

Odessa National Medical University

Faculty of Medicine

Department of Physiology

Syllabus of the course "Age Physiology"

Amount	3 ECTS credits, 90 hours
Semester, year of study	Semester III-IV, year of study 2
Days, time, place	According to the class schedule, study rooms 1-6 Department of Physiology - Odesa, str. Olhivska, 4.
Teacher(s)	Head of the department: Oleksiy Shandra - Doctor of Science in Science. of Ukraine, doctor of medicine, professor; Svitlana Lyashenko - Doctor of Medicine, Assoc.
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Workplace	Department of Physiology - str. Olhivska, 4.
Consultations	Thursday 14.30-16.00, Saturday 09.00-13.00 Consultations and practice of missed classes on Microsoft Teams platform

COMMUNICATION

Educational classes are held under the conditions of distance education with using:

- Internet platform: Microsoft Teams
- messengers: Zoom, Viber, Telegram, Skype
- social networks: Facebook
- website of the department: <http://info.odmu.edu.ua/chair/physiology>
- e-mail of the teacher:
- phone number 048-712-31-35

ABSTRACT OF THE EDUCATIONAL DISCIPLINE

The subject of studying the discipline - age-related physiology studies regularities formation and development of the body's physiological functions during ontogenesis, establishes the peculiarities of the functioning of the body, its organs, and systems at different age stages.

Prerequisites and post-requisites of the discipline: the discipline "Age-related physiology" is included in the cycle of elective subjects of general training. It is based on the study by students of: medical biology - which provides knowledge biological processes in the human body and the ability to assess their regularity; medical chemistry - which provides knowledge of human biochemical processes and skills evaluate their condition and role in the human body; of biological chemistry - which provides knowledge of the structure and functions of chemical compounds in the human body and skills evaluate their activity and role; human anatomy - which provides knowledge of the structure and functions of organs and systems of the body and the ability to apply the acquired knowledge in clinical practice of histology, cytology and embryology - which provides knowledge structure and functions of cells and tissues of organs and body systems. Age physiology lays the foundations for students to study pathological physiology, pharmacology, propaedeutics of internal and pediatric diseases, surgery, therapy, hygiene, neurology, medical rehabilitation and social assistance, which involves integration teaching with these disciplines and forming skills to apply knowledge from of physiology in the process of further education and in professional activity;

The goal of the discipline: formation of future specialists' idea of the organism as a single self-regulating system whose functional features change in the process ontogenesis of the functioning of the organism as a single integral system; formation competencies in the field of modern physiological foundations of human activity in kindergarten, adults and old age and mechanisms of neuro-humoral regulation of organ functions and systems in the age aspect, assimilation of physiological features of the body at different stages ontogenesis, taking into account the age periodization of the organism's development.

Tasks of the discipline:

- Formation of a systemic approach to the morpho-functional organization of organs and systems organism and mechanisms of their regulation, taking into account age, gender and individual human characteristics.
- Study of the age-related features of the functioning of various organs and systems of the body;
- Identification of exogenous and endogenous factors that determine features functioning of the body in different age periods;

- Formation of abilities and skills provided by the curriculum in the discipline
- Acquisition of competencies according to the curriculum.

Expected results:

As an elective component, the study of the discipline will allow the student to form an individual educational trajectory. As a result of studying this of the elective academic discipline, the student must:

Know:

- the basics of the structure and function of organs and systems and their regulation mechanisms;
- peculiarities of human life mechanisms in different age periods;
- principles and regularities of body cohesion;
- rules for preserving and strengthening health;
- principles of maintaining high work capacity and good quality of life at different ages.

Be able:

- understand the relationship between age-related physiology and clinical disciplines;
- calculate the age norm of the body's physiological indicators;
- analyze the physiological indicators of the body's activity;
- to understand the peculiarities of human interaction with the environment, critical and sensitive periods of human body development;
- analyze processes and develop measures that prevent the development of diseases and ensure the quality of life of people of all ages;
- to evaluate the functional state of the whole organism and its separate systems in different people age.

Master the skills:

- measurement of anthropometric indicators of a person - body mass and length, circumference chest and waist, girth of the shoulder and lower leg, thickness of the skin-fatty fold;
- measurement of hand compression force, static force;
- definition of dermographism;
- short-term and long-term memory testing;

- determination of visual acuity, color vision, fields of vision;
- determination of bone and air conduction of sound;
- assessment of general blood analysis;
- palpation of the apical impulse of the heart, arterial pulse;
- ECG analysis;
- auscultation of the heart;
- FCG analysis;
- measurement of external respiration indicators;
- evaluation of the composition of gastric juice;
- evaluation of the general analysis of urine.

DESCRIPTION OF THE EDUCATIONAL DISCIPLINE

Forms and methods of education

The discipline will be taught in the form of seminar classes (30 hours) and organization of students' independent work (60 hours).

Teaching methods:

To achieve the main goal of studying the discipline by the program the following methods of organizing the educational process are provided: *Frontal method* of organization when all students under the teacher's control perform the same thing also tasks at the same time. *Individual method* of organization when students alternately perform tasks and report to the teacher in class. In addition, depending on the need to reach a certain level the teacher uses the following methods to learn the program material: *Explanatory-illustrative method* in which the teacher proves ready information by various means, and students perceive it, realize it and fixed in memory. This method involves the use of verbal (*conversation*) and visual teaching aids (*illustration, demonstration*). It provides knowledge and formation at the level of the appropriate ability to analyze and generalize the main ones provisions depending on the contingent, conditions and forms of organization and conduct the learning process. *Problem-based teaching* is used by the teacher at solving situational problems using innovative methods (case method and business game). This method is used by the teacher during the course practical classes. The direct result of problem-based learning should be the student's assimilation of the algorithm for solving a specific study task. *Partial search (heuristic) method* serves the purpose of gradual bringing students closer to solving typical professional tasks independently by previously mastering several ways of solving

them. It is used when performing tasks in which the method of their execution is chosen by oneself student. To achieve the main goal of training - training specialists in the "Medicine" curriculum provides for the study of theoretical sections with further specification of the methodological orientation of the didactic material *with the use of control and educational computer programs from disciplines.*

Content of the academic discipline

Content module 1. Age-related physiology of biological regulation mechanisms.

Topic 1. Age-related physiology of excitable tissues.

The topic of students' independent work. Age-related features of skeletal and smooth muscles, their mechanisms contraction and relaxation.

Topic 2. Age-related physiology of synaptic transmission and bioelectrical activity of neurons

brain

The topic of students' independent work. Age features of the electroencephalogram.

Topic 3. Age-related physiology of the somatic nervous system.

The topic of students' independent work. Age-related features of motor units, mechanisms of motor regulation activity

Topic 4. Age-related physiology of the autonomic nervous system.

The topic of students' independent work. Age-related features of vegetative regulation of physiological processes, vegetative reflexes.

Topic 5. Age-related physiology of endocrine glands.

The topic of students' independent work. Age-related features of humoral regulation, activity of endocrine glands.

Topic 6. Age-related physiology of sensory systems.

The topic of students' independent work. Age features of analyzers of special sensitivity - visual,

auditory, vestibular, olfactory, taste

Topic 7. Age-related physiology of neural activity.

The topic of students' independent work. Age-related features of the mechanisms of the formation of emotions and memory; features of phases sleep

Content module 2. Age-related physiology of life support systems.

Topic 8. Age-related physiology of the blood system.

The topic of students' independent work. Age-specific features of hemostasis mechanisms and antihemostatic activity systems.

Topic 9. Age-related physiology of cardiac activity.

The topic of students' independent work. Age characteristics of mechanical and sound manifestations of cardiac activity.

Topic 10. Age-related physiology of blood vessels.

The topic of students' independent work. Age-related features of microcirculation, regional blood supply, lymph flow

Topic 11. Age-related physiology of the respiratory system.

The topic of students' independent work. Age-related features of gas exchange mechanisms in lungs and tissues, transport gases with blood

Topic 12. Age-related physiology of the digestive system.

The topic of students' independent work. Age-related features of motor activity of gastrointestinal organs and mechanisms absorption.

Topic 13. Age-related physiology of metabolism, energy, and thermoregulation.

The topic of students' independent work. Age-specific features of mechanisms of heat production and heat transfer, formation fever.

Topic 14. Age-related physiology of the excretory system.

The topic of students' independent work. Age-related features of the mechanisms of allocation regulation.

Topic 15. Control of practical skills and theoretical knowledge. Credit class.

List of recommended literature

Additional:

1. Costanzo L. S. Physiology. Elsevier. 6th ed., 2017. - 528 p
2. Barrett K. E., Barman S. M., Yuan J., Brooks H. L. Ganong's Review of Medical Physiology. McGraw Hill Professional. 26th edition, 2019. - 752 p.

3. Guyton A., Hall J. E. Textbook of Medical Physiology. Elsevier. 14th Edition, 2021. - 1820 p.
4. Koeppen B. M., Stanton B. A. Berne and Levy Physiology. Elsevier. 7th edition, 2018. - 880 p.
5. Sembulingam K., Sembulingam P. Essentials of Medical Physiology. Jaypee Brothers Medical Publishers. 8th ed., 2019. - 1186 p.
6. Мотузюк О.П. Практикум з фізіології людини: навч. Посіб./ О.П.Мотузюк. А.І.Хмелькова, І.В.Міщенко. – К.: ВСВ «Медицина», 2017. – 2-е вид., випр. – 160 с.

EVALUATION

According to the Regulation on the organization of distance learning in education process by higher education seekers at the Odesa National Medical University (2020), evaluation of the current success of studying the topics of the discipline performed on a traditional 4-point scale. At a seminar class students are interviewed at least once in 3-4 classes (no more than 50% students). At the end of the semester, the number of grades of students in group c on average is the same. At the end of each lesson, the teacher announces to the students their assessments, make a corresponding entry in the paper and electronic Journal attendance and performance records of students and information on performance records and attendance of classes by students. At the end of studying the discipline the current academic performance is calculated - the average current score (average arithmetic of all current ratings on the traditional scale, rounded to two decimal places).

Current assessment criteria for the seminar session:

"5" - The student is fluent in the material, actively participates in discussion and solution of a situational problem, confidently demonstrates practical skills during examination of a sick child and interpretation of clinical data, of laboratory and instrumental research, expresses his opinion on the topic classes, demonstrates clinical thinking.

"4" - The student has a good command of the material, participates in the discussion and solving a situational clinical problem, demonstrates practical skills during examination of a sick child and interpretation of clinical, laboratory and of instrumental studies with some errors, expresses his opinion with class topics, demonstrates clinical thinking.

"3" - The student does not have enough knowledge of the material, he is unsure about participating in discussing and solving a situational clinical problem,

demonstrates practical skills during examination of a sick child and interpretation of clinical data, laboratory, and instrumental studies with significant errors.

"2" - The student does not have the material, does not take part in the discussion and solving a situational clinical problem, does not demonstrate practical skills during examination of a sick child and interpretation of clinical, laboratory and instrumental research.

The discipline ends with a credit. They are admitted to the final certification only those students who have completed all types of work provided for in the curriculum (have no gaps), their average score for the current educational activity is 3.00 and more and receive for the discipline - "credited".

Independent work of students.

The work program for the discipline includes classroom and extracurricular activities forms of *independent work*. During extracurricular form of independent work, the student completes homework and prepares for seminars classes, control papers and tests. During independent work under supervision the teacher, the student takes part in scientific circles, conferences, performs research work, prepares scientific theses, reports, reviews the works of other students, takes part in contests, Olympiads, quizzes, production visibility, preparation of technical teaching aids. During classrooms a large part of the time (at least 60%) of seminar classes is devoted to the main class stage: independent work of students under the guidance of a teacher professionally oriented tasks (real objects of the future professional activity - situational tasks, laboratory results studies, radiographs, or their models). The rest of the time is for analysis and joint discussion of the results of students' independent work with correction errors Independent work of students, which is provided by the topic of the lesson along with classroom work, evaluated during the current control of the topic on relevant occupation. Mastering topics that are presented only for independent work, is checked during the exam or differential assessment. Grades for individual assignments are awarded to the student only under certain conditions their successful implementation and protection. The grade is added to the current grade. Points for individual scientific work by decision of the Academic Council can be awarded to be added to the number of points in the discipline for students who have scientific publications or took prize places for participation in the Olympiad in the discipline among Universities of Ukraine and others.

COURSE POLICY

Deadlines and Rescheduling Policy:

Under the conditions of distance learning according to the Regulation on the organization distance learning in the educational process (new edition, 2020), by students of higher education at Odesa National Medical University a student of medical education has the right to work off academic debt without permission of the dean. The lesson is considered completed if the student has received it positive assessment. Missed practical classes are made up accordingly schedule of the department's exercises: during the semester - twice a week (on working days day from 2:30 p.m. to 4:00 p.m. and Saturday – a day of practice and consultations from 9:00 a.m. to 13.00). During the semester, no more than one working day is worked out classes, on Saturday - no more than three. A student who is timely without a respectable reason for not completing the curriculum in full at the end of the semester the right to liquidate the current academic only with the permission of the dean of the faculty debt after its end within the examination session. After at the end of the semester, internships at the departments are held daily. Student has the right to work no more than three classes a day. The student is obliged transfer unsatisfactory marks in the discipline, if the average score of his current one success rate does not reach the minimum level of 3.00, but no later than the day of the event final control.

Academic Integrity Policy:

Observance of academic integrity by students of education involves:

- independent performance of educational tasks, tasks of the current and final control of learning results (for persons with special educational needs, this requirement is applied taking into account their individual needs and capabilities);
- links to sources of information in the case of using ideas, developments, statements, information;
- compliance with the legislation on copyright and related rights;
- provision of reliable information about the results of one's own (scientific, creative) activities, used research methods and sources of information.

Unacceptable in educational activities for participants of the educational process are:

- using family or work connections to obtain a positive or higher when performing any form of performance monitoring training or advantages in scientific work;
- use of prohibited auxiliaries during control measures materials or technical means (cheat sheets, notes, micro-earphones, phones, smartphones, tablets, etc.);
- passing the procedures for monitoring the results of the study with false ones persons.

Attendance and Tardiness Policy:

Attendance by students of all types of educational classes is mandatory. The teacher makes a note about the attendance of classes by students in the journal attendance and success records of students and the headmaster in the records performance and attendance of classes by the student. According to the statute and rules internal regulations for persons studying at the university, to comply the schedule of the educational process and the requirements of the curriculum, in particular:

- attend lectures, practical, seminar and laboratory classes;
- do not be late for classes, come to classes according to the schedule occupations;
- inform within two days in any form convenient for the student dean's office about the reasons that make it impossible to attend classes and perform other tasks provided by the curriculum.

Mobile devices: During the lesson, the use of mobile devices is prohibited

Behavior in the classroom: In the classroom, the student must behave according to the rules of ethics and rules of conduct specified in the Regulation on educational organization process by higher education seekers at ONMEDU and the Regulations on Organization of humanitarian education and educational work at the Odesa National Medical School university.