

MINISTRY OF EDUCATION OF SCIENCE OF UKRAINE

BLACK SEA NATIONAL UNIVERSITY  
in the name of PETER TOMB

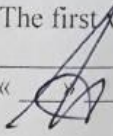
Medical Institute

Department of Hygiene, Social Medicine, Public Health and Medical Informatics

"APPROVE"

The first vice-rector

NM Ishchenko

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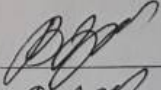
**CURRICULUM WORK PROGRAM**

**"Traumatology, orthopedics, physical rehabilitation, sports medicine"**

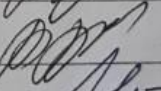
Area of knowledge 22 "Health care"

Specialty 222 "Medicine"

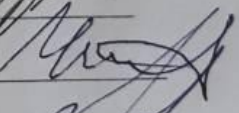
Developer

Zyuzin VO 

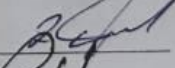
Head of the Department of Developer

Zyuzin VO 

Guarantor of the educational program

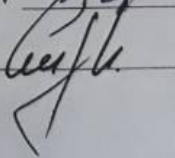
Klymenko MO 

Director of the institute

Grishchenko GV 

Head of

EMD

Shkirchak SI 

## 1. Description of the discipline

Characteristic	Characteristics of the discipline	
Name of discipline	Traumatology, orthopedics , physical rehabilitation , sports medicine	
Branch of knowledge	22 "Health care"	
Specialty	222 "Medicine"	
Specialization (if any)		
Educational program	Medicine	
Level of higher education	Master	
Discipline status	Normative	
Curriculum	3 rd , 5 th	
Academic year	2021 -2022	
Semester numbers:	Full-time	Correspondence form
	7 th, 9 th	
Total number of ECTS credits / hours	4.5 credit and / 135 hs	
Course structure: - Lectures  - practical classes  - hours of independent work of students	Full-time	Correspondence form
	5.5 hs - 7 semester 10 hs - 9 semester 20 hs - 7 semester 40 hs - 9 semester 59.5 hs	
Percentage of classroom load	55 %	
Language of instruction		
Form of final control	credit - 9th semester Credit - 7th semester	

## 1. Purpose, tasks and planned learning outcomes

The purpose of studying traumatology, orthopedics, physical rehabilitation, sports medicine is established on the basis of OPP of preparation of the doctor on a specialty according to its block and is a basis for construction of the maintenance of educational discipline:

It is necessary to provide students with knowledge on prevention of injuries and orthopedic diseases, organization of trauma and orthopedic care in Ukraine, methods of examination, diagnosis and treatment and rehabilitation of patients with injuries and diseases of the machine movement and support, disaster recovery and determining employment forecast.

Mastery of knowledge and skills in the basics of rehabilitation, study of basic instructional and legislative acts on rehabilitation, concepts in the rehabilitation of the sick and disabled, organization and conduct of medical, psychological, physical, professional, social and other types of rehabilitation.

To form a system of knowledge about general pathology, methods of physical rehabilitation, determination of physical development and functional state, increase of physical working capacity.

The discipline is an integral part of clinical medicine, so the study of the basic principles of this field of science - an important point in training a doctor of any specialty.

**Objectives of study:** acquisition by the student of competences, knowledge, abilities and skills for realization of professional activity on a specialty:

- 1) interpret the concept of "traumatology and orthopedics";
- 2) evaluate a person's motor activity and physical condition, compile and implement fitness training programs, organize and conduct physical culture and health activities.
- 3) to explain the pathogenetic features of the course of traumatic illness with polytrauma;
- 4) May aktuvannya main clinical manifestations and laboratory parameters violations vitally important functions in the course of traumatic disease;
- 5) possession of methods of diagnosis and assistance in the main syndromes during the consequences of traumatic injuries;
- 6) the ability to identify measures for physical rehabilitation
- 7) use of the basic principles of the organization of emergency care to victims with field injuries at man-caused and natural disasters;
- 8) to learn the principles of classification of typical injuries and orthopedic chnyh diseases and principles of pro aktyky injury th and orthopedic diseases;
- 9) for persons who need to justify the choice of measures for physical culture and sports rehabilitation and adaptive sports.

**Prerequisites for studying the discipline ( interdisciplinary links).** T ravmatolohi I, podiatrists, I physically and reabilitatsi I, Sport and Medicine as well as a training course related to such items:

- a) **Normal anatomy**: osteology, myology, syndesmology, joint structure.
- b) **pathological anatomy**: inflammation, degenerative- dystrophic process, specific inflammatory processes (tuberculosis, etc.).
- d) **d histology**: structure of bone and cartilage tissue and physiological regeneration of bone tissue.
- e) **he enthenolohiya and radiology**, age characteristics of the skeleton in the X-ray image; X-ray examination of the skeleton; radiographic semiotics of diseases and injuries of the skeleton, radionuclide methods for diagnosing diseases of the musculoskeletal system.
- e) **o perative surgery and topographic anatomy**: operative .accesses to large joints, topography of vascular-nervous formations of extremities, amputation and exarticulation, surgical instruments.

same ) **physical rehabilitation, sports medicine**, provides the opportunity to get great ktychni skills and form professional skills to provide skilled assistance during rehabilitation in peri units care for travmatoloho - orthopedic patients.

from ) creates methodological basis of clinical thinking.

**Expected learning outcomes. As a result of studying the discipline, students have:**

- identify the tactics of trauma patients and the most extend their orthopedic diseases musculoskeletal
- To demonstrate the method , etc. ofilaktyky injuries and orthopedic diseases
- diagnose emergencies in musculoskeletal injuries and provide emergency medical care
- explain the principles of rehabilitation treatment and rehabilitation of patients with lesions of the porno- musculoskeletal system
- conduct a differential in the diagnosis of traumatic injuries oporno- movement ovoho device , set a preliminary diagnosis of injuries and the most common orthopedic diseases
- learn osno vni concepts in rehabilitation
- to master the main directions of organization and management of the medical rehabilitation system
- to study the basic instructive-methodical and legislative acts in the system of medical rehabilitation in Ukraine

According to the requirements of the educational and professional program, students must:

***KNOW :***

- general principles of examination of patients with injuries and diseases of the musculoskeletal system;
- signs of anatomy and function of the joints, spine;
- principles of diagnosis of injuries of the spine, bones of joints, belts, upper and lower extremities;
- special methods of examination of traumatological and orthopedic patients and patients with spinal pathology (radiography, tomography, computed tomography);
- modern ideas about the etiology and pathogenesis of osteochondrosis and osteoarthritis;
- etiology and pathogenesis of scoliotic disease, classification of scoliotic disease and clinic of different degrees of scoliosis, methods of conservative and surgical treatment of scoliosis and indications for them;
- probable and relative signs of fracture, dislocation, diseases of the joints and spine;
- schemes of clinical and laboratory diagnostics and treatment of inflammatory and tumor lesions of bones and joints;
- basic methods of conservative and operative treatment of patients with injuries and diseases of the musculoskeletal system;
- indications for operative and conservative methods of treatment;
- the main advantages and disadvantages of conservative and operative methods of treatment; use of conservative and operative methods of treatment and ways of their prevention;
- m ozhlyvi complications using conservative and surgical treatments and ways of their prevention.

***BE ABLE:***

- to examine patients with injuries and diseases of the musculoskeletal system and to formulate a preliminary diagnosis and a plan for examination and - treatment.
- to determine the tactics of management of patients with injuries and the most common orthopedic diseases of the musculoskeletal system;
- demonstrate mastery of methods of injury prevention and orthopedic diseases;
- explain Prince ypy restorative treatment and rehabilitation of patients with diseases of musculoskeletal up and Ratu;
- conduct differential diagnosis junction traumatic injuries GCO p n o- motor system;
- Pa novlyuvaty previous diagnosis of May avmah and the most common orthopedic diseases;
- draw up schemes of treatment and rehabilitation terror azhdalyh of claim erelomamy and its complications;
- diagnose traumatic shock and provide medical care at the pre-hospital and hospital stages .
- perform anesthesia of the fracture of the diaphysis of the long bone;

- execu HC atm transport and medi lnu immobilization ;
- apply and znya you cast, at value c an limbs in plaster bandage:

### ***MOTHER OF COMPETENCE***

- on the application of knowledge in traumatology and orthopedics to promote a healthy lifestyle, as well as for the prevention of domestic injuries ;
- about the main perspective directions of development of traumatology and orthopedics ; formation of practical skills of diagnostics and treatment of patients with injuries and diseases of the musculoskeletal system. about the main perspective directions of development of traumatology and orthopedics .

The developed program corresponds to the *educational-professional program (OPP)* and is focused on the formation of *competencies*:

#### ***general (LC) - LC1-LC 3 OPP :***

- ZK1.** Ability to abstract thinking, analysis and synthesis, the ability to learn and master modern knowledge.
- ZK2.** Ability to apply knowledge in practical situations.
- ZK3.** Knowledge and understanding of the subject area and understanding of professional activity.

#### ***professional (FC) - FC1 - 6; FC11; FC16; FK18 OPP:***

- FC1.** Patient interviewing skills.
- FC2.** Ability to determine the required list of laboratory and instrumental studies and evaluate their results.
- FC3.** Ability to establish a preliminary and clinical diagnosis of the disease.
- FC4.** Ability to determine the required mode of work and rest in the treatment of diseases.
- FC5.** Ability to determine the nature of nutrition in the treatment of diseases.
- FC6.** Ability to determine the principles and nature of disease treatment.
- FC11.** Skills to perform medical manipulations.
- FC16.** Ability to determine the tactics of management of persons subject to dispensary supervision.
- FC18.** Ability to keep medical records.

#### ***program learning outcomes (PRN) - PRN11, PRN13-18, PRN22, PRN25 , PRN28 , PRN30 , PRN3 2, PRN33 , PRN35 , PRN41 OPP :***

**PRN11.** Collect data on patient complaints, medical history, life history ( including professional history), in a health care facility, its unit or at the patient's home, using the results of the interview with the patient, according to the standard scheme of the patient's survey. Under any circumstances (in a health care facility, its unit, at the patient's home , etc.), using knowledge about the person, his organs and systems.

**PRN13.** In the health care facility, its unit and among the attached population: be able to identify and record the leading clinical symptom or syndrome by making an informed decision, using preliminary history of the patient, physical examination of the patient, knowledge of the person, his organs and systems, adhering to the relevant ethical and legal norms. To be able to install the most virohid tion or syndromic diagnosis of diseases grinding yahom adoption of reasonable decisions on patient data and examination of the patient, based on top class inichnoho symptom or syndrome, using a knowledge of human, his organs and systems, adhering to appropriate ethical and legal standards.

**PRN14.** In terms of health institution, its division, Mr ryznachyty laboratory and / or INS trumentalne examination of the patient by taking obrr untovanoho decisions based on the most probable or syndrome diagnosis, according to standard regimens, etc. using the knowledge of human, his organs and systems, adhering to appropriate ethical and legal norm.Zdiysnyuvaty differential diagnosis of diseases by making reasonable decisions on a particular algorithm, using the most probable or CLI ndromnyy diagnosis data of laboratory and instrumental examination of the patient, knowledge of human, his organs and systems, adhering liability dnyh ethical and th rydic norms. Set preliminary clinical diagnosis by adopting reasonable th solution and logical

analysis, using the most likely second or syndromic diagnosis data of laboratory and instrumental first examination of the patient, the conclusions of Dr. yferentsialnoyi diagnosis, knowledge of human, his organs and systems, adhering to appropriate ethical and legal norms.

**PRN15.** Determine the required mode of work and in idpochynku in the treatment of disease in terms of health care facility, home of the patient during medical and second evacuation, including in field conditions, based on the front-clinical diagnosis using knowledge of human, his organs and systems, adhering to appropriate ethical and yurydych these standards by making obr runtovanoho solutions for existing algorithms and standard charts.

**PRN16.** Determine the necessary therapeutic nutrition in the treatment of the disease, in a health care facility, at the patient's home and at the stages of medical evacuation , including in the field on the basis of a previous clinical diagnosis, using knowledge about the person, his organs and systems , adhering to appropriate ethical and legal standards through the adoption of brruntovanoho solutions for existing algorithms and standard charts.

**PRN17.** To determine the nature of treatment (conservative , operative) of the disease , in a health care facility, at the patient's home and at the stages of medical evacuation , including in the field on the basis of a preliminary clinical diagnosis, using knowledge about the person, his organs and systems, adhering to appropriate ethical and legal norms by Accept tya reasoned decision by the existing algorithms and standard we schemes. Determine the principles of treatment of the disease , in a health care facility, at home and at the stages of medical evacuation, including field conditions, based on a previous clinical diagnosis, using knowledge about the person, his organs and systems, adhering to appropriate ethical and legal norms by adopting obr runtovanoho solutions for existing algorithms and standard charts.

**PRN18.** Establish a diagnosis by making an informed decision and assessing the human condition, under any circumstances (at home, on the street, health care facility , its units), including in an emergency, in the field, in a lack of information and limited time, using standard methods of physical examination and possible anamnesis, knowledge about the person , his organs and systems, adhering to the relevant ethical and legal norms.

**PRN22.** Perform medical manipulations in a medical institution, at home or at work on the basis of a previous clinical diagnosis and / or indicators of the patient's condition , using knowledge of the person, his organs and systems, adhering to relevant ethical and legal norms, making informed decisions and using standard methods.

**PRN25.** To form, in the conditions of a health care institution, its division on production, using the generalized procedure of an estimation of a state of human health, knowledge of the person, its bodies and systems, adhering to the corresponding ethical and legal norms, by acceptance of the reasonable decision, among the fixed contingent of the population. : dispensary groups of patients, groups of healthy people subject to dispensary supervision (newborns, children, adolescents, pregnant women, representatives of professions that must undergo a mandatory dispensary examination).

**PRN28.** Organize secondary and tertiary prevention measures among the assigned population, using a generalized procedure for assessing human health (screening, preventive medical examination, seeking medical care), knowledge about the person, his organs and systems, adhering to the relevant ethical and legal norms, by making an informed decision, in the conditions of the health care institution, in particular: to form groups of dispensary supervision; to organize medical and health-improving measures differentiated from the group of medical examination.

**PRN30 .** Carry out in the conditions of a health care institution, its subdivision: detection and early diagnosis of infectious diseases ; primary anti-epidemic measures in the center of an infectious disease.

**PRN32.** In health care facilities or at home for a patient based on the received data on the health status of the patient, using standard schemes, using the knowledge of human, his organs and systems, adhering to appropriate ethical and legal standards by adopting a reasoned decision, determine the tactics of examination and secondary prevention of patients subject to dispensary supervision, to determine the tactics of examination and primary prophylaxis of healthy persons subject to dispensary supervision, to calculate and prescribe the necessary food for children of the first year of life.

**PRN33.** Determine the presence and degree of restrictions on life, type, degree and duration of disability with the issuance of relevant documents in a health care institution on the basis of data on the disease and its course, features of professional activity.

**PRN35.** At the service by standard methods of descriptive, analytical epidemiological, medical and statistical research, screening on manifesting major non-communicable diseases, assess the dynamics and in co- relation with medium static data morbidity, including whether SLI chronic non-communicable diseases, disability, mortality , integrated health indicators, identify risk factors for the occurrence and course of disease; to form risk groups of the population.

**PRN41.** In the conditions of a health care institution or its subdivision according to standard methods: to select and use unified clinical protocols for the provision of medical care, developed on the basis of evidence-based medicine; take part in the development of local protocols for medical care; seeing you control the quality of medical care on the basis of statistical data, expert CC in yuvannya data and sociological studies of the use Indicative Hur structure, process and performance; identify factors that hinder the improvement of the quality and safety of medical care.

### **3. The program of the discipline**

The educational process is organized according to the European Credit Transfer and Accumulation System (ECTS).

The program of the discipline " Traumatology, Orthopedics, Physical Rehabilitation, Sports Medicine " consists of three blocks .

**Block 1. Traumatology, orthopedics**

**Block 2. Physical rehabilitation**

**Block 3. Sports medicine**

#### **Block 1. Traumatology, orthopedics**

*Topic 1. Introduction to the specialty. Trauma, polytrauma, traumatic illness. Features of examination of traumatological and orthopedic patients.*

Definition Trauma t and orthopedics as a discipline. History of development and modern achievements of domestic traumatology and orthopedics. Features of history taking in patients with ORA pathology. Methods of determining the axis of the limbs and spine. The main types of deformities of the extremities and spine. Measurement of length and volume of limbs. Types of limb reduction and methods of their definition . Methods for determining the volume of movement in the joints. Types of contractures . Absolute and relative clinical signs of fractures, dislocations. Radiological signs of fractures, dislocations and orthopedic diseases . The use of NMR - tomography, CPD and densitometry in the diagnosis of lesions of the musculoskeletal system.

Etiology and pathogenesis of clubfoot and muscular hemorrhage . Disease Klee Pel-feil disease Hryzelya. Classification. Clinical manifestations in different age categories. Etiology and pathogenesis of hip dysplasia and congenital hip dislocation. Methods of conservative treatment of dysplasia and congenital dislocation depending on the age of the child. Trendelenburg symptom. Surgical treatment of congenital hip dislocation.

*Topic 2. Traumatic shock, prolonged compression syndrome.*

Definition of traumatic shock, frequency and severity of shock in war and in peacetime, modern ideas about the etiology and pathogenesis, clinical manifestations of shock in different localizations of wounds. Comprehensive treatment of shock, modern methods of correction of hemodynamic disorders, respiration, metabolism and neuroendocrine disorders. Content of anti-shock measures in the conditions of military actions and extreme situations. Early prevention of shock. Prolonged compression syndrome, etiology , pathogenesis. Classification. Phases of development. Clinic. Dependence of clinical manifestations on the mass of tissue damage, strength and duration of action of the crushing factor on them. Modern methods of treatment in the conditions of military actions and natural disasters. Features of treatment of open and closed soft tissue injuries with fracture and without bone fracture, dislocations and orthopedic diseases. The use of NMR tomography, CPD and densitometry in the diagnosis of lesions of the support system and movement. Definition of concepts: dislocation - subluxation . Pa tomorphology of dislocation,

general classification of dislocations. Mechanogenesis (shoulder, forearm, thigh), their classification and clinic. Providing medical care at the pre-hospital stage, treatment of dislocations in a specialized hospital. Complications of dislocations, their prevention and treatment.

*Topic 3. Damage to the bones of the shoulder girdle and joints of the upper extremity.*

Damage to the scapula. Classification, diagnosis and treatment. Dislocations and fractures of the clavicle. Diagnosis, conservative and operative treatment. Mechanogenesis of fractures of the proximal humerus. Classification, diagnosis and treatment. Fractures of the diaphysis of the humerus. Classification, diagnosis and treatment. Fractures of the distal end of the humerus, mechanismogenesis of injury. Classification, diagnosis and treatment. Fractures of the ulnar process. Mechanogenesis of trauma. Classification, diagnosis and treatment. Fractures of the head of the radial bone. Mechanogenesis of trauma. Classification, diagnosis and treatment. Fractures of the diaphysis of the forearm bones. Classification, mechanism of damage. Features of displacement of fragments. Clinic. Diagnosis. Indications for conservative, operative methods of treatment. Fractures of the distal end of the radial bone and their types. Mechanogenesis of damage. Clinic. Diagnosis and treatment. Fractures of the bones of the hand. Fractures of the wrist and metacarpal bones. Typical mechanisms of injury. Clinic. Diagnosis. Treatment. Damage to the tendons of the fingers. Diagnosis. Clinic. Treatment.

*Topic 4. Damage to the spine, pelvis and lower extremities.* Classification of spinal injuries, their mechanogenesis, pathomorphology. The concepts of "stable" and "unstable" spinal injuries. Clinical manifestations of complicated and uncomplicated injuries, depending on their location. Providing medical care at the pre-hospital stage, with various spinal injuries. Treatment of spinal injuries at the hospital stage. Conservative and operative methods of treatment of complicated and uncomplicated spinal injuries, their indications and technique. Social and professional rehabilitation of patients with spinal cord injuries. Classification of pelvic injuries and mechanogenesis of various variants of their formation. Clinical picture with various pelvic injuries. Clinical features of pelvic injuries. And their diagnosis. Principles of providing medical care at the pre-hospital stage. Conservative and operative methods of treatment of patients with various types of pelvic injuries. Classification of fractures of the proximal metaphysis of the femur. Damage mechanism. Clinic, diagnosis. Providing medical care at the pre-hospital stage.

*Topic 5. Congenital deformities and degenerative-dystrophic, spine, bones and joints. Scoliosis.*

Pathogenesis of osteochondrosis of the spine. Biomechanics and physiology of the intervertebral segment. Stages of osteochondrosis. Clinic, diagnosis of osteochondrosis of the spine of different locations. Indications for conservative and operative methods of treatment. Etiology of pathogenesis of spondylosis and spondyloarthritis. Clinic, diagnosis. Principles of treatment of spondylosis and spondyloarthritis. Professional rehabilitation of patients with degenerative-dystrophic diseases of the spine. Etiology and pathogenesis of deforming arthrosis. Classification and clinic of arthrosis. Diagnosis. Principles of treatment of deforming arthrosis depending on the stage of the disease. Indications for conservative and surgical treatment of osteoarthritis of the hip, knee and tibial joints. Congenital muscular crooked neck, Klippel-Feil disease, Grizel's disease. Congenital high standing of the scapula, pterygoid scapula. Etiology. Clinic. Principles of diagnosis and treatment. Funnel-shaped and keel-shaped chest.

*Topic 6. Inflammatory, tumor and tumor-like diseases of the musculoskeletal system.*

Rheumatoid arthritis. Etiology, pathogenesis, clinic. Principles of complex treatment: medical, orthopedic. The choice of orthopedic methods depending on the stage of the disease. Syphilitic lesions of bones and joints. Classification: congenital and acquired (early, late). Clinical and radiological symptoms depending on its form. Treatment. General questions of pathogenesis and clinic of bone and joint tuberculosis, its forms. Tuberculous spondylitis, phases of running. Clinical and radiological diagnosis. General principles of conservative treatment. Indications for surgical treatment and types of surgical interventions. Classification of tumors. Primary benign tumors of cartilage and bone origin: chondroma, osteoblastoclastoma, osteoma, osteoidosteoma. Clinical and radiological signs of tumors. Methods of treatment. Primary malignant tumors of cartilage and bone origin: chondrosarcoma, periosteal fibrosarcoma, osteogenic sarcoma, Ewing's sarcoma. Clinical and radiological methods of diagnosis of malignant tumors, their treatment. Secondary



malignant tumors: metastatic and growing into the bone from the surrounding soft tissues (synovioma). Clinic, treatment. Tumor- like bone disease: solitary bone cyst, aneurysmal bone cyst, osteoid osteoma. Clinical and radiological signs. Treatment.

*Topic 7. Basic principles of osteosynthesis.*

One of the current trends in world traumatology and orthopedics is the development and widespread implementation in the practice of traumatologist - orthopedist modern methods of osteosynthesis, aimed at reducing the time of fracture fusion, hospital stay, providing early function of the injured limb, reducing disability and rapid social adaptation . Osteosynthesis ( Greek osteon (bone) + synthesis ), therefore, the surgical connection of bone fragments in the correct position for the purpose of stable fixation until their full consolidation (bone fusion) and achieve the restoration of integrity and function Osteosynthesis is used in the treatment of fresh, unfused, improperly fused fractures and defective joints, bone joints after osteotomy.

*Topic 8. General concepts of physical rehabilitation.* History of medical application of physical exercises in recovery of persons after transferred diseases. The purpose of the task and methods at ntsypy their application. Types of periods, stages of rehabilitation. Exercise, their place at certain stages of rehabilitation.

*Topic 9. Adaptation reactions in muscular activity.* Muscles are their function, types and structure. Restructuring of muscles under the influence of various physical activities static and dynamic, moderate and their limits ). Structural and functional and features of motor units . Characteristics of muscle fibers of different types. Changes in muscle fibers under the influence of exercise: hypertrophy (saroplasmic and myofibrillar) and atrophy. Intramuscular and intramuscular for oordynatsiya. Adaptive changes in the skeletal system in the process of rehabilitation. Adaptive changes of connective tissue .

*Topic 10. Features of methods of physical rehabilitation for diseases and injuries of the musculoskeletal system.*

The main manifestations of diseases and injuries of the musculoskeletal system. Complications of diseases: contractures, paralysis, paresis, hyperkinesis, sensitivity disorders , trophic function. Mechanical modes of therapeutic action of physical exercises and other means of physical rehabilitation. Tasks and methods of treatment of complications and their prevention.

## **Block 2. Physical rehabilitation**

*Topic 1. Physical rehabilitation as a science, its purpose, objectives, tools, principles, types, periods and stages.* Rehabilitation as a science, its purpose, tasks, means, principles, types, periods and stages. Carrying out of complex rehabilitation: medical, psychological, pedagogical, legal, state, public actions. Category of patients to be rehabilitated. The main task of rehabilitation. The main purpose of rehabilitation. Principles of rehabilitation. Medical rehabilitation. Seasonal rehabilitation. Stages of rehabilitation. Social or domestic rehabilitation.

*Topic 2. Therapeutic physical culture* Therapeutic physical culture. Mechanisms of therapeutic action of physical exercises. Means of medical physical culture. Classification of physical exercises. Forms of therapeutic physical culture. Periods of exercise therapy in rehabilitation programs. General requirements for the methodology of exercise classes. Motor modes. Dosage of physical activity.

*Topic 3. Therapeutic massage.* The essence of therapeutic massage. Basic massage techniques. Basic methods, types of basic massage. Auxiliary massage. Indications and contraindications to therapeutic massage. Methods of massage on different parts of the body. Rules for combining and combining exercise therapy, therapeutic massage and physiotherapy procedures.

*Topic 4. Basic principles of physical rehabilitation of patients with cardiovascular diseases.* Characteristics of cardiovascular diseases. Basic principles of rehabilitation of hypertension. Polyclinic stage of rehabilitation. Sanitary and resort stage of rehabilitation. Hospital stage of rehabilitation for myocardial infarction. Sanitary stage of rehabilitation. Polyclinic stage of rehabilitation. Remote stage of rehabilitation in myocardial infarction.

*Topic 5. Physical rehabilitation for respiratory diseases.*

Clinical and physiological substantiation of the use of means of physical rehabilitation. Physical rehabilitation for acute and chronic pneumonia. Physical rehabilitation for bronchitis.

Physical rehabilitation for bronchial asthma. Physical rehabilitation of bronchiectasis and pulmonary emphysema.

*Topic 6. Physical rehabilitation in diseases of the digestive system and metabolism.* Physical rehabilitation in acute with normal and increased secretory function. Physical rehabilitation in acute with reduced secretion and achilles. Physical rehabilitation for peptic ulcer of the stomach and duodenum. Physical rehabilitation for obesity. Physical rehabilitation for diabetes .

*Topic 7. Basic principles of rehabilitation of patients with neurological profile.* Diseases and injuries of the peripheral nervous system. Physical rehabilitation for stroke. Physical rehabilitation for paralysis and paresis. Physical rehabilitation for lumbosacral radiculitis.

*Topic 8. Physical rehabilitation for surgical and traumatic diseases, posture deformities, scoliosis and flat feet .* Physical therapy intervened with operational nnyah abdominal. Physical rehabilitation during surgery on the chest. Physical rehabilitation for injuries. Physical rehabilitation for injuries of the ENT - tracheal organs. Physical rehabilitation of posture deformities. Physical rehabilitation for scoliosis. Physical rehabilitation for flat feet.

*Topic 9 . Adaptation reactions in muscular activity.* Muscles are their function, types and structure. Restructuring Island muscles under the influence of various physical activities static and dynamic, and moderate boundary). Structural and functional and features of motor units . Characteristics of muscle fibers of different types. Changes in muscle fibers under the influence of exercise: hypertrophy (sarcolemmic and myofibrillar) and atrophy. Intramuscular and intramuscular for oordynatsiya. Adaptive changes in the skeletal system in the process of rehabilitation. Adaptive changes of connective tissue .

### **Block 3 . Sports medicine**

*Topic 1 . Subject and tasks of sports medicine.* The purpose of sports medicine. Tasks of sports medicine. The main sections of work with sports medicine. The purpose of the medical examination. Dispensary method of observation of athletes. Medical and physical training consultation. Medical control room. Medical and sports dispensary.

*Topic 2 . Medical and pedagogical observation (LPS) in the process of training.* Tasks and forms of organization of LPS. Research methods in LPS. Functional tests in the conditions of LPS. Medical support of sports competitions. Anti-doping control. Sex control. Self-control over physical performance. Self-control in the process of training.

*Topic 3 . Research methods in sports medicine.* The scope of hospital examination. Medical and sports analysis. Research of physical development. Sports anthropology. Muscular system research. Measurement of skin and fat folds. Calculation of body mass components. Study of the amplitude of movement in the extremities. Measurement of muscle strength. Plantography method.

*Topic 4 . Tasks, means, organization and methods of medical control.* Morphofunctional characteristics of age features of the person. Hospital control over schoolchildren, young athletes, students, middle-aged and elderly people. Hospital control of women engaged in physical culture and sports. Assessment of health, physical development and fitness. Negative forms in the training process.

*Topic 5 . General characteristics of physical activity of different intensity and organization.* Determination and assessment of overall physical performance and aerobic performance. Tolerance to physical activity. Quantitative assessment of the level of physical health. Compilation of individual sports and health regimes. Prepathogenic conditions and diseases that occur during irrational exercise and sports. Research and assessment of the functional state of the main body systems.

*Topic 6 . Functional diagnostics in sports medicine.* Methods for assessing the functional state of the cardiovascular system. Methods for assessing the functional state of the respiratory system. Methodical approaches to functional diagnostics of the central nervous system. General diagnosis of blood.

*Topic 7 . Medical control in certain groups of the population engaged in physical culture and sports.* Medical control in special medical groups. Medical control during classes with children. Medical control during health training with adults, the elderly and the elderly. Medical support of sports and health-improving measures.

## The structure of the discipline

Name the topics	Number of hours				
	In this	including:			
		lectures	practical training	individual lessons	individual work
1	2	3	4	5	6
<b>Block 1. Traumatology, orthopedics</b>					
Topic 1. Introduction to the specialty. Trauma, polytrauma, traumatic illness. Features of examination of traumatological and orthopedic patients.	9	1	4	-	4
Topic 2. Traumatic shock, prolonged compression syndrome.	9	1	4	-	4
Topic 3. Damage to the bones and joints of the upper extremity.	9	1	4	-	4
Topic 4. Damage to the spine, pelvis and lower extremities.	9	1	4	-	4
Topic 5 . Congenital deformities and degenerative-dystrophic, spine, bones and joints. Scoliosis.	9	1	4	-	4
Topic 6 . Inflammatory, tumorous and tumorous diseases of the musculoskeletal system.	9	1	4	-	4
Topic 7. Basic principles of osteosynthesis.	9	1	4	-	4
Topic 8. Reactions of adaptation at muscular activity.	9	1	4	-	4
Topic 9 . Features of methods and physical rehabilitation for diseases and injuries of the musculoskeletal system.	9	1	4	-	4
<b>In this for the block</b>	90	10	40	-	<b>40</b>
<b>Block 2. Physical rehabilitation</b>					
Topic 1. Physical rehabilitation as a science, purpose, tasks, content, principles, types, periods, stages	4	1	1	-	2
Topic 2. Therapeutic physical culture	4	1	1	-	2
Topic 3. Therapeutic massages	3	1	1	-	1
Topic 4. Basic principles of physical rehabilitation of patients with cardiovascular diseases	2	-	1	-	1
Topic 5. Physical rehabilitation for respiratory diseases	2	-	1	-	1

Topic 6. Physical rehabilitation in diseases of the digestive system and metabolism	2	-	1	-	1
Topic 7. Basic principles of rehabilitation of patients with neurological profile	2	-	1	-	1
Topic 8. Physical rehabilitation for surgical and traumatic diseases, posture deformities, scoliosis and flat feet	2	-	1	-	1
<b>Final control</b>	<b>2</b>		<b>2</b>		
<b>In this for the block</b>	<b>2 3</b>	<b>3</b>	<b>10</b>	<b>-</b>	<b>10</b>
<b>Block 3. Sports medicine</b>					
Topic 1 . Subject and tasks of sports medicine	4	1	1	-	2
Topic 2 . Medical and pedagogical observation in the process of physical rehabilitation	4.5	1 , 5	1	-	2
Topic 3 . Research methods in sports medicine	3	-	1	-	2
Topic 4 . Tasks, content, organization and methods of medical control	2 , 5	-	1	-	1 , 5
Topic 5 . General characteristics of physical activity of different intensity on the organs	2	-	1	-	1
Topic 6 . Functional diagnostics in sports medicine	2	-	1	-	1
Topic 7. Medical control in certain groups of the population engaged in physical culture and sports	2	-	2	-	-
<b>Final control</b>	<b>2</b>	<b>-</b>	<b>2</b>	<b>-</b>	<b>-</b>
<b>In this for the block</b>	<b>22</b>	<b>2.5</b>	<b>10</b>	<b>-</b>	<b>9.5</b>
<b>At this hour</b>	<b>45</b>	<b>5.5</b>	<b>20</b>	<b>-</b>	<b>19.5</b>

## 4. The content of the discipline

### 4.1. Lecture plan

№ 3.p.	Topic	Number of hours
<b>Block 1. Traumatology, orthopedics</b>		
1	<b>Introduction to traumatology and orthopedics.</b> History of development and modern achievements of domestic traumatology and orthopedics. Bone regeneration. Closed and open fractures. Providing medical care at the pre-hospital stage, treatment of dislocations on an outpatient basis and in a specialized hospital. Etiology and pathogenesis of clubfoot and muscular hemorrhage. Klipel-Feyl disease, Grizel disease. Classification. Clinical manifestations in different age categories. Etiology and pathogenesis of hip dysplasia and congenital hip dislocation	2
2	<b>Traumatic illness.</b> Polytrauma Clinic, diagnosis, treatment. Pelvic injury. Clinic, diagnosis, treatment. Traumatic shock, prolonged compression syndrome. Definition of traumatic shock, frequency and severity of shock in war and in peacetime, modern ideas about the etiology and pathogenesis, clinical manifestations of shock in different localizations of wounds. Comprehensive treatment of shock, modern methods of correction of hemodynamic disorders, respiration, metabolism and neuroendocrine disorders. Content of anti-shock measures in the conditions of military actions and extreme situations. Early prevention of shock. Questions of military traumatology. Gunshot and closed injuries of limbs and joints.	2
3	<b>Spinal cord injury.</b> Clinic, diagnosis, treatment. Open fractures, features of treatment. Traumatic osteomyelitis. Classification of spinal injuries, their mechanogenesis, pathomorphology. The concepts of "stable" and "unstable" spinal injuries. Clinical manifestations of complicated and uncomplicated injuries, depending on their location. Providing medical care at the pre-hospital stage, with various spinal injuries. Treatment of spinal injuries at the hospital stage. Conservative and operative methods of treatment of complicated and uncomplicated spinal injuries, their indications and technique. Damage to the bones of the shoulder girdle and joints of the upper limb. Damage to the bones and joints of the lower extremity.	2
4	<b>Osteochondrosis. Osteoarthritis.</b> Clinic, diagnosis, treatment. Rehabilitation for diseases and injuries of the musculoskeletal system. Pathogenesis of osteochondrosis of the spine. Biomechanics and physiology of the intervertebral segment. Stages of osteochondrosis. Clinic, diagnosis of osteochondrosis of the spine of different locations. Indications for conservative and operative methods of treatment. Etiology of pathogenesis of spondylosis and spondyloarthritis. Clinic, diagnosis. Principles of treatment of spondylosis and spondyloarthritis. Professional rehabilitation of patients with degenerative-dystrophic diseases of the spine. Etiology and pathogenesis of deforming arthrosis. Classification and clinic of arthrosis. Diagnosis. Inflammatory, tumorous and tumorous diseases of the musculoskeletal system. Clinic, diagnosis, treatment. Scoliosis. Deformation of the neck, chest. Clinic, diagnosis, treatment. Rheumatoid arthritis. General principles of conservative treatment. Basic principles of osteosynthesis.	2
5	<b>General concepts of physical rehabilitation.</b> History of medical application of physical exercises in recovery of persons after the transferred diseases. The purpose of the task methods and principles of their application. Type, periods, stages of rehabilitation. Motor functions and human activity, their violation and correction in order to restore full life in accordance with the desires and needs of man in the environment. Implementation of complex specialized tasks and practical problems associated with dysfunction of	2

	organs and systems, in particular, the musculoskeletal system. Exercise, their place at certain stages of rehabilitation. Adaptation reactions in muscular activity. Muscles are their function, types and structure. Muscle adjustment under the influence of various physical activities static and dynamic, moderate and borderline). Structural and functional features of motor units. Changes in muscle fibers under the influence of exercise. Adaptive changes in the skeletal system. Adaptive changes of connective tissue.	
<b>In this behind the block</b>		10
<b>Block 2. Physical rehabilitation</b>		
1	Physical rehabilitation as a science, purpose, tasks, content, principles, types, periods, stages	1
2	Therapeutic physical culture	1
3	Therapeutic massage	1
<b>In this behind the block</b>		3
<b>Block 3. Sports medicine</b>		
1	Subject and tasks of sports medicine	1
2	Medical and pedagogical observation in the process of physical rehabilitation	1.5
<b>In this behind the block</b>		2.5
<b>In this discipline</b>		15.5

#### 4.2. Plan of practical classes

№ z.p.	TOPIC	Number hours
<b>Block 1. Traumatology, orthopedics</b>		
1.	<p><b>Topic 1. Introduction to the specialty. Trauma, polytrauma, traumatic illness. Features of examination of traumatological and orthopedic patients .</b></p> <p>Definition Trauma t and orthopedics as a discipline. History of development and modern achievements of domestic traumatology and orthopedics. Features of history taking in patients with ORA pathology. Methods of determining the axis of the limbs and spine. The main types of deformities of the extremities and spine. Measurement of length and volume of limbs . Types of limb reduction and methods of their definition . Methods for determining the volume of movement in the joints. Types of contractures .</p> <p>Absolute and relative clinical signs of fractures , dislocations . Radiological signs of fractures, dislocations and orthopedic diseases . The use of NMR - tomography, CPD and densitometry in the diagnosis of lesions of the musculoskeletal system.</p> <p>Etiology and pathogenesis of clubfoot and muscular hemorrhage . Disease Klee Pel-feil disease Hryzelya. Classification. Clinical manifestations in different age categories. Etiology and pathogenesis of hip dysplasia and congenital hip dislocation. Methods of conservative treatment of dysplasia and congenital dislocation depending on the age of the child. Trendelenburg symptom.</p> <p>Surgical treatment of congenital hip dislocation.</p>	4
2.	<p><b>Topic 2 May vmatychnyy shock syndrome, prolonged compression .</b></p> <p>Definition of traumatic shock, frequency and severity of shock in war and in peacetime, modern ideas about the etiology and pathogenesis, clinical</p>	4

	<p>manifestations of shock in different localizations of wounds. Comprehensive treatment of shock, modern methods of correction of hemodynamic disorders, respiration, metabolism and neuroendocrine disorders. Content protivoshokovym Zakho virgins in terms of military operations and emergencies . Early prevention of shock. Prolonged compression syndrome, etiology , pathogenesis. Classification. Phases of development. Clinic. Dependence of clinical manifestations on the mass of tissue damage, strength and three degrees of action of the crushing factor on them. Modern methods of treatment in the conditions of military actions and natural disasters. Features of treatment of public and private damage the soft tissue of the fracture without re breakage of bones, dislocations and orthopedic diseases. The use of NMR tomography, CPD and densitometry in the diagnosis of lesions of the support system and movement. Definition of concepts: dislocation - subluxation . Pa tomorfolohiya dislocation, general classi TION dislocations. Mechanogenesis (shoulder, forearm, thigh), their classification and clinic. Providing medical assistance to the hospital stage, treatment of dislocations in terms of spe tsializovanoho sta onaru. Complications of dislocations, their prevention and treatment.</p>	
3.	<p><b>What ma 3. Damage to the bones of the shoulder girdle and upper extremity joints.</b>  Damage to the scapula. Classification, diagnosis and treatment. Dislocations and fractures of the clavicle. Diagnosis, conservative and operative treatment. Mechanogenesis of fractures of the proximal humerus. Classification, diagnosis and treatment. Fractures of the diaphysis of the humerus. Classification, diagnosis and treatment. Fractures of the distal end of the humerus, m echanogenesis of injury. Classification, diagnosis and treatment. Fractures of the ulnar process. Mechanogenesis of trauma. Classification, diagnosis and treatment. Fractures of the head of the radial bone. Mechanogenesis of trauma. Classification, diagnosis and treatment. Fractures of the diaphysis of the forearm bones. Classification, mechanism of damage. Features of displacement of fragments. Clinic. Diagnosis. Indications for conservative, operative methods of treatment. Fractures of the distal end of the radial bone and their types. Mechanogenesis of damage. Clinic. Diagnosis and treatment. Fractures of the bones of the hand. Fractures of the wrist and metacarpal bones. Typical mechanisms of injury. Clinic. Diagnosis. Treatment. Damage to the tendons of the fingers. Diagnosis. Clinic. Treatment.</p>	4
4.	<p><b>Topic 4. Damage to the spine, pelvis and lower extremities.</b>  Classification of spinal injuries, their mechanogenesis, pathomorphology. The concepts of "stable" and "unstable" spinal injuries. Clinical manifestations of complicated and uncomplicated injuries, depending on their location. Providing medical care at the pre-hospital stage, with various spinal injuries. Treatment of spinal injuries at the hospital stage. Conservative and operative methods of treatment of complicated and uncomplicated spinal injuries, their indications and technique. Social and professional rehabilitation of patients with spinal cord injuries. Classification of pelvic injuries and mechanogenesis of various variants of their formation. Clinical picture with various pelvic injuries. Clinical features of pelvic injuries. And their diagnosis. Principles of providing medical care at the pre-hospital stage. Conservative and operative methods of treatment of patients with various types of pelvic injuries. Classification of fractures of the proximal metaepiphysis of the femur. Damage mechanism. Clinic, diagnosis. Providing medical care at the pre-hospital stage.</p>	4

5.	<p><b>Topic 5 . Congenital deformities and degenerative-dystrophic, spine, bones and joints. Scoliosis.</b></p> <p>Pathogenesis of osteochondrosis of the spine. Biomechanics and physiology of the intervertebral segment. Stages of osteochondrosis. Clinic, diagnosis of osteochondrosis of the spine of different locations. Indications for conservative and operative methods of treatment. Etiology of pathogenesis of spondylosis and spondyloarthritis. Clinic, diagnosis. Principles of treatment of spondylosis and spondyloarthritis. Professional rehabilitation of patients with degenerative-dystrophic diseases of the spine. Etiology and pathogenesis of deforming arthrosis. Classification and clinic of arthrosis. Diagnosis. Principles of treatment of deforming arthrosis depending on the stage of the disease. Indications for conservative and surgical treatment of osteoarthritis of the hip, knee and tibial joints. Congenital muscular crooked neck, Klippel-Feyl disease, Grizel's disease. Congenital high standing of the scapula, pterygoid scapula. Etiology. Clinic. Principles of diagnosis and treatment. Funnel-shaped and keel-shaped chest.</p>	4
6.	<p><b>Topic 6 . Inflammatory, tumorous and tumorous diseases of the musculoskeletal system.</b></p> <p>Rheumatoid arthritis. Etiology, pathogenesis, clinic. Principles of complex treatment: medical, orthopedic. The choice of orthopedic methods depending on the stage of the disease. Syphilitic lesions of bones and joints. Classification: congenital and acquired (early, late). Clinical and radiological symptoms depending on its form. Treatment. General questions of pathogenesis and clinic of osteoarticular tuberculosis, its forms. Tuberculous spondylitis, phases of the course. Clinical and radiological diagnosis. General principles of conservative treatment. Indications for surgical treatment and types of surgical interventions. Classification of tumors. Primary benign tumors of cartilage and bone origin: chondroma, osteoblastoclastoma, osteoma, osteoidosteoma. Clinical and radiological signs of tumors. Methods of treatment. Primary malignant tumors of cartilage and bone origin: chondrosarcoma, periosteal fibrosarcoma, osteogenic sarcoma, Ewing's sarcoma. Clinical and radiological methods of diagnosis of malignant tumors, their treatment. Secondary malignancies: metastatic and growing into the bone from the surrounding soft tissues (synovioma). Clinic, treatment. Tumor-like bone diseases: solitary bone cyst, aneurysmal bone cyst, osteoid osteoma. Clinical and radiological signs. Treatment.</p>	4
7.	<p><b>Topic 7. Basic principles of osteosynthesis.</b></p> <p>One of the current trends in world traumatology and orthopedics is the development and widespread implementation in the practice of traumatologist - orthopedist modern methods of osteosynthesis, aimed at reducing the time of fracture fusion, hospital stay, providing early function of the injured limb, reducing disability and rapid social adaptation . Osteosynthesis ( Greek osteon (bone) + synthesis ), therefore, the surgical connection of bone fragments in the correct position for the purpose of stable fixation until their full consolidation (bone fusion) and achieve the restoration of integrity and function Osteosynthesis is used in the treatment of fresh, unfused, improperly fused fractures and defective joints, bone joints after osteotomy.</p>	4
8.	<p><b>Topic 8. General concepts of physical rehabilitation.</b></p> <p>History of medical application of physical exercises in recovery of persons after transferred diseases. The purpose of the task and methods at ntsypy their application. Types of periods, stages of rehabilitation. Exercise, their</p>	4



	place at certain stages of rehabilitation.	
9.	<b>Topic 9. Adaptation reactions in muscular activity.</b> Muscles are their function, types and structure. Restructuring (static and dynamic, moderate and boundary). Structural and functional and features of motor units . Characteristics of muscle fibers of different types. Changes in muscle fibers under the influence of exercise: hypertrophy (sarcolemmal and myofibrillar) and atrophy. Intramuscular and intramuscular for oordynatsiya. Adaptive changes in the skeletal system in the process of rehabilitation. Adaptive changes of connective tissue .	4
10.	<b>Topic 10. Features of methods of physical rehabilitation for diseases and injuries of the musculoskeletal system.</b> The main manifestations of diseases and injuries of the musculoskeletal system . Complications of diseases: contractures, paralysis, paresis, hyperkinesis, sensitivity disorders , trophic function. Mechanical modes of therapeutic action of physical exercises and other means of physical rehabilitation. Tasks and methods of treatment of complications and their prevention.	4
<b>In this behind the block</b>		<b>40</b>
<b>Block 2. Physical rehabilitation</b>		
1	Physical rehabilitation as a science, purpose, tasks, content, principles, types, periods, stages	1
2	Therapeutic physical rehabilitation	1
3	Therapeutic massage	1
4	Basic principles of physical rehabilitation of patients with cardiovascular diseases	1
5	Physical rehabilitation for respiratory diseases	1
6	Physical rehabilitation in diseases of the digestive and metabolic organs	1
7	Basic principles of rehabilitation of patients with neurological profile	1
8	Physical rehabilitation for surgical and traumatic diseases, posture deformities, scoliosis and flat feet	1
9	<b>Final control</b>	<b>2</b>
<b>In this behind the block</b>		<b>10</b>
<b>Block 3 . Sports medicine</b>		
1	Subject and tasks of sports medicine	1
2	Medical and pedagogical observation in the process of physical rehabilitation	1
3	Research methods in sports medicine	1
4	Tasks, content, organization and methods of medical control	1
5	General characteristics of physical activity of different intensity on the organs	1
6	Functional diagnostics in sports medicine	1
7	Medical control in certain groups of the population engaged in physical culture and sports	2
8	<b>Final control</b>	<b>2</b>
<b>In this behind the block</b>		<b>10</b>
<b>In this discipline</b>		<b>60</b>

### 4.3. Tasks for independent work

The main types of independent work of students are:

- Robot and from published sources;
- independent training;
- independent watching of movies, TV programs, listening to radio programs, etc.

For independent work of students takeaway I ARE theoretical tasks that are not thoroughly examined within the lectures and practical classes. The student must study literary sources and be ready to answer questions during practical classes and diff. offset . Tasks and tasks are of a practical nature.

№ з.п.	TOPIC	Number of hours
<b>Block 1. Traumatology, orthopedics</b>		
1.	<u>Development of rheumatology and orthopedics in Ukraine and the world</u> .	4
2.	Multiple and combined injuries of the musculoskeletal system, traumatic shock, diagnosis, principles of treatment.	4
3.	Osteochondropathy (Leg-Calve-Perthes disease; Osgood-Schlater; Keller I, II; Schoerman-Mau; Calve; Kinbeck, etc.).	4
4.	Soft tissue damage (bruises, hemorrhages, ligament damage).	4
5.	Disease Dupuy her train, Ledderhoza, Peyronie's.	4
6.	Arthropathies ( diabetic, psoriatic, etc.) Epicondylitis, degenerative-dystrophic soft tissue diseases, punitive canal syndrome , etc.	4
7.	Tumors of the organs of movement and support. Fibrous osteodystrophies (Paget's disease, Recklinghausen's disease, etc.).	4
8.	Features of methods of physical re habilitation for diseases and injuries of the musculoskeletal system.	4
9.	Compilation of complexes of physical exercises for various diseases and injuries of the musculoskeletal system.	4
10.	The mechanisms of therapeutic action physically s exercise and other means of physical rehabilitation with various diseases and injuries of the musculoskeletal system.	4
<b>In this behind the block</b>		<b>40</b>
<b>Block 2. Physical rehabilitation</b>		
1	Basics of physical rehabilitation. Tasks, methods, principles, types, periods and stages of physical rehabilitation	2
2	Basic principles of physical rehabilitation. The mechanism of therapeutic action of exercise. Means, forms of exercise therapy. Periods of exercise therapy in rehabilitation programs	2.5
3	Therapeutic massage. Techniques of therapeutic massage. Distribution and contraindications	2
4	Basic principles of physical rehabilitation of patients with cardiovascular diseases	1
5	Clinical - physiological substantiation of application of means of physical rehabilitation at diseases of respiratory organs	1
6	Physical rehabilitation in diseases of the digestive and metabolic organs	1
7	Basic principles of physical rehabilitation in diseases and injuries of the peripheral nervous system	1
8	Clinical and physiological substantiation of the use of physical rehabilitation in surgical and traumatic diseases	1
9	Sports medicine as a scientific discipline. Subject and tasks	2
10	Content and tasks of medical - pedagogical supervision in the process of	1

	physical rehabilitation	
11	Scientific achievements in sports medicine	1
12	Organization and methods of medical control in sports medicine	1
13	The effect of exercise of varying intensity on the body	1
14	Functional diagnostics in sports medicine	1
15	Content and tasks of medical control in groups of the population engaged in physical culture and sports	1
<b>In this for the block</b>		<b>19.5</b>
<b>In this discipline</b>		<b>59.5</b>

### Individual tasks

Selection and review of scientific literature on the subject of the program of the student's choice with the writing of an abstract and its public defense.

Selection and review of scientific literature on the subject of research work of the department with the preparation of a scientific report at a meeting of the SNT or at student conferences.

A scientific e research topics research department with the publication of results in scientific journals.

Participation in the work of the student scientific circle and speeches at scientific forums.

Participation in the student Olympiad in the discipline.

Curation of patients, work in the operating room, plaster room, duty in the emergency room.

### Typical tasks for checking the mastered material in practical classes ( examples )

1. An 8-year-old boy was admitted to the clinic . Diagnosed with supraspinatus extensor fracture of the right humerus. Under local anesthesia, the fragments were repositioned and immobilized with a splint-circular plaster bandage to the upper third of the right shoulder. After 3 hours, the fingers of the right hand turned white, sensitivity and active movements disappeared.

Your diagnosis of the complication that arose, its mechanism? Methods of prevention and tactics of treatment and rehabilitation .

2. A 35-year-old patient was admitted to the clinic with a fracture of the ulnar process with a slight displacement of fragments. The patient had a posterior plaster cast at an angle of flexion in the elbow joint up to 80 degrees. The patient is referred for outpatient treatment. Recommendations: the plaster bandage should not be removed for weeks, after which you will appear for an appointment at the clinic.

1. Are the treatment tactics and method of immobilization correct ?

2. Are the recommendations correct?

3. Your treatment tactics.

4. Methods of rehabilitation.

3. 4 weeks ago the patient addressed to a trauma center concerning a back dislocation of the right forearm. The dislocation was removed, the posterior plaster cast was applied. No radiography was performed. In a polyclinic in 3 weeks the plaster bandage is removed and medical gymnastics is appointed. However, despite vigorous rehabilitation, movements in the elbow joint were not restored.

1. What is the mistake of the doctor who provided care and the doctor of the clinic?

2. With what injuries it is necessary to differentiate posterior dislocations of the forearm?

4. A 5-year-old child was taken to the emergency room after falling from the stairs to his right arm. Diagnosed fracture of the medial epiphysis with displacement of fragments. The posterior

plaster cast was applied in the position of forearm extension, after which the child was sent for outpatient treatment.

Are the tactics of care and further treatment correct? If not, why not?

5. A 32-year-old patient was treated for a week with skeletal traction for oblique fracture of the humeral diaphysis in the distal third. However, the width offset of the fragments could not be eliminated. On day 10, an open reposition of the fragments was performed, followed by osteosynthesis with a metal plate. The next day after the operation, the examination revealed that the patient could not actively unbend the fingers and hand, as well as withdraw 1 finger.

1. Was the operation legal?
2. Why the patient cannot actively unbend fingers, a brush and take away And a finger?
3. Tactics of further treatment.
4. Terms of early rehabilitation.

6. A 28-year-old patient fell on his left arm, felt pain in the elbow joint, which increased with movement. On examination: the contours of the left elbow joint are smoothed, movements are limited, the patient fixes the forearm with a healthy hand in the middle position between supination and pronation. Supination, pronation are impossible due to pain, which is localized in the projection of the head of the radial bone. On radiographs in two projections fracture of the head of the left radial bone. '

1. Justify the treatment plan.
2. Methods and terms of immobilization .
- 3 . Terms and stages of physical rehabilitation.

#### **4.4. Ensuring the educational process**

1. Multimedia projectors, computers, screens for multimedia presentations, lecture presentations.
2. Schemes , tables, tests, video.
3. Technical means and training: simulation manipulation class.
4. Bilet river differential offset .

### **5. Final control**

#### **Block 1. Traumatology, orthopedics**

##### **List of questions of final control ( differential test)**

1. Cognitive points and lines that are determined during the examination of an orthopedic-traumatological patient.
2. Types of restriction of movements in the joints.
3. The course of reparative regeneration of bone tissue in fracture.
4. The main principles of treatment of bone fractures.
5. Indications and principles of application of the fixation method of fracture treatment.
6. Indications and principles of stagnation ments ekstenziynoho method of treatment of fracture.
7. Indications and principles of surgical treatment of fracture.
8. Indications and principles of application of compression-distraction method.
9. Define the concept of "dislocation" and its classification depending on time.
10. Classification of rib fracture and the mechanism of its formation.
11. Fracture of the clavicle. Mechanism of formation , classification, clinic and diagnosis.
12. Classification of fractures in the bones of the shoulder, forearm, the mechanism of its occurrence and features of fragment displacement in diaphyseal fracture.
13. Classification of spinal injuries.

14. Clinic, diagnosis and treatment of complicated dislocation and vertebral fracture-dislocation.
15. Clinic, diagnosis and treatment of uncomplicated compression vertebral fracture.
16. Mechanism and classification of pelvic fracture.
17. Features of shock and intra-tissue bleeding in pelvic fractures and their treatment.
18. Treatment of fracture of the femoral neck and acetabulum.
19. Mechanogenesis of damage to the ligament of the knee joint. Clinic, diagnosis and treatment.
20. Yet Zann I conservative and surgical treatment of patellar fracture.
21. The mechanism and classification of ligament injuries , fractures of the ankle joint.
22. Fracture of the heel , heel , metatarsal bones and phalanges of the fingers . Damage mechanism, clinic, diagnosis and treatment.
23. Pathogenesis of osteochondrosis of the spine and its stage.
24. Clinical diagnosis of osteochondrosis cervical, d ore and lumbar.
25. Indications for conservative and surgical treatment of osteochondrosis of the spine, its main methods.
26. Etiology and pathogenesis of deforming atrosis and its classification.
27. Tuberculosis of bones and joints. Clinic, diagnosis and treatment.
28. Etiology of spastic paralysis and its main clinical signs.
29. Flaccid paralysis. Etiology, clinical signs. Conservative and operative treatment .
30. Etiology, pathogenesis, clinical signs of congenital muscular curvature of the neck. Conservative and operative treatment .
31. Definition of "scoliosis" and classification of scoliosis by etiology.
32. Posture defects and their clinical signs. Etiology and principles of treatment.
33. Clinical signs of congenital clubfoot and its classification.
34. The role of prosthetics in the rehabilitation system of orthopedic and trauma patients.
35. The main indications for urgent planned amputation of limbs.
36. Methods and methods of limb amputation.
37. Types of limb prostheses and their characteristics.
38. Orthopedic devices, their purpose and indications for use.
39. Definition of traumatic shock. Frequency and severity of shock in war and in peacetime .
40. Clinical manifestations of shock at different localizations of wounds. Comprehensive treatment of shock.
41. Si ndrom long crushing, etiology, pathogenesis. Classification. Phases of development. Clinic.
42. Features of treatment of open and closed large soft tissue injuries with fracture and without bone fracture.
43. Describe the basic terms and concepts of rehabilitation.
44. Legislation on the rehabilitation of the sick and disabled in Ukraine.
45. Rehabilitation issues in traumatology and orthopedics.
46. Temporary disability and its significance for the rehabilitation of the sick and disabled.
47. The concept of medical and social rehabilitation.
48. Organization and management of the medical rehabilitation system .
49. Causes of disability.
50. The concept of an individual rehabilitation program .
51. Basic principles of drawing up an individual rehabilitation program.
52. Formation and implementation of an individual rehabilitation program.
53. Basic principles of medical rehabilitation .
54. Basic principles of professional and social rehabilitation .
55. The concept of psychological rehabilitation.
56. Structure individ efficient innovation infrastructure rehabilitation program.
57. Exercise, their place at certain stages
58. Characteristics of physical exercises in the recovery of persons after injuries .
59. M etody and principles of the use of exercise in the postoperative period .

60. Types of periods, stages of rehabilitation.

**"0" version of the ticket diff. offset**

**Petro Mohyla Black Sea National University**

Level of higher education - master

Field of knowledge: 22 Health care

C specialist Medicine 222

Course - " **Traumatology, Orthopedics, Physical Rehabilitation, Sports Medicine** "

**Option № 0**

1. The course of reparative regeneration processes in soft tissue fractures - **the maximum number of points - 20.**
2. The pathogenesis of osteochondrosis of the spine and its stage - **the maximum number of points - 20.**
3. Rehabilitation issues in traumatology and orthopedics - **maximum number of points - 20.**
4. The main principles of medical rehabilitation - **the maximum number of points - 20.**

*Approved at a meeting of therapeutic and surgical disciplines , Protocol № \_\_\_\_ from " \_\_ "*  
\_\_\_\_\_ 2021 p.

Head of the Department     Doctor of Medical Sciences Zyuzin  
VO

Examiner     Zaborovsky VI

**And such 15 tickets**

**An example of the task of KKR**

**Option № 0**

**I. Question**

**and.** The mechanism and classification of ligament injuries, fractures of the ankle joint. Physical rehabilitation plan.

**b.** Types of restriction of movements in the joints. Ways to restore them.

**II . From the source:**

1. You measured the lower extremities of the patient. Anatomical length: segmental measurement of both thighs and legs is the same; when measuring the relative length revealed a difference of the right lower limb by 5 cm. What are the reasons for such a difference?
2. A 14-year-old patient has congenital hip dislocation, diving gait. What cognitive lines and measurements will give us grounds to clinically diagnose hip dislocation?
3. When measuring the volume of movements in the knee joint, you received data: flexion to 90 degrees, extension to 160 degrees. What is the name of such an installation, its variety, the causes of pathological attitudes in the joints?
4. When examining the patient, the angle between the axis of the thigh and lower leg is open to the outside. What is the name of such a deformity in the knee joint (Latin name)? What and how to define it?
5. When examining the patient, the angle between the axis of the thigh and shin is open inward. What is the name of such a deformation (Latin name) and how to measure it?

6. The patient does not walk, there are no movements in the knee joints, pathological installations in them at an angle of 145 degrees. What are the names of such pathological attitudes? The reasons for their occurrence?
7. At inspection of the patient (at loading) the foot is flattened and inclined together with a heel outside. What is the name of the deformation (Latin name)?
8. The patient due to the disease preserved hook and pinch grip. What types of brush grips are missing?
9. The patient due to improperly enlarged fracture of the tibia developed a deformity with an angle open forward. How to name an ayetsya and determined strain?
10. The patient due to improperly grown fracture of the tibia developed a deformity with an angle open back. How is deformation defined and called ?

**And so 15 options**

## **Block 2. Physical rehabilitation**

### **2. List of control questions for credit**

1. Tasks, purpose and principles of rehabilitation.
2. Types, periods and stages of rehabilitation.
3. Basic principles of physical rehabilitation.
4. The mechanism of therapeutic action of exercise.
5. Means of medical physical culture.
6. Forms of therapeutic physical culture.
7. Periods of exercise therapy in rehabilitation programs.
8. General requirements for methods of exercise therapy.
9. Motor modes.
10. Dosage of physical activity.
11. The effectiveness of exercise therapy.
12. Therapeutic massage.
13. Rules for combining and combining exercise therapy, therapeutic massage and physiotherapy procedures.
14. Principles of physical rehabilitation in hypertension.
15. Physical rehabilitation for myocardial infarction.
16. Physical rehabilitation for acute pneumonia.
17. Physical rehabilitation for chronic pneumonia.
18. Physical rehabilitation for bronchitis.
19. Physical rehabilitation for bronchial asthma.
20. Physical rehabilitation for bronchiectasis.
21. Physical rehabilitation for pulmonary emphysema.
22. Physical rehabilitation for gastritis with reduced and increased secretory function.
23. Physical rehabilitation for gastritis with reduced secretion and achilles.
24. Physical rehabilitation for peptic ulcer of the stomach and duodenum.
25. Physical rehabilitation for obesity.
26. Physical rehabilitation for diabetes.
27. Principles of rehabilitation for diseases and injuries of the peripheral nervous system.
28. Physical rehabilitation for stroke.
29. Physical rehabilitation for paralysis and paresis.
30. Physical rehabilitation for lumbosacral radiculitis.
31. Physical rehabilitation during surgical interventions on the abdominal organs.
32. Physical rehabilitation during surgery on the chest.
33. Physical rehabilitation for injuries.
34. Physical rehabilitation for maxillofacial trauma.
35. Physical rehabilitation for damage to the ENT organs.
36. Physical rehabilitation for eye injuries.
37. Principles of rehabilitation of pediatric patients.
38. Physical rehabilitation for posture defects.

39. Physical rehabilitation for scoliosis.
40. Physical rehabilitation for flat feet.
41. Physical rehabilitation in obstetrics and gynecology.
42. The purpose and objectives of sports medicine.
43. Research and evaluation of physical development.
44. Factors that impair the physical performance and health of athletes.
45. Influence of physical activity on the functional state of athletes.
46. Prevention and treatment of injuries and diseases of the musculoskeletal system in athletes.
47. Resumption of treatment of athletes.
48. Organization of pre-medical care for athletes.
49. The main forms of work in sports medicine.
50. Selection and orientation in sports. Acclimatization.
51. Medical association of persons engaged in physical culture and sports.
52. Medical examination of leading contingents of athletes.
53. Health, treatment and prevention measures in sports medicine.
54. Sanitary and hygienic supervision of places and conditions of sports and competitions.
55. Medical support of sports competitions and mass types of physical culture.
56. Prevention of sports injuries.
57. Medical and pedagogical observation (LPS) in the process of training.
58. Tasks and forms of organization of LPS.
59. Research methods in LPS.
60. Functional tests in the conditions of LPS.
61. Medical control at competitions (anti-doping, sex control, self-control).
62. Medical and physical training consultation.
63. Cabinet of medical control, tasks, organization.
64. Center for therapeutic physical culture and sports medicine, tasks, organization.
65. Medical examination of athletes, volume, tasks,
66. Sports anthropology, tasks, methods of study.
67. Study of body size in athletes by sports metrology.
68. Study of the muscular system in athletes.
69. Study of the skin in athletes.
70. Calculation of body weight components in athletes.
71. Study of the amplitude of movement in the extremities.
72. Measurement of muscle strength in sports medicine.
73. Sex research. Methodometry. Methodoplantography.
74. Causes of diseases in athletes.
75. Classification of causes of diseases in athletes.
76. Contraindications to sports and physical education.

**"0" version of the test ticket**

Form №H - 5.05.

Black Sea National University  
 named after Peter the Great  
 Educational - qualification level - master  
 Specialty : 222 "Medicine"  
 Field of knowledge: 22 "Health care"  
 Academic discipline

**" Traumatology, orthopedics, physical rehabilitation, sports medicine "**

Option № 0



1. Physical rehabilitation and sports medicine as a discipline. Purpose and objectives. - **The maximum number of points is 20.**
2. Therapeutic physical culture as a method of physical rehabilitation. - **M fully upheld score 20.**
3. Therapeutic control. Definitions, purpose, tasks, principles. - **M fully upheld score 20.**
4. Acclimatization (climatic and temporary). - **The maximum number of points is 20.**

*Approved at a meeting of therapeutic and surgical disciplines , Protocol № \_\_\_\_ from " \_\_ " \_\_\_\_\_ 202  
1 p.*

Head of the Department Doctor of Medical Sciences Zyuzin  
VO

Examiner Doctor of Medical Sciences Zyuzin VO

### **Examples of tests and situational tasks**

1. *What is primary prevention:*
  - a) disease prevention;
  - b) prevention of recurrences;
  - c) prevention of exacerbation of the disease;
  - d) prevention of complications.
2. *Means of therapeutic function of culture :*
  - a) physical exercises, motor mode, therapeutic gymnastics;
  - b) massage, walking, natural environmental factors, motor modes;
  - c) physical exercises, motor modes, natural environmental factors;
  - d) sports games, massage, health course.
3. *Mechanism for massage:*
  - a) neuro-reflex;
  - b) humoral;
  - c) mechanical;
  - d) stimulating.
4. *Tasks of rehabilitation:*
  - a) restore the functions of organs or systems;
  - b) to adapt to everyday life;
  - c) resume professional activity;
  - d) dispensary supervision.
5. *Name the stages of rehabilitation:*
  - a) preparatory;
  - b) hospital;
  - c) remote;
  - d) outpatient.

#### **Problem № 1**

During the examination of adolescents for selection for children's sports school, it is necessary to assess the physical development of students.

Indicate which indices are used to assess physical development, how to calculate them and what are the indicators of the norm.

#### **Problem № 2**

Patient C, 25 years old, with a fracture of the right humerus in the consolidation stage, with a circular living bandage on his arm was sent to the physiotherapy room of the family outpatient clinic. What exercises can be recommended to the patient and by what method classes should be conducted.

### Problem № 3

Patient C, aged 46, was sent to the day hospital of the family outpatient clinic for exercise therapy with a diagnosis of second-degree hypertension, with periodic crises.

Specify the tasks and means, forms and methods of exercise therapy, tactics of training.

## 6. Evaluation criteria and tools for diagnosing learning outcomes

### Control methods

- **Survey (testing of theoretical knowledge and practical skills).**
- **Test control.**
- **Writing a review of scientific literature (abstracts).**
- **Preparation of presentations.**

**Current control.** Testing in practical classes of theoretical knowledge and the acquisition of practical skills, as well as the results of independent work of students. Supervised by teachers according to the specific purpose of the curriculum. Assessment of the level of student training is carried out by: interviewing students, solving and analyzing situational tasks and test tasks, monitoring the acquisition of practical skills.

**Intermediate control.** Checking the possibility of using students for the practical application of theoretical knowledge and practical skills on all topics studied, as well as the results of independent work of students. Carried out in the last lesson by section by passing practical skills, testing.

**Final control.** By the final control ( dyf.zalik ) students, which visited all the prescribed curriculum lectures, lecture classes, completed in full and independent work in learning the number of points scored, not less than minimum - **7, 0 points per semester.**

### Distribution of points received by students

The student can get a maximum of **120 points** for current learning activities . Accordingly, a positive assessment in each practical session can be **from 3 , 5 to 6 points**. A score below **3 , 5 points** means "unsatisfactory", the lesson is not credited and must be practiced in the prescribed manner .

In order to assess learning outcomes, the final control in the form of diff. offset. The student can get the most on the diff. credit **80 points**. Diff. the test is considered passed if the student received at least **50 points**.

### Assessment of student performance

Type of activity (task)	Maximum number of points
practical lesson 1	6
practical lesson 2	6
practical lesson 3	6
practical lesson 4	6
practical lesson 5	6
practical lesson 6	6
practical lesson 7	6
practical lesson 8	6
practical lesson 9	6
practical lesson 10	6
practical lesson 11	6
practical lesson 12	6
practical lesson 13	6
practical lesson 14	6
practical lesson 15	6
practical lesson 16	6

practical lesson 17	6
practical lesson 18	6
practical lesson 19	6
practical lesson 20	6
<b>Together</b>	<b>120</b>
<b>Diff. test</b>	<b>80</b>
<b>Together with diff. offset</b>	<b>200</b>

### Criteria for assessing knowledge

A student's answer is evaluated **with a score of 6 points in a practical lesson and 71-80 points in a test (A on the ECTS scale and 5 on the national scale)** if it demonstrates deep knowledge of traumatology, orthopedics and rehabilitation, ability to apply theoretical material for practical analysis and has no inaccuracies.

**A score of 5 points in the practical lesson and 61-70 points in the test (B and C on the ECTS scale and 4 on the national scale)** the answer is evaluated if it shows knowledge, ability to apply them in practice, but some fundamental inaccuracies are allowed.

**A score of 3, 5 - 4 points in the practical lesson and 50-60 points in the test (D and E on the ECTS scale and 3 on the national scale)** the student's answer is evaluated provided that he knows the main theoretical principles and can use them in practice.

## 7. Recommended sources of information

### 7.1. Basic

1. Maikova TV The main provisions and trends in the development of rehabilitation: textbook. manual for students of higher. textbook institutions / TV Майкова, А.В. Samoshkina. - Dnepropetrovsk, 2014. - 95 p.
2. Marchenko OK Fundamentals of Physical Rehabilitation: Uchebnoe posobyе / O.K. Marchenko. - K.: Olympus. lit., 2012. - 528 p.
3. Methodical instructions for writing a medical history in the supervision of patients with injuries and diseases of the musculoskeletal system. - Constipation. - 2010. - 15 p.
4. Orthopedics and Traumatology / Ed. prof. ОНМ. Хвисяюка. - Н., 2013. - 656 p.
5. Traumatology and orthopedics: n idruchnyk for students in higher education for the put / a Ed. Needles GG, Buryanova OA, Klimovich VG - Vinnytsia: Nova Kniga (Ukr.), 2014. - 416 p.
6. Chemiris AY, Neryanov YM, Kudievsky AV, Shishka IV Practical skills and abilities in traumatology and orthopedics. Educational and visual aid for students of higher educational institutions. - Zaporizhzhia. - 2010. - 64 p.

### 7.2. Additional

1. Babosha VA, Klimovich VG, Pasternak VN etc. Pelvic trauma (Clinic, diagnosis and treatment). - Донецк: Донеччина, 2000. - 176 с.
2. Diagnosis and treatment of degenerative-dystrophic lesions of the joints / IV Shumada, O.Ya. Suslova, VI Stetsula, N.F. Moroz, A.P. Krysiuk et al. - Kyiv in: Health, 1990. - 200 p.
3. Korzh MO, Dedukh NV, Zupanets IA (ed.). Osteoarthritis. Conservative therapy. - Kharkiv: Flag, 1999. - 33 p.
4. Kornilov NV, Gryaznukhin EG Traumatology and orthopedics (guide for physicians in 4 volumes), 2004–2007.
5. Oleksa AP Traumatology and orthopedics. - K.: Вища школа, 1999. - 511 с.
6. Organization of emergency medical assistance and military units (establishments) of the Armed Forces of Ukraine: methodical recommendation / [2nd ed., Revised. and add.] // [Authors ...]. - GVMKC "GVKG". - K., 2014. - 144 p.
7. Osteoporosis: epidemiology, clinic, diagnosis, prevention and treatment / Under. ed. ON. Korzha, VV Povoroznyuk, NV Grandfather, IA Zupants. - Н.: Golden Pages, 2002. - 648 p.

8. Fishchenko V.Ya. Scoliosis. - Ма кіївка: Поліпрес, 2005. - 568 с.
- Gorbatyuk SO Physical rehabilitation for injuries of the musculoskeletal system [textbook. aid.] / S.O. Gorbatyuk - Rivne : Volyn shores, 2008. - 200 p.
9. Therapeutic physical education and sports medicine: ed. V.V. Клапчука, Г.В. Thanks. - О .: "Health" 1995. - 312 p.
10. Therapeutic physical training in the system of medical rehabilitation : under. ed. AR Kaptelina, IP Lebedeva - М .: Medicine, 1985. - 400 p.
11. Marchenko OK Physical rehabilitation of patients with injuries and diseases of the nervous system [textbook. aid.] / O.K. Marchenko. - К .: Olympus. 1-ra, 2006. - 196 p.
12. Murza VP Physical rehabilitation [teaching. aid.] / VP Murza. - К .: Орлан, 2004. - 559 с.
- Romanishin M.Ya. Physical rehabilitation in sports [textbook. aid.] / M.Ya. Romanishin. - Rivne .: Volyn charms, 2007. - 368 p.
13. Yazlovitsky VS Fundamentals of physical rehabilitation [textbook. aid.] / VS Yazlovitsky, GS Verich, VM Mukhin, A.L. Turgak. - Kirovograd .: RVV KDPU imeni V. Vinnichenko, 2004. - 238 s.

### **Information about - electronic resources**

1. National Library. VI Vernadsky - [www.nbuv.gov.ua](http://www.nbuv.gov.ua).
2. State Service of Ukraine for Emergencies - [www.dsns.gov.ua](http://www.dsns.gov.ua).
3. Ministry of Health of Ukraine - <http://www.moz.gov.ua>.
4. <https://www.cebp.nl/?NODE=239>
5. [www.pubmed.gov](http://www.pubmed.gov)
6. [www.amjphysmedrehab.com](http://www.amjphysmedrehab.com)
7. [www.apta.org](http://www.apta.org)
8. [www.sciencedirect.com](http://www.sciencedirect.com)
9. [www.acsm-msse.org](http://www.acsm-msse.org)
10. [www.pmrjournal.org](http://www.pmrjournal.org)
11. [www.imtt.com.ua](http://www.imtt.com.ua)
12. Official Internet - representation of the President of Ukraine <http://www.president.gov.ua>
13. The Verkhovna Rada of Ukraine <http://www.rada.gov.ua>
14. Cabinet of Ministers <http://www.kmu.gov.ua/>
15. Ministry of Education and Science of Ukraine <http://www.mon.gov.ua>
16. National Security Council of Ukraine <http://www.rnbo.gov.ua/>
17. Permanent Mission of Ukraine to the United Nations <http://ukrainen.org/>
18. North Atlantic Treaty Organization (NATO) <http://www.nato.int>
19. World Health Organization <http://www.who.int>
20. Educational programs of higher educational institutions of Ukraine