



**INTEGRATED ACADEMIC
MEDICAL STUDIES**

THIRD YEAR OF STUDIES

school year 2023/2024.

SPORTS MEDICINE

Subject:

SPORTS MEDICINE

The course is evaluated with 4 ECTS. There are 3 active classes per week (2 classes of lectures and 1 class of small group activities).

TEACHERS AND ASSOCIATES:

No	Name and surname	E-mail address	Title
1.	Vladimir Jakovljević	drvladakgbg@yahoo.com	Full professor
2.	Gvozden Rosic	grosic@medf.kg.ac.rs	Full professor
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10.	Jovan Milosavljević	jovan.milosavljevic1997@gmail.com	Facilitator

COURSE STRUCTURE:

	Name of the subject	Week	Lectures	Work in a small group	Teacher-head of the course
1	Sports medicine	15	2	1	Prof. Dr. Ivan Srejović
					$\Sigma 30+15=45$

ASSESSMENT:

The grade is equivalent to the number of points won (see tables). Points are earned in two ways:

1. ACTIVITY DURING THE LESSON:In this way, a student can earn up to 50 points:

A. WEEKLY EXAMINATION: In a special part of the work in a small group, the student answers the exam questions from the previous week of classes and receives 0-1 points according to the demonstrated knowledge. In this way, he can gain a maximum of 15 points.

B. MODULE TEST: The module test is conducted after the 11th week of classes and includes material from the first 10 weeks of classes. The test has 35 questions. In this way, a student can obtain a maximum of 35 points. A student must achieve more than half of the points in both forms of activity during class (8 for the weekly test, 18 for the module test) in order to pass this part of the exam and gain the right to take the final exam.

2. FINAL EXAM:The final exam is organized as a final test. The test consists of 50 questions. Each correct answer is worth 1 point. In this way, the student can obtain a maximum of 50 points. If the student achieves 26 or more points on the test, the final exam has been passed.

A student has the right to take the final test if he has achieved more than 50% of the points provided for the weekly exam and the module test for the activity during the lesson.

Postponed passing of the final test (in subsequent exam periods) does not reduce the number of points used to define the final grade.

The final grade is formed as follows:

In order to pass the course, the student must obtain a minimum of 51 points.

To pass the student must:

1. acquires more than 50% of the points for the activity during the teaching
2. obtains more than 50% points on the module test
3. pass the final exam, i.e. have more than 50% correct answers on the final test.

number of points won	rating
0 - 50	5
51-60	6
61-70	7
71-80	8
81-90	9
91 – 100	10

LITERATURE:

SUBJECT	TITLE OF THE TEXTBOOK	THE AUTHORS	PUBLISHER	THE LIBRARY
SPORTS MEDICINE	Medical Physiology (Tenth or Eleventh Edition Translation)	Guyton AC, Hall JE	Contemporary administration, Belgrade, 2003.	Has
	Ganong's Review of Medical Physiology, first edition in Serbian.	Ganong William. Vladimir Jakovljević editor-in-chief	Faculty of Medical Sciences, Kragujevac 2015.	Has

All lectures and material for small group work are available on the website of the Faculty of Medical Sciences: www.medf.kg.ac.rs

THE PROGRAM:

TEACHING UNIT 1 (FIRST WEEK):

INTRODUCTION TO SPORTS MEDICINE

lectures - 2 classes

small groups activities - 1 class

Historical aspects of sports medicine. Physical activity. Physical ability.

Body composition analysis - basic anthropometric measurements.

TEACHING UNIT 2 (SECOND WEEK):

PHYSIOLOGICAL BASIS OF MUSCLE CONTRACTION

lectures - 2 classes

small groups activities - 1 class

Neuromuscular junction. Morpho-physiological characteristics of striated muscles. Contraction of striated muscles. Types of contractions and motor unit. Types of muscle fibers and sports. Work, strength and muscle fatigue.

Dynamometry.

TEACHING UNIT 3 (THIRD WEEK):

HOMEOSTATIC MECHANISMS AND PHYSICAL ACTIVITY

lectures - 2 classes

small groups activities - 1 class

Regulation of acid-base balance: chemical and physiological buffers. Regulation of glycemia. Regulation of calcium levels in the body. Regulation of protein metabolism.

Influence of homeostatic mechanism disorders.

UNIT 4 (FOURTH WEEK):

ADAPTATION OF THE BODY TO PHYSICAL ACTIVITY

lectures - 2 classes

small groups activities - 1 class

Definition and basic principles of training. Effects of body adaptation to aerobic training. Effects of body adaptation to anaerobic training. Neuromuscular adaptation to training. Metabolic adaptation to training. Neuroendocrine adaptation to training. Cardiovascular adaptation to training.

Assessment of the degree of adaptation of the organism to physical activity.

UNIT 5 (FIFTH WEEK):

BIOENERGETIC DETERMINANTS OF PHYSICAL ABILITY

lectures - 2 classes

small groups activities - 1 class

Building and energetic role of nutrients. Sources of energy in the human body. Anabolism and catabolism. Anaerobic energy resources and anaerobic capacity. Energy provision of muscle work of different duration.

Determination of aerobic and anaerobic capacity.

UNIT 6 (SIXTH WEEK):

FUNCTIONAL DETERMINANTS OF PHYSICAL ABILITY

lectures - 2 classes

small groups activities - 1 class

Functional ability of the cardiovascular system. Functional ability of the respiratory system. Functional ability of the musculoskeletal system.

Ergospirometry

UNIT 7 (SEVENTH WEEK):

BASIC PRINCIPLES OF HYDRATION IN SPORTS

lectures - 2 classes

small groups activities - 1 class

Changes in water-salt balance during physical exertion. Ionic homeostasis during prolonged physical activity. Effects of dehydration on the body. Principles of proper and timely hydration in sports.

Assessment of the degree of hydration and timely hydration.

UNIT 8 (EIGHTH WEEK):

BASIC PRINCIPLES OF NUTRITION IN SPORTS

lectures - 2 classes

small groups activities - 1 class

Nutritional needs of athletes. Basic principles of correct and timely nutrition for athletes. The influence of nutritional correction on the metabolic status of the organism.

Assessment of nutrition and body composition correction mechanisms.

UNIT 9 (NINTH WEEK):

VITAMINS, MINERALS AND AMINO ACIDS AS SUPPLEMENTS IN SPORTS

lectures - 2 classes

small groups activities - 1 class

exercises 1 hour Basic characteristics of vitamins and minerals as nutritional supplements. The influence of the most important vitamins and minerals on metabolic processes and the function of organic systems. Amino acids and proteins as dietary supplements. The influence of the use of amino acids and proteins on metabolic processes and the function of organic systems.

The most common practical questions related to the use of supplements.

UNIT 10 (TENTH WEEK):

INJURIES AND DISEASES OF THE LOCOMOTIVE APPARATUS

lectures - 2 classes

small groups activities - 1 class

Acute injuries in sports. Deformations of the spinal column and back pain. Flat feet.

Basic principles of care for sports injuries.

UNIT 11 (ELEVENTH WEEK):

SPORTS CARDIOLOGY

lectures - 2 classes

small groups activities - 1 class

Methodology of cardiological examination of athletes. Sports heart. The most common cardiological conditions and diseases in athletes. The most important cardiac diseases that can lead to sudden cardiac death.

Electrocardiography in sports medicine.

UNIT 12 (Twelfth Week):

DOPING IN SPORTS AND DOPING CONTROL

lectures - 2 classes

small groups activities - 1 class

Doping control. Prohibited substances. Exemption for therapeutic use.

Doping control.

UNIT 13 (THIRTEENTH WEEK):

THE CONCEPT OF STRESS AND THE RELATIONSHIP BETWEEN STRESS AND PHYSICAL ACTIVITY

lectures - 2 classes

small groups activities - 1 class

Stress theory, stages of stress, stressor. The role of sports and recreation according to the modern theory of functional systems in the adaptation of the organism to the harmful effects of stress. The occurrence of overtraining, its implication on the functional abilities of athletes. Chronobiology and its importance in sport. Circadian rhythms.

Assessment of the response and adaptation of the organism to stress.

UNIT 14 (FOURTEENTH WEEK):

PSYCHOLOGY OF SPORTS AND EXERCISE

lectures - 2 classes

small groups activities - 1 class

Exercise and mental health. Psychological characteristics of athletes. Eating disorders in sports.

Analysis of cognitive abilities in sports.

UNIT 15 (FIFTEENTH WEEK):

FUNCTIONAL CHARACTERISTICS AND PHYSICAL ACTIVITY OF SPECIAL GROUPS

lectures - 2 classes

small groups activities - 1 class

Functional characteristics and physical activity of children. Functional characteristics and physical activity of women. Functional characteristics and physical activity of old people.

Assessment of physical ability of special groups.

WEEKLY COURSE SCHEDULE

COURSE	THURSDAY	FRIDAY
SPORTS MEDICINE (2+1)	LECTURES 12:15 - 13:45 Small Hall (H4)	PRACTICE 13:15 - 16:15 (R9-1, R9-2) Biochemical practice room 1 (R9-1) Biochemical practice room 2 (R9-2)

Sunday	type	Method unit name	A teacher
1	L	Introduction to sports medicine.	Prof. Dr. Ivan Srežović
1	SGA	Body composition analysis - basic anthropometric measurements.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srežović Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević
2	L	Physiological basis of muscle contraction.	Prof. Dr. Gvozden Rosić
2	SGA	Dynamometry.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srežović Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević
3	L	Homeostatic mechanisms and physical activity.	Prof. Dr. Gvozden Rosić

Sunday	type	Method unit name	A teacher
3	SGA	Influence of homeostatic mechanism disorders.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srejšević Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević
4	L	Adaptation of the organism to physical activity.	Prof. Dr. Vladimir Živković
4	SGA	Assessment of the degree of adaptation of the organism to physical activity.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srejšević Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević
5	L	Bioenergetic determinants of physical ability.	Asst. Dr. Jovana Joksimović Jović
5	SGA	Determination of aerobic and anaerobic capacity.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srejšević Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević

Sunday	type	Method unit name	A teacher
6	L	Functional determinants of physical ability.	Prof. Dr. Vladimir Živković
6	SGA	Examination of functional abilities.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srejšović Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević
7	L	Basic principles of hydration in sports.	Prof. Dr. Vladimir Jakovljević
7	SGA	Assessment of the degree of hydration and timely hydration.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srejšović Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević
8	L	Basic principles of nutrition in sports.	Prof. Dr. Vladimir Živković

Sunday	type	Method unit name	A teacher
8	SGA	Assessment of nutrition and body composition correction mechanisms.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srežović Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević
9	L	Vitamins, minerals and amino acids as supplements in sports.	Prof. Dr. Vladimir Jakovljević
9	SGA	The most common practical questions related to the use of supplements.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srežović Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević
10	L	Injuries and diseases of the locomotive apparatus.	Prof. Dr. Ivan Srežović
10	SGA	Basic principles of care for sports injuries.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srežović Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević

Sunday	type	Method unit name	A teacher
11	L	Sports cardiology.	Prof. Dr. Vladimir Živković
11	SGA	Electrocardiography in sports medicine.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srejšević Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević
MODULE TEST			
12	L	Doping in sports and doping control.	Asst. Dr. Jasmina Sretenović
12	SGA	Doping control.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srejšević Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević
13	L	The concept of stress and the connection between stress and physical activity.	Prof. Dr. Dragica Selaković

Sunday	type	Method unit name	A teacher
13	SGA	Assessment of the response and adaptation of the organism to stress.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srejšović Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević
14	L	Psychology of sport and exercise.	Prof. Dr. Dragica Selaković
14	SGA	Analysis of cognitive abilities in sports.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srejšović Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević
15	L	Functional characteristics and physical activity of special groups.	Prof. Dr. Ivan Srejšović
15	SGA	Assessment of physical ability of special groups.	Prof. Dr. Vladimir Jakovljević Prof. Dr. Gvozden Rosić Prof. Dr. Suzana Pantović Prof. Dr. Vladimir Živković Prof. Dr. Ivan Srejšović Prof. Dr. Dragica Selaković Asst. Dr. Jovana Joksimović Jović Asst. Dr. Jasmina Sretenović Asst. Dr. Maja Murić Asst. Marina Nikolić Dr. Jovan Milosavljević

Sunday	type	Method unit name	A teacher
	E	FINAL EXAM (June deadline)	