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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии
საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

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GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman (Кириллица)**, для текста на грузинском языке следует использовать **AcadNusx**. Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - <http://www.spinesurgery.ru/files/publish.pdf> и http://www.nlm.nih.gov/bsd/uniform_requirements.html В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректурa авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or computer-printed on a single side of standard typing paper, with the left margin of 3 centimeters width, and 1.5 spacing between the lines, typeface - **Times New Roman (Cyrillic)**, print size - 12 (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf

In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

**Articles that Fail to Meet the Aforementioned
Requirements are not Assigned to be Reviewed.**

ავტორთა საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx**. შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგების ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფხიხლებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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MODELING METHODS FOR TEACHING MEDICAL UNIVERSITY STUDENTS ABOUT THE REPRODUCTIVE SYSTEM

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Abstract.

One of the priority directions of the development of the Republic of Kazakhstan at the present stage is the formation of competitive specialists in various fields of the educational process, including in medical education. The article presents the introduction of modern information and educational programs and innovative technologies into the educational process at Karaganda State Medical University at the Department of Physiology, which are aimed at developing higher competencies among medical students.

Aim: The aim was to show the application of the modeling method in the process of studying topics in the module "Reproductive system" and the effectiveness of using relevant teaching methods in the course of normal physiology for medical university students.

Research methods: Students have created a mock-up on the reproductive system, using the example of which the physiological mechanisms and principles of regulation of the female reproductive system are studied in practical classes.

Results and conclusion: This type of independent active work of students activates mental activity, directs it to the subsequent solution of tasks, the formation of professional critical thinking.

Key words. modeling method, innovative technologies, reproductive system, educational process, menstrual cycle, regulation of the reproductive system.

Introduction.

The reforms of higher medical education involve, among others, the transition of the system to new educational standards, the introduction of a credit-modular organization of the educational process with an emphasis on a competence-based approach, which requires the teaching staff of universities to develop and use new methods, techniques that improve the quality of education, activate the cognitive activity of students and motivate them to professionalism. Many experts [1-4] note that innovative learning technologies have become the most important factor in the successful operation of higher education institutions in modern conditions. Cognitive interest, creative search process is the most effective among all the motives of educational activity. This type of independent active work of students not only activates mental activity, but also directs it to the subsequent solution of tasks, the formation of professional critical thinking. Modern education requires the introduction of such technologies that can not only arouse students' interest in knowledge, but also contribute to the need for a more complete and in-depth assimilation of it, develop the initiative for independence in work. In the learning process, students should not only master the established system of scientific knowledge,

skills and abilities, but also develop their cognitive abilities and creative powers [3,5,6].

The purpose of the study was to show the application of the modeling method in the process of studying topics in the module "Reproductive system" and the effectiveness of using relevant teaching methods in the course of normal physiology for medical university students.

To achieve this goal, the following tasks were set: 1) to determine the pedagogical foundations of active teaching methods, in particular, the method of modeling the ovarian cycle; 2) to develop practical exercises using active teaching methods for the discipline "Normal Physiology"; 3) to test practical exercises using this method developed by us in teaching conditions for 1st year students of the specialty "General Medicine"; 4) to evaluate the effectiveness of using the ovarian cycle modeling method in the learning process in the discipline of physiology according to the final estimates of students.

Materials and Methods.

It is relevant to use techniques and methods in teaching that combine the principles of modeling and problemativeness in professional activity, form the ability of students to independently acquire new knowledge and collect the necessary information [2,4].

The teaching staff of the Department of Physiology, in the process of studying such disciplines as "Normal Physiology", strives to ensure that the student must form and demonstrate a number of general cultural, general professional and professional competencies, in addition to developing students' creative thinking, skills and independent work skills, which is very important for a practitioner [5,6].

Thus, this method of modeling and the introduction of a number of innovative learning technologies into the educational process makes it possible to expand the practical skills and competencies of junior students, which will further contribute to their creative potential in senior courses when studying the discipline "Pathological Physiology".

Materials used: styrofoam, PVA glue, hot glue, stationery knife, scissors, ruler, pencil, plasticine, system, 1200 ml forceps, 3 medical latex gloves, gouache and brush, 3 droppers(system), 3 V-shaped lamps (LEDs), wire, 3 keys (inserts), soldering, tube, red liquid, clock, paper, wooden board, cyclic calendar.

The construction heat sink "penoplex" 5x585x1185mm was taken as the basis of the layout. A projection picture of the uterus and fallopian tube was constructed in the frontal plane. According to the same shape, the outlines of the uterus and fallopian tube were cut out of a styrofoam petal using a

stationery knife. Similarly, another layer of the corresponding uterine body was cut out of the polystyrene foam petal. The model showed the uterine wall, neck, body, fallopian tube and fimbria. The general scheme of the uterus has been prepared.

Next, we chose medical latex gloves to demonstrate the phenomena of proliferation and desquamation of the endometrial layer of the uterus. After we attached the three tubes coming out of the uterus to one cylinder through glue, we all attached the piston to the cylinder together. A simple system is implemented as tubes and connecting cylinder. As a result, the endometrial layer of three identical queens rises and falls as air passes through the piston.

The shape of the brain (pituitary gland), indicating further humoral regulation, was cut out of styrofoam. Painted and decorated. A frontal incision of one anabesis was made, and structures inside the anabesis were visible. We bought 3 V-lamps (LEDs) to show their hormonal activity. Additionally, a power source is selected – 6 1.5 V batteries, connecting wires, and a switch). A white light bulb was installed in the pituitary gland model, a red one in the follicle of the 3rd order, and a yellow light bulb in the yellow body. Then a tube was passed through the pre-cut fallopian tube to demonstrate the phenomenon of ovulation. As a result, at the moment when the thread is stretched from both ends, the oocyte moves through the tube.

In order to show the work of the model, a hole was made in the cervix and a tube was installed. The other end of the tube was attached to the drip vessel. The vessel is filled with a red liquid, and when the dropper is started, a red liquid appears in the cervix area. Last of all, a wooden frame board was chosen for fastening the manufactured structures. The zones where all structures will be located were measured and the dimensions were prepared. In addition, the board was filled with applications. The clock was mounted on the board to show its dependence on time. A presentation on a special topic was prepared, pasted in the form of a QR code, and a cyclic calendar with pockets at the bottom was laid out (Figure 1).



Figure 1. The layout of the menstrual cycle.

Results and Discussion.

When determining the pedagogical foundations of active teaching methods, the following specific principles can be used according to A.A. Balaev [1], which are part of the general didactic principles of teaching: 1) the principle of balance

between the content and the method of teaching, taking into account the preparedness of students and the topic of the lesson; 2) the principle of modelling

At the same time, the model of the learning process is both the curriculum and the final result (the "model of the student" who completed the training); 3) the principle of entrance control; 4) the principle of correspondence of content and methods to learning goals; 5) the principle of problemativeness; 6) the principle of "negative experience"; 7) the principle of "from simple to complex"; 8) the principle of continuous updating; 9) the principle of organizing collective activities; 10) the principle of advanced learning; 11) the principle of diagnosing (checking) the effectiveness of classes; 12) the principle of saving study time; 13) the principle of exit control.

In the process of conducting classes on the "Reproductive system" cycle, students get acquainted with the ovarian cycle at the level of physiological mechanisms and its regulation by the central nervous system.

Conclusion.

Over the past decade, there has been a significant modernization of medical education, innovative approaches have been formed in the training of medical students, and new curricula have been developed. At the moment, the modern educational process is increasingly including model and experimental innovative forms and means of learning. It is impossible to imagine a modern medical university without innovative activities.

Doing practical work is an integral part of studying physiology. Unfortunately, recently there has been a tendency to reduce the classroom time of the educational process, including practical classes. Solving the problem of familiarizing students with modern research methods naturally sets the teacher the task of updating and improving laboratory equipment associated with significant and constant financial costs. For this reason, the formulation of many "simplest" experiments confirming the correctness of the basic physiological laws and patterns turns out to be very difficult from a technical point of view in mass staging.

Modeling of physiological processes is now the simplest and most accessible tool for many educational departments to demonstrate various processes and phenomena. Many problems that are unsolvable in setting up real experiments turn out to be easily solved in modeling. The modern physiology program includes a number of very difficult questions to understand. The most convincing technique in discussing such issues is to demonstrate physiological processes on an animal using real equipment or on a model of a physiological process.

The increase in the effectiveness of training is due to the growth of students' motivation to study and interest in mastering new knowledge, skills and abilities when using active teaching methods. In general, this increases the communication skills and intellectual competence of students.

Thus, our experience in the introduction of new learning technologies in the teaching of disciplines "Physiology" allows: 1) to increase students' motivation to study; 2) to comprehensively consider the course of pathological processes; 3) to continuously improve pedagogical skills using new educational technologies.

The modeling method in preparing presentations for independent work of students plays an important role in the accumulation of material in disciplines, including integrated ones, effectively develop clinical thinking, skills and abilities to work in a team, acquire skills in modern medical technologies. Modern education requires the introduction of such technologies that can not only arouse students' interest in knowledge, but also contribute to the need for a more complete and in-depth assimilation of it, develop the initiative for independence in work.

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