

The study of professional competencies of physical education teachers in water sports El estudio de las competencias profesionales del profesorado de educación física en deportes acuáticos

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Abstract. The relevance of the issue is determined by the need to improve the training of physical education teachers and the mastery of water sports methods by future teachers. The purpose of the article is to develop and test ways to improve the professional competencies of physical education teachers in water sports, namely, the introduction of the elective course “Working with students in water sports” into the educational process and determining the effectiveness. During the study, student competence in water sports and their teaching readiness was assessed using a three-component model: motivational, content, and procedural. Evaluating factors like interest, skills, lesson management, and outcome regulation helped determine their professional competence level. The experiment was conducted at Sh. Ualikhanov Kokshetau University and Abay Myrzakhmetov Kokshetau University, involving 120 students from the Department of Creativity and Sports, who are prospective teachers and coaches. The preliminary experiment highlighted the necessity to enhance the preparation of future teachers for water sports coaching. The results from both the experimental and control groups were nearly identical, underscoring the credibility of the study. The significance of the research paper in the theoretical aspect lies in considering and discussing the need to introduce ways to improve the professional competence of physical education teachers in water sports, determining the criteria for assessing the level of professional competence of teachers of the above-mentioned specialty.

Key words: Skill assessment, Pedagogical preparedness, Aquatic training techniques, Curriculum enhancement, Coaching methods, Athletic development, Teaching strategies.

Resumen. La relevancia del tema viene determinada por la necesidad de mejorar la formación de los profesores de educación física y el dominio de los métodos de deportes acuáticos por parte de los futuros profesores. El propósito del artículo es desarrollar y probar formas de mejorar las competencias profesionales de los profesores de educación física en deportes acuáticos, a saber, la introducción del curso optativo "Trabajar con estudiantes en deportes acuáticos" en el proceso educativo y determinar su efectividad. Durante el estudio, se evaluó la competencia de los estudiantes en deportes acuáticos y su preparación para la enseñanza mediante un modelo de tres componentes: motivacional, de contenido y de procedimiento. La evaluación de factores como el interés, las habilidades, la gestión de las lecciones y la regulación de los resultados ayudaron a determinar su nivel de competencia profesional. El experimento se llevó a cabo en Sh. Universidad Ualikhanov Kokshetau y Universidad Abay Myrzakhmetov Kokshetau, en el que participan 120 estudiantes del Departamento de Creatividad y Deportes, que son futuros profesores y entrenadores. El experimento preliminar puso de relieve la necesidad de mejorar la preparación de los futuros profesores para el entrenamiento de deportes acuáticos. Los resultados tanto del grupo experimental como del de control fueron casi idénticos, lo que subraya la credibilidad del estudio. La trascendencia del trabajo de investigación en el aspecto teórico radica en considerar y discutir la necesidad de introducir formas de mejorar la competencia profesional de los profesores de educación física en deportes acuáticos, determinando los criterios para evaluar el nivel de competencia profesional de los profesores de los mencionados. especialidad.

Palabras clave: Evaluación de habilidades, Preparación pedagógica, Técnicas de entrenamiento acuático, Mejora curricular, Métodos de entrenamiento, Desarrollo atlético, Estrategias de enseñanza.

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Introduction

Today, the professionalism of workers in all sectors is a factor in the efficiency of the state economy as well as a factor in the well-being of the population. Professionalism of the teacher plays far from the last role in the system of the national structure. After all, the outlook of society depends on teachers (Tokareva, 2015). Competence is a complex multi-stage combination of knowledge, skills, values, understandings, desires and attitudes, which is the key to the effective implementation of human activity in a certain area. Competence's characteristic of the education sector are divided into two groups – special and general (Yeremiia, 2022). The latter are universal, which specialists must possess, regardless of their specialization. They are associated with communication skills, the ability for continuous learning, the ability to transfer knowledge, as well as organizational skills, while special competencies are determined by a particular subject being learned. The teaching profession must be based on a high level of

education, which is expanded and supplemented throughout life. The qualification must be mobile and based on partnership (Tul et al., 2019). As for the teacher of physical education, their professional competence is based on the integrity of motivational, cognitive and psychological components, pedagogical skills, methods and techniques that contribute to the effective teaching of the subject (Loy and Gordienko, 2023). Among the modern professional competencies of a teacher of physical education, the following can be distinguished: gnostic (cognitive); research; constructive; organizational (management); communicative; motor; competence of professional and personal improvement (Maldybaev, 2022).

Teaching water sports is a separate responsibility of a physical education teacher. The modern approach to teaching swimming expands the concept of “swimming ability” to the concept of “aquatic competence”. The term was introduced by S. Langendorfer and L. Bruya in 1995 and adapted by K. Moran in 2013 (Stallman, et al., 2017). It is broader in itself and explains many of the competencies

that a person must have to feel confident in the water. Aquatic competence includes physical and cognitive abilities, which together make a person competent while in the water. Being competent in the water means possessing the necessary skills and knowledge to safely navigate and interact with aquatic environments, encompassing swimming abilities, safety awareness, and adaptability to various water conditions. The ability to stay on the water alone is not enough to master water sports. Breathwork is also very important in this lesson (Pivovar and Kovach, 2023). Delay, control and regulation of breathing are associated with the ability to swim. From the viewpoint of aquatic competence, swimming cannot be considered simply as moving the body in the water, but should also include all the features of movement both on the water surface and in the water (Stallman et al., 2008). J. Clemente et al. (2004) studied flotation. Flotation refers to the ability of an object or individual to remain suspended on the surface of a liquid without sinking. In aquatic contexts, effective flotation is crucial for safety, as it helps prevent drowning by allowing individuals to stay afloat. Mastering flotation techniques, such as treading water or floating on one's back, is a foundational skill in water competency, ensuring an individual can rest, breathe, and signal for help if needed. All these nuances should be taken into account by the teacher, so their readiness to conduct water sports classes should be formed in the process of professional training.

A competency-based approach to the training of physical education teachers should be organized in all higher educational institutions (Krzysztofik et al., 2021). The article aims to devise and evaluate methods to enhance the professional skills of physical education instructors in aquatic sports, specifically by integrating an elective course titled "Working with students in water sports" into the curriculum and assessing its impact. This study tested the pedagogical model for the development of professional competence of physical education teachers in water sports during their training, which will modernize curricula and achieve the goals of high-quality training of future specialists.

Literature Review

Modern teaching trends require the teacher to possess extensive knowledge in various fields, to possess skills that are not only related to their subject, but also general ones that characterize a competent teacher. Therefore, the issue of professional competencies of teachers has recently become quite popular in the research literature. For example, O.Y. Grechanik and V.V. Grigorash (2019) distinguish between professional training of a specialist and professional competence. The competence of a teacher is explained as an integration of the level of professional knowledge, skills, and personal qualities that affect the level of upbringing and education of students. The competence of a teacher is directly related to the success of students (Suratman et al., 2020). Also, professional competence can

be improved throughout the teaching career. This was demonstrated by research conducted by C. Dignath (2021).

During professional training, a future teacher goes through four stages that characterize the process of professional development. This model was proposed by G.K. Nakipova (2021), and it includes the stages of unconscious incompetence, conscious incompetence, conscious competence, unconscious competence. The competence of teachers in certain areas is also revealed in the scientific literature. For example, competence in the development of information literacy of students (Wu et al., 2021); competence in the construction of thinking (Dahlan et al., 2020). Some works are also devoted to the issue of competences of physical education teachers. S. Kryshtanovych et al. (2021) identify progressive teaching methods for future sports teachers aimed at increasing professional competence and revealing the personal potential of students. The content of professional training with a competency-based approach of physical education teachers is the subject of research by Z.S. Jalolova (2022). The number of scientific papers allows concluding that the general professional competence of teachers has been studied sufficiently. At the same time, the problem requires concretization and in-depth research, as well as a separate study of the competencies of teachers in various fields.

Education is one of the main priorities of the "Kazakhstan-2030" Strategy. The education system must be adapted to the new modern socio-economic environment (Shaimukhanova et al., 2012). The system of physical education requires universities to improve the conditions for the process of professional development of specialists, as well as requires compliance with social ideals from curricula. The "Kazakhstan-2050" Strategy political course creates the prerequisites for the demand for sports and pedagogical professions, since it highlights culture and sports as a special area of concern for the state. The preparation of a future teacher must be done in stages, developing various competencies and contributing to their personal formation (Orynbekkyzy, 2018).

Materials and Methods

The research engaged a sample of 120 students (in experimental group 60 students and in control group 60) from the Department of Creativity and Sports at Sh. Ualikhanov Kokshetau University and Abay Myrzakhmetov Kokshetau University, who are prospective teachers and coaches. Instruments employed included specialized surveys, questionnaires, tests, conversational methods, interviews, and peer reviews. Methodologically, the study was organized in three pivotal stages.

The initial stage focused on gathering, classifying, and analyzing the theoretical foundation on the topic. This phase also incorporated an ascertaining experiment to gauge the existing competence levels of physical education students, segmenting them into low, medium, and high categories. It was during this phase that the students were divided into

control and experimental groups based on their competency levels.

The second stage concentrated on a thorough literature analysis, looking into the nuances of training future physical education teachers, particularly in water sports. This phase also heralded the development of the elective course

"Working with students in water sports", structured into two comprehensive modules that amalgamate both theoretical and practical dimensions. This curriculum, designed to enhance the students' pedagogical prowess in water sports teaching, is detailed in Table 1.

Table 1.
The "Working with students in water sports" curriculum plan

Ser. No.	Module name	No. of hours	
		lectures	practical lessons
1.	Module 1	16	
	Organization of water sports at school		
	Theoretical lessons	9	9
1.1.1	Fundamentals of working with students in water sports at school	2	2
1.1.2	Harmoniously developed personality in the process of physical education and sports	2	2
1.1.3	Preparation for planning and organizing work with students on water sports	2	2
1.1.4	Planning work with students on water sports at school	3	3
	Practical lessons		
1.2.1	The value of sports. The educational role of sports. Choice of specialization.		
1.2.2	Formation of a sports team in water sports.		
1.2.3	Importance of the planning process. Specificity of planning documents.		
1.3	Generalizing Module 1 lesson		
1.4	Module 1 knowledge control		
2.	Module 2	14	
	Methods of working with students on water sports		
	Theoretical lessons	6	6
2.1.5	Fundamentals of physical education in water sports	2	2
2.1.6	Fundamentals of water sports training	2	2
2.1.7	Organization of water sport competitions	2	2
	Practical lessons		
2.2.1	Principles and methods of training in swimming.		
2.2.2	Peculiarities of training periods in the pool.		
2.2.3	Pedagogical requirements for working with students on water sports at school		
2.3	Generalizing Module 2 lesson		
2.4	Module 2 knowledge control		
	Total:	15	15

The third stage was marked by a formative experiment. The "Working with students in water sports" elective course, proposed at the previous stage of research, was introduced into the educational process of experimental groups of students. After the formative experiment, the students were asked to undergo a diagnostic study again in order to establish the dynamics of changes in the indicators of their professional competence in working with water sports. The results of the control and experimental groups of students were obtained, analyzed and compared. At the third stage, practical and theoretical results were summed up, the significance and effectiveness of the proposed methodology were established.

Results

In order to improve the efficiency of training specialists – physical education teachers – their professional competence in water sports, the "Working with students in water sports" elective course was developed and introduced into teaching. The basis of the course is a modular teaching method, which is based on the active work of the student, their involvement in the search for information and independent acquisition of new knowledge. This technology is more flexible and gives the student a choice in managing their learning, encouraging a gradual and step-by-step approach to education (Sarah, 2015). Ascertaining

experiment. Professional competence of future specialists in water sports was determined by three components: motivational and targeted, meaningful, procedural and managerial. The motivational and targeted component reflects the internal enthusiasm of teachers, which can be considered a central factor in determining professional success (Yermentayeva et al., 2018). Motivation to teach a particular subject and motivation to teach in general are different. And the teacher's enthusiasm for a particular subject affects the quality of learning and student achievement (Kunter, 2013). This research established the motivation of future physical education teachers to teach water sports.

According to the data displayed in Figure 1, most students have a low level of professional competence in terms of the motivational and targeted component. These students are not interested in activities related to water sports. They have no interest in organizational work in water sports and no motivation to improve their knowledge and skills, which are necessary for this work. Most of these students have a negative attitude towards this kind of activity. The average level of the studied indicator indicates the episodic interest of the subjects in teaching water sports, insufficient knowledge and mastery of skills for organizing and conducting classes, as well as a weak desire to improve their own pedagogical competencies. Only 17% of students in the control group and 19% of the experimental group

demonstrated a high level of competence in water sports in terms of the motivational and targeted component. This is manifested in the teacher's enthusiasm for work with water sports and high motivation to obtain professional competencies necessary for the qualitative implementation of all the goals of this activity. The content component describes cognitive activities, the manifestation of cognitive abilities, as the ability to perceive and assimilate information, as well as directly the knowledge in a particular area.

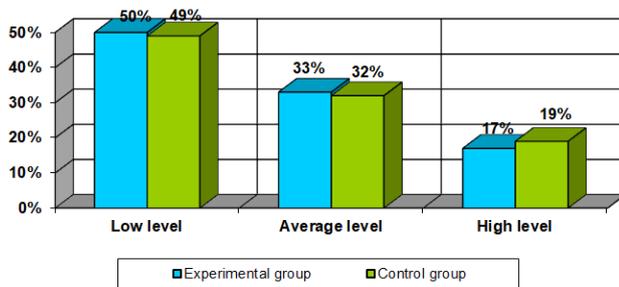


Figure 1. Levels of professional competence in water sports of students of the "Physical education and sports" specialty in terms of the motivational and targeted component within the framework of the ascertaining experiment

Figure 2 shows the level of manifesting professional competence in water sports (content component), which is low in 34% and 36% of respondents from the experimental and control groups, respectively. Students with such results do not possess the knowledge necessary for organizing and conducting water sports classes, do not possess the skills of sports education through aquatic training. Teachers with this indicator are not aware of modern teaching technologies and do not use the most effective new methods and techniques for teaching water sports. Students with average level of competence in terms of the content component are characterized by partial formation of cognitive competencies in teaching physical education in general and water sports in particular, possessing several effective pedagogical technologies and some modern methods of teaching water sports. A high level of professional competence speaks of solid knowledge in the field of pedagogy, physical education and water sports. A teacher with a high level of competence possesses a system of methods, forms, techniques and technologies that allow to effectively organize and conduct training in water sports.

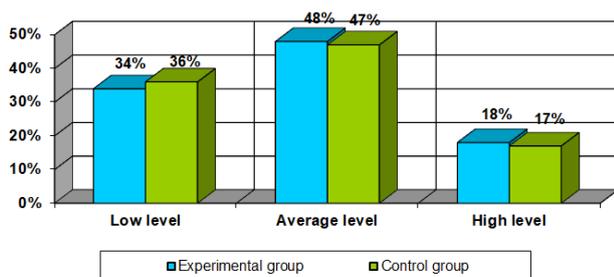


Figure 2. Levels of professional competence in water sports of students of the "Physical education and sports" specialty in terms of the content component within the framework of the ascertaining experiment

The procedural and managerial component of the professional competence of physical education teachers in water sports describes the teacher's readiness to coordinate the productive activities of both one student and the whole class, as well as the formation of their organizational skills and abilities, the possibility of using their competencies to stimulate the self-development of students in water sports (Tatur, 2001). A low level of competence in the procedural and managerial component (Figure 3) testify to the unwillingness of future specialists to carry out preparatory and coordinating actions for organizing water sports classes. Students with a low level of the studied criterion are not able to project the results of the learning process and correct them in time. The average level of competence according to the procedural and managerial criterion was established in 30% and 33% of respondents in the experimental and control groups, respectively. These students have the skills to organize and manage the process of teaching water sports, but do not apply them in practice or face difficulties in applying their skills. The formation of professional competence of teachers in water sports according to the procedural and managerial criterion at a high level indicates a complete and conscious system of managerial skills of a specialist, their readiness and ability to apply it for effective coordination of work on water sports.

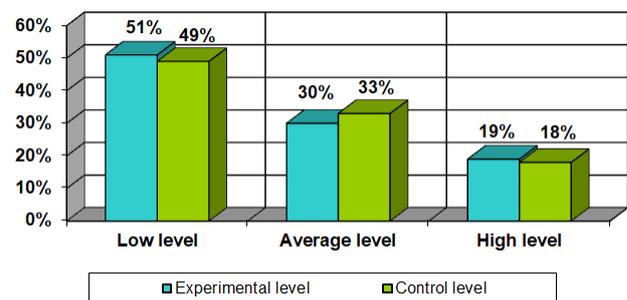


Figure 3. Levels of professional competence in water sports of students of the "Physical education and sports" specialty in terms of the procedural and managerial component within the framework of the ascertaining experiment

Formative experiment. Increasing the competence of future physical education teachers in water sports requires a comprehensive and thorough approach. Therefore, a special "Working with students in water sports" elective course was developed and introduced into the education system of freshmen who made up the experimental group, while students in the control group were trained according to the traditional program without changes in curricula. The elective course comprises two discrete modules that divide educational information and detail it. Thus, the first module is aimed at obtaining theoretical knowledge. Its goal is cognitive. The purpose of the second module is to form practical professional skills that are based on acquired knowledge. The entire course consists of two credits: 30 classroom hours and 15 hours of self-study. Regular updating of the educational process requires the creation and application of innovative technologies for the training of specialists, which will be aimed at increasing their

professional competence and competitiveness. To do this, it is important to use methods that include two levels – educational and methodical – in the process of training physical education teachers. Together, they reflect the technological component of education (with techniques, forms, means, as well as pedagogical conditions), which forms the professional competence of physical education teachers and sports coaches. In the educational process, it is also important to use methods of pedagogical influence, methods of active learning; update traditional methods in line with modern trends; use problematic, dialogic and discussion projects; ensure the continuity of all practices; promote ongoing interaction between teacher and student.

The formation of professional competence of future physical education teachers will be effective if the process is based on the integration of an innovative competence approach, on modular and differentiated technologies, on the principles of the integrity of theoretical knowledge and practical skills, on professional orientation, taking into account the individual characteristics of students (Prystupa et al., 2020). Thus, the “Working with students in water sports” special course is designed to develop the professional competencies necessary for a teacher to teach water sports, as well as to form an interest in the profession, motivation for continuous learning and improving pedagogical skills. Control experiment. The monitoring of the professional competence of future physical education teachers in water sports was carried out using the same methods as those used at the ascertaining stage of the experimental research. Below are the results of changing the levels of the studied indicator according to three specific criteria.

As a result of the formative stage of the experimental work, the dynamics of the levels of students' competencies in water sports was observed. A low level of professional competence in terms of the motivational and targeted component was found in 11% of the respondents in the experimental group, while a low level in the control group was noted in 50% of the respondents (Figure 4).

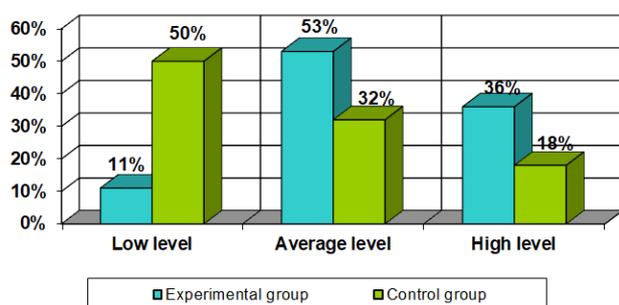


Figure 4. Levels of professional competence in water sports of students of the “Physical education and sports” specialty in terms of the motivational and targeted component during the control experiment

The level of manifestation of the indicator under study among the respondents in terms of the content component is shown in Figure 5. The professional competence of 10% of the students of the experimental group and 35% of the

students of the control group was at a low level after the introduction of the special course into the educational process of the first group.

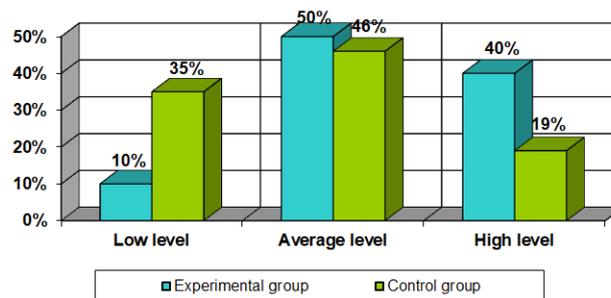


Figure 5. Levels of professional competence in water sports of students of the “Physical education and sports” specialty in terms of the content component during the control experiment

The Figure 6 shows that a low level of competence is typical for 12% and 48% of the respondents in the experimental and control groups, respectively. 49% of the students of the experimental group and 32% of the students of the control group have the studied indicator at the average level. A high level is observed in 39% of students who studied an elective course, and in 20% of students who studied according to a traditional program. The control stage of the experiment demonstrates changes in comparison with the data of the ascertaining experiment. These changes were significant only in the experimental group, while the indicators of the control group remained almost unchanged. The number of respondents in the experimental group, who have an average and high level of professional competence in water sports, has increased significantly.

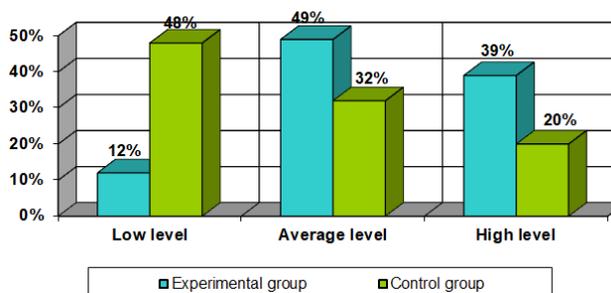


Figure 6. Levels of professional competence in water sports of students of the “Physical education and sports” specialty in terms of the procedural and managerial component during the control experiment

The results of the control stage and their comparison with the data of the ascertaining experiment give grounds to assert that the developed elective course helps to improve the professional competence of future physical education teachers in water sports.

In the initial ascertaining experiment, the motivational and targeted component showed that 17% of the control group and 19% of the experimental group had a high level of competence. By the time of the control experiment, the experimental group showed a significant improvement in

this competence, while the control group's performance remained roughly stable, indicating a clear benefit of the elective course. For the content component, while specific data on high competence wasn't provided initially, the control experiment revealed that only 10% of the experimental group demonstrated a low level of competence in this area, compared to 35% in the control group. This demonstrates the positive influence of the elective course on equipping students with necessary knowledge and skills in water sports.

Lastly, the procedural and managerial component, essential for effective teaching and coordination in the realm of water sports, revealed marked differences between the two groups in the control experiment. The experimental group showed a strong shift towards higher competence, with 39% achieving a high level of competence. In contrast, the control group had only 20% at this high competence level, with almost half still at a low competence level. Overall, the introduction of the elective course "Working with students in water sports" had a pronounced positive impact on the professional competence of future physical education teachers in water sports. The experimental group, which was exposed to this course, consistently outperformed the control group across all three components. This provides strong evidence in favor of the course's efficacy in enhancing professional competence in this domain.

Discussion

A thorough study of the scientific psychological and pedagogical literature allows concluding that the competence of physical education teachers in teaching water sports is insufficiently studied and that there are no special studies on the problem of training future physical education specialists with the development of professional competence in water sports. At the same time, many scientific papers have been devoted to the issue of the general professional competence of teachers, which indicates the relevance of this issue and the demand for innovative solutions to improve the quality of training of modern teachers. For example, in their joint research of the impact of teachers' professional competence on the quality of teaching and student development, researchers M. Kunter et al. (2013) found that teachers' awareness of the content of pedagogical activity, enthusiasm for teaching, self-regulation skills of teachers have a positive effect on the quality of education. And vice versa – the general academic abilities of teachers do not affect their pedagogical activity. S. Blömeke and G. Kaiser (2017) in 2015 developed the structure of teacher competence. This model is based on the interaction of personal, situational and social characteristics. In other words, competence can be viewed as a complex of professional knowledge of a teacher and beliefs that underlie such specific situational skills, as perceptions and decision-making motives. A year after the presentation of the model, Scheerens and Blömeke

supplemented it with the social context and its influence on the development of teacher competence.

The authors M.C. Zaragoza et al. (2021) studied the professional competence of teachers in Catalonia. As a result of their work, they came to the conclusion that modern schools need teachers who can constantly acquire competencies, both personal and relative. The researchers also emphasized the need for joint efforts of schools and pedagogical universities, the need for consultation with the teaching staff of schools in the development of educational plans. The scientific literature also partially discloses the issue of professional competence of physical education teachers and sports coaches. M. Vasylenko and M. Dutchak (2018) conducted a research of the level of formation of professional competence of future fitness trainers in higher educational institutions. They singled out the structure of the phenomenon under study, which included motivational, axiological, epistemological, praxeological and personal components. The authors of this research is inclined to believe that the professionalism of a physical education teacher makes up a whole range of competencies, which include gnostic, research, constructive, organizational, communicative and motor competencies.

Gnostic competence (it is also cognitive) is a wide amount of knowledge about the laws of physical development, about the psychological and pedagogical process and its features, full awareness in one's discipline: from safety rules to cultural and historical foundations of physical education and sports (Ponomarenko et al., 2016). Research competence characterizes the search for new information to solve non-standard problems, which allows a physical education teacher to apply a creative approach to the activities (Poproshaiev and Poproshaieva, 2022). Constructive competence ensures the planning of teaching and educational activities, the selection of methods, techniques, forms and means of pedagogical activity. Organizational (managerial) competence is based on the management of students' physical activity, mobilization of their attention, dosage of physical activity (Krutsevich et al., 2019). Communicative competence refers to the general competencies that are necessary for a professional in any specialty. But the profession of a teacher is characterized by the need for a high level of rhetorical skills and conflict resolution skills. Unlike the previous one, motor competence refers to the special competences of a physical education teacher, which is determined by the specifics of the subject. The teacher must understand and perfectly master the technique of exercises, safeguarding methods and safety precautions (Krzysztofik et al., 2022).

The professionalism of a teacher is also characterized by the ability and motivation for continuous learning and increasing their effectiveness. Therefore, the competence of professional and personal self-improvement plays an important role (Maldybaev, 2022). One of the most important conditions for the formation of professional competence of physical education teachers in the learning process is the creation of interdisciplinary connections,

which allows using the acquired knowledge in a complex and makes education holistic (Volkivsky and Tsaruk, 2023). Also, for the successful training of a teacher who has all the necessary competencies, it is important to take into account the individual interests of the student in professional activities, promote a student-centered learning model, regularly increase students' motivation for learning and self-development, ensure the conscious accumulation of knowledge by students and the transformation of this knowledge into professional skills, organize scientific research and in-depth study of actual issues of physical education and sports.

Since the formation of professional competence is a multifactorial process, it requires an all-encompassing methodology and a clear algorithmization of learning. To simplify program planning, the entire process of specialist training can be divided into three stages. The first year of study is a preparatory-accumulative stage, during which the motives of the teacher's activity, the goals of their activity and ways to achieve these goals are formed, an algorithm is established for acquiring professional qualities, which takes into account the individual characteristics of each student. At this stage, the student receives basic knowledge of anatomy, pedagogy, psychology, etc., basic practical skills in gymnastics, swimming, team sports, etc. The second stage of education – reproductive-active – covers the second year of study at the university. It is characterized by the systematization of all previously acquired knowledge and skills, the construction of relationships between the studied disciplines, which will allow them to be used in combination for subsequent professional activities. The integrative-active stage (third) that extends to the remaining years of study aims at forming students' creative skills, skills of diagnostic activity in the process of physical education, as well as creating prerequisites for the transformation of theoretical and methodological knowledge into personal professional and pedagogical experience of future physical education specialists (Tokareva, 2015).

World scientists also pay attention to certain aspects of the professional competence of physical education teachers. J. Lohmann et al. (2021) studied the competence of physical education teachers, which is necessary for the formation of sustainable development. The study states that physical education has the potential to achieve the educational sustainable development goals, since the latter is aimed at developing systemic and critical thinking, cooperation, self-awareness, and integrated problem-solving competence in students. Physical education teachers must be prepared to teach their subject in line with the educational sustainable development goals. E. Grimminger (2011) offers a course for improving the intercultural competence of physical education teachers, which is based on a systematic relationship of qualitative and quantitative data, and empirically proves its effectiveness. The author points out that intercultural competence is one of the educational missions of European schools. Therefore,

teachers of any specialty should be able to work constructively with cultural diversity and form intercultural learning processes in their lessons.

The readiness of a physical education teacher to conduct lessons in water sports, their competence in this activity in our time is an important professionalism aspect of a teacher. Swimming, scuba diving, etc. have a positive effect on the physical and mental health of students. They can be a tool for both recreation and restoring health (Lloret et al., 2021). The ability of a teacher to conduct water sports classes efficiently and effectively is based on a combination of personal qualities, professional position, and formed competencies. The last indicator indicates the strong knowledge and skills of the teacher, the ability to use them effectively in teaching activities. Significant theoretical skills include the setting of tasks and goals, the selection of means, methods and techniques of teaching. The professional skills necessary for organizing activities in water sports include, in addition to mastering the techniques of swimming and general pedagogical qualities, the ability to organize a group, knowledge about safeguarding when the student performs movements in the water, the use of means of presenting material suitable for this activity (gestures, signals) (Fetisov and Saikin, 2015; Maldybaev, 2022).

The “Working with students in water sports” elective course developed in this research is aimed at obtaining and improving the qualities in future physical education teachers necessary for organizing, conducting and achieving the goals of water sports classes. As a result of studying the subject, students must master the basics of water sports techniques, the ways and methods of learning them, the peculiarities of the organization of classes, as well as understand the specifics of training individuals who are focused on achieving high sports results in this industry. In addition, specialists need to be able to assess the level of physical qualities of students, be able to develop them, note and correct mistakes, as well as develop plans for the educational process. Achieving high-quality training of teaching staff with all the necessary qualifications is possible only with comprehensive systemic training, taking into account the theoretical and practical components of the education process. Therefore, it is important to adhere to general principles during training.

The principle of systematicity: subject information, the development of students' skills and abilities should be complex, the topics and problems of the subject should complement each other. A physical education teacher must also adhere to this principle in pedagogical activity. It determines the regulation of physical activity during the lesson by alternating exercise and rest, the number of repetitions of the movement and the pace of its execution. The principle of conscientiousness in the preparation of teachers for teaching water sports lies in the student's understanding of the applied value of swimming skills and water competence. The principles of accessibility and continuity are based on such guidelines for presenting

material from simple to complex; complication of technical tasks from easy to heavy; learning from the known to the unknown. The accessibility principle will be manifested during water sports classes in the setting by the teacher of tasks that are feasible for students, which correspond to their age, physical and psychological readiness. The visual principle is a demonstration of movements and water sports techniques in a more perfect form. It can be realized by watching competitions, training of outstanding swimmers. The individualization principle is based on the consideration of the individual characteristics of students, their personal qualities and natural abilities. The purpose of this principle is the selection of the most optimal training method, which will increase the effectiveness of training (Pavliv and Fedorishchak, 2017). The “Working with students in water sports” elective course is built on these teaching principles and is effective.

In the evolving realm of sports science and training methodologies, a myriad of strategies and techniques are constantly being examined to optimize athletic performance and recovery.

D. Nurmukhanbetova et al. (2023) delved into the influence of the low-volume high-intensity method training on the indicators of speed and strength qualities of young high skill level swimmers. Their research, specifically sought to determine how decreased volume but increased intensity could affect swimmers' core competencies. Such an approach is gaining traction in various sports due to its potential benefits in performance enhancement without overly exhausting athletes. The findings from this study could hold significant implications for swimming coaches and trainers in determining the balance between training volume and intensity. Recognizing the importance of early skill acquisition, O. M. Moura et al. (2022) studied how a 12-week Learn-to-swim program in a school context impacted aquatic skills and motor coordination in Brazilian children. Their findings underscore the significance of early exposure to structured aquatic programs in enhancing children's motor skills and fostering a love for swimming.

The continuous advancements and findings in the realm of sports science, as evident in the studies, provide a nuanced understanding of optimizing performance and recovery. These studies, spanning from training methodologies, recovery techniques, to hydration behaviors, offer valuable insights for athletes, coaches, trainers, and therapists to make informed decisions in their respective domains. Potential avenues for future research include refining curricula, advancing contemporary training methodologies for physical education instructors, and enhancing their proficiency in imparting water sports education.

Conclusions

Scientific research of the professional competencies of physical education teachers in water sports allows drawing the following conclusions. The scientific and

methodological base for the training of teachers in water sports requires the expansion of programs with the addition of special courses, the improvement of methods and support materials. For example, replenishment of teaching aids, organization of the exchange of pedagogical experience, formation of the relationship between theory and practice. Also, the paper characterized such basic definitions as the competence of a physical education teacher, the competence of future teachers in water sports, aquatic competence, as well as a competence-based approach. The place of training of physical education teachers in the state development strategy was outlined. In the course of the research, the competence of students in water sports and their readiness for teaching activities in this industry was determined by a model comprising three components: motivational and targeted, content, procedural and managerial. An analysis of these components with their indicators (interest, enthusiasm, striving for improvement and creativity; the availability of knowledge, skills and abilities; the ability to organize and manage a lesson, the ability to regulate and correct learning outcomes) allows establishing the level of professional competence. The ascertaining experiment confirmed the need to improve the quality of training future teachers to work with water sports. The indicators of the experimental and control groups practically did not differ, which confirms the validity of the research.

In order to improve the competencies of students in water sports, the “Working with students in water sports” elective course was introduced into the learning process of the experimental group. It is divided into two modules that take into account the theoretical and practical training of future specialists. A control experiment was conducted at the end of the specialized course. It testified to the effectiveness of the developed program, since the results of the students of the experimental group have improved significantly, while the levels of professional competence of the students of the control group have changed only slightly. The materials of this paper will be useful for teachers of pedagogical universities who are interested in improving the effectiveness of teaching, students who are focused on self-improvement of their competence, as well as for education professionals who develop new and modernize traditional training programs. The prospect of further research is possible in the improvement of curricula, the development of modernized methods of training physical education teachers and the development of their competence in teaching water sports.

References

- Blömeke, S., & Kaiser, G. (2017). Understanding the Development of Teachers' Professional Competencies as Personally, Situationally and Socially Determined. In: *The Sage handbook of research on teacher education* (pp. 783-802). New Delhi: SAGE publishing.
- Clemente, J. A. J., Lanaspá, E. G., Sarradell, J. J. S.,

- Casterad, J. Z. (2004). Las actividades acuáticas educativas: principios, reglas de acción y conductas observables. *Revista Digital*, 10(64).
- Dahlan, D., Permana, L., & Oktariani, M. (2020). Teacher's competence and difficulties in constructing hots instruments in economics subject. *Cakrawala Pendidikan*, 39(1), 111-119.
- Dignath, C. (2021). For unto every one that hath shall be given: teachers' competence profiles regarding the promotion of self-regulated learning moderate the effectiveness of short-term teacher training. *Metacognition and Learning*, 16, 555-594.
- Fetisov, A.M., & Saikin, S.V. (2015). Formation of readiness of future specialists of adaptive physical culture for professional activities in the discipline of swimming. *Vestnik Tomsk State University*, 1(141), 61-67.
- Grechanik, O.Y., & Grigorash, V.V. (2019). *Formation of the teacher's acmeological competence in the system of postgraduate education*. Kharkiv: Foundation.
- Grimminger, E. (2011). Intercultural competence among sports and PE teachers. Theoretical foundations and empirical verification. *European Journal of Teacher Education*, 34(3), 317-337.
- Jalolova, Z.S. (2022). Content of professional training in the development of future physical education teacher's competence. *WEB of Scientist: International Scientific Research Journal*, 3(2), 907-910.
- Krutsevich, T., Pengelova, N., & Trachuk, S. (2019). Model-target characteristics of physical fitness in the system of programming sports and recreational activities with adolescents. *Journal of Physical Education and Sport*, 19, 242-248.
- Kryshtanovych, S., Bilyk, O., Shayner, H., Barabash, O., & Bondarenko, V. (2021). Study of the Experience of the Formation of Professional Competence in Future Managers of Physical Education and Sports. *Revista Romaneasca Pentru Educatie Multidimensionala*, 13(1Sup1), 162-176.
- Krzysztofik, M., Kalinowski, R., Trybulski, R., Filip-Stachnik, A., & Stastny, P. (2021). Enhancement of countermovement jump performance using a heavy load with velocity-loss repetition control in female volleyball players. *International Journal of Environmental Research and Public Health*, 18(21), 11530.
- Krzysztofik, M., Trybulski, R., Trąbka, B., Perenc, D., Łuszcz, K., Zajac, A., Alexe, D.I., Dobrescu, T., & Moraru, C.E. (2022). The impact of resistance exercise range of motion on the magnitude of upper-body post-activation performance enhancement. *BMC Sports Science, Medicine and Rehabilitation*, 14(1), 123.
- Kunter, M. (2013). Motivation as an Aspect of Professional Competence: Research Findings on Teacher Enthusiasm. *Cognitive Activation in the Mathematics Classroom and Professional Competence of Teachers*, 8, 273-289.
- Kunter, M., Klusmann, U., Baumert, J., Richter, D., Voss, T., & Hachfeld, A. (2013). Professional competence of teachers: Effects on instructional quality and student development. *Journal of Educational Psychology*, 105(3), 805-820.
- Lloret, J., Gómez, S., Rocher, M., Carreño, A., San, J., & Inglés, E. (2021). *The potential benefits of water sports for health and well-being in marine protected areas: a case study in the Mediterranean*. <https://doi.org/10.1080/11745398.2021.2015412>.
- Lohmann, J., Breithecker, J., Ohl, U., Gieß-Stüber, P., & Brandl-Bredenbeck, H.P. (2021). Teachers' Professional Action Competence in Education for Sustainable Development: A Systematic Review from the Perspective of Physical Education. *Sustainability*, 13(23), article number: 13343.
- Loy, B., & Gordienko, O. (2023). Preparation of future physical education teachers for the application of individual educational trajectories in the educational process of secondary school students. *Theory and practice of physical culture and sports*, 3, 74-79.
- Maldybaev, U. (2022). *Research of professional competence of physical education teachers in water sports*. Ulaanbaatar: Mongolian University of Post-Higher Education.
- Moura, O. M., Marinho, D. A., Morais, J. E., Pinto, M. P., Fail, L. B., & Neiva, H. P. (2022). Learn-to-swim program in a school context for a twelve-week period enhance aquatic skills and motor coordination in Brazilian children (Las clases de natación en el contexto escolar durante un período de doce semanas mejoran las habilidades acuáticas y l. *Retos*, 43, 316-324. <https://doi.org/10.47197/retos.v43i0.88903>
- Nakipova, G.K. (2021). Professional competence: essence and basic principles. *Bulletin of the Kazakh National Women's Pedagogical University*, 1, 208-213.
- Nurmukhanbetova, D., Gussakov, I., & Yermakhanova, A. (2023). The influence of the low-volume high-intensity method training on the indicators of speed and strength qualities of young high skill level swimmers. *Retos*, 50, 446-455. <https://doi.org/10.47197/retos.v50.98492>
- Orynbekzy, A. (2018). The main objectives of the Republic of Kazakhstan in the training of the future pedagogues of physical education. *The World of Science, Culture, Education*, 1(68), 147-152.
- Pavliv, I., & Fedorishchak, R. (2017). The training of future teachers of physical education to teaching pupils how to swim. *Scientific Chronology of NPU Drahomanova*, 5(86), 239-242.
- Pivovar, A., & Kovach, S. (2023). Play activity classes with younger schoolchildren in a water environment. *Theory and practice of physical culture and sports*, 3, 90-96.
- Ponomarenko, Y.V., Kenzhebekova, R.I., Yessaliyev, A.A., Moldabek, K., Larchenkova, L.A., Dairbekov, S.S., & Jumagulova, G. (2016). Pedagogical research methods of training in higher educational establishments: A comparative analysis. *Mathematics Education*, 11(9), 3221-3232.
- Poproshaiev, O., & Poproshaieva, O. (2022). Problems of

- constitutional and legal regulation of physical culture and sports in Ukraine in the context of European integration. *Theory and practice of physical culture and sports*, 2, 149-155.
- Prystupa, Y., Kryshchanovych, S., Danylevych, M., Lapuchak, I., Kryshchanovych, M., Sikorskyi, P., Podolyak, Z., & Basarab, V. (2020). Features of formation the professional competence of future managers of physical culture and sports. *Journal of Physical Education and Sport*, 20, 441-446.
- Sarah, F. (2015). The Benefits and Challenges of Modular Higher Education Curricula. *Creative Education*, 10(7), 1-12.
- Shaimukhanova, S.D., Nugman, B.G., Suleimenova, M.Zh., Rakhimova, G.M., & Makalakov, T.Zh. (2012). Current and ways of development of the educational system of the Republic of Kazakhstan. In: *Kazakhstan Symposium 2012* (pp. 23-39). Kazakhstan: Karaganda State Technical University.
- Stallman, R.K., Junge, M., & Blixt, T. (2008). The Teaching of Swimming Based on a Model Derived from the Causes of Drowning. *International Journal of Aquatic Research and Education*, 2(4), article number: 11.
- Stallman, R.K., Moran, K., Quan, L., & Langendorfer, S. (2017). From Swimming Skill to Water Competence: Towards a More Inclusive Drowning Prevention Future. *International Journal of Aquatic Research and Education*, 10(2), article number: 2.
- Suratman, S., Arafat, Y., & Eddy, S. (2020). The Influence of Principal's Leadership and Teacher's Competence toward Teacher's Performance in Indonesia. *Journal of Social Work and Science Education*, 1(2), 96-104.
- Tatur, Yu.G. (2001). *Systematic and methodological support of the educational process: Educational method, manual*. Moscow: Vysshaya Shkola.
- Tokareva, S.V. (2015). Professional competence of future teachers of physical culture for correctional and health-improving work and stages of its formation. *Scientific Notes: Electronic Scientific Journal of Kursk State University*, 2(34), 1-5.
- Tul, M., Leskosek, B., & Kovac, M. (2019). The professional competences of physical education teachers from north-eastern Italy. *CEPS Journal*, 9(1), 103-120.
- Vasylenko, M., & Dutchak, M. (2018). Components, criteria, indicators and levels of professional competence formation of future fitness-trainers at higher educational institutions. *Eureka: Social and Humanities*, 2, 45-51.
- Volkivsky, M., & Tsaruk, V. (2023). Components of professional training of future physical education teachers. *Theory and practice of physical culture and sports*, 3, 157-162.
- Wu, D., Zhou, Ch., Li, Y., & Chen, M. (2021). Factors associated with teachers' competence to develop students' information literacy: A multilevel approach. *Computers & Education*, 176, article number: 104360.
- Yeremiia, Y. (2022). Subject-methodical competence of future teachers of physical culture: to the issue of identifying structural components. *Professional Education: Methodology, Theory and Technologies*, 16, 73-89.
- Yermentayeva, A.R., Baizhumanova, B.S., Mandykayeva, A.R., Nagymzhanova, K.M., Ayupova, G.T., Mamanova, A.S., & Kokorayeva, A.K. (2018). Peculiarities of professional identity in teachers. *Espacios*, 39(29), 15.
- Zaragoza, M.C., Díaz-Gibso, J., Caparrós, A.F., & Solé, S.L. (2021). The teacher of the 21st century: professional competencies in Catalonia today. *Educational Studies*, 47(2), 217-237.