

**MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS  
EDUCATIONAL INSTITUTION  
BELARUSIAN STATE MEDICAL UNIVERSITY**

**Контрольный  
экземпляр**

**APPROVED**

by First Vice-Rector, Professor

S.V. Gubkin



*24.06.2017*

Reg. # *UD-L.601/1718/edk4*

**TRAUMATOLOGY AND ORTHOPEDICS**

**Curriculum of higher educational institution in  
the educational discipline for the specialty:**

**1-79 01 01 General Medicine**

Minsk, BSMU 2017

Curriculum is based on the standard educational program “Traumatology and Orthopedics”, approved 20.06.2017, registration # ТД-Л.601/тип.

**COMPILERS:**

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**RECOMMENDED FOR APPROVAL:**

by the Department of Traumatology and Orthopedics of the Educational Institution “Belarusian State Medical University”  
(protocol # 17 of 02.06.2017);

by the Methodological Commission of Surgical disciplines of the Educational Institution “Belarusian State Medical University”  
(protocol #9 of 14.06.2017).

## EXPLANATORY NOTE

“Traumatology and Orthopedics” is the educational discipline containing systematized scientific knowledge and techniques about the etiology, pathogenesis, mechanism of injury, clinical manifestations, methods of X-ray, laboratory, radionuclide, ultrasound, morphological diagnostics, computed tomography, magnetic resonance imaging, differential diagnosis, complex conservative and operative treatment, rehabilitation and prevention of congenital and acquired diseases and injuries of the musculoskeletal system.

The curriculum of the discipline “Traumatology and Orthopedics” includes the latest scientific data about the pathomorphological features of common diseases and injuries of the musculoskeletal system, methods of diagnosis and specialized treatment including methods of osteosynthesis, arthroscopy, large joints arthroplasty, rehabilitation of patients after trauma.

The aim of teaching and learning the discipline “Traumatology and Orthopedics” is to provide the students with the scientific knowledge about diagnosis, victim assistance and treatment of injuries of the musculoskeletal system and the most common orthopedic diseases.

The tasks of studying the discipline are to develop the students’ academic competences, based on the ability to self-search educational and information resources, as well as acquire and understand the knowledge of:

- principles of organization of orthopedic and traumatological medical care in the Republic of Belarus;
- causes of high level of injuries and possible ways of its prevention;
- basic concepts of reparative osteogenesis;
- important early and late, local and general complications of traumatic disease;
- clinical and radiological manifestations of typical injuries and diseases of the musculoskeletal system;
- principles of providing urgent medical care for injuries of the limbs, pelvis and spine;
- the most important methods of conservative and operative treatment of patients with injuries of the musculoskeletal system and orthopedic diseases;
- bases of medical rehabilitation of patients with diseases and injuries of the musculoskeletal system;
- factors affecting the outcome of the treatment and prevention of disability.

The tasks of teaching the discipline include the formation of students’ social, personal and professional competences, based on the knowledge and application of:

- methods of clinical orthopedic examination of patients, contributing to the formation of clinical thinking;
- diagnostic methods for the main nosological forms of injuries and diseases of the musculoskeletal system;
- methods of medical care in case of injuries at the prehospital stage;

- immobilization and extraction methods of treatment of bone fractures of the extremities, pelvis and spine;
- methods of conservative treatment of congenital orthopedic pathology;
- methods of restorative treatment.

Teaching and successful learning of the discipline “Traumatology and Orthopedics” is carried out on the basis of the knowledge and skills previously acquired by the students in the following disciplines:

General Chemistry. The chemical elements and their compounds. Chemical reactions.

Medical and biological physics. Devices and function of medical devices used in traumatology and orthopedics. Safety rules when working with electrical appliances. X-rays and biophysical mechanisms of action. Fundamentals of Medical Statistics and Informatics.

Bioorganic chemistry. Inorganic and organic chemicals. Rheological properties of biological tissues and fluids. Exchange of organic substances in the bone tissue. Elements of analytical chemistry, synthesis and modification of useful chemical compounds.

Biological Chemistry. Structure, function and exchange of amino acids, nucleic acids, proteins, carbohydrates and lipids. The biosynthesis of nucleic acids and proteins. Energy metabolism in the cell. Cell membranes. Passive and active transport of substances through the cell membrane structure. Fundamentals of Molecular Genetics.

Latin. Practical knowledge of the principles of grammar and word formation. Knowledge of the meanings of the Latin word-building elements and a certain minimum medical terminology in Latin.

Human anatomy. The structure of the human body, its constituent systems, organs, tissue, sex and age characteristics of the organism. Methods of histological and cytological studies. International anatomical and histological terminology.

Histology, cytology, embryology. Methods of histological and cytological studies. International histological terminology. Basics of reparative osteogenesis. Normal physiology. Organism and its safety systems. Basic principles of regulation and physiological functions.

Pathological anatomy. Inflammation, degeneration, oncogenesis - concept and biological essence.

Pathological physiology. Doctrine of pathogenesis. Role in the pathology of reactivity. The mechanism of pain. Allergic reactivity. Pathological physiology of infectious, neoplastic process.

Microbiology, virology, immunology. Human microbial flora, specific and nonspecific protection factors.

Pharmacology. Pharmacodynamics of drugs. Basic principles of action of drugs. Adverse and toxic effects of drugs. Substances that affect the processes of inflammation and allergies. Antimicrobial and antiparasitic agents: antiseptic, disinfectant, chemotherapeutics.

Internal Medicine. Physical examination of the patient and the basic principles of diagnosis. The clinic, diagnosis and emergency care to patients with life-threatening conditions.

Surgical diseases. Principles and rules of transport immobilization. During the wound healing process. Principles of surgical treatment of purulent wounds. Surgical patients care.

Radiodiagnostics and radiotherapy. Radiation diagnosis of injuries and diseases of the musculoskeletal system, its complications. Differential diagnosis based on radiological methods. Radiological semiotics. Basic principles of radiotherapy.

**As a result of studying the discipline “Traumatology and Orthopedics” the student should know:**

- etiology, pathogenesis, classification, clinical picture of orthopedic diseases and typical injuries of the musculoskeletal system in children and adults in peacetime and wartime;
- modern methods of diagnostics, conservative and operative treatment of diseases of the musculoskeletal system;
- volume of primary, urgent and specialized medical care for injuries of the musculoskeletal system;
- methods of diagnosis and treatment for multiple, combined and associated trauma;
- methods of preventing diseases and injuries of the musculoskeletal system in children and adults;
- types of injuries (industrial, household, children, etc.), their characteristics and methods of prevention;
- frequency, causes, socio-economic issues of injuries and diseases of the musculoskeletal system;
- principles of medical rehabilitation of patients with polytrauma and orthopedic diseases;

**be able to:**

- Identify the mechanism of injury and recognize typical injuries of the musculoskeletal system;
- examine patients with injuries and diseases of the musculoskeletal system;
- diagnose typical injuries of the skeleton;
- provide urgent medical care for injuries of the musculoskeletal system;
- temporarily stop external bleeding and apply a bandage in open fractures;
- perform transport immobilization in case of musculoskeletal injuries;
- perform Novocain blockade of the fracture site;
- treat fractures with conservative methods;
- identify common congenital diseases and deformations of the musculoskeletal system and arrange a referral for consultation in a specialized health care organization;

**master:**

- methods of clinical examination of the musculoskeletal system;
- methods of diagnosis of soft tissue injuries, fractures, dislocations and methods of providing primary medical care, including in children;
- methods of diagnostics of senile and pathological fractures and methods of providing primary medical care;
- methods of examination of patients with multiple and combined injuries;
- ways to determine the condition severity of a patient with polytrauma;
- ways to identify the dominant injury in multiple and combined trauma;
- methods of providing emergency medical care for polytrauma (typical novocain blockades, transport immobilization, temporary stopping of bleeding, transfusion of blood substitutes, inhalation of a mixture of oxygen with nitrous oxide);
- methodology for drawing up a plan of measures for the prevention and treatment of possible complications (acute renal failure, thromboembolism, fat embolism, wound infection, osteomyelitis, etc.) in the early period after polytrauma;
- methods of diagnostics of injuries, degenerative, inflammatory and metabolic diseases of joints;
- method of drawing up a treatment plan and methods of conservative treatment of patients with arthrosis, methods for identifying patients with arthrosis who require an in-patient treatment;
- methods of clinical diagnosis of typical congenital diseases and deformities of the musculoskeletal system in children: torticollis, chest deformity, developmental hip dysplasia, scoliosis, deformities of the foot;
- determining the indications for rehabilitative treatment.

The structure of the curriculum in the educational discipline “Traumatology and Orthopedics” is formed by three section.

**Total number** of hours for the study of the discipline is 136 academic hours. Classroom hours according to the types of studies: lectures - 16 hours, practical classes - 50 hours, student independent work (self-study) - 70 hours.

Current assessment is carried out according to the syllabus of the specialty in the form of examination (10th semester).

Form of higher education – full-time.

## THEMATIC PLAN

Section (topic) name	Number of class hours	
	lectures	practical (laboratory or seminars)
<b>1. General Traumatology</b>	<b>6</b>	<b>10</b>
1.1. Introduction to the academic discipline "Traumatology and Orthopedics". Prevention of injuries. Principles and methods of treatment of patients with injuries and diseases of the musculoskeletal system	2	3
1.2. Features of examination of patients with injuries and diseases of the musculoskeletal system	-	2
1.3. Regeneration of bone tissue in normal and pathological conditions	-	1
1.4. Multiple and associated injuries	2	2
1.5. Open fractures	2	2
<b>2. Clinical Traumatology</b>	<b>2</b>	<b>23</b>
2.1. Fractures and dislocations of the clavicle. Humeral fractures	-	5
2.2. Injuries of the elbow joint, forearm	-	3
2.3. Injuries of the hand	2	2
2.4. Fractures of the pelvic bones	-	3
2.5. Injuries of the spine	-	3
2.6. Femur fractures	-	3
2.7. Injuries of the knee joint. Fractures of the shin bones. Ankle and foot injuries.	-	3
2.8. Traumatic dislocations of shoulder, forearm, hip	-	1
<b>3 Orthopedics</b>	<b>8</b>	<b>17</b>
3.1. Developmental hip dysplasia	1	3
3.2. Congenital clubfoot	-	2
3.3. Congenital muscular torticollis	-	1
3.4. Osteoarthritis. Spine osteochondrosis	2	4
3.5. Posture and types of its disorders. Scoliosis.	2	1
3.6. Bone tumors	1	1
3.7. Osteochondropathies	-	2
3.8. Static foot deformities	2	3
<b>Total hours</b>	<b>16</b>	<b>50</b>

## CONTENT OF THE EDUCATIONAL MATERIAL

### 1. General Traumatology

#### 1.1. Introduction to the academic discipline "Traumatology and Orthopedics". Prevention of injuries. Principles and methods of treatment of patients with injuries and diseases of the musculoskeletal system

Introduction to the academic discipline "Traumatology and Orthopedics". The concept of traumatology and orthopedics. The emblem of orthopedics. Development of traumatological and orthopedic medical care in the Republic of Belarus. The structure of traumatism, its prevention. Modern principles of treatment of long bones fractures. Methods of treatment of bone fractures: conservative treatment, surgical treatment. Types of plaster immobilization. The technique of splints and casts applying, indications for their use. Advantages and disadvantages of the fixation method of treatment, possible complications and their prevention. Permanent skeletal traction, indications for use, technique, advantages of the method. Types of osteosynthesis (extra- and intramedullary, transosseous, compression-distraction system), indications, advantages of the method, possible complications and their prevention.

Management of patients with injuries of the musculoskeletal system: participation in the closed reposition of fractures, applying plaster fixation. Writing a medical history.

#### 1.2. Features of examination of patients with injuries and diseases of the musculoskeletal system

Types of positions of patients with diseases of the musculoskeletal system. Methods of determining the axis of the limb, the spine. The main types of deformities of the axis of the limb and spine. Methods of palpation and percussion in patients with injuries and diseases of the musculoskeletal system. Methods for determining the range of movements in the joints. Methods of measuring the length and circumference of the limbs. Types of limb shortening, ways to determine them. Deformations of the spine (scoliotic deformity, pathological kyphosis, lordosis). Gait disorders (limp, its types).

Reliable and questionable clinical signs of fractures, dislocations. Types of displacement of bone fragments and ways to determine them. Special diagnostic methods in traumatology and orthopedics, indications for their application, methodology, interpretation of the data obtained. X-ray signs of fractures, dislocations and the most common orthopedic diseases.

Management of patients with injuries of the musculoskeletal system: collection of complaints and anamnesis of trauma; Objective examination of the patient; Drawing up a plan for examining the patient; Interpretation of the results of instrumental diagnostic methods; Diagnosis; Substantiation of indications for surgical intervention; Preparation of an operative intervention plan; Assisting in surgical interventions for fractures of long tubular bones; Postoperative management of the patient. Writing a medical history.



### **1.3. Regeneration of bone tissue in normal and pathological conditions**

Ways of regeneration of bone tissue. Physiological and reparative regeneration. The stages of bone callus formation and its types. Primary and secondary fusion of the fractured bone. Disorders of reparative regeneration of bone wounds (delayed consolidation and false joint), causes, methods of treatment.

Management of patients with false joints: collection of complaints and anamnesis of trauma; Objective examination of the patient; Drawing up a plan for examining the patient; Interpretation of the results of instrumental survey methods; Diagnosis; Substantiation of indications for surgical intervention; Preparation of an operative intervention plan; Assistance in surgical interventions for false joints; Postoperative management of the patient. Writing a medical history.

### **1.4. Multiple and associated injuries**

Definition of the term "polytrauma": multiple, combined injuries, their characteristics. Clinical features of polytrauma (syndrome of mutual burdening, incompatibility of treatment, acute complications of injuries - shock, massive bleeding, toxemia, acute renal failure, fat embolism, thromboembolism, etc.).

Emergency medical care at the prehospital stage of treatment: ways to identify life-threatening conditions, methods for their elimination in patients with trauma of the musculoskeletal system; determining the volume of injury; detection of dominant damage.

Choice of methods of anti-shock therapy in patients with polytrauma: novocaine blockades, blood substitutes infusion, anti-shock mixtures. Transport immobilization in polytrauma. Characteristics of the hospital stage of treatment of patients with polytrauma. Means, methods of antishock therapy at the hospital stage of treatment. Methods of therapeutic immobilization in patients with multiple, combined and complex injuries. The choice of the optimal time and volume of surgical interventions. Diagnosis, prevention and treatment of complications of injuries of the musculoskeletal system. Features of the rehabilitation period in patients with polytrauma. Medical, social, professional rehabilitation of patients who underwent multiple and combined injuries of the musculoskeletal system.

### **1.5. Open fractures**

Frequency and features of open fractures. Classification of open fractures. Clinical manifestations, diagnosis of open fractures, complications. Principles of step-by-step treatment of patients with open fractures. Primary surgical treatment of wounds in open fractures. Indications for osteosynthesis and skeletal traction, complications. Features of gunshot fractures.

Management of patients with open fractures: collection of complaints and anamnesis of trauma; objective examination of the patient; drawing up a plan for examining the patient; Interpretation of the results of instrumental survey methods; diagnosis; substantiation of indications for surgical intervention; preparation of an operative intervention plan; participation in the wound debridement; assistance in surgical interventions for open fractures of long tubular bones; postoperative management of the patient. Writing a medical history.

## **2. Clinical Traumatology**

### **2.1. Fractures and dislocations of the clavicle. Humeral fractures**

Fractures of the clavicle: classification, mechanism of injury, mechanogenesis of fragments displacement. Clinical manifestations and diagnosis of clavicle fractures. Urgent and final treatment of clavicle fractures.

Dislocation of the clavicle: classification, mechanism of injury, clinical manifestations, emergency medical care, treatment, prevention of complications.

Classification of injuries of the proximal metaepiphysis of the humerus. Fractures of the surgical neck of the humerus: classification, mechanism of injury, mechanogenesis of fragments displacement. Clinical manifestations and diagnosis of fractures of the humeral surgical neck. Urgent medical care and treatment of fractures of the humeral surgical neck.

Fractures of the diaphysis of the humerus: classification, mechanism of injury, mechanogenesis of fragments displacement, clinical manifestations, diagnosis, urgent and final treatment.

Supracondylar fractures of humerus: classification, mechanism of trauma, mechanogenesis of fragments displacement, diagnostics, urgent and final treatment, complications (acute arterial insufficiency and Volkman's contracture).

Management of patients with fractures of the clavicle, humerus: collection of complaints and anamnesis of trauma; objective examination of the patient; drawing up a plan for examining the patient; interpretation of the results of instrumental diagnostic methods; diagnosis; choice of method and preparation of a patient treatment plan; substantiation of indications for surgical intervention; preparation of an operative intervention plan; assistance in surgical interventions for fractures of the clavicle, humerus; postoperative management of the patient. Writing a medical history.

### **2.2. Injuries of the elbow joint, forearm**

Fractures of the olecranon: the mechanism of injury, diagnosis, methods of conservative and surgical treatment, indications for their use, timing of consolidation. Fractures of the head and neck of the radius: the mechanism of damage, clinical manifestations, diagnosis, treatment.

Fractures of the diaphysis of the forearm bones: classification, trauma mechanism, mechanogenesis of fragments displacement, diagnostics, urgent and final treatment.

Distal radius fractures (Colles and Smith fractures): the mechanism of injury, clinical manifestations, diagnosis, urgent and final treatment, fusion and return to work timing.

Management of patients with fractures of the forearm bones: collection of complaints and anamnesis of trauma; objective examination of the patient; drawing up a plan for examining the patient; Interpretation of the results of instrumental diagnostic methods; diagnosis; choice of method and preparation of a patient treatment plan; substantiation of indications for surgical intervention; preparation of an operative intervention plan; participation in the implementation of a closed

reposition of fractures of the forearm bones; assistance in surgical interventions for fractures of the forearm bones; postoperative management of the patient. Writing a medical history.

### **2.3. Injuries of the hand**

Frequency of hand injuries, their structure. Classification of hand injuries. Clinical manifestations, diagnosis and treatment of closed injuries. Treatment of wounds and open fractures. Principles of surgical restoration of damaged structures of the hand. The concept of replantation and revascularization.

Fractures of the bones of the wrist (navicular, semilunar): clinical manifestations, diagnosis, conservative and operative methods of treatment.

Tears of tendons of flexors and extensors of the hand and fingers, diagnosis. Conservative and surgical treatment of injuries of extensor tendons. Principles of operative treatment of injuries of flexor tendon.

Fractures of metacarpal bones and phalanges of fingers: diagnostics, treatment. Principles of treatment of open injuries.

Management of patients with hand injuries: collection of complaints and anamnesis of trauma; objective examination of the patient; drawing up a plan for examining the patient; interpretation of the results of instrumental diagnostic methods; diagnosis; choosing of the treatment method and preparation of the patient's treatment plan; substantiation of indications for surgical intervention; preparation of an operative intervention plan; participation in closed reduction of fractures of metacarpal bones; assistance in surgical interventions for injuries of the flexor tendons of the fingers; postoperative management of the patient. Writing a medical history.

### **2.4. Fractures of the pelvic bones**

Classification of fractures of pelvic bones, mechanism of injury. Clinical manifestations and diagnosis of fractures of pelvic bones. Urgent medical care for patients. Anti-shock therapy for fractures of pelvic bones in the prehospital stage of medical care. Conservative and surgical methods of treatment of patients with various types of fractures of pelvic bones.

Patients with fractures of pelvic bones: collection of complaints and anamnesis of trauma; objective examination of the patient; drawing up a plan for examining the patient; Interpretation of the results of instrumental diagnostic methods; diagnosis; choosing of the treatment method and preparation of a patient treatment plan; substantiation of indications for surgical intervention; Preparation of an operative intervention plan; Postoperative management of the patient. Writing a medical history.

### **2.5. Injuries of the spine**

Classification of spine injuries. Isolated ligament injuries: mechanism of trauma, diagnosis, treatment methods. Fractures of vertebral transverse processes, arches and articular processes: diagnosis, treatment. Fractures of vertebral bodies: the mechanism of injury, the typical localization of lesions, the principles of diagnosis. Methods of treatment of uncomplicated vertebral fractures: conservative (functional,

one-stage reposition, gradual reclination) and surgical methods of treatment. Methods of therapeutic immobilization in fractures of vertebral bodies. Timing of fusion of vertebral body fractures. Features of outpatient treatment of patients with uncomplicated vertebral fractures.

Diagnosis of complicated spine injuries. The volume of urgent medical care for patients with complicated spinal injuries. Modern methods of treatment of complicated vertebral fractures.

Management of patients with spine injuries: collection of complaints and anamnesis of trauma; objective examination of the patient; drawing up a plan for examining the patient; interpretation of the results of instrumental diagnostic methods; diagnosis; choosing the treatment method and preparation of a treatment plan; substantiation of indications for surgical intervention; drafting of an operative intervention plan; postoperative management of the patient. Writing a medical history.

## **2.6. Femur fractures**

Classification of injuries of the proximal femur. Femoral neck fractures (valgus and varus fractures), features of bone regeneration in this area, diagnosis, clinical manifestations, complications, surgical treatment. Conservative treatment of valgus fractures.

Trochanteric fractures of the femur: the mechanism of injury, clinical manifestations, diagnosis, treatment methods.

Fractures of the femur diaphysis: classification, mechanism of trauma, mechanogenesis of fragments displacement depending on fracture site, clinical manifestations, diagnosis, treatment methods, timing of union, prevention of possible complications. Outpatient treatment of patients with femoral fractures.

Management of patients with fractures of the femur: collection of complaints and anamnesis of trauma; objective examination of the patient; Drawing up a plan for examining the patient; Interpretation of the results of instrumental diagnostic methods; diagnosis; choosing the treatment method and preparation of a patient treatment plan; substantiation of indications for surgical intervention; drafting of an operative intervention plan; Assistance in surgical interventions for fractures of the femur; postoperative management of the patient. Writing a medical history.

## **2.7. Injuries of the knee joint. Fractures of the shin bones. Ankle and foot injuries**

Fractures and dislocations of the patella: fracture types and the mechanism of injury, clinical picture, diagnosis, treatment methods.

Fractures of the condyles of the femur and tibia: the mechanism of injury, clinical manifestations, diagnosis, treatment.

Meniscal lesions: classification, clinical manifestations, diagnosis, treatment.

Knee joint's ligament lesions (lateral and cruciate ligament, patellar ligament), clinical signs. Diagnosis of knee joint ligaments injuries. The role and place of arthroscopy in the diagnosis and treatment of intraarticular injuries of knee joint.

Fractures of the diaphysis of the shin bones: the mechanism of injury, clinical manifestations, diagnosis, treatment.

Injuries of the ligaments of the ankle joint: differential diagnosis, treatment. Fractures of the ankles: classification, clinical manifestations, diagnosis, conservative and surgical methods of treatment.

Fractures of the talus and calcaneus: the mechanism of injury, clinical manifestations, diagnosis, treatment. Fractures of metatarsal bones and phalanges of fingers. Dislocations of toes. Diagnosis, treatment of injuries of the forefoot.

Management of patients with knee, shin and foot injuries: collection of complaints and anamnesis of trauma; objective examination of the patient; Drawing up a plan for examining the patient; Interpretation of the results of instrumental diagnostic methods; diagnosis; Choosing the treatment method and preparation of a patient treatment plan; Participation in the implementation of a closed reposition of fragments in fractures of the ankles; Substantiation of indications for surgical intervention for knee, shin and foot injuries; drafting of an operative intervention plan; Assistance in arthroscopic surgical interventions for intra-articular knee joint injuries; postoperative management of the patient. Writing a medical history.

### **2.8. Traumatic dislocations of shoulder, forearm, hip**

Dislocations of the shoulder, forearm, hip: classification, mechanism of injury, clinical manifestations, urgent medical care. Methods of elimination of dislocations in large joints, treatment in the post-traumatic period, prevention of complications.

Management of patients with traumatic dislocations in large joints: collection of complaints and anamnesis of trauma; objective examination of the patient; Interpretation of the results of instrumental diagnostic methods; diagnosis; Participation in the reduction of traumatic shoulder dislocation.

## **3. Orthopedics**

### **3.1. Developmental hip dysplasia**

Developmental hip dysplasia: etiology, pathogenesis, pathological anatomy. Degrees of dysplasia of the hip joint and their characteristics. Clinical symptoms of congenital hip dislocation in newborns and children. X-ray and ultrasound diagnosis of various degrees of hip dysplasia. Early detection of hip dysplasia and treatment of patients in the first year of life. Conservative (stretching according to Mau) and surgical treatment of congenital dislocation of the femur in children and adolescents. Preventive examinations of children. Orthopedic care for children in the Republic of Belarus.

Management of patients with hip dysplasia: collection of complaints and anamnesis of the disease; objective examination of the patient; Interpretation of the results of instrumental diagnostic methods; diagnosis; choice of method and preparation of a treatment plan.

### **3.2. Congenital clubfoot**

Congenital clubfoot: frequency, etiology, pathogenesis, pathological anatomy, clinical signs in different age groups. Treatment of congenital clubfoot, depending on the severity and age of the child, medical rehabilitation.

Patients with congenital clubfoot: the collection of complaints and anamnesis of the disease; objective examination of the patient; Interpretation of the results of instrumental survey methods; diagnosis; choice of method and preparation of a treatment plan; Participation in the implementation of the step correction of foot deformation.

### **3.3. Congenital muscular torticollis**

Congenital muscular torticollis: frequency, etiology, pathological anatomy, classification, clinical signs. Treatment of congenital muscular torticollis depending on the severity, type, age of the child, medical rehabilitation.

Management of patients with congenital muscular torticollis: collection of complaints and anamnesis of the disease; objective examination of the patient; Interpretation of the results of instrumental survey methods; diagnosis; choice of method and preparation of a treatment plan.

### **3.4. Osteoarthritis. Spine osteochondrosis**

Etiology and pathogenesis of deforming arthrosis (osteoarthrosis), classification according to the etiology and severity. Clinical manifestations and diagnosis of osteoarthritis. Coxarthrosis. Gonarthrosis. Principles and methods of treatment of osteoarthritis depending on the etiology and stage of the disease development, conservative treatment and indications for surgical treatment. Methods of surgical treatment of osteoarthritis: corrective osteotomy of the pelvis, femur, tibia and their types, joint arthroplasty. Joints replacement. Medical and professional rehabilitation. Etiology, pathogenesis, clinical manifestations and diagnosis of spinal osteochondrosis. Principles and methods of treatment of osteochondrosis of the spine.

Patients with osteoarthritis of large joints: collection of complaints and anamnesis of the disease; objective examination of the patient; Interpretation of the results of instrumental diagnostic methods; diagnosis; choosing the treatment method and preparation of a treatment plan; participation in the surgical treatment of a patient with osteoarthritis; postoperative management of the patient. Writing a medical history.

### **3.5. Posture and types of its disorders. Scoliosis**

Definition of the "posture". Types of posture disorders. Diagnosis and prevention of postural problems.

Scoliosis: definition, etiology, pathogenesis, pathological anatomy, classification, clinical manifestations, X-ray diagnostics. Changes in the cardiovascular and respiratory systems in patients with scoliotic disease. Signs of possible progression of spinal deformity. Modern conservative and surgical treatment of scoliosis. The role of boarding schools in the treatment of patients with scoliotic disease.

Management of patients with scoliosis: collection of complaints and anamnesis of the disease; objective examination of the patient; Interpretation of the results of instrumental diagnostic methods; diagnosis; choosing the treatment method and preparation of a treatment plan.

### **3.6. Bone tumors**

Frequency and prevalence of bone tumors, classification. Characteristics of malignant and benign tumors. Clinical manifestations of bone neoplasm. Additional diagnostic methods in the diagnosis of bone tumors (X-ray, clinical laboratory, computer and magnetic resonance imaging). Treatment of bone tumors, medical and social rehabilitation of patients.

Management of patients with bone tumors: collection of complaints and anamnesis of the disease; objective examination of the patient; Interpretation of the results of instrumental diagnostic methods; diagnosis; choosing the treatment method and preparation of a treatment plan.

### **3.7. Osteochondropathies**

Osteochondropathy: etiology, pathogenesis, pathological anatomy. Clinical manifestations of Leg-Calve-Perthes disease, Osgood-Schlatter, Keller I and II, Scheuermann-Mau. X-ray diagnostics, treatment and prevention of osteochondropathy.

Management of patients with osteochondropathies: collection of complaints and anamnesis of the disease; objective examination of the patient; Interpretation of the results of instrumental diagnostic methods; diagnosis; choosing the treatment method and preparation of a treatment plan.

### **3.8. Static foot deformities**

Etiology, pathogenesis of static foot deformities, its classification. Etiology and pathogenesis of longitudinal and transverse flatfoot. Clinical manifestations and methods of detecting of static foot deformities. Methods of treatment of flatfoot. Hallux valgus: etiology and pathogenesis, progression of the disease, treatment methods. Hammer-toes: causes of development, clinical manifestations, principles of treatment. Indications for conservative and surgical methods of treatment of static foot deformities, medical rehabilitation of patients.

Management of patients with static foot deformities: collection of complaints and anamnesis of the disease; objective examination of the patient; interpretation of the results of instrumental diagnostic methods; diagnosis; choosing the treatment method and preparation of a treatment plan; substantiation of indications for surgical intervention; drafting of an operative intervention plan; assisting in surgical interventions for static foot deformities; postoperative management of the patient. Writing a medical history.

## EDUCATIONAL DISCIPLINE CURRICULAR CHART

Section, topic #	Section (topic) name	number of hours			Equipment	Form of control
		lectures	Practical classes	Self-studying		
<b>1</b>	<b>General Traumatology</b>	<b>6</b>	<b>10</b>	<b>15</b>		
1.1	Introduction to the academic discipline "Traumatology and Orthopedics". Prevention of injuries. Principles and methods of treatment of patients with injuries and diseases of the musculoskeletal system	2	3	3	Computer, visual aids	Computer test, oral interview
1.2	Features of examination of patients with injuries and diseases of the musculoskeletal system	-	2	3	Computer, collection of x-rays, visual aids	Computer test, oral interview, essay
1.3	Regeneration of bone tissue in normal and pathological conditions	-	1	3	Computer, collection of x-rays	Computer test, oral interview
1.4	Multiple and associated injuries	2	2	3	Computer, collection of x-rays	Computer test, oral interview, essay
1.5	Open fractures	2	2	3	Computer, collection of x-rays	Standardized tests, oral interview, essay
<b>2</b>	<b>Clinical Traumatology</b>	<b>2</b>	<b>23</b>	<b>33</b>		
2.1	Fractures and dislocations of the clavicle.	-	5	5	Computer,	Computer test, oral



	Humeral fractures				collection of x-rays	interview
2.2	Injuries of the elbow joint, forearm	-	3	3	Computer, collection of x-rays	Computer test, oral interview, essay
2.3	Injuries of the hand	2	2	4	Computer, collection of x-rays	Computer test, oral interview
2.4	Fractures of the pelvic bones	-	3	5	Computer, collection of x-rays	Computer test, oral interview, essay
2.5	Injuries of the spine	-	3	3	Computer, collection of x-rays	Computer test, oral interview, essay
2.6	Femur fractures	-	3	5	Computer, collection of x-rays	Computer test, oral interview, essay
2.7	Injuries of the knee joint. Fractures of the shin bones. Ankle and foot injuries.	-	3	5	Computer, collection of x-rays	Computer test, oral interview, practical tests
2.8	Traumatic dislocations of shoulder, forearm, hip	-	1	3	Computer, collection of x-rays	Computer test, oral interview, essay
<b>3</b>	<b>Orthopedics</b>	<b>8</b>	<b>17</b>	<b>22</b>		
3.1	Developmental hip dysplasia	1	3	3	Computer, collection of x-rays, visual aids	Colloquium, Computer test, oral interview
3.2	Congenital clubfoot	-	2	2	Computer, collection of x-rays	Computer test, oral interview, essay
3.3	Congenital muscular torticollis	-	1	2	Computer, collection of x-rays	Oral interview, essay
3.4	Osteoarthritis. Spine osteochondrosis	2	4	3	Computer,	Computer test, oral

3.5	Posture and types of its disorders. Scoliosis.	2	1	3	collection of x-rays Computer, collection of x-rays	interview Computer test, oral interview, essay
3.6	Bone tumors	1	1	3	Computer, collection of x-rays	Computer test, oral interview, essay
3.7	Osteochondropathies	-	2	3	Computer, collection of x-rays	Computer test, oral interview, essay
3.8	Static foot deformities	2	3	3	Computer, collection of x-rays	Computer test, oral interview, essay, examination
<b>Total hours</b>		<b>16</b>	<b>50</b>	<b>70</b>		

## **INFORMATION AND INSTRUCTIONAL UNIT**

### **LITERATURE**

#### **Basic (relevant):**

1. Godwin Iwegbu. Orthopedics and trauma for medical students and junior residents. AuthorHouse. Indiana, US. 2012. 389 p.

#### **Additional:**

2. Martha M. Murray, Patrick Vavken, Braden Fleming. Selected References in Trauma and Orthopedics. Springer New York Heidelberg Dordrecht London, 2013, 330 p.

3. Rajesh Malhotra. Mastering orthopedic techniques. Intra-articular fractures. Jaypee Brothers Medical Publishers. New Delhi. 2013. 526 p.

4. Peter V. Giannoudis. Practical procedures in orthopedic surgery. Springer London Dordrecht Heidelberg New York. 2012. 103 p.

### **LIST OF AVAILABLE DIAGNOSTIC TOOLS**

The following forms are used for competences assessment:

1. Oral form:
  - interviews;
  - colloquiums.
2. Written form:
  - tests;
  - control questioning;
  - essays;
  - standardized tests.
3. Oral-written form:
  - examination.
4. Technical form:
  - electronic tests.

### **LIST OF PRACTICAL SKILLS**

1. Identifying of the upper limb axis.
2. Identifying of the lower limb axis.
3. Measurement of the length of the upper limb.
4. Measurement of the length of the lower limb.
5. Determination of the type of limb shortening.
6. Determination of the range of motions in the shoulder joint.
7. Determination of the range of motions in the elbow joint.
8. Determination of the range of motions in the hip joint.
9. Determination of the range of motions in the knee joint.
10. Determination of the range of motions in the ankle joint.

11. Determination of the type of limitation of the range of motions in the joint.
12. Determination of the type of limp.
13. Applying of transport immobilization in the fracture of the humerus.
14. Applying of transport immobilization in case of fracture of the femur.
15. Applying of transport immobilization in the fracture of the lower leg bones.
16. Identification of reliable signs of diaphyseal fracture.
17. Identification the symptoms of meniscal tear.
18. Identification of Guter`s line and triangle.
19. Identification of the “resistance symptom” in case of a dislocation in a large joint.
20. Identification of the Trendelenburg symptom.
21. Identification of the sign of Marks-Ortholani.
22. Identification of symptoms of anterior cruciate ligament injury.
23. Identification of symptoms of tear of the collateral ligaments of the knee joint.
24. Determination of the position of the large femoral trochanter to the Roser-Nelaton line.
25. Identification of the mallet finger deformity.
26. Determination of the type of periostitis in bone tumors.
27. Determination of the type of fragments displacement on the x-ray.

### **LIST OF LECTURES**

1. Introduction to the discipline "Traumatology and Orthopedics". Principles and methods for the treatment of patients with injuries or diseases of musculoskeletal system.
2. Open fractures.
3. Hand injuries, complications, prophylaxis and treatment.
4. Multiple and associated injuries.
5. Poor posture. Scoliosis.
6. Osteoarthritis.
7. Developmental hip dysplasia. Bone tumors.
8. Static foot deformities.

### **LIST OF LABORATORY PRACTICAL STUDIES**

1. Features of examination, principles and methods of treatment of patients with injuries and diseases of the musculoskeletal system.
2. Multiple and associated injuries. Open fractures. Regeneration of bone in normal and pathological conditions.
3. Fractures and dislocations of the clavicle. Shoulder fractures.
4. Injuries of the elbow, forearm. Hand injuries.
5. Fractures of the pelvic bones. Spine injuries.
6. Femoral fractures. Knee joint injuries. Fractures of the shin bones. Ankle joint and foot injuries.


7. Traumatic shoulder, forearm and hip dislocations. Osteoarthritis. Spinal osteochondrosis. Posture disorders. Scoliosis.
8. Developmental hip dysplasia. Congenital clubfoot. Congenital muscular torticollis.
9. Bone tumors. Osteochondropathies. Static foot deformities.

## PROTOCOL OF THE CURRICULUM APPROVAL BY OTHER DEPARTMENTS

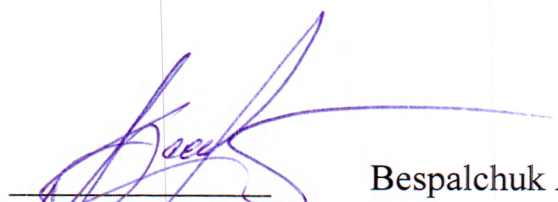
Title of the discipline requiring approval	Department	Amendments to the curriculum of the academic discipline	Decision of the department, which designed the curriculum (date, protocol #)
1. Surgical diseases	1st chair of surgical diseases	No amendments or changes	Protocol #14 of 04.04.17

## COMPILERS/AUTHORS:

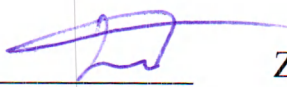
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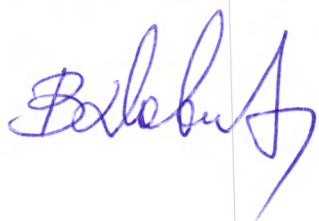
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Curriculum content, composition and accompanying documents comply with  
established requirements.


Dean of the Medical Faculty of  
International Students

24.06 2014

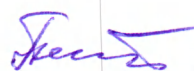
  
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