The paper aims to determine, scientifically substantiate and experimentally test a number of pedagogical conditions for the development of professional competence of future coaches in the process of their professional training at a university. A research hypothesis implies that the effectiveness of the development of professional competence of future coaches is provided by a combination of the following pedagogical conditions: supplementing the content of professional disciplines with the material aimed at developing their professional competence; the use of innovative technologies in the professional training of future coaches; focusing on self-development of professional competence of future coaches studying at universities and the implementation of a model of such a process. The professional competence of future experts in the field of physical education is considered as a combination of general professional knowledge and skills formed in the process of professional training concerning the organization and planning of professional activity, reading and arranging documents, ways of solving problems, the use of new information technologies in professional activities. There has been developed and presented a technique of the development of professional competence of future coaches in the form of a program complex of professional training disciplines, based on modular-interactive means of professional training development, which includes initial data on the discipline and its author (authors), work syllabus, content of disciplines (modules), lectures, additional informational materials, practical classes with instructions, tasks for individual work, training exercises (tests), modular assessment and criteria for evaluating learning outcomes for final knowledge assessment. The conducted pedagogical experiment has proved the effectiveness of the suggested technique.

**Keywords:** professional competence, coach, professional training, pedagogical conditions.

**Introduction**

One of the components of professional training is the development of professional competence and the improvement of teaching methods [13]. Modern trends in teaching methods are focused on a competency-based approach in the training of future professionals [14,15], which requires justification of pedagogical conditions for the development of professional competence of future experts. Taking into account the processes of globalization and European integration, the migration of athletes, coaches, and other specialists in this field, there are special requirements to the level of professional competence of professionals in sports, and, accordingly, the structure of their education.

However, the issue of developing professional competence of future coaches at higher educational institutions is not yet fully covered.

The problem of forming professional competence of future specialists is investigated by many domestic and foreign scientists [4, 12, 16, 17, 19, 21]. Special attention is also paid to well-known pedagogical approaches to the educational process and the formation of professional competence of future specialists in higher educational institutions: a systematic approach; managerial approach; competency-based approach [1, 2, 6].

**Aim**

The paper aims to determine, scientifically substantiate and experimentally test pedagogical conditions for the development of professional competence of future coaches in the process of professional training.

A hypothesis implies that the effectiveness of the development of professional competence of future coaches is provided by a combination of the following pedagogical conditions: supplementing the content of professional disciplines with the material aimed at developing their professional competence; the use of innovative technologies in the professional training of future coaches; focusing on self-development of professional competence of future coaches studying at universities and the implementation of a model of such a process.
Research Methods
The experiment involved 423 future coaches of 1-4 years of study who were divided into two groups (control - 210 students and experimental - 213 students). The study was held at Khmelnytskyi National University and Ternopil Volodymyr Hnatyuk National Pedagogical University.

In the control group, traditional methods of teaching were used, and in the experimental one the methods of teaching majors were dependent on the didactic peculiarities of the use of pedagogical conditions for the development of professional competence; on the content basis of training and the innovative form of teaching using the principle of interactivity; the use of the classified content of theoretical and methodological foundations of professional competence, where the system of knowledge formation is based on logically related sections of the general characteristics of professional activity and features of the content of production functions.

The summative assessment has made it possible to determine the main operation functions of future coaches, which are considered as a component of their professional competence [7].

At this stage of the experiment the respondents were suggested a questionnaire. It included the following questions:
1. What encouraged you to choose this specialty?
2. What subjects would you like to study more deeply?
3. What forms of educational work organization are you interested in?
4. What disciplines are of the greatest interest to you?
5. What causes your interest in these subjects?
6. What interests you in the content of these disciplines?

The carried out pedagogical experiment was aimed at determining the effectiveness of pedagogical conditions for the development of professional competence of future coaches in the process of professional training. The quality and speed of mastering theoretical knowledge, practical skills in professional disciplines, the role of a teacher under conditions of an innovative form of conducting classes focused on the development of professional competence of future trainers-teachers were studied.

The formative stage of the experiment included the implementation of scientific and methodological support in the educational process as a structure of the program complex of educational disciplines “Theory and Methodology of Child And Youth Sports”, “Olympic and Professional Sports”, “Sport-Pedagogical Improvement” [9], based on modular-interactive means of the development of future coaches’ professional training, covering the initial data on the discipline and its author (s), the curriculum, the content section (modules) of a discipline, texts of lectures, additional information materials, workshops on methodological guidelines, tasks for independent work, tests, criteria and tasks for final knowledge assessment, etc.

The peculiarity of the developed method of professional training of future coaches when using the credit-modular technology of teaching is the structuring of the discipline on the modular principle, which involves the division of the teaching material into logically completed units of the theoretical and practical material.

This form of conducting lessons in professional disciplines makes it possible to:
- facilitate the formation of practical self-study skills of future coaches, the implementation of individual tasks in educational disciplines;
- promote the development of students’ motivation to study and deepen professional scientific and practical interest in professional activities;
- promote the formation of professional qualities, competences, development of knowledge, skills and abilities;
- facilitate the formation of intellectual work culture, autonomy and initiative in the search and acquisition of knowledge.

With the help of a modular learning environment, elements of the classified content of theoretical and methodological bases of professional training for coaching are formed and are offered for study in the experimental group [9]. In the control group, the learning process was carried out according to the traditional method.

Concerning the definition of competencies of future coaches, expert-examination was conducted in the form of a survey by a group of experts. This process involved the formulation of tasks; selection and acquisition of a group of experts; direct conduct of the survey; analysis and processing of the received information.

The selection of the experts was carried out taking into account the following qualities: high level of professional competence; the ability to analyze the past critically and assess the future; psychological stability.

The consistency of expert assessments was determined by the magnitude of the coefficient of concordance by the formula:

$$W = \frac{12 \sum}{m^2 \cdot (n^3 - n)}$$

(1)

The expert evaluation was carried out using the method of direct assessment of objects, when the expert places an object at a certain estimated interval and, by the sum of the points, determines its significance in relation to others.

One of the sources of information on the quality of the educational process is the diagnosis of the level of future coaches’ professional skills maturity provided by a set of methods for diagnosing the levels of maturity of knowledge, abilities and skills, depending on their type: the level of practical skills was evaluated for the accuracy and speed of the implementation of certain techniques and
actions characteristic for this type of work. The data were
classified according to a pre-designed scale that meets the
requirements of the work syllabus for integration into the
ECTS. Tests were used to diagnose the level of skills
maturity, as well as the criteria that are a set of tasks
compiled on the basis of the curriculum.

The maturity of future coaches’ professional skills
was assessed according to orientation-motivational, func-
tional, control-evaluation components. The respondents’
professional competence was evaluated to be high, medi-
um, lower than average, and low.

In order to assess the quality of knowledge of stu-
dents, we used the methodology for calculating the final
evaluation, recommended by the teaching and methodo-
logical department of the Khmelnytsky National University.

\[ M = \frac{\sum_{i=1}^{n} w_i m_i}{\sum_{i=1}^{n} w_i} \]

(2)

where \( m_i \) – national grade for every task performed;
\( w_i \) – relevant significance “weight” of a certain task;
\( n \) – number of all tasks performed by a student in
terms of a certain discipline.

This method has the following peculiarities of calcula-
tion: the weighting factor \( w_j \) is interpreted as the
“weight” of every certain task for the type of assessment;
\( m_j \) is interpreted as the “price” of the task (cost per unit of
weight). In order to get the “cost” of a certain task, the
“price” should be multiplied by the “weight” \( (w_j \cdot m_j) \);
the cost of all works is the sum of these products; the
overall grade in a discipline (price) is the cost per unit of
weight.

We distinguish the following advantages of this
method: the estimate for each task is taken into account in
the overall assessment in proportion to its weight; the
number of optional assessments (student’s active work
at the lesson) is taken into account. It is possible to take into
account the complexity of individual works (for example,
laboratory ones), assigning certain significance; the sum
of weight coefficients may not be equal to units; their
relative ratio is important (more important work is as-
sessed higher). The methodology models the intuitive
aspiration of both the teacher and the student to obtain a
“fair” general assessment that takes into account the com-
plexity and importance of each type of individual work on
da discipline.

Statistical analysis. Statistical processing was per-
formed by modern statistical methods that provide analy-
sis of measurements, presented in both quantitative and
qualitative scales.

In the correlation analysis, the distribution of the
sample was analyzed, depending on which either the
applied or non-sampler methods were used.

Data processing was carried out using Microsoft®
Excel.

Research Results

According to the results of the survey (filling in the
questionnaire), it has been found that 65% of the respond-
ants explain their choice of occupation by the demand on
the labor market, which is steadily increasing. 51% of the
respondents believe that it is necessary to reduce the
number of non-major disciplines, and 85% suggested to
increase the volume of majors. They are interested in their
professional training because they want to plan their fu-
ture in the field of coaching and develop their profession-
al competence. The results of the study suggest that the
change and improvement of the curricula of “Physical
Education, Sports and Human Health” field of study,
improving the skills during the training with future coach-
es are the necessary components of the development of
their professional competence.

In the process of teaching students according to the
traditional methods the following results were achieved:
the average score of assessing students’ knowledge of
state examinations was 4.0 points; 17.7% of the respond-
ants got “excellent” marks, the quality indicator was
63.7%, 7.0% of the students have defended their creative
works.

Indicators of the experimental group are as follows:
the average score of assessing the students’ knowledge of
state examinations was 4.3; 32.1% of the respondents got
“excellent” marks, the qualitative index was 74.5%;
42.5% successfully defended their creative works.

The use of the elements of scientific and methodo-
logical support of “Theory and Methods of Child and
Youth Sports”, “Olympic and Professional Sport”, “Sport
and Pedagogical Improvement” disciplines gave a posi-
tive effect, which was manifested in improving the quality
of knowledge of students.

The effectiveness of the formation of future coaches’
knowledge increases in the process of studying the updat-
ed content of professional information in comparison with
the traditional one: the number of “good” and “excellent”
grades increases according to the state examinations re-
results, the number of prepared and successfully defended
works is growing; the average score of the quality of
knowledge of the training group increases. The average
score of the experimental group students’ knowledge
exceeds the average score of knowledge of the control
group students by 0.3 points; accordingly, the number of
defended creative works in the experimental group ex-
ceeds the number of those in the control group by 35.5%.
The number of excellent grades of the experimental group
students according to the state examinations results ex-
ceeds the number of those in the control group by 14.4%.

The probability of differences in the individual as-
sumptions of the quality of knowledge of the experimental
groups students as a pedagogical result according to Stu-
dent’s t-test is \( t = 2.321 \), which exceeds \( 1.860; \)
\( 2.321 > 1.860 \). This indicates a real difference in the qual-
ity of knowledge.
Improving the quality of knowledge depends on the degree of acquisition of elements of scientific and methodological content. The students who successfully mastered the basics of scientific and methodological work in the process of professional training, were highly evaluated during state examinations in the discipline.

The increase of the result due to the effect of the experimental factor is greater than the effect of the control one.

Mathematical and statistical data processing, which confirms the high degree of reliability of the results of the pedagogical experiment, makes it possible to determine the general pattern of improving the quality of the system of knowledge formation in the process of training future coaches: the formation of the content of academic disciplines by increasing the number of elements of scientific, prognostic, methodological and explanatory nature creates conditions and opportunities for improving the quality of knowledge. Changing the quality of the discipline volume occurs when the acquisition of quantitative characteristics of scientific and methodological content reaches a certain limit of the transition of quantitative changes into qualitative.

The increase in the pedagogical result due to the effect of the experimental factor is greater than the control factor.

The correlation between the indicators of mastering the elements of scientific and methodological content and the quality of knowledge in general is high. Coefficient of correlation is $r = 0.904$.

Comparing the results of the summative and formative assessments (Fig. 1 and Fig. 2), we concluded that in the experimental group there was a steady tendency for increasing the number of the respondents with a high level of professional competence maturity.

**Fig. 1. Results of the study of the levels of future coaches’ professional competence maturity (summative assessment), %**

**Fig. 2. Results of the study of the levels of future coaches’ professional competence maturity (formative assessment), %**
Structural adjustment of the content provides a qualitative indicator of the level of knowledge of students in the process of teaching, which is defined in the form of an increase of “excellent” and “good” marks according to the state examinations results, as well as in the defending of qualification works.

The method of determining the mean values (M), the mean square deviation (σ) of processing the results of expert assessments helped us to distinguish the following functions: organization and conducting physical exercises taking into account physical and mental state of a person; prediction of short-term and long-term results of training and recreational activity; the implementation of an individual approach to the organization of students in various forms of physical education, engagement in various sports; the ability to form educational, training and recreational programs, to distinguish key ideas in them, to update the content; promotion of recreational types of physical exercises; development of means for improving the activity of students in the process of physical training; application of the principles of health, educational and sports-mass work management; organization of physical education in specialized institutions for children and adolescents; work with students with various abilities, compilation of individual programs for them.

Discussion

According to the carried out experiment we received three groups of results: confirmatory, results complementing existing developments, and completely new outcomes concerning the issue studied.

As a result of systematization of the data of scientific and methodological literature, we can conclude that the use of the proposed pedagogical conditions aimed at the development of professional competence has given a positive result of the training of future coaches [8].

The essence and structure of professional competence of future coaches has been specified, taking into account that its development is carried out according to the following scheme: professional training – professional skills (professional readiness) – professional competence. We have distinguished the following professional competences of future coaches: professional and general pedagogical, professional and management, professional self-development and self-education, profession-related, professional-specific, general.

The conducted research has confirmed the results of studies of other authors concerning professionally important qualities of experts in the field physical education [for example, 1, 2, 3, 22]. Besides, the results are congruent with the works of L. Sushchenko, B. Shyian [6,11] concerning the professional training of specialists in physical education, which reveal the theoretical and methodological basis of professional training in the field of physical education and sports; which distinguish theoretical bases of the competence-based approach to the process of training Physical Culture teachers [5]; the formation of professional and pedagogical skills [19, 20]; the genesis of the motivational structure of the subject of sports and pedagogical activity in the process of professional development [12]. Also, our results are consistent with the findings of the research on professional training [21], psychological readiness of the future professional in physical culture and sports, which are highlighted in other works [14, 15, 18].

As some authors point out, in European countries, the curriculum has been revised and amended for now. These changes are aimed at creating the basis for learning, which should result in the formation of necessary competencies [16, 17].

In general, the study confirmed the hypothesis that the effectiveness of the development of professional competence of future coaches is provided by a combination of pedagogical conditions (supplementing the contents of professional disciplines of professional training of future coaches with material aimed at developing their professional competence; the use of innovative technologies in the professional training, focus on self-development of professional competence) [8].

Conclusion

The logical organization of the content basis of the professional training of future coaches has been substantiated. The content of the suggested theoretical and methodological provision of coaching activities is a scientifically substantiated subsystem of methodically designed educational material, an integral part of the content of education and is reflected in the MOODLE electronic learning environment, as well as in textbooks and methodological materials. The obtained positive results confirm the efficiency of pedagogical conditions and the model of future coaches’ professional competence development in the process of professional training.

The proposed model of the development of professional competence in the process of professional training has confirmed its effectiveness.

A promising area of the research is the further development of educational and methodological support for the improvement of professional competence of specialists in the field of physical education and sports.

Gratitude

The research work, the basis for the suggested scientific article is “Psycho-Pedagogical System of an Expert’s Personality Formation” (2014 - 2017), the work cipher is 10 - 2014TS, state registration number is 0114U005266. UDC: 37.013.77: 159.98.

Conflict of interest.

The authors claim that there is no conflict of interest.

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ЛИТЕРАТУРА


МОДЕЛЬ РОЗВИТКУ ПРОФЕСІЙНОЇ КОМПЕТЕНТНОСТІ МАЙБУТНИХ ТРЕНЕРІВ-ВИКЛАДАЧІВ У ВИЩОМУ НАВЧАЛЬНОМУ ЗАКЛАДІ

Мета статті – визначити, науково обґрунтувати й експериментально перевірити педагогічні умови розвитку професійної компетентності майбутніх тренерів-викладачів у процесі фахової підготовки. Для досягнення мети та розв’язання поставлених завдань використано комплекс методів дослідження: теоретичні – аналіз, синтез, систематизація, порівняння, моделювання та узагальнення, що дозволили опрацювати наукові джерела, визначити сутність і особливості педагогічної системи розвитку професійної компетентності; емпіричні – спостереження, опитування, педагогічний експеримент, опрацювання результатів науково-дослідницької діяльності, що забезпечило вивчення стану зазначеної проблеми на практиці з метою визначення впливу педагогічних умов розвитку професійної компетентності у процесі фахової підготовки майбутніх тренерів-викладачів; метод експертних оцінок, який дозволив за допомогою шкали оцінювання визначити головні компетенції у професійній діяльності майбутніх тренерів-викладачів; статистичні, за допомогою яких здійснено кількісну обробку результатів педагогічного експерименту для одержання достовірної інформації. Професійну компетентність майбутніх тренерів-викладачів розуміємо як сукупність загальних професійних знань і умінь, сформованих у процесі професійної підготовки, з організації та планування професійної діяльності, читання і складання документів, способів вирішення проблем, використання нових інформаційних технологій у професійній діяльності. Розроблено методику розвитку професійної компетентності у тренерсько-викаладацькій діяльності майбутніх тренерів-викладачів у вигляді структури програмного комплексу професійних навчальних дисциплін, заснованої на модульно-інтерактивних засобах розвитку професійної підготовки майбутніх тренерів-викладачів, які включають в себе початкові дані про навчальну дисципліну та її автора (авторів), робочу програшу, зміст розділів (модулів) дисципліни, тексти лекції, додаткові інформаційні матеріали, практичні заняття з методичними вказівками, завдання для самостійної роботи студентів, тренувальні вправи (тести), модульний контроль, варіанти контрольних завдань та критерії оцінки результатів навчання для проведення підсумкового контролю з дисципліни. На основі проведенного педагогічного експерименту відбулися статистично значущі зміни, що засвідчили позитивну динаміку розвитку професійної компетентності майбутніх тренерів-викладачів у процесі фахової підготовки в експериментальній групі та підтвердили ефективність запропонованих умов.

Ключові слова: професійна компетентність, тренер-викладач, фахова підготовка, педагогічні умови.

Submitted on August, 1, 2017