

Ministry of Health of the Republic of Belarus
Education Establishment
"Gomel State Medical University"
Normal Physiology Department

It was discussed at the department meeting 30.08.16
The protocol № 8

METHODICAL INSTRUCTION

for carrying out classes by teachers with the 2nd course students
of Faculty for training specialists for foreign countries (teaching in English)
on normal physiology

Topic: Metabolism. Nutrition

General time of the class 4 hours.

**1. THE STUDYING AND EDUCATIONAL PURPOSES, THE MOTIVATION FOR
ASSIMILATION OF THE SUBJECT, REQUIREMENTS TO THE INITIAL LEVEL OF
KNOWLEDGE**

Purposes of the class

To master a technique of making a diet, to get acquainted with techniques of evaluation of compliance of the actual body weight with due.

Motivational characteristic of the subject

The medical student needs ability to define the main indicators of metabolism reflecting condition of homeostasis, and also comprehension of the main physiological mechanisms of exchange of the proteins, lipids and carbohydrates participating in its maintenance. The student has to know the main indicators for assessment of protein, fat, carbohydrate metabolism.

Tasks of the class

During the class students have to master a technique of making a diet, get acquainted with techniques and evaluate compliance of the actual body weight with due.

As a result of carrying out the class the student has to:

To know:

- physiological value of metabolism;
- the basic concepts and terms on the class subject;
- plastic and energetic role of nutrients;
- essence of exchange of proteins, fats and carbohydrates;
- neuro-humoral mechanisms of metabolism regulation.

To be able:

To make a diet, to use techniques for evaluation of compliance of the actual body weight with due.

2. CONTROL QUESTIONS FROM RELATED SUBJECTS:

1. Molecular bases of cellular metabolism.
2. Mechanisms of effect of biologically active agents, biochemistry of tissues, organs, biological liquids.

3. CONTROL QUESTIONS ON THE CLASS SUBJECT:

1. A concept about metabolism of an organism. Its stages. Processes of assimilation and dissimilation of substances. Plastic and energetic role of nutrients.

1.1 Exchange of proteins, its regulation.

1.2. Exchange of carbohydrates, its regulation.

1.3. Exchange of fats, its regulation.

1.4. Exchange of water and mineral substances, its regulation.

2. Nutrition. Physiological bases of a balanced diet.

Reports:

1. Vitamins, classification and physiological value.

2. Theories of nutrition. Clinical nutrition.

4. PRACTICAL PART OF THE CLASS

Laboratory work. 26.1. Making the daily diet

Laboratory work 26.2 Ratio of individual body weight from the due.

5. THE COURSE OF THE CLASS

- *Introduction:* The teacher answers questions of students which caused certain difficulties in the course of independent mastering of education material;

- *Demands to the initial level of knowledge:* - From biochemistry students have to know composition, structure, chemical properties and a biological role of the major classes of natural bonds. Inorganic substances as structural and functional components of a human body, their properties. Water exchange. Vitamins, their role.

- *Correction of initial level of knowledge:* The teacher checks and supplements the initial level of students knowledge of theoretical and applied questions on the class subject "Metabolism. Nutrition". In this section it is necessary to pay attention to plastic and energetic role of nutrients, and also to questions of intermediate exchange which provides interrelation between exchanges of carbohydrates, fats and proteins. The attention is focused on neuro-humoral regulation of metabolism.

The teacher corrects answers of students on the considered subject;

- *Setting of problems which will be solved by students:* The teacher sets a task to master a technique of making a diet, and also to get acquainted with techniques and to establish compliance of the actual body weight with due.

- *Independent performance of tasks by students:*

- students make out the protocol of the class with the subsequent discussion of a technique of performance;

- students perform practical work under control of the teacher and laboratory assistant. For performance of work students are provided with methodical guiding and the necessary equipment. Presentation is provided by tables and drawings.

- students read reports on the class subject with the subsequent discussion.

- *Assessment of final level of knowledge of the class subject:* The teacher specifies the final level of knowledge of students of theoretical and practical questions, the basic concepts and terms, and also knowledge of basic physiological constants of the class subject;

- *Fixing of knowledge:* The teacher suggests students to solve several situational problems of a subject of the class and to answer test questions;

- *The conclusion of the teacher and the task to the next class:* At the end of the class the teacher does the conclusion about the carried-out work and tells students the home task for independent work. Then summing up the results of the class and signing of protocols of experience, and also assessment of practical skills in a leaf of their account is carried out.

6. QUESTIONS FOR SELF-CHECKING OF KNOWLEDGE

1. Can RC be less than 0,7? If yes, then in what case? In what case at the person can RC be more than 1? Why?
2. How will the size of RC change at fast obesity, for example, at fattening of geese with corn in the conditions of hypodynamia?
3. With urine 12 g of nitrogen was excreted. How many protein was splitted in an organism?
4. Why is, despite the identical content of water in various organs, water percent in all body at women and men different?
5. The more work is made by a muscle, the more intensively it consumes oxygen. Whether it is possible to claim that the more complex problem is solved by a brain, the more oxygen it consumes?

LITERATURE

Basic

1. Human physiology: textbook for overseas students = Физиология человека: учеб. пособие для иностранных студентов, обучающихся на английском языке / А. И. Киеня [и др.]; под ред. проф. Э. С. Питкевича; пер. на англ. яз. Р. А. Карпов, В. А. Мельник. — Гомель: УО ГoГМУ, 2009. — 352 с.
2. Text of lectures.

Alternate

1. Textbook of medical physiology // C. Guyton, 2006. — 1116 p.
2. Human anatomy and physiology // Alexander P., Spence-Elliott B. Masson.
3. Human physiology. The mechanisms of body function // Arthur J. Vander James H Sherman Dorothy S. Luciano, 1986. — 715 p.
4. Lecture notes on human physiology // John J Bray, Patricia A. Cragg, Anthony D.C. Macknight, Roland G. Mills and Douglass W. Taylor.
5. Human anatomy and physiology // Elaine N. Marieb, 1989. — 995 p.
6. Review of medical Physiology, International edition, 2003. — 912 p.