PHYSICAL TRAINER BSc

2025.

QUESTION "A"

1. The appearance of a pedagogical viewpoint, the issue of the need for education in coaching. Specific tasks and opportunities in different forms of sports activities (leisure and recreational sports, physical education and sports, competitive -elite sports, rehabilitation sports, etc.).
2. The role and importance of sport in society and in the life of an individual. Sports activity as a means of education, the educational effect of sport in the formation of personality. Key educational values and goals in the pedagogical work of coaches.
3. Pedagogical issues of sport choice, talent management, competitive sport in view of age characteristics. The pedagogical model of a coach, leadership style, competencies (the most important personality characters, qualities, abilities and skills).
4. The definition of talent, talent models (Renzulli, Czeizel). Types of talent-selection, possibilities, appearance in competitive sports. Scholarships and sports programs in youth education.
5. The concept, aim, exercises and fields of application of calisthenics. Stick drawing and terminology of calisthenics exercises. Movement material of free exercises, exercises based on free exercises and natural movements. Design aspects of calisthenics exercises that develop conditional skills in the chosen sport.
6. The importance and aim of warm up. Aspects and structure of the general warm-up exercise series according to traditional and novel approach. The exercises of sport specific warm up in the chosen sport. Concept and types of range of motion and stability.
7. Basics of fundamental sports (athletics, gymnastics, swimming, combat sports) and their application in conditioning and injury prevention in the selected sport. Categorization of physical education games and their role in athletic preparation.
8. Kinematic characterization of the basic movements / static positions of one's own sport in each anatomical plane. Muscle functions in basic movements / in static positions. (Handball: basic stance, running movements in defense and offence, optional shot technique) (Swimming: Start from a starting block, one optional stroke) (Athletics: running movement, jumping movement, optional throwing movement) (Football: basic stance of goalkeeper, running movement of field player, optional kicking technique) Basketball: kinematic characterization of the offensive and defensive stance. Muscle functions in the free throw shot and jump shot
9. Characterization, tasks, and research areas of Sport Psychology. Opportunities of Sport Psychology in athlete's performance development. Motivational theories and practical methods of motivation in sport.
10. Physiological and psychological background of stress and anxiety. Inverted-U theory. Anxiety-relieving methods to increase sports performance. Interpreting the competitiveness and start state. Signs of burnout in youth sports. Methods of burnout prevention. The importance of attention and concentration in sports. Types of attention.
11. The subject and research areas of Sociology of Sport. The concept, characteristics and significance of socialization and sport socialization. The role of the family and institutions in sports, sports socialization. The relationship between education and sport.
12. The relationship between media, politics, and sport. Sport as a channel for social mobility. Forms of sport as a recreational activity.
13. Definition, characteristics, and structure of exercise training. Definition and components of sports performance. Didactical and general principles of sport preparation.
14. Internal environment, homeostasis, load, and adaptation. General principles, levels, and symptoms of adaptation. The load-adaptation structure. Training variables in one training session and in consecutive sessions. Performance change tendencies to optimal and non-optimal loads (overreaching, overtraining).
15. Acute physiological and biomechanical adaptation to exercise. Definition and types of fatigue. Definition of exercise induced skeletal muscle damage and the "repeated bout effect", and their influence on athletic performance.

16. Definition of force and strength in biomechanics and the theory of training, respectively. Newton's 1st, 2nd, and 3rd law of motion and their appearance in the selected sport. Types of strength (maximum, relative, explosive, reactive, strength endurance, general strength, specific strength).
17. Skeletal muscle structure and function. Molecular mechanism of muscle contraction. Contraction types. Biomechanical factors influencing force production (morphometric, biochemical, mechanical and neural). Description of strength training methods with respect to training variables (repetition, intensity, rest intervals, movement velocity).
18. Definition and types of speed (reaction speed, locomotory speed, cyclic speed, acyclic speed, supramaximal speed, speed coordination). Physiological, biochemical and biomechanical factors influencing speed. Direct and indirect methods of speed development.
19. Structure and function of the cardiorespiratory system. Physiological factors influencing endurance. Definition and types of endurance. Importance of aerobic and anaerobic capacity, anaerobic threshold in sports. Methods of endurance training.
20. Structure and function of the neuroendocrine system. The effects of exercise on the hormonal system. Sex differences in sports. Prohibited substances and methods during competition and training – effects on the endocrine glands
21. Structure and function of the nervous system. The neuromuscular system. The pyramidal and extrapyramidal system. Definition and types of coordination (kinesthesia, balance, rhythm, spatial orientation, differentiation, movement connection, speed coordination) and their appearance in own sport.
22. Neural background of simple and complex forms of motor learning. Conditions and methods of coordinational development. Kinematical and dynamical structure of movement. Ways of error correction.
23. The process of development and maturation. Development of motor skills from birth to old age (sensitive periods, gender differences and environmental factors). Biological and chronological age. Body composition.
24. The concept, definition and estimation of basal metabolic rate (BMR). Distribution and grouping of nutrients. Heat of combustion and calorimetry. Carbohydrates, proteins, fats, vitamins, minerals and trace elements in sports. Problems of fluid replacement.
25. Definition of first aid. The importance of accident prevention for the coach. First care for the most common sports injuries. What the BLS means, explain your rescue by showing an imaginary case. Perform the rescue call correctly.
26. List and describe the types of the most common sports injuries (acute and overuse injuries/chronic injuries) and the predisposing factors involved in their development. What strategies do you know and apply at different levels of injury prevention (primary, secondary, tertiary)? What aspects should be considered before, during and after the introduction of a personalized injury prevention plan? Justify your answers in detail.
27. List the orthopedic diseases learned. Explain orthopedic changes in the spine. Prevention (movement development, curvature formation, ontogenetic movement development, muscle ligation design, correct sitting, standing), prohibited exercises in case of kyphosis, curative swimming exercises against lordosis, rehabilitation possibilities. The organizational structure, peculiarities and competition system of Hungarian parasport. Special rules and requirements for parasports. Principles of categorization. Possibilities of implementing integrated physical education and application of Adaptive Sports movements in PE.
28. Performance evaluation in sports. Cardiorespiratoric, spirometry, anthropometric, dynamometry, electromyography and force plate tests. Laboratory and field tests used in own sport. Reliability, validity, and objectivity in performance measurements.

Football

1. Major stages of the international history of football from the ancient time to the present day. The history of the development of game systems according to the specific positions of players.
2. The history of own country football, the major international achievements of own country interests, the biggest coach and player individualities.
3. The rules of the football, highlighting the latest changes.
4. The personality of a coach, pedagogical roles of a coach, leader and communication style with players and their parents.
5. Characteristics of the physique, mental and motor skills required for the various positions.
6. The definition of technique, tactics and strategy and their separation. Description of technical elements with and without ball for field players and goalkeepers - separately
7. Description and education of the ball-free technical elements of field players in different age groups.
8. Types of dribbling and teaching methodology in different age groups.
9. Types of kicks, their technical description and education in different age groups.
10. Types of ball takeovers, technical description and education in different age groups.
11. Types of tricks, their technical description and education in different age groups.
12. Types of tackles, their technical description and education in different age groups.
13. Types of headers, their technical description and education in different age groups.
14. Types of throw-ins, its technical description and education in different age groups.
15. Description and teaching of ball-free defending techniques for goalkeepers.
16. Description and teaching of defending techniques for goalkeepers.
17. Description and teaching of attacking technical elements for goalkeepers.
18. Application of preparatory games, leading exercises, and didactic principles in football through the teaching of ONE specific ball technical element.
19. The significance of small sided games, their goals and the principles of their design (1:1, 2:1, 2:2, 3:2, 3:3, 4:3, 4:4).
20. Possibilities for football-specific development of strength in the light of age by presenting specific exercises.
21. Possibilities for football-specific development of speed in the light of age by presenting specific exercises.
22. Possibilities for football-specific development of endurance capacity in the light of age by presenting specific exercises.
23. Possibilities for football-specific development of joint mobility and flexibility in the light of age by presenting specific exercises.
24. The definition of „defending”, types, preparatory games and methodological steps of teaching in football by presenting one specific example.
25. The definition of „attacking”, types, preparatory games and methodological steps of teaching in football by presenting one specific example.
26. Theoretical background of football nutrition in different age groups of football.
(in general, before the match, during the break, after the match)
27. Theoretical background of footballers' hydration in different age groups of football.
(in general, before the match, during the break, after the match)
28. Aspects of the periodization and compilation of the annual football training plan (whole year), the main objectives of each period.
29. The most common sports related injuries of football players and methods of their prevention.

Handball

1. Describe the characteristics of Handball. What are the basic movements of Handball? Interpret the concept of FMS. Organize the technical elements of Handball. Highlight the main events in history of the game. Describe the stages and characteristics of jumping.
2. Stages of throwing. List the technical elements of defence. Interpret the concept of cFMS. The importance of kinetic chain in Handball.
3. Possibilities of long-term athlete development in Handball. The concept of sports talent. The use of small-sided games in Handball.
4. Age groups and characteristics of Handball in primary schools. Methodological principles of sponge Handball (mini-Handball) classes. Stages of movement learning and examples in Handball. Selection versus retention. Creating a supportive coaching behavior and autonomy supportive emotional environment during trainings and games.
5. The motor learning process and development in youth Handball. The proportions of competition and training. Rational and constructive use of competitiveness to process success and failure. Education of youth athletes.
6. Characteristics of youth Handball. Fundamentals of game pedagogy. Pedagogical principles of trainings and competitions.
7. Development of condition and coordination skills in young athletes. Sensitive periods of certain abilities and presentation of general and sport-specific practices.
8. Prevention and regeneration in Handball. Concept of preventive training. Dynamic stabilization in an integrated approach. Regeneration methods.
9. The technique of the goalkeeper. The process of training, selection and personality traits of goalkeepers. The main principles and practical solutions for the development of flexibility.
10. Tactical elements of attack against organized defence. Detailed description of attacking systems. Features of tactical solutions in the modern Handball.
11. Tactical elements of defence against organized attack. Characteristics of group tactical elements and detailed presentation of team tactical elements.
12. Stages of counterattack and rapid reorganization and their significance in today's modern Handball.
13. The successful coaching profile and personality traits. The role and activities of the coach. The coach as a leader.
14. Scientific research in Handball. The most common scientific research methods, and the use of the results in Handball.
15. Describe the basic rules of Handball. Development of Handball in the light of changes in the rules of the game. The most significant rule changes that had the greatest impact on the game.

Swimming

1. Present the process of swimming instruction, addressing the following: What are the theoretical differences between school-based swimming education and instruction within sports clubs? Discuss international trends and aquatic competencies.
2. The concept of fitness in competitive swimming. Provide examples to explain the training system and training tools applied in swimming.
3. Describe the function of the shoulder, hip, and knee joints during different swimming movements. Explain the importance of joint protection and provide practical examples with a focus on shoulder injury prevention.
4. Describe the structure of the respiratory system. Which respiratory muscles contribute to changes in thoracic volume during breathing? Discuss the importance of breathing techniques in swimming.
5. External and internal causes of health impairments during sports. The role of the coach (swimming coach) in preventing sports-related harm and injuries. The role of warm-up in injury prevention. The importance of cool-down and stretching.
6. Dryland and water-based exercises for teaching the arm and leg movements of front crawl. Effective methods to reduce frontal resistance that hinders swimmers' performance.
7. Dryland and water-based exercises for teaching the arm and leg movements of breaststroke. Possible methods for overcoming resistance caused by the contact between body surface and water.
8. Dryland and water-based exercises for teaching the arm and leg movements of backstroke. Strategies to overcome posterior drag (suction effect) that arises behind the swimmer.
9. Dryland and water exercises for the arm and leg movements of butterfly stroke. The technique of the dolphin kick, the importance of ankle flexibility, and its development.
10. Requirements, principles, methodological and practical approaches in the preparation of individual medley swimmers.
11. Criteria for selecting effective endurance training methods considering the swimmer's event distance, age, and fitness level.
12. Classification and physiological effects of anaerobic endurance training methods. Methodology for planning lactate-producing and lactate-tolerant workouts. Options for developing anaerobic endurance in youth swimmers.
13. Present the “Three-macrocycle training system” developed by Tamás Széchy. Methodological aspects of building a mesocycle and the importance of progressive application of new stimuli. Professional expectations for young agegroup swimmer education and training structures.
14. Historical overview of swimmer preparation and training methodology, both nationally and internationally. Basic concepts of annual preparation systems and the knowledge required for planning. Questions of age-group competition planning.
15. Possibilities and methodological aspects of swimmers’ strength development specific to stroke, and event distance—both in water and dryland practice.
16. Physiological and methodological differences in the preparation of sprinters, middle-distance, and long-distance swimmers. Interrelations of training methods that develop aerobic, anaerobic alactic, and lactic energy systems, and the importance of sensitive periods.
17. Biomechanical principles related to the swimmer’s body. Hydrostatic pressure, buoyant force, drag, propulsive forces, and flow dynamics.

Athletics

1. The universal history and origin of athletics, the importance of athletics today. The national, European and world organisation system of athletics. Disciplines and events in athletics.
2. Categories of athletic running events. Biomechanical analysis of running movement. Technical comparison of sprinting and distance running. Components of running speed (stride length and frequency). Mechanical, anthropometric, physiological and psychological factors influencing running performance.
3. The process of teaching running movement. Preparatory and lead-up exercises. Walking and running drills. Teaching sprint start. The sprint training system in U23 and adult age groups. Direct and indirect opportunities for the development of sprint speed. The general rules for track events.
4. The technique of middle- and long-distance running and standing start. The distance running training system in U23 and adult age groups. Methodology for the development of endurance. The general rules for middle- and long-distance running.
5. Categories of athletic jumps, general characteristics. Biomechanical analysis of athletic jumps. Factors influencing jump performance. Plyometrics as a training system for the development of reactive strength.
6. The importance of warm-ups and preparatory exercises in athletics. The concept and importance of joint mobility/mobilisation. The concept, mechanism and importance of static and dynamic joint stabilization in athletics. Development of joint stabilization with static and dynamic own-body resistance exercises and unstable devices.
7. Types and stylistic characteristics of athletic throws. Biomechanical basics of athletic throws. Mechanical, physiological and psychological factors influencing throwing performance. A system of medicine ball and heavy weight throw training and other strength exercises.
8. The importance of Olympic weightlifting in athletics. The teaching process of Olympic weightlifting exercises. The procedures of resistance training in athletics. General and specific strength development with free exercises and resistance tools.
9. General characteristics and rules for shot put and javelin throwing. Biomechanical analysis of the shot put. Development of putting and throwing skills. Shot put with the O'Brien technique. Teaching and lead-up exercises for javelin.
10. Training system of throwers in U23 and adult age groups. The process selection in athletics for disciplines and events (specifically for throws). The long-term process of developing technical and conditional abilities. Prevention in the training of throwing athletes.
11. Training system for jumping athletes in U23 and adult age groups. The process of selection in athletics for disciplines and events (specifically for jumps). The long-term process of developing technical and conditional abilities. Prevention in the training of jumping athletes.
12. General characteristics and events of combined events. The preparation system for combined events competitors in U23 and adult age groups. The general rules of decathlon and heptathlon. Youth talent programs in athletics.
13. General characteristics of long jump and triple jump. Biomechanical analysis of the long and the triple jump. General rules, training, preparatory and lead-up exercises.
14. General characteristics of high jump and pole vault. Biomechanical analysis of high jump and pole vault. Preparatory and lead-up exercises of flop and scissors kick high jump technique.
15. General characteristics of hurdles. Biomechanical analysis of hurdling. General rules, training, preparatory and lead-up exercises. General characteristics of relays, technical analysis, general rules, training, preparatory and lead-up exercises.
16. General characteristics of discus throw and hammer throw. Biomechanical analysis of discus and hammer throw. General rules, training, preparatory and lead-up exercises.
17. General characteristics of race walking and steeplechase. Biomechanical analysis of race walking and steeplechase. General rules, training, preparatory and lead-up exercises.
18. Performance diagnostics in athletics. Tests to measure jumping, throwing and running ability. Functional and laboratory tests to identify risks of injury.

Basketball

1. Technical goals, curriculum of the mini basketball. Developing ball handling skills. Special rules and principles of the mini basketball.
2. Types of shooting. Teaching points and progression of shooting. Shooting trend sin modern basketball.
3. The role of the point guard. Developing a youth player for the point guard position regarding technical, tactical and athletic skills.
4. The role of the center. Developing a youth player for the center position regarding technical, tactical and athletic skills.
5. How to be a professional coach? The role of the coach in a youth program. Evaluation, individiual and group feedback techniques in basketball.
6. General and specific warm up in basketball. Injury characteristics of basketball. Risk of injuries in basketball, sport specific prevention programs.
7. On ball screens in offense and defense. Types, teaching points, presence during the game.
8. Off ball screens in offense and defense. Types, teaching points, presence during the game.
9. Introduction of the give and go team tactical element in youth basketball. Teaching points and progression during and between youth categories.
10. The motor skill characteristics of basketball. Planning short-term and long-term development programs.
11. Introduction of the transition defense in youth basketball. Teaching points and progression during and between youth categories.
12. The role of set plays in youth basketball against man to man defense. Teaching points and progression during and between youth categories.