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REGULATORY AND LEGAL SUPPORT OF THE NATURAL AND SCIENTIFIC TRAINING OF PHYSICAL THERAPY AND ERGOTHERAPY SPECIALISTS AT THE PROFESSIONAL AND ADAPTIVE STAGE

The article is devoted to the study of regulatory and legal support of the process of formation of natural and scientific competence of future specialists in physical therapy and ergotherapy at the professional and adaptive stage of training of the second (master's) level of higher education. The process of natural and scientific training of a specialist in physical therapy and ergotherapy should take into account cause-and-effect relationships and dependencies that appear in the form of leading trends and determine the strategy of this process. These include: humanization, fundamentalization, humanitarization, interdisciplinary and interscientific nature of knowledge, intellectualization. Modern natural and scientific training of a future specialist in physical therapy and ergotherapy is studied by us through a set of scientific ideas, which include the following ideas: optimization of natural and scientific training, formation of the functionality of natural and scientific knowledge, integration of educational disciplines and health-keeping.

We conducted a structural analysis of the set of discipline programs of normative and selective parts of natural and scientific training of future specialists in physical therapy and ergotherapy basing on an algorithm that allowed us to unify the requirements for natural and scientific discipline programs and to develop a multi-subject matrix of the content of this training.

There were analyzed the content and professional orientation of natural and scientific disciplines, such as «Modern Medical and Biological Methods of Restoring the Functional State in Physical Culture, Sports and Rehabilitation», «Information and Communication Technologies in Natural and Scientific Training», and «Natural and Scientific Foundations of Health-keeping», their place in the system of training of physical therapy and ergotherapy specialist is determined.

Key words: *future specialists in physical therapy and ergotherapy, professional training, natural and scientific training, natural and scientific competence, stages of training, professional and adaptive stage of training, regulatory and legal support.*

The topicality of the problem. As a result of the study of a set of literary sources, it is established that the natural and scientific training of future specialists in physical therapy and ergotherapy is the basis of the formation of natural and scientific competence. Modern trends in updating the system of professional training of future specialists in physical therapy and ergotherapy in higher education institutions provide the formation of a dynamic complex of thorough knowledge and skills in natural and scientific disciplines, since high-quality natural and scientific training is the basis for mastering the specialty. At the same time, the professional competence of future specialists in physical therapy and ergotherapy can be formed only in the presence of high-quality natural and scientific training.

Natural and scientific training is a purposeful process and the result of the formation of a person's system of fundamental natural and scientific knowledge, abilities, skills, experience of cognitive and practical activities, value orientations and relationships sufficient for the implementation of professional and social activities in modern society (Bilyk, 2017; Makarenko, 2017). On the basis of the results of the analysis of a set of literary sources and the experience of professional training of applicants of higher education, we developed our own definition of natural and scientific competence of future specialists in physical therapy and ergotherapy. Natural and scientific competence is a holistic, integrative quality of a personality of future specialist in physical therapy and ergotherapy, which is formed in the process of natural and scientific training and is characterized with the

depth of medical and biological knowledge, subjective skills and experience of research activities in the field of rehabilitation, as well as natural and scientific outlook and readiness to conduct the professional activities based on fundamental ideas and principles of natural sciences (Biletska, 2014; Drobin, 2020; Khomenko, 2016).

Analysis of previous research and publications. The issue of training of future specialists in physical therapy (rehabilitation) and ergotherapy for professional activity is described in the scientific works of Y. Liannoi, N. Bielikova, A. Hertsyk, T. Diachenko, V. Kuksa, O. Mikheienko, L. Sushchenko, O. Dubohai, V. Zavatskyi, M. Romanyshyn; the analysis of historically formed health-improving technologies and the development of innovative ones are presented in the works of M. Bulatov, E. Vilchkovskyi, L. Volkov, H. Dziak, O. Dubynska, S. Duditska, O. Zandyk, T. Krutsevych, L. Mikhno, I. Muravov, B. Moskalenko, P. Mukhin, V. Platonov, B. Shyian and others; M. Bulatova, M. Verkhovska, L. Holovina, I. Hrybovska, V. Hryhoriev, V. Davydov, P. Dzhurynskyi, V. Ivanochko, L. Ivashchenko, O. Kachan, Y. Kopylov, Y. Korzh, H. Krasnova, I. Liakhova, F. Muzyka, A. Shamardin and others studied the organization of physical culture and health-improving technologies in work with different age and nosological categories.

The purpose of the study is to highlight and clarify the regulatory and legal support of the process of formation of natural and scientific competence of future specialists in physical therapy and ergotherapy at the professional and adaptive stage of training in higher education institutions.

Presentation of the main research material. The final (professional and adaptive) stage of professional training of future specialists in physical therapy and ergotherapy covers 1 and 2 courses of study at the second (master's) level and involves the study of the following natural and scientific disciplines: «Modern Medical and Biological Methods of Restoring the Functional State in Physical Culture, Sports and Rehabilitation», «Information and Communication Technologies in Natural and Scientific Training», «Natural and Scientific Foundations of Health-keeping». In general, three natural and scientific disciplines are studied at the final (professional and adaptive) stage, which, according to the curriculum, belong to the selective cycle of professional and practical training.

The purpose of studying the «Modern Medical and Biological Methods of Restoring the Functional State of the Body» educational discipline is to acquire knowledge about the causes of fatigue and physiological mechanisms of recovery, control of recovery processes, rational use of modern methods and means of recovery of the body in motor activity. The prerequisites for this educational course studying are the assimilation of educational material from the disciplines «Fundamentals of Medical Knowledge», «Sports Medicine and Traumatology» and «Non-traditional Medicine in Sports» (Fastivets, 2020).

Expected results of the discipline learning: the ability to use various forms of health-improving physical culture in order to improve the physical condition of people of different ages and genders; mastery of the basic methods of health diagnosis, methods of prevention, keeping and restoration of health; the ability to apply various methods and means in practical activities that activate restorative processes in the body; the ability to use means of psychological recovery of the body; the ability to distinguish the main types of medical and biological means of restoring the body in motor activity.

The content of this training course is outlined in the module «Means of recovery of the body in motor activity», which covers the following topics: «Biological mechanisms of fatigue and recovery», «Diagnostics of fatigue and recovery», «General characteristics of means of recovery of physical ability to work», «Psychological means of recovery of the person's body», «Medical and biological means of recovery in physical rehabilitation», «Rational nutrition», «The importance of phytotherapy for the recovery of the body», «Pharmacological means of recovery and increasing sports performance», «Complex use of recovery means» (Fastivets, 2020).

The educational course «Information and Communication Technologies in Natural and Scientific Training» is based on the assimilation by future specialists in physical therapy and ergotherapy of knowledge in informatics, computer technology, mathematics and the basics of statistics. The subject of this educational course is the methodology of using communication and information technologies in professional activities for the purpose of effective and safe implementation of physical and ergotherapy procedures, which is conditioned by the formation of skills in the use of information and communication technologies for searching, processing and analyzing information from various sources, self-education and critical comprehension of new professional information. The purpose of studying the training course is to form the basic knowledge and achieve a professional level of using the means of information and communication technologies, which are necessary for a modern specialist in physical therapy to ensure the guarantee of successful implementation of his or her activity. The main tasks of the training course include: formation of the professional and general competencies in use of modern computer technology in physical therapy and ergotherapy of higher education applicants, the use of information technology tools for searching and analyzing information necessary for the professional tasks solving and making reasoned professional decisions (Ponochovnyi, Fastivets, 2019).

The educational course «Information and Communication Technologies in Natural and Scientific Training» ensures that higher education applicants acquire the following competencies: integral, which is the ability to fulfil the complex specialized tasks and solve practical problems related to physical therapy and ergotherapy, which are characterized by uncertainty of conditions, with the application of statements, theories and methods of

medical and biological, social, and psychological and pedagogical sciences with the use of computer equipment and information technologies; general, which are the skills of using information and communication technologies; the ability to search, process and analyze information from various sources; ability to apply knowledge into practical situations; the ability to learn and master modern knowledge; the ability to preserve and multiply the scientific values and achievements of society basing on understanding of the regularities of development of the subjective area in relation to the achievements of other sciences, in particular, computer technology and information technologies; special (professional, subjective), which are the ability to use modern methods of collecting and analyzing information about the conducted physical therapy measures, use of traditional and modern information technologies and modern computer equipment in order to predict changes that will occur as a result of physical therapy measures; the ability for effective professional interaction in computer networks with members of the multidisciplinary team, patients and their families, readiness to organize the work of the team in current scientific and educational tasks solving; the ability to keep specialized documentation in electronic format, to present the results of research at the national and international levels; the ability to develop and supplement the theoretical base about the effectiveness of physical rehabilitation measures and therapy, to develop new procedures and protocols basing on knowledge and information contained in scientific research, to confirm their effectiveness using statistical methods basing on the principles of evidence-based medicine; the ability to plan and conduct the personal and professional development, in particular regarding the use of computer equipment and IT tools for physical therapy and ergotherapy.

As a result of studying the educational discipline, the education applicant should know: general issues of the theory and practice of computer technology (CT) and IT in physical therapy; the role of information, communication and computer technologies in physical therapy; should be able to: use traditional and modern information and communication methods of information processing; use information technologies in a professional field that requires updating and integration of knowledge; predict the influence and effect of the applied methods and technologies of physical therapy; use methods of statistical analysis in research results processing; work effectively in a multidisciplinary team using IT network; to obtain: the skills of searching and processing information using the web and other resources; skills in using electronic document management tools and electronic presentations creating; the software tools for observation data processing; skills of information service of specialized CT.

According to the course program, the educational material is divided between two content modules:

1) «Information and communication technologies in the training of specialists in physical therapy and ergotherapy», which covers the following topics: «Directions of information and communication technologies application in physical therapy and ergotherapy», «Search and processing of information using web resources. Database management systems (DBMS)», «Methods of statistical analysis in processing the results of practical research. Means of forecasting», «Informational support for the functioning of modern CT in physical therapy»;

2) «Information and communication technologies in the system of natural and scientific training», which involves the study of the following topics: «Modern software tools for functional readiness control», «Technologies of selection and application of modern means of knowledge quality control in natural and scientific training» (Ponochovnyi, Fastivets, 2019).

The purpose of studying the «Natural and Scientific Aspects of Health-keeping in Physical Therapy and Ergotherapy» educational course is the assimilation by applicants of higher education of knowledge about factors that form health or affect human health negatively, methods and ways of a healthy lifestyle forming; formation of a holistic view of future specialists about human health, its physical, psychological, social and spiritual components; development of healthy lifestyle skills and the ability to perform physical health checks of people. Expected learning outcomes from this discipline: mastery of the theory and methods of applying the basics of a healthy lifestyle; the ability to use basic forms and methods of health maintaining; the ability to determine the intensity of physical exertion and psycho-emotional stress (mood) during the rehabilitation activities; the ability to control the health of children and adults; the ability to demonstrate modern methods of quantitative assessment of the health level; the ability to use individual techniques and methods of health training in practical activities.

The content of the training course is divided between two modules:

1) «General theory of health», which involves the study of the following topics: «General theory of health as the basis of the rehabilitation specialist's activity », «Adaptation (adjustment) and compensation of life disorders», «Peculiarities of the current state of health of the population of Ukraine. Healthy lifestyle», «Child's health and ways of its formation, preservation and strengthening», «Spiritual, mental and social aspects of health»;

2) «Natural and scientific aspects of health-keeping», which covers the following topics: «Diagnostics of the level of individual health», «Basic natural and scientific principles of health formation», «Integrative approach to health management», «Health-improving and rehabilitative effect of physical exercises», «Main aspects of prevention of deviant behavior of youth», «Venereal diseases as a risk factor for reproductive health», «Individual health system as the basis of a full-fledged long life» (Fastivets, 2020).

Thus, the disciplines of the initial (theoretical) stage of training are studied in the 1st and 2nd courses of training a specialist in physical therapy and ergotherapy. The main tasks of this stage are aimed at the development of professional motivation, the formation of the main components of professional competence related to the content of educational disciplines. At this stage of training, the disciplines of general biological orientation (Human Anatomy, Human Physiology, Age-Related Physiology and Hygiene) prevail, which, as prerequisites for study, are oriented to the materials of the school Biology course. Thus, in the process of studying the course of Anatomy, future specialists in physical therapy and ergotherapy generalize and deepen the knowledge about the structure of the human body, as well as form the basis of the primary integration of knowledge by studying morphological changes in the body during rehabilitation activities. Such integration is actualized in the process of studying Human Physiology, which is combined with Human Anatomy and Age-Related Physiology and Hygiene through intercyclical connections. We considered the study discipline «Biomechanics» as the main course at a certain stage of training, because it reveals the directions of integration connections most widely: intra-subject (the course is integrated in its essence and name, combines Mechanics as a section of General Physics and Human Biology), intra-cycle (biomechanical competences are formed on the basis of anatomical, physiological and biochemical ones), inter-cycle (biomechanical bases of the motor actions technique and didactic bases of their formation are the theoretical basis of rehabilitation). Biomechanics as the central discipline of the specified stage not only allows to implement the integration aspect of natural and scientific training, but also contributes to the implementation of modernization and health-keeping aspects, which actualizes the meaning and integration place of the educational course «General Theory of Health, Diagnostics and Health Monitoring». Anatomical, physiological and ontogenetic aspects of health-keeping and motor activity are summarized in the educational discipline «Physiology of Motor Activity». We found that the idea of integration of the content of natural and scientific knowledge at this stage is most fully realized in the educational courses «Biomechanics» and «Physiology of Motor activity». The performed analysis allows to systematize the directions of using the anatomical, biochemical, physiological and biomechanical regularities of the body's activity to improve the methods of physical therapy and ergotherapy.

The results of the structural analysis of the content of the disciplines of natural and scientific training at the basic (practically oriented) stage are the identification of integrated tasks of the stage, which consist in mastering of future specialists in physical therapy and ergotherapy of the knowledge about the peculiarities of diagnostics the functional state of the human body in normal conditions, in case of pathological deviations and as a result of restoration of functions. The study of the academic disciplines «Functional Diagnostics» and «Metrological Control» is aimed at achieving these results. The analysis of the set of natural and scientific disciplines allows to establish the directions of the formation of a general scientific worldview and the upbringing of a culture of health-keeping, ensuring optimal conditions for the normal physical development of a person, preserving and strengthening their health, as well as the formation of the skills of the correct organization of physical exercises of higher education applicants. The integration of natural and scientific knowledge is conducted by studying the theoretical and methodical foundations of preventing the development of diseases and physical defects, health strengthening and preserving, as well as in-depth assimilation of knowledge about the mechanisms of injury. The study of the educational courses «Psychology of Health and Healthy Lifestyle», «Theory of Health-improving Nutrition» and «Biological Aspects of the Development and Implementation of Health and Rehabilitation Systems» is aimed at ensuring this direction of realization of the system of natural and scientific knowledge.

Natural and scientific educational disciplines of the final (professional and adaptive) stage are studied on the 1st and 2nd courses of the second (master's) level of training of specialist in physical therapy and ergotherapy. They are aimed at the development of creative aspects of professional competence, the beginning of the formation of which is laid in the previous stages of professional training, as well as in the process of production practices passing. At this stage, study courses of natural and scientific orientation predominate, which, as prerequisites for study, are focused on the content of the disciplines of the previous stages. The biological disciplines of the specified stage of training include «Modern Medical and Biological Methods of Restoring the Functional State of the Organism», «Information and Communication Technologies in Natural and Scientific Training» and «Natural and Scientific Aspects of Health-keeping in Physical Therapy». We consider the «Natural and Scientific Aspects of Health-Keeping in Physical Therapy» educational discipline as a leading course at the specialized professional stage, since it realizes ways of cooperation between lecturers and future specialists most widely, in the process of which the formation of initiative, independence and creativity of the latter takes place, as well as their involvement into research and educational activities.

During this stage, the methods of formation of a valeological worldview and behavior of future specialists, their conscious and careful attitude to their health and the health of children are integrated as the most important condition for the effective realization of a person's creative and physical potential. Future specialists master the universal methods of studying the level of the body's functional reserves basing on the acquired knowledge and skills, which allow the scientifically based solutions to the issue of physical exertion normalization, monitoring the level of physical preparation, controlling and analyzing the body's reaction to rehabilitative influences.

Conclusions. So, our structural analysis of the content of the natural and scientific training of a specialist in physical therapy and ergotherapy allows us to determine the specifics of the study of educational disciplines at the initial (theoretical), basic (practically oriented) and final (professional and adaptive) stages of this training. The identification of basic disciplines at each of the specified stages, as well as the determination of the ways of implementing ideas and scientific approaches, made it possible to scientifically substantiate the mechanism of integration of natural and scientific knowledge into the training of a specialist in physical therapy and ergotherapy.

Prospects for further research. The presented study does not cover all aspects of the considered problem. We consider the task of further development to be the design and application of the methodics for the implementation of the integrated content of the disciplines of the natural and scientific cycle of training of a specialist in physical therapy and ergotherapy.

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ФАСТИВЕЦЬ А.

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НОРМАТИВНО-ПРАВОВЕ ЗАБЕЗПЕЧЕННЯ ПРИРОДНИЧО-НАУКОВОЇ ПІДГОТОВКИ ФАХІВЦЯ ФІЗИЧНОЇ ТЕРАПІЇ ТА ЕРГОТЕРАПІЇ НА ПРОФЕСІЙНО-АДАПТАТИВНОМУ ЕТАПІ

Стаття присвячена вивченню нормативно-правового забезпечення процесу формування природничо-наукової компетентності майбутніх фахівців фізичної терапії та ерготерапії на професійно-адаптивному етапі підготовки другого (магістерського) рівня вищої освіти. Процес природничо-наукової підготовки фахівця з фізичної терапії та ерготерапії має враховувати причинно-наслідкові зв'язки й залежності, що виявляються в формі провідних тенденцій і визначають стратегію цього процесу. До них належать:

гуманізація, фундаменталізація, гуманітаризація, міждисциплінарний та інтернауковий характер знань, інтелектуалізація. Сучасна природничо-наукова підготовка майбутнього фахівця з фізичної терапії й ерготерапії вивчається нами через комплекс наукових ідей, до яких відносимо ідеї: оптимізації природничо-наукової підготовки, формування функціональності природничо-наукових знань, інтеграції навчальних дисциплін та здоров'язбереження.

Структурний аналіз комплексу програм дисциплін нормативної та вибіркової частин природничо-наукової підготовки майбутніх фахівців із фізичної терапії й ерготерапії нами здійснено на основі алгоритму, який дозволив уніфікувати вимоги до програм природничо-наукових дисциплін і розробити поліпредметну матрицю змісту цієї підготовки.

Проаналізовано зміст та професійну спрямованість природничо-наукових дисциплін: «Сучасні медико-біологічні методи відновлення функціонального стану в фізичній культурі, спорті та реабілітації», «Інформаційно-комунікаційні технології в природничо-науковій підготовці», та «Природничо-наукові основи здоров'язбереження», визначено їхнє місце в системі підготовки фахівця фізичної терапії та ерготерапії.

Ключові слова: *майбутні фахівці фізичної терапії та ерготерапії, професійна підготовка, природничо-наукова підготовка, природничо-наукова компетентність, етапи підготовки, професійно-адаптивний етап підготовки, нормативно-правове забезпечення.*

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