

BACHELOR'S FINAL STATE EXAM

Study program: Specialization in Health Care System
Study field: Physiotherapy

I. Theoretical exam:

- a) Clinical Kinesiology
- b) Physiotherapy
- c) Psychology
- d) Pathological Physiology and Sport Medicine

II. Practical exam: Physiotherapy

I. THEORETICAL EXAM

A) Subject: CLINICAL KINESIOLOGY

1. Definition of the term “Kinesiology” in relation to related scientific fields.
2. Types of movements and their relationship; movement as a fundamental manifestation of life.
3. Motor function control on single levels of nervous system; nociception; gate theory of pain.
4. Motor function control on subcortical level.
5. Motor function control on cortical level.
6. Postural and locomotor functions.
7. Axial system and its functional complexes.
8. Cervical spine, its relationship to the posture and function of other body segments.
9. Thoracic spine and thorax; their relationship; kinesiological aspects of respiratory functions.
10. Lumbar spine and its relationship to the pelvic girdle; muscle chains in the axial organ in relation to the pelvis.
11. Pelvic girdle and its function in standing position and locomotion.
12. Lower limb; functional muscle chains and their relationship to the function of lower limb.
13. Foot arch; function of the foot in standing position and in locomotion.
14. Gait and its mechanisms.
15. Pectoral girdle and upper limb; function and relationship to surrounding body segments; muscle chains between the pectoral girdle and trunk.
16. Hand function in manipulation and communication.
17. Communication, facial expressions as a motor function.
18. Sensory functions and their relationship to locomotor behavior; feedback mechanisms; motor function control.
19. Mechanism of development of reflex changes; viscer-vertebral relations.
20. Kinesiological aspects of stability; orientation in space.

HAMILL, J., KNUTZEN, K. Biomechanical Basis of Human Movement. Lippincott Williams & Wilkins, 2009.

KAPANDJI, I. A. The physiology of joints. Vol I-III, Churchill Livingstone, London, 1975.

KAPANDJI, I. A. The Physiology of the Joints: Volume One the Upper Limb. 6th edition, London: Churchill Livingstone, 2007.

KAPANDJI, I. A. The Physiology of the Joints: Volume Three the Trunk and Vertebral Column. 6th edition, London: Churchill Livingstone, 2004.

KAPANDJI, I. A. The Physiology of the Joints: Volume Two the Lower Limb. 6th edition, London: Churchill Livingstone, 2002.

LATASH, M. Neurophysiological Basis of Movement. Champaign: Human Kinetics, 1998.

B) Subject: PHYSIOTHERAPY - theoretical part

I. Physical therapy:

1. General characteristics of physiotherapy and its use in physiotherapy.
2. Analgesic effects, principles, practical principles and examples of physical therapy with full specification of procedures.
3. Myorelaxant effects, principles, practical principles and examples of physical therapy with full specification of procedures.
4. Trophotropic effects, principles, practical principles and examples of physical therapy with full specification of procedures.
5. Antiedematous effects, principles, practical principles and examples of physical therapy with full specification of procedures.
6. Spa care - characteristics, principles, types, use, indications and contraindications of spa care, indication lists. Balneotherapy - types of procedures, nature, effects and performing of particular procedures, indications and contraindications.
7. Phototherapy and climate therapy - types of procedures, principle, effects and performing of particular procedures, indications and contraindications.
8. Mechanotherapy - types of procedures, principle, effects and performing of particular procedures, indications and contraindications.
9. Thermotherapy and hydrotherapy - types of procedures, principle, effects and performing of particular procedures, indications and contraindications.
10. Electrotherapy - types of procedures, principle, effects and performing of particular procedures, indications and contraindications.

II. Physiotherapy - diagnostic processes:

1. Diagnostic methods assessing qualitative changes of skin, subcutaneous tissue, fascia and muscles.
2. Diagnostic methods assessing muscle strength.
3. Diagnostic methods assessing range of joint mobility and function.
4. Diagnostic methods assessing static posture.
5. Diagnostic methods assessing gait.
6. Diagnostic methods assessing basic movement patterns (stereotypes).
7. Diagnostic methods used by a physiotherapist for evaluation of everyday activities (ADL), independence and self-reliance, grip, mental and gnostic functions etc.
8. Diagnostic methods used by a physiotherapist for evaluation of cardiovascular, respiratory and vestibular system.
9. Neurological examination used by a physiotherapist.
10. Instrumental diagnostic methods used by a physiotherapist.

III. Physiotherapy - therapeutic procedures:

1. Therapeutic procedures used in physiotherapy - generally, division of physiotherapeutic procedures, options of use of these procedures in specific clinical fields.
2. Physiotherapeutic procedures used by a physiotherapist in surgery.
3. Physiotherapeutic procedures used by a physiotherapist in internal diseases.
4. Physiotherapeutic procedures used by a physiotherapist in neurology.
5. Physiotherapeutic procedures used by a physiotherapist in gynecology.
6. Physiotherapeutic procedures used by a physiotherapist in psychiatry and geriatrics.
7. Physiotherapeutic procedures used by a physiotherapist in orthopedic surgery.
8. Physiotherapeutic procedures used by a physiotherapist in pediatrics.
9. Physiotherapeutic procedures used by a physiotherapist in patients with functional musculoskeletal disorders.
10. Preventive programs in physiotherapy; ergonomic aspects from the view of a physiotherapist.

CARR, H. J., SHEPHERD, R. B. Neurological rehabilitation. Butterworth Heinemann, Oxford – Boston, 1998.

CASH's textbook of neurology for physiotherapists, Faber and Faber London, 1986.

EVERETT, T., KELL, C., Human Movement: An Introductory Text. Elsevier Health Sciences, London, 2011.

HOUGLUM P. A., BERTOTI, D. B. Brunnstrom's Clinical Kinesiology. F. A. Davis Company: Pennsylvania, United States, 2012.

KENDAL, F. P, at all: Muscles, testing and function with posture and pain. Baltimore: Williams and Wilkins, 2005.

KOLAR, P. et al., Clinical rehabilitation. 1st edition. Prague: RPS, 2013.

LATASH, M. Neurophysiological Basis of Movement. Champaign: Human Kinetics, 1998.

LIEBENSON, C. Rehabilitation of the Spine - A Practitioner's Manual. Lippincott Williams & Wilkins, 2007.

LEWIT, K. Manipulative Therapy in Rehabilitation of the Locomotor System. 3rd edition. Butterworth Heinemann, 1999.

NORKIN, C C., WHITE, J., D. Measurement of joint motion : A Guide to Goniometry. Philadelphia: F.A.Davis, 1995.

PAGE, P. et al. Assessment and Treatment of Muscle Imbalance: The Janda Approach. Champaign : Human Kinetics, 2010.

PALMER, M. L., EPLER, M: Fundamentals of Musculoskeletal Assessment Techniques (Spiral-bound). Baltimore. Lippincott Williams Wilkins, 1998.

PORTER, S. (Ed.). Tidy's Physiotherapy, 15th ed., Churchill Livingstone Elsevier, 2013.

PRENTICE, W. E. Therapeutic Modalities in Sports Medicine. St. Louis: Mosby, 1994.

REICHERTt, B., STELZNMUELLER, W. Palpation Techniques: Surface Anatomy for Physical Therapists. Stuttgart: Thieme, 2011.

TRAVELL, J. G., SIMONS D. G. Myofascial pain and dysfunction. Vol I, II. Williams and Willkins, Baltimore-London, 1992.

WALSHE, E.G. Muscles, Masses & Motion. Mac. Keith Press, Oxford, 1992.

C) Subject: PSYCHOLOGY and CLINICAL PSYCHOLOGY

I. Psychology

1. Psychology as a science - definition, object of study in psychology, major goals of psychology, comparison of different approaches.
2. History of psychology, major perspectives in psychology - characteristics and representatives.
3. Biological determination of “psyche”.
4. Socio cultural determination of “psyche”.
5. Mental processes - sensation, perception, consciousness, dreams.
6. Mental processes - memory, learning, concentration, thinking.
7. Emotions - definition, characteristics of central components, physiological correlates of emotions, primary emotions.
8. Needs - characteristics, hierarchy of needs theory, need-persistent and ego-defensive reactions to frustration.
9. Motivation - definition, types of motivation.
10. Personality - definition, structure and dynamics of personality, theories, diagnostics.
11. Temperament - definition, characteristics of the four temperament types, diagnostics.
12. Intelligence - definition, structure of intelligence, IQ, diagnostics.
13. Developmental psychology - childhood, adolescence.
14. Developmental psychology - adult age, midlife crisis.
15. Developmental psychology - elderly period, thanatology.
16. Stress - definition, general adaptation syndrome, physiological aspects of stress, stress and health, coping with stress.
17. Relaxation techniques - characteristics (breath control, progressive relaxation, autogenic training), mechanisms of action, indications and contraindications, use of relaxation techniques in physiotherapy.

II. Clinical Psychology

1. Clinical psychology - definition, object of clinical psychology, psychology of patient.
2. Schizophrenia and schizophrenic disorders.
3. Mood disorders.
4. Personality disorders.
5. Aggression and its significance in clinical psychology, autoaggressive behavior.
6. Anxiety disorders.
7. Addictology.
8. Domestic violence, CAN (Child Abuse and Neglect) syndrome.
9. Sexual disorders.
10. Eating disorders and psychotherapy in psychogenic eating disorders.
11. Learning and behavioral disorders, school maturity.
12. Specifics of psychopathology of childhood, psychotherapy for children.
13. Specific of psychopathology in older age, psychotherapy for elderly persons.
14. Psychotherapy – definition, object of psychotherapy, historical development.
15. Psychotherapy – types and approaches of psychotherapy, psychotherapeutic techniques.
16. Individual, group and family psychotherapy.
17. Psychosomatics.

MYERS, D. G. Psychology. New York: Worth Publishers, 2013.

NOLEN-HOEKSEMA, S. N., FREDRICKSON, B. L., LOFTUS, G. R., LUTZ, C. Atkinson and Hilgard's Introduction to Psychology. Cengage Learning, 2014.

WORTMAN C. B., LOFTUS, E. F., WEAVER, C. Psychology. New York: McGraw Hill, 1999.

BENNETT, P. Abnormal and clinical psychology: An introductory textbook. McGraw-Hill Education (UK), 2011.

D) Subject: PATHOLOGICAL PHYSIOLOGY and SPORT MEDICINE

I. Pathological physiology

1. Obstructive and restrictive disorders; respiratory insufficiency; hypoxia.
2. Pathophysiology of nervous system: musculoskeletal system afferentation and efferentation disturbances.
3. Pathophysiology of tumor growth.
4. Defects of neuromuscular system; defects of peripheral nerve; Diagnostic methods.
5. Invasive and non-invasive methods: options (types), indications, and complications.
6. Stress, stress threshold.
7. Nutrition disorders.
8. Physical burden: reactive and adaptive changes in patients with respiratory disorders.
9. Pathophysiology of circulatory system disorders; compensatory mechanisms.
10. Physical burden: reactive and adaptive changes in patients with metabolic disorders (diabetes, obesity, metabolic syndrome etc.).
11. Diabetes and other common endocrinopathies.
12. Pathophysiology of musculoskeletal and load-bearing system.
13. Pathophysiology of inflammation.
14. Pain.
15. Immunity disorders.

II. Sport Medicine

1. Preventive medical examination of sportsman; sports medicine follow-up.
2. Examination of cardiovascular system; ECG, most frequent abnormal findings.
3. Exercise tests; spiroergometry.
4. Prescription of exercise activity in cardiovascular diseases (hypertension, ischemic heart diseases, heart defects) and pulmonary diseases.
5. Prescription of exercise activity in metabolic diseases (diabetes, obesity, thyroid gland diseases).
6. Female and sports activity.
7. Exercise activity in elderly.
8. Exercise activity in children and young people; repetitive strain diseases in this age.
9. Nosocomial (hospital-acquired) infections; hygiene in health care settings.
10. Sport in extreme conditions.
11. Sudden death in sport; athletic heart; injuries, chronic damages in sport.
12. First aid (unconsciousness, resuscitation, arrest of bleeding, serious injuries, acute changes in health status).
13. Principles of regeneration, tiredness, overtraining, regeneration products; doping.
14. Travel medicine (brief characteristics of most common risks; prophylaxis).
15. Prescription of exercise activity in musculoskeletal system diseases.

SILBERNAGL, S. Color Atlas of Pathophysiology. Georg Thieme Verlag, 2016.

BRAUN, C. Applied Pathophysiology: A Conceptual Approach to the Mechanisms of Disease. NBN Int. Ltd, 2016.

DAMJANOV, I. Pathophysiology. Elsevier Ltd, 2008.

VILIKUS, Z., BRANDEJSKY, P. Sports Medicine for English-speaking Students. Charles University in Prague. Karolinum. Prague, 2006.

KJAER, M., KROGSGAARD, M, MAGNUSSON, P. et al. Textbook of Sports Medicine: Basic Science and Clinical Aspects of Sports Injury and Physical Activity, Wiley-Blackwell, 2002.

KJAER, M., KROGSGAARD, M, MAGNUSSON, P. Textbook of Sports Medicine: Basic Science and Clinical Aspects of Sports Injury and Physical Activity Published Online: 28 JAN 2008. [online], DOI: 10.1002/9780470757277.

St. John Ambulance, St. Andrew's Ambulance Association and British Red Cross: First Aid Manual, 10th Edition (revised), London: Dorling Kindersley, 2016.

II. THEORETICAL EXAM

Subject: PHYSIOTHERAPY – practical part

Aim of the exam:

To prove ability to examine, propose and apply appropriate physiotherapeutic processes in a particular patient (in case of known diagnosis determined by a physician) in the range of practical skills and theoretical knowledge corresponding to the content of university, three-year (bachelor) study program of physiotherapy.

Course of exam:

- 1) The student will receive patient's medical records for studying.
- 2) Preparation with the patient – approx. 30 minutes should be utilized for:
 - making assessment from physiotherapist's perspective,
 - determination of assessment result,
 - formulation of treatment goals and formation of physiotherapeutic procedures originating from the assessment.
- 3) Exam – approx. 30 minutes and student will present:
 - results of assessment performed by him/her (conclusion of assessment),
 - proposal of therapy goals and physiotherapeutic procedures that will be applied "today",
 - proposal of long-term plan,
 - if requested by the exam committee, the student will apply diagnostic and therapeutic procedures in the given patient.
- 4) Protocol of the examination:
 - after completion of the final exam, the student will prepare the protocol documenting diagnosis of the patient, assessments performed by the student, proposal of therapeutic procedures (also long-term plan due to current situation),
 - the student will sign the protocol and submits it to the exam committee for filing into the Protocol on the Final State Exam.

Result of Practical Final State Exam:

The student will be informed about the result of the Practical Final State Exam in the term (time) that was announced by the committee prior to the initiation of preparation with a patient; in any case on the day of the exam (the practical part of the Final State Exam is meant)

Recommended literature:

Identical as for the subject "Physiotherapy – theoretical part".