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Federal State Budget Educational Institution
of Higher Education
Pacific State Medical University
of the Ministry of Health of the Russian Federation

APPROVED BY

Head of the Department
of Pharmacology and Clinical Pharmacology
_____/ Eliseeva E.V
"8th" of April 2026

SUBJECT GUIDE FOR TEACHERS AND STUDENTS FOR

B1.V.EC.04.01 Pharmacology and drug control in sports

(Name of discipline)

Specialty	**31.05.01 General Medicine (English-language program)** (code, name)
Degree	Specialist's degree
Profile	02 "Healthcare" (in the field of providing primary health care to the population in medical organizations: polyclinics, outpatient clinics, inpatient/outpatient facilities of the municipal health care system)
Mode of study	**Full-time**
Period of mastering the BEP	**6 years** (nominal length of study)
Department	of Pharmacology and Clinical Pharmacology

Vladivostok, 2026

Subject guide for teachers and students for **B1.V.EC.04.01 Pharmacology and drug control in sports** is based on:
1) Federal State Educational Standard of Higher Education for the specialty approved by the Order No. 988 of Ministry of Science and Higher Education of the Russian Federation
dated August 12, 2020.

2) Curriculum for the 31.05.01 General Medicine (English-language program), profile 02 "Healthcare" (in the field of providing primary health care to the population in medical organizations: polyclinics, outpatient clinics, inpatient/outpatient facilities of the municipal health care system), approved by the Academic Council of FSBEI HE PSMU of the Ministry of Health of Russia, Report No. 1-7/25-26 dated March 27, 2026.

Subject guide for teachers and students for **B1.V.EC.04.01 Pharmacology and drug control in sports** was developed by the writing team of the Department of Pharmacology and Clinical Pharmacology of the FSBEI HE PSMU of the Ministry of Health of Russia, under the guidance of the head of the department, Doctor of Medical Sciences, professor Eliseeva E.V.

Developed by:

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1. GENERAL PROVISIONS

Subject guide for **B1.V.EC.04.01 Pharmacology and drug control in sports** is a set of recommendations and explanations that facilitate to optimal organization of mastering this discipline.

Regular analysis of lecture materials and work with end-of-the-text questions are necessary for better understanding of the material and systematization of knowledge of **B1.V.EC.04.01 Pharmacology and drug control in sports**. Particular attention should be paid to emerging questions, confusing terms, and conflicts of points of view during the independent review of the lecture material. If necessary, a student should contact the teacher for advice. Lecture material streamlines students' thinking, while practical classes provide deeper insight into the material of the discipline.

Special attention should be paid to the content of the main provisions and conclusions, explanation of phenomena and facts, and clarification of the practical application of theoretic aspects of topic when preparing for a practical class. During this process students should aim to understand and remember the main provisions of the material under consideration, examples provided, as well as understand the illustrative material.

Collections of assessment tools are used to organize independent study of topics of **B1.V.EC.04.01 Pharmacology and drug control in sports**.

Independent work of students is facilitated by the following:

1. availability and accessibility of the necessary educational and reference material;
2. a system of regular quality control of completed independent work;
3. availability of teacher's advice.

Subject guides for self-study are presented as literary sources. Subject guides for independent work of students include a list of library resources of the educational institution and other materials accessible to students.

Independent work is a type of in-person extracurricular work of teachers and students of **B1.V.EC.04.01 Pharmacology and drug control in sports**. Control of independent work is conducted by the leading teacher. Evaluation of independent work results is taken into account when conducting interim examination of students throughout the **B1.V.EC.04.01 Pharmacology and drug control in sports** course.

Continuous assessment during **B1.V.EC.04.01 Pharmacology and drug control in sports** course is implemented in order to check indicators of achieving competencies, to stimulate students' academic work, and improve methods of mastering new knowledge. Continuous assessment during **B1.V.EC.04.01 Pharmacology and drug control in sports** course is conducted during the semester to assess all types and sections of the academic discipline that encompass the competencies developed by the discipline: classroom questioning, conducting discussions, working with tests, preparing reports. Continuous assessment of students' knowledge and results of their preparation for practical classes is conducted during every class session.

Interim assessment aims to determine the level of mastery of competency indicators. It is conducted in the exam format after the student has mastered all sections of **B1.V.EC.04.01 Pharmacology and drug control in sports** and takes into account learning outcomes for all types of student work over the entire period of mastering **B1.V.EC.04.01 Pharmacology and drug control in sports** course.

Time allotted for interim assessment is indicated in the schedule.

Assignments given during practical classes, as well as assignments aimed to prepare students for continuous and interim assessment, are included in the collection of assessment tools for **B1.V.EC.04.01 Pharmacology and drug control in sports**. If necessary, students should contact the teacher for advice. It is necessary to thoroughly think over questions that need clarification before seeking teacher's advice.

2. SUBJECT GUIDES FOR LECTURE CLASSES

Table 1. Subject Guides for **B1.V.EC.04.01 Pharmacology and drug control in sports** Lectures

Topic No.2 List of prohibited substances and methods. Prohibited classes of substances: stimulants and anabolic hormones	
Duration of the lecture (in academic hours):	2
Purpose of the lecture: 1. tell students about prohibited classes of substances: stimulants and anabolic hormones; 2. define stimulants and anabolic hormones; 3. examine pharmacokinetics and pharmacodynamics of stimulants and anabolic hormones.	
Lecture plan, order of presentation of its sections: - List of prohibited substances and methods - Clinical and pharmacological characteristics of stimulants: o Amphetamines o Phenylalkylsydnonimine derivatives (mesocarb) o Ephedrine and its derivatives o Caffeine o Cocaine o Adamantane derivatives - Clinical and pharmacological characteristics of anabolic hormones: o Exogenous anabolic steroids o Endogenous anabolic agents o Other anabolic agents	
Recommended literature 1. Sports medicine : studies. the manual [Electronic resource]. E. Yu. Andrianova. M.: Издательство Юрайт, 2024. - 341 с. URL: https://www.urait.ru/. 2. Pharmacology in the practice of sports [Electronic resource]. O. S. Kulinenkov. M.: Sport, 2024. - 256 с. URL: http://www.studentlibrary.ru. 3. Anti-doping policy in sports: textbook [Electronic resource]. A.B. Miroshnikov, A.V. Smolensky, A.V. Shevtsov. M.: Sport, 2024. - 354 с. URL: http://www.studentlibrary.ru. 4. Guidelines on anti-doping control in sports for sports doctors, coaches, nutritionists, students of medical and sports universities, athletes [Electronic resource]. A.B. Miroshnikov, A.V. Smolensky, O. I. Belichenko. M.: Советский спорт, 2022. - 152 с. URL: http://www.studentlibrary.ru. 5. Fundamentals of anti-doping support for sports: textbook. the manual [Electronic resource]. E. N. Bezuglova, E. E. Achkasova. M.: Sport, 2019. - 288 с. URL: http://www.studentlibrary.ru.	
Topic No.3 Prohibited substances: narcotics, diuretics, peptide and glycoprotein hormones and their analogs	
Duration of the lecture (in academic hours):	2
Purpose of the lecture: 1. tell students about prohibited classes of substances: narcotics, diuretics, peptide and glycoprotein hormones and their analogs; 2. define and provide classification of these substances; 3. examine pharmacokinetics and pharmacodynamics of these substances.	
Lecture plan, order of presentation of its sections: 1. Clinical and pharmacological characteristics of narcotics	

2. Clinical and pharmacological characteristics of diuretics (pharmacological and adverse effects, emergency medical aid)
3. Clinical and pharmacological characteristics of peptide and glycoprotein hormones and their analogs
    - Erythropoietin
    - Growth hormone and insulin-like growth factor
    - Human chorionic gonadotropin
    - Pituitary and synthetic gonadotropins
    - Insulin
    - Corticotrophins

Recommended literature

1. Sports medicine : studies. the manual [Electronic resource]. E. Yu. Andrianova. M.: Издательство Юрайт, 2024. - 341 с. URL: https://www.urait.ru/.
2. Pharmacology in the practice of sports [Electronic resource]. O. S. Kulinenkov. M.: Sport, 2024. - 256 с. URL: http://www.studentlibrary.ru.
3. Anti-doping policy in sports: textbook [Electronic resource]. A.B. Miroshnikov, A.V. Smolensky, A.V. Shevtsov. M.: Sport, 2024. - 354 с. URL: http://www.studentlibrary.ru.
4. Guidelines on anti-doping control in sports for sports doctors, coaches, nutritionists, students of medical and sports universities, athletes [Electronic resource]. A.B. Miroshnikov, A.V. Smolensky, O. I. Belichenko. M.: Советский спорт, 2022. - 152 с. URL: http://www.studentlibrary.ru.
5. Fundamentals of anti-doping support for sports: textbook. the manual [Electronic resource]. E. N. Bezuglova, E. E. Achkasova. M.: Sport, 2019. - 288 с. URL: http://www.studentlibrary.ru

3. SUBJECT GUIDES FOR PRACTICAL CLASSES

Table 2. Subject Guides for Practical **B1.V.EC.04.01 Pharmacology and drug control in sports** Classes

Topic No.2 Pharmacological characteristics of stimulants and anabolic hormones	
Duration of the practical class (in academic hours):	4
Purpose of the practical class: 1. consolidate knowledge acquired during lectures and independent work; 2. during the discussion, outline aspects of the effect of stimulants on the human body and their pharmacological effects; 3. thoroughly go over pharmacological effect of exogenous agents, anabolic hormones in sports: improved strength, increased muscle mass, decreased body fat percentage, increased respiratory rate and endurance, improved muscle vascularity, reduced recovery time after injuries and intense exercise, ability to perform exercise of higher length or intensity; 4. identify adverse effects of anabolic hormones; 5. examine pharmacodynamics and pharmacokinetics of endogenous anabolic agents (androgens) and other anabolic agents.	
Practical classes requirements: classrooms equipped with multimedia equipment, blackboards, and subject guides for the discipline.	
Independent work of the student: 1. Preparing for practical classes, writing a report on the results of independent work 2. Working with educational materials 3. Working with a case study 4. Preparing for continuous assessment	

5. Preparing a library-research paper
Library-research paper topics:

- Anabolic agents
- Amino acids
- Anti-catabolic agents
- Protein and carbohydrate-protein cocktails and supplements
- Means of urgent compensation of energy expenditure
- Substances and methods improving aerobic endurance and performance

Methods of evaluation of acquired knowledge and skills: classroom questioning, tests.

Recommended reading:

1. Sports medicine : studies. the manual [Electronic resource]. E. Yu. Andrianova. M.: Издательство Юрайт, 2024. - 341 с. URL: https://www.urait.ru/.
2. Pharmacology in the practice of sports [Electronic resource]. O. S. Kulinenkov. M.: Sport, 2024. - 256 с. URL: http://www.studentlibrary.ru.
3. Anti-doping policy in sports: textbook [Electronic resource]. A.B. Miroshnikov, A.V. Smolensky, A.V. Shevtsov. M.: Sport, 2024. - 354 с. URL: http://www.studentlibrary.ru.
4. Guidelines on anti-doping control in sports for sports doctors, coaches, nutritionists, students of medical and sports universities, athletes [Electronic resource]. A.B. Miroshnikov, A.V. Smolensky, O. I. Belichenko. M.: Советский спорт, 2022. - 152 с. URL: http://www.studentlibrary.ru.
5. Fundamentals of anti-doping support for sports: textbook. the manual [Electronic resource]. E. N. Bezuglova, E. E. Achkasova. M.: Sport, 2019. - 288 с. URL: http://www.studentlibrary.ru
6. Pharmacology, Textbook [Электронный ресурс] Kharkevitch D.A. M. : ГЭОТАР-Медиа, 2018. - 2nd edition. - 680 pages with illustrations. - 680 с. - ISBN 978-5-9704-4307-1. - Текст : электронный // ЭБС "Консультант студента" : [сайт]. - URL : https://www.studentlibrary.ru/book/ISBN9785970443071.html
7. Pharmacology. Illustrated textbook (“Электронный ресурс) Alyautdin R.N. Москва : ГЭОТАР-Медиа, 2020. - 312 с. - ISBN 978-5-9704-5665-1. - Текст : электронный // ЭБС "Консультант студента" : [сайт]. - URL : https://www.studentlibrary.ru/book/ISBN9785970456651.html
8. Pharmacology: practical manual [Электронный ресурс] A. I. Vengerovsky. Kogay L. V.
9. Pharmacology: practical manual / L. V. Kogay, O. E. Vaizova, A. I. Vengerovsky. - Томск: Издательство СибГМУ, 2019. - 230 с. - Текст: электронный // ЭБС "Букап" : [сайт]. - URL : https://www.books-up.ru/ru/book/pharmacology-practical-manual-10236726/.

Topic No.3 Pharmacological characteristics of prohibited substances: narcotics, diuretics, peptide and glycoprotein hormones and their analogs

Duration of the practical class (in academic hours):	6

Purpose of the practical class:
1. consolidate knowledge acquired during lectures and independent work;
2. during the discussion, outline aspects of the effect of narcotics, diuretics, peptide and glycoprotein hormones and their analogs;
3. thoroughly go over pharmacological effect of peptide and glycoprotein hormones and their analogs in sports (human chorionic gonadotropin, growth hormone, erythropoietin, insulin-like growth factor, insulin);
4. identify adverse effects of peptide and glycoprotein hormones and their analogs;
5. study pharmacodynamics, pharmacokinetics, and adverse effects of diuretics;
6. examine emergency medical aid in case of adverse effects.

Practical classes requirements: classrooms equipped with multimedia equipment, blackboards, and subject guides for the discipline.

Independent work of the student:
1. Preparing for practical classes, writing a report on the results of independent work
2. Working with educational materials
3. Working with a case study
4. Preparing for continuous assessment
5. Preparing a library-research paper

Library-research paper topics:

- Pharmacological means of improving recovery rate in athletes
- Substances and methods increasing aerobic endurance and performance
- Means of protection and recovery of ligamentous apparatus of joints and bone tissue
- Substances and methods of losing weight
- Substances and methods affecting psycho-physiological reactions
- Substances improving eyesight (carotenoids)
- Substances and methods of improving microcirculation

Methods of evaluation of acquired knowledge and skills: classroom questioning, tests, working with case studies, prescription skills assessment

Recommended reading:

1. Sports medicine : studies. the manual [Electronic resource]. E. Yu. Andrianova. M.: Издательство Юрайт, 2024. - 341 с. URL: https://www.urait.ru/.
2. Pharmacology in the practice of sports [Electronic resource]. O. S. Kulinenkov. M.: Sport, 2024. - 256 с. URL: http://www.studentlibrary.ru.
3. Anti-doping policy in sports: textbook [Electronic resource]. A.B. Miroshnikov, A.V. Smolensky, A.V. Shevtsov. M.: Sport, 2024. - 354 с. URL: http://www.studentlibrary.ru.
4. Guidelines on anti-doping control in sports for sports doctors, coaches, nutritionists, students of medical and sports universities, athletes [Electronic resource]. A.B. Miroshnikov, A.V. Smolensky, O. I. Belichenko. M.: Советский спорт, 2022. - 152 с. URL: http://www.studentlibrary.ru.
5. Fundamentals of anti-doping support for sports: textbook. the manual [Electronic resource]. E. N. Bezuglova, E. E. Achkasova. M.: Sport, 2019. - 288 с. URL: http://www.studentlibrary.ru
6. Pharmacology, Textbook [Электронный ресурс] Kharkevitch D.A. M. : ГЭОТАР-Медиа, 2018. - 2nd edition. - 680 pages with illustrations. - 680 с. - ISBN 978-5-9704-4307-1. - Текст : электронный // ЭБС "Консультант студента" : [сайт]. - URL : https://www.studentlibrary.ru/book/ISBN9785970443071.html
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8. Pharmacology: practical manual [Электронный ресурс] A. I. Vengerovsky. Kogay L. V. Pharmacology: practical manual / L. V. Kogay, O. E. Vaizova, A. I. Vengerovsky. - Томск: Издательство СибГМУ, 2019. - 230 с. - Текст: электронный // ЭБС "Букап" : [сайт]. - URL : https://www.books-up.ru/ru/book/pharmacology-practical-manual-10236726/

4. GUIDELINES FOR CONTINOUS AND INTERIM ASSESSMENT

Table 3. Guidelines for Conducting Continuous and Interim Assessment during **B1.V.EC.04.01 Pharmacology and drug control in sports** Course

Type of assessment	Assessment format
Continuous assessment	- conducting and evaluating oral quizzes during practical classes; - assessment and evaluation of completion and results of assignments given during practical classes; - assess and evaluate completion and results of individual assignments and exam tasks given during practical classes.
Interim certification	is conducted in written pass/fail test format; it allows to assess the development of students' competencies correlating with types of professional activity.

5 ASPECTS OF THE IMPLEMENTATION OF THE COURSE FOR STUDENTS WITH DISABILITIES AND SPECIAL NEEDS

5.1. Availability of accessible environment

For students with disabilities and special needs, if a written application is submitted, lectures and practical classes are carried out taking into account health limitations, individual capabilities and medical status (hereinafter referred to as individual characteristics) of the student. Compliance with the following general requirements is ensured: teaching aids for collective and individual use are provided, required technical assistance is provided by an assistant, buildings and premises where lectures and practical classes are taking place meet accessibility requirements, other arrangements lack of which makes it impossible or difficult to master the discipline are made.

5.2. Compliance with general requirements

When lectures and practical classes are carried out at the written application of the student, the following general requirements are met: lectures and practical classes for students with disabilities and special needs take place at the same location as for students who do not have disabilities, if this does not cause difficulties for students; an assistant (assistants), who provide(s) students with the necessary technical assistance taking into account individual characteristics of the student, is (are) provided; necessary teaching aids are provided, taking into account individual characteristics of the student.

5.3. Availability of the internal policies and procedures of FSBEI HE PSMU of the Ministry of Health of Russia to students with disabilities in a form accessible to them.

All internal policies and procedures of FSBEI HE PSMU of the Ministry of Health of Russia concerning the discipline are made available to students with disabilities in a form accessible to them.

5.4. Increase in the duration of interim assessment of students with disabilities and special needs in relation to the established duration

Format of the interim assessment of academic performance within the scope of the discipline for students with disabilities and special needs is selected taking into account individual characteristics (orally, by writing on paper, by typing on a computer, as a test, etc.). The duration of the interim assessment in relation to the established duration is increased at the written application of the student with disabilities. Time limit for the student's preparation for the test is increased by at least 0.5 hours

6. STAFFING REQUIREMENTS OF THE DISCIPLINE

Academic teaching personnel that ensure the implementation of the discipline education process meet the requirements of the Federal State Educational Standard of Higher Education for the 31.05.01 General Medicine specialty; list of the aforementioned personnel is available on the website of the educational organization.