MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS
Educational Institution
BELARUSIAN STATE MEDICAL UNIVERSITY

APPROVED
by Rector of the Educational Institution «Belarusian State Medical University»
_____ S.P.Rubnikovich
20.11.2024
Reg. # UD-091-050/2425 /edu.

TRAUMATOLOGY AND ORTHOPEDICS

Curriculum of the educational institution in the academic discipline for the specialty

1-79 01 07 «Dentistry»

2024

Curriculum is based on the educational program 1-79 01 07 «Traumatology and Orthopedics», approved on 20.11.2024, registration # УД-091-050/2425/уч.; on the educational plan in the specialty 1-79 01 07 «Dentistry», approved 15.05.2024, registration # 7-07-0911-03/2425/mf.

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RECOMMENDED FOR APPROVAL:

by the Department of Traumatology and Orthopedics with course of advanced training and retraining of the Educational Institution «Belarusian State Medical University» (protocol # 2 of 19.09.2024);

by the Scientific and Methodological Council of the Educational Institution «Belarusian State Medical University»
(protocol # 3 of 20.11.2024)

EXPLANATORY NOTE

«Traumatology and Orthopedics» – the educational discipline of the General Clinical Surgical Module, which contains systematized scientific knowledge about etiology, pathogenesis, mechanisms of injury, clinical manifestations, methods of laboratory and radiological diagnostics, differential diagnosis, comprehensive conservative and surgical treatment, medical rehabilitation and prevention of congenital and acquired diseases and injuries of the musculoskeletal system.

The aim of the discipline «Traumatology and Orthopedics» is the formation of basic professional competencies for solving professional tasks in the diagnosis, treatment and prevention of diseases and injuries in adults and children.

The objectives of the discipline «Traumatology and Orthopedics» are to form students' scientific knowledge among students about the etiology and pathogenesis, clinical manifestations and complications, methods of diagnosis, treatment and prevention of diseases and injuries in adults and children, as well as the skills and abilities necessary for:

the examination of patients with acute trauma, congenital and post-traumatic diseases of the musculoskeletal system;

the diagnosis of the main nosological forms of acute injuries and diseases of the musculoskeletal system;

medical care in emergency situations for injuries of the limbs, pelvis and spine;

immobilization of bone fractures of the limbs, pelvis and spine;

medical rehabilitation of patients with diseases and injuries of the musculoskeletal system.

The knowledge, skills and abilities acquired while studying the academic discipline «Traumatology and Orthopedics» are essential for successful studying the academic disciplines «Maxillofacial Surgery and Outpatient Surgery of the Maxillofacial Area», «Pediatric Maxillofacial Surgery».

A student, who has mastered the content of the academic discipline «Traumatology and Orthopedics», should possess the following basic professional competence: organize and provide medical assistance in emergency.

As a result of studying the discipline «Traumatology and Orthopedics» the student should

know:

types of injuries and their characteristics;

etiology, pathogenesis, clinical presentation, methods of diagnosis, differential diagnosis, treatment and prevention of the most common orthopedic diseases and injuries in patients of different ages;

the degree of emergency medical care for injuries of the musculoskeletal system;

rules of medical ethics and deontology;

be able to:

plan and conduct communicative interaction with the patient based on the assessment of their mental and personal characteristics and individual reaction to the trauma;

conduct a clinical examination of a patient with musculoskeletal injuries;

recognize typical injuries of the musculoskeletal system and skeletal injuries;

provide emergency medical assistance for musculoskeletal injuries;

identify congenital diseases and deformities of the musculoskeletal system and refer patients to specialized healthcare organizations for consultation;

master:

methods of examining a patient with musculoskeletal injuries;

techniques for providing emergency medical assistance for musculoskeletal injuries;

methods of diagnosing injuries, degenerative, inflammatory and metabolic joint diseases.

Total number of hours for the study of the discipline is 48 academic hours, of which 27 classroom hours and 21 hours of student independent work. Classroom hours according to the types of studies: lectures - 9 hours (including 3 hours of supervised student independent work (SSIW)), practical classes - 18 hours.

Intermediate certification is carried out according to the syllabus of the specialty in the module «General Clinical Surgical» (academic disciplines «Traumatology and Orthopedics», «Obstetrics and Gynecology») in the form of differentiated credit (8th semester).

Form of higher education – full-time.

ALLOCATION OF ACADEMIC TIME ACCORDING TO SEMESTERS OF STUDY

Code, name of the specialty	semester	Number of academic hours						Form of intermediate assessment
		total	in-class	including			out-of-class self-studies	
				lectures	supervised student independent work	practical classes		
1-79 01 07 «Dentistry»	4	48	27	6	3	18	21	graded credit

THEMATIC PLAN

Name of the section (topic)	Number of class hours	
	lectures (incl. SSIW)	practical
1. General Traumatology	**4,5**	**6**
1.1. Introduction to the academic discipline «Traumatology and Orthopedics». Peculiarities of examining patients with injuries and diseases of the musculoskeletal system	1,5	–
1.2. Types of injuries and their characteristics	–	1
1.3. First medical care	–	1
1.4. Principles and methods of treating patients with injuries and diseases of the musculoskeletal system	–	1
1.5. Bone tissue regeneration	–	1
1.6. Diaphyseal fractures of long bones	1,5	1
1.7. Open fractures	1,5	1
2. Traumatology	**–**	**6**
2.1. Upper extremity injury	–	2
2.2. Lower extremity injury	–	2
2.3. Spinal and pelvic injuries	–	2
3. Orthopedics	**4,5**	**6**
3.1. Congenital disease	–	2
3.2. Osteoarthritis	1,5	–
3.3. Posture. Scoliosis	1,5	–
3.4. Bone tumors	–	2
3.5. Osteochondropathy	–	1
3.6. Foot deformity	1,5	1
Total hours	**9**	**18**

CONTENT OF THE EDUCATIONAL DISCIPLINE

1. General Traumatology

1.1. Introduction to the academic discipline «Traumatology and Orthopedics». Peculiarities of examining patients with injuries and diseases of the musculoskeletal system

History of the development of traumatology and orthopedics. The contribution of Belarusian orthopedists and traumatologists to the development of modern orthopedics and traumatology. The emblem of orthopedics. Organization of medical care for patients with congenital and acquired diseases and injuries of the musculoskeletal system in the Republic of Belarus.

Peculiarities of examining patients with injuries and diseases of the musculoskeletal system, types of patient positions, methods of determining the axis of the limb, spine, main types of deformations, gait changes. Limping and its types..

Rules of medical ethics and deontology. Principles of humanism, compassion, restraint, professionalism, confidentiality and tolerance. The inadmissibility of formalism and bureaucracy, as well as disdainful attitudes towards patients, colleagues and others in the provision of medical care.

1.2. Types of injuries and their characteristics

Types of injuries and their characteristics: Industrial injuries: distribution based on the nature of the work, leading causes, injuries by profession. Features of the organization of trauma care at various enterprises. Measures for injury prevention. Non-industrial injuries: street, transport, household, sports and children. Distribution of non-industrial injuries by causes. Characteristics of individual types of injuries, clinical manifestations depending on the conditions of occurrence.

1.3. First medical care

Emergency medical assistance for trauma in the prehospital stage: methods of temporary bleeding control, pain relief, transport immobilization for various localizations, protective dressings for open injuries.

1.4. Principles and methods of treating patients with injuries and diseases of the musculoskeletal system

Conservative treatment methods.

Fixation method: types of dressings, application techniques for splints and circular plaster casts, indications for use, advantages and disadvantages, possible complications and their prevention. Extension method: indications for temporary and permanent skeletal traction, application techniques, advantages and disadvantages of the method. Surgical treatment methods: types of osteosynthesis and endoprosthetics, indications, advantages, complications and their prevention.

1.5. Bone tissue regeneration

Physiological and reparative bone tissue regeneration. Stages of callus formation and its types. Primary and secondary bone wound healing. Impaired reparative bone regeneration (nonunion, delayed consolidation, pseudoarthrosis), causes, treatment methods. Types of bone grafts.

1.6. Diaphyseal fractures of long bones

Mechanism of injury (direct and indirect). Mechanogenesis of fragment displacement. Reliable and unreliable clinical signs of fractures. Types of bone fragment displacement. Radiological signs of fractures. Principles and methods of treatment and rehabilitation.

1.7. Open fracture

Peculiarities of open fractures. Classification of open fractures. Clinical manifestations, diagnosis of open fractures, complications. Principles of phased treatment of patients with open fractures. Primary surgical treatment of wounds in open fractures. Methods of treating open fractures and medical rehabilitation.

2. Traumatology

2.1. Upper extremity injury

Clavicle fractures: transport immobilization, clinical manifestations, diagnostic and treatment methods, possible complications.

Clavicle dislocations: transport immobilization, types, clinical manifestations, diagnostic and treatment methods.

Diaphyseal fractures of the humerus: transport immobilization, clinical manifestations, diagnostic and treatment methods, possible complications.

Dislocations of humerus: transport immobilization, types, clinical manifestations, diagnostic and treatment methods.

Fractures of the olecranon: injury mechanism, clinical manifestations, diagnostic and treatment methods, possible complications, features of medical rehabilitation.

Diaphyseal fractures of the forearm bones: injury mechanism, transport immobilization, clinical manifestations, diagnostic and treatment methods.

Distal radius fracture: injury mechanism, transport immobilization, types, diagnostic and treatment methods, consolidation and recovery times.

Scaphoid fractures of the wrist: clinical manifestations, diagnostic methods, conservative and surgical treatment methods.

Flexor and extensor tendon injuries of the fingers: diagnostic methods, conservative and surgical treatment methods.

Fractures of the metacarpal bones and phalanges of the fingers: diagnostic and treatment methods

2.2. Lower extremity injury

Hip dislocation: injury mechanism, types, clinical manifestations, diagnostic and treatment methods, features of medical rehabilitation.

Proximal femur fractures: types and peculiarities of treatment strategy, clinical manifestations, diagnostic methods, treatment and medical rehabilitation.

Diaphyseal fractures of the femur: transport immobilization, mechanogenesis of fragment displacement, clinical manifestations, diagnostic and treatment methods, complications.

Knee joint contusion, hemarthrosis: clinical manifestations, diagnostic and treatment methods.

Meniscus and ligament injuries of the knee joint: injury mechanism, clinical manifestations, diagnostic and treatment methods.

Patella fractures: injury mechanism, clinical presentation, diagnostic methods, conservative and surgical treatment methods.

Diaphyseal fractures of the lower leg bones: clinical manifestations, transport immobilization, diagnostic methods, conservative and surgical treatment methods.

Ankle fractures: injury mechanism, transport immobilization, diagnostic and treatment methods.

Metatarsal bone and toe phalanx fractures, toe dislocations: diagnostic and treatment methods.

2.3. Spinal and pelvic injuries

Classification of spinal injuries, mechanism of injury. Stable spinal injuries: localization, diagnostic and treatment methods in inpatient and outpatient settings. Unstable spinal injuries: mechanism of injury, typical localization of injuries, diagnostic principles, treatment methods. Complicated spinal injuries: scope of emergency medical care, modern treatment methods.

Classification of pelvic injuries, mechanism of various injury variants. Clinical manifestations and diagnostic methods of complicated and uncomplicated pelvic fractures. Emergency medical care for pelvic fractures. Conservative and surgical treatment methods of various types of pelvic fractures.

3. Orthopedics

3.1. Congenital disease

Causes contributing to the occurrence of congenital orthopedic pathology (endogenous, exogenous, genetic).

Congenital hip dislocation: etiology, pathogenesis, clinical symptoms in newborns and older children, radiological and ultrasound diagnostics, principles of conservative and surgical treatment.

Congenital clubfoot: incidence, etiology, clinical signs in different age groups, treatment principles depending on the severity of the pathology and the age of the child.

Torticollis: incidence, types, etiology, clinical signs, treatment principles depending on the severity, type of pathology and age of the child.

3.2. Osteoarthritis

Classification, etiology and pathogenesis of osteoarthritis. Clinical manifestations and diagnostics of osteoarthritis. Hip osteoarthritis. Knee osteoarthritis. Osteoarthritis of the temporomandibular joint. Principles and methods of treating osteoarthritis depending on etiology and stage of the disease. Conservative treatment of osteoarthritis and indications for surgical treatment. Joint replacement. Medical and professional rehabilitation of patients.

3.3. Posture. Scoliosis

Definition of «posture», types of its disorders. Diagnosis and prevention of posture defects.

Scoliosis: classification, etiology, pathogenesis, clinical manifestations, diagnostic methods. Maxillofacial deformities in patients with scoliosis (distal bite, sagittal gap, deep incisal overlap, etc.). Signs of possible progression of scoliosis. Principles of conservative and surgical treatment of scoliosis. Identification of clinical signs of scoliosis.

3.4. Bone tumors

Frequency and prevalence of bone tumors, classification. Characteristics of malignant and benign bone tumors. Clinical manifestations and radiological diagnosis of bone tumors. Determination of the type of periostitis in bone tumors.

3.5. Osteochondropathy

Etiology, pathogenesis, pathological anatomy of osteochondropathies. Clinical manifestations, radiological diagnosis, principles of treatment of osteochondropathies.

Features of the course of Legg-Calvé-Perthes disease, Osgood-Schlatter disease, Köhler disease I and II, Scheuermann's disease.

3.6. Foot deformity

Classification, etiology and pathogenesis of static foot deformities. Etiology and pathogenesis of longitudinal and transverse flatfoot. Clinical manifestations and methods of identifying static foot deformities. Methods of treating the flattened arch of the foot. Etiology and pathogenesis of hallux valgus, the course of the disease, treatment methods. Causes of development, clinical manifestations of hammer toe deformities, principles of treatment, indications for the use of conservative and surgical treatment methods.

ACADEMIC DISCIPLINE CURRICULAR CHART

Section, topic #	Section (topic) name	Number of hours		Supervised student independent work	Literature	Practical skills	Form of control	
		lectures	practical				of practical skills	of current / intermediate assessment
	Lectures	**6**	–	**3**				
1.	Features of examining patients with injuries and diseases of the musculoskeletal system. Principles and methods of treating patients with injuries and diseases of the musculoskeletal system	1,5	–	–	1-4			
2.	Diaphysis fracture of long bones	1,5	–	–	1-4			
3.	Open fracture	1,5	–	–	1-4			
4.	Osteoarthritis	–	–	1,5	1-4			Oral questioning
5.	Posture. Scoliosis	–	–	1,5	1-4			Electronic testing
6.	Foot deformities	1,5	–	–	1-4			
	Practical lessons	–	**18**	–				
1.2-1.7	Introduction to the academic discipline «Traumatology and Orthopedics». Peculiarities of examining patients with injuries and diseases of the musculoskeletal system. Types of injuries and their characteristics. First medical care. Principles and methods of treating patients with injuries and diseases of the musculoskeletal system. Bone	–	6	–	1-4	Determining the axis of the upper limb. Determining the axis of the lower limb. Identifying the absolute signs of diaphyseal fracture	Solving situational problems	Oral questioning, electronic testing, solving situational problems

	tissue regeneration. Diaphyseal fractures of long bones. Open fracture							
2.1-2.3	Upper extremity injury. Lower extremity injury. Spinal and pelvic injuries	–	6	–	1-4	Transport immobilization for humerus fractures. Transport immobilization for femur fractures. Transport immobilization for lower leg bone fractures. Identifying the absolute signs of diaphyseal fracture	Solving situational problems*	Oral questioning, electronic testing, solving situational problems
3.1, 3.4-3.6	Congenital disease. Osteoarthritis. Posture. Scoliosis. Bone tumors. Osteochondropathy. Foot deformity	–	6	–	1-4	Determination of the type of periostitis in bone tumors. Identification of clinical signs of scoliosis	Solving situational problems*	Oral questioning, electronic testing*, solving situational problems Graded credit
		6	**18**	**3**				

*This is a mandatory form of current certification (each student will receive a mark)

INFORMATION AND INSTRUCTIONAL UNIT

LITERATURE

Basic:

1. Garkavi, A. V. Traumatology and orthopedics : textbook / A. V. Garkavi, A. V. Lychagin. – Moskow : Geotar-Media, 2023. – 781 p.

Additional:

2. Aitken, M. J. Rheumatology and orthopaedics / M. J. Aitken, A. Gibson. – 4th ed. – Elsevier, 2019. – 229 p.

3. Traumatology and orthopedics : textbook for students of higher medical schools IV level of accreditation / O. A. Burianov [и др.]. - Vinnytsia : Nova Knyha, 2018. - 400 p.

Electronic courseware for the academic discipline «Traumatology and Orthopedic»

4. https://etest.bsmu.by/course/index.php?categoryid=10&browse=courses&perpage=20&page=3

METHODOLOGICAL RECOMMENDATIONS FOR THE ORGANIZATION AND PERFORMANCE OF STUDENT INDEPENDENT WORK IN THE ACADEMIC DISCIPLINE

The time allocated for independent work can be used by students for:
preparing for lectures, practical classes;
preparing for the graded credit in the academic discipline;
working through topics (questions) designated for independent study;
solving situational problems;
preparing thematic reports, essays, presentations;
completing practical assignments;
compiling thematic collections of literary sources, internet sources;
creating tests for organizing peer review.

METHODOLOGICAL RECOMMENDATIONS FOR THE ORGANIZATION AND PERFORMANCE OF SUPERVISED STUDENT INDEPENDENT WORK IN THE ACADEMIC DISCIPLINE

APPROXIMATE LIST OF TASKS FOR SUPERVISED STUDENT INDEPENDENT WORK:

preparing thematic reports, essays, presentations;

summarizing primary sources (collections of documents, monographs, educational publications, etc.)

FORMS OF CONTROL OF SUPERVISED STUDENT INDEPENDENT WORK:

oral questioning;
electronic testing.

LIST OF AVAILABLE DIAGNOSTIC TOOLS

To diagnose competencies, the following forms of current assessment are used:
oral questioning;
electronic testing;
solving situational problems.

LIST OF AVAILABLE TEACHING METHODS

Traditional method.
Active (interactive) methods:
Problem-Based Learning (PBL);
Team-Based Learning (TBL);
Case-Based Learning (CBL);
Research-Based Learning (RBL).

LIST OF PRACTICAL SKILLS

Name of practical skills	Form of practical skills control
1. Determining the axis of the upper limb	Solving situational problems
2. Determining the axis of the lower limb	Solving situational problems
3. Transport immobilization for humerus fractures	Solving situational problems
4. Transport immobilization for femur fractures	Solving situational problems
5. Transport immobilization for lower leg bone fractures	Solving situational problems
6. Identifying the absolute signs of diaphyseal fracture	Solving situational problems
7. Determination of the type of periostitis in bone tumors	Solving situational problems
8. Identification of clinical signs of scoliosis	Solving situational problems

PROTOCOL OF THE CURRICULUM APPROVAL BY OTHER DEPARTMENTS

Title of the discipline requiring approval	Department	Amendments to the curriculum in the academic discipline	Decision of the department, which designed the curriculum (date, protocol #)
1. Maxillofacial surgery and outpatient maxillofacial surgery	Maxillofacial Surgery and Facial Plastic Surgery with an advanced training and retraining course	Agreed. No additions or changes.	Protocol #2 of 19.09.2024
2. Pediatric Maxillofacial Surgery	Maxillofacial Surgery and Facial Plastic Surgery with an advanced training and retraining course	Agreed. No additions or changes.	Protocol #2 of 19.09.2024

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Assistant Professor of the Department of Traumatology and Orthopedics with course of advanced training and retraining of the educational institution «Belarusian State Medical University» _____ A.D.Titova

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

Head of the Office of Educational Activities of the educational institution «Belarusian State Medical University» I.L.Kotovich

18.11.2024

Methodologist of the Educational and Methodological department of the Office of Educational Activities of the educational institution «Belarusian State Medical University» S.V.Zaturanova