

### **III. LEARNING OUTCOMES**

#### **1. GENERAL LEARNING OUTCOMES**

1.1. Knowledge: a student knows and understands:

- 1) topics relating to biological sciences, including the development, structure and functions of the human body under normal and pathological conditions;
- 2) topics relating to medical sciences, including the etiology, pathomechanism, symptoms and course of the most common diseases;
- 3) topics relating to psychology, pedagogy, sociological sciences, philosophy, and bioethics;
- 4) how mechanical forces affect a healthy human organism and a diseased human organism, including elderly people, presenting with various dysfunctions and diseases and under various conditions;
- 5) the mechanism through which physical agents influence a human body and the effect of physical treatments on persons with various diseases and dysfunctions, including the elderly, under various conditions;
- 6) indications and contraindications for physical modalities, massage, kinesiotherapy, manual therapy treatments, and special methods of physiotherapy;
- 7) indications for physiotherapy treatments in specific medical conditions;
- 8) how medical devices work and the rules for using them to treat patients with various conditions and dysfunctions, including the elderly, under various conditions;
- 9) the specialist aspects of the theory, methodology, and practice of physiotherapy;
- 10) the aspects of functional diagnostics in physiotherapy, planning physiotherapy interventions, and assessing their results, at an advanced level;
- 11) problems in developing, supporting and restoring fitness and efficiency to patients at different ages, including the elderly, which they have lost or which has been reduced due to various diseases or injuries, and the principles of health promotion, at an advanced level;
- 12) the legal and economic aspects of the operation of the providers of rehabilitation to people with disabilities;
- 13) the ethical, legal and special aspects of practicing the profession of a physiotherapist.

### 1.2. Skills: a graduate can:

- 1) carry out physical modalities, kinesiotherapy, massage and manual therapy treatments, and use special methods of physiotherapy;
- 2) carry out functional tests and interpret their results to select physiotherapy intervention;
- 3) create, verify, and adjust physiotherapy programs to patients with different dysfunctions, including the elderly, to appropriately address the patients' clinical and functional status in comprehensive rehabilitation process;
- 4) assess the results of a physiotherapy intervention;
- 5) select medical devices so that they appropriately address the patient's dysfunction and needs at each stage of the rehabilitation process and advise the patient on how to use them;
- 6) plan, select, adjust and create various recreational and sports activities for persons with special needs, including the elderly, taking advantage of options available within adapted physical activity and sport for people with disabilities;
- 7) carry out actions within health education, health promotion, prevention of disability, and primary and secondary prevention of diseases;
- 8) demonstrate high physical fitness necessary to properly present and apply kinesiotherapy, massage, manual therapy, and special methods in patients with various diseases, dysfunctions, and the type and degree of disability;
- 9) plan further education and consistently improve knowledge;
- 10) inspire others to learn and engage in physical activity;
- 11) communicate with a patient and his or her family in a manner based on trust and respect for the rights and needs of the patient;
- 12) communicate and share knowledge within a therapeutic team;
- 13) use the knowledge in physiotherapy rationalization and optimization, including as a member of a therapeutic team;
- 14) fulfill the responsibilities of a physiotherapist in conformity with the ethical and bioethical principles of the profession,

### 1.3. Social competencies: a graduate is prepared to:

- 1) establish and maintain respectful contact with a patient and show understanding for worldview and cultural differences;
- 2) practice the profession with awareness of the role a physiotherapist plays for society and the local community;
- 3) promote a healthy and active lifestyle while practicing the profession and demonstrate a level of fitness necessary to meet its requirements;
- 4) respect patients' rights and the principles of professional ethics;

- 5) notice and identify his or her limitations and independently assess educational deficits and needs;
- 6) use objective sources of information;
- 7) act based on the principles of professional collegueship and cooperation with other specialists in the team, including with the representatives of other medical professions and in multicultural and multinational environments;
- 8) formulate opinions on various aspects of professional activity;
- 9) accept his or her responsibility for professional decisions, including decisions involving personal safety and the safety of other persons.

## **2. SPECIFIC LEARNING OUTCOMES**

**A. BIOMEDICAL BASICS OF PHYSIOTHERAPY** (anatomy – normal anatomy, functional anatomy, radiologic anatomy, palpative anatomy; medical biology; genetics; biochemistry; physiology - general physiology, exercise physiology, physiology of pain, physiological diagnostics; pharmacology for physiotherapy; biophysics; biomechanics – applied biomechanics, clinical biomechanics and ergonomics; general pathology; first aid)

Knowledge: a graduate knows and understands:

- A.W1. the anatomy of human body systems, especially of the locomotor system, and the basic relationships between their structure and function in health and disease;
- A.W2. the types of medical imaging methods, the rules of using them, and their diagnostic usefulness (radiology, ultrasonography, computed tomography, magnetic resonance imaging);
- A.W3. anatomical terminology necessary to describe a person's health status;
- A.W4. basic physical properties, structure and functions of human cells and tissues;
- A.W5. embryonic development, organogenesis, and the phases of embryonic and sexual development in humans;
- A.W6. the basic mechanisms of processes occurring in the human body from childhood through maturity to old age;
- A.W7. basic metabolic processes taking place in the human cells, organs and body systems, including hormonal regulation, reproduction, and aging processes, and changes therein brought about by physical exercise or some diseases;

A.W8. the basics of functioning of the human body systems and the locomotor and sensory organs;

A.W9. the kinesiological mechanisms of movement control, the regulation of human metabolic processes, and the physiology of physical exercise;

A.W10. methods for assessing the function of particular body organs and systems and the possibility of using them to determine the patient's functional status in various clinical areas;

A.W11. the mechanism of action of drugs used in the treatment of various diseases and body systems, the rules for administering them, their limitations and side effects, as well as their effect on the patient's functional status to account for it in planning a physiotherapy intervention;

A.W12. external physical factors and their influence on the human body;

A.W13. the biomechanical principles concerning normal human body statics and movement, and their disorders;

A.W14. the rules of ergonomics applying to everyday human activities and occupational activities, especially ergonomic rules for physiotherapists;

A.W15. the principles of motor control and theories and concepts explaining the process of control and regulation of movement;

A.W16. the basics of learning to control posture and movement and teaching movement activities;

A.W17. mechanisms underlying the development functional disorders and the pathophysiological background to disease development;

A.W18. general health assessment methods and the symptoms of major disorders and lesions;

A.W19. methods for assessing basic vital functions of a person in a health or life-threatening situation;

A.W20. genetic determinants of disease development in the human population;

A.W21. genetic and phenotypic determinants of motor abilities.

**Skills:** a graduate can:

A.U1. recognize the essential structures of the human body, including elements of the locomotor system such as elements of the osteoarticular system, muscle groups and

individual muscles, and locate them on phantoms and anatomical models;

A.U2. locate by palpation selected elements of the anatomical structure and their connections with adjacent structures, including the bony sites where the muscles and ligaments are attached, anthropometric measurement points, superficial muscles and tendons, and selected neurovascular bundles;

A.U3. name biochemical indices and understand how they change during some diseases and following physical effort to ensure the safe application of physiotherapy methods;

A.U4. measure and interpret the results of basic cardiovascular indices (pulse, blood pressure), blood composition, static and dynamic respiratory measurements, and evaluate reflexes from all levels of the nervous system to ensure safe use of physiotherapy methods;

A.U5. carry out a basic examination of the sense organs and assess postural balance;

A.U6. assess exercise capacity, exercise tolerance, and fatigue and overtraining levels;

A.U7. use the properties of a specific group of pharmacological agents in physical modality application in various conditions;

A.U8. assess the effect of physical agents on the human body and distinguish between normal and abnormal reactions;

A.U9. assess a human locomotor system under static and dynamic conditions (general, segmental, and local examinations) to detect disorders in its structure and function;

A.U10. carry out a detailed biomechanical analysis of simple and complex movements in healthy individuals and individuals affected by various disorders of the locomotor system;

A.U11. predict the impact of different mechanical loads on pathologically altered structures of the human body;

A.U12. assess individual motor abilities;

A.U13. assess physical and functional fitness based on current tests for all age groups;

A.U14. take a patient's history and analyze information necessary to perform physiotherapy interventions;

A.U15. recognize health- or life-threatening situations and apply qualified first aid and cardiopulmonary resuscitation to adults and children.

**B. GENERAL SCIENCES** (foreign language; psychology – general psychology, clinical psychology, psychotherapy, clinical communication; sociology – general sociology, sociology of disability; pedagogy – general pedagogy, special pedagogy; didactics of physiotherapy;

elements of the law – intellectual property law, medical law, civil law, labor law; public health; demography and epidemiology; healthcare economics and systems; management and marketing; philosophy; bioethics; history of physiotherapy; information technology; physical education)

Knowledge: the graduate knows and understands:

- B.W1. the psychological and sociological factors of functioning in society;
- B.W2. the psychological and social aspects of helping attitudes and actions;
- B.W3. models of communication in healthcare, the basics of communicating with a patient and the members of an interdisciplinary therapeutic team;
- B.W4. the rules of motivating patients to adopt healthy behaviors and informing them about an unfavorable prognosis, the importance of verbal and non-verbal communication with patients and the concept of trust in interaction with patients;
- B.W5. the basic methods of psychotherapy;
- B.W6. basic problems in pedagogy and special pedagogy;
- B.W7. the limitations and considerations of educating people with disabilities, the rules of coping with pedagogical problems involved, and modern trends in the revalidation of people with disabilities;
- B.W8. the basic forms, ways of providing knowledge, and teaching aids that are used in teaching physiotherapy, professional training, and continuing education courses;
- B.W9. the rules of practicing the profession of a physiotherapist and the rules of functioning of the self-governing professional association of physiotherapists;
- B.W10. laws governing the profession of a physiotherapist, including patients' rights, the responsibilities of an employer and an employee, especially those established under civil law, labor law, industrial property protection law and copyright law, as well as the rules of civil liability of physiotherapists;
- B.W11. the determinants of health and health risks;
- B.W12. the principles of health education and promotion and the elements of social policy relating to health protection;
- B.W13. the determinants of health and health risks and the scale of disability-connected problems as seen from the demographic and epidemiological perspectives;
- B.W14. the rules of demographic analysis and basic concepts within epidemiological statistics;
- B.W15. rules underlying the organization and financing of the healthcare system of the

Republic of Poland and the economic aspects of providing physiotherapy care;

B.W16. the rules of managing a therapeutic team and the rules governing the organization and management of rehabilitation providers;

B.W17. the rules of employing people with different degrees of disability;

B.W18. the ethical principles of contemporary medical marketing;

B.W19. the rules of a simplified market analysis in planning physiotherapy services;

B.W20. the history of physiotherapy, directions in the development of teaching physiotherapy, and international and other associations of physiotherapists;

B.W21. IT and statistical tools used to process and present data and solve problems.

Skills: the graduate can:

B.U1. communicate in one foreign language at the B2+ level of the Common European Framework of Reference for Languages;

B.U2. notice and identify the psychological problems of patients with different dysfunctions and at different ages, including the elderly, with regard to the safe application of physiotherapy methods; assess their influence on the course and efficacy of treatment;

B.U3. use appropriate forms of therapeutic and educational handling of people with disabilities to support their revalidation;

B.U4. organize activities aimed at health education, health promotion and disability prevention;

B.U5. carry out screening in the prevention of dysfunctions and disabilities;

B.U6. estimate the cost of a physiotherapy intervention;

B.U7. carry out a simplified market analysis for the planning of physiotherapy activities;

B.U8. identify basic ethical problems within contemporary medicine and life and health protection and consider cultural, religious and ethnic characteristics of patients in planning and delivering a physiotherapy intervention;

B.U9. demonstrate motor skills required by selected forms (recreational and health-related) of physical activity;

B.U10. communicate with an adult patient, a child and patient's family using active listening techniques and expressing empathy, and talk with the patient about his or her health in the atmosphere of trust over the physiotherapy intervention;

B.U11. advise a patient about the purpose, course and risks involved in the proposed diagnostic or physiotherapy procedures and obtain the patient's informed consent for

them;

B.U12. communicate with other members of the team and give them feedback and support.

**C. BASICS OF PHYSIOTHERAPY** (general physiotherapy; motor skills training and movement education; kinesiotherapy; manual therapy; physiotherapy modalities – physical modalities; balneoclimatology, wellness; massage; special methods of physiotherapy – methods of neurodevelopmental therapy, neuromuscular and postural reeducation and neurorehabilitation, methods of manual therapy methods; adapted physical activity, sports of people with disabilities; medical devices; preventive physiotherapy and promotion of health)

Knowledge: a graduate knows and understands:

C.W1. concepts relating to medical rehabilitation, physiotherapy and disability;

C.W2. mechanisms underlying structural and functional disorders caused by a disease or injury;

C.W3. the mechanisms of operation and possible side-effects of physiotherapy modalities and treatments;

C.W4. methods for assessing structural and functional disorders caused by a disease or injury, diagnostic tools and methods for assessing the condition of a patient to receive physiotherapy; methods of assessing the patient's body structure, function and activity in various diseases;

C.W5. the rules of selecting the means, forms and methods of therapeutic treatment appropriate for the specific dysfunction, condition and age of the patient;

C.W6. the theoretical and methodological basics of learning and teaching movement activities;

C.W7. the theoretical, methodological and practical basics of kinesiotherapy, manual therapy and massage and special methods of physiotherapy;

C.W8. indications and contraindications for kinesiotherapy, manual therapy, and massage treatments, and for special methods of physiotherapy;

C.W9. the theoretical, methodological and practical basics of physical modalities, balneoclimatology, and wellness;

C.W10. indications and contraindications for physical modalities, balneoclimatology, and wellness treatments;

C.W11. the rules of selecting different forms of adapted physical activity, sport,



tourism and therapeutic recreation in the process of treating and maintaining the fitness of people with special needs, including people with disabilities;

C.W12. laws regulating the participation of people with disabilities in sport, including the Paralympics and Special Olympics, and organizations supporting the physical activity of people with disabilities;

C.W13. physical training's risks and limitations in disability;

C.W14. the principles of operation of medical devices and the rules of using them to treat persons with different diseases and dysfunctions;

C.W15. rules governing the list of medical devices set out in the regulations issued pursuant Article 38(4) of the Act of 12 May 2011 on reimbursement of drugs, foodstuffs for special nutritional purposes, and medical devices (Journal of Laws, 2021, item 523);

C.W16. indications and contraindications for the use of medical devices;

C.W17. issues in health promotion and preventive physiotherapy.

Skills: the graduate can:

C.U1. take a patient's history and carry out physical examinations, basic functional examinations and tests used in physiotherapy, including measurements of limb length and circumference, joint range of motion, and muscle strength;

C.U2. keep the records on the patient's health status and the physiotherapy program;

C.U3. select and perform kinesiotherapy addressing different motor skills in healthy individuals and patients with various dysfunctions; provide targeted motor skill training, gait re-education, postural education and re-education, and upper limb function re-education;

C.U4. instruct patients to perform exercises at home and use medical products and everyday objects for therapeutic purposes; instruct the caregivers how to take care of their patients with special needs or how to stimulate proper development of children;

C.U5. design medical training including various physical exercises; adjust exercises to the participants' needs; select devices and aids appropriate for specific exercises; progressively increase exercise difficulty;

C.U6. select exercises appropriate for patients with different functional disorders and abilities and consistently teach them to perform them, progressively adjusting exercise difficulty and intensity;

C.U7. demonstrate motor skills necessary to present exercises and ensure that they are performed in a safe manner;

C.U8. plan, select and carry out kinesiotherapy, manual therapy, and massage

treatments, and special methods of physiotherapy;

C.U9. operate and use devices employed in kinesiotherapy, physical modalities, massage, manual therapy, and special methods of physiotherapy;

C.U10. demonstrate advanced manual skills necessary to perform the appropriate kinesiotherapy, massage, or manual therapy technique, or special methods of physiotherapy;

C.U11. plan, select and carry out physical modalities, balneoclimatology, and wellness treatments;

C.U12. operate devices used for physical modalities, balneoclimatology and wellness treatments;

C.U13. advise patients with special needs, including patients with disabilities, about various forms of adapted physical activity, sport, tourism and therapeutic recreation;

C.U14. explain the rules of self-care and locomotion to patients with disabilities, including the rules for moving unassisted and overcoming physical obstacles while using an active wheelchair;

C.U15. provide training in selected sports to people with disabilities and demonstrate the elements of their technique and tactics to them;

C.U16. select medical devices appropriate to the patient's dysfunction and needs at each stage of physiotherapy intervention and advise the patient about how to use them;

C.U17. take actions to promote healthy lifestyles and design a preventive programs appropriate for patients' age, gender, health status, and standard of living, with a special focus on physical activity.

**D. CLINICAL PHYSIOTHERAPY** (Clinical Basics of Physiotherapy (CBP) - CBP in orthopedics, traumatology and sports medicine, CBP in rheumatology, CBP in neurology and neurosurgery, CBP in pediatrics and pediatric neurology and orthopedics, CBP in cardiology, cardiac surgery and intensive care, CBP in pulmonology, CBP in surgery and peripheral vascular diseases, CBP in gynecology and obstetrics, CBP in geriatrics, CBP in psychiatry, CBP in oncology and palliative medicine; Clinical Physiotherapy in Musculoskeletal System Dysfunction (CPMSD) - CPMSD in orthopedics and traumatology, CPMSD in sports medicine, CPMSD in rheumatology, CPMSD in neurology and neurosurgery, CPMSD in pediatric neurology and orthopedics; Module: Clinical Physiotherapy in Internal Diseases (CPID) - CPID in cardiology, cardiac surgery and intensive care, CPID in pulmonology, CPID in surgery and peripheral vascular diseases, CPID in gynecology and obstetrics, CPID in pediatrics, CPID in geriatrics,

CPID in psychiatry, CPID in oncology and palliative medicine; Functional Diagnostics and Physiotherapy Planning in Musculoskeletal System Dysfunction (FDPPMSD) - FDPPMSD in orthopedics and traumatology, FDPPMSD in sports medicine, FDPPMSD in rheumatology, FDPPMSD in neurology and neurosurgery; Functional Diagnostics and Physiotherapy Planning in Internal Diseases (FDPPID) - FDPPID in cardiology, cardiac surgery and intensive care, FDPPID in pulmonology, FDPPID in surgery and peripheral vascular diseases, FDPPID in gynecology and obstetrics, FDPPID in pediatrics, FDPPID in geriatrics, FDPPID in psychiatry, FDPPID in oncology and palliative medicine; Functional Diagnostics and Physiotherapy Planning in Pediatric Neurology and Orthopedics

Knowledge: a graduate knows and understands:

D.W1. the etiology, pathomechanism, symptoms, and course of locomotor system dysfunctions in orthopedics and traumatology, sports medicine, rheumatology, neurology, neurosurgery, pediatrics, and pediatric neurology to a degree enabling the rational application of physiotherapy interventions;

D.W2. the rules of diagnosing and the general principles and ways of treating the most common locomotor system dysfunctions in orthopedics and traumatology, sports medicine, rheumatology, neurology, neurosurgery, pediatrics, and pediatric neurology to a degree enabling the rational application of physiotherapy interventions;

D.W3. the etiology, pathomechanism, symptoms and course of the most common diseases in cardiology and cardiac surgery, pulmonology, surgery, gynecology and obstetrics, geriatrics, psychiatry, intensive care, and oncology and palliative medicine, to a degree enabling the rational application of physiotherapy interventions;

D.W4. the rules of diagnosing and the general principles and ways of treating the most common diseases in cardiology and cardiac surgery, pulmonology, surgery, gynecology and obstetrics, geriatrics, psychiatry, intensive care, oncology and palliative medicine, to a degree enabling the rational application of physiotherapy interventions;

D.W5. the rules of handling a patients who is unconscious, suffered a multi-site **or** multi-organ trauma, spine or spinal cord injury, or an upper or lower limb injury, to a degree enabling the safe application of physiotherapy interventions;

D.W6. general principles of taking medical histories and examining cardiac, neurological, orthopedic and geriatric patients;

D.W7. the rules of interpreting the results of additional tests used in cardiovascular

assessment and cardiac physiotherapy, including electrocardiography (ECG), ultrasound scanning, exercise ECG, and clinical assessments of a cardiac patient's health according to different scales, to a degree enabling the safe application of physiotherapy interventions;

D.W8. the results of stress tests in cardiac and pulmonary physiotherapy (the cycle ergometer test, the treadmill test, the walking test, spiroergometry), the NYHA (New York Heart Association) grading of heart failure, and the values of the metabolic equivalent of task (MET));

D.W9. the general principles of taking a patient's history and performing a pulmonary physiotherapy evaluation; major additional testing methods, and functional tests used in qualifying patients for and monitoring the course of respiratory physiotherapy;

D.W10. the rules of qualifying patients for surgery and basic surgical procedures, including amputations due to vascular diseases, and minimally-invasive surgery;

D.W11. the methods of clinical examination and additional diagnostics in gynecology and obstetrics;

D.W12. the physiology of aging and the principles of geriatric care and physiotherapy;

D.W13. risks involved in the hospitalization of the elderly;

D.W14. the special nature of dealing with patients with mental illness and the principles of handling them in a proper manner;

D.W15. the rules of dealing with patients who are unconscious, have acute circulatory or respiratory failure, in shock, diagnosed with sepsis, mechanically ventilated, or have suffered a skull and cerebral injury or multiple bodily trauma;

D.W16. the assumptions and principles underlying the International Classification of Functioning Disability and Health (ICF).

**Skills:** a graduate can:

D.U1. carry out a detailed examination and functional tests of the human motor system for physiotherapy purposes and record and interpret the results;

D.U2. perform the biomechanical analysis of human simple and complex movements in case of a normal motor system and its disfunctions;

D.U3. carry out a static and dynamic assessment of a human motor system (general, segmental, and local assessments) and gait analysis, and interpret the results;

D.U4. select and carry out physiotherapy methods appropriate to the clinical and functional condition of patients with injuries to soft tissues of the locomotor system

undergoing conservative or surgical treatment, patients with limb injuries (contusions, sprains, dislocations, or fractures) undergoing conservative or surgical treatment, and patients with non-paralytic spinal injuries or stable and unstable spinal fractures;

D.U5. select and carry out, pre- and post-operatively, physiotherapy treatments appropriate to the clinical and functional condition of patients with planned amputations or traumatic amputations, provide prosthetic gait training and training for upper-limb amputees, including advising on how to wear a prosthesis;

D.U6. select and carry out, pre- and post-operatively, physiotherapy treatments appropriate to the clinical and functional condition of patients after orthopedic reconstructive surgery, including arthroscopy and endoprosthetics;

D.U7. explain to patients or their caregivers how to do therapeutic exercises and training at home and use medical devices and everyday objects for therapeutic purposes;

D.U8. carry out functional tests used in rheumatology, including assessment of the degree of joint damage and deformity, hand function and locomotion in patients with rheumatologic diseases;

D.U9. plan, select and carry out physiotherapy methods appropriate to the clinical and functional condition of patients with rheumatologic diseases, enthesopathies, degenerative joint diseases, range of motion restrictions, or rheumatoid extra-articular pain syndromes;

D.U10. perform transfer and gait training in patients with rheumatologic diseases and improve rheumatoid hand function;

D.U11. advise patients with rheumatologic diseases about how to exercise at home and use medical devices, including grip-improving devices;

D.U12. carry out a neurological examination and functional tests in neurological physiotherapy, including muscle tone, spasticity, body function and activity assessments, especially with the use of clinical scales; interpret the results of major additional (imaging and electrophysiological) tests;

D.U13. plan, select and carry out physiotherapy treatments appropriate to the clinical and functional condition of patients with the symptoms of injury to the brainstem, cerebellum or telencephalon, with special regard to cases of stroke, Parkinson's disease, and demyelinating diseases, provide physiotherapy in patients with paralysis due to spinal cord injury, carry out treatments to alleviate trophic and excretory disorders, provide transfer and gait training, or wheelchair mobility training to patients with spinal injuries;

D.U14. plan, select and carry out physiotherapy treatments appropriate to the clinical and functional condition of patients with peripheral nerve injuries, polyneuropathies, neuromuscular diseases, primary muscular diseases, or different pain syndromes;

D.U15. position a patient in bed, apply bedside kinesiotherapy, carry out a bed mobility, transfer from sit to stand and gait retraining in patients with nervous system disorders, and the re-education of upper-limb function in post-stroke patients;

D.U16. explain patients with neurological diseases how to do exercises at home and use medical devices and everyday objects for therapeutic purposes;

D.U17. take a patient's history and record basic information about a child's development and health;

D.U18. assess the psychomotor development of a child;

D.U19. assess the spontaneous activity of a newborn and an infant;

D.U20. use the appropriate scales to assess the functional motor and communication skills of a child;

D.U21. perform a clinical assessment of increased or decreased muscle tone in a child, including spasticity and rigidity;

D.U22. perform a clinical assessment of posture and interpret its results; use the Bunnell scoliometer, point scales, and biostereometric assessment method;

D.U23. determine on the basis of a spinal X-ray: the Cobb angle and the rotation angle using one of the established evaluation methods, assess bone age according to the Risser classification, interpret the results, and use them to select appropriate physiotherapy intervention for scoliosis;

D.U24. plan, select and carry out physiotherapy intervention appropriate to the clinical and functional condition of children and adolescents with locomotor system conditions, including congenital defects, postural defects, sterile bone necrosis;

D.U25. plan, select and carry out, pre- and post-operatively, physiotherapy intervention appropriate to the clinical and functional condition of surgically treated children;

D.U26. plan, select and carry out physiotherapy intervention appropriate to the clinical and functional condition of children and adolescents with movement disorders of central origin, cerebral palsy, spinal dysraphism, neuromuscular diseases, perinatal injuries to peripheral plexuses and nerves, neurogenic and myogenic muscular atrophies (muscular atrophies and dystrophies);

D.U27. advise the caregiver of a child receiving caregiver-delivered movement therapy, and the caregiver and the child about how to exercise at home and how medical products and everyday objects can be used for therapeutic purposes;

D.U28. perform in a safely manner basic measurements and functional tests, including heart rate and blood pressure measurements, a walking test, a get up and go test, a treadmill stress test as per the Bruce protocol and the modified Naughton protocol, and an cycloergometer test;

D.U29. plan, select and carry out physiotherapy treatments appropriate to the clinical and functional condition of patients with heart failure, hypertension, ischemic heart disease, cardiac arrhythmia, and acquired cardiac defects, and patients after myocardial infarction;

D.U30. plan, select and carry out physiotherapy treatments appropriate to the clinical and functional condition of patients before heart surgery, after cardiac surgery, with cardiac pacemakers, and patients post-treatment with interventional cardiology methods;

D.U31. advise a patient undergoing cardiac physiotherapy about how to do respiratory exercises and use relaxation techniques;

D.U32. advise a patient with a cardiovascular disease about how to do exercises at home and physical activity within secondary prevention;

D.U33. carry out pulmonary function tests, including spirometry, and interpret the results of a spirometry, a stress test, and a blood gas test;

D.U34. plan, select and apply therapeutic exercises appropriate to the clinical and functional condition of patients with different pulmonary diseases (acute and chronic), predominantly restrictive pulmonary diseases, and predominantly obstructive pulmonary diseases;

D.U35. carry out respiratory physiotherapy methods in different pulmonary diseases, after chest trauma, chest surgery, or lung transplantation;

D.U36. advise a patient with a respiratory disease about how to exercise at home and take advantage of secondary prevention measures;

D.U37. plan, select and carry out physiotherapy treatments appropriate to the clinical and functional condition of patients with functional and organic peripheral vascular diseases and patients with vascular amputations;

D.U38. implement strategies for early patient mobilization after abdominal or thoracic surgery, carry out physiotherapy treatments to decompress lungs and facilitate bronchial clearance, advise about how to prevent early and late postoperative complications, and give recommendations on postoperative outpatient physiotherapy;

D.U39. use the International Classification of Functioning, Disability and Health (ICF);

- D.U40. plan, select and carry out postpartum physiotherapy methods to eliminate adverse effects, especially from the cardiovascular, skeletal and muscular systems;
- D.U41. advise pregnant women about how to perform pre- and postpartum exercises;
- D.U42. give physiotherapy treatments to patients with urinary incontinence and advise them about how to do exercises at home;
- D.U43. plan and select cardio-respiratory exercises appropriate to the clinical and functional condition of children and adolescents and advise their caregivers about how to do them;
- D.U44. make a comprehensive assessment of a geriatric patient and interpret its results;
- D.U45. select and carry out geriatric physiotherapy treatments and advise elderly patients about how they should exercise at home and use various forms of recreation;
- D.U46. plan, select and carry out physiotherapy methods appropriate to the clinical and functional condition of women after mastectomy, including treatments for lymphedema and upper limb dysfunction;
- D.U47. follow the rules of appropriate communication with patients and maintain communication with other members of the therapeutic team;
- D.U48. make efforts to improve patients' quality of life, including the terminally-ill patients, making use of rehabilitation equipment;
- D.U49. plan, select and adjust rehabilitation programs to patients with different locomotor system dysfunctions and internal diseases so that they suit their clinical, functional and mental (cognitive-emotional) condition and needs, as well as the needs of their caregivers.

## **E. METHODOLOGY OF SCIENTIFIC RESEARCH**

Knowledge: a graduate knows and understands:

- E.W1. research methods and techniques used within a research project.

Skills: a graduate can:

- E.U1. plan a scientific investigation and discuss its purpose and expected outcomes;
- E.U2. interpret a scientific investigation and relate it to the current state of knowledge;
- E.U3. use specialist domestic and international scientific literature;
- E.U4. carry out a scientific investigation and interpret and document its results;



E.U5. present the results of a scientific investigation.

**F. PHYSIOTHERAPY WORK EXPERIENCE PLACEMENTS** (Introductory physiotherapy placement, summer kinesiotherapy placement, placement in a facility providing clinical physiotherapy, modalities, and massage, summer specific physiotherapy field placement – elective, placement in a facility providing clinical physiotherapy, modalities, and massage, summer specific physiotherapy field placement – elective, placement in a facility providing clinical physiotherapy, modalities, and massage)

Knowledge: a graduate knows and understands:

F.W1. physical processes induced by external factors in the human body;

F.W2. the theoretical, methodological and practical basics of kinesiotherapy, manual therapy, special methods of physiotherapy, ergonomics and physical modalities, and therapeutic massage;

F.W3. methods for assessing a human locomotor system to identify structural and functional disorders and perform physiotherapy in locomotor system dysfunctions and internal diseases;

F.W4. methods for assessing structural and functional disorders induced by a disease or injury and basic human reactions to illness and pain to a degree required by physiotherapy;

F.W5. methods for describing and interpreting common diseases and syndromes as necessary to rationally plan and apply physiotherapy modalities;

F.W6. the basics of health education, promotion and prevention, including the prevention of disability;

F.W7. the principles of selecting different forms of adapted physical activity and sports for people with disabilities undergoing comprehensive rehabilitation and fitness maintenance programs;

F.W8. the modes of operation of medical devices used for rehabilitation;

F.W9. ethical rules of dealing with a patient;

F.W10. the rules of evidence-based physiotherapy intervention;

F.W11. physiotherapy standards;

F.W12. the role of a physiotherapist and other specialists on the therapeutic team during comprehensive rehabilitation;

F.W13. the legal, ethical and methodological aspects of clinical research and the role of a

physiotherapist in it;

F.W14. rules and objectives of health promotion and the role of a physiotherapist in promoting a healthy lifestyle;

F.W15. basic problems of psychosomatic relationships and methods for building body awareness;

F.W16. tasks of the different organs of the self-governing professional association of physiotherapist and the rights and responsibilities of its members;

F.W17. the ethical rules of the profession of a physiotherapist;

F.W18. the rules of professional liability of physiotherapists.

Skills: a graduate can:

F.U1. perform examinations, interpret their results, and carry out functional tests necessary to select physiotherapy agents, provide treatments, and apply basic therapeutic methods;

F.U2. independently give kinesiotherapy, manual therapy, physical modalities, and therapeutic massage treatments;

F.U3. create, verify and modify rehabilitation programs to address different dysfunctions of the locomotor system and dysfunctions of other organs and systems according to the clinical and functional condition of the patient and the goals of comprehensive rehabilitation;

F.U4. demonstrate specialist motor skills relating to selected forms of physical activity;

F.U5. select medical devices appropriate to the type of the patient's dysfunction and needs at each stage of rehabilitation;

F.U6. apply medical devices and advise a patient about how to use them;

F.U7. use and operate physiotherapy apparatus and equipment and functional assessment equipment, and prepare the workplace;

F.U8. work in an interdisciplinary team providing care to a patient and communicate with other team members, the patient, and his or her family;

F.U9. enter data, information obtained, and the results of therapeutic treatments and interventions into the patient's records;

F.U10. initiate, organize and conduct activities within health education, health promotion, and prevention of disabilities;

F.U11. state the extent of his or her professional competences and cooperate with the representatives of other medical professions;

F.U12. independently fulfill tasks he or she has been entrusted with, properly organize own work, and accept responsibility for it;

F.U13. work with the team and accept responsibility for participation in decision-making;

F.U14. actively participate in therapeutic team's activities;

F.U15. actively participate in discussions on professional issues in line with the principles of ethical behavior;

F.U16. adhere to the principles of professional deontology, including the ethical principles of the profession of a physiotherapist;

F.U17. respect patients' rights;

F.U18. establish trust- and respect-based relationships with patients and co-workers.

## **WAYS OF ASSESSMENT OF LEARNING OUTCOMES**

1. The assessment of learning outcomes within the categories of knowledge, skills, and social competencies requires various and adequate forms of testing.

2. Learning outcomes within a category of knowledge can be tested by means of written or oral exams.

3. Written examinations may include essays, reports, short structured questions, multiple-choice questions (MCQs), multiple response questions (MRQs), Yes/No questions, or matching tests.

4. Examinations should be standardized and seek to test knowledge beyond the very understanding of subjects (the level of their understanding, the ability to analyze and synthesize information and solve problems).

5. The assessment of learning outcomes within the category of skills – communication and manual – requires direct observation under standard conditions of the student demonstrating a skill.

6. The graduation exam should have a form enabling the verification of the knowledge and skills a student has acquired over the course of study.