficient for the diagnosis
D. Cognitive symptoms in vascular dementia are much more variable than in other types of dementia
ANSWER: C, D

TRUE OR FALS

1. According to the Yerkes Dodson law, there is a linear relationship between stress level and performance.
A. True
B. False
ANSWER: B

2. All patients experiencing a psychotic episode lose contact with reality in some degree.
A. True
B. False
ANSWER: A

3. Patients with acinetopsia have difficulty perceiving movement
A. True
B. False
ANSWER: A

4. Patients with simultagnosia have difficulty in the control of voluntary, purposeful eye movements
A. True
B. False
ANSWER: B

5. The two main types of extrapersonal hemispatial neglect syndrome are egocentric and allocentric neglect.
A. True
B. False
ANSWER: A

6. Allocentric neglect is characterized in responses missing on the contralateral side with respect to the object (object-centered)
A. True
B. False
ANSWER: A

7. Anosognosia is a neurological symptom that can occur solely in neglect syndrome
A. True
B. False
ANSWER: B

8. Voluntary attention is a top-down cognitive process that is goal directed and requires the inhibition of irrelevant stimuli from the environment
A. True
B. False
ANSWER: A

9. Dysexecutive syndrome is related to temporal lobe damage.
A. True
B. False
ANSWER: B

10. Perseveration can be a reliable sign of brain damage and is a disorder of “shifting” process
A. True
B. False
ANSWER: A

11. Disorders of executive functions can be reliably detected by neuropsychological testing alone
A. True
B. False
ANSWER: B

12. Patients with dysarthria might mispronounce words in a consistent manner, whereas pronunciation errors in patients with apraxia of speech vary considerably from one use of a particular word to the next
A. True
B. False
ANSWER: A

13. Both Broca's and Wernicke's areas play an important role in language production and comprehension
A. True
B. False
ANSWER: A

14. Confabulation is the production of fictitious stories and false memories with the intention of deceit.
A. True
B. False
ANSWER: B

15. Significant decrease of white matter volume can be attributed to healthy, normal process of aging
A. True
B. False
ANSWER: A

APPLIED EXERCISE PHYSIOLOGY

SINGLE CHOICE

1. Which is not part of the routine sports medicine examination in our country?
A. physical examination
B. History
C. echocardiography
D. Ecg
ANSWER: C

2. Why do we ask about the sudden death of a juvenile in the family on the screening questionnaire?
A. because it may indicate a vegetative regulation disorder in the family
B. because it may indicate familial accumulation of genetic heart disease
C. because it may indicate a familial accumulation of psychomotor instability
D. because it may indicate an increased tendency to ion imbalance
ANSWER: B

3. Master (older) athletes are investigated:
A. whereas they are not top athletes and do not need to be investigated
B. Because these athletes tend to be older, undiscovered cardiovascular disease, which is more common than them, puts them at increased risk
C. their investigation is not different from that of top athletes, as their racing is always subject to a license
D. whereas their racing is not subject to a licence and there is no need to investigate them
ANSWER: B

4. What should I do if a physical deviation is found during the routine sports aptitude test or the athlete complains?
A. we wait and in half a year we repeat the routine examinations
B. echocardiography, cardiac MRI, exercise ECG or Holter ECG are used to examine the athlete
C. we're also investigating teammates to find a similar discrepancy in others.
D. nothing, it is natural to find a number of deviations in athletes
ANSWER: B

5. Not true for athlete screening tests
A. The detection of sudden cardiac death and early heart attacks in the family history is part of the study
B. Revealing the athlete's own history of hypertension and loss of consciousness is part of the study
C. The examination of signs characteristic of possible Marfan syndrome is part of the examination
D. Evaluation of the 12-lead ECG is not part of the study
ANSWER: D

6. In which sport is sudden cardiac death most common in Europe?
A. basketball
B. football
C. badminton
D. long-distance running
ANSWER: B

7. It is true for the causes of sudden cardiac death in young top athletes under the age of 35, except:
A. The most common cause of death is some genetic heart muscle disease
B. Heart trauma can also be caused by
C. Calcification of the coronary arteries is the most common cause
D. Life-threatening coronary arteries from the aorta may be behind it
ANSWER: C

8. In the sudden death of an athlete can play a role:
A. Coronary artery disease.
B. Genetic myocardial disease
C. Myocarditis
D. All of the above diseases
ANSWER: D

9. What is the most common cause of sudden cardiac death in athletes over 35?
A. car accident
B. heart valve disease
C. genetic heart muscle disease
D. coronary artery disease
ANSWER: D

10. What is the normal range of body mass index?
A. 23.5 - 40 kg/m^2
B. 15.5 to 20 kg/m^2
C. 40 to 50 kg/m^2
D. 18.5 to 24.9 kg/m^2
ANSWER: D

11. Which statement is true regarding elevated systolic blood pressure?
A. Reducing body weight effectively reduces
B. Regular dynamic exercise increases
C. In the diet, in the first place, the withdrawal of meats reduces
D. Salt intake has no effect on it
ANSWER: THE

12. Which of the following ECG abnormalities can be observed in a healthy athlete?
A. Resting sinus bradycardia (low heart rate)
B. Signs of right ventricular enlargement
C. Persistent ventricular arrhythmia
D. Negative T-waves in all thoracic drainage
ANSWER: THE

13. Not true for atrial fibrillation:
A. May increase the likelihood of thrombosis and embolism.
B. May have a high ventricular frequency.
C. May occur under the influence of sports loads.
D. In athletes, it is always harmless to develop.
ANSWER: D

14. Creatine kinase levels are true in athletes, except for:
A. Usually higher than in non-athletes
B. A sudden significant increase may be a sign of acute overtraining
C. An increase in genetic myocardial disease is characteristic
D. A sustained significant increase may be a sign of long-term overtraining
ANSWER: C

15. What are the benefits of echocardiography, except?
A. cheap, easily accessible
B. requires a lot of practice, is dependent on the investigator
C. can be repeated many times, has no harmful effects
D. also informs about morphology and function
ANSWER: B

16. Sportshearted echocardiographic characteristic may be:
A. increase in myocardial wall thickness
B. larger cavity sizes
C. both
D. none
ANSWER: C

17. Cardiac MRI scan:
A. also informs about morphology and function
B. if myocardial disease is suspected, it has a diagnostic value
C. suitable for the examination of the sports heart
D. each
E. none
ANSWER: D

18. Applications of the exercise ECG test, except:
A. Follow-up of a patient who has had a heart attack
B. may be part of a cardiology examination of top athletes
C. Examination of performance in a patient with fever
D. in case of complaints of arrhythmia, provoking the arrhythmia
ANSWER: C

19. Ventricular arrhythmia that occurs during exercise ECG examination:
A. Myocardial disease may be the first sign.
B. It is also common in healthy athletes.
C. Harmless, related to the pressure load on the heart.
D. Harmless, related to the volume load on the heart.
ANSWER: A

20. Indications for spiroergometry study, EXCEPT:
A. Determination of endurance
B. Determination of aerobic capacity
C. Screening for load-induced arrhythmias
D. Muscle strength test
ANSWER: D

21. Spiroergometry does NOT provide information:
A. Cardiovascular condition
B. Pulmonological condition
C. Neurological condition
D. On the aerobic-anaerobic transition
ANSWER: C

22. The VO2 max:
The value of A. depends only on the sport and the amount of training
B. value increases only with endurance training
C. primarily provides information on the adaptation of the circulation load
D. value increases only with speed training
ANSWER: C

23. The athlete's load capacity can be impaired by:
A. Iron deficiency
B. Infection
C. Myocardial blood supply disorder
D. Each
E. Neighter
ANSWER: D

24. Lactate threshold:
A. It also reflects the state of the athlete’s psychological stress that day
B. This is the point during the loading, when the lactate treshold in the blood is suddenly increaseing.
C. It indicates the ratio of magnesium and potassium levels in the blood.
D. its increase may be related to the deterioration of the athlet’s performance
ANSWER: B

25. It can help with the training planning:
A. The determination of the maximum heart rate
B. The determination of the anaerobic threshold
C. The determination of herat rate zones
D. Repeated lactate measurement
E. All of the above
ANSWER: E

26. What is the operating priciple of Cough Assist?
A. It gradually applies positive pressure to the airways and then quickly switches to negative pressure
B. Passive ventilation of some lung areas
C. With its use, a minimum breathing rate is determined, if the breathing drops below that, the machine automatically compensates
D. Can produce two pressure levels
ANSWER: A

27. What is the FET-Forced Expiratory Technique?
A. deep inhale, than forced exhalation with an open glottis
B. deep inhale, than forced exhale with closed glottis
C. some lung’s areas active rebreathing
D. chest mobilisation
ANSWER: B

28. Which device is suitable for increasing FIV?
A. Pulmotrainer
B. Volumetric exercise
C. KS pipe/tick
D. Cough Asszisztt
ANSWER: B

29. What is JET?
A. uh nebuliser
B. an air rail therapy device that produces two levels of pressure
C. compressor atomizer
D. Positional therapy
ANSWER: C

30. 5. What is the principle of BIRD's operation?
A. helps with deep breaths, thus coughing and discharge of phlegm from respiartory tracts
B. it provides a lower pressure during inhaleing and a higher pressure during exhaling
C. belégzéskor magasabb, kilégzéskor alacsonyabb nyomást biztosít it provides higher pressure during inhaleing and lower pressure during exhalation
D. it helps to avoid damage to the respiratory tracts
ANSWER: A

31. Which peripheral nerve palsy often occurs after heart transplantation
1. after prolonged ventilation?nervus brachialis
2. nervus phrenicus
3. nervus axillaris
4. nervus peroneus
ANSWER: D

32. How long does the sternum heal?
A. 12-15 weeks
B. 1- 2 weeks
C. 6 months
D. 6-8 weeks
ANSWER: D

33. What is the recommended intensity of the training load after heart transplantation for the 20 Borg scale?
A. 11-13
B. 8-10
C. 17-20
D. 15-17
ANSWER: A

34. Which device is suitable for years of circulation support?
A. ECMO
B. Heart Mate
C. Intraaortikus balloon pump
D. BIVAD
ANSWER: B

35. For wich heart failure can be used the Heart Mate?
A. left side of the heart
B. right side of the heart
C. both
D. neighter
ANSWER: B

BIOPHYSICS

SINGLE CHOICE

1 What does the position of the maximum depend on in the spectrum emitted by an abdolute black body?

A. On the temperature of emitting material
B. On the kind of emitting material
C. On the color of emitting material
D. On the thickness of emitting material

ANSWER:A

2 What does the position of the maximum depend on in the spectrum emitted by luminescence?

A. On the kind of emitting material
B. On the temperature of emitting material
C. On the concentration of emitting material
D. On the thickness of emitting material

ANSWER:A

3 What kind of connection is between wavelength and photon energy?

A. inverse proportionality
B. direct proportionality
C. there is no connection between them
D. squared proportionality

ANSWER:A

4 The lifetime of which is longer?

A. phosphorescence
B. fluorescence
C. it is different for different molecules
D. their lifetime is the same

ANSWER:A

5 Which requires higher amount of energy?

A. ionization
B. excitation
C. it is different for different atoms
D. the same amount of energy is required

ANSWER:A

6 For which of the mentioned radiations the attenuation law is valid?

A. for all of them
B. only for light
C. only for x-ray
D. only for ultrasound

ANSWER:A

7 What is not true for Bremsstrahlung?
A. it has line spectrum
B. it is produced at every accelerating voltage
C. the emitted power is proportional with the square of accelerating voltage
D. the emitted power is proportional with the anode current
ANSWER:A

8 In which case the wavelength distribution of x-radiation does not change?
A. if the anode current is changed
B. if the accelerating voltage is changed
C. if the material of the anode is changed
D. if we apply filter
ANSWER:A

9 Which radiation causes the highest hazard if the radiation source is outside the body?
A. gamma radiation
B. beta radiation
C. alpha radiation
D. they cause the same hazard
ANSWER:A

10 Which radiation causes the highest hazard if the radiation source is incorporated into the body?
A. alpha radiation
B. beta radiation
C. gamma radiation
D. they cause the same hazard
ANSWER:A

11 Which is not particle radiation?
A. gamma radiation
B. beta radiation
C. alpha radiation
D. neutron radiation
ANSWER:A

12 Which is not electromagnetic radiation?
A. beta radiation
B. x-radiation
C. gamma radiation
D. visible light
ANSWER:A

13 Which radiation has the longest effective range?
A. gamma radiation
B. beta radiation
C. alpha radiation
D. the order is different for different isotopes
ANSWER:A

14 Which is the shortest in case of a given isotope?
A. effective half-life
B. biological half-life
C. physical half-life
D. the order is different for different isotopes
ANSWER:A

15 "Which one does not detect radiation, that is emitted inside the body?"
A. x-ray CAT-scan
B. gamma camera
C. SPECT
D. PET
ANSWER:A

16 In which part of the atom the gamma radiation is produced?
A. in the nucleus
B. in an inner electron shell
C. in an outer electron shell
D. both in the nucleus and in electron shells
ANSWER:A

17 In negative beta decay the mass number…
A. does not change
B. increases by one
C. increases by two
D. decreases by one
ANSWER:A

18 When the value of frequency shift is maximal in Doppler effect?
A. when the direction of flow and the ultrasound beam are parallel with each other
B. when the direction of flow and the ultrasound beam close small angle with each other
C. when the direction of flow and the ultrasound beam close large angle with each other
D. when the direction of flow and the ultrasound beam are perpendicular to each other
ANSWER:A

19 What is the purpose of application of ultrasound detector based on Doppler principle?
A. detection of thrombosis
B. removal of odontolith
C. heat therapy
D. examination of fetal hearing
ANSWER:A

20 Choose the false statement. During Doppler effect:
A. "the frequency decreases, when the detector moves toward the ultrasound source"
B. "the frequency decreases, when the ultrasound source moves away of the detector"
C. "the frequency of reflected sound increases, when the reflecting surface moves toward the source or the detector"
D. "the frequency increases, when the ultrasound source moves toward the detector"
ANSWER:A

21 What is acustic impedance?
A. the product of ultrasound velocity and density of the medium
B. "the change of ultrasound intensity, when it enters a new medium"
C. "the change of ultrasound velocity, when it enters a new medium"
D. the ratio of incident and reflected intensity
ANSWER:A

22 Which statement is not true about the ultrasound images?
A. the duplex image is a two-dimensional B image
B. the disadvantege of A image is that it is only one-dimensional
C. the advantage of A-image compared to one-dimensional B-image is that it shows more exactly the changes of reflectivity
D. M-image is the change of one-dimensional B-image in the function of time
ANSWER:A

23 What can be examined by Doppler detector?
A. velocity of blood flow
B. size of brain chambers
C. fetal hearing
D. disorders of bone development
ANSWER:A

24 What does the frequency of produced high-frequency sinusoidal electric oscillation depend on?
A. the value of capacity and inductivity
B. the value of resistance and inductivity
C. the value of resistance and capacity
D. "the value of resistance, inductivity and capacity"
ANSWER:A

25 What kind of current is applied for galvanic treatment?
A. direct current
B. 50 Hz alternating current
C. alternating current with several 1000 Hz frequency
D. alternating current above 100 kHz frequency
ANSWER:A

26 Which has heat effect?
A. both of them
B. microwave
C. ultrasound
D. neither of them
ANSWER:A

27 Which is able to ionize?
A. ultrasound
B. microwave
C. both of them
D. neither of them
ANSWER:A

28 Which is electromagnetic radiation?
A. microwave
B. ultrasound
C. both of them
D. neither of them
ANSWER:A

29 In which range the germicidal lamp has the main part of emission?
A. ultraviolet
B. infrared
C. visible light
D. x-ray
ANSWER:A

30 In which case there will not be x-ray production?
A. when high-energy neutron is stopped
B. when high-energy positron is stopped
C. when high-energy electron is stopped
D. "when an outer shell electron gets into an inner shell, from where an electron was hit out"
ANSWER:A

31 During the emission of gamma radiation the mass number…
A. does not change
B. increases by one
C. increases by two
D. decreases by one
ANSWER:A

32 During the emission of alpha radiation the atomic number…
A. decreases by two
B. decreases by four
C. increases by two
D. does not change
ANSWER:A

33 The phase of photons produced by induced emission is determined by…
A. the phase of inducing photon
B. the phase of exciting photons
C. the lifetime of metastable state
D. the nature of pumping energy
ANSWER:A

34 Which is not necessarily a property of laser light?
A. high energy
B. monochromatic
C. coherent
D. parallel beam
ANSWER:A

35 What induces the induced emission in laser?
A. photons
B. electrons
C. high voltage
D. heat
ANSWER:A

36 The probability of spontaneous emission from metastable laser levels compared to induced emission:
A. very low
B. very high
C. the same
D. zero
ANSWER:A

37 What is identical for the isotopes of a certain element?
A. atomic number
B. mass number
C. both of them
D. neither of them
ANSWER:A

38 The effective half-life of an isotope
A. "can not be longer, than the physical half-life"
B. "can not be shorter, than the biological half-life"
C. "is always longer, than the physical half-life"
D. "can be longer or shorter, than the physical half-life"
ANSWER:A

39 In which case does the mass number change?
A. alpha decay
B. positive beta decay
C. negative beta decay
D. gamma decay
ANSWER:A

40 The radiation emitted during isomeric transition
A. is gamma radiation
B. can not be used for diagnostic purposes
C. can not be used in medical practice
D. is alpha radiation
ANSWER:A

41 "What parameter of reflected sound changes and how in Doppler effect, if the object is moving towards us?"

A. Its frequency increases
B. Its intensity increases
C. Its intensity decreases
D. Its wavelength increases

ANSWER:A

42 What can be determined by the means of A image in ultrasound diagnostics?

A. the distance of reflecting surfaces
B. the velocity of reflecting surfaces
C. the velocity of ultrasound
D. the acustic impedance of reflecting media

ANSWER:A

43 The direction of propagation of photons produced by induced emission is

A. identical to the propagation direction of inducing photon
B. dependent on the way of excitation
C. identical to the propagation direction of exciting photon
D. equally probable in any direction

ANSWER:A

44 The maximum of which spectrum is at the longest wavelength in case of a given material?

A. The phosphorescence emission spectrum.
B. The fluorescence emission spectrum.
C. The absorption spectrum.
D. It is different for diffenrent materials.

ANSWER:A

45 What kind of connection is between wavelength and frequency of electromagnetic radiations?

A. Inverse proportionality
B. Direct proportionality
C. Second power function
D. There is no connection

ANSWER:A

46 What changes during beta decay?

A. atomic number
B. mass number
C. both of them
D. neither of them

ANSWER:A

47 What is the unit of activity (radioactivity?

A. Bq
B. Gy
C. C/kg
D. Sv

ANSWER:A

48 In which case the atomic number does not change?

A. gamma decay
B. alpha decay
C. negative beta decay
D. positive beta decay

ANSWER:A

NEUROPHYSIOLOGY IN PHYSIOTHERAPY

SINGLE CHOICE

1. The motor evoked response test is useful in the diagnosis of which disease?
A. hearing loss
B. epilepsy
C. both
D. none of them
ANSWER: D

2. Regarding electromyography (EMG), which of the following statements is correcta
A. A method used in the diagnosis of myasthenia gravis
B. In myopathy, the EMG shows a characteristic deviation of muscle damage
C. both
D. none of them
ANSWER: C

3. Electroneuronography (ENG):
A. Disease-specific variation can always be identified
B. It can distinguish axonal damage from a demyelinating lesion
C. both
D. none of them
ANSWER: B

4. Definition of motor unit:
A. A group of pyramidal cells located in the secondary motor cortex
B. The set of muscles supplied by a given spinal cord segment
C. The spinal motor neuron and the muscle fibres it innervates together
D. The functional unit formed by the upper motor neuron and the lower motor neuron
ANSWER: C

5. What are the typical symptoms of carpal tunnel syndrome?
A. Muscle weakness in the index finger
B. Painful hand numbness at night
C. both
D. none of them
ANSWER: C

6. Method used to detect carpal tunnel syndrome
A. Peripheral nerve ultrsound examination
B. Electroneurographic examination
C. both
D. none of them
ANSWER: C

7. The cause of carpal tunner syndrome
A. The n. median injury at the elbow height
B. The n. median compression at the wrist height
C. The n. radial compression
D. The n. ulnaris injury
ANSWER: B

8. It is not part of the peripheral motor track system
A. Peripheral extension of pseudounipolar sensory neurons
B. The corticobulbar fibers
C. Axon of a cortical motoneuron
D. none of them
ANSWER: D

9. The myelin sheath
A. Each neuron produces it for itself and wraps the axon with it
B. It's main function is „electrical insulation" of the nerve fiber
C. Covers only sensory fibers
D. none of them
ANSWER: B

10. How long does it take for compression nerve damage associated with conduction block to heal?
A. 1-2 weeks
B. 2-3 wekks
C. 3-4 weeks
D. 4-6 weeks
ANSWER: D

11. What can cause n. compressive damage tot he peroneal fibular head?
A. Knee-lenght plaster cast
B. Permanently crossed legs
C. Permanently squat
D. All of the above
ANSWER: D

12. What is the typical initial symptom of diabetic polyneuropathy?
A. Numbness in both arms
B. Painful lower limb paralysis
C. Increased deep reflexes
D. Burning paresthesia of both feet
ANSWER: D

13. Which of the following complaints may indicate muscular dystrophy?
A. The patient has difficulty going up stairs
B. Numbness of the feet
C. Pyramidal signs on the lower limbs
D. Areflexia in the lower limbs
ANSWER: A

14. Which neurophysiological deviation can best be used to localize the site of the nerve injury?
A. Determining the location of the driving block.
B. Based on the size of the motor unit potential.
C. both
D. none of them
ANSWER: A

15. What type of EMG abnormality is there in myasthenia gravis?
A. Fibrillation
B. During serial stimulation, the amplitude of the potentials that can be conducted from the muscles increases.
C. both
D. none of them
ANSWER: D

16. Which part of the motor system malfunctions can the ENG test primary detect?
A. Central motoneuron
B. Peripheral motoneuron
C. both
D. none of them
ANSWER: B

17. Which parameter of the complex action potential that can be drived from muscles is examined during ENG?
A. Latency
B. Amplitude
C. both
D. none of them
ANSWER: C

18. ENG can help reveal
A. Axon damage
B. Peripheral nerve neural sheath damage
C. both
D. none of them
ANSWER: C

19. It is characteristic of the muscle's own disease that
A. The conduction speed of the motor fibers is particularly fast
B. During the EMG examination, we see a reduced interference pattern
C. Conduction block develops in the sensory fibers
D. The affected limbs have pyramidal signs
ANSWER: B

20. In polyneuropathy
A. The conduction velocity of the sensory fibers is slow
B. The amplitude of the motor fibers increases
C. both
D. none of them
ANSWER: A

21. What is characteristic of polyneuropathy?
A. The initial symptom is numbess in the trunk
B. The symptoms appear suddenly
C. Symmetrical sensory disturbance ont he limbs is a sock-glove distribution
D. The symptoms occur in only one limb
ANSWER: C

22. Which track system can be tested with an evoked response test?
A. Visual pathway
B. Corticospinal pathway
C. Auditory tract
D. All of the above
ANSWER: D

23. In the case of peripheral nerve damage, when can we expect the appearance of spontaneous muscle activity, which can be detected whit an EMG test, indicating denervation?
A. 1-2 days
B. 2-3 weeks
C. 3-4 months
D. None, because such a phenomenon does not occur
ANSWER: B

24. What maintains the resting membarne potential?
A. The action potential
B. The semipermeable cell membrane, in which an active Na/K pump also helps the distribution of ions
C. Higher Ca+ concentration inside the cell
D. Higher Cl+ concentration outside the cell
ANSWER: B

25. What creates the action potential?
A. The charged proteins that can cross the cell membrane
B. Migration of Na+ and K+ ions across the cell membrane
C. Exit of the positively charged chloride ions from the neuron
D. None of them
ANSWER: B

26. The following phenomena are involved in the formation of EEG singnals
A. Synaptic potentials
B. Action potentials
C. both
D. none of them
ANSWER: C

27. Which activity is characteristic of the the EEG of healthy, deeply sleeping person
A. Alpha activity
B. Delta waves
C. Both
D. None of them
ANSWER: B

28. In which diseases can we use the EEG examination in the differential diagnosis?
A. Disturbance of consciousness
B. Epilepsy
C. Both
D. None of them
ANSWER: C

29. What is polysomnography used for?
A. To detect breathing disorders during sleep
B. To diagnose sleep disorders
C. Both
D. None of them
ANSWER: C

30. EEG abnormality suggestive of epilepsy
A. Alpha wave activity
B. 3 Hz spike wave pattern
C. Both
D. None of them
ANSWER: B

31. The somatosensory evoked response test is useful in the diagnosis of which disease?
A. Myelon damage
B. Epilepsy
C. Both
D. None of them
ANSWER: A

32. Which of the following statements about electromyography (EMG) is correct?
A. A method suitable for detecting diseases of the muscles
B. In lower motoneuron involvment, it shows a characteristic difference for nerve damage
C. Both
D. None of them
ANSWER: C

33. Electroneuronography (ENG)
A. Disease-specific variations can always be identified
B. It can be used to detect upper motoneuron damage
C. Both
D. None of them
ANSWER: D

34. The cause of the carpal tunnel syndrome
A. The n. median injury at elbow height
B. The n. median compression at wrist height
C. The n. radial compression at the height of the wrist
D. The n. ulnar injury at the level of the wrist
ANSWER: B

35. Part of the peripheral motor track system
A. Peripheral protrusion of pseudounipolar sensory neurons
B. The corticobulbar fibers
C. Axon of the lower motoneuron
D. None of them
ANSWER: C

36. How long does it take for compression nerve damaga associated with conduction block to heal?
A. 1-2 days
B. 2-3 weeks
C. 4-6 weeks
D. 4-6 months
ANSWER: C

37. Which of the following is true in muscular dystrophy?
A. The patient has difficulty going up stairs
B. The patient has no sensation disorder
C. There are no pyramidal signes ont he lower limbs
D. All of the above
ANSWER: D

38. Which neurophysiological difference can best be used to localize the site of the nerve injury?
A. By determining the location of the driving block
B. By determining the conduction velocity of the sensory nerve
C. Both
D. None of them
ANSWER: A

39. What type of EMG abnormality is there in myasthenia gravis?
A. The conduction velocity of the sensory nerve decreases
B. During serial stimulation, the amplitude of the potentials thet can be conducted from the muscle decreases
C. Both
D. None of them
ANSWER: B

40. Which part of the sensory system can be detected primarily by the ENG test?
A. Corticospinal pathway
B. Peripheral motoneuron
C. Both
D. None of them
ANSWER: D

41. In polyneuropathy
A. The conduction velocity of sensory fibers decreases
B. The conduction velocity of the motor fibers decreases
C. both
D. none of them
ANSWER: C

42. What activity is characteristic of the EEG of a healthy, sleeping person
A. Alpha activity
B. 3 Hz spike-wave pattern
C. Both
D. None of them
ANSWER: D

43. In which diseases csan use the EEG examination in the differential diagnosis?
A. Drug poisoning
B. Epilepsy
C. Both
D. None of them
ANSWER: C

44. EEG abnormality suggestive of epilepsy
A. 3 Hz spike wave pattern
B. Delta wave activity
C. Both
D. None of them
ANSWER: A

TRUE OR FALSE

1. EMG can only give a diagnosis together with clinical information
A. True
B. False
ANSWER:A

2. EMG is not suitable for confirming Myopathy
A. True
B. False
ANSWER:B

3. Electorneurography examines thin myelinated and unmyelinated sensory fibes
A. True
B. False
ANSWER:B

4. The sensory spinal root can not be tested with EMG
A. True
B. False
ANSWER:A

5. Summation of the simultaneous activity of many neurons in the EEG
A. True
B. False
ANSWER:A

6. The EEG is a graphical representation of the change in the voltage difference over time between two different areas of the brain
A. True
B. False
ANSWER:A

7. EEG Theta waves in mammals occur only under pathological conditions
A. True
B. False
ANSWER:A

BIOMECHANICS

SINGLE CHOICE

1. The location of collagen fibers is parallel in the tendons.
A. True
B. False
ANSWER:A

2. Limb ligaments contain more elastin than collagen.
A. True
B. False
ANSWER:B

3. The tension of the elastic elements connected in series affects the shape of the muscle length - tension curve.
A. True
B. False
ANSWER:B

4. The value of a/F 0 of the force-velocity curve affects the peak power of the muscle.
A. True
B. False
ANSWER:A

5. The change in length during the maximum deformation of the elastic elements of the muscle is completely reversible.
A. True
B. False
ANSWER:B

6. During isotonic contraction, the velocity of the shortening is constant.
A. True
B. False
ANSWER:B

7. During the concentric contraction, all the cross bridges exert a pulling force at the same time.
A. True
B. False
ANSWER:B

8. Under isometric contraction, parallel elastic elements are also stretched.
A. True
B. False
ANSWER:B

9. As a result of eight weeks of immobilization, the energy storage capacity of the tendons decreases by approximately 30 percent.
A. True
B. False
ANSWER:A

10. During voluntary eccentric muscle contractions, an increase in muscle tension occurs only from the resistance of passive elastic elements. T
A. True
B. False
ANSWER:B

11. Muscle is capable of exerting 1.4-1.8 times more force during eccentric contraction than during isometric contraction.
A. True
B. False
ANSWER:A

12. The muscle can exert more force during isometric contraction than during concentric contraction.
A. True
B. False
ANSWER:A

13. Fast muscles show a higher value of a / F_0
A. True
B. False
ANSWER:A

14. During isometric contraction, the contractile elements are not shortened. T
A. True
B. False
ANSWER:B

15. The higher the shortening rate of the muscle, the greater the force it exerts.
A. True
B. False
ANSWER:B
16. Muscle contraction refers to the active state of the muscle.
A. True
B. False
ANSWER:A

17. The slope of the muscle force-time curve does not depend on the synchronized operation of motor units.
A. True
B. False
ANSWER:B

18. A muscle with a greater angle of penance has a physiological cross-section and maximum strength greater than that of a muscle of the same volume, but with a smaller penance.
A. True
B. False
ANSWER:A

19. Almost one hundred percent of the elastic energy stored in the muscle can be utilized during positive work.
A. True
B. False
ANSWER:B

20. Mechanical work during muscle shortening after stretching is equal to a change in the positional energy of the external force under ideal conditions.
A. True
B. False
ANSWER:A

21. Working under eccentric contraction is called negative work.
A. True
B. False
ANSWER:A

22. The longer a tendon is, the greater its stiffness.
A. True
B. False
ANSWER:B

23. The elastic modulus (Young) can be calculated based on the stress-strain curve of the tendon.
A. True
B. False
ANSWER:A

24. The stress indicator of the tendon is calculated by dividing the cross-section of the tendon by the maximum stretching force acting on the tendon.
A. True
B. False
ANSWER:B

25. The tendons and ligaments, the more elastin they contain, the greater their initial resistance to stretching force.
A. True
B. False
ANSWER:B

26. The stiffness (tension growth rate) of the tendons also depends on the number of cross-links of collagen fibers.
A. True
B. False

ANSWER:A

27. The stiffness of the patella ligament is less than that of the anterior cruciate ligament.
A. True
B. False
ANSWER:B

28. The elastic energy storage capacity of tendons is equal to the area under the force-deformation curve.
A. True
B. False
ANSWER:A

29. The rigidity of the tendons of older people is greater than that of young adult people.
A. True
B. False
ANSWER:B

30. The muscle is connected to the tendon without transition.
A. True
B. False
ANSWER:B

SINGLE CHOICE

1. Which definition is characteristic of isokinetic contraction?
A. Muscle tone (tension) is constant during contraction
B. The muscle contractes at a constant length
C. Muscle contractions at a constant speed
ANSWER: C

2. Eccentric contraction is characterized by the following definition.
A. The tension of the muscle during stretching is always greater than the tension of the muscle before stretching
B. The tension of the muscle does not change during stretching
C. Sarcomers shorten during eccentric contraction
ANSWER:A

3. What characterizes concentric contraction from among the following?
A. Stretched elastic elements are not involved in muscle shortening
B. Only contractile elements and parallel elastic elements are involved in the work
C. If the contractile elements can no longer contract, then the elements connected in series can also do work
ANSWER:C

4. The elastic modulus can be determined by the following relation
A. ε / σ
B. σ / ε
C. dL/Df
ANSWER:B

5. Which variable is not in the Hill equation?
A. v
B. F_0
C. P_0
ANSWER:B

6. How to calculate muscle stiffness (tension growth rate)?
A. F_0 / dl
B. F / t
C. dF/dl
ANSWER:C

7. Which muscle has the highest pennance angle?
A. Soleus
B. Sartorius
C. Vastus lateralis
ANSWER:A

8. How to calculate the mechanical power of a muscle based on the force-speed relationship?
A. $F_{0\text{-}F}/v$
B. F×v
C. $F \times v/F_0$
ANSWER:B

9. How to calculate the efficiency of mechanical work?
A. (Concentric work / eccentric work) * 100
B. (Eccentric work / concentric work) * 100
C. (Concentric work / concentric work + eccentric work) * 100
ANSWER:C

10. How to calculate muscle flexibility ?
A. dt/ Fo
B. dl / dF
C. dF / dl
ANSWER:B

11. Places of storage of elastic energy in the muscle
A. PEC and actin
B. SEC and myosin
C. SEC, PEC and crossbridge
ANSWER:C

12. The stiffness of tendons can be determined by the following relationship
A. s / e
B. (b) dF/dl
C. dL/Df
ANSWER:B

13. How many times is the force increased during eccentric contraction equal to the maximum isometric force?
A. 0.8-1.0 times
B. 1.4-1.8-fold
C. 2.0-2.2 times
ANSWER:B

14. During a concentric contraction, what percentage of the maximum force does the muscle have to work with to perform the highest mechanical performance?
A. 66 %
B. 33 %
C. 99 %
ANSWER:B

15. What percentage of the energy invested can be recovered during stretching-shortening muscle contraction?
A. 10-20 %
B. 60-80 %
C. 30-40%
ANSWER:C

16. The force-velocity curve can be characterized by the following function.
A. linear
B. hyperbolic
C. exponential
ANSWER:B

17. What causes the increase in tension in muscle stretching during voluntary muscle contraction?
A. motor unit activation and increasing resistance of passive elastic elements.
B. elongation of passive elastic elements only
C. the contractile elements lengthen the length is increased
ANSWER: A

18. What does the recruitement according to the size principle mean?
A. First the small muscles are involved in the effort and then the large muscles
B. First, small motor units with a low stimulus threshold are activated, and then the increasingly large ones
C. First, fast motor units with a high stimulus threshold are activated, and then gradually slow motor units are activated
ANSWER:B

19. Fast motor units are capable of more force than slow ones, because
A. They contract faster
B. The length of the sarcomeres in the fibers is shorter
C. They contain more muscle fibers
ANSWER:C

20. Which statement is true?
A. Muscles with parallel fiber run are capable of a lower shortening rate than feathered muscles because they contain fewer muscle fibers
B. Feathered muscles are able to exert more effort than muscles with parallel fiber run because their fibers have a shorter length
C. Feathered muscles are capable of greater effort than muscles with parallel fiber run because they have a larger physiological cross-section
ANSWER:C
21. At the tendon-bone transition, the width of the cartilaginous fiber in adults
A. 1-2 mm
B. 150-200 mm
C. 150-400 m
ANSWER:C

22. Unit of stress
A. N
B. N/s
C. Pa
ANSWER:C

23. Which statement is true?
A. The tendons of older people have a higher stretchability than those of young ones, but their resistance to stretching force is less.
B. The tendons of older people have 14 percent less stretchability than young people, but the stress value is only one-third that of young people.
C. Older people's tendons have a higher stiffness than young people's, and thus have greater resistance to stretching force.
ANSWER:B

24. Choose how much pulling force the patella tendon can withstand in adult, trained people without tearing.
A. 10-20 kN
B. 6000-10000 N
C. 30-150 N
ANSWER:B

25. The magnitude of the elastic energy stored in tendons, ligaments is equal to
A. Force elongation with area under the curve
B. With the area under the stress-strain curve
C. With the area under the force-time curve
ANSWER:A

26. When stretching the muscle quickly and shortly, which element stores the most elastic energy
A. fascia
B. tendon
C. titin
ANSWER:B

27. Which tendon has more rigidity?
A. the short and thick tendon
B. the long and thin tendon
C. size does not affect rigidity
ANSWER:A

28. At which value a/F_0 has the most curved force-velocity curve?
A. 0,6
B. 0,3
C. 0,15
ANSWER:C

29. At what weight size does the muscle achieve maximum mechanical performance?
A. With 30-40 percent of the maximum isometric force
B. 15-20 percent of the maximum isometric force
C. 50-60 percent of the maximum isometric force
ANSWER:A

30. What does tendon hysteresis means?
A. The ratio of the force maxima measured during stretching and subsequent shortening.
B. Percentage of energy consumed during stretching and subsequent shortening
C. The difference between stretching during tendon shortening and post-shortening.
ANSWER:B

31. Eccentric contraction is defined as follows:
A. The tension of the muscle during stretching is always greater than the tension of the muscle before stretching
B. The tension of the muscle does not change during stretching
C. Sarcomeres shorten during eccentric contraction
ANSWER:A

32. How to calculate the mechanical performance of a muscle based on the force-speed relationship in the case of rotational motion?
A. $F_{0\text{-}F}/v$
B. $M \cdot \omega$
C. $F \times v$
ANSWER:B

33. How much can the pulling force increase to the apex of the patella during eccentric contraction compared to that measured at maximum muscle strength?
A. 80 percent
B. 100 percent
C. 40 percent
ANSWER:C

34. What does the stress value of the tendon means?
A. Pulling force per unit of tendon cross-section.
B. Pulling force per unit elongation.
C. Resistance to stretching.
ANSWER:A

35. Which statement is true?
A. The stress value of the lig. patellae of 10-year-old boys is higher than that of 10-year-old girls.
B. The strain value of the lig. patellae of 10-year-old girls is greater than that of adult females.
C. The strain value of the lig. patellae of adult men and women is the same.
ANSWER:B

36. What is meant by the elastic modulus of the tendon?
A. The slope of the straight line drawn to the ascending branch of the tension-strain curve of the tendon.
B. The slope of the straight line drawn to the descending branch of the stress-strain curve of the tendon.
C. The slope of the line drawn to the ascending branch of the tendon force-deformation curve.
ANSWER:A

37. What shows the limit of the load capacity of the tendon?
A. The ratio of the thickness and length of the tendon.
B. The slope of the straight line drawn to the force-elongation curve.
C. The safety factor.
ANSWER:C

38. What is a load safety factor?
A. The ratio of the force required to tear the tendon to the maximum force measured (calculated) during a given movement.
B. The average of all forces acting on the tendon.
C. The vectoral sum of the tensile and shear forces.
ANSWER:A

39. Which statement is true?
A. The force-speed-power curve of a muscle is constant.
B. The shape of the curve changes by the same amount as the maximum isometric force changes.
C. If the maximum isometric force is increased, then the shape of the force-velocity curve changes.
ANSWER:C

40. Which statement is true?
A. With the speed of stretching of the muscle, the resistance of the muscle increases exponentially.
B. The force-speed relationship of eccentric contraction shows a hyperbolic relationship.
C. Only in a small range of stretch speeds does the resistance of the muscle increase.
ANSWER:C

MULTIPLE CHOICE

1. What affects the stiffness (stiffness) of the lig. patellae?
A. Number of cross-links of collagen fibers.
B. Place of origin.
C. Cross-section of the tape.
D. Amount of elastin.
ANSWER:A,C

2. Why is the RTD of fast motorized units higher than that of slow ones?
A. Thinner motor nerves.
B. They contain more muscle fibers.
C. They have a shorter contraction time.
D. They contain more slow fiber.
ANSWER:B, C

3. What affects the physiological cross-section of the muscle?
A. Muscle length.
B. Muscle fiber composition.
C. The length of the muscle bundles.
D. Muscle volume.
ANSWER:C, D

4. Select the two muscles that have the smallest physiological cross-section.
A. Soleus
B. Gastrocnemius
C. Sartorius
D. Biceps femoris
ANSWER:C,D

5. Choose which quotients express the shape of the force-velocity curve
A. a/F_0
B. b/v_0
C. dF/ v_0
D. F_0/a
ANSWER:A,B

6. When is the mechanical performance of the muscle zero?
A. When the velocity is zero.
B. When the weight moved is 30 % of the maximum force 0.
C. When the size of the weight moved is 100%.
D. When the speed is 30 % of the maximum speed.
ANSWER:A,C

7. What are the parallel elastic elements?
A. Tendons
B. Fascia
C. Titin
D. Z plates
ANSWER:B,C

8. How to calculate the mechanical work of the muscle?
A. We calculate the area under the force-time curve.
B. Calculate the area under the stress-strain curve.
C. Calculate the area under the force-length change curve.
D. The integral of the force exerted by the muscle according to elongation is calculated.
ANSWER:C,D

9. Which two muscles are capable of the greatest effort?
A. Soleus.
B. Semitendinosus.
C. Vastus lateralis
D. Psoas Major
ANSWER:A,C

10. In which cases is the muscle physiological and anatomical cross section the same?
A. When muscle fibers run parallel to each other.
B. When the muscle bundles have no angle of pennance.
C. When the length of the muscle is greater than that of the muscle fibers.
D. In the middle of the muscle belly.
ANSWER:A,B

11. Why the muscle is able to exert more force during isometric than during concentric contraction.
A. Under concentric contraction, all sarcomeres are shortened.
B. During isometric contraction, the length of the sarcomeres does not change.
C. During isometric contraction, theoretically, all crossbridges can exert force.
D. During concentric contraction, not all crossbridges can exert force, because then the muscle would not be able to shorten.
ANSWER:C,D

12. When moving how much weight, does the muscle produce the greatest mechanical power?
A. Maximum force at 30 %.
B. Maximum force at 50 %.
C. Maximum force at 20 %
D. Maximum force at 40 %.
ANSWER:A,D

13. What is characteristic of isometric contraction?
A. The length of the muscle is shortened.
B. Sarcomers are shortened
C. The length of the parallel elements is increased.
D. The elastic elements connected in series are elongated.
ANSWER:B,D

14. What characterizes eccentric contraction?
A. The muscle exerts more force than under isometric contraction.
B. More cross-bridge connections are made than during isometric contraction.
C. The increase in strength is due to the resistance of elastic elements to stretching.
D. Elastic elements perform work on contractile elements.
ANSWER:A,C

15. What is the characteristic of concentric contraction?
A. External forces perform work on contractile elements.
B. External forces perform work on elastic elements.
C. The muscle performs work against external force.
D. Sarcomers are shortened.
ANSWER:C,D

16. What is the feature of fast motor units?
A. They are large because they innervate a lot of fiber.
B. The faster their shortening is, the more fast fibres are found in them.
C. High levels of stimuli are required to turn them on.
D. They are not tired.
ANSWER:A,C

17. Which statements are true?
A. Aponeurosis is the connective tissue that covers the muscles.
B. Aponeurosis is also called an internal tendon.
C. In pennant muscles, muscle fibers are associated with aponeurosis.
D. Aponeurosis is a parallel elastic element.
ANSWER:B,C

18. How do the indicators of force-speed power curves change when the temperature of the muscle decreases during concentric contraction?
A. Peak performance is reduced.
B. The value a/F_0 is increased.
C. The maximum speed is reduced.
D. The maximum isometric force increases.
ANSWER:A,C

19. How do the indicators of force-speed power curves change when muscle temperature decreases during eccentric contraction?
A. The eccentric force decreases relative to the maximum isometric force.
B. The relative stretching force increases.
C. The higher the stretching speed, the greater the resistance of the muscle.
D. The absolute elastic energy storage capacity increases.
ANSWER:A,B

20. Which definition is characteristic of isokinetic contraction
A. The muscle exerts a constant force during contraction
B. The length of the sarcomers is constant
C. Muscle contractions at a constant speed
D. The force exerted by the muscle is constantly changing
ANSWER:C,D

21. Eccentric contraction is defined as follows
A. The tension of the muscle during stretching is always greater than the tension of the muscle before stretching
B. Muscle tension does not change during stretching
C. Sarcomers may shorten during eccentric contraction
D. The length of the sarcomers is increased in all cases
ANSWER:A,C

22. Which variables are needed to calculate the mechanical performance of a muscle based on the force-speed relationship in the case of rotational motion?
A. $F_{0\text{-}F}/v$
B. M
C. v
D. ω
ANSWER:B,D

23. How many component muscle models do you know?
A. One
B. Four
C. Three
D. Multiple three-component
ANSWER:C,D

24. Which two statements are true?
A. Muscles with parallel fiber run are capable of a lower shortening rate than feathered muscles because they contain fewer muscle fibers.
B. Pennant muscles are capable of exerting more force than muscles with parallel fiber run because their fibers have a shorter length.
C. Pennant muscles are capable of exerting more force than muscles with parallel fiber run because they have a larger physiological cross-section.
D. The fiber length of the feathered muscles is less than the length of the whole muscle
ANSWER:C,D

25. When stretching an active muscle, in which case is the greatest increase in tension and in which case is the greatest amount of tension?
A. When muscle stretching begins at a pretension of 20 %.
B. When muscle stretching begins at 60% of the maximum isometric force.
C. Muscle stretching begins at maximum pretension.
D. The degree of increase in tension does not depend on the magnitude of the pretension.
ANSWER:A,C

26. What does residual increase in tension mean?
A. Muscle tension remaining after relaxation after isometric contraction.
B. Constant tension remaining during concentric contraction
C. Muscle tension remaining for a few seconds after the cessation of activated muscle stretching.
D. Residual tension can exceed the maximum isometric force by 30-40 %.
ANSWER:C,D

27. What does the magnitude of the residual increase in tension depend on?
A. The length of muscle stretching.
B. From the speed of muscle stretching.
C. At the beginning of muscle stretching, from the magnitude of the pretension.
D. From the time of the creation of muscle tension.
ANSWER:A,B

28. In which two cases is the greatest the residual tension?
A. When the length of the muscle is greater than the resting length and the length of stretching is greatest.
B. When stretching begins at rest and the muscle has no pretension.
C. When muscle tension is maximum at the beginning of stretching and the speed of stretching is small.
D. When muscle stretching begins at a short muscle length and occurs at high speed.
ANSWER:A,C

29. Why is the maximum mechanical performance of a fast-fiber-dominated muscle higher?
A. Fast fibers have a larger cross-section than slow fibers.
B. The contraction time of fast fibers is shorter than that of slow ones.
C. Mechanical work in the muscle is mainly carried out by the fast fibers.
D. Slow fibers do not inhibit the shortening of fast fibers.
ANSWER:B,C

30. Which statement is true?
A. When stretching muscles, the energy used in the work performed by external force is 100 percent transferred in the elastic elements of the muscle.
B. The energy stored in the elastic elements can be fully used during the positive work of the muscle.
C. The most elastic energy can be recovered if the stretching is followed without delay by muscle shortening.
D. 70-80 percent of the elastic energy stored in the muscles can also be recovered.
ANSWER:C,D

31. How to calculate the mechanical efficiency of the muscle?
A. Total mechanical work divided by the work during muscle shortening and multiplied by 100.
B. The work done during positive work is divided by the sum of the positive and negative work and multiplied by 100.
C. The energy consumed during muscle shortening is divided by the sum of the energy used during shortening and stretching and multiplied by 100.
D. We divide the positive work by the negative work and multiply by 100.
ANSWER:B,C

32. What is the approximate mechanical efficiency of skeletal muscles?
A. 80%
B. 35 %
C. 45%
D. 10%
ANSWER:B,C

33. With a small angular change in the joints during stretching-shortening contraction of the muscle, which elements perform the mechanical work when the joint extend?
A. Elastic elements connected in series.
B. Contractile elements.
C. Titin.
D. The tendons.
ANSWER:A,D

34. In which two cases is the mechanical efficiency higher?
A. Muscle stretching begins at 50 % pretension.
B. Muscle stretching begins at maximum pretension.
C. Muscle stretching begins at maximum pretension and resting length.
D. Muscle stretching begins at 50 % tension and resting length.
ANSWER:B,C

35. What characterizes tendons and articular ligaments?
A. Collagen fibers show transverse spurs.
B. The striated striation is similar to that seen in skeletal muscle myofibrullums.
C. The structure of the tendons and ligaments is homogeneous, it is built up only by collagen molecules.
D. Tendons and ligaments have viscoelastic properties.
ANSWER:A,D

36. Why does the tendon and muscle transition show finger-like laceration?
A. This increases the area of connection.
B. There will be a better blood supply to the tendon.
C. Less traction per unit area
D. Reduced shear force on the contact surface
ANSWER:A,D

37. On the tendon-force-elongation curve, what characterizes the physiological load stage?
A. Deformation is reversible.
B. The area under the curve expresses the amount of elastic energy stored.
C. Microcracks also occur at this stage.
D. The increase in force is exponential as a function of elongation.
ANSWER:A,B

38. What are the two main differences in the mechanical properties of the lig. patellae and the anterior cruciate ligament.
A. The lig. patellae is thicker and therefore has greater stretchability.
B. The rigidity of the lig. patellae is significantly greater than that of the anterior cruciate ligament.
C. The anterior cruciate ligament begins to tear at a greater length with a smaller stretching force.
D. The anterior cruciate ligament is thinner than that of the lig. patellae and therefore begins to tear at a smaller length
ANSWER:B,C

39. What tools are needed to determine the characteristics of the force-elongation curve of the patella ligament?
A. Electromyograph.
B. goniometer.
C. Ultrasound device.
D. Dynamometer.
ANSWER:C,D

40. Which statements are true?
A. The stretchability of the lig. patellae in adult females is higher than that of 10-year-old boys.
B. The stiffness of the lig. patellae of 10-year-old girls is greater than that of 10-year-old boys.
C. The lig. patellae of adult females indicates a microtear at a lower pulling force than that of men
D. The lig. patellae in adult men and women has approximately the same stiffness
ANSWER:B,C

REHABILITATIVE TECHNOLOGIES

SINGLE CHOICE

1. What kind of knee types are not used in a transfemoral prosthetic leg ?
A. Monocentric (single axis) knees
B. Polycentric (multi axial) knees
C. Microprocessor controlled knees
D. High Flex unicompartmental knees
ANSWER: D

2. Characteristic of active orthoses
A. Own muscle strength is used only
B. Used for neurological problems
C. Cheap
D. Lightweight
ANSWER: B

3. What are the two large groups of robots?
A. Industrial and service robots
B. Microbi and Avatar
C. Battery and mains powered
D. Automatic and semi-automatic
ANSWER: A

4. There are two main groups of robots that can be used in rehabilitation:
A. Assistive and therapeutic
B. Surgical and traumatological
C. Food and drinking aid
D. Wheelchair and bed mounted
ANSWER: A

5. Ways to connect the physiotherapy robot to the upper arm:
A. Exoskeleton and end-effector
B. External and internal
C. Top and bottom
D. Longitudinal or transverse
ANSWER: A

6. What is the name of the hungarian-developed robotic physiotherapy system?
A. Lake Balaton
B. Danube
C. Tisza
D. Reharob
ANSWER: D

7. What type of orthosis is useful in case of peroneal palsy?
A. FO
B. AFO
C. KO
D. KAFO
ANSWER: B

8. What is the relieving function of orthoses?
A. In all cases, preventing the movement of several joints in full.
B. Correction of the axis of the limb
C. Withdrawal of one or more joints from weight loss
D. Fixation
ANSWER: C

9. Why do we use an orthosis after LCA surgery?
A. Can prevent the joint stiffness.
B. Because it relieves the knee joint from weight.
C. Because it allows to move the knee joint within specific limits while stabilizing it.
D. Correction
ANSWER: C

10. The primary aspect of post-traumatic orthotic care:
A. the instruments should be well-applicate to the long term
B. the injured person should not have to use more than two aids
C. mobilization as soon as possible
ANSWER: C

11. Which of the following effects is characteristic of passive orthosis?
A. support
B. muscle stimulation
C. increase muscle mass
D. reinforcement
ANSWER: A

12. During the treatment of knee osteoarthritis, the first step is:
A. Indications of an orthosis
B. drug therapy
C. physiotherapy
D. Use of selective muscle stimulation
ANSWER: C

13. Classification of orthoses according to ISO
A. It is done according to body areas
B. Functionally based
C. Diagnosis-based
D. Based on physique characteristics
ANSWER: A

14. The purpose of temporary prosthetics is to:
A. restoration of blood circulation in the stump
B. preparation of the stump for final prosthetic fitting
C. acceleration of wound healing
D. facilitating the work of the physiotherapist
ANSWER: B

15. What is characteristic of lower limb prostheses with an endoskeletal structure?
A. Tubular frame construction with internal frame, modular elements
B. Externally framed, wood or laminated construction
C. Made entirely with custom design and machining
ANSWER: A

16. True for the length of the artificial limb:
A. be 3 cm shorter than the intact side
B. Be minimally shorter than the intact side
C. Be as high
D. Depends on stump embedding
ANSWER: B

17. After amputation, individual muscles are **not** characterized by:
A. Insuffiency
B. Change in direction of pulling force
C. Agonist-antagonist muscle dysbalance
D. hypertophy
ANSWER: D

18. The energy storage foot:
A. Stores electrical energy
B. Made of rubber
C. Contains an external energy source
D. Stores flexible/elastic energy
ANSWER: D

19. Which upper limb prosthesis works with the use of external energy?
A. cosmetic prosthesis
B. hook
C. bioelectrical (myoelectric) prosthesis
ANSWER: C

20. What is the fundamental difference between a person who has suffered amputation as a result of vascular disease and trauma?
A. Load capacity
B. Postoperative physiotherapy
C. Mobility aid
ANSWER: A

21. Which is **not** a sign of load intolerance when walking in lower limb amputees?
A. <40 and >130 heart rate at rest
B. Small or excessive heart rate elevation during activity
C. Frequent arrhythmia
D. slight fatigue
ANSWER: D

MULTIPLE CHOICE

1. Which of the following instruments can be used for FES cycling trainings. (Multiple choice is possible)
A. Stationary cycle ergometers
B. Mobile tricycles
ANSWER: A, B

2. Functional Electrical Stimulation has beneficial effects on the following. (Multiple choice is possible)
A. Muscle strength,
B. Cardiovascular functions
C. Vision
D. Respiratory functions
ANSWER:A, B, D

3. Shoulder Orthoses are suitable for individuals with ?
A. Subluxation and dislocations
B. Soft tissue and nerve injuries including rotator cuff tears
C. Post-surgical trauma
D. Diabetes
ANSWER: A, B, C

4. Hip orthosis is suitable for individuals with ?
A. Legg-Calvé-Perthes-Disease (LCPD)
B. Osteoarthritis
C. Development hip dysplasia (DDH)
D. Post-operative hip replacement
ANSWER: A, B, C, D

5. Types of prosthetic suspension systems?
A. Suction/Elevated Vacuum
B. SACH
C. Carbon Fibre
D. Belt and Straps
ANSWER: A, D

6. The general classes of upper extremity prostheses are
A. Passive prostheses
B. Body-powered prostheses
C. Externally powered myoelectric prostheses
D. Hybrid prostheses
ANSWER: A, B, C, D

8. Osteointegration prosthesis is characterized by:
A. The metal stem of the prosthesis is fixed in the bone
B. Recommended for vascular patients
C. Long rehabilitation period
D. No complications
ANSWER: A, C

9. Expectation of a below knee prosthesis suitable for cycling:
A. Mobil ankle
B. Stable, stiff ankle
C. Energy storage foot
D. Be capable of large-scale pronation and supination
ANSWER: A, C

10. Types of evidence
A. Research results
B. Characteristic features of the patient's condition
C. Experience, beliefs and ability of professionals
D. Subjective opinion of the patient
ANSWER: A, B, C

11. Quality of life includes
A. the social relations of the individual,
B. his personal faith
C. its relation to relevant phenomena of the environment
D. Diagnosis
ANSWER: A, B, C

12. Main biomechanical aspects in the design of orthoses:
A. Strength
B. Pressure
C. balance
D. blood circulation
ANSWER: A, B, C

13. For the temporary pneumatic prosthesis is characterized by:
A. Pneumatic case
B. Rolling sole
C. Height adjustment
D. Use only after wound healing
ANSWER: A, B, C

14. Liners suggested
A. For active prosthesis users
B. For people with sensitive skin
C. Scarred stump
D. For hip exarticulated amputees
ANSWER: A, B, C

15. Knee contracture after amputation can be caused by:
A. Pain
B. Improper posture
C. Muscle imbalance
D. A lot of prone position
ANSWER: A, B, C

16. During prosthesis revision, the physiotherapist's task is:
A. Observation of the height
B. Observation of the axis position
C. Observation of the stump entrenchment
D. Observational aspects are competencies of the orthopedic technician
ANSWER: A, C

17. Operational characteristics expected of a care facility providing the rehabilitation program (e.g. hospital rehabilitation department):
A. Rehabilitation team work
B. Functional assessment
C. Preparation of a rehabilitation plan at the beginning of the program that formulates goals and provides tools for them
D. Existence of an acute surgery department
ANSWER: A, B, C

18. In which care facilities can rehabilitation take place?
A. Active department of the hospital
B. Outpatient treatment
C. Residential community
D. Rehabilitation Department
ANSWER: A, B, C, D

19. When choosing orthoses, we take into account
A. Functional diagnosis
B. Joint stability
C. Medical diagnosis
D. Protection phase
ANSWER: A, B, C, D

20. Characteristic of walking of transfemoral amputees
A. Knee flexion in the swing phase of the amputated side starts from an open kinetic chain
B. Glut. maximus function enhanced in the stance phase
C. Increased adductor activity in the swing phase
D. Increased function of the quadriceps on the amputated side in the stance phase
ANSWER: B

21. During the gait of a transfemoral amputated person, if during the support phase of the amputated side the patient is tilted to the same side:
A. small step width
B. Weak support-sided abductors
C. long/high prosthesis
D. the stump moves in the socket
ANSWER: B, D

122. Characteristics after knee exarticulation and factors affecting prosthetic fitting:
A. Shift of the axis of rotation of the knee in a distal direction
B. Short force arm
C. End-loader
D. Only with a stiff ankle
ANSWER: A, C

23. Suspension of an above knee prosthesis can be:
A. Vacuum
B. Gamma bandaging
C. Trochanter belt
D. Liverpool belt
ANSWER: A, C

24. What determines the type and components of the prescribed artificial limb?
A. level of activity of the patient, body weight
B. patient's need
C. mental state of the patient
D. opinion of the family
ANSWER: A, B, C

25. Modeling of the prosthesis can be done
A. With laser
B. By observation
C. Gypsum
D. with centimeter tape
ANSWER: A, C

26. Factors determining the energy needs of walking with a prosthesis:
A. Length of the stump
B. Mass of the prosthesis, location of Center of Body Mass
C. Speed
D. Artificial leg structure
ANSWER: A, B, C, D

27. Mobilization method of a right leg tibial amputee who suffered left calcaneus and radius fractures:
A. Cannot be mobilized, only with a wheelchair
B. Walker/frame
C. Two elbow crutches
D. Two armpit crutches, left orthosis
ANSWER: B, D

28. True for the length of the artificial limb:
A. be 3 cm shorter than the intact side
B. Be minimally shorter than the intact side
C. Be as high
ANSWER:B

29. During gait training of a lower limb amputee:
A. We divide the gait cycle into its elements
B. PNF patterns can be applied when wearing a prosthesis
C. Phantom exercises are part of the preparation
D. We exercise with resistance on the prosthesis
ANSWER: A, B, C

30. Upper limb prosthesis type:
A. Cosmetic
B. Mechanical
C. Bioelectric
D. Global
ANSWER? A, B, C

31. Which of the following parameters of the electrical signal can be adjusted for controlling
A. FES induced movements. (Multiple choice is possible)
B. Current amplitude
C. Frequency of the electrical impulses
D. Pulse width of the electrical impulses
E. Cycling speed
F. The timing of the stimulating signal sent to the individual muscles
ANSWER: A, B, C, E

TRUE OR FALSE AND YES OR NO QUESTION

1. Functional Electrical Stimulation (FES) is a technology that artificially stimulates muscles by sending electrical signals from a control device through electrodes to muscles for performing a motor task. (Please select one answer)

A. Yes
B. No
ANSWER: A

2. In Functional Electrical Stimulation driven cycling training of spinal cord injured patients, their power output is higher when the number of separately stimulated muscles is higher. (Please select one answer)

A. Yes
B. No
ANSWER:A

3. Functional Electrical Stimulation generate active muscle contractions and forces in paralyzed muscles to perform a given motor task, although these contractions are not voluntary.

A. Yes
B. No

ANSWER: A

4. Orthosis comes from the Greek word ortho, which means “to straighten” or “correct” .

A. True
B. False

ANSWER: A

5. Orthoses are classified into classes of five body areas according to the international classification system (ICS)

A. True
B. False

ANSWER: B

6. The components of a below knee prosthetic are: socket, pylon, foot.

A. True
B. False

ANSWER: A

7. The most common cause lower limb amputations result from severe trauma to the limb caused by an accident.

A. True
B. Fals

ANSWER: B

8. Externally powered myoelectric prostheses are for cosmetic purposes.

A. True
B. False

ANSWER: B

9. Evidence-based physiotherapy aims to use the best available evidence-based method in clinical decision-making.

A. True
B. False

ANSWER:A

10. Evidence-based medicine emphasizes observation, individual experience over theory.

A. True
B. False

ANSWER:B

11. Correct order of evaluation of evidence: Asking questions - Searching evidence - Applying evidence - Evaluating evidence –Evaluating efficacy

A. True
B. False

ANSWER: B

12. The FNO describes the human body's ability to function, physical capabilities, and its relationship to its environment.
TRUE
A. True
B. False
ANSWER

13. ICF (International Classification of Functions) is based on diagnosis
A. True
B. False
ANSWER:B

14. ICF (International Classification of Functions) means different things to different professions.
A. True
B. False
ANSWER:B

15. The choice of the type of prosthesis depends primarily on the diagnosis.
A. True
B. False
ANSWER: B

16. Phantom sensations appear more intensely on distal parts of the body with larger cortical representations.
A. True
B. False
ANSWER:A

17. Orthoses, thanks to their adaptive possibilities, can perform different tasks.
A. True
B. False
ANSWER:A

18. In lower limb amputees, a comfortable gait speed is the most energetically efficient.
A. True
B. False
ANSWER: B

19. Silicone foot and toe replacements, for diabetic patients, are contraindicated.
A. True
B. False
ANSWER:A

20. In case of knee osteoarthritis, when choosing an orthosis, it is necessary to take into account the laterality of the affected compartement.
A. True
B. False
ANSWER:A

21. Mobilization of a bilateral lower limb injured patient is possible only with a wheelchair.
A. True
B. False
ANSWER:B

22. With a modern lower limb prosthesis, a physiological gait picture (kinematic) can be achieved.
A. True
B. False
ANSWER:A

23. With a modern lower limb prosthesis, the patient will have physiological muscle functions.
A. True
B. False
ANSWER:B

24. On unstable surfaces, we do not exercise with a lower limb amputated patient, because it is dangerous.
A. True
B. False
ANSWER:B

25. A prosthesis with a microprocessor knee joint uses laser beams to determine the current position of the limb.
A. True
B. False
ANSWER:B

26. In the case of an upper limb amputatee, we practice wearing prostheses by the biofeedback method. FALSE
A. True
B. False
ANSWER:B

27. In the case of an upper limb amputated person, the biofeedback method helps to separate the agonist and antagonist muscles.
A. True
B. False
ANSWER:A

PHARMACOLOGY

TRUE OR FALSE

1. The interaction between a drug and the receptor depends on the complementarity of 'fit' of the two molecules.

A. True
B. False
ANSWER:A

2. Receptor specificity is the ability of a drug to combine with one particular type of receptors, drugs have a relatively selective action on one type of receptors.

A. True
B. False
ANSWER:A

3. Cytocrom P450 enzymes induction or inhibition phenomena are the main causes of pharmacokinetic drug-drug or herb-drug interactions.

A. True
B. False
ANSWER:A

4. The trade mark or brand name (proprietary name) is the name under which its listed in one in the official publication.

A. True
B. False
ANSWER:B

SINGLE CHOICE

5. The main way to eliminate drugs:

A. through the skin
B. with urine
C. with feces
D. by exhalation
E. with bile
ANSWER:B

6. True statement about anticoagulants:

A. when administered orally, heparin derivatives act rapidly
B. heparin derivatives do not cause bleeding even in the event of an overdose
C. heparin derivatives are anticoagulants used in thromboembolism
D. Clopidogrel can cause stomach upset and asthma, so it is rarely used today
E. Patients with acute thrombosis should be given a platelet aggregation inhibitor such as aspirin
ANSWER:C

7. True statement about insulin therapy:
A. hyperglycaemia due to overdose is the most common complication of insulin therapy
B. should be administered by subcutaneous injection, because there are fast-acting preparations only
C. cannot be combined with oral antidiabetic therapy
D. insulin must not be overdosed
E. when administered orally, it degrades in the gastrointestinal tract and loses its effect
ANSWER:E

8. Corticosteroid-type active substance in asthma or COPD:
A. salbutamol, salmeterol
B. cetirizine, desloratidine
C. tiotropium, atropine
D. montelukast, xylometazoline
E. mometasone, fluticasone
ANSWER:E

MULTIPLE CHOICE

Write only one letter!
A. only answers 1, 2, and 3 are correct
B. only answers 1 and 3 are correct
C. only answers 2 and 4 are correct
D. all 4 correct answers
E. none of the answers are correct

9. Characteristic of modern drug therapy of rheumatoid arthritis:
1. NSAIDs are often used as symptomatic treatment
2. Methotrexate is the first-choice drug for disease modification therapy
3. Biological therapy uses TNF alpha inhibitors and IL inhibitors
4. Side effects of infliximab chimera (e.g. Remicade) may include increased susceptibility to infection, cytopenias, gastrointestinal symptoms
ANSWER:D

10. Steroidal anti-inflammatory drugs are contraindicated:
1. in rheumatoid diseases
2. as an immunosuppressant
3. in asthma bronchiale
4. in eczematous diseases

ANSWER:E

Short lists (only keywords!):

11. List 5 active substance and their possible side effects of non-steroidal anti-inflammatory drugs (NSAIDs)

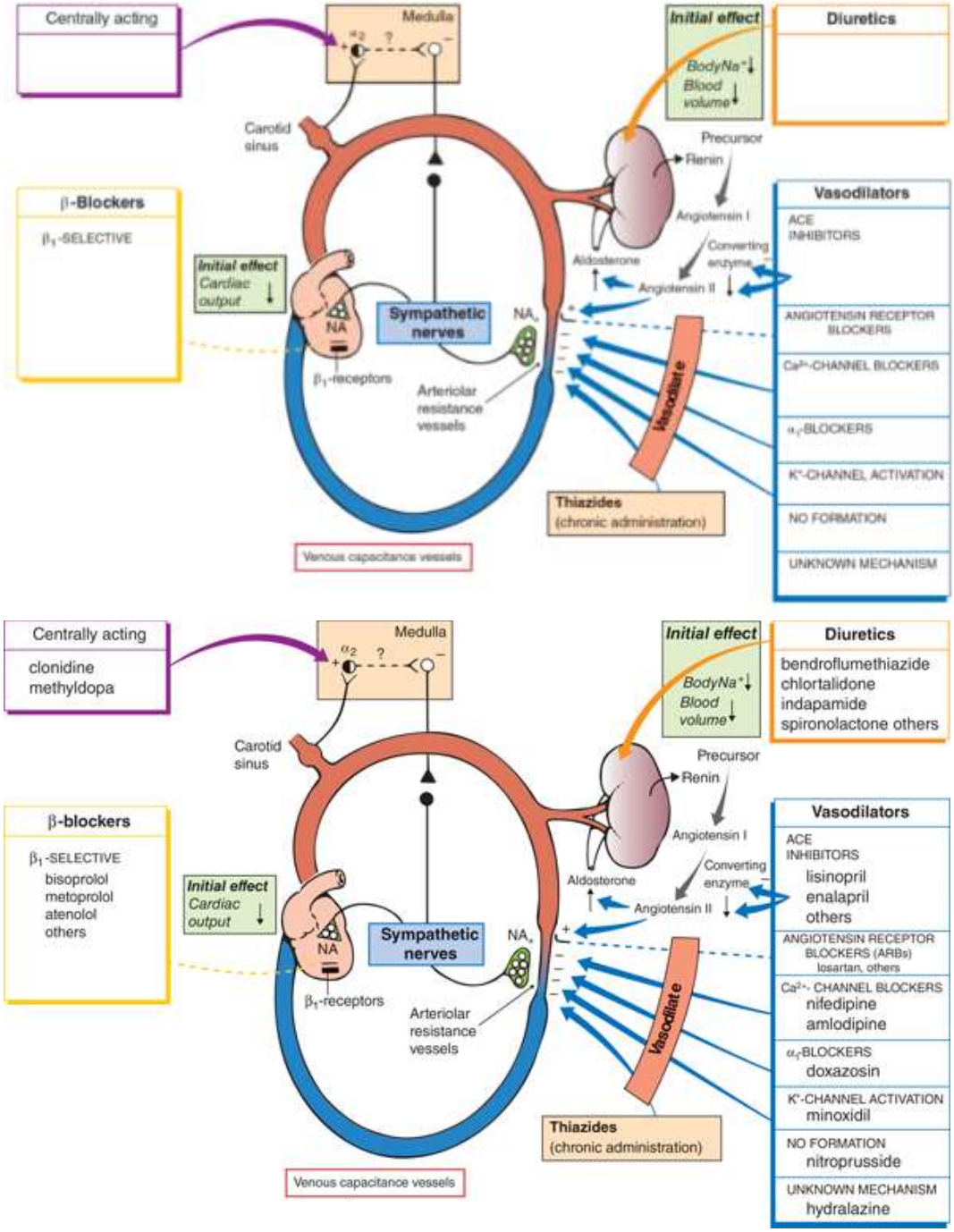
ibuprofen	peptic ulcer
naproxen	gastrointestinal bleeding
diclofenac	increased blood pressure
celecoxib	drug allergy
indomethacin…	indigestion and other gut complaints…

12. List 5 active substances and 5 main risks/ side effects of benzodiazepines (BDZs) in CNS medication

alprazolam
chlordiazepoxide
clonazepam
diazepam
medazepam…

drowsiness
dizziness
lack of coordination result in falls and injuries
hypotension
suppressed breathing
drug abuse…

12. Fill in the blanks in the CVS **medication diagram** below with at least 10 matching active substance names (each field can contain up to 2 names)



CLINICAL SCIENCE IN CARDIORESPIRATORY DISEASES
PULOMONOLOGY

1. What is the orthopnea?
A. A temporary stop of breathing.
B. Breathing 500 ml air with 14-16 respiratory rate
C. A kind of dyspnoe caused by a serious orthopedic problem, like pectus excavatum.
D. A kind of dyspnoe caused by reclining position.
ANSWER:D
2. Equation of transalveolar pressure?
A. $P_{TA} = P_A - P_{pl}$
B. $P_{TA} = P_{pl} - P_A$
C. $P_{TA} = P_A - P_{BS}$
D. $P_{TA} = P_{AO} - P_{pl}$
ANSWER:A

3. What is the midscapular line?
A. A horizontal line drawn at half the distance between superior angle and inferior angle.
B. A vertical line drawn at half the distance between superior angle and inferior angle.
C. A line drawn at half of the spine of the scapule.
D. A vertical line pass through inferior angle, parallel to the spine.
ANSWER:D

4. Due to the function of the upper airways:
A. … the temperature of air is 35C° and the humidity is 100% in the segmental bronchi.
B. … the temperature of air is 37C° and the humidity is 100% in the trachea.
C. … the temperature of air is 37C° and the humidity is 80% in the segmental bronchi.
… the temperature of air is 35C° and the humidity is 100% in the trachea
ANSWER:B

5. What is the function of the pores of Kohn and canals Lambert?
A. Connect the conductive airways so provide the collateral ventilation.
B. Takes it possible the Na and K transport across cell membrane.
C. Connect alveoli and respiratory bronchioles.
Takes it possible the Ca transport across cell membrane.
ANSWER:C

6. The frequency of intrapulmonary percussive ventilation is
A. 25-100 / minute
B. 100-225 / minute
C. 225-300 / minute
D. 300-375 / minute
ANSWER:B

7. In obstructive respiratory disorder
A. The big resistance increases the airflow
B. The big airflow decreases the resistance
C. When pressure difference is constant, an increased flow rate indicates an increased R_{AW}.
D. There is an inverse relation between the resistance and flow
ANSWER:D

8. In restrictive respiratory disorder
A. The decreased lung compliance deteriorate the big chest wall compliance.
B. There is an indirect connection between compliance and volume.
C. The decreased chest compliance deteriorates the big lung compliance.
D. There is a direct relationship between compliance and volume.
ANSWER:D

9. In asthma bronchiale
A. The immediate hypersensitivity reaction that usually subsides in approximately 30-60 minutes, however, airflow obstruction recurs in 1-3 hours.
B. The immediate hypersensitivity reaction that usually subsides in approximately 10-30 minutes, however, airflow obstruction recurs in 1-3 hours.
C. The immediate hypersensitivity reaction that usually subsides in approximately 30-60 minutes, however, airflow obstruction recurs in 3-8 hours.
D. The immediate hypersensitivity reaction that usually subsides in approximately 10-30 minutes, however, airflow obstruction recurs in 3-8 hours.
ANSWER:C

10. Bronchiectasis is a…
A. …restrictive disorder characterize the abnormal, irreversible dilation of the bronchi.
B. …obstructive disorder characterize the abnormal, reversible narrowing of the bronchi.
C. …obstructive disorder characterize the abnormal, reversible dilation of the bronchi.
D. … obstructive disorder characterize the abnormal, irreversible dilation of the bronchi.
ANSWER:D

11. The intrapleural pressure…
A. … is positive in general, and in case of forced inspiration it increases more.
B. … is negative in general, except during forced inspiration, when it may turn to positive.
C. … is negative in general, except during forced expiration, when it may turn to positive.
… is negatíve in general, except during forced expiration, when it may turn to more negative.
ANSWER:C

12. True for pleural effusions…
A. Congestive heart failure may cause transudative effusion
B. Pleuritis is the main cause of pleural effusions
C. In case of empyema there is a viral infection in intrapleural space, which must be drainaged.
D. The ultrasound is the most common method of detecting.
ANSWER:A

13. True in case of pneumothorax
A. The diagnose of PTX is established with CT.
B. Primary spontaneous PTX is very common among obese, old patients with COPD.
C. Secondary spontaneous PTX appears most often slim, young patients.
D. Primary spontaneous PTX in which there is no underlying disease.
ANSWER:D

14. The equation of transairway pressure
A. $P_{TAW} = P_A - P_{AO}$
B. $P_{TAW} = P_{AO} – P_{pl}$
C. $P_{TAW} = P_A - PD_{BS}$
D. $P_{TAW} = P_{AO} - P_A$
ANSWER:D

15. The equation of transpulmonary pressure

A. $P_{TP}= P_A- P_{BS}$

B. $P_{TP}=P_{AO} – P_{BS}$

C. $P_{TP}= P_{AO} - P_{pCl}$

D. $P_{TP}= P_{pl} – P_A$

ANSWER:C

TRUE OR FALSE

1.The pleura produce 20 ml pleural fluid per day .

A. True

B. False

ANSWER: B

2. The function of diaphragm is not excluding condition of the survival.

A. True

B. False

ANSWER: A

CARDIOLOGY

SINGLE CHOICE

16. What is the orthopnea?
A. A temporary stop of breathing.
B. Breathing 500 ml air with 14-16 respiratory rate.
C. A kind of dyspnoe caused by a serious orthopedic problem, like pectus excavatum.
D. A kind of dyspnoe caused by reclining position.
ANSWER: D

17. What is eupnoea?
A. A temporary stop of breathing
B. Breathing 500 ml air with 14-16 respiratory rate per minute
C. Lower than normal respiratory rate
D. Breathing 500 ml air with 12-14 respiratory rate per minute
ANSWER: D

18. Equation of transalveolar pressure?
A. $P_{TA} = P_A - P_{pl}$
B. $P_{TA} = P_{pl} - P_A$
C. $P_{TA} = P_A - P_{BS}$
D. $P_{TA} = P_{AO} - P_{pl}$
ANSWER: A

19. What is the midscapular line?
A. A horizontal line drawn at half the distance between superior angle and inferior angle.
B. A vertical line drawn at half the distance between superior angle and inferior angle.
C. A line drawn at half of the spine of the scapule.
D. A vertical line pass through inferior angle, parallel to the spine.
ANSWER: D

20. Due to the function of the upper airways:
A. … the temperature of air is 35C° and the humidity is 100% in the segmental bronchi.
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C. … the temperature of air is 37C° and the humidity is 80% in the segmental bronchi.
… the temperature of air is 35C° and the humidity is 100% in the trachea. ANSWER: B

21. What is the function of the pores of Kohn and canals Lambert?
A. Connect the conductive airways so provide the collateral ventilation.
B. Takes it possible the Na and K transport across cell membrane.
C. Connect alveoli and respiratory bronchioles.
D. Takes it possible the Ca transport across cell membrane.
ANSWER: C

22. The frequency of intrapulmonary percussive ventilation is
A. 25-100 / minute
B. 100-225 / minute
C. 225-300 / minute
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A. The big resistance increases the airflow
B. The big airflow decreases the resistance
C. When pressure difference is constant, an increased flow rate indicates an increased R_{AW}.
D. There is an inverse relation between the resistance and flow
ANSWER: D

24. In restrictive respiratory disorder
A. The decreased lung compliance deteriorate the big chest wall compliance.
B. There is an indirect connection between compliance and volume.
C. The decreased chest compliance deteriorates the big lung compliance.
D. There is a direct relationship between compliance and volume.
ANSWER: D

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B. The immediate hypersensitivity reaction that usually subsides in approximately 10-30 minutes, however, airflow obstruction recurs in 1-3 hours.
C. The immediate hypersensitivity reaction that usually subsides in approximately 30-60 minutes, however, airflow obstruction recurs in 3-8 hours.
D. The immediate hypersensitivity reaction that usually subsides in approximately 10-30 minutes, however, airflow obstruction recurs in 3-8 hours.
ANSWER: C

26. True in COPD:
A. Gas exchange is impaired in chronic bronchitis at an early stage, whereas in emphysema and AAT deficiency it is only impaired at an advanced stage.
B. In chronic bronchitis, gas exchange deteriorates only at a late stage, whereas in emphysema and AAT deficiency it deteriorates at an early stage.
C. Gas exchange in chronic bronchitis, emphysema and AAT deficiency also deteriorates only at an advanced stage.
D. Gas exchange deteriorates early in chronic bronchitis and remains close to normal in AAT deficiency.
ANSWER: A

27. Bronchiectasis is a…
A. …restrictive disorder characterize the abnormal, irreversible dilation of the bronchi.
B. …obstructive disorder characterize the abnormal, reversible narrowing of the bronchi.
C. …obstructive disorder characterize the abnormal, reversible dilation of the bronchi.
D. … obstructive disorder characterize the abnormal, irreversible dilation of the bronchi.
ANSWER: D

28. The intrapleural pressure…
A. … is positive in general, and in case of forced inspiration it increases more.
B. … is negative in general, except during forced inspiration, when it may turn to positive.
C. … is negative in general, except during forced expiration, when it may turn to positive.
… is negative in general, except during forced expiration, when it may turn to more negative.
ANSWER:C

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A. Congestive heart failure may cause transudative effusion.
B. Pleuritis is the main cause of pleural effusions.
C. In case of empyema there is a viral infection in intrapleural space, which must be drainaged.
D. The ultrasound is the most common method of detecting.
ANSWER: A

30. True in case of pneumothorax (PTX)
A. The diagnose of PTX is established with CT.
B. Primary spontaneous PTX is very common among obese, old patients with COPD.
C. Secondary spontaneous PTX appears most often slim, young patients.
D. Primary spontaneous PTX in which there is no underlying disease.
ANSWER: D
31. True in case of pneumothorax (PTX)
A. The diagnose of PTX is established with CT.
B. Primary spontaneous PTX is very common among obese, old patients with COPD.
C. Secondary spontaneous PTX appears most often slim, young patients.
D. Thoracoscopy is a diagnostic and therapeutic intervention at the same time.
ANSWER: D

32. The equation of transairway pressure
A. $P_{TAW} = P_A - P_{AO}$
B. $P_{TAW} = P_{AO} – P_{pl}$
C. $P_{TAW} = P_A - PD_{BS}$
D. $P_{TAW} = P_{AO} - P_A$
ANSWER: D

33. The equation of transpulmonary pressure
A. $P_{TP} = P_A - P_{BS}$
B. $P_{TP} = P_{AO} – P_{BS}$
C. $P_{TP} = P_{AO} - P_{pCl}$
D. $P_{TP} = P_{pl} – P_A$
ANSWER: C

MULTIPLE CHOICE

1. Which statements are true?
A. The last cartilage ring at the base of the trachea gives the bifurcation, which is the carina.
B. The right main bronchus deviates from the trachea by 20-30 degrees, the left by 45-55 degrees.
C. The inner surface of the trachea is covered by mucous membrane, which is covered by a layer of connective tissue, externally stabilized by C-shaped cartilage rings.
D. Aspiration is more often into the left main bronchus.
ANSWER: A, B

2. It can cause damage to the blood-gas barrier:
A. Pulmonary hypertension > 30 mm Hg due to congestive heart failure.
B. Reduced respiratory volume and airway pressure due to hypertension.
C. Positive pressure ventilation that damages type 2 pneumocytes.
D. Positive pressure ventilation that increases respiratory volume.
ANSWER: A, D

3. True for bronchial asthma:
A. Airway mucosal hyperreactivity in asthmatic patients underlies their symptoms.
B. Airway inflammation is persistent, symptoms are intermittent.
C. In nearly half of patients, 6-8 minutes of intense physical activity provokes bronchospasm.
D. Irreversible obstruction is caused by smooth muscle spasm, hypersecretion and mucosal oedema.
ANSWER: A, B

4. True for PEP mask use:
A. Suitable for both respiratory muscle training and airway clearance.
B. A larger resistance (smaller size) is placed in the inhalatory valve and a smaller resistance (larger size) is placed in the expiratory valve.
C. Exhalation pressures of 10-30 to 80-100 cm of water can be achieved.
D. Not suitable for collateral ventilation.
ANSWER: A, C

5. The oscillating PEP devices...
A. Their primary function is to mobilise the chest by moving large volumes of air.
B. They improve respiratory muscle strength by providing constant resistance.
C. Can be used after inhalation to aid expectoration.
D. Can be used before inhalation to aid expectoration.
ANSWER: C, D

6. Pulmonary rehabilitation...
A. ...does not stop the progression of the disease.
B. ... almost half of its patients have COPD.
C. ... myocarditis is a relative contraindication.
D. ... upper limb training has a major role.
ANSWER: A, D

7. For cough...
A. ...during the irritation phase, an abnormal stimulus provokes the receptors, which, through afferent mediation, triggers a response of the cough centre of the midbrain.
B. ... the compression phase lasts for 0.2 s.
C. ... intrapleural pressure may rise to over 100 mm Hg.
D. there are 3 distinct phases.
ANSWER: B, C

8. Elements of conventional chest physiotherapy
A. Postural drainage
B. Percussion
C. Chest compression
D. PEP
ANSWER: A, B, C

9. On forced exhalation
A. dynamic airway compression occurs peripherally from the equal-pressure point.
B. the dynamic airway compression moves in the direction opposite to the Expiratory flow, towards the periphery.
C. airway collapse occurs.
D. local acceleration of air flow in the moving stenosis occurs.
ANSWER: B, C, D

10. The active cycle of breathing
A. 4 components: huff, thoracic expansion, breathing controll, positioning
B. at the end of chest expansion, collateral ventilation may open.
C. bronchospasm may occur in patients with airway hypersensitivity.
D. 4 components may be repeated in up to 2 rounds.
ANSWER: B, C

11. For mechanically assisted coughing
A. Positive pressure of 30-50 cm of water is maintained for at least 5-6 seconds
B. Negative pressure of 30-50 cm of water is maintained for 2-3 seconds
C. A cycle consists of 5 inhalations and exhalations, repeated at least 5 times
D. Can also be used in case of cardiac instability, but only under pulse and saturation control.
ANSWER: B, C, D

12. Autogenic Drainage
A. tries to avoid airway collapse and bronchospasm by controlled expiration.
B. the velocity of the expiratory flow accelerates exponentially.
C. can be performed in any body position.
D. breaths transfers from inspiratory reserve (IRV) to expiratory reserve (ERV).
ANSWER: A, B

13. Contraindications for Positive Expiratory Pressure
A. Active haemoptysis
B. Haemodynamic instability
C. Nosebleed
D. Chronic sinusitis
ANSWER: A, B, C

14. 4 phases of cough
A. Irritation
B. Exhalation
C. Compression
D. Expulsion
ANSWER: A, C, D

15. Criteria for asthma controll
A. The patient has minimal symptoms the day or night, or is asymptomatic
B. Rarely has exacerbations
C. No or minimal need for beta-2 agonists
D. The disease does not limit exercise capacity
E. PEFR or FEV1 above 60% and less than 10% daily variability
ANSWER: A, B, C, D

TRUE OR FALSE

1.The pleura produce 20 ml pleural fluid per day.
A.True
B.False
ANSWER: B

2. The function of diaphragm is not excluding condition of the survival.
A. True
B. False
ANSWER: A

2. The costophrenic angle in healthy people is 60 degrees.
A. True
B. False
ANSWER: B

3. The apex of the lung is located 1-2 cm above the lateral third of the clavicle.
A. True
B. False
ANSWER: B

4. The horizontal fissure separates the upper and middle lobes on the right side as an infiltration of the visceral pleura.
A. True
B. False
ANSWER: A

5. The pleural fluid, which completely fills the pleural cavity, has the function of reducing friction.
A. True
B. False
ANSWER: B

6. The ventillation is 70% greater at the base than at the apical area.
A. True
B. False
ANSWER: B

8. The transversus has the largest role of the four abdominal muscles in forced exhalation.
A. True
B. False
ANSWER: A
9. The secondary increase in body temperature can be caused by both infectious and non-infectiosus diseases.
A. True
B. False
ANSWER: A
10. A significant increase in pressure and flow is encountered during the use of PEP.
A. True
B. False
ANSWER: B
11. In COPD the supplemental oxygen therapy lasting more than 15 hours no longer improves survival, i.e. 15 hours per day is sufficient.
A. True
B. False
ANSWER: B
12. Pursed lip breathing is used by COPD patients to accelerate expiratory flow.
A. True
B. False
ANSWER: B

13. Jugular venous distention is a symptom of left heart failure.
A. True
B. False
ANSWER: B
14. Massive haemoptysis is more than 300 ml blood in a day.
A. True
B. False
ANSWER: A
15. Increased ventilation due to fever in cardiopulmonary patients may cause respiratory failure.
A. True
B. False
ANSWER: A

CLINICAL SCIENCES OF MUSCULOSKELETAL DISEASES

SINGLE CHOICE

1. In case of toeing of a child with CP
A. Achillotomy is recommended in all cases
B. If the equinus is uncorrectable Achillotomy is recommended
C. If the equinus is overcorrigable with flexed knee, an ankle foot orthosis (AFO) is recommended
D. If the equinus is overcorrigable with extended knees, no treatment is required
ANSWER: C

3. When setting up AFO, the primary is
A. setting the calcaneus
B. setting the calf
C. setting the talus
ANSWER: A

4. In the case of Pes equinovalgus is shorthening:
A. M. peroneus longus
B. M. quadriceps femoris
C. M. tibial anterior
D. M. tibialis posterior
ANSWER: A

5. Following an ankle ligament injury caused by a supination mechanism:
A. positive will be the Q-angle
B. may increase the reaction time of m. peroneus longus
C. instability is in all cases
D. strengthening the m. triceps surae is highlighted
ANSWER: B

6. Disadvantage of endoscopic discectomy
A. access to the surgical area for the surgeon is limited
B. associated with significant muscle destruction
C. higher complication rate
D. higher rate of postoperative scarring
ANSWER: A

7. The Pronator teres syndrome
A. inflammatory disease
B. Tunnel syndrome
C. causes diabetic neuropathy
D. affects n. radialis
ANSWER: B

8. Choose the **wrong** answer. Surrounding structures that affect the functioning of the elbow joint:
A. Painful signs of cervical vertebrae and shoulder girdle joints
B. Dysbalance of the shoulder muscles, especially in rotator cuff
C. Painful signs of lumbar vertebrae
ANSWER: C

9. Pronator teres syndrome: a n. ..... involvement
A. ulnar
B. medianus
C. radialis
ANSWER: B

10. Choose the right answer!! For tennis elbow:
A. ECRB hyperfunction is the key factor
B. ECRL hyperfunction is the key factor
C. FCRB overactivity is the key factor
D. PT overactivity is the key factor
ANSWER: A

11. Test for hand problems
A. Finkelstein
B. Ober
C. Kennedy-Hawkins
D. Drop arm test
ANSWER: A

12. Collagen type I is characteristic in the following tissues/organs
A. Skin, bone, tendon, cartilage
B. placenta
C. kidney
D. liver, lungs
ANSWER: A

13. Effect of immobilization on muscle:
A. Fibre composition does not change
B. Motoneuronic activity increases
C. Excitability increases
D. Voluntary contraction force decreases
ANSWER: D

14. The type of cartilage found in areas exposed to high deformation:
A. flexible
B. fibrous
C. hyalin
ANSWER: A

15. The effect of immobilization on synovial fluid
A. Decrease in hyaluron content
B. Viscosity increases
C. The number of macrophages increases
ANSWER: A

16. Choose the correct statement:
A. In any position of the ankle, in order to establish mechanical balance, there are several tight ligaments
B. In any position of the ankle, in order to establish mechanical balance, there are two tight ligaments
C. In any position of the ankle, in order to establish mechanical balance, there is one tight ligament
ANSWER: A

17. In the remodeling phase of ligament healing
A. Revascularization begins
B. Scar tissue is strengthened
C. Scar tissue is located in the direction of tension
ANSWER: C

18. After an anterior cruciate ligament surgery to protect the graft in the maximum protection phase:
A. avoid active knee extension in an open kinematic chain
B. we fix in 0º the knee joint using an orthosis
C. relieve the knee for 6 weeks
D. avoid active knee reflex in an open chain
ANSWER: A

19. In case of posterior cruciate ligament injury, avoid during the maximum protection phase
A. Open kinematic chain Quadriceps Exercise
B. Open kinematic chain Hamstring Exercise
C. Closed kinematic chain Quadriceps exercise
D. Full extension ROM
ANSWER: B

20. Knee joint ligament replacement ……..is not recommended graft type
A. Hamstring tendon
B. Plastic ligament
C. Patellar tendon
ANSWER: B

21. Typical symptom in case of anterior knee pain
A. Reduction of ROM
B. Pain after prolonged sitting with bent knee
C. Feeling of instability
D. Hamstring weakness
ANSWER: B

22. In case of anterior knee pain, initially
A. We performed closed kinematic chain exercises up to the pain limit
B. We perform open kinematic chain exercises up to the pain limit
ANSWER: B

23. Abnormal tibiofemoral arthrokinematic movements occur, during which cartilage damage occurs on the loading surface in the first step, the patient does not feel it. This is the:
A. Macroinstability
B. Microinstability
C. Pseudoinstability
ANSWER: B

24. Handball player's landing after jumping up creates a hip adduction. Based on the mechanism of stabilization of the knee, this refers to:
A. Limb dominance
B. Quadriceps dominance
C. Hamstring's dominance
D. Ligament dominance
ANSWER: D

25. When a volleyball player lands after jumping up, the ROM of the knee is small. Based on the mechanism of stabilization of the knee, this refers to:
A. Limb dominance
B. Quadriceps dominance
C. Hamstring's dominance
D. Ligament dominance
ANSWER: B

26. Handball player's asymmetrical lands after jumping up. Based on the mechanism of stabilization of the knee, this refers to:
A. Limb dominance
B. Quadriceps dominance
C. Hamstring's dominance
D. Ligament dominance
ANSWER: A

27. The double-bundle anterior cruciate ligament replacement
A. provides rotational stability
B. provides flexion stability
C. surgents use BTB graft
ANSWER:A

28. For posterior cruciate ligament injury:
A. quadriceps on the affected side are activated earlier
B. gastrocnemies on the affected side are activated later
C. hamstring on the affected side is activated earlier
ANSWER: A

29. In case of isolated LCL injury
A. posterior translation of the tibia increases
B. the tibia varus translation increases
C. tibia anterior translation increases
ANSWER: B

30. The compression force in the patellofemoral joint is greater:
A. down stairs
B. up stairs
ANSWER: A

31. In the case of a pronated leg, on which side increase compression forces in the patellofemoral joint?
A. medial
B. lateral
ANSWER: B

32. After a medial menisectomy, which direction of torque increases?
A. adduction
B. abduction
C. flexion
D. extension
ANSWER: A

33. In case of pain after prolonged sitting, when starting walk, after a longer distance, when walking on stairs, we think first of all about the
A. patellofemoral joint problem
B. superior tibiofibular joint problem
C. tibiofemoral joint problem
ANSWER: C

34. In the shoulder joint, the coronal force pair consists of:
A. M. deltoideus – m. supraspinatus
B. M. deltoideus – m. infraspinatus
C. M. biceps brachii – m. teres minor
D. M. subscapularis – m. infraspinatus
ANSWER: A

35. The test to be performed in case of suspicion of subacromial impingement is the painful arch test. Where does the patient feel pain?
A. From 45/60 to 120/145 degrees
B. 0 to 45 degrees
C. From 135 to 180 degrees
ANSWER: A

37. In the case of subacromial impingement, the
A. the acromion collides with the tub. majus
B. acromion collides with tub. minus
C. the proc. coracoideus collides with the tub. minus
D. the proc. coracoideus collides with the tub. majus
ANSWER: A

38. The process of formation of subacromial impingement
A. tendinosis — bursitis – CA ligament abnormalities – cranial instability
B. tendinosis – cranial instability – bursitis – CA ligament abnormalities
C. cranial instability tendinosis — bursitis – CA ligament abnormalities
D. tendinosis – cranial instability– CA ligament abnormalities– bursitis
ANSWER: A

39. The process of rupture of the ROK: Impingement - …….. - partial rupture – complete rupture
A. Paralysis
B. Bursitis
C. Ankylosis
D. Arthrosis
ANSWER: B

40. …… does not refer to rotator cuff rupture:
A. Wrist pain
B. Pain under m. deltoideus
C. Shoulder pain
ANSWER: A

42. In the case of rotator cuff rupture, primary
A. strengthening m. deltoideus
B. strengthening the scapular stabilizers
C. strengthening of m. pectoralis major
ANSWER: B

43. In case of rotator cuff rupture, date of surgery:
A. with a limited range of motion, surgery is recommended immediately so as not to get worse
B. in case of limited range of motion, it is recommended to increase the range of motion before surgery
ANSWER: B

44. Open rotator cuff surgery
A. allows for good reconstruction
B. does not affect m. deltoideus
C. modern
ANSWER: A

45. Rotator cuff surgery with an arthroscope
A. Does not spare m. deltoideus
B. Only the rotator cuff suture can be performed
C. Less postoperative pain
ANSWER: C

46. Recurrent shoulder luxation after the first shoulder luxation are **most** common
A. Ages 10 and up
B. Over 40 years of age
C. Under 10 years old
D. Over 70 years old
ANSWER: C

47. In case of a shoulder luxation, there is a high chance of injury of the ROK
A. In children
B. In young adults
C. In older people
ANSWER: C

48. The Hill-Sacks lesion:
A. is the rupture of the joint capsule
B. is the head of the humerus is affected
C. is the rotator cuff tear type
D. is the rupture of the coracoacromial ligament
ANSWER: B

49. The primary form of treatment for multi-directional instability is:
A. sonophoresis
B. development of neuromuscular control
C. surgery
D. manual therapy
ANSWER: B

50. Patient with reverse prosthesis
A. can't rotate
B. can't flect
C. can't abduct
ANSWER: A

MULTIPLE CHOICE

1. Not typical for Pes equinovarus-adductus
A. Shortening of the m. popliteus
B. Shortening of the m. adductor magnus
C. Shortening of the tibial posterior
D. Shortening of the m. peroneus longus
ANSWER: C

2. What are the supporting surfaces for an Ankle-foot (AFO) orthosis?
A. Heel part
B. Over ankle
C. Tibia's edge
D. Top of the shank
ANSWER: A, B, C

3. Dupuytren contract is **not** characterized by:
A. Disease of men
B. Disease of women
C. Treatment with iontophoresis
D. Does not give recurrence
ANSWER: B, D

4. Characteristic of carpal tunnel syndrome:
A. always positive sensory symptoms first: painful night numbness of the hand, arm pain
B. the dominant hand is usually affected first, but most of the time is bilateral
C. in advanced cases, thenar atrophy and weakness of the thumb are observed
D. no loss of sensation
ANSWER: A, B, C

5. **Un**characteristic for cartilage tissue
A. Good blood supply
B. Contains pressure receptors
C. Fast metabolism
D. Feeds via diffusion
ANSWER: A, B, C

6. Characteristic in proliferative stage of healing after a ligament injury
A. Appearance of precursor cells
B. Phagocytosis of damaged fibers occurs
C. Fibroblast proliferation – fibrogenesis
D. Revascularization begins
ANSWER: D

7. After posterior cruciate ligament injury:
A. The number of collagen fibers in the anterior cruciate ligament decreases
B. No change occurs in proprioception
C. Load on injured limb decreases
D. There is a significant change in kinematics
ANSWER: A, C

8. Examination for use in the diagnosis of subacromial impingent
A. UH
B. Scintigraphy
C. Painful arc test
D. Simmonds Test
ANSWER: A, C

9. After rotator cuff surgery with an arthroscope
A. Until week 9, the shoulder is fixed
B. self-assisted exercises from day one up to 90 degrees
C. By the 6th day, the shoulder is fixed
D. self-assisted exercises from day one to the pain limit
ANSWER: D

10. From day one, assisted exercises can be started:
A. In case of Latarjet surgery
B. In case of subacromial debridement
C. Tossy III AC sprain after tape fixation
ANSWER: A, B

11. Test for shoulder problems
A. Kennedy-Hawkins Test
B. FADIR Test
C. Drop arm
D. SLUMP
ANSWER: A, C

12. Which is not a static stabilizer?
A. glenohumeral articular capsule
B. m. infraspinatus
C. coracohumeral ligament
D. m. biceps long head
ANSWER: B, D

13. Stability, elasticity of the spine is provided by:
A. ligaments
B. muscles
C. bones
D. cartilage
ANSWER: A, B

14. The curvatures of the spine determine:
A. the form of the human body
B. the characteristic body posture
C. the load capacity of the bones
D. the elasticity of fascias
ANSWER: A, B

15. The main functional components of the vertebral body are:
A. weight bearing function
B. conducting movements
C. restriction of movements
ANSWER: A, B

16. Components of the motor control of the cervical and lumbar spine:
A. segmental stabilization
B. global stabilisation
C. monosegmental mobilization
ANSWER: A, B

17. Pains of cervical spine origin:
A. Upper part – occiput – C2 □ neck headache
B. middle part – C2 – 5 □small joints tension or jerking
C. lower part – C5-7 □discus degeneration, nerve root pressure
ANSWER: A, B, C

18. The thoracic spine :
A. member of the kinematic chain formed by the neck-shoulder-shoulder girdle- back-chest-lumbar spine section.
B. determinant of inhalation-exhalation
C. determinant of shoulder girdle and scapula movements
ANSWER: A, B, C

19. Simple pain caused by impaired mobility of the cervical spine can be purposefully treated:
A. by mobilization
B. by manipulation
C. with movement therapy
D. with attachment
ANSWER: A, B, C

20. In case of spinal damage, which condition assessment scale and/or point system can be used preferably:
A. Frankel scale
B. Russek scale
C. Oswestry's Low Back Pain Score/Disability Questionnaire
D. FIM scale
ANSWER: A, C

TRUE OR FALSE

1. Multidirectional shoulder instability is always associated with generalized hypermobility.

A. True
B. False

ANSWER: B

2. Determining the time of return to sports can be carried out according to the DAVIS algorithm. If the recreational athlete's measured tibia anterior translation is physiological, it can return to:

A. True
B. False

ANSWER: B

3. The m. subscapularis and m. infraspinatus/m. teres minor form pair of forces.

A. True
B. False

ANSWER: A

3. All rotator cuff tears require surgery

A. True
B. False

ANSWER: B

4. In the acute stage of anterior knee pain, we start with closed kinematic chain exercises, and after that we introduce open chain exercises.

A. True
B. False

ANSWER: B

5. In case of femoroacetabularis impingement, a FAKIR test is performed.

A. True
B. False

ANSWER: B

6. Reverse shoulder arthroplasty for patients with rotator cuff deficits is not recommended.

A. True
B. False

ANSWER: A

7. In the granulation phase of spontaneous fracture healing, a haematoma is formed between the broken ends.

A. True
B. False

ANSWER: B

8. The evolutionary background of degenerative lesions of the spine is adaptation to tree climbing.
A. True
B. False
ANSWER: B

9. The consequence of walking on two legs is a change in the shape of the pelvis.
A. True
B. False
ANSWER: A

10. The consequence of walking on two legs is the decentralization and narrowing of the pelvis.
A. True
B. False
ANSWER: B

11. The spine provides stabilization by vegetative control.
A. True
B. False
ANSWER: B

12. Discus intervertebralis is characterized by low resistance to compression forces.
A. True
B. False
ANSWER: B

13. Motor control, the condition for the effective functioning of the muscles in the cervical and lumbar spine section is the correct recruiting of the muscles.
A. True
B. False
ANSWER: A

14. Prevention of musculoskeletal spine disorders can only be started in adulthood.
A. True
B. False
ANSWER: B

NEUROLOGY

SINGLE CHOICE

1. How could you maximize the effectiveness of physical therapy training?
A. Perform training activities only one postural orientation.
B. Create activities that are not repetitive without progression in difficulty.
C. Do the training in the gravitational positions that stimulate the best performance.
D. Integrate training activities across one sensory modality.
ANSWER: C

2. What is the Souques sign?
A. Finger flexion on the involved side of a hemiplegic patient when the extremity is raised to a position above 90º of shoulder flexion or abduction.
B. Fan-shaped finger extension on the involved side of a hemiplegic patient when the extremity is raised to a position above 120° shoulder flexion or abduction.
C. Finger flexion on the involved side of a hemiplegic patient when the extremity is raised to a position above 10º of shoulder extension or adduction.
D. Fan-shaped finger extension on the involved side of a hemiplegic patient when the extremity is raised to a position above 90º of shoulder flexion or abduction.
ANSWER: D

3. What could occur after several concussions when shearing forces happen in the brain?
A. Nothing
B. Countercoup lesion
C. Disruption of the synapses.
D. Coup lesion.
ANSWER: C

4. What is the best initial strategy to assist the patient with right cerebrovascular accident in compensating homonymous hemianopia?
A. Provide constant reminders, printed notes on the left side.
B. Place items on the left side.
C. Teach the patient to turn the head to the left side.
D. Talk to the patient from the left side.
ANSWER: C

5. How would you strengthen functionally the hip and knee flexors in right hemiparesis?
A. Bridging.
B. Sitting on physio ball, alternating lateral side steps and back to neutral.
C. Forward step-ups in standing, using graduated height steps.
D. Pushing backwards while sitting in wheelchair.
ANSWER: C

6. Which intervention would be the most beneficial for patient with Parkinson, who demonstrates festinating gait?
A. Locomotor training using a rolling walker.
B. Body weight supported treadmill training.
C. Standing and reaching with body weight supported harness.
D. Scooting.
ANSWER: B

7. Patient after right cerebrovascular accident reports being thirsty. The PT gives the patient a soda can and instructs how to open the can. The patient cannot complete the task. Later, when the PT goes back to the room, the patient drinks from the can. What is the possible primary deficit in this case?
A. Ideational apraxia.
B. Unilateral neglect.
C. Pusher syndrome.
D. Ideomotor apraxia.
ANSWER: D

8. Patient with right hemiparesis has sulcus sign of the right shoulder. What is contraindicated in this case?
A. Traction.
B. Approximation.
C. Scapula indirect mobilization.
D. Shoulder flexion and external rotation with extended elbow above the head.
ANSWER: A

9. A patient demonstrates weakness when rotating the head to one side, also weakness while flexing the head laterally and forward at the same time. What is the possible reason of this?
A. Lesion of motor portion of the facial nerve.
B. Lesion of spinal nerve root of accessory nerve on the contralateral side.
C. Lesion of spinal nerve root of accessory nerve on the same side.
D. Lesion of motor portion of the hypoglossal nerve.
ANSWER: B

10. Elderly patient assessed for fall risk. The timed up and go test (TUG) score is 35 seconds. Based on this result what is the patient's fall risk?
A. High.
B. Low.
C. Moderate.
D. No risk.
ANSWER: A

11. During a sensory examination the patient complaints of a dull pain and cannot discriminate a stimulus as sharp or dull. Vibration and 2-point discrimination is absent. Which pathway is intact in this case?
A. Anterior spinothalamic pathway.
B. Lateral spinothalamic pathway.
C. Dorsal columns system
D. Medial lemniscus.
ANSWER: A

12. What are the expected impairments of a patient with basal ganglia damage?
A. Impaired sensory organization of balance.
B. Impaired motor planning.
C. Muscle hypertonicity.
D. Hyperreflexia.
ANSWER: B

13. What should a PT initially teach to a postpolio patient?
A. Energy conservation techniques.
B. High intensity resistance training.
C. Aerobic exercises in waist high water.
D. Cycle ergometry 4 times a weak for 60 minutes.
ANSWER: A

14. What is the weaning prerequisite after a C5 spinal cord injury?
A. 100 mL of tidal volume.
B. 200 mL of tidal volume.
C. 300 mL of tidal volume.
D. 500 mL of tidal volume.
ANSWER: C

MULTIPLE CHOICE

1. How can you measure clinically the changes in neural adaptation in terms of improvement in function?
A. Balance and postural control.
B. Sensory discrimination.
C. Achievement of developmental milestones.
D. Rhythm and timing of movements.
ANSWER: A, B, C, D

2. What kind of techniques can be used to heighten postural righting?
A. Prone over ball: rapid acceleration forward.
B. Weight shifting in kneeling, half-kneeling, or standing.
C. Slow rocking in rocking chair.
D. Do activities with eyes closed.
ANSWER: A, B, D

3. What is the "ideal" procedure for effectively and efficiently using functional training as a treatment intervention?
A. Avoid activities that can be too difficult and elicit compensation strategies.
B. Choose functional activities that are necessary for the patient to get independence before being discharged.
C. Environment should not be modified during practice.
D. Identify and emphasize the patient's strength.
ANSWER: A, B, D

4. What kind of treatment alternatives can be used to change the proprioceptive muscle spindle system?
A. Quick stretch to agonist muscles.
B. Ultrasound.
C. Tapping the tendon and muscle belly.
D. Icing.
ANSWER: A, C

5. What kind of possible treatment approaches focus on the joint receptors?
A. Manual traction.
B. Positions which eliminate gravity.
C. Weight belts, shoulder harnesses to increase approximation.
D. Wrist and ankle weights to increase traction.
ANSWER: A, C, D

6. Which techniques can provide combined proprioceptive input?
A. Manual resistance.
B. PNF patterns.
C. Jamming.
D. Extreme stretch.
ANSWER: B, C

7. Which treatment procedures use the exteroceptive/cutaneous sensory system?
A. Quick phasic withdrawal using cold and light touch.
B. Maintained pressure.
C. Prolonged icing.
D. Wall pulleys.
ANSWER: A, B, C

8. Which would be considered as viable vestibular treatment modality?
A. Horizontal movements
B. Spinning acceleration
C. Vertical movements
D. Forward-backward movements
ANSWER: A, C, D

9. Which vestibular treatment could decrease extensor muscle hypertonicity with intact sensory system?
A. Constant, slow, repetitive rocking pattern in sitting.
B. Constant, high, spinning in supine.
C. Constant, slow, repetitive rocking pattern in supine.
D. Slow, repetitive rocking pattern in side lying.
ANSWER: A, C, D

10. Which treatment modalities produce parasympathetic or decreased sympathetic response?
A. Slow, continuous stroking for 3-5 minutes over the paravertebral area of the spine.
B. Inversion.
C. Maitland's grade II movements
D. Prolonged icing.
ANSWERS: A, B, C

11. Which of the followings could be affected by odor?
A. Arousal.
B. Level of consciousness.
C. Tonal patterns.
D. Emotional level
ANSWERS: A, B, C, D

12. Which of the followings belong to the primary taste sensations?
A. Salty.
B. Bittersweet.
C. Sour.
D. Spicy.
ANSWERS: A, C

13. When could visual system be used effectively as a compensatory input system in neurological impairment?
A. Impaired muscle strength.
B. Impaired proprioception.
C. Impaired muscle tone.
D. Impaired vestibular system.
ANSWERS: B, C

14. In neurolinguistic theory, which would be clinically relevant for improving activities of a right-handed patient?
A. If gazing right and down always leads to motor success means the patient uses kinesthetics (tactile and emotion) motor planning, therefore it should be encouraged.
B. If a patient looks down at the feet during ambulation the reason may be accessing the motor cortex to gain better motor function, therefore it should be encouraged in the beginning.
C. If the patient is asked to visualize the movement before and during activity, the eyes usually gaze up to the left or to the right, because of the visual construct or remembered images, which posturally correct the position of the head.
D. If the patient is asked to walk, while visualizing the movement, the posture would be more upright and efficient.
ANSWERS: A, B, C, D

15. What are the characteristics of a patient with ALS in phase I, stage 3?
A. Difficulty climbing stairs.
B. Able to preform ADLs, but fatigues easily
C. Severe selective weakness in ankles, wrists and hands.
D. Slightly increased respiratory effort.
ANSWERS: C, D

16. What are the recommendations for ALS patients to maintain and improve muscle strength in phase I, stages 1-3?
A. Six maximal isometric contractions held for 6 seconds.
B. Six maximal isometric contractions held for 20 seconds.
C. Isotonic elastic band exercises at submaximal level.
D. Exercise all muscle group once a day for longer period of time.
ANSWERS: A, C

17. What are the possible treatments for patient with Guillain-Barré Syndrome, when there are palpable muscle activities in the neck, trunk, and proximal parts of the limbs?
A. Chest stretching, breathing exercises.
B. Gravity eliminated exercises using suspension slings.
C. Tilt table standing program to increase tolerance to upright position.
D. Strenuous physical exercise of the limbs.
ANSWERS: A, B, C

18. What are the clinical presentations of the Guillain-Barré Syndrome?
A. Symmetrical ascending progressive loss of motor function.
B. Asymmetrical descending progressive loss of motor function.
C. Flaccid paralysis.
D. Spastic paresis.
ANSWERS: A, C

19. What are the goals of intervention in Guillain-Barré syndrome?
A. Minimize pain.
B. Prevent contractures, decubitus, and injury to the denervated muscles.
C. Initiate active exercises when muscle activities are palpable, while monitoring overuse and fatigue.
D. ROM program, splinting and positioning when no active contractions present.
ANSWERS: A, B, C, D

20. What are the possible behavioral changes after traumatic brain injury?
A. Uncontrolled anger
B. Full cooperation.
C. Inappropriate sexual behavior.
D. Impulsiveness.
ANSWERS: A, C, D

21. What are the symptoms of increased intracranial pressure?
A. Altered vital signs.
B. Vomiting.
C. Ipsilateral dilatation of pupil.
D. Fever
ANSWERS: A, B, C

22. What are the predictors of poor outcome after traumatic brain injury?
A. Low initial GCS score.
B. Lower educational level.
C. Longer periods of post traumatic amnesia
D. Contractures.
ANSWERS: A, B, C

23. What are the possible PT management based on decreased response levels after traumatic brain injury?
A. Provide sensory stimulation for arousal to elicit movement.
B. Upright positioning for improved arousal.
C. Maintain ROM, prevent contracture development.
D. Use prolonged icing for treatment of heterotrophic ossification.
ANSWERS: A, B, C

24. What are the possible PT management based on mid-level recovery after traumatic brain injury?
A. Provide structure, prevent overstimulation for confused, agitated patient.
B. Engage the patient in task-specific training: limit activities to familiar, well-liked ones, offer options.
C. ADLs in real life environments.
D. Provide verbal or physical assistance
ANSWERS: A, B, D

25. When should the weaning be discontinued after cervical spinal cord injury?
A. Respirations increased to 30/min
B. oxygen saturation <92% with a supplemental oxygen level 20% higher than baseline
C. Heart rate is above 150 beats/min or below 50 beats/min.
D. Oxygen saturation below 95% with a supplemental oxygen 6L/min.
ANSWERS: A, B, C

26. Why do people with SCI often develop secondary neuromuscular problems of the upper extremity?
A. Weight-bearing upon the extended wrist during transfers.
B. Pressure during wheelchair propulsion
C. Obesity.
D. Electric wheelchair usage.
ANSWERS: A, B, C

27. What are the signs of a hyperkinetic disorder?
A. chorea
B. athetosis
C. ballism
D. dystonia
ANSWERS: A, B, C, D

28. Which tests are part of the static balance tests?
A. Tandem stance
B. Functional reach test
C. Timed up and go.
D. BEST test
ANSWERS: A, B

29. What are the signs of demyelination in multiple sclerosis?
A. Loss of saltatory conduction
B. Inefficient conduction or conduction block
C. Abnormal evoked response potentials
D. Normal evoked potentials.
ANSWERS: A, B, C

30. What are the typical signs after anterior cerebral artery occlusion?
A. Contralateral weakness and sensory loss primarily in the lower extremity.
B. Contralateral sensory loss and weakness in the face and upper extremity.
C. Perceptual deficits, unilateral neglect, depth perception, spatial relations, agnosia.
D. Apraxia, problems with imitation and bimanual tasks.
ANSWERS: A, D

TRUE OR FALSE

1. The connections of the auditory pathway to the cerebellum could affect the regulation of the muscle tone.
A. True
B. False
ANSWER: A

2. The auditory feedback system has regulatory mechanism between internal and external homeostasis.
A. True.
B. False.
ANSWER: A

3. The large, fast-conducting fibers of the optic nerve play role in reflexive activity of the eyes.
A. True
B. False.
ANSWER: B

4. Reducing the visual stimuli within the external space of a TBI patient can reduce distractibility, hyperactivity and emotional tone.
A. True
B. False
ANSWER: A

5. In “pusher syndrome” (while relearning verticality) would be a proper treatment approach to teach the patient to attend to vestibular-proprioceptive cues, while vision is occluded in order to re-establish orientation.
A. True
B. False
ANSWER: A

6. Firm packs surrounding a very restless patient after traumatic brain injury will calm down the patient.
A. True.
B. False.
ANSWER: A

7. In case of autonomic dysreflexia in SCI, vasodilatation occur below the level of injury.
A. True.
B. False.
ANSWER: B

8. Functional electrical stimulation has been shown to effectively increase blood pressure after SCI above Th6, likely through an artificially induced sympathetic response.
A. True.
B. False.
ANSWER: A

9. Spinal cord injury can affect male and female fertility.
A. True.
B. False.
ANSWER: B

10. In case of deep vein thrombosis, assisted coughing by thrusting under the diaphragm can cause damage to, or migration of, an inferior vena cava filter.
A. True.
B. False
ANSWER: A

SCIENTIFIC BACKGROUND AND PRACTICE OF ACTIVE MOVEMENT THERAPY METHODS

SINGLE CHOICE

1. Passing the weight line with correct posture:
A. On the body of the lumbar vertebrae
B. On the body of the dorsal vertebrae
C. Behind the hip joint
D. In front of the cervical vertebrae
ANSWER: A

2. How is the regular position of the legs determined?
A. Legged “A”, standing with legs spread
B. Parallel position (4-5 cm)
C. Heels together
D. Fully closed position
ANSWER: B

3. How does the position of the pelvis change with a lordotic back?
A. Tilted forward
B. Tilted backwards
C. Straightens out
D. Rotates
ANSWER. A

4. How does the position of the head change in relation to the correct posture, for a convex back?
A. Forwarded
B. Straight continuation of the cervical spine
C. Positioned backwards
D. No change
ANSWER: A

5. What is the specified angle of pelvic tilt for correct posture?
A. 40°
B. 60°-65°
C. 20°
D. 45°-50°
ANSWER: B

6. During running
A. Double support is shortened
B. No double support
C. Single support is longer
D. Increased stride width
ANSWER: B

7. Which is not a sub-phase of the supported phase?
A. Stepping off the ground
B. Shortening
C. Rolling
D. Load response
ANSWER: B

8. During walking:
A. alternate between dual support and flight phase
B. no dual support
C. single support and dual support alternate
D. the support phase is shorter than the swing phase
ANSWER: C

9. During walking,
A. single support and swing phase alternate
B. no single support
C. the support phase and the swing phase alternate
D. the swing phase and the heel support alternate
ANSWER: C

10. What is the step cycle?
A. The total period of movement of an extremity: from the heel strike of the extremity to the next heel strike
B. Lasts from the heel strike of one extremity to the heel strike of the other extremity
C. The full range of motion of both extremities: from the kick-off of one leg to the heel strike of the other leg
D. The full range of motion of both extremities: from heel strike of one leg to kick-off of the other leg
ANSWER: A

11. Which is the sub-phase of the swing phase?
A. Stepping off the ground
B. Shortening
C. Rolling
D. Load response
ANSWER: B

12. Which of the following tests is suitable for the semi-objective assessment of children's postural weakness?
A. Matthiass
B. Fukuda
C. Flamingo
D. Romberg
ANSWER. A

13. Which of the following is not a pelvic floor dysfunction?
A. rectocele
B. vaginal dryness
C. descensus uteri
D. faecal incontinence
ANSWER: B

14. Which of the following is a functional impairment of the pelvic floor?
A. obstipation
B. vaginal dryness
C. descensus uteri
D. erection
ANSWER: C

15. Choose the false statement
A. Urgency/Urge incontinence, involuntary loss of urine associated with a very strong urge to urinate
B. In stress incontinence, urinary leakage occurs when intravesical pressure exceeds the maximum urethral closing pressure
C. In cases of overflow incontinence, gait training is the primary therapy
D. In reflexincontinence, the patient feels no urge to urinate
ANSWER: C

16. Choose the true statement
A. Urge/Urge incontinence is involuntary urinary leakage associated with a very strong urge to urinate
B. Stress incontinence is a common problem in men
C. Overflow incontinence is more common in women
D. In reflex incontinence, the patient has a strong urge to urinate
ANSWER. A

17. The collective name for the deep layer of the pelvic floor:
A. Genital plexus
B. Centrum tendineum
C. Diaphragma urogenitale
D. M. Levator ani
ANSWER: D

18. Where do the gait muscles get their innervation from?
A. Lumbar plexus (L1-L4)
B. Lumbar plexus (L2-L5)
C. Sacral plexus (S2-S3)
D. Sacral plexus (L4-S4)
ANSWER: D

19. Which is not a function of the pelvic floor?
A. Underpinning support
B. Sphincter functions
C. Birth canal formation
D. Erection
ANSWER: D

20. Which type of incontinence is most common in women?
A. Stress
B. Distress/urge
C. overflow
D. reflex
ANSWER: A

21. Which incontinence is most common in men?
A. Stress
B. Emergency/urge
C. overflow
D. reflex
ANSWER: C

22. Which type of incontinence can be most effectively treated/cured by pelvic floor exercises?
A. Stress
B. Emergency/urge
C. overflow
D. reflex
ANSWER. A

23. Which type of incontinence cannot be treated/cured by pelvic floor exercises?
A. stress
B. urge/urge
C. overflow
D. none, we can cure all of them
ANSWER: C

24. Rank the systems for measuring spine shape in order of accuracy from least to most accurate:
A. Somatoinfra imaging, UH measurement based on scanning of the processus spinosus, CT
B. CT, somatoscopy, UH measurement based on scanning of the processus spinosus
C. Somatoinfra image, CT, UH measurement based on scanning of processus spinosus
D. UH measurement based on scanning of the processus spinosus, Somatoinfra scan, CT
ANSWER. A

25. Relationship between plantar pressure distribution and spine position:
A. Greater anterior plantar pressure indicates increased lumbar lordosis
B. Greater posterior plantar pressure indicates straightened lordosis
C. Greater anterior plantar pressure may indicate a protrusion of the whole trunk
D. Increased pressure in the posterior part of the sole may indicate increased dorsal kyphosis
ANSWER: C

26. What is balneotherapy?
A. Aquatic movement therapy
B. Cold-bath fever relief
C. Treatment with medicinal waters
D. Hot water compresses
ANSWER: C

27. Which method does not belong to hydrotherapies?
A. Subaqual physiotherapy
B. Weight bath
C. Compresses
D. Dead sea mud treatment
ANSWER : D

28. What is the recommended water temperature for aerobic aqua fitness?
A. 26-28 Cº
B. 24-26 Cº
C. 34-36 Cº
D. 30-32 Cº
ANSWER: A

29. Which answer is false?
A. Hydrostatic pressure increases excretion
B. Buoyancy can unbalance, allowing equilibrium to develop
C. Hydrostatic pressure increases lower limb oedema
D. Buoyancy allows for easier movement
ANSWER: C

30. What is the recommended temperature of water for muscle strengthening training?
A. 32-34 Cº
B. 36-38 Cº
C. 24-26 Cº
D. 28-30 Cº
ANSWER: D

31. What is the temperature of water of indifferent temperature?
A. 28-32 Cº
B. 36-38 Cº
C. 32-34 Cº
D. 34-36 Cº
ANSWER: D

32. What is called a bath reaction?
A. A bath reaction may occur on days 2-4 of bathing, with characteristically elevated lab values that do not decrease with rest.
B. A reaction on days 2 to 4 of bathing with an increase in clinical signs, which resolves as bathing progresses.
C. May occur on days 4 to 8 of bathing, with elevated laboratory values and increasing clinical signs, which may require definitive discontinuation of treatment.
D. May occur on days 4 to 8 of bathing, with increasing clinical signs and elevated laboratory values, which resolve after a few days of rest.
RESPONSE: D

33. In the second phase of the Halliwick method, rotational control is initiated in which body position?
A. In the upright position.
B. In a horizontal body position using floats.
C. In a horizontal body position without floats, with manual assistance from the therapist.
D. Depending on the patient's condition, determined by the therapist based on functional diagnosis.
ANSWER. A

34. What is true of the Halliwick method?
A. It aims to create the most active and independent movement possible in the aquatic medium.
B. The facilitation of uplift reactions is initially accomplished using floats.
C. During therapy, finding and maintaining balance is a psycho-sensory-motor learning process.
D. Because of the psycho-sensory-motor learning process, the Halliwick Method is a method for children only, based on the 10 Point Program.
ANSWER: C

35. What is the relative contraindication for aqua therapy?
A. Acute febrile state
B. Epilepsy
C. Coronary artery disease with resting angina
D. Incontinence urinea et alvi
ANSWER: D

36. What is the absolute contraindication for aquatherapy?
A. Acute febrile state
B. Epilepsy
C. Coronary artery disease with resting stenocardia
D. Incontinence urinea et alvi
ANSWER: C

37. What is medicinal water?
A. Water that springs up naturally
B. Hot water used for healing by experience
C. Mineral water with proven curative properties
D. Thermal water with medicinal properties
ANSWER: C

38. Specific to Aquafitness:
A. 36° water is the most ideal for aquafitness
B. Aquafitness should only be practised by healthy people
C. Aquafitness does not require swimming skills
D. Aquafitness is contraindicated in older age
ANSWER: C

39. Which of the following is not an aquatic relaxation technique?
A. Aqua step
B. Ai Chi
C. Jahara
D. Watsu
ANSWER. A

40. Which of the following is not true of the Aquawallgym technique?
A. The device can be used to perform sport-specific movements
B. In the long term, it promotes a decrease in muscle tone
C. Hungarian development
D. A portable shallow and deep water "gym machine"
ANSWER: B

41. What is the Aquanatal programme?
A. An aerobic exercise in water
B. A complex aquatic exercise method that incorporates elements of yoga, gymnastics, oriental dance, meditation and gait training.
C. It means giving birth in water
D. Swimming for postnatal rehabilitation
ANSWER: B

42. What are the effects of the Aquanatal programme?
A. It helps to keep the pregnant woman fit and prepare for childbirth mentally, psychologically and physically.
B. Reduces urinary tract infections during pregnancy
C. Helps with singleton labour
D. Helps the baby to learn to swim
ANSWER:A

43. For soft tissue mobilisation techniques using direct pressure, what is the critical pressure value for nerve tissue?
A. 50 Hgmm
B. 10 Hgmm
C. 30 Hgmm
D. 100 Hgmm
ANSWER: C

MULTIPLE CHOICE

1. Which of the following are the muscles that are prone to shrinkage?
A. M. iliopsoas
B. M. pectoralis maior
C. M. gluteus maximus
ANSWER: A, B

2. Which of the following are the muscles that tend to weaken?
A. Upper musculus trapesius
B. Middle musculus trapesius
C. Lower part of musculus trapesius
ANSWER: B, C

3. Which muscles pull the pelvis upwards in the sagittal plane (looking at the pelvis from the side)?
A. dorsally, bilateral erector spinae muscles, quadratus lumborum muscles
B. from the front, bilateral m. obliqus externus et internus abdominis, m. rectus abdominis
C. from the middle the m. latissimus dorsi
ANSWER: A, B

4. Which muscles pull the pelvis downwards in the sagittal plane (looking at the pelvis from the side)?
A. from the front, the bilateral m. iliopsoas, m tensor fasciae latae, m. rectus femoris
B. from the back the bilateral m. gluteus maximus, m. biseps femoris, m. semitendinosus, m. semimembranosus
C. from the middle the m. sartorius
ANSWER: A, B

5. Which muscle maintains the muscular balance required for posture in the frontal plane (pelvis viewed from the front)?
A. same side m. qadratus lumborum
B. same side m. externus et internus abdominis
C. same side hip adductors
D. opposite hip abductors
E. m. psoas major
ANSWER: A, B, C, D

6. Non-invasive ways to measure the shape of the spine:
A. Moiré recording
B. RTG
C. UH
D. CT
ANSWER: A, C

7. Select the true statements that describe the physiological effects of water (both statements are true)
A. Diaphragm function is impaired due to increased abdominal pressure
B. The joint-sparing property of water, due to its resistance to the medium, is useful for load relief
C. The use of indifferent temperatures reduces balance and coordination capability
D. The muscle-strengthening effect of water as a medium is well suited for use due to its resistance to turbulence and friction
ANSWER: A, D

8. Consequences of hypomobility:
A. Reduced ROM
B. muscle imbalance
C. lack of proprioception
D. decreased muscle tone
ANSWER: A,B,C

9. Which are the tonic muscles?
A. M. Iliopsoas
B. Hamstrings
C. Serratus anterior
D. Piriformis muscle
ANSWER: A,B,D

10. Characteristics of phasic muscles:
A. fatigue quickly
B. tend to weaken
C. contain fast twitch fibres
D. respond to overload with shortening and increased tone
ANSWER: A,B,C

11. Miotatic reflex characteristics.
A. monosynaptic
B. receptor is the tendon
C. its stimulus forms a synapse with the alpha motoneuron
D. its receptor is deformed on stretching
ANSWER: A,C,D

12. Characteristics of inverse miotic reflex.
A. facilitates the alpha motoneuron innervating the muscle
B. transmits an action potential in response to stretching, strong tension
C. forms a synapse with an inhibitory interneuron
D. polysynaptus
ANSWER: B,C,D

13. Physiological effects of stretching:
A. increase sarcomere number
B. reduce pain
C. increase muscle tone
D. spinal autogenic inhibition
ANSWER: A,B,D

14. Role of the Golgi tendon:
A. located between muscle fibers
B. senses muscle tension
C. exerts inhibition of the associated muscle
D. reduces muscle tone
ANSWER: B,C,D

15. Fall prevention strategies:
A. Enhancing intrinsic factors
B. Therapy adherence - medication
C. Regular bone mass measurement
D. Sensorimotor training
ANSWER: B,C,D

16. Areas containing the most proprioceptors:
A. cervical spine
B. SI joint
C. knee joint
D. tibia
ANSWER: A, B

17. Personal health risk factors for falls
A. physiological ageing
B. lack of stability and mobility of the spine
C. reduced proprioception
D. lower limb muscle weakness
ANSWER: A, B, C, D

18. External - environmental risk factors for falls
A. poor lighting
B. depression
C. reduced proprioception
D. slippery surface, wrong glasses
ANSWER: A, D

19. Psychosocial risk factors for falls
A. physiological ageing
B. fear of falling
C. depression
D. lower limb muscle weakness
ANSWER: B, C

20. Personal health risk factors for falling
A physiological ageing
B. lack of stability and mobility of the spine
C. reduced proprioception
D. lower limb muscle weakness
ANSWER: A, B, C, D

21. Select the indications for whole body vibration training!
A. peripheral neuropathy
B. hip joint TEP
C. Parkinson's disease
D. osteopenia
E. synovitis
ANSWER: C, D

22. Resistance training for pathological fracture prevention should be avoided:
A. impact exercises
B. anterior compression
C. trunk flexion + rotation
D. prox. femur traction
E. unloaded range of motion therapy
ANSWER: A, B, C

23. contraindications to joint mobilisation:
A. ankylosis
B. soft tissue injury
C. pain
D. acute inflammation
E. hypermobility or instability
ANSWER: A, B, D, E

24. Physiotherapy treatment options for incontinence:
A. barrier massage
B. pelvic floor (pelvic floor muscle) training
C. electrostimulation
D. vaginal weight
E. soft tissue mobilization
ANSWER: B, C, D

25. Causes of reduced pelvic floor function
A. birth injuries
B. persistent increase in abdominal pressure (e.g. constipation, cough)
C. congenital hip dysplasia
D. decrease in estrogen action - menopause
E. hypertension
ANSWER: A, B, D

TRUE-FALSE

1. Viewed from the side, proper pelvic tilt and stability in the direction of the arrow is ensured by the cooperation of the extensor and flexor muscles of the trunk and the flexor and extensor muscles of the hip.

A. True
B. Fals
ANSWER: A

2. The movement material of the Hungarian Spine Society's primary prevention programme is based around 12 test exercises to test the strength and stretchability of the muscles responsible for posture and to develop the strength and stretchability of the muscles responsible for posture.

A. True
B. Fals
ANSWER: A

3. 3. In the Hungarian Spine Society's primary prevention programme, muscle tests of movement material are evaluated by means of a professional qualitative assessment that accurately identifies the correct or incorrect execution of the test exercise.

A. True
B. Fals

ANSWER: A

4. 4. The movement material of the primary prevention programme of the Hungarian Spine Society is characterised by 12 points for the correct performance of all muscle tests. The average of the total points for the assessment of the muscle tests in relation to the state of muscle balance is interpreted as a comparison. The aggregation of the score is only justified on the basis of the concept of muscle balance.

A. True
B. Fals

ANSWER: A

5. The movement material in the Hungarian Spine Society's primary prevention programme automates the biomechanically correct use of the spine.

A. True
B. Fals

ANSWER: A

6. The effect of using the movement material of the Hungarian Spine Society's primary prevention programme in school physical education was studied in a prospective controlled trial.

A. True
B. Fals

ANSWER: A

7. The movement material of the primary prevention programme of the Hungarian Spine Society was included in the physical education curriculum for all school age groups. The preventive arm of the "Genodisc" programme is a longitudinal test and practice material used in selected schools.

A. True
B. Fals

RESPONSE: A

8. The exercise material of the primary prevention programme of the Hungarian Spine Society is included in the qualification requirements for physical education teachers, physical educators and coaches.

A. True
B. Fals

ANSWER: A

9. unctional training can be used in both prevention and rehabilitation.

A. True
B. Fals

ANSWER: A

10. Functional training is designed to disengage the stabilising muscles of the trunk during the movement process
A. True
B. Fals
11. ANSWER: B

12. Sports movement forms are movement actions involving elementary movements that form the basis of several sports simultaneously
A. True
B. Fals
ANSWER: A

13. Motor skills are the components of a movement action acquired exclusively through learning
A. True
B. Fals
ANSWER:B

14. Muscular strength is the ability to overcome external forces and forces and resistance encountered during movement by the active use of muscle force
A. True
B. Fals
ANSWER: A

15. Endurance is the body's resistance to fatigue
A. True
B. Fals
ANSWER: A

16. Kinesthesia is the spatial and temporal perception of the body's position
A. True
B. Fals
ANSWER: B

17. Information for posture comes from proprioceptors in the muscles, skin receptors in the vestibular system, and vision also plays an important role.
A. True
B. Fals
ANSWER: A

18. The spinal cord has no role in postural control
A. True
B. Fals
ANSWER: B

19. A fall is a sudden, involuntary change in body position when an individual is lowered to a lower level (surface, object).
A. True
B. Fals
ANSWER: A

20. Walking alone prevents falls, sufficient movement
A. True
B. Fals
ANSWER: B

21. The fall prevention exercise program should include progressively more difficult balance exercises
A. True
B. Fals
ANSWER: B

22. Barrier muscle training, gymnastics is not a primary therapy for overflow incontinence
A. True
B. Fals
ANSWER: A

23. In reflex incontinence, the patient has a very strong urge to urinate
A. True
B. Fals
ANSWER: B

SINGLE CHOICE

1. Optimum phase time (or 'Therapeutic Utilization Time')
A. Is the shortest time of the applied pulsed current at rheobase intensity; in other words, it is the time (in ms) just before the curve leaves the rheobase intensity, plotted from right to left on a rectangular S/D curve.
B. On a trapezoidal curve - only detectable in the case of partial degeneration of the muscle
C. Can be plotted using a triangular S/D curve
D. Can be determined by a separate program
ANSWER: C

2. Diagnostic utilization time can be originated
A. From the rectangular S/D curve
B. From the trapezoidal curve; however, only in case of partially degenerated muscle
C. From the triangular S/D curve
D. Can be determined by a separate program
ANSWER: A

3. The chronaxia
A. also called the abscissa (i.e. the X axis) (chronos = time; axis = axis)
B. chronaxia is the duration (in mV) of the pulse that works at half the rheobase when produces the minimum twitch
C. if the logarithm of the rheobase is taken, then it is elog rheo
D. chronaxia is the duration (in ms) of the pulse that works at twice the rheobase when produces the minimum twitch
ANSWER: D

4. Meaning of 'őptimum phhase time' (therapeutic utilization time)
A. The most selective and effective stimulus current parameter for therapy, in other words, the pulse frequency
B. Diagnostic parameter providing the most selective and effective current parameter for therapy, i.e. the pulse strength (intensity)
C. Diagnostic parameter providing the most selective and effective current parameter for therapy, i.e. the pulse duration
D. Diagnostic parameter providing the fastest and most effective electrotherapy
ANSWER: C

5. Before treating with selective stimulation current, parameters of the treatment do not include the following:
A. pulse duration, inter-pulse interval
B. shape/form of pulse or 'rising time'
C. length of decay; polarity change cycle frequency
D. polarity and intensity
ANSWER: C

6. For peripheral neuropathic patients, selective stimulation current treatment parameters are NOT defined by
A. The accommodation quotient/alpha factor
B. Active muscle status
C. Reinnervation odds ratio defined by the height of the injury
D. Time since injury
ANSWER: C

7. Which of the following signs or symptoms is not characteristic of the inflammatory response?
A. rubor
B. cellular injury
C. tremor
D. acute inflammatory reaction promoting repair
ANSWER: C

8. Basic principles of therapy for peripheral nerve damage related palsy (which statement is INCORRECT):
A. Protection from distraction of paretic muscle
B. Compensation for deficits in joint movements and sensorimotor information
C. Owing to the lack of physiological motor output replacement of contraction via electrical stimulation of denervated muscles
D. Support of the consequences of peripheral nerve damage
ANWER: D

9. Purpose and method of electrical stimulation therapy for peripheral paresis – select the INCORRECT answer
A. Reduction of hypotrophy and/or atrophy of paretic muscles, acceleration of reinnervation, preservation of muscle contractility
B. Conditions for selective stimulation current treatment: determine the state of the damaged muscle by electrodiagnostic and clinical examination methods
C. Form of stimulation by defining the treatment parameters: form, pause (interpulse interruption), polarity, intensity
D. Mode of stimulation: indirect, via implanted electrodes
ANWER: D

10. To be treated with triangular current form
A. the muscle whose twitch is most sensitive to this type of current
B. if the muscle is intact according to the S/D curve
C. if we have no other ideas
D. the muscle that has lost its innervation
ANSWER: D

11. Muscles to be treated with triangular current form
A. muscle suffering mild degeneration, because it is the only one that selectively responds to this current form
B. muscles which do not show accommodation and therefore has an alpha factor greater than 2.8
C. a muscle that cannot adapt to a slow-ramping pulse, in other words, a muscle with an adaptation factor of 1
D. the muscle that goes into tetanic spasm upon indirect stimulation
ANSWER: C

12. We can treat with a triangular current waveform
A. the bipennatus muscles
B. only those muscles that are permanently remodeled (there is no more contractile matter) according to their S/D curve data
C. muscles that are completely denervated but can be directly stimulated
D. muscles are not treated with this type of current; instead, a series of rectangular pulses with a triangular envelope curve is used
ANSWER: C

13. Which physiotherapy means would you use to reduce inflammation?
A. Pulsed galvanic treatment
B. Interference treatment
C. Nonthermal UH treatment
D. Hyase iontophoresis
ANSWER: C

14. Which physiotherapy procedure would you use to reduce inflammation?
A. cryogel wrapping, but only for chronic, proliferative inflammation
B. LLLT - photobiomodulation for conjunctivitis
C. thermal UH treatment (in continuous mode, possibly with a 1:1 pulsation ratio, at higher intensity)
D. heparin iontophoresis
ANSWER: D

15. Which physiotherapy procedure is suitable for optimizing acute inflammatory phase?
A. neofaradic current
B. selective stimulation current therapy
C. acetic acid iontophoresis for open wounds
D. non-thermal UH therapy
ANSWER: D

16. Advantage of TENS treatment:
A. significant muscle stimulation is achieved
B. short treatment time, max. 3-5 minutes
C. drug intake is more favourable
D. different frequencies produce different physiological effects
ANSWER: D

17. Compare TENS treatment to HVPC (which statement is NOT TRUE)?
A. in a very acute phase, management of oedema reduction is more successful with HVPC because the required constant polarity difference between electrodes is not met with all TENS
B. TENS is not recommended to promote wound healing, whereas HVPC, like Microcurrent Therapy, is indeed
C. HVPC is suitable for iontophoresis, TENS is not
D. HVPC is typically suitable for muscle strengthening, whereas TENS is only an adequate therapy for denervated muscle
ANSWER: D

18. 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 ratio between the actual (fitted) treatment time and the required treatment time
ANSWER: B

19. What is the alpha factor?
A. at threshold current, the shortest pulse duration corresponding to twice the rheobase
B. accommodation quotient
C. for threshold current, the shortest pulse duration corresponding to half the rheobase
D. treatment time
ANSWER: B

20. What is the accommodation threshold?
A) for threshold current, the shortest pulse duration corresponding to twice the rheobase
B) the intensity value in the numerator of the fraction providing the alpha value
C) for threshold current, the shortest pulse duration corresponding to half the rheobase
D) treatment time
ANSWER: B

21. What is the rheobase? (select the WRONG ANSWER)
A. threshold current intensity that excites a minimum detectable action potential
B. the minimum current required to trigger excitable tissue
C. the strength of the current at a tolerable intensity, i.e. a well-measured threshold intensity of the pain threshold
D. sensory fibres also have a rheobase, just not detectable by the naked eye
ANSWER: C

22. What is the definition of rheobase in terms of muscle electrodiagnostics? (Which is the CORRECT ANSWER?)
A. at threshold current, the shortest pulse duration that causes minimum twitch
B. also known as alpha value, which is a dimensionless quantity (a number) measured in mA or mV
C. in practice (and traditionally), the threshold intensity determined using a square pulse of 1000 ms, usually expressed in mA
D. the intensity or potential difference required for the minimum twitch experienced in response to a slowly rising triangular pulse of 1000 ms
ANSWER: C

23. What is the definition of the accommodation threshold for muscle electrodiagnostics? (Which is the CORRECT ANSWER?)
A. for threshold current, the shortest pulse duration that causes a minimum twitch
B. also called alpha value, which is a dimensionless quantity (a number) measured in mA or mV
C. in practice (and traditionally), the threshold intensity determined using a square pulse of 1000 ms, usually expressed in mA
D. the intensity or potential difference required for the minimum twitch experienced in response to a slowly rising triangular pulse of 1000 ms
ANSWER: D

24. For interferencial current treatments, the following AMF values have the related biological effects:
A. 90-100 Hz: oedema reduction
B. 0-100 Hz: thermal effect
C. 50-100 Hz: vasodilation
D. 1-50 Hz: muscle contraction
ANSWER: D

25. Physiological reasons behind the phenomenon of Wedensky inhibition (select the WRONG ANSWER):
A. once the rate of stimulation exceeds 1000 Hz, successive stimuli fall into an absolute and then finally a relative refractory period of the previous action potential
B. a higher than normal current is required to stimulate neurons in a refractory state
C. the sensitivity of the nerve is reduced
D. prolonged stimulation at a supramaximal frequency (i.e. a frequency above 1000 Hz, the maximum frequency which results in synchronous discharge due to the pulse) eventually results in loss of axon conduction
ANSWER: A

26. Which iontophoresis is specifically anti-inflammatory?
A. Hyase
B. di-Adreson/Prednisolone
C. Heparin
D. Potassium iodatum
ANSWER: B

27. Which of the following drug(s) can be used for iontophoresis as well, in addition to their anti-inflammatory effect, mainly for their antibacterial action?
A. Potassium iodatum
B. di-Adreson/Prednisolone
C. Heparin (in Contratubex, Dolobene)
D. Hyase
ANSWER: A

28. Which drug combination can be used without issues during iontophoresis when administering the drug mixture from the cathode?
A. acetic acid, dexamethasone
B. lidocaine, dexamethasone
C. Heparin and procaine
D. potassium iodatum, salicylic acid (Na-salycilate)
ANSWER: D

29. Which drug solution(s) can be administered from the anode?
A. Phenylbutasone
B. Voltaren/Diclophenac
C. Hydrocortisone
D. Di Adreson/Prednisolone
ANSWER: D

30. For Galvanic (DC) treatment, not to be specified preliminarily:
A. the body part treated
B. the placement and size of the electrodes
C. duration, number, frequency of treatments
D. the intensity applied
ANSWER: D

31. Which diadynamic current waveform(s) have a pronounced oedema reducing effect with concomitant more prolonged pain relief?
A. DF
B. LP
C. MF
D. CP
ANSWER: B

34. Which statement is true?
A. The S/D curve test, repeated every five weeks, is an accurate way to monitor changes in muscles
B. The S/D curve test, repeated every three weeks, can accurately monitor changes in muscles
C. The S/D curve test, repeated every eight weeks, can be used to accurately monitor muscle changes
D. The S/D curve test, repeated every twelve weeks, is the most accurate way to monitor muscle changes
ANSWER: C

35. SD curve analysis - Select the INCORRECT statement.
A. Rheobase is the intensity of the triangular electrical pulse of 1000 ms duration required to generate a reaction potential
B. When testing a motor or mixed nerve, minimal muscle twitching indicates a visually perceptible phenomenon of depolarization
C. The intensity of the rheobase may vary from site to site, from muscle to muscle, and may be influenced by the temperature of the muscle being tested, fatigue due to vigorous physical activity, etc.
D. Independently of other parameters determined in the same clinical study, rheobase alone may not be informative enough to make a clinical decision on appropriate therapy.
ANSWER A

36. Which statement is INCORRECT?
A. The rheobase is the required amplitude of the electric current generated by a 1000 ms square wave pulse to overcome the resting potential
B. When testing a motor nerve, minimal muscle twitching indicates a visually perceptible phenomenon of depolarization
C. Reference value for rheobase intensity 2.3 -2.5 mA
D. Regardless of other parameters determined in the same clinical trial, rheobase alone may not be informative enough to make a clinical decision regarding appropriate therapy
ANSWER: C

37. Which parameters are derived from the analysis of the SD curve?
A. Rheobase; the tolerance treshold; the accommodation quotient
B. Polarity; dermogram; alpha value
C. AQ; chronaxie; reaction time
D. 'temps utile' (utilization time); optimum phase time; accommodation quotient
ANSWER: D

38. Which statement is CORRECT?
A. Chronaxie is the intensity at which the rheobase time is twice as effective
B. Chronaxie is half the time for which the minimum muscle twitch provides maximum performance
C. Chronaxie is the duration of the square pulse (expressed in milliseconds) that produces the minimum twitch at the double rheobase intensity setting
D. Chronaxia is the intensity of a rectangular pulse current that causes minimal twitching by setting the pulse duration to double the rheobase
ANSWER: C

39. Selective stimulation current therapy for peripheral paresis – treatment parameters are:
A. intensity, pulse duration, inter-pulse interval; electrode size
B. pulse duration; duty cycle; frequency of current; neofaradical response
C. Interpulse interval; optimal phase time, duty cycle; chronaxie
D. Ramp-up time ('pulse shape'); pulse duration; inter-pulse interval; polarity; intensity
ANSWER: D

40. Which statement is INCORRECT?
A. The diagnostic utilization time is the minimum time required for a stimulus of rheobase intensity to produce just enough minimum twitch
B. The duration of the stimulus pulse that produces the optimum contraction during therapy is derived from the optimum phase time (therapeutic utilization time)
C. the longest duration of the minimum peak intensity triangular pulse that is just sufficient to produce a twitch is called the 'optimum phase time' (therapeutic utilization time)
D. The duration of the stimulus that produces the optimum contraction during therapy is derived from the (diagnostic) utilization time/temps' utile
ANSWER: D

MULTIPLE CHOICE

1. The information characteristics of electroneurography (ENG)/neuromyography (NMG) (which statements are FALSE)?
A. The conduction velocity of the nerve provides information about the state of the nerve
B. The normal nerve conduction velocity is independent of the location of the nerve being examined
C. Velocity can be calculated from the distance/time formula
D. Data recorded by EMG/ENG are sufficient to determine the conduction velocity of a nerve
ANSWER: B, D

2. Spontaneous electrical activities detected during EMG examination (choose the INCORRECT responses)
A. Insertion activity (caused by needle injury, indicating that the needle is in the muscle)
B. Interference pattern (maximal volitional innervation/contraction)
C. Spontaneous activity (in relaxed muscle)
D. Motor unit potential analysis (mild innervation)
ANSWER: B, D

3. Which answer is NOT CORRECT? We treat with a triangle current form:
A. a muscle that exhibited a prompt twitch on the mid-frequency rapid test
B. a muscle that showed a complete tetanic spasm on the Lange test
C. any muscle (including electrostimulation) if the patient can tolerate the pain
D. if it is deemed appropriate after a complete S/D curve has been recorded
ANSWER: A, B, C

4. Which physiotherapy procedure would you use for an inflammatory condition?
A. ascending galvanic treatment
B. interferencial current treatment with relatively high AMF in isoplanar mode
C) lidocaine iontophoresis from the cathode
D. thermal US treatment, in the case of chronic musculoskeletal disease, to breake down the isolation maintained by microthrombi and white blood cells surrounding the inflammatory area
ANSWER: B, D

5. Which physiotherapy procedure would you use to reduce inflammation?
A. Descending galvanic treatment
B. Medicinal mud treatment for chronic pelvic inflammation
C. Nonthermal US treatment
D. Dexamethasone iontophoresis
ANSWER: A, B, C, D

6. Which physiotherapy procedure is NOT SUITABLE for reducing inflammation?
A. Neofaradic current
B. Selective stimulation current therapy
C. Acetic acid iontophoresis for open wounds
D. Non-thermal US therapy
ANSWER: A, B, C

7. Advantages of TENS treatment over galvanotherapy:
A. creates an action potential on the thick myelin sheath fibres,
B. by applying biphasic, symmetrical pulses, no electrochemical effects of electrolysis and consequent persistent hyperemia are produced, resulting in skin sparing
C. different frequencies, different intensities of pulses produce different physiological effects
D. more favourable drug intake
ANSWER: A, B, C

8. Disadvantage of TENS treatment compared to galvanotherapy:
A, not suitable for reducing inflammation based on vasodilation, effects on tissue metabolism
B. biphasic, symmetric pulses do not produce electrochemical effects of electrolysis and consequent persistent hyperemia, resulting in sparing of the skin
C. not suitable for drug administration (by iontophoresis)
D. pulses of different frequencies and intensities have different physiological effects
ANSWER: A, C

9. Advantages of TENS treatment over Traebert (2-5 ultrastimulation) treatment:
A. can be used for postoperative analgesia
B. can be used for post-traumatic analgesia
C. the different modalities (CO, APL; Burst and MO) can produce different physiological and therapeutic effects
D. more favourable drug intake
ANSWER: A, B, C

10. Advantage of TENS treatment over diadynamic current modes:
A. significant muscle stimulation can be achieved without inducing unpleasant current sensations
B. from a short treatment time of 5-10 minutes max. up to 1-1.5 hours with the right choice of parameters
C. the high variability of the parameters available ensures a personalised treatment option
D. more suitable for drug delivery (iontophoresis)
ANSWER: A, B, C

11. Typical for interferencial current treatments:
A. deeper effect compared to low frequency
B. unipolar electrode application possible with bipolar/premodulated technique
C. The advantage of the four-electrode, dual-channel application is that a larger area can be treated and the maximum current density is observed not at the close proximity of electrode surface
D. the carrier frequency current generated by alternating polarity eliminates the electrolytic effect
ANSWER: A, B, C, D

12. Interferencial current treatments:
A. a more superficial but more pleasing effect compared to low frequency
B. for the bipolar technique, it is possible to opt for unipolar electrode application, which has the advantage of targeted tissue treatment (e.g. painful spot)
C. it is also suitable for iontophoresis after rectification, which in practice can be observed in the treatment sequence used as a combination of premodulated interference and sonophoresis
D. the advantage of the four-electrode, dual-channel application is that a larger area can be treated and the current density is observed not at close vicinity of the electrode surface
ANSWER: B, D

13. The physiological phenomena behind the Wedensky inhibition phenomenon:
A. as the rate of stimulation exceeds 1000 Hz, successive stimuli fall into a relative and eventually absolute refractory period of the previous action potential
B. higher than normal current is required to stimulate neurons in their refractory state
C. the sensitivity of the nerve is reduced
D. prolonged stimulation at a supramaximal frequency (i.e. a frequency above 1000 Hz maximum resulting in pulse synchronous discharge) eventually results in loss of axon conduction
RESPONSE: A, B, C, D

14. Physiological reasons behind the phenomenon of Wedensky inhibition (select the RIGHT SETTING(S)):
A. a higher than normal current is required to stimulate nerve cells in their refractory state
B. nerve sensitivity is reduced
C. prolonged stimulation at a supramaximal frequency (i.e. above 1000 Hz maximum, resulting in a pulse-synchronous discharge) will eventually result in loss of axon conduction
D. once the stimulation rate exceeds 1000 Hz, successive stimuli fall into an absolute and then finally a relative refractory period of the previous action potential
RESPONSE: A, B, C

15. The Gildemeister effect and its underlying mechanism:
A. Rapid stimulation of the motor nerve with high-intensity, yet comfortable interferential currents results in asynchronous depolarization of individual motor units
B. The rate of firing of the neuron (firing rate) is independent of the frequency of the applied stimulus, determined only by the length of the refractory period of the nerve fiber
C. this asynchronous firing pattern, as opposed to the synchronous pattern of low frequency stimulation, mimics the pattern observed during normal voluntary contraction (i.e., closer to physiological activation of motor units)
D. the reduced sensitivity is due to the so-called Wedensky inhibition phenomenon
ANSWER: A, B, C

16. Which iontophoresis has an anti-inflammatory effect?
A. Hyase
B. Prednisolone
C. Heparin
D. Diclophenac
ANSWER: B, D

17. Which iontophoresis uses steroidal anti-inflammatory drugs?
A. Hyase
B. di-Adreson/Prednisolone
C. Heparin
D. hydrocortisone
ANSWER: B, D

18. Which iontophoresis treatment is effective for nociceptive pain?
A. lidocaine/procaine
B. di-adreson/prednisolone
C. Na-salycilate
D. hyaluronidase
ANSWER: A, B, C

19. What are the indications for TENS treatment?
A. reduction of tumour-induced pain
B. reduction of muscle atrophy
C. postoperative pain relief
D. n. facial paresis
ANSWER: A, C

20. Selective stimulation current treatment should not be continued if:
A. the accommodation quotient of the treated muscle is the same as that of the intact side
B. no improvement despite treatment
C. there is an unavoidable electrical bridging towards adjoining healthy muscle during treatment
D. the paralysis of the muscle is no longer present
ANSWER: A, B, C, D

21. Non-selective stimulation current treatment is chosen if:
A. the accommodation quotient of the treated muscle is the same as that of the intact side
B. we want to improve muscle strength in a muscle with intact innervation
C. to strengthen a painful, spastic muscle
D. hypotrophy due to inactivity is confirmed
ANSWER: A, B, C, D

22. In the case of galvanic current (DC) treatment, it should be determined in advance:
A. the part of the body being treated
B. the placement and size of the electrodes
C. duration, number, frequency of treatments
D. the intensity applied
ANSWER: A, B, C

23. Which diadynamic current form(s) have a pronounced edema reducing effect?
A. DF
B. LP
C. MF
D. CP
ANSWER: B, D

24. Which physical therapy modality would you use to treat a young athlete who sprained his ankle 5 days ago, the area is swollen, covered with haematoma, painful around the lateral ankle?
A. DF - at tolerance level
B. LP - at sensory threshold
C. MF - at motor threshold
D. CP - at a comfortable current sensation
ANSWER: B, D

25. Which definition(s) is/are the problematic one(s)?
A. pain: an unpleasant sensory and emotional experience that is associated with, or can be described as, actual or potential tissue damage.
B. allodynia: pain in response to normally innocuous (non-nociceptive) stimuli or activities due to a genetic defect (A delta fibres bind allodynein-antagonists to the mü-opioid receptor- and cause persistent depolarisation of nocineurons)
C. hyperalgesia: increased pain response to usually noxious (painful) stimuli
D. radiating pain: the somatosensory pain sensation of sunburned skin causes visceral pain in an internal organ innervated by fibres arising from a spinal cord segment
ANSWER: B, D

26. Which statement(s) is/are FALSE?
A. The sensory-discriminative dimension of pain is concerned with the quality (i.e., burning, splitting, dull), location, duration, and intensity of pain, and is mediated by the spinothalamic pathway to primary and secondary somatosensory cortical areas.
B. The cognitive-evaluative dimension is based on past experiences and the outcome of a decision between different response strategies (annoying, distressing, unbearable); the pathway mediating this dimension of the pain experience is via the posterior fascicles of Goll and Burdach pathway to the lemniscus medialis.
C. The motivational - affective dimension of pain processes the unpleasant sensation of pain (e.g. nausea, sickness); the motivational tendency to escape or attack is mediated by the spinothalamic pathway to the anterior cingulate and anterior insular cortex.
D. The thalamus is not involved in the perception of pain signals as a subcortical relay station; if it is, it experiences therapy-resistant thalamic pain during the patient's waking time.
ANSWER: B, D

27. Chemical substances released at the site of tissue inflammation that activate primary nociceptors:
A. Serotonin, bradykinin,
B. Substance-P, hydrogen ions,
C. CGRP, K^+, histamine
D. vasopressin, Na^+
ANSWER: A, B, C

28. Chemicals released at the site of tissue inflammation that sensitize primary nociceptors
A. Serotonin, bradykinin,
B. Substance-P, cytokines, H^+
C. CGRP, K^+, histamine
D. prostaglandine, leukotrienes
ANSWER: B, D

29. Excitatory neurotransmitters:
A. glutamate,
B. Substance-P
C. Calcitonin gene-related peptide (CGRP)
D. gamma-aminobutyric acid (GABA)
ANSWER: A, B, C

30. Sensitization of pain transmission neurons in the spinal cord can occur…
A. …in the presence of long-lasting synaptic transmission between primary afferent nociceptors and second order dorsal horn neurons
B. … when a decrease in inhibitory neurotransmitter activity in the posterior horn arises
C. … when a release of chemicals from glial cells that stimulate pain transmitting neurons (T cells, nocineurons) happens,
D. …and/or some factors enhance the release of pain neurotransmitters from primary nociceptive afferents
ANSWER: A, B, C, D

31. When direct electrical stimulation of the periaqueductal grey matter (PAG) occurs… (choose the CORRECT ANSWER(S))
A. via direct endogenous opiate release: enkephalin release occurs in addition to beta-endorphin and dynorphin release
B. when it induces indirect serotonin (5-HT) neurotransmitter release by projection to the rostroventral medulla (RVM)
C. when direct release of norepinephrine/norepinephrine from the tegmentum pontis (locus coeruleus (LC); nucl. subcoeruleus; nucll. parabrachiales) happens
D. due to the projection to the nucl. raphe magnus an enkephalin-induced 5-HT release happens
ANSWER: A, B, C, D

32. Which responses are TRUE? Stimulation of the nucl. raphe magnus (NRM)…
A. …induces direct serotonin (5-HT) release.
B. …originated analgesia is consistently produced by the inhibitory effect of 5-HT on incoming nociceptive afferents.
C. …produced indirect behavioural analgesia can be blocked.
D. choice C is demonstrated by the opioid antagonist naloxone to produce suspended analgesia (via its electrical stimulation effect).
ANSWER: A, B, C

33. Neurochemistry of endogenous opioid analgesia
A. The central nervous system contains "endogenous substances" with analgesic properties, such as natural (intrinsic) opioids or opiates of synthetic (ingested) origin.
B. Endogenous opioids include beta-endorphins, methionine and leucine enkephalin, endomorphins 1 and 2, and dinorphins A and B, each of which has a distinct anatomical distribution and activates specific receptors.
C. Beta -endorphins are found in neurons of the hypothalamus and in the anterior and intermediate lobes of the pituitary gland.
D. Neurons located in the hypothalamus send beta-endorphin compounds to the periaqueductal grey matter (PAG) and can "turn on" the descending inhibitory pathways.
ANSWER: A, B, C, D

34. Which statements are true?
A. The release of beta-endorphins from the pituitary gland occurs with vigorous exercise and in response to stress.
B. After inflammation, the number of opioid receptors on the peripheral terminals of primary afferent fibres increases, so it is thought that the increased plasma concentration of beta-endorphin probably produces its analgesic effect peripherally.
C. Endogenous morphins, enkephalins, dinorphins are found in neurons of the brain and in the dorsal horn of the spinal cord grey matter in areas known to be involved in analgesia
D. In the periaqueductal grey matter (PAG), in the rostral ventromedial medulla (RVM) and in the dorsal horn of the spinal cord catecholamines are released in response to endogenous opioids rather than endogenous opioids themselves.
ANSWER: A, B, C

35. Mechanisms of action of the endogenous opioid system
A. Activation of opioid receptors with selective agonists (systemically or locally in the PAG, RVM or spinal cord) causes analgesia.
B. Posterior horn neurons containing the neurotransmitter enkephalin produce presynaptic inhibition of primary afferent nociceptors
C. Enkephalin also produces postsynaptic inhibition of posterior horn nocineurons.
D. Pain is amplified through inhibition of inhibitory interneurons, forming the basis of hyperalgesia.
ANSWER: A, B, C

36. Mechanisms of action of TENS-based analgesia - conventional, high frequency, low intensity TENS
A. General guideline: electrical stimulation should be used for analgesia when it is no longer protective but contributes to the maintenance of abnormal function and inhibits the successful progression of tissue healing
B. Sensory stimulation: at fixed pulse frequency (typically 50-100 Hz), with fixed pulse or phase pulses (typically 20-50 s)
C. amplitude/intensity is increased up to the sensation threshold, aiming at inducing tingling (paraesthesia)
D. treatment time 20-60 min; apply/use as often as necessary
ANSWER: A, B, C, D

37. Mechanism of action of TENS-based analgesia: low frequency, high intensity TENS
A. For stimulation at the motor threshold: pulse frequency or burst frequency is fixed, typically 2-4 Hz
B. pulse duration > 150 microseconds,
C. amplitude of the stimulus current is strong; the aim is to achieve visible muscle contraction
D. treatment duration 30-45 min; treatment may be repeated twice to four times daily
ANSWER: A, B, C, D

38. The mechanism of action of TENS-based analgesia: low frequency, painfully high intensity (APL TENS; Kathleen A. Sluka (2008))
A. Very intense, pain threshold stimulation: fixed frequency, 1-5 Hz,
B. Pulse duration is long, 1 ms - 1 s,
C. Amplitude is increased until the patient experiences pain in response to stimulation
B. treatment time lasts from seconds to minutes per treated site; often stimulating several points in succession ("acupuncture" points or trigger points)
D. frequency of treatment: usually once a day
ANSWER: A, B, C, D

39. MO (modulated) TENS - the following changes are available if one of the forms of TENS does not seem appropriate:
A. Modulation of pulse amplitude, pulse duration and/or pulse frequency is used to avoid adaptation to stimulation (i.e., loss of sensation, habituation to stimulation).
B. varying the intensity level of TENS (at sensory or motor threshold, possibly at pain threshold)
C. changing the frequency of TENS (high frequency or low frequency)
D. changing the position of the electrodes
ANSWER: A, B, C, D

40. Possible (undesirable) side effects of electrical nerve stimulation for pain relief (choose the CORRECT answers)
A. Allergic reaction to fixation tape, electrodes or gels;
B. Skin irritation or burning of the skin under the electrode
C. The more intense the current, the longer the pulse duration, the more unbalanced asymmetric or clearly monophasic the pulsed current, the more raised the likelihood of electrical and/or electrochemical burns.
D. TENS is very safe, no dangerous situation or situation requiring more precautions can be imagined
ANSWER: A, B, C

TRUE OR FALSE

1. The median nerve (C6-Th1) arises from the fasciculus medialis and the fasciculus lateralis, each with a root.
A. True
B. False
ANSWER: A

2. The median nerve (C6-Th1) arises from the posterior fasciculus and the lateral fasciculus, each with a root.
A. True
B. False
ANSWER: B

3. The ulnar nerve (C8-Th1) arises from the fasciculus medialis.
A. True
B. False
ANSWER: A

4. The ulnar nerve (C5-C6) arises from the fasciculus medialis.
A. True
B. False
ANSWER: B

5. The ulnar nerve (C8-Th1) arises from the lateral fasciculus
A. True
B. False
ANSWER: B

6. 6. The common peroneal nerve arises from the sacral plexus
A. True
B. False
ANSWER: A

7. The common peroneal nerve arises from the lumbar plexus.
A. True
B. False
ANSWER: B

8. The femoral nerve arises from the sacral plexus.
A. True
B. False
ANSWER: B

9. The obturator nerve arises from the sacral plexus.
A. True
B. False
ANSWER: B

10. 10. The distal nerve stimulation point of the median nerve is located between the FCR and the PL.
A. True
B. False
ANSWER: A

11. The distal nerve stimulation point of the ulnar nerve is located between the FCR and the PL.
A. True
B. False
ANSWER: B

12. The proximal nerve stimulation point of the ulnar nerve is located between the FCR and the PL.
A. True
B. False
ANSWER: A

13. The distal nerve stimulation point of the peroneal nerve is located between the tendons of TA and EHL
A. True
B. False
ANSWER: B

14. The distal nerve stimulation point of the (deep) peroneal nerve is located behind - below the inner ankle bone
A. True
B. False
ANSWER: B

15. the proximal nerve stimulation point of the tibial nerve is located at the centre of the popliteal crease
A. True
B. False
ANSWER: A

16. The distal nerve stimulation point of the tibial nerve is located at the centre of the popliteal fossa

A. True
B. False

ANSWER: B

17. A pulse of sufficient intensity from the thicker, tactile A beta and proprioceptive A alpha fibres can close the spinal gate to the pain pulse from the C fibres

A. True
B. False

ANSWER: A

18. The inflammatory response is characterised by (the Latin) stupor, calor, tumor, dolor and functio laesa

A. True
B. False

ANSWER:B

19. Visual Analogue (Pain) Scale measures the pain on a 10-cm line with two endpoints; the pain intensity scales 0 if no pain, 10 if intolerable pain is reported.

A. True
B. False

ANSWER: A

20. 20. The so-called "first pain" is projected to the site of sensory body map, so the postcentral gyrus is the cortical location of pain perception as well.

A. True
B. False

ANSWER: A

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SIGNIFICANCE OF DIAGNOSTIC IMAGING IN PHYSIOTHERAPY PRACTICE

SINGLE CHOICE:

1. The uses of medical imaging:
A. Control of therapy
B. Diagnostics
C. Screening
D. All of the above(a+b+c)
ANSWER:D

2. Which imaging method is **not** used for screening::
A. Plain chest film - screening for TB
B. Prostate MRI - screening for prostate cancer
C. Mammography - screening for breast cancer
D. Low dose chest CT - screening for lung cancer
ANSWER:B

3. Plain chest film is suited for the screening of which illness:
A. Pneumonia
B. Lung abscess
C. TB
D. Lung cancer
ANSWER:C

4. Imaging method based on ionizing radiation:
A. MRI
B. Ultrasound
C. Endoscopic ultrasound
D. CT
ANSWER:D

5. Imaging method based on **Non**-ionizing radiation::
A. MRI
B. Fluoroscopy
C. Scintigraphy
D. CT
ANSWER:A

6. Imaging method **not** based on X - ray:
A. Scintigraphy
B. Fluoroscopy
C. CT
D. DSA (Digital Subtraction Angiography)
ANSWER:A

7. X - rays:
A. Are absorbed to **the same** degrees by different tissues
B. Are absorbed to **different** degrees by different tissues
C. Pass through tissues without absorption
D. Reflects from tissues, without passing through them
ANSWER:B

8. During a CT scan:
A. An X - ray source is rotating around the patient
B. There is no ionizing radiation
C. A magnetic field is created around the patient
D. Ultrasound waves pass through the patient
ANSWER:A

9. During a scintigraphy:
A. The patient is exposed to X - ray and then its reflection is measured
B. The patient is exposed to ultrasound waves and then its reflection is measured
C. A piezoelectric transducer is used
D. The patient is administered radionuclides and then the radiation signal coming from the patient is registered
ANSWER:D

10. During an ultrasound examination:
A. Sound waves are measured originating from the tissues
B. Echoes reflected from the interfaces between the different tissues are measured
C. They use frequencies in the hearing range
D. There is no need for a transducer
ANSWER:B

11. For an ultrasound examination you need:
A. Piezoelectric transducer
B. Stethoscope
C. Strong magnetic field
D. Lead shielding
ANSWER:A

12. During an MRI scan:
A. The patient is exposed to ionizing radiation
B. The patient is put in a strong magnetic field
C. The patient is administered molecules marked by radiant material
D. Magnetic field is turned off after every patient
ANSWER:B

13. The MRI machine:
A. Creates a strong magnetic field
B. Is not turned off between examinations
C. It is forbidden to carry magnetizable metal near it
D. All of the above (a+b+c)
ANSWER:D

14. The following must not be brought into the MR examination room:
A. Bank card
B. Jewelry
C. Mobile phone
D. All of the above (a+b+c)
ANSWER:D

15. During an MRI scan, patients with a pacemaker:
A. Represent an absolute contraindication, they cannot be examined
B. Represent a relative contraindication, in some cases patients can be examined
C. They represent no contraindication, all patients can be examined
D. Neither answer is true
ANSWER:B

16. MRI scans of **recently** inserted metal implants:
A. Is forbidden, because of the risk of displacement
B. Is allowed, if the implant is MRI compatible
C. Is allowed, because nowadays are implant are MRI compatible
D. Is allowed, but only in low magnetic mode (LMM)
ANSWER:A

17. Ionizing radiation:
A. Is harmless
B. Directly and indirectly damages the DNA
C. Is less harmless to younger people
D. Is harmful only to immunocompromised patients
ANSWER:B

18. It is **not** an element of radiation protection:
A. Leaded wall
B. Leaded glass
C. Leaded lamp
D. Leaded clothing
ANSWER:C

19. Children are at increased risk of radiation because:
A. Their immune system is still underdeveloped
B. Their metabolism is slower
C. Their bones contain less Calcium
D. Nearly all tissues in their body contain dividing cells
ANSWER:D

20. Lead protects against ionizing radiation because:
A. It absorbs most of the radiation
B. It collects the radiation from the surroundings
C. It reflects the radiation
D. It neutralizes the radiation
ANSWER:A

21. **Not** an indication for chest X - ray:
A. Respiratory symptoms
B. Control after central venous catheterization, if it was done by ultrasound guidance
C. Suspicion of pneumothorax
D. Suspicion of pulmonary embolism
ANSWER:D

22. Indication for a chest CT as a first choice of imaging method:
A. Suspicion of lung cancer
B. Suspicion of pneumonia
C. Suspicion of pneumothorax
D. Part of preoperative examinations
ANSWER:A

23. Indication for a chest CT as a first choice of imaging method:
A. Suspicion of pulmonary embolism
B. Suspicion of pneumonia
C. Suspicion of pneumothorax
D. Part of preoperative examinations
ANSWER:A

24. Imaging possibilities of the heart:
A. Heart ultrasound
B. MRI
C. CT coronarography
D. All of the above (a+b+c)
ANSWER:D

25. Imaging method rarely used in neuroradiology:
A. Head CT
B. Skull X - ray
C. Angiography
D. Head MRI
ANSWER:B

26. Advantages of head CT scan::
A. Critical, **unstable** patients can be easily examined
B. Suitable for more common pathologies and emergency disease
C. Often suitable for rare pathologies
D. It does not involve radiation exposure
ANSWER:B

27. Advantages of CT scan:
A. Radiation exposure
B. Resolution and tissue differentiation capabilities are far **higher** than of an MR examination
C. Fast and easily accessible
D. Metals do not give artefacts
ANSWER:C

28. Suitable for the depiction of intracranial hemorrhage:
A. CT
B. Ultrasound examination
C. Angiography
D. Neither answer is true
ANSWER:A

29. Suitable for the depiction of intracranial hemorrhage:
A. MRI
B. Ultrasound examination
C. Angiography
D. Neither answer is true
ANSWER:A

30. Appropriate method for detecting symptomatic discal hernia::
A. Spine x - ray
B. Spine fluoroscopy
C. Spine CT
D. Spine MRI
ANSWER:D

31. The role of medical imaging in musculoskeletal pathologies:
A. Confirming a diagnosis
B. Specifying a diagnosis
C. Therapy planning
D. All of the above (a+b+c)
ANSWER:D

32. The role of medical imaging in musculoskeletal pathologies:
A. Therapy planning
B. Reassuring the patient
C. Reassuring the referring physician
D. Neither answer is true
ANSWER:A

33. Musculoskeletal plain films:
A. Depict soft tissues well
B. Depicts bony structures well
C. Depicts effusions well
D. All of the above (a+b+c)
ANSWER:B

34. Musculoskeletal MRI examination:
A. Takes only a couple of minutes
B. Is always first choice of imaging
C. Has no contraindications
D. Depicts soft tissues and bone marrow well
ANSWER:D

35. Musculoskeletal CT examination:
A. Depicts soft tissues and bone marrow well
B. Comes with minimal radiation exposure
C. Can be a complementary examination for the more detailed visualization of bony structure
D. Is a first imaging method choice in case of simple fractures
ANSWER:C

36. Musculoskeletal ultrasound examinations:
A. Do not require experienced examiner
B. Is well suited for the depiction of bony structures
C. Can be used for screening of hip dysplasia
D. All of the above (a+b+c)
ANSWER:C

37. In case of persistent musculoskeletal pain, imaging should be done:
A. Always
B. Only in cases of severe pain
C. Only in cases where patients insist on it
D. Only in cases where there is a history of malignancy
ANSWER:A

38. In case of persistent musculoskeletal pain, the first choice of imaging method:
A. MRI
B. X - ray examination
C. CT
D. Ultrasound examination
ANSWER:B

39. The first step in patient management:
A. Physical examination
B. Simple examinations (urine, blood etc.)
C. Imaging
D. Taking medical history
ANSWER:D

40. The latest step in patient management:
A. Taking medical history
B. Physical examination
C. Simple examinations (urine, blood etc.)
D. Complex examinations (CT, endoscopy)
ANSWER:D

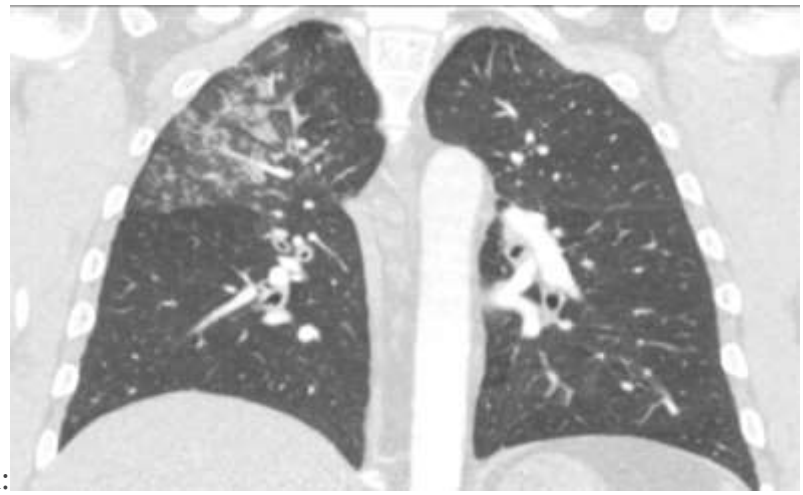
41. Primary storage format of medical imaging:
A. JPEG
B. AVI
C. DICOM
D. MP4
ANSWER:C

42. Digital images of medical imaging:
A. Are saved primarily in DICOM format
B. In all cases, it must also be copied onto a paper-based media
C. Can not be enhanced or formated
D. Cannot be given to the patient
ANSWER:A

43. The role of the radiologist in the development of AI in medicine:
A. Ensuring the respect for medical ethics and patients' rights
B. Attachment to classical radiological work
C. Programing AI algorithms
D. Slowing down the development
ANSWER:A

44. What imaging method is shown:

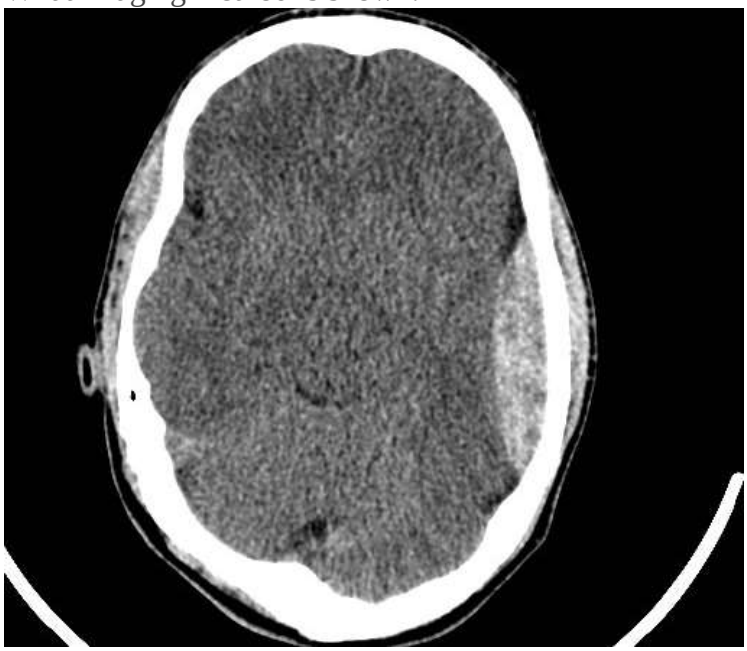
A. Whole body x - ray
B. Whole body MRI
C. Whole body CT
D. Whole body scintigraphy
ANSWER:D



45. What imaging method is shown:
A. Chest plain film
B. Chest CT
C. Chest MRI
D. Chest fluoroscopy
ANSWER:B

46. What imaging method is shown:
A. Heart MRI
B. Heart ultrasound
C. Coronaria CT
D. Heart fluoroscopy
ANSWER:B

47. What imaging method is shown:



A. Skull x- ray
B. Head CT
C. Head MR
D. Head PET-CT
ANSWER:B

48. What imaging method is shown:

A. Skull x - ray
B. Head CT
C. Head MR
D. Head PET-CT
ANSWER:B

49. What imaging method is shown:

A. Spine x - ray
B. Spine CT
C. Spine MRI
D. Spine PET-MR
ANSWER:C

50. What imaging method is shown:

A. Spine x - ray
B. Spine CT
C. Spine MRI
D. Spine PET-MR
ANSWER:C

51. What imaging method is shown:

A. Knee x - ray
B. Knee CT
C. Knee MR
D. Knee PET
ANSWER:C

52. What imaging method is shown:

A. Abdominal x - ray
B. Abdominal CT
C. Abdominal ultrasound
D. ERCP
ANSWER:C

EVIDENCE-BASED APPLICATION OF MANUAL METHODS IN PHYSIOTHERAPY PRACTICE

.

SINGLE CHOICE

1. What is fibromyalgia syndrome?
A. Widespread, chronic, unremitting pain
B. "Glove-like" numbness of the distal part of the limbs
C. Accumulation of synovial fluid
D. Fibromyalgia is not a real disease
ANSWER: A

2. Who is mainly affected by fibromyalgia syndrome?
A. 90% male
B. Mainly around the age of 55
C. 60% women
D. Mainly between the ages of 20 and 55
ANSWER: D

3. What factors could be potential causes or risk factors for fibromyalgia syndrome?
A. Post-traumatic stress syndrome
B. Trauma
C. Emotional stress or prolonged tension
D. All of the above answers are true
ANSWER: D

4. The American College of Rheumatology (ACR) has defined two criteria for diagnosis.
A. Extensive pain for at least 6 months, both below and above the waist; subjective tenderness to pressure of 11/18 tender points.
B. Extensive pain for at least 3 months both below and above the waist; subjective tenderness to pressure at 9/18 tender points.
C. Extensive pain for at least 3 months both below and above the waist; subjective tenderness to pressure of 11/18 tender points.
D. Extensive pain for at least 6 months both below and above the waist; subjective tenderness to pressure at 9/18 tender points.
ANSWER: C

5. What is the characteristic of a trigger point (TrP)?
A. Can cause radiating pain
B. Less irritable place
C. Responds to compression, stretching, overloading and tissue contraction by relaxing
D. Located in a tight layer of skeletal connective tissue
ANSWER: A

6. What can cause a trigger point (TrP)?
A. May not develop from visceral pain or dysfunction
B. Different forms of muscle overload can cause it
C. The right posture for shorter periods of time can also cause it
D. Muscle overload can not cause it
ANSWER: B

7. What is not part of the integrated trigger point hypothesis process?
A. Reduced blood flow and hypoxia
B. Release of sensitizing substances
C. Increased tension in the muscle fibers
D. Abnormal noradrenaline release
ANSWER: D

8. Is the location of the trigger point pain the same as the source of the pain?
A. Yes, in all cases
B. No, it never matches
C. No, they do not usually match
D. Yes, but only if there is also muscle atrophy
ANSWER: C

9. Which statement about deep friction massage according to Cyriax is false?
A. The joint capsule is treated in the most accessible position.
B. In the case of tenosynovitis, the affected structure is treated in a tight position.
C. The tendon is treated in the most accessible position.
D. The muscle is treated in its relaxed position.
ANSWER : A

10. What is not the therapeutic effect of Cyriax deep friction massage?
A. Pain relief
B. Facilitating remodelling
C. Preventing the development of adhesions
D. Trauma haematoma
ANSWER: D

11. What is the principle of Cyriax deep friction massage?
A. Prevents healing tissue from entering the remodelling phase
B. It dissolves adhesions, the scarring between individual fibres.
C. Develops new, organized adhesions
D. Helps scarring between individual fibers while healing tissue is dissolved
ANSWER: B

12. What is the order of the scar tissue healing phases?
A. Inflammation -> Proliferation -> Remodelling -> Haemostasis
B. Homeostasis -> Inflammation -> Proliferation -> Remodelling
C. Haemostasis -> Inflammation -> Proliferation -> Remodelling
D. Inflammation -> Proliferation -> Remodelling -> Homeostasis
ANSWER: C

13. What is not true for scar treatment?
A. Transversal mobilization is forbidden
B. Treatment should not be painful
C. Does not cause pathological skin or vascular reactions
D. The stage of wound healing does not affect mobilisation
ANSWER: D

14. What treatment can be given during the fibro-proliferative phase of wound healing?
A. only indirect technique
B. indirect and direct techniques
C. manual passive stretching
D. only direct techniques
ANSWER: B

15. Which scar treatment technique is a direct technique?
A. Longitudinal stretch with crossed hands technique
B. Tissue push-off
C. Longitudinal smoothing
D. Circular rubbing
ANSWER: A

16. What is typical of the proliferative phase of wound healing?
A. Reorganization of collagen fibers
B. Local vasoconstriction
C. Formation of granulation sarcoid tissue
D. Vasodilation
ANSWER: C

17. Characteristic of pain in the facet joint
A. positive Slump test
B. Very local unilateral pain
C. diffuse central pain
D. always bilateral
ANSWER: B

18. Characteristics of intervertebral disc pain
A. Very localized pain
B. there is always a radiating symptom
C. wide area hurts
D. worst in the evening
ANSWER: C

19. Characteristic of disc herniation :
A. often muscle weakness, reflex changes
B. Very local unilateral pain
C. negative neurodynamic tests
D. muscle strength always maintained
ANSWER: A

20. Pain of the dura and the dura cuff :
A. never refers down to the ankles
B. always refers down to the ankle
C. distal pain is greater than proximal pain
D. Local pain
ANSWER: A

21. Characteristic of nerveroot pain

A. has always been associated with central pain
B. often occurs only on the distal part of the dermatome
C. mild pain
D. local
ANSWER: B

22. What does it mean if coughing or sneezing aggravates the patient's lumbar complaints ?

A. Pain in the joint capsule
B. ligament pain
C. tumour
D. herniated disc
ANSWER: D

23. During the Maitland movement testing, we observe the

A. the symptoms
B. the movement range
C. the quality of the movement
D. all three
ANSWER: D

24. Which is the primary muscle to activate if you have back pain when standing ?
A. multifidus
B. Pelvic floor muscles
C. psoas major
D. transversus abdominis
ANSWER: D

25. Which is the primary muscle to activate if you have back pain when sitting ?
A. multifidus
B. pelvis floor muscles
C. psoas major
D. transversus abdominis
ANSWER: A

26. The Slump test :
A. examines the mechanosensitivity of the dura
B. if positive, we will also see a reflex change
C. if positive, then SLR is also positive
D. if positive, we will also find muscle weakness
ANSWER: A

27. Choose the correct treatment sequence for pelvic dysfunction for Lewit manual therapy!
A. Sacrum, Os ilium, Symphysis dysfunction
B. Symphysis, Sacrum, Os ilium dysfunction
C. Os ilium, Sacrum, Symphysis dysfunction
D. Depends on the extent of the dysfunction.
ANSWER: B

28. Choose the correct lumbar treatment protocol for Lewit Manipulation!
A. soft tissue technique, traction, joint mobilisation
B. soft tissue technique, joint mobilisation, traction
C. traction, active joint mobilisation, passive joint mobilisation
D. traction, passive joint mobilisation, manipulation
ANSWER : A

29. Choose the definition of manipulation!
A. Precisely defined, rapid, high-amplitude, but non-violent movement at the pathological end-range of motion.
B. Precisely defined, rapid, low-amplitude, but non-violent movement at the pathological end-range of motion.
C. Precisely defined, rapid, low-amplitude, violent movement at the pathological end-range of motion.
D. A precisely defined, rapid, low amplitude, but non-violent movement of the anatomical barrier.
ANSWER: B

30. Select the absolute contraindication for Lewit's manual therapy!
A. non-cooperating patient
B. osteoporosis
C. hypermobility
D. spondylolisthesis
ANSWER:A

31. What are the characteristics of Mulligan manual therapy?
A. pain during treatment
B. immediate effect
C. uses a passive mobilization technique
D. equal pressure
ANSWER: B

32. When using the SNAGs technique (Mulligan manual therapy):
A. direction of active movement is the same as the direction of ROM restriction
B. the direction of active movement is the opposite of the ROM restriction
C. the direction of active movement and the side of passive movement are always the same
D. passive movement is done by moving the spinas process
ANSWER: A

33. For pelvic dysfunction, which test is used to determine the side that needs to be treated (Lewit manual therapy)?
A. Spine test
B. “Overtake” symptom
C. SI joint play testing
D. SLR test
ANSWER: B

34. Indication for Gaymans grip (Lewit manual therapy):
A. os ilium rotated backwards
B. sacrum nutation dysfunction
C. sacrum contranutation dysfunction
D. os ilium rotated anteriorly.
ANSWER: D

35. The direction of the mobilizing hand in the examination of joint play according to Lewit:
A. lumbar section dorso-ventral-cranial
B. lumbar section dorso-ventral
C. thoracic section dorso-ventral-caudal
D. thoracic section dorso-ventral
ANSWER: B

36. Choose the correct statement!
A. When the pelvis is overloaded, the line of L5-S1 disc makes an angle of 50-70 degrees to the horizontal
B. When the pelvis is overloaded, the line of L5-S1 disc makes an angle of 15-30 degrees to the horizontal
C. When the pelvis is overloaded, the line of L5-S1 disc makes an angle of 30 to 50 degrees to the horizontal
D. Overloaded pelvis predisposes to lumbosacral hypermobility.
ANSWER: A

MULTIPLE CHOICE

1. Characteristic of pain of the facet joint

A. the opening of the joint may increase the pain
B. closure of the joint may increase the pain
C. diffuse central pain
D. mainly local pain
ANSWER: A, B, D

2. Characteristics of intervertebral disc pain
A. can be central, unilateral, bilateral
B. the pain is deep, often causing nausea
C. wide area hurts
D. hurts when you get up in the morning
ANSWER: A, B, C, D

3. Characteristic of a herniated disc :
A. often muscle weakness, reflex changes
B. neurodynamic tests are positive
C. often paraesthesia, loss of sensation
D. muscle strength always maintained
ANSWER: A, B ,C

4. Pain in the dura and the dura cuff :
A. never refers down to the ankles
B. always refers down to the ankles
C. distal pain is greater than proximal pain
D. proximal pain is greater than distal pain
ANSWER: A, D

5. Characteristic of nerveroot pain

A. has always been associated with central pain
B. often occurs only on the distal part of the dermatome
C. severe pain
D. often associated with muscle weakness
ANSWER: B, C, D

6. When is lumbar rotation treatment recommended ?
A. for unilateral pain
B. for central pain
C. for longitudinal spine pain
D. for unilateral lower limb symptoms
ANSWER: A, D

7. During the Maitland movement testing, we observe the
A. the symptoms
B. the movement range
C. the quality of movement
D. the patient's face
ANSWER: A, B, C

8. When do we think that the patient needs activation of multifidus ?
A. if there is a complaint on extension movement
B. if there is a complaint on flexion movement
C. if you have recurrent discogenic pain
D. if there is a complaint in sitting
ANSWER: B, C, D

9. In the PKB (Prone Knee Bend) test, we test ?
A. a lumbar plexus
B. stretching of the iliotibial tract
C. stretching of the rectus femoris
D. the stretching of the psoas major
ANSWER: A, B, C

10. The Slump test is characterized by :
A. examines the mechanosensitivity of the dura
B. differentiate by raising the head
C. if positive, then SLR is also positive
D. can be differentiated by lumbar extension
ANSWER: A, B

11. Which of the following is a pathological phenomenon in scar healing?
A. Excessive granulation
B. Incomplete scar contraction
C. Excessive scarring
D. Lack of pigmentation
ANSWER: A, B, C

12. In which case is scar treatment NOT contraindicated?
A. In case of infection around the scar
B. In the absence of tissue integrity in or around the scar
C. For malignancy in the scar area
D. For stitches in or around the scar
ANSWER: D

13. The American College of Rheumatology has defined the following two criteria for the diagnosis of fibromyalgia:
A. Extensive pain (all four quadrants of the body) for at least 3 months, both below and above the waist
B. Extensive pain (all four quadrants of the body) for at least 6 months, both below and above the waist
C. 11/18 subjective sensitivity of tender point to pressure
D. 11/18 tender point objective sensitivity to pressure
ANSWER: A, C

14. What is myofascial pain syndrome?
A. It mainly affects elements of the sceletal system
B. Common condition affecting soft tissues
C. Presence of tender points that can only be determined from their sensitivity
D. Myofascial trigger points cause symptoms
ANSWER: B, D

15. What are the typical symptoms caused by trigger points?
A. They can limit the range of movement
B. They can change movement activation patterns
C. May cause local or radiating pain
D. Can cause muscle weakness
ANSWER: A, B, C, D

16. What factors can make the pain from trigger points persistent:
A. Scoliosis
B. Leg length discrepancy
C. Articular hypermobility
D. Physiological muscle use
ANSWER: A, B, C

17. Key criteria for identifying trigger points include:
A. Tight muscle bundle
B. High sensitivity at tissue attachments on bones
C. Patient pain recognition
D. Painfree muscle endposition
E. ANSWER: A, C

18. What explains the principle of Cyriax deep friction massage?
A. It creates adhesions
B. Can trigger scarring between some soft tissue fibers
C. Can promote the breakdown of healing tissue
D. None of this is true
ANSWER: D

19. Which of the followings are considered contraindicated for Cyriax deep friction massage?
A. Bursitis
B. Local sepsis
C. Extensive haematomas
D. Tissue adhesion
ANSWER: A, B, C

20. What is NOT the basic principle of scar management?
A. We use the highest possible intensity of treatment
B. Choose mobilisation according to the stages of wound healing
C. Treatment can be as painful as the patient can tolerate
D. Pathological skin or vascular reactions should not be triggered by the treatment
ANSWER: A, C

21. In which clinical areas can Dr Terrier's soft tissue and joint mobilisation be used?
A. rheumatology
B. traumatology
C. orthopaedics
D. internal medicine
ANSWER: A, B, C

22. What are the primary symptoms that can be treated by Dr Terier's soft tissue and joint mobilisation?
A. Pain
B. defensive position
C. pressure sensitivity
D. periarticular muscle spasm
ANSWER: A, D

23. What kind of treatment is Dr Terrier's soft tissue and joint mobilisation treatment?
A. massage
B. orthopaedic manual therapy
C. oscillation
D. Grade III traction
ANSWER: A, B

24. What stimulus does Dr.Terrier's soft tissue and joint mobilisation use?
A. smoothing
B. Traction
C. Pressure
D. Stretch
ANSWER: B, C, D

25. What are the primary indications for Dr Terrier's soft tissue and joint mobilisation?
A. arthromuscular dysfunctions
B. post-traumatic cases
C. neurological cases
D. inflammatory diseases
ANSWER: A, B

26. What are the contraindications to Dr Terrier's soft tissue and joint mobilisation?
A. hypomobile arthromuscular dysfunctions
B. joint hypermobility
C. arthritis
D. malignant tumours
ANSWER: C, D

27. What is targeted by Dr Terrier's soft tissue and joint mobilisation?
A. muscles
B. arthron
C. Tendons
D. vertebrae
ANSWER: B, D

28. In which joint position is Dr. Terrier's soft tissue and joint mobilisation performed?
A. in the end position of the joint
B. at resting position of the joint
C. in the closed position of the joint
D. the position of the joint play
ANSWER: A, D

29. What do we call manoeuvres in Dr Terrier's soft tissue and joint mobilisation?
A. stretch stimulus
B. the right grip for the body-part
C. Intervention in a functional manner
D. pressure stimulus
ANSWER: B, C

30. What is the effect of stretching-mobilisation in Dr. Terrier's soft tissue and joint mobilisation?
A. stimulation of proprioceptors
B. reflex joint relaxation
C. pain relief
D. Increase of blood flow in the soft tissues
ANSWER: A, B, C, D

31. Choose the correct statements for the joint play!
A. depends on the congruency of the joints and the condition of the accessory structures
B. not possible by muscle activation
C. physiological movement in itself
D. can be detected by passive movement at the end of the elastic range of movement.
ANSWER: A, B, D

32. This is true for the functional block:
A. results in a reduction in active ROM
B. reversible
C. accompanied by an increase in muscle tone
D. is associated with vegetative symptoms
E. ANSWER: B, C, D

33. Select the diagnostic characteristics of Lewit manual therapy!
A. Barrier concept
B. Convex-concave rule
C. ART
D. testing joint play
ANSWER: A, C, D

34. Choose the Lewit joint mobilisation techniques!
A. auto-mobilisation
B. Breathing technique
C. Visual technique
D. PIR
ANSWER: A, B, C, D

35. Select the activities that can be carried out without a higher-level of qualifications in health care on the basis of national legislation.
A. reflexology therapy
B. acupressure
C. manual therapy
D. Phytotherapy
ANSWER: A, B, D

36. Right anteriorly rotated os illium – in case of Lewit's manual therapy test:
A. overtaking sign is positive on the left
B. the overtaking sign on the right is positive
C. spine test is positive on the right side
D. the right SIAS is lower, the right SIPS is higher
ANSWER: B, D

37. What is typical of the reverse NAGs technique (Mulligan manual therapy)?
A. applicable to the cervical spine
B. oscillating movement
C. movement of spinas process
D. may be used in postural dysfunction
ANSWER: A, B, D

38. Indications for steering wheel grip (Lewit manual therapy):
A. os ilium higher position
B. os ilium placed downwards
C. anteriorly rotated os ilium
D. os ilium rotated posteriorly
ANSWER: C, D

39. Select the screening tests used in Lewit manual therapy!
A. Gait analysis
B. Flexion test in standing
C. Flexion test in sitting
D. Breathing testing
ANSWER: A, B, C, D

40. Mobilization of the sacrum towards contranutation (Lewit manoeuvre therapy):
A. Supine position, Dorsoventral mobilization on S2 during exhalation.
B. Side-lying position, caudal from S2 mobilization to dorsoventral.
C. The mobilization is done while the patient is breathing in.
D. The mobilization is done while the patient is exhaling.
ANSWER: B, C

TRUE OR FALSE

1. The primary aim of the Maitland movement testing is to reproduce pain.
A. True
B. False
ANSWER. A

2. In the case of nerve root pain, the distal symptom is often greater than the proximal symptom
A. True
B. False
ANSWER. A

3. Neurological examination tests the mechanosensitivity of the nerves
A. True
B. False

ANSWER: B

4. Neurodynamic testing examines the mechanosensitivity of nerves
A. True
B. False
ANSWER. A

5. Intervertebral disc pain is always central
A. True
B. False
ANSWER: B

6. The wound/scar is at its weakest on postoperative days 5-8
A. True
B. False
ANSWER. A

7. Deep friction massage according to Cyriax is not allowed to induce traumatic hyperaemia
A. True
B. False
ANSWER: B

8. Fibromyalgia cannot be classified as a true myofascial disease
A. True
B. False
ANSWER: B

9. Trigger points are characterized by the fact that they can trigger no symptoms other than pain, including other sensory and autonomic symptoms
A. True
B. False
ANSWER: B

10. During scar treatment, the scar should also be mobilized in transverse directions as early as possible
A. True
B. False
ANSWER: B

11. The McKenzie MDT system addresses both inflammatory and mechanical problems.
A. True
B. False
ANSWER: B

12. In the McKenzie MDT examination procedure it is important to identify the tissue/structure causing the pain.
A. True
B. False
ANSWER: B

13. In Mechanical Diagnosis and Therapy we base our treatment primarily on palpation.
A. True
B. False
ANSWER: B

14. In Mechanical Diagnosis and Therapy we base our treatment primarily on the examination of repeated movements.
A. True
B. False
ANSWER. A

15. In the system of Mechanical Diagnosis and Therapy a detailed anamnesis is an important part of the examination
A. True
B. False
ANSWER. A

16. In a system of McKenzie's MDT home exercises (by patient generated forces) play an important role.
A. True
B. False
ANSWER. A

17. Joint play is not a movement that can be performed by the muscle itself, it is not a physiological movement; it is a passive movement that can be detected by springing at the end of the range
A. True
B. False
ANSWER. A

18. Reduced joint play results in pain.
A. True
B. False
ANSWER: B

19. Reduced joint play leads to dysfunction.
A. True
B. False
ANSWER. A

20. The joint play testing is based on the convex-concave rule.
A. True
B. False
ANSWER: B

21. The examination of joint play in the spine can be tested by pressing on the proc. spinosus.
A. True
B. False
ANSWER. A

22. Joint play is tested after the anatomical barrier.
A. True
B. False
ANSWER:B

23. The restrictive barrier indicates a physiological limit of the movement.
A. True
B. False
ANSWER: B

24. The basic convex-concave rule compares the direction of osteokinematic movement with the direction of arthrokinematic sliding.
A. True
B. False
ANSWER. A

SCIENTIFIC BACKGROUND AND PRACTICE PHYSIOTHERAPY FOR IMPROVE COORDINATION AND PROPRIOCEPTION

SINGLE CHOICE

1. Laws of physics applied in motion analysis:
A. Newton's laws
B. Heisenberg's laws
C. Bloomfeld's laws
D. Aristotle's laws
ANSWER: A

2. Does not provide information on balancing strategies:
A. Posturography
B. Cranio-corpography
C. 3D motion analysis
ANSWER: B

3. When testing balancing ability, the order of steps to make conditions more difficult:
A. Standing on two feet - Standing on one foot - Visual control denied
B. Standing on two feet - Visual control denied - Standing on one foot
C. Standing on one foot - Visual control denied - Standing on two feet
ANSWER: A

4. During gait analysis, the high standard deviation of the step length indicates:
A. Long stride
B. Stride width
C. High ground reaction force (GRF)
D. Stride variability
ANSWER: D

5. Not suitable for testing balancing ability:
A. Flamingo balance test
B. Standing stork test
C. Tegner Activity Scale (TAS)
D. Berg Balance Scale (BBS)
ANSWER: C

6. What is stability?
A. Stability = passive control = active control
B. Stability = control of the joints = control of the muscles
C. Stability = motor control = pain control
D. Stability = neural control = control of the muscles
ANSWER: C

7. Where is the neutral posture?
A. Where the physiological (osteokinematic) movements start
B. At the elastic zone's beginning
C. Where the physiological (osteokinematic) movements end
D. At the physiological limit
ANSWER: A

8. What is required for segmental stabilisation?
A. Isometric contraction of muscles
B. Isotonic contraction of muscles
C. Co-contraction of muscles
D. Muscle elasticity
ANSWER: C

9. Which three muscle groups secure the most lumbar stabilization?
A. Transversus abdominis, multifidus, pelvic floor muscles
B. Diaphragma, multifidus, pelvic floor muscles
C. Abdominal muscles, multifidus, pelvic floor muscles
D. Transversus abdominis, abdominal muscles, multifidus
ANSWER: A

10. What is not needed for the optimal stabilization?
A. Tonal contraction
B. Consciously keeping the joint stable
C. Sufficient reaction time, speed
D. Coordination and control within the neutral zone
ANSWER: B

11. Examination of the movement of the foot plantar center of pressure (COP) provides information about:
A. Postural control
B. The body's weight force
C. Pressure distribution
D. The center of mass' 3D movement
ANSWER: A

12. The dynamic characteristics of walking include:
A. Ground reaction force (GRF)
B. The joint angle of the knee
C. The center of mass' trajectory
D. The stride's length
ANSWER: A

13. The motion of body center of mass shows:
A. The energy need of walking
B. The strides' length
C. The strides' width
D. The gait cycle' length
ANSWER: A

14. Used for measuring the hand’s fine-motor coordination/finger dexterity:
A. Fukuda test (FST)
B. Nine-Hole Peg Test (9HPT)
C. Grip force measuring
D. Measuring the range of motion of the phalanges
ANSWER: B

15. True for testing the joint position sense:
A. Must be tested in a standing position
B. Must replicate a previously sensed joint position
C. Provides information about the muscle strength
D. Results are the same on both sides
ANSWER: B

16. What is one of the principles of proprioceptive "training"?
A. The speed of movement is not changed
B. Use of static and dynamic positions
C. We start with complex exercises and break them down into simpler exercises
D. Always performed with visual control
ANSWER: B

17. Not true for aesthetic body shaping gymnastics (ETK)?
A. Functional
B. Uses special patterns
C. Accurate, economical movement
D. Uses transitional parts
ANSWER: B

18. True for Mensendieck’s gymnastics:
A. Feet are open at 45 degrees in standing position to maintain balance
B. Anatomy-based gymnastics
C. Avoids isolation muscle exercises
D. Dynamic gymnastics with background music
ANSWER: B

19. True for Alice Madzsarné Jászi’s gymnastics:
A. Uses special manual techniques
B. Gradualism and corrective approach
C. Builds from the periphery, adjusting limbs in space
D. No emphasis on breathing
ANSWER: B

20. The duration of the sensorimotor training’s neural adaptation:
A. 6 weeks
B. 2 weeks
C. 2 months
D. 30 days
E. Half a year
ANSWER: A

21. What is postural stability?
A. When the body center of mass is kept above the base of support
B. When the line of gravity is perpendicular to the ground
C. When the body center of mass is near the base of support
ANSWER: A

22. What does it mean to maintain balance?
A. Motionless state on an unstable surface without limb movement
B. The ability to keep the body's position above the base of support
C. The neural adaptation created by increasing the base of support
ANSWER: B

23. Which statement is true?
A. More movement experience leads to better learning algorithm
B. When time is short, the best motor response will be the answer
C. Women have better motor coordination than men
D. Walking is a position of stability
ANSWER: A

24. Which statement is false?
A. There's no skill acquisition without motor learning
B. If the optimal condition for afferentation or efferentation is lost, the movement will be faulty
C. People base 99% of their information on what they see
D. Walking is not a position of stability
ANSWER: C

25. What age is the best to teach motor learning?
A. 3-5 y/o
B. 14-16 y/o
C. 8-13 y/o
D. 5-6 y/o
ANSWER: C

26. What tools are used during aesthetic body shaping gymnastics (ETK)?
A. Small balls, dynair
B. Stability disc, veil
C. Cane, rubber band
D. Hand barbells
ANSWER: B

27. Does NOT belong to the variables used in static equilibrium tests:
A. Body swing direction
B. Vertical ground reaction force (vGRF)
C. Movement of the head and shoulders
D. The strides' width
ANSWER: D

28. True of the cranio-corpography:
A. Measures the trajectory of the head and shoulders
B. Can be performed standing on even feet
C. Measures the movement of the foot plantar center of pressure (COP)
D. Measures forces
ANSWER: A

29. During the posturography test body sway can be calculated using the foot plantar center of pressure (COP), which gives information about:
A. Postural control strategies
B. The distribution of weight between the two lower limbs
C. The level of the postural control ability
D. Length of the major axis of the ellipse
ANSWER: A

30. Select the incorrect answer: During the provocation test on Posturomed:
A. The platform is moved from its stable balance position
B. Information is gained on the oscillation damping's time period
C. The amplitude of the platform's movement is measured
D. Lower limb muscle strength is measured
ANSWER: D

31. True for the virtual reality therapy:
A. The patient is an active participant
B. Only the computer provides information
C. Must not contain acoustic stimuli
D. It can be implemented in 2D.
ANSWER: A

32. During the Feldenkrais Method's Awareness through Movement group classes:
A. The most important thing is to perform the movements as often as possible
B. The most important thing is to pay attention to perception and movement
C. The most important thing is to perform the movements correctly
D. The most important thing is to correct what was done incorrectly
ANSWER: A

33. How should the Feldenkrais Method be defined?
A. Training
B. Coaching
C. Sensory motor learning method
D. Therapy
ANSWER: C

34. True for the Feldenkrais Method:
A. The teacher demonstrates what to do
B. The more fine/subtle the movement, the more it can be felt
C. There's no rest between movement blocks
D. There's no need to pay attention to the movement
ANSWER: B

35. The Feldenkrais Method is contraindicated in cases of:
A. Problems with motor development
B. Problems with the knee joint
C. Schizophrenia
D. Autism
ANSWER: C

36. Choose the definition of reaction time!
A. The length of time between the appearance of a sudden and unanticipated stimulus and the start of a response action.
B. The length of time needed for the appearance of a sudden and unanticipated stimulus.
C. The length of time between the appearance of a stimulus known in advance and the start of a response action.
D. The length of time needed for the appearance of a stimulus known in advance.
ANSWER: A

37. Which one does not belong to the stages of information processing?
A. Response selection
B. Stimulus identification
C. Movement time
D. Response programming
ANSWER: C

38. True for the short-term memory:
A. The duration is less than 1 sec
B. It has unlimited capacity
C. Its encoding type is called „chunking”
D. It is not affected by selective attention
ANSWER: C

MULTIPLE CHOICE

1. Physical quantities used in kinematic tests:
A. Time
B. Torque
C. Velocity
D. Pressure
ANSWER: A, C

2. Quantities used in dynamic tests:
A. Acceleration
B. Work
C. Angular velocity
D. Mass
ANSWER: B, D

3. COP – Center Of Pressure – The foot plantar center of pressure
A. Centre of the resultant forces on the base of support
B. A point in 3D
C. A point on a 2D plane
D. Unaffected by the centre of gravity
ANSWER: A, C

4. Suitable for testing balancing ability:
A. Cranio-corpography
B. MR
C. Posturography
D. ECG (EKG)
ANSWER: A, C

5. Information that can be conveyed to the patient in virtual reality therapies:
A. Visual
B. Acoustic
C. Kinetic
D. Tactile
ANSWER: A, B, C, D

6. Can be measured with an ultrasonic based testing system:
A. The shape of the spine
B. The range of motion of the spine
C. The perimeter of the muscles that stabilise the spine
D. The strength of the muscles that stabilise the spine
ANSWER: A, B, C
7. Can be measured by cranio-corpography:
A. Position of the head
B. Position of the pelvis
C. Body swing
D. The strength of the neck muscles
ANSWER: A, C

8. Representatives of the „movement for healing” approach:
A. Dorothy Voss
B. Bess Mensendieck
C. Alice Madzsar
D. Sára P. Berczik
ANSWER: B, C

9. Movement forms/exercises that increase proprioception:
A. ATG
B. Passive range of motion exercise, holding out at the maximum range of motion
C. Plyometric exercise
D. Postural stability exercise
ANSWER: A, B, C, D

10. What are the parts of the stability system?
A. Active system
B. Passive system
C. Neural - control and coordinating system
D. Neural - vegetative system
ANSWER: A, B, C

11. What does instability mean in the case of the spine?
A. Pathologically increased amount of movement between two vertebrae
B. Increase of the physiological curves
C. Loss of control of movement and/or movement pattern
D. Increased amount of movement between two vertebrae
ANSWER: A, C

12. Which are the typical dysfunctions of cervical instability?
A. Decreased oculomotor control
B. Histological lesions, atrophy
C. Loss of coordination
D. Increased neuromuscular efficiency
ANSWER: A, B, C

13. What is true for the pelvic floor in terms of stability?
A. It supports the transversus abdominis and the multifidus
B. Works in the opposite way to the diaphragm
C. Provides flexible, ventral stabilisation for the lumbar vertebrae
D. It has increasing role in stabilising the lumbar vertebrae when the abdominal pressure decreases

ANSWER: A, C

14. When it comes to the function of the transversus abdominis, what is the so-called pre-programming?
A. Movement to prevent injury
B. Protection in time
C. Stabilising before a movement
D. Stabilising at the end of a movement
ANSWER: B, C

15. What is true for the local stabilising muscles?
A. Small, deep muscles near the joints
B. High activity level
C. Not specifically locomotor, rather control muscles
D. Explosive muscles
ANSWER: A, C

16. Name the stages of information processing:
A. Stimulus identification stage
B. Response selection stage
C. Response programming stage
D. Stimulus delivery stage
ANSWER: A, B, C

17. True for the choice response time:
A. Several possible stimuli, but happens only if a certain stimulus occurs; no response to the others
B. Several possible stimuli, 1 response given, but a different response for each
C. Discrimination and choice are its components
D. 1 stimulus for which there is 1 response
ANSWER: B, C

18. What variables affect reaction time in information processing?
A. Learned patterns
B. Intelligence
C. Genetic determination
D. Age
E. The number of response options
ANSWER: A, C, D, E

19. What variables affect reaction time in information processing?
A. Learned patterns
B. Genetic determination
C. Age
D. The number of response options
ANSWER: A, B, C, D

20. Pick the correct statements for response time:
A. Several possible stimuli, but happens only if a certain stimulus occurs; no response to the others
B. Several possible stimuli, 1 response given, but a different response for each
C. Discrimination and choice are its components
D. 1 stimulus for which there is 1 response
ANSWER: B, C

21. Select the systems that influence the postural control!
A. Visual
B. Vestibular
C. Somatosensory
D. Cognitive
ANSWER: A, B, C, D

TRUE OR FALSE

1. The postural control's goal is to keep the center of mass (COM) above the base of support
A. True
B. False
ANSWER:A

2. The joint position sense testing is always performed actively.
A. True
B. False
ANSWER:B
3. In cases of low deflecting forces, the primary strategy for maintaining balance is a hip strategy.
A. True
B. False
ANSWER:B
4. In general, a greater degree of body/postural sway indicates poorer balancing ability.
A. True
B. False
ANSWER:A
5. The Fukuda-Unterberger test is used to detect vestibular problems.
A. True
B. False
ANSWER:A
6. Is this statement true? In the case of transversus abdominis dysfunction, an increase in the neutral zone and thus segmental instability can occur.
A. True
B. False
ANSWER:A

7. Is this statement true? The multifidus muscle performs its stabilising function even at a small percentage (3-5%) of maximum contraction.
A. True
B. False
ANSWER:A

8. Is this statement true? The pelvic floor muscles alone are responsible for stabilising the sacrum.
A. True
B. False
ANSWER:B

9. When building up stability training, one starts first with the arm-leg coordination and only then moves on to leg coordination.
A. True
B. False
ANSWER:B

10. Treatment of the musculus multifidus in the cervical part needs to be built up in a segment specific way.
A. True
B. False
ANSWER:B

11. Cervical instability may result in reduced oculomotor control.
A. True
B. False
ANSWER:A

12. Postural control is the spatial control of body position during dynamic movements.
A. True
B. False
ANSWER:B

13. The base of support is an ellipse laid on the contact points.
A. True
B. False
ANSWER:B

14. The centre of gravity and the centre of mass are in the same place.
A. True
B. False
ANSWER:B

15. The relationship between the number of stimulus-response options' logarithm and the choice reaction time is exponential.
A. True
B. False
ANSWER:B
16. In the case of choice reaction time, only when a certain stimulus occurs out of several possible stimuli, does a response reaction happen.
A. True
B. False
ANSWER:B

17. The stages of the discrimination reaction time are discrimination and choice.
A. True
B. False
ANSWER:B

18. At the response selection stage, the stimulus-response compatibility affects the slope of the formula describing Hick's law.
A. True
B. False
ANSWER:A

19. Hick's law describes the connection between the choice reaction time and the number of stimulus-response options.
A. True
B. False
ANSWER:A

RELATIONAL ANALYSIS

A: The first part of the statement is TRUE, the second part of the statement is TRUE, and there is a correlation between them
B: The first part of the statement is TRUE, the second part of the statement is TRUE, and there is no correlation between them
C: The first part of the statement is TRUE, the second part of the statement is FALSE, and there is no correlation between them
D: The first part of the statement is FALSE, the second part of the statement is TRUE, and there is no correlation between them
E: The first part of the statement is FALSE, the second part of the statement is FALSE, and there is no correlation between them

1. Analyse the statements!
   Segmental stabilisation requires good co-contraction of the muscles, in which case the joint is centralised and an even distribution of pressure on the cartilage is achieved.
   TRUE-TRUE, there is, A
2. In the case of instability: the stabilisation system keeps the neutral zone of a movement segment within its physiological limits, so dysfunction and pain may occur.
   FALSE-TRUE, there isn't, D
3. The first treatment level of lumbar stabilization training starts with local segmental control, as the pelvic floor has no role in stabilization training.
   TRUE-FALSE, there isn't, C
4. Because of cervical pain, multifidus atrophy may develop, that makes the side-specific treatment of the multifidus necessary.
   TRUE-TRUE, there is, A
5. The early contraction for optimal stabilisation occurs at the end of the movement, so oculomotor control does not play a role in cervical stability.
   FALSE-FALSE, there isn't, E
6. The transversus abdominis is a toned muscle, at about 25% of its maximum strength it performs its maximum stabilising function, making strength training ineffective.
   TRUE-TRUE, there is, A

DEVELOPMENTAL NEUROLOGY

SINGLE CHOICE

1. What are the basic movement patterns that can be used to test the tone of the limbs?
A. elementary walking, floating sitting, pulling into a sitting position
B. assisted climbing, walking on hands, crawling on slopes
C. supported squats, sit-ups, floating sit-ups, sit-ups
ANSWER:B

2. What is needed to trigger elementary sensorimotor movement patterns?
A. for tactile stimulation, for a physiotherapist skilled in developmental neurology
B. to a visual stimulus, a few days after birth
C. for gravity, to create special stimulus situations
ANSWER:C

3. How would you set up neurotherapy for a baby born with a brachial plexus lesion who has the following symptoms: weak wrist elevation, weak elbow flexion, stronger elbow extension, weaker shoulder movements, but the shoulder is not yet stable?
A. A, pulling into a seat, crossing hands, Moro reaction
B. B, crawling on a slope upside down, elementary walking, pulling into a seat
C. **C**, floating planting, walking by hand, assisted climbing
ANSWER:C

4. Which disease is a consequence of hypoxic-ischemic damage?
A. spinal muscular atrophy
B. periventricular leukomalacia
C. myelomeningocele
ANSWER:B

5. In case of visual attention disorder (no dioptre deviation), what treatment would you recommend at the age of 3 weeks?
A. with an infant with open eyes, 6 times a day, in a semi-recumbent position, slowly moving a contrasting image along a semicircle from the infant's face approx. 25 - 30 cm apart
B. when the baby is awake, 6 times a day, in a semi-recumbent position, slowly moving a contrasting image along a semicircle from the baby's face approx. 25 - 30 cm apart
C. moving a contrasting image in all directions when the baby is awake, in a floating position, at a distance of 10-15 cm from him
ANSWER:C

6. What kind of electrotherapy treatment would you start in a newborn with a mixed brachial plexus lesion and when?
A. selective impulse current treatment immediately after birth
B. muscle stimulation after the examination
C. functional impulse current treatment from the nerve directly after the examination
D. TENS treatment
ANSWER:B

7. Which is a complication of prematurity that can adversely affect the adjustment of the length of neurotherapy?
A. osteopenia
B. hypothyroidism
C. bronchopulmonary dysplasia
D. retinopathy prematororum II.st.
ANSWER:C

8. The development of which function is mostly at risk in the newborn who is born with myelomeningocele?
A. the development of posture and manipulation
B. the development of standing and walking and bladder and rectal functions
C. head lifting, lower limb movements, intellectual development
ANSWER:B

9. Which movement patterns can best be used to examine axial tone?
A. assisted climbing, crawling on a slope, elementary walking
B. elementary walking, supported bending, walking on hands
C. floating sitting, sitting down
ANSWER:C

10. In case of brachial plexus injury, which movement pattern should not be practiced at first?
A. pulling into a seat
B. manual operation
C. bending into a seat
ANSWER:A

11. What is not one of the functions of the basal ganglia?
A. automation of movements
B. control of mimicry
C. movement planning
ANSWER:B

12. How would you organize the neurotherapy of a 3-week-old baby with Down syndrome?
A. taking into account its load capacity, paying attention to its symptoms, practicing elementary walking
B. I would only practice locomotor movement patterns according to your symptoms
C. specifically setting verticalization patterns according to his symptoms
ANSWER:C

13. Which movement patterns would you practice with the 4-month-old baby who shows signs of side difference?
A. pulling into a seat, elementary walking, walking on hands
B. walking by hand, assisted climbing
C. crawling on a slope lying on your stomach upside down, sitting up
ANSWER:A

14. What symptoms does West syndrome consist of?
A. flexion spasm, EEG deviation, intellectual involvement
B. tonic-clonic seizure, attention disorder
C. vision problem, myoclonus appearing in seizures
ANSWER:A

15. Which of the following imaging tests can be used to examine the brain structure most easily and repeatedly in newborns?
A. skull ultrasound
B. skull CT
C. MRI
ANSWER:A

16. How would you structure neurotherapy for a newborn with myelomeningocele if both lower limbs are affected below the knee?
A. a., floating sitting, assisted climbing, elementary walking, crawling on a slope, Bauer reaction, stepping on a table
B. b., mk. moving the lower limb, assisted climbing, elementary walking, crawling on a slope, stepping on a table
C. C., sitting down, assisted climbing, elementary walking, Bauer reaction, stepping on a table
ANSWER:C

17. How are primitive reflexes regulated?
A. premotor cortex
B. basal ganglia
C. brainstem
ANSWER:C

18. Which of the following goals is not the goal of neurotherapy at the age of 2-3 months?
A. development of manipulation
B. development of head control
C. retuning of movement control
ANSWER:B

19. How would you structure neurotherapy for a newborn with myelomeningocele if both lower limbs are affected below the knee?
A. floating sitting, assisted climbing, elementary walking, crawling on a slope, Bauer reaction, stepping on a table
B. mk. moving the lower limb, assisted climbing, elementary walking, crawling on a slope, stepping on a table
C. sitting down, assisted climbing, elementary walking, Bauer reaction, stepping on a table
ANSWER:C

20. What would you think if a baby treated with neurotherapy started at the age of 1.5 months shows a side difference when practicing locomotor patterns at the age of about 4 months, who has ventricular asymmetry on ultrasound?
A. our therapeutic method is wrong
B. to the risk of developing hemiparesis
C. a new disease process started in the periphery
ANSWER:B

21. Among the following, attention and vigilance are associated with which nervous system structure?
A. fasciculus longitudinalis medialis
B. formatio reticularis ascendens
C. formation reticularis descendens
ANSWER:C

22. How are elementary movement patterns regulated?
A. spinal cord
B. frontal cortex
C. basal ganglia
ANSWER:C

23. Which of the following brain development processes continues even after birth?
A. canalization
B. migration
C. myelination
ANSWER:C

24. What symptoms can we expect in a newborn born with myelomeningocele?
A. decreased axial tone, vegetative symptoms, speech disorder
B. spastic paraparesis, sensory disturbance, epilepsy
C. flaccid lower limb involvement, incontinence, sensation disorder
ANSWER:A

25. Which function is most often at risk for the development of a newborn born with lumbo-sacral myelodysplasia?
A. the development of sitting and manipulation
B. development of standing, walking, bladder and rectal functions
C. head lifting, lower limb movements, intellectual development
ANSWER:B

26. Which of the following symptoms is most likely to cause hemiparesis in a 4-5 month old baby?
A. reaches crosswise for objects
B. unable to stand up while lying prone, with increased asymmetric neck reaction
C. turns only to the side
ANSWER:B

27. What is the most common first symptom of cerebral palsy?
28. increased muscle tone in the limbs
29. neck and back hypotonia
30. presence of increased neck reactions
ANSWER:A

MULTIPLE CHOICE

31. Which i.e. nervous system development process, which iu. is it closed in the case of normal term pregnancy?
A. medullary closure and cell proliferation
B. medullary encapsulation and migration of nerve cells to the site (migration)
C. medullary encapsulation and formation of connections between neurons
ANSWER:A,B

32. What is not characteristic of elementary sensorimotor movement patterns?
A. learned, regulated at the level of the brain stem, stereotypes
B. they are born with us, regulated at the level of the basal ganglia, human-specific
C. learned, stereotypes, forerunners of later independent movements
ANSWER: A, B

33. Which movement patterns are most suitable for detecting the side difference?
A. assisted climbing, walking by hand
B. floating planting, Bauer reaction
C. sitting up, Moro reaction
ANSWER:A, B

34. Who performs a significant part of neurotherapy?
A. the parent, relative
B. physiotherapist
C. conductor
D. somatopedagogue
ANSWER:A,B

35. Early symptoms of hemiparesis in infancy?
A. deviation in axial and limb tone, asymmetric posture
B. reaching across for an object, asymmetry in locomotor movement patterns
C. increased asymmetric tonic neck response
ANSWER:A,B

36. Which movement patterns are most suitable for detecting the side difference?
A. assisted climbing, walking by hand
B. floating planting, Bauer reaction
C. sitting up, Moro reaction
ANSWER:B,C

37. Which of the following symptoms in infancy has the highest incidence rate after hypoxic-ischemic damage?
A. the swallowing paralysis
B. epilepsy
C. decreased axial tone
ANSWER:B,C

38. What kind of electrotherapy treatment would you start in a newborn with a mixed brachial plexus lesion and when?
A. the. selective impulse current treatment immediately after birth
B. muscle stimulation after the examination
C. functional impulse current treatment from the nerve directly after the examination
D. TENS treatment
ANSWER:B,D

39. The existence of which function is the most important question when we examine the development of the possibility of standing and walking later?
A. degree of lower extremity extension
B. lower extremity flexion function
C. the ankle functions
ANSWER:B,C

40. Which movement patterns are most suitable for detecting the side difference?
A. assisted climbing, walking by hand
B. floating planting, Bauer reaction
C. sitting up, Moro reaction
ANSWER:B,C

SINGLE CHOICE

1. When do we NOT assess babies for General Movements due to possible overlapping of writhing and fidgety movements?
A. 2-4 weeks post-term
B. 6-9 weeks post-term
C. 9-20 weeks post-term
D. 0-2 weeks post-term
ANSWER: B

2. Why cannot be Fidgety Movements seen after 20-24 weeks post-term?
A. ATNR is no longer present.
B. Intentional antigravity movements start to dominate.
C. Beginning of lateral righting.
D. Elementary walking no longer present.
ANSWER: B

3. Why does hiccup important during fetal movements?
A. For the development of abdominal muscles.
B. For the development of sensory system.
C. For the development of lungs.
D. For the development of phrenic nerve.
ANSWER: C

4. Why does sucking important during fetal movements?
A. For the development of gastro-intestinal system.
B. For the development of urinary system.
C. For the development of orofacial muscles.
D. For the development of trigeminal nerve.
ANSWER: A

5. Why do eye movements important during fetal movements?
A. For the development of oculomotor nerve.
B. For the development of trochlear nerve.
C. For the development of optic nerve.
D. For the development of the retina.
ANSWER: D

6. What is the possible risk for a preterm baby if Cramp Synchronized GM occur as early as 34 weeks postmenstrual age?
A. 70% risk for ataxic CP with GMFCS I-II.
B. 50% risk for CP with dystonia.
C. 98% risk for spastic CP with GMFCS IV-V.
D. 100% risk for CP with athetosis.
ANSWER: C

7. What is the characteristic of “windmill” as abnormal fidgety movement?
A. Big circular movement of both upper limbs at the same time with fingers extension.
B. Big circular movement of the upper limb with extended fingers 60% of the time.
C. Big circular movement of the upper and lower limb on the same side with fingers extension and abduction.
D. Big circular movement of the lower limb with knee extension.
ANSWER: B

MULTIPLE CHOICE

1. What are the characteristics of Fidgety Movements (FM)?
A. Continuous small movements of moderate speed and variable acceleration of neck in all directions.
B. Continuous large movements of moderate speed and variable acceleration of trunk in lateral flexion.
C. Continuous small movements of moderate speed and variable acceleration of trunk in all directions.
D. Intermittent large movements of moderate speed and variable acceleration of limbs in all directions.
ANSWERS: A, C

2. What are the characteristics of Poor Repertoire General Movement?
A. Sequence is less variable, repetitive than GMs.
B. Movements get stuck, sequence is not completed.
C. Components are monotonous and speed is less variable than GMs.
D. Amplitude is more variable than normal GMs.
ANSWERS: A, B, C

3. What are the characteristics of Chaotic General Movement?
A. Movements of all limbs has large amplitude.
B. Movements of all limbs occur close to the body.
C. Movements of all limbs occur in a chaotic order without any fluency or smoothness.
D. Movements consistently appear to be abrupt.
ANSWERS: A, C, D

4. What are the characteristics of Cramped Synchronized General Movement?
A. Movements appear flaccid and close to the body.
B. Movements appear rigid and lack the normal smooth and fluent characters.
C. All limb and trunk muscles contract and relax in a chain.
D. All limb and trunk muscles contract and relax almost simultaneously.
ANSWERS: B, D

5. What are the possible outcomes if fidgety movements are not well developed?
A. Less optimal fine motor performance
B. Language impairments and articulation difficulties
C. Athetosis.
D. Dyslexia
ANSWERS: A, B, D

6. How could we improve the performance of fidgety movements of a baby?
A. In supine, with rotation of the head to the side.
B. In supine, with flexion of the hips and knees while pushing closer to the body with some rhythmic movements.
C. In supine, with midline position of the head.
D. In prone, with knee flexion and trunk extension.
ANSWERS: B, C

7. Which of the followings true for gross motor milestones?
A. Head control develops by 4 months of age
B. Segmental rolling develops by 9 months of age
C. Independent sitting develops by 6 months of age
D. Reciprocal creeping develops by 10 months of age.
ANSWERS: A, D

8. Which of the followings true for fine motor milestones?
A. Hand recognition develops by 2 months of age.
B. Voluntary grasp develops by 6 months of age
C. Radial digital grasp develops by 11 months of age
D. Superior pincer grasp develops by 12 months of age
ANSWERS: A, B, D

9. What is the order of motor control development?
A. Stability, mobility, controlled mobility, skill
B. Mobility, controlled mobility, stability, skill
C. Mobility, stability, controlled mobility, skill
D. Stability, controlled mobility, mobility, skill
ANSWER: C

10. What components belong to preparational techniques in NDT?
A. Active muscle strengthening.
B. Mobilization
C. Soft tissue techniques
D. Active muscle stretching
ANSWERS: B, C, D

11. Which of the following techniques applied in NDT?
A. Facilitation of active movements
B. Control of key points.
C. Proprioceptive and tactile stimuli.
D. Tone regulatory patterns.
ANSWERS: A, B, C, D

12. What are the characteristics of severe spasticity in CP?
A. In postural control, the co-contraction is increased.
B. The spasticity is increased more distally, than proximally
C. The spasticity is increased more proximally, than distally.
D. Balance reactions are absent, righting reactions may be present.
ANSWERS: A, C, D

13. What are the principles of NDT treatment in severely spastic children with CP?
A. Avoid dynamic treatment for the child.
B. Lot of movements with small and large amplitude.
C. Increase trunk mobility
D. Rotations to decrease and inhibit pathological patterns.
ANSWERS: B, C, D

14. What are the contraindications of hinged ankle-foot splint (HAFS)?
A. Severe tightness of TFL
B. Inability to walk.
C. Severe equinovarus
D. Severe tightness of hamstrings.

ANSWERS: B, C, D

15. Which of the following could be part of the NDT therapeutic interventions at 4 months of age?
A. Tactile self-exploration in supine
B. Bilateral symmetrical activities in supine to control flexor muscles
C. Bilateral symmetrical activities in prone to control extensor muscles
D. Prone to sit with lateral flexion

ANSWERS: A, B, C, D

TRUE OR FALSE

1. General movements (GMs) can be observed in fetuses as young as 9 weeks postmenstrual age.
A. True
B. False
ANSWER: A

2. At term age, writhing movements are characterized by large amplitude and fast speed, typically in ellipsoid form.
A. True
B. False
ANSWER: B

3. At 10-12 weeks post-term age, General Movements (GMs) with a writhing character gradually disappear while fidgety GMs gradually emerge.
A. True
B. False
ANSWER: B

4. We cannot observe/assess babies for General Movements who are sedated.
A. True
B. False
ANSWER: A

5. Fetal movements are not reflexes, not intentional and are spontaneously generated by the nervous system itself.
A. True
B. False
ANSWER: A

6. Motor development, motor control and motor learning depend on the person's intellectual ability.
A. True
B. False
ANSWER: A

7. The development of the brain never stops in infancy. It develops typically or atypically no matter what.
A. True
B. False
ANSWER: A

8. The impairment of the brain during pregnancy or perinatally always leads to further impairment in the development of the brain.
A. True
B. False
ANSWER: B

9. Apoptosis a form of cell death that is generally triggered by normal, healthy processes in the body.
A. True
B. False
ANSWER: A

10. The progression of the pathological epigenesis cannot be prevented with early therapy.
A. True
B. False
ANSWER: B

11. Changing the pathological postural and movement patterns will decrease muscle hypertonicity.
A. True
B. False
ANSWER: A

SCIENTIFIC APPROACH AND CLINICAL PRACTICE OF EXERCISE TOLERANCE TRAINING

SINGLE CHOISE

1. What parameter can be used to measure the endurance of an individual?
A. with maximum of heart rate
B. with muscule strenght
C. with maximal oxigen consumption
D. at the maximum of the firat resistance
ANSWER: C

2. What is the anaerob threshold?
A. It is the maximum work capacity of the body, which it can preform int the absence of oxygen.
B. The limit at which aerobic energy production is replaced by anaerobic energy production.
C. Determinant of the body's energy production during 1-2 seconds of high-intensity exercise.
D. The load threshold when the tissue lactate level falls below 4mmol/l.
ANSWER: B

3. What is the reason for the difference in muscle strenght between fast and slow fibers?
A. the motoneuron innervates a different number of muscle fibers and the fast muscle fibers have a larger diameter
B. the motoneuron innervates the same number of muscle fibers and the fast muscle fibers have larger diameter
C. the motoneuron innervates different number of muscle fibers and the slow muscle fibers have larger diameter
D. the motoneuron innervates the same number of muscle fibers and the slow muscle fibers have larger diameter
ANSWER: A

4. Which statement is NOT TRUE regarding the characteristics of muscle fiber types?
A. The slow muscle fibers have a high sustained aerobic work capacity and are thus suitable for low- and moderate-intensity endurance activity.
B. Fast muscle fibers are better suited for anaerobic or sudden, rapid activity.
C. During the development of a specific contraction, the strength of the contraction increases faster in the slow fibers.
D. Slow fibers are predominantly activated during weak exertion.
ANSWER: C

5. What is the maximum muscle power?
A. The ability to overcome external forces and internal resistances occurring during movement through the active exertion of muscles (contraction, tension).
B. Work per unit of time as a function of force and speed of movement
C. The muscle power that the muscle can exert - at the given level of fitness - through the simultaneous activation of a maximum number of functional units.
D. The work per time unit, in the function of the maximum number of repetitions
ANSWER: C

6. What is the reason of the increase the pulse volume during physical exertion?
A. Increased peripheral vascular resistance
B. Increased venous filling resulting from physical exertion
C. Increase in the strength of the muscles of the left ventricle
D. An increase in left ventricular blood volume resulting from an increase in systolic blood pressure
ANSWER: C

7. What is characteristic of an increase in cardiac output during physical exertion?
A. It increases in direct propotion to the intesity of the load throughout the load.
B. At the start of the muscle work, it shows a rapid increases at the 40-60% of the intensity, then stabilizes or may even show a decrease.
C. Its rate increases in direct propotion ti intensity of the load, up to 80-100 L/min.
D. It increases in direct propotion with the intensity of the load throughout the load, and after the end of the load, it can also decrease below the rest value.
ANSWER: B

8. What is characteristic of the periferial system's adaptation during physical exertion?
A. It will be a vasodialtation throughout the peripherial arterial system
B. Due to the increase in fluid volume and blood volume in the limbs, venous return increases
C. The muscle pump increases the central and pripherial veous pressure above 30 mmHg.
D. Vasodilation in the muscles, dilation of arterioles and precapillary sphincters greatly increase the number of open capillaries.
ANSWER: D

9. The cause of hypertrophy resulting from training:
A. increase in the number of muscle fibers
B. an increase in the diameter of the muscle fibers
C. increase of the number of the type II.muscle fibers
D. thickening of type I muscle fibers
ANSWER: B

10. Which hormone raises the blood sugar level during physical exertion?
A. insulin
B. ACTH
C. glucagon
D. adrenaline
ANSWER: C

11. What is characteristic of the adaptation of the peripheral arterial system during physical exertion?
A. During systole, the aorta expands to take in most of the stroke volume and the resulting vessel wall tension ensures the flow during diastole
B. Vasoconstriction occurs throughout the peripheral arterial system, which leads to an increase in flow velocity
C. At rest, the blood flow to the muscle is low, during muscle work, the blood supply to the muscle stops at the 10% contraction of the maximum tension, which leads to early fatigue
D. At the beginning of the relaxation phase of the muscle, the blood flow per unit of time decreases to a minimum.
ANSWER: A

12. What is characteristic of the responses of the respiratory system during physical exertion?
A. The minute ventilation continuously increases in direct proportion to the intensity of the physical load, both the depth and number of breaths show a linear increase.
B. The minute ventilation increases for a while in direct proportion to the intensity of the load, then shows a rapid and higher increase, the further oxygen demand can only be ensured by increasing the number of breaths.
C. At the aerobic threshold, the RQ drops below 1.
D. As a result of physical exertion, the PH value of the blood - similarly to the other respiratory parameters - shows an increase
ANSWER: B

13. What is the role of individual chemoreceptors in the regulation of breathing?
A. PAO2-sensing receptors have a role in breathing regulation at rest, because their stimulus threshold is low
B. The central PACO2-sensing chemoreceptors are also active at rest because their stimulus threshold is low
C. Peripheral H+ chemoreceptors have no role in respiratory regulation during physical exertion, they only provide respiratory regulation at
D. Tension-sensing receptors of the lung tissue play a role in regulating the initiation of inspiration during physical exertion
ANSWER: B

14. Which statement is true about the energetic aspects of physical exertion?
A. The increased concentration of ADP in the muscle stimulates the breakdown of CrP
B. The breakdown of ATP and CrP allows long-term high-intensity work
C. Carbohydrates reach the cells in the form of glycogen in the blood
D. The glycogen stored in the liver is transformed back into glucose in the presence of a small amount of oxygen and is transported by the blood to the muscle for ATP production
ANSWER: A

15. Which statement is true about the breakdown processes of carbohydrates?
A. Carbohydrates are broken down by terminal oxidation in the mitochondria, the process requires oxygen, CO2 and water are produced
B. Carbohydrates are broken down by terminal oxidation in the cytoplasm, during which lactic acid and water are produced
C. The release of hydrogen is anaerobic, during which 2 hydrogen atoms of the oxidizing substance form water with 1 oxygen atom
D. Glucose is broken down in a 10-step biochemical process by lactic acid fermentation, during which a large amount of ATP is produced
ANSWER: A

16. What is characteristic of lipolysis?
A. A glicerint az acetyl-CoA enzim segítségével a Béta-oxidáció útján a citrát körben égeti el a szervezet
B. A zsírok metabolizmusa a szénhidrátok folyamatos felhasználását feltételezi
C. A zsírok oxigenizációja kis mennyiségű O2-t igényel és nagy mennyiségű energiát szolgáltat
D. A szervezet zsírraktárai nagyobbak, mint a szénhidrát raktárak, ezért már a rövid időtartamú és magas intenzitású terhelés energia igényét is képes a zsírok bontása biztosítani
ANSWER: B

17. What are the methods of heat release during physical exertion?
A. infrared radiation from our body is responsible for 60% of our heat loss
B. most of our heat release occurs via conduction when under load
C. we release heat through strong sweating during physical exertion
D. evaporation of our body is responsible for 80% of our heat loss
ANSWER: D

18. How is 1 RM determined?
A. Karvonen formula
B. Fick equation
C. Epley formula
D. Wassermann's formula
ANSWER: C

19. When developing strength and endurance, we can use alternating resistance in different series. Which program uses the method of progressively increasing resistance?
A. De Lorme
B. Oxford
C. Saunders
D. MacQueen
ANSWER: A

MULTIPLE CHOICE

1. What are the effects of CORE stabilization training?
A. Active posture control in all everyday and sports activities.
B. Establishing the pelvicolumbar balance
C. Protection of the spine in dynamic and static situations
D. Development of neuromuscular adaptation

ANSWER: A, B, C, D

2. What are the physiological effects of warming up?
A. acceleration of energy-producing chemical processes
B. the heat produced favorably reduces the viscosity of the soft tissues
C. the cardiac output increases significantly already at the beginning
D. a significant increase in catecholamines increases the respiratory rate

ANSWER: A, B

3. What are the long-term effects of aerobic training?
A. The contractility of the heart muscle increases.
B. Mobilization and oxidation of fats increases
C. The sensitivity of tissues to insulin decreases
D. Resting blood pressure decreases

ANSWER: B. D

4. In what ways can a patient's maximum oxygen consumption be determined?
A. 6 minute walk test
B. Time Up and Go
C. Spiroergometry
D. DUKE activity scale

ANSWER: A, C, D

5. What are the characteristics of training aimed at increasing the cross-sectional diameter of the muscle?
A. The intensity should be at least 70-80% of 1 RM
B. 90-95% of 1 RM is the most optimal intensity
C. Do only 2-4 repetitions
D. The number of repetitions should be 6-9.

ANSWER: A, D

6. What are the effectiveness of submaximal aerobic physical exercise performed 3-5 times a week?
B. the total volume of the blood increases, thereby reducing resting blood pressure
C. increases vital capacity
D. the amount of high-density lipoprotein (HDL) increases
E. cholesterol decreases (HDL ratio)

ANSWER: B, C, D

7. What does the body use to cover its energy needs during a sprint-type workout?
A. The use of creatine phosphate is typical because it does not require oxygen.
B. It also uses the small amount of stored ATP at the beginning of the sprint.
C. Anaerobic glycolysis can only cover the high energy demand.
D. Rapid mobilization of stored fats provides a large amount of energy.

ANSWER: A, B

8. What is the method of obtaining energy in case of short-term (max. 5 minutes) intense load?
A. The use of creatine phosphate is typical because it does not require oxygen.
B. It also uses the small amount of stored ATP at the beginning of the load.
C. Anaerobic glycolysis to cover the high energy demand.
D. Rapid mobilization of stored fats provides a large amount of energy.

ANSWER: A, B, C

9. Which statements are true about the regulation of blood sugar during physical exertion?
A. Glucagon lowers blood sugar
B. Glucagon raises blood sugar.
C. During physical activity, the body raises the glucagon level and lowers the insulin level, thus causing a slow decrease in blood sugar.
D. Insulin stimulates peripheral sugar burning and thereby lowers blood sugar levels.

ANSWER: B, C

10. Fatigue determining factors:
A. duration and intensity of physical activity
B. depletion of carbohydrate stores
C. freqency increase
D. rate of lactate release

ANSWER:A, B, D

11. What are the effects of interval training?
A. Short anaerobic periods are better tolerated by less fit individuals
B. develops lactate tolerance
C. significantly increases maximal oxygen consumption
D. requires less concentration than continuous training.
ANSWER: A, B

12. Which statements are true regarding plyometrics?
A. The prerequisite for its use is the development of core stability
B. The eccentric and concentric action of intense agonists-antagonists alternate dynamically
C. It primarily develops aerobic endurance and power endurance.
D. Develops speed endurance and reaction time
ANSWER: A, B, D

13. In case of high intensity physical load (limit load):
A. deterioration of reaction time is characteristic
B. dizziness and pain may occur
C. coordination disorders are visible during movement
D. strong sweating can also be experienced on the lower half of the body
ANSWER: A, B, C, D

14. Death in a cold environment during physical exertion:
A. the use of free fatty acids increases
B. muscle twitching, shivering reduces metabolic heat productiona
C. the vasoconstriction created in the skeletal muscles is not conducive to subcutaneous fat burning
D. sympathetic nervous system reduces the production of catecholamines
ANSWER: A, B, C

15. Sweating changes the hemoconcentration of the blood - by increasing its osmolytic properties - during physical exertion. Which hormones play a role in maintaining the balance of the fluid household?
A. ADH secretion increases in the posterior lobe of the pituitary gland, which increases the reabsorption of water in the renal tubules.
B. The decrease in the amount of blood flowing through the kidney stimulates the renin-angiotensin system, which causes aldosterone to be released in the adrenal cortex, increasing reabsorption in the renal tubules.
C. As a result of aldosterone, the plasma water content increases relatively (water from the working muscle into the blood).
D. The activity of catecholamines increases during physical exertion, which accelerates the kidney's circulation and increases the reabsorption of water in the kidney's tubules.
ANSWER: A, B, C

16. The respiratory quotient (RQ) shows the ratio of carbon dioxide produced in tissues to oxygen used. Its value changes during physical exertion. How?
A. Its decrease indicates that the body obtains energy from fats.
B. Its decrease refers to the body's energy from carbohydrates.
C. Its increase indicates that energy is obtained from carbohydrates.
D. Its increase indicates that energy is obtained from fats.
ANSWER: A, B

17. Which statements are true regarding the increase in stroke volume?
A. As the intensity of physical activity increases, the stroke volume first increases sharply, then at a slower rate and stabilizes.
B. The blood vessels of the working muscles dilate, this reduces the total peripheral resistance, therefore it is easier for the heart to eject blood and thus the stroke volume increases.
C. In the supine position, stroke volume primarily increases in end-diastolic volume due to an increase in venous return.
D. The stroke volume increases as the work intensity increases due to the increase in the heart rate.
ANSWER: A, B, C

18. Which statements are true regarding the change in cardiac output?
A. It increases with the intensity of the work, the maximum is on average 20-40 l/min.
B. The amount of growth depends on body weight and fitness level.
C. In higher submaximal intensity ranges, cardiac output increases more as a result of an increase in heart rate.
D. As a result of physical activity, in untrained persons, the increase in resting minute volume is at most 4-5 times.
ANSWER: C, D

19. Which statements are true regarding the distribution of cardiac output during exercise?
A. The increase in the heart's own circulation increases proportionally with the cardiac output
B. During physical activity of increasing intensity, the absolute magnitude of brain circulation increases
C. The share of the muscular system increases continuously with the intensity of physical activity.
D. The circulation of the viscera is reduced to a minimum even during moderate-intensity physical activity
ANSWER: A, B, C

20. Which statements are true about the adaptation of blood pressure during physical exertion?
A. The systolic blood pressure increases in proportion to the intensity of work and then stabilizes.
B. Diastolic pressure changes little during endurance exercise.
C. Strength training raises both systolic and diastolic blood pressure.
D. The systolic blood pressure rises gradually, showing uniform values at the peak of the load
ANSWER: A, B, C

21. Which statements are true regarding the responses of the respiratory system to physical stress?
A. In the case of short-term heavy muscle work, the respiratory minute volume can increase up to twenty times.
B. A respiratory minute volume exceeding 100 l/min is no longer economical for the body, because the extra oxygen is primarily required by the increased work of breathing.
C. As a result of physical exertion, the volume of respiratory air (VT) increases at the expense of the inspiratory reserve volume (IRV).
D. At 70-85% of the maximum oxygen consumption, the oxygen supply no longer covers the entire energy requirement and the excess energy requirement must be provided by anaerobic glycolysis.
ANSWER: B, C, D

22. What is characteristic of the responses of the cardio-respiratory system in case of Steady-State load?
A. During Steady-State work, breathing intensity increases together with oxygen consumption
B. The rate of increase of the pulse reaches 80-90 % of the maximum frequency.
C. Steady-State load main energy source is carbohydrate and lipid metabolism.
D. In the case of steady-state exercise or muscle work of a relatively long duration (over 60 minutes), the decisive energy source is protein.
ANSWER: A, B, C

23. Choose the methods that develop aerobic capacity!
A. FARTLEK
B. Continious training with VO_{2max} intensity between 50-85 %
C. Interval trainig with altering intensity (50% - 95% -70% VO_{2max})
D. Plyometrics
ANSWER: A, B

24. What are the first steps in developing CORE stability training?
A. Strengthening the muscles of the pelvic-hip-lumbar spine
B. Building synergisms of the pelvic-hip-lumbar spine
C. Sensing the stability of the pelvis-hip-lumbar spine
D. Coordination of the function of the diaphragm and pelvic muscles
ANSWER: B, C, D

25. What are the physiological effects of strength training?
A. The amount of creatinine phosphate stored in the muscle increases.
B. The activity of aerobic enzymes increases.
C. The proportion of contractile protein increases
D. Muscle glycogen storage increases
ANSWER: A, C, D

26. What are the factors determining muscle strength?
A. Number of activated motor units
B. Degree of discharge of motorized units
C. Speed of displacement
D. Cross section of the muscle
ANSWER: A, B, C, D

27. After eccentric training, the following may occur:
A. Sub-microscopic muscle fiber injury
B. venous edema
C. Depletion of enzyme stores (creatine kinase)
D. muscle pain
ANSWER: A, C, D

28. What events cause delayed onset muscle soreness (DOMS)?
A. Damage to the sarcolemma during high resistance exercises.
B. Immflammation, that activates the immune system
C. The increase in calcium ctives free nerve endings
D. Damage to the myofascial layer causes pain lasting several days
ANSWER: A, B

29. What happens during a high-intensity load, if the load intensity is 85-95%?
A. the lactic acid level exceeds 1.2 mmol/l in adults,
B. the blood catecholamine level decreases exponentially,
C. the heat balance is out of balance and the core heat is creeping up,
D. the beating volume of the heart peaks and more blood can enter the aorta only by increasing the heart rate

ANSWER: C, D

TRUE OR FALSE

1. Isokinetic training means training with constant external resistance.
A. True
B. False
ANSWER: B

2. The stabilizing power of the trunk muscles can be tested in the PLANK position.
A. True
B. False
ANSWER: A

3. 1 MET (metabolic equivalent) indicates the magnitude of the load.
A. True
B. False
ANSWER: B

16. When using 1 liter of oxygen during aerobic exercise, we need 5 kcal of energy.
A. True
B. False
ANSWER: A

4. To lose nearly half a kilogram of fat, 3500 kcal of energy is needed.
A. True
B. False
ANSWER: A

5. By calculating the absolute oxygen consumption, the caloric demand for total body weight can be determined during a given training period.
A. True
B. False
ANSWER: B

6. The cross-sectional diameter of the muscle is a response to the surface micro-injuries of the muscle fibers.
A. True
B. False
ANSWER: A

7. During isometric/stabilization training, we perform the training with 60-80% of the 1 RM.
A. True
B. False
ANSWER: A

8. Maximum oxygen consumption: The maximum oxygen consumption that cannot be increased further with a continuously increasing load.
A. True
B. False
ANSWER: A

9. Hypertrophy, an increase in muscle mass resulting from regular muscle work, which is primarily caused by an increase in the number of individual muscle fibers.
A. True
B. False
ANSWER: B

10. The optimal eccentric training intensity is 100-130% of the 1 Resistance Maximum.
A. True
B. False
ANSWER: A

11. When the bone is subjected to increased stress, the mineralization of the bone increases, the bone becomes stronger and denser.
A. True
B. False
ANSWER: A

ONKOLOGY

SINGLE CHOICE

1. Wich statement is true?

A. Chemo brain is a cancer treatment-related cognitive impairment.
B. AWS is a common type of impingement syndrome
C. Sarcopenic obesity only depends on the genetic factors.
D. Polyneuropathy always has autonomic symptoms as well.
E. By bone metastasis the low levels of calcium in the blood are frequent.
ANSWER:A.

2. AWS syndrome
A. It develops as a complication of radiation therapy
B. Moderate-intensity aerobic training for 150 minutes a week can prevent this
C. LD occurs as a complication of surgery, but only very rarely
D. A common complication in bone metastasis processes
E. occurs when it is necessary to remove lymph nodes during breast surgery which causes sterile inflammation of the lymphatic vessels
ANSWER:**E**

3. HPV infection can result in:
A. Ovarian cancer
B. Migratory thrombophlebitis
C. Papilloma
D. Head and neck malignancy
E. Inflammatory breast cancer
ANSWER:**D**

4. Malignant lymphedema is characterized by:

A. Slowly long months may develop over years
B. It develops primarily in the distal part of the limbs
C. Painful, centrally dominant, and therapy resistant
D. It depends on the location of the primary tumor
E. Resistance training can prevent the progression of the process

ANSWER:**C**

5. Wich statement is false?

A. Cahexia is one of the greatest mortality risks in cancer patients.
B. ADT is a commonly used therapy in patients with colon cancer.
C. Polyneuropathy impairs balance and coordination skills.
D. Chronh's disease increases the risk of developing colon cancer.
E. MFI training should not be performed in patients with stoma.

ANSWER:B

6. Wich statement is true?

A. AWS develops as a result of hormone therapy.
B. Polyneuropathy is a common complication of surgical intervention.
C. Fall prevention training is not important for patients with prostate cancer receiving AD therapy.
D. Regular exercise, sports, and physical activity help for NK cells function.
E. Polyneuropathy is a common complication of radiation therapy.

ANSWER:**D**

7. Wich statement is true?

A. Cachexia is one of the less common mortality risks in cancer patients.
B. Chemotherapy should only be given after surgery,in all cases.
C. Prostate enlargement is always a malignancy.
D. AWS develops as a result of hormone therapy.
E. A common therapy for prostate cancer is androgen deprivation treatment.

ANSWER:**E**

8. Every day our body produces,

A. 2-4 liters of lymph fluid.
B. 10 liters of lymph fluid.
C. 5-6 liters of lymph fluid.
D. 1000 ml of lymph fluid
E. 500-2000 ml of lymph fluid.

ANSWER:A

9. Wich statement is false about radiation fibrosis?

A. It is a scar tissue that forms as a result of damage caused by radiation therapy.
B. It can occur in the breast and chest wall.
C. It often begins with inflammation during radiation therapy.
D. It can occur up to 10 years after therapy is completed.
E. It never occurs up to 10 years after therapy is completed.
ANSWER:E

MULTIPLE CHOICE

1. Which statements are true about prostate cancer?

A. In regular physical activity are less likely to develop prostate cancer or die from the disease.
B. Studies have linked obesity with particularly aggressive forms of prostate cancer.
C. Separate research has connected weight gain with an increased risk of recurrence in men who have already been treated.
D. After PC surgery is important for patients as it significantly reduces the likelihood of two important potential complications, deep vein thrombosis or DVT and related to DVT, there is a risk of a pulmonary embolus or PE.
E. After PC operation lifting heavy objects such as suitcases or big boxes for 6 weeks is recommended.
ANSWER:**A,B,C,D**

2. Which statements are true about prostate cancer?

A. Pelvic floor excercises should be started before surgery.
B. By creating a strong pelvic floor with your exercises, the muscles are able to squeeze around this valve and help it to close.
C. A weak pelvic floor therefore allows you greater control over your continence after the operation.
D. The pelvic floor muscles are the ones that you use to interrupt your urine stream.
E. Cycling should be avoided for the first 12 weeks after surgery to allow the new join between your bladder and urethra to heal before being subject to the sustained pressure and trauma from a narrow bike saddle.
ANSWER:**A,B,D,E**

3. Which statements are true?

A. Chemo Brain can be prevented.
B. High levels of calcium in the blood (hypercalcemia), which can cause nausea, vomiting, constipation and confusion.
C. Capsular contracture significantly reduces the range of motion of the upper limb, but can be improved with a targeted exercise program.
D. Capsular contracture occurs more often in men, which has a hormonal cause.
E. Crohn's disease is a type of inflammatory bowel disease, which increases the risk of colon cancer.
ANSWER:**A,E**

4. Which statements are true about Chemo Brain?

A. Difficulty finding the right word
B. Difficulty multitasking
C. Short attention span
D. Short-term memory problems
E. Trouble with verbal memory, such as remembering a conversation

ANSWER:**A,B,C,D,E,**

5. MFI training should not be performed in patients

A. with stoma
B. after TRAM operation
C. during radiation therapy
D. after prostatectomy
E. with authonom neuropathy

ANSWER:**A,D,E**

6. Fall prevention training is very important for patients

A. with prostate cancer receiving ADT therapy.
B. having bone metatstasis
C. having osteoporosis
D. with Chrohn dissease
E. with neuropathy

ANSWER:**A.B.C.E**

7. Which statements are true?

A. Confusion
B. Difficulty concentrating
C. Unpossible learning new skills
D. Taking shorter than usual to complete routine tasks
E. Trouble with visual memory, such as recalling an image or list of words

ANSWER:**A,B,E**

8. Which statements are true about bone metastasis?

A. Whe the bone is being eroded, potassium frome the bone is being poured into the blood.
B. It will produce an increase of the calcium concentration int he blood, a hypercalcamia.
C. To have little appetite and many nause.
D. If the metastasis affect bones with bone marrow inside, it infrequently could cause fever.
E. We would have more bacterial infections and our wound could take longer to stop bleeding.

ANSWER:**B,C,D,E**

9. Bone metastasis may produce the following symptoms:

A. Localized or generalized pain.
B. Hypocalmia
C. Fractura of the bone, especially if it is a bone that carry weight
D. Hypercalcemia
E. Patients urinate a lot

ANSWER:**A,C,D,E**

10. Polyneuropathy is a common complication of

A. chemotherapy
B. neoadjuvant therapy
C. breast surgary
D. diabetes
E. lymphoedema

ANSWER:**A.B.C.D**

TRUE OR FALSE

1. When the cancer is large some of these cells get into a blood vessel and begin to swim trough the blood

A. True
B. False

ANSWER: A

2. When metastasis located in the bones are very small, they do not produce any alteration int he bone.

A. True
B. False

ANSWER:A

3. When metastasis in a bone that holds weight (vertebrae, pelvis, femur, tibia to a lesser extend fibula, bones of the foot) they will produce pain that will increase when walking as the bone holds body weight.

A. True
B. False

ANSWER:A

4. If the metastasis is not in a weight-holding bone there is more risk of fracture.

A. True
B. False

ANSWER:B

5. If the metastasis is not in a weight-holding bone there is less risk of fracture.

A. True
B. False

ANSWER:A

6. Bone metastasis may be multiple, in the same bone or in bones very separated from each other

A. True
B. False

ANSWER:A

7. Axillary web syndrome(AWS), sometimes develops as a side effect of sentinel lymph node biopsy or axillary lymph node dissection.
A. True
B. False
ANSWER:A

8. If you have AWS the cords tend to be painful and tight, making it difficult for you to lift your arm any higher than your shoulder or extend the elbow fully.
A. True
B. False
ANSWER:A

9. If you have symptoms of AWS stretching and flexibility exercises can improve your pain-free range of motion.
A. True
B. False
ANSWER:A

10. When cancer spreads to the bones of the spine, it can press on the spinal cord and can cause nerve damage that may lead to paralysis if not treated right away**.**
A. True
B. False
ANSWER:A

11. VTE (venous thromboembolism)risk depends on the tumor type, the stage or extent of the cancer, and treatment with antineoplastic agents.
A. True
B. False
ANSWER:A

12. VTE is a rare complication of malignant disease.
A. True
B. False
ANSWER:B

13. Hot flushes are one of the most common and bothersome side effects associated with ADT.
A. True
B. False
ANSWER:A

14. A variety of metabolic changes have been observed with ADT.
A. True
B. False
ANSWER:A

15. The hormonal vicissitude from ADT may then compound the psychological distress of the patient already in a state of crisis.
A. True
B. False
ANSWER:A