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Developing health-saving competence of pre-service teachers in Kazakhstan
Desarrollo de las competencias de preservación de la salud de los futuros profesores de Kazajstán

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Abstract. This study's significance lies in the need for a perspective teacher who can solve educational objectives to preserve children's and teenagers' health. In this context, it is crucial to cultivate the health-saving competence of pre-service teachers during the educational process at the university. The study has aimed to develop, implement and experimentally test educational conditions for developing health-saving competence of a pre-service teacher within the framework of the educational program of the pedagogical direction. The participants were 37 university teachers of physical education and 145 students from two universities in Kazakhstan. The proposed approaches and methods represent a process of future teacher training which includes the stages: initial, main and final. Instructional intervention was employed at the final stage: the authors developed and introduced a special course for prospective teachers titled "Development of Schoolchildren's Health and Modern Health-promoting Technologies". Tests, surveys, and questionnaires have been used during the intervention to test the course efficiency. The majority of respondents (79%) consider it necessary to utilize health-promoting methods and techniques at different stages of the lesson in the process of teaching the discipline. The essential aspect in the study of the elective course was building upon students' existing knowledge in the fields of physical education, pedagogy, psychology, and subject-specific teaching methods, as well as enhancing their health-saving competencies.
Keywords: health-saving, competence, physical education, teacher, activity.

Resumen. La importancia del estudio radica en la necesidad de contar con docentes capaces de resolver problemas educativos para preservar la salud de niños y adolescentes. En este contexto, es sumamente importante desarrollar la competencia de preservación de la salud de los maestros de preescolar durante el proceso educativo en la universidad. El objetivo del estudio es desarrollar, aplicar y probar experimentalmente las condiciones educativas para el desarrollo de las competencias de preservación de la salud de un futuro profesor dentro del programa educativo de dirección pedagógica. Los participantes en el estudio fueron 37 profesores de universidades de educación física y 145 estudiantes de dos universidades de Kazajstán. Los enfoques y métodos propuestos representan el proceso de formación de futuros profesores, que incluye etapas: inicial, principal y final. La etapa final consistió en un experimento pedagógico: los autores desarrollaron e introdujeron un curso especial para futuros profesores titulado "Desarrollo de la salud de los escolares y tecnologías modernas de promoción de la salud". Durante el experimento se utilizaron tests, encuestas y cuestionarios para comprobar la eficacia del curso. La mayoría de los encuestados (79%) considera necesario utilizar métodos y técnicas que promuevan la promoción de la salud en las distintas fases de la lección en el proceso de enseñanza de la disciplina. Un aspecto importante de la asignatura optativa es desarrollar los conocimientos de los estudiantes en materia de educación física, pedagogía, psicología y métodos de enseñanza específicos de la asignatura, así como consolidar sus competencias en promoción de la salud.
Palabras claves: preservación de la salud, competencia, educación física, profesor, actividad.

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Introduction

The contemporary educational strategy emphasizes the significance of health and a healthy lifestyle as fundamental elements for physical and social well-being, as well as for the holistic development of an individual's personality. The primary objective of state policies in the field of education is to effectively utilize physical culture's potential in promoting national health, fostering youth education, and cultivating a healthy lifestyle within the population. However, pedagogical science and practice are currently lacking theoretical, methodological, and conceptual studies that adopt a competency-based approach towards developing individuals' health-saving competence. Health is universally recognized as the most valuable aspect of human life, and its optimal state is achieved through targeted training interventions that incorporate physical education (Su et al., 2022; Lobachev, 2006). The individual's physical education encompasses physical readiness, psychological stability, and social adaptation to negative environmental factors, all of which form the foundation for unlocking their health potential (Laulanbekov et al., 2021).

The current landscape imposes specific requirements on teachers, who bear the responsibility of addressing professional and pedagogical challenges to create an educational environment that promotes health (Lotova, 2015). This is particularly crucial as a significant portion of negative influences on students' health (estimated to be 50-60% according to some studies) can be attributed to teachers and their detrimental impact on students' physical and psychological well-being, often resulting from their lack of preparedness and incompetence in implementing health-saving methods(Смирнов,2002; Хонелидзе et al., 2020; Леванова & Цибульникова, 2018).

T. Makeeva's (Urait.ru, 2019) study has demonstrated that one of the key factors in implementing the concept of health-saving pedagogy and facilitating health-saving activities is the proficiency and competency of teachers in organizing sports and recreational endeavors.

Health-preserving competence is one of the most important components of the competence of teachers, which

includes a set of value orientations, health-preserving knowledge, skills and personal qualities. Health-preserving competence of a teacher is usually considered from two positions: as a personality-oriented quality aimed at optimizing the teacher's own health directly and as a professional quality of a teacher aimed at preserving and strengthening students' health. Being a complex phenomenon that includes a set of value orientations, health-preserving knowledge, skills and abilities, and personal qualities of teachers, this competence characterises the personality of a teacher, the level of formation of which is manifested in the ability and readiness for health-preserving activities based on knowledge, skills, and experience in the educational environment.(Gladkova et al.,2019; Vasina et al., 2021)

The significance of developing the health-saving competence of future teachers has been acknowledged in the works of N. V. Skurkhina (*Sfu-kras.ru*, 2016), where a consistent correlation was identified between teachers' attitudes towards their own health, their proficiency in restoring all aspects of health, and their ability to provide appropriate educational impact on students. Insufficient health-saving competency among teachers results in the devaluation of the existing system of physical education for students and a limited utilization of physical education's potential to preserve and enhance the health of individuals involved in the educational process (Palatkin, 2012).

Discipline 'Physical Education' within higher educational institutions serves as a primary means for fostering the necessary health-saving competence in future professionals. One approach to cultivating this competence involves increasing motor activity and enhancing the physical and functional preparedness of future specialists to meet the demands they may encounter in their future professional endeavors and everyday life.

Upon conducting a review analysis, it becomes apparent that the health-saving competency of a teacher is typically approached from two perspectives. Firstly, it is viewed as a quality that is focused on optimizing the teacher's own health, emphasizing personal well-being. Secondly, it is perceived as a professional attribute of a teacher, targeting the preservation and enhancement of students' health. This competency, as a multifaceted phenomenon, encompasses a combination of value orientations, knowledge related to health preservation, practical skills, and personal qualities of teachers. It reflects the teacher's personality and their level of development in terms of the ability and willingness to engage in health-promoting activities within the educational environment, drawing upon their knowledge, skills, abilities, and professional experiences.

Taking into consideration the findings of previous studies (Konyaeva, 2016; edu.ru, 2012), which highlight the importance of developing a person's steadfast stance towards physical education and health-improvement activities as effective means for preserving and enhancing health, it becomes evident that a healthy lifestyle is contingent upon the development of health-saving competency within individuals. The analysis of sources on the problem under study showed that the term "health-saving competence" is interpreted as motivated, self-organized activity, determined by the logic of behavior and the personal attitude of the individuals to the problem of maintaining their health. Taking into account the specifics of the perspective professional activity of a pedagogical university graduate, a rather serious approach to health when recruiting for a job, we consider it necessary to pay special attention to the objective of developing health-saving competence among students-pre-service teachers during university training.

The formation of health-saving competence serves as the technological foundation of health-saving pedagogy, as teachers equipped with this competency can strategically design their activities within educational institutions to maximize students' health outcomes.

Measures of ensuring a high-quality development

In order to address the challenge of ensuring a high-quality development of the requisite health-saving competencies among future specialists, the following measures are essential:

- Development of an effective methodology for conducting physical education classes: It is crucial to establish a methodology that promotes the improvement of participants' health levels through increased motor activity and careful monitoring of their functional states.

- Enhancement of emotional-value, information-cognitive, and creative-activity motivations of students: Active involvement of students in the selection and compilation of physical exercise routines can foster greater engagement and motivation. This approach empowers students to take ownership of their physical well-being.

A professionally oriented approach in physical education training aims to develop students' ability to address health promotion and healthy lifestyle education within specific professional and educational contexts, considering the unique characteristics of professional thinking.

Principles of teaching "Physical Education" discipline

To strengthen the professional orientation of teaching the university discipline "Physical Education" and ensure effective health-saving education of future teachers based on a competency-based approach, the following principles should be considered:

1) Professionally oriented teaching of physical culture involves integrating it with medical and biological disciplines to acquire additional professional knowledge and cultivate significant personal qualities relevant to the profession (Merma-Molina et al.,2023).

2) "Physical Education" as a university discipline serves as a means to enhance professional competence and personal-professional development of students, being a vital requirement for successful professional practice upon graduation. The study of physical culture fundamentals and health-improving activities should not be an isolated objective, but a means to achieve the goal of enhancing health-saving competence within one's specialized field (Selvam et al.,2017).

3) The specificity of major specialties should be taken

into account, particularly in areas such as warm-up exercises, breathing techniques, muscle relaxation exercises, and general developmental exercises tailored to activate students (Santos et al.,2022).

4) Age, socio-demographic, socio-psychological, personal, and activity factors should be considered when forming a healthy lifestyle for future teachers.

Effective forms, methods, techniques, and tools should be comprehensively utilized to actively engage students in sports and recreational activities (Kone et al, 2022).

5) Cognitive activity should be stimulated, and students' value orientations, interests, and needs in the realm of health preservation and promotion through physical culture should be nurtured (Bernadette et al.,2013).

6) Students should be equipped with self-control and self-organizational skills aligned with the aspects of a healthy lifestyle within the context of physical culture and health-improving activities (Bernadette et al.,2013).

7) Close collaboration between physical culture instructors and teachers in the medical, biological, special, psychological, and pedagogical fields should be established (Szucs et al., 2021).

The design and organization of physical education and health-improving activities for students at the university should adopt an integrated system that is phased and encompasses various forms of in-class and extracurricular activities, blending educational and health-improving components.

Components of developing a health-saving competence

In our perspective, the process of developing health -saving competence involves the formation of various components: motivational, cognitive, and procedural. It is crucial to recognize that the formation of each component cannot be isolated from the formation of others, as they are intricately interconnected and work towards a common objective-developing health-saving competence.

Simultaneously, each component has its own specific objectives, means, and methods. For instance, in the formation of the motivational component of health-saving competence, the primary aim is to develop the student's sphere of needs and volition (Vamos et al., 2020). We consider it pertinent to conceptualize the will as a function of organizing physical culture and health-improvement activities, determining their initiation and execution. Meanwhile, motives serve as the driving force behind the will, stimulating such activities. An essential source of motives for volitional activity stems from the recognition of social and personal needs and values.

The cognitive component is shaped through the acquisition of relevant knowledge by students. The central objective in this process is to cultivate an individual style of a healthy lifestyle. The development of the intellectual potential within the realm of physical culture should be coupled with nurturing students' cognitive activity, fostering their skills in searching for and utilizing necessary information, and cultivating their analytical abilities to assess actions based on meaningful engagement with the activities performed (Beinert et al., 2021).

Hence, *the cognitive component* of health-saving competence encompasses concepts and ideas that are developed based on specific knowledge and motor experiences. This component assists students in understanding their body, its functions, and the range of motor capabilities it possesses. It enables students to acquire knowledge about their own development, methods of preserving health, improving their physical well-being, and to engage in self-monitoring of their health.

The main objective in forming *the procedural component* of students' health-saving competence is to cultivate a healthy lifestyle through the adoption of specific behavioral patterns. Physical exercises serve as the primary means for achieving this goal, as they contribute to the formation of other components that facilitate a responsible attitude towards health. In this context, the development of physical exercises as activities and the translation of motor actions into meaningful formations that contribute to the formation of the individual's value-motivational structure become urgent tasks within health-oriented physical education.

Considering that the transition to distance and blended forms of education has necessitated the transformation of traditionally organized and purposefully designed physical education for students, there is a growing need to adopt a competency-based approach and develop the appropriate competence among future teachers to effectively meet the challenges of this new educational landscape.

The development of health-saving competence encompasses various components of the learning process. The *motivational component* involves the cultivation of a value system, with a central emphasis on health, that motivates students to prioritize health and adopt a healthy lifestyle, fostering a positive attitude towards it. The cognitive component focuses on acquiring the necessary knowledge about the theoretical and methodological foundations of health preservation. The procedural component entails mastering the skills required to carry out activities aimed at preserving and promoting health, alongside the cultivation of essential personality traits.

In organizing and implementing the professional and pedagogical training of future teachers at the university level, it is crucial to ensure that the acquired knowledge holds personal meaning and significance for the students. Thus, in the process of developing health-saving competence, situations should be created wherein individuals perceive socially significant activities as aligned with their own goals and intentions.

In this regard, the success of a pre-service teacher's professional training is heavily influenced by the cultivation of positive motivation for learning. This motivation shapes their attitude towards both cognitive activities and the educational activities of teachers, encompassing various aspects of the learning process.

Regarding the *educational content* necessary for training

future teachers in health-saving activities at school, it can be divided into a general part and a special part that focuses on specific aspects of the educational process. The general part encompasses the content that characterizes the teacher's activities in alignment with the overall goals of educating and teaching schoolchildren. It is shaped by the societal demands, general educational principles, and universal ideas and values. On the other hand, the special part of the content pertains to the incorporation of traditional approaches in addressing relevant issues alongside the imperative for widespread adoption of health-saving technologies aimed at preserving and strengthening students' health.

Consequently, in order to transfer the educational objectives into practical implementation, pre-service teachers must possess a sufficient level of health-saving competence. This level of competence is determined by and relies on their psychological and pedagogical preparedness.

From our perspective, achieving such a level of competence can be realized through the recognition of interdisciplinary connections among psychological and pedagogical disciplines. These interdisciplinary connections provide the necessary skills and abilities for the development of health-saving competence among future teachers.

For example, an important direction in the formation of studied readiness among students at the first stage is to familiarize them with the methodology of psychological and pedagogical diagnosis of the level of physical, psycho-emotional and spiritual-moral health of students. First-year students are introduced to a set of methods for studying the personality of students and student groups in Psychology classes.

Within this course and the university discipline "Physical Education", they develop the acquired knowledge and initial practical skills to diagnose the levels of physical and psychological health of students. In addition, using various methods of psychological diagnostics, they develop the skills and abilities of purposefully applying the results in work to improve the health of students and develop the values of a healthy lifestyle in a modern school.

The main basis for the development of the studied competence during the second (main stage), along with the discipline "Physical Education", is the course "Pedagogy", which specifies the methodological, theoretical and methodological foundations of the holistic pedagogical process of the school, which is designed to equip future teachers with knowledge of theoretical and methodological foundations modern pedagogical science, as well as the skills necessary for the effective organization of the educational process for the formation of both physically and mentally healthy, as well as spiritually and morally developed schoolchildren.

Following ideas of health-preserving pedagogy, to preserve and promote children's health it is important to use the opportunities of pedagogical science itself and teacher activities. (Urait.ru, 2019) Capacities of the "Pedagogy" course in developing health-saving competence can be applied if:

- active forms of lecture are used (problem lecture, lecture-conference, binary lecture, lecture visualization, lecture-consultation, etc.), in which students are involved in active cognitive activity to acquire knowledge and master the skills of organizing work with parents of schoolchildren on the utilization of health-promoting technologies for the purpose of improving and strengthening their health and the health of their children;

-all forms of independent work of students, used in practical classes in pedagogy (and other educational disciplines of the pedagogical cycle), and in parallel during teaching practice;

- implementation of educational tasks of a professional pedagogical nature, based on the use of active and interactive teaching methods, independent search for students in classroom (seminar, practical classes) and extracurricular (club) classes; during the period of teaching practice, second-year students develop their own experience in solving problems in the aspect of health-saving activities with schoolchildren.

In addition, at this stage, the continuation of classes within the framework of the university course "Physical Education" serves as the basis for the development of the following pedagogical skills: to implement the objective of developing health-saving competence in accordance with the principles and educational mechanisms of the pedagogical process; to diagnose the health status of students based on their main characteristics and predict the further development of their physical activity and experience in the use of physical education and health technologies.

Limited amount of hours and the breadth of issues required for consideration do not allow university teachers to reveal in more detail all issues related to the preservation and strengthening of student health. This circumstance, in our opinion, requires the development and inclusion in educational programs in the pedagogical field of a special course that will ensure effective preparation of students for the aspect of activity being studied.

Materials and Methods

To achieve the objectives outlined in this study, a range of methods were employed. Theoretical research methods encompassed the comparative analysis of scientific, pedagogical, and methodological studies, the examination of advanced pedagogical practices in higher education, and the use of modeling techniques. Empirical research methods involved conducting surveys, questionnaires, interviews, and conversations, as well as observing students' pedagogical activities during their teaching practice. Additionally, analysis of students' creative outputs and the implementation of verification, formation, and control measurements were employed. Furthermore, mathematical and statistical techniques were utilized for processing and analyzing the empirical data.

Identification of participants

Instructional intervention was carried out on the basis of South Kazakhstan Pedagogical University, M. Auezov South Kazakhstan University and H.A. Yasawi International Kazakh-Turkish University. 37 physical education teachers from these universities, as well as 145 students 18-21 years old, among them 98 boys and 47 girls, participated in it. During the intervention work, the participants were familiarized with the aim and objectives of the study, methods, and stages of the study, in addition, an explanatory conversation was held on the study procedure, and informed consent sheets for study participants were prepared.

The distribution of students in the control and interventional groups according to the level of development of health-saving competence was carried out using the method of expert assessments. Experts, experienced physical education university and school teachers, filled out sheets with criteria-based assessments for evaluating interventional study participants.

Ethics

The study procedure and protocols were reviewed and approved at a meeting of the local ethical commission of the university where the research was performed. All relevant international ethical principles prior to and during the study were observed.

In this study, we aimed to determine the content and methods of physical education with regard to the formation of health-saving competence among future teachers. It is important to emphasize that the prioritization of health in physical education centers around key goals such as health preservation and enhancement, as well as the cultivation of a desire for a healthy lifestyle among students (Başer et al., 2007).

The elective course

Thus, at the third (final) stage, the development of the studied competence among future teachers is carried out during the teaching of the special course “Development of Schoolchildren's Health and Modern Health-saving Technologies” (Table 1), which reveals the methodological, theoretical and instructional foundations for organizing a health-preserving environment and a healthy lifestyle, which is designed to equip future teachers with knowledge of the theoretical and methodological foundations of health conservation, as well as the skills necessary for the effective organization of the educational process for the formation of both physically and mentally healthy, as well as spiritually and morally developed schoolchildren.

Table 1.
Schedule of the elective course "Development of schoolchildren's health and modern health-saving technologies"

Topic	Number of hours			
	Lecture	Practical	Lecturer’s office hours	SIW
1. Organization and implementation of the education of a healthy lifestyle for schoolchildren.	1	1	2	4
2. Methodology and innovative approaches to preserving the health of students in online and offline learning	1	1	2	4
3. The concept of "sports and recreation activities". Forms and methods of physical culture and health-improving activities of schoolchildren	1	1	2	4
4. Ways and conditions for the formation of a healthy lifestyle of a person in the process of physical culture and health-improving activities	1	1	2	4
5. Features of the organization of space and safety precautions in the process of physical education at home	1	1	2	4
6. Health-saving role of physical exercises. Psychophysiological bases of physical inactivity, ways to prevent it	1	1	2	4
7. Emotional discharge and restoration of mental performance during active rest	1	1	2	4
8. The concept of health-saving technologies, their classification. Features of the use of health-saving technologies	1	1	2	4
9. The specifics of the organization of physical culture and health-improving activities of schoolchildren in extracurricular work	1	1	2	4
10. Methods of mastering special exercises with a pronounced health-improving orientation (cross-country running in the park, in the forest, respiratory gymnastics health-improving complexes, yoga, autogenic training)	1	1	2	4
11. Mastering unloading entertainment complexes (rhythmic gymnastics, exercises with musical accompaniment)	1	1	2	4
12. Methodology for the development of independent tasks in terms of the organization of physical culture and recreation activities	1	1	2	4
13. Forms of control in the organization of physical culture and recreation activities in the process of introducing students to a healthy lifestyle	1	1	2	4
14. Health-improving physical exercises in online lessons	1	1	2	4
15. Innovative forms and methods of organizing educational work to introduce schoolchildren to a healthy lifestyle	1	1	2	4
Total:	15	15	30	60

This course (120 hours, 4 credits) serves as a vital link in the structure of the university's educational process, aiming to foster the development of health-saving competence among students. It establishes close connections with other pedagogical disciplines, serving as a logical continuation of the process of instilling students' positive attitudes towards the specific aspects of pedagogical activity, knowledge, and implementation skills. Moreover, it acts as a gradual continuation of the formation of the studied competence, progressing from the first to the fourth year through the teaching of pedagogical disciplines, pedagogical practice, and extracurricular work. The course facilitates the generalization and systematization of the knowledge and skills acquired by students in the realm of educating schoolchildren, while also encouraging independent and creative engagement among students. The elective course program addresses numerous questions that future teachers encounter in the process of promoting healthy lifestyles among students. It focuses on recognizing the educational potential of physical culture and provides a foundation for organizing effective sports and recreational activities, while considering specific

factors at different stages of implementation. The program's content encompasses theoretical aspects, practical class plans, and independent assignments, enabling students to not only solidify their theoretical knowledge but also enhance their professional skills. This includes the ability to address pedagogical challenges related to the health preservation and development of schoolchildren.

Since one of the main components of health-saving competence of a teacher is motivational, characterized by students' interest, attitude towards their upcoming professional and pedagogical activities, and the motives driving them, the first criterion of our readiness is "a positive attitude towards health-saving activities and a healthy lifestyle." The following criteria were identified as criteria for this component:

- awareness of the social significance of a healthy lifestyle, the role of the teacher in preserving and strengthening the health of schoolchildren;
- the need for physical education and recreational activities;
- orientation and attitude towards the norms and values of a healthy lifestyle.
- professional interest in health technologies and physical education.
- interest in studying and improving their personality and individuality; need for self-improvement, self-realization, self-knowledge, self-development.

As the survey data showed, regarding the severity of this component among students, in the interventional group the level of formation of the motivational component increased significantly compared to the control group. Thus, in the intervention group, there was a noticeable increase in interest in the development of health-saving competencies, in mastering professional knowledge in physical education and recreational activities, as well as in the use of health-promoting technologies. In the control group, the degree of manifestation of the criteria for the motivational component increased slightly, while there were cases of a decrease in its indicators.

The content of other components of health-saving competence consists of a certain range of knowledge and skills necessary and sufficient for the implementation of health-saving activities in the unity of educational and extracurricular activities and for improving their professional and pedagogical skills. Therefore, as the second criterion of the studied readiness, we highlight "the presence of knowledge that determines pedagogical activity and the formation of health-saving competence," which is expressed in the following:

- knowledge about the essence of health, factors and means of a healthy lifestyle, features of its management;
- knowledge about the essence, types of physical education and health activities;
- knowledge about the methods and ways of using health-saving technologies.
- knowledge about the essence of self-control and diagnosis of health conditions.

To assess the level of formation of the cognitive component among future teachers, which pertains to their knowledge of health-saving technologies and their application in teaching, a control task was administered. This task required students to answer questions aimed at gauging their understanding of physical culture, health-improving activities, and contemporary health-saving technologies. Additionally, students were tested to ascertain their knowledge of the specifics of health-saving technologies and the implementation of these techniques in subject-based teaching.

Based on the data, notable positive changes in the dynamics of the cognitive component's formation of health-saving competence were observed in the intervention group. The results obtained from the analysis of the test scores indicate an increased knowledge among the interventional group regarding the essence of physical education and health-improving activities, the methodology for applying health-saving technologies, as well as methods for diagnosing and assessing students' health levels and their engagement in healthy lifestyles. Overall, this suggests a higher level of formation of health-saving competence within the intervention group. In contrast, the control group did not show significant growth in the formation of the cognitive component.

Following the completion of the elective course, students were asked to respond to the following questions:

1. Which methods of physical culture and health-improving activities sparked the most interest in you, and why?
2. Do you believe it is feasible to incorporate health-saving technologies in the teaching process of your subject?
3. Should this elective course be included as a compulsory course, or do you think it should remain an elective choice for students?

The third stage of the formation of health-saving competence among future teachers encompassed pedagogical practice during the 3rd and 4th years.

One of the important components, characterizing health-saving competence of a future teacher, is the procedural component, which is presented with the following criteria and indicators:

- general pedagogical and professional skills and abilities that form the basis for maintaining and developing health in the process of physical education and health activities;
- skills and abilities to utilize modern health-saving technologies in educational work at school;
- readiness for diagnosis, control (self-diagnosis and self-control) and correction of healthy lifestyle in the process of physical education and health activities;
- skills and abilities of modern methods of physical self-improvement, emotional self-regulation, self-maintenance of health;
- the ability to manage the process of schoolchildren's health improvement.

To assess the procedural component, which directly

contributes to the implementation of health-saving competence, students were provided with tasks aimed at evaluating their development of skills and abilities as future teachers.

Results and discussion

The analysis of processed results reveals a substantial advantage for students in the intervention group during this phase of the study. On average, they demonstrate more than double the proficiency of the control group in effectively planning and organizing the educational process according to the methodology of health-saving education. Moreover, their adept use of technological tools in implementing physical education and health-improving activities sets them apart. Furthermore, their ability to analyze, diagnose, and evaluate progress and results related to a healthy lifestyle showcases a marked superiority over their counterparts in the control group.

The study of educational work plans, jointly compiled with school teachers, reports on teaching practice, and observations of the process of preparing and conducting collective activities, both in defending projects in the classroom and during immersion in pedagogical practice, provided evidence that the inclusion of the elective course "Development of schoolchildren's health and modern health-saving technologies" significantly enhances the level of formation of health-saving competence of future teachers (Table 2).

Table 2.
Dynamics of development of levels of health-preserving competence of pre-service teachers during interventional work (in%)

Levels	Initial stage		Final stage	
	control group	intervention group	control group	intervention group
High	16, 5	17,8	21,9	35,6
Medium	37,7	40,0	39,2	49,3
Low	45,8	42,2	38,9	15,1

As the results of the experiment showed, the essential aspect in the study of the elective course was building upon students' existing knowledge in the fields of physical education, pedagogy, psychology, and subject-specific teaching methods. This approach not only facilitated a more solid and meaningful acquisition of pedagogical knowledge but also allowed for the updating of their existing knowledge. The third stage of the formation of health-saving competence among future teachers demonstrated that relying on subject-specific knowledge and familiarity with physical education and health-improving activities enabled students to avoid many negative phenomena that may arise in communication with children during previous stages of education. Moreover, it helped foster initiative and independence in the use of methodological and technological tools, showcase organizational skills in educational work with children in this domain, and effectively integrate theoretical knowledge of the subject with practical implementation of physical education and health-improving activities. Students successfully applied the acquired knowledge during their pedagogical practice. The assessment of practical training among students in the control and interventional groups was conducted through the analysis of educational and program documentation (such as pedagogical diaries, notes on educational activities, and reports on pedagogical practice), as well as through questionnaires and self-assessments by the students themselves.

For instance, students were directly involved in organization of various directions and forms of health-preserving work with schoolchildren during their pedagogical practice. An immersion' method was used for students, when they were set in a situation of problem solving, improvisation, immediate decision-making, impromptu, increased eventfulness, interest, and most importantly, taking independent action in the context of preserving and strengthening the health of children. So for example, In order to create the need for children to exercise, observe the motor regime, students-pre-service teachers organized and held various competitions, competitions including "family relay races," where both parents and their children took part. Competition was held under the motto"Mom, Dad, and me -all are sports family!". Passing each stage of this relay race corresponded to the fulfillment by all family members of certain physical education techniques (for dexterity, coordination of movement, speed, etc.). After the end of the competition, the winners told spectators and participants of the relay about how they develop physical culture and sports skills in themselves and in their children.

The results of the questionnaire revealed the following:

To the question “Which methods of physical culture and health-improving activities sparked the most interest in you, and why?” most students (63,5%) replied that various competitions, and festivals involving physical movements demanding some creative approach generated the highest interest both in pre-service teachers and schoolchildren. It is worth noting that students of the intervention group indicated that the elective course "Development of schoolchildren's health and modern health-saving technologies" was most useful for their successful school practice. Particularly noteworthy is that the majority of respondents (79%) consider it necessary to utilize health-promoting methods and techniques at different stages of the lesson in the process of teaching the discipline.

The analysis of similar research in this area shows that students increasingly acknowledge the more persistent implementation of competency-based teaching practices in the design, management, and evaluation of their professional training. (Duclos Bastías, et al.,2023). We agree with the researchers claiming that teachers must have updated health knowledge and skills to keep their commitment to health education. (El Kazdouh at al.,2022) Moreover, we noticed a positive impact of physical activity on students-future teachers own academic, professional and personal skills as described in the study by Corral-Robles et al. (2022) Further research may be devoted to the acceptability and implementation of the elective course on health-preserving, as described in the study by Renko et al. (2020)

Study limitations

Due to time limitations allocated for this research, it was not possible to observe the long-term effect of the proposed approaches and the course on pre-service teachers' professional experience at school except for their pedagogical practice.

Conclusion

In conclusion, the methodology of teacher training for the organization of physical education and health-improving activities, as well as the implementation of health-saving technologies was developed by considering the general, special, and singular aspects of studying psychological and pedagogical disciplines, biomedical disciplines, and students' extracurricular and independent work.

As one can observe from comparison of control and intervention groups only targeted activity on forming health-saving competence during their study at university such as the special course, together with infusion of other disciplines, active involvement of students into pedagogical practice may lead to more effective acquiring of health-preserving skills and knowledge (difference 10,1%). Special attention should be paid to students' motivation and self-reflection during their practice at schools, making an analysis of their efforts by themselves with the help of self-evaluation sheets may help students to correct their practical skills on health-preserving activity.

The process of forming the health-saving competence of future teachers is an integral part of their professional training.

Practical acquisition of health-preserving competence is implemented comprehensively. Firstly, students are equipped with knowledge about the essence, objectives, and methodological foundations of forming a healthy lifestyle, as well as its interconnectedness with other aspects of comprehensive personality development. Secondly, students develop an understanding of the modern system of physical education, the organization of physical culture and health-improving activities in general education schools, and the various means, forms, and methods of implementation. Thirdly, students acquire the skills to apply health-saving technologies in educational and extracurricular activities, as well as in supporting families in preserving the health of children, including the ability to facilitate collaboration between schools and families. Additionally, independent student work plays a crucial role in developing their value attitudes towards health and consolidating the knowledge and skills necessary for the development of health-saving competence. Finally, various forms of extracurricular educational work are employed to foster the development of students' health-saving competence.

Overall, the development of students' health-saving competence based on a system-holistic approach requires comprehensive coverage throughout their entire university education, encompassing the content of all courses and passing through motivational, cognitive and procedural components. Furthermore, it should follow a phased approach, progressively addressing the range of skills and abilities related to health-saving competence at each stage of their education.

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