Abstract

The modern pedagogical technologies orient the system of higher physical education for the training students with professional competence and ability to navigate the labor market. The purpose of the study is to develop and experimentally test the professional training system designed for students in physical education and sports. The object of the research is the professional training of students in physical education and sports in higher education institutions. The results of the pedagogical experiment, which are presented in the article, indicate that there were statistically significant changes in the readiness formation level of the students.

Key words
physical education, students, training system

Introduction

The rapid development of science and technology, social, economic and cultural changes occurring in modern society place on the agenda the task of training highly skilled and competitive specialists in the field of physical education and sports. The peculiarities of the professional activity of such specialists point to the need to modernize the content, forms and methods of higher education in this field.

The modern pedagogical technologies orient the system of higher physical education for the training students with professional competence and ability to navigate the labor market; it is advantageous to withstand rivalry with other applicants for jobs. Therefore, one of the tasks of a higher school is to create conditions for students able to compete in the labor market. The solution to the problem of employment of future specialists in physical education and sports is based on a competent approach, in which the professional and personal characteristics of the graduates are associated with the staffing needs.

The pedagogical grounds of higher education and the strategic aspects of its reform are highlighted in the works of the Ukrainian (V. Andrushchenko (2016, 5-11), P. Gusak (2015, 7-11), N. Demianenko (2001, 149-152), V. Kremen (2008; 2010), N. Ridey (2018, 359-363), P. Sauk (2012), S. Sysoeva (2012)), and foreign (A. Craft (2003), A. J. Cropley (2012), G. J. Hwang, H. F. Chang (2011, 1023-1025), K. Maršíková (2015), G. Moodie (1998)) scholars.

Modernization of the higher education system in our state requires effective training for the field of physical education. Research done by O. Yu. Azhippo
At the same time, in spite of the practical demand of the skilled personnel, the training system designed for students in physical education and sports has not been developed in the theory and methodology of professional education. The study was performed according to the research plan of the Lviv State University of Physical Culture for 2016-2020 "Technology of attracting people to the recreational motor activity" (state registration number 0117U003040).

The purpose of the study is to develop and experimentally test the professional training system designed for students in physical education and sports.

**The object of the research** is the professional training of students in physical education and sports in higher education institutions.

**The subject of the study** is a training system of students in physical education and sports.

**Methodology and organization**

The pedagogical experiment on monitoring the effectiveness of the training system designed for students in physical education and sports included the determination, development and generalization stages.

At the determination stage of the pedagogical experiment, the following activities were carried out:

- analysis of the library resources on physical education regarding the training of students in physical education and sports;
- theoretical substantiation of the readiness structural components of the students in physical education and sports to activity;
- definition of criteria, indices and levels of readiness formation of students in physical education and sports to activity;
- analysis of the current state of professional training of students in physical education and sports to activity at higher education institutions of Ukraine;
- development of the training concept of students in physical education and sports to activity;
- development and theoretical substantiation of the professional training system designed for students in education and sports to activity.

During the development stage of the pedagogical experiment, 948 people participated in the survey, in particular 792 students and 96 teachers from ten higher education institutions of Ukraine and 60 specialists from 11 recreational institutions.

The results of the preliminary stage of the pedagogical experiment confirmed the urgency and expediency of developing a system of professional training
of future specialists in physical education and sports for recreation and recreation activities.

The formative stage of the pedagogical experiment envisaged an experimental verification of the effectiveness of the system of professional training of future specialists in physical education and sports.

In the formative stage of the pedagogical experiment, students of the set (2012-2013 academic year) of the Lviv State University of Physical Culture, Ternopil National Pedagogical University named after Volodymyr Hnatyuk, Uzhhorod National University, and Chernivtsi National Yuriy Fedkovych University took part in the control (n = 108 persons) and experimental (n = 116) groups.

Students of the control group trained in the traditional system of training future specialists in physical education and sports in higher education institutions. In the professional training of students of the experimental group, a developed system of professional training of future specialists in physical education and sport for recreational and recreational activities was implemented.

At the generalization stage, the results of experimental verification of the effectiveness of the system of professional training of future specialists in physical education and sports for recreational and recreational activities were analyzed, conclusions and perspectives of further scientific developments were formulated.

Thus, the types of activities that were carried out by us at the ascertaining, forming and generalizing stages of the pedagogical experiment to verify the effectiveness of the system of professional training of future specialists in physical education and sports for recreational and recreational activities are described.

The pedagogical experiment on checking the effectiveness of the system of training future specialists in physical education and sports for recreational and recreational activities included the forming, forming and generalization stages.

At the qualifying stage of the pedagogical experiment, 948 people participated in the survey, including 792 students and 96 teachers from ten higher education institutions of Ukraine and 60 specialists from 11 recreation and health institutions of Lviv region.

In the formative stage of the pedagogical experiment participated Lviv State University of Physical Culture, Volodymyr Hnatyuk Ternopil National Pedagogical University, Uzhhorod National University and Yuriy Fedkovych Chernivtsi National University, which were included in the control group (n = 108 persons) and the experimental group (n = 116).

Students of the control group trained in the traditional system of training future specialists in physical education and sports in higher education institutions. In the professional training of students of the experimental group, the developed system of professional training of future specialists in physical education and sports for recreation and recreation activities was implemented.
Discussion and results
Focus on the results of the pedagogical experiment to determine the readiness of students in physical education and sport to activities according to motivational criteria.

Table 1 presents the data describing the students' readiness in control (CG) and experimental (EG) groups to activities according to motivational criteria in terms of the pedagogical experiment. Comparative analysis shows no statistically significant differences between the average values of the data on the students' readiness in CG and EG to activities according to motivational criteria in terms of the pedagogical experiment. Consequently, we can assert that the control and experimental groups were homogeneous in their composition (at \( t_{emp} = 1.29 \)).

| Indices | Control group (\( n = 108 \)) | Experimental group (\( n = 116 \)) |
|---------|-------------------------------|-----------------------------------|
| \( M \pm m \) | 11.25 ± 0.3 | 11.83 ± 0.33 |
| \( \sigma \) | 3.13 | 3.57 |
| \( t_{emp} \) | 1.29 | |
| \( t_{lim} \) | 1.99 | |

Table 2 reflects the changes that occurred in the data characterizing the readiness formation of the students in the control and experimental groups to activity by the motivational criterion in the process of conducting the pedagogical experiment.

At the end of the development stage of the pedagogical experiment, the average values of the data characterizing the readiness formation of the students in the experimental group to activity according to the motivational criterion increased from 11.83 ± 0.33 to 13.97 ± 0.34 points, in the control group - respectively, from 11.25 ± 0.3 to 12.04 ± 0.33 points. At the same time, a significant difference was found between the data (12.04 ± 0.33), which characterize the readiness formation of the students in the control group to activity according to the motivational criterion, and data (13.97 ± 0.34) characterizing the readiness formation of the students in the experimental group to activity according to the motivational criterion (at \( t_{emp} = 4.04 \)).

| Indices | Before the pedagogical experiment | After the pedagogical experiment |
|---------|-------------------------------|----------------------------------|
| \( t_{emp} \) | \( t_{lim} \) | \( t_{emp} \) | \( t_{lim} \) |
| CG (\( n = 108 \)) | EG (\( n = 116 \)) | CG (\( n = 108 \)) | EG (\( n = 116 \)) |
Note: * - the results of the experimental group after the pedagogical experiment statistically significantly differ compared with the results of the control group (P < 0.05)

The dynamics of the readiness formation levels of the students in control and experimental groups to activity according to the motivational criterion is reflected in Table 3.

**Table 3 Dynamics of the readiness formation levels of the students in control and experimental groups to activity by the motivational criterion**

| Indices | Levels | Low | Average | High |
|---------|--------|-----|---------|------|
|         |        | abs. | %       | abs. | %   | abs. | %   |
| Control group (n=108) | Before pedagogical experiment | 56 | 51.85 | 47 | 43.52 | 5 | 4.63 |
|         | After pedagogical experiment | 41 | 37.96 | 55 | 50.93 | 12 | 11.11 |
|         | Difference (%) | -13.89 | +7.41 | +6.48 |
| Experimental group (n=116) | Before pedagogical experiment | 57 | 49.14 | 50 | 43.10 | 9 | 7.76 |
|         | After pedagogical experiment | 25 | 21.55 | 68 | 58.62 | 23 | 19.83 |
|         | Difference (%) | -27.59 | +15.52 | +12.07 |

It should be noted that before the pedagogical experiment, the high level of readiness formation to activity according to the motivational criterion was demonstrated by 5 students of the control group, which is 4.63%, and 9 students of the experimental group, which makes up 7.76%; the average level of readiness to activity by the motivation criterion was demonstrated by 47 students of the control group, which is 43.52%, and 50 students of the experimental group, which makes up 43.10%; the low level of readiness to activity according to the motivational criterion was demonstrated by 56 students of the control group, which is 51.85%, and 57 students of the experimental group, which makes up 49.14%.

After the pedagogical experiment, 12 students of the control group, 11.11%, and 23 students of the experimental group, representing 19.83%, demonstrated the high level of readiness to activity according to the motivational criterion; the average level of readiness to activity according to
the motivational criterion was demonstrated by 55 students of the control group, which is 50.93%, and 68 students of the experimental group, which is 58.62%; the low level of readiness to activity according to the motivational criterion was demonstrated by 41 students of the control group, which is 37.96%, and 25 students of the experimental group, which is 21.55%

The result of the determination stage of the pedagogical experiment is the increase in the readiness formation level of the students in the control and experimental groups to activity by the motivational criterion.

The confirmation of the before mentioned thesis is an increase in the experimental group by 12.07% of the number of students with a high level of readiness to activity based on the motivational criterion as compared to an increase in the control group by 6.48% of the number of students with a high level of readiness to activity by motivational criterion.

There was also an increase in the experimental group by 15.52% in the number of students with an average level of readiness to activity according to the motivational criterion, as compared to an increase in the control group by 7.41% in the number of students with an average level of readiness to activity according to the motivational criterion. Positive dynamics is observed in the decrease in the experimental group by 27.59% of the number of students with a low level of readiness to activity according to the motivational criterion, as compared to the decrease in the control group by 13.89% in the number of students with a low level of readiness to activity by motivational criterion.

We focus on the results of the pedagogical experiment determining the readiness formation of the students in physical education and sports to activity according to the cognitive criterion.

Table 4 presents data characterizing the readiness formation of the students in control and experimental groups to activity according to the cognitive criterion before the pedagogical experiment.

Table 4 Data characterizing the readiness formation of the students in control and experimental groups to activity according to the cognitive criterion before the pedagogical experiment (points)

| Indices     | Control group (n = 108) | Experimental group (n = 116) |
|-------------|-------------------------|-----------------------------|
| M ±m        | 26.56 ± 0.68            | 28.02 ± 0.76                |
| σ           | 7.02                    | 8.19                        |
| t emp.      |                         | 1.43                        |
| t lim.      |                         | 1.99                        |

The comparative analysis shows that there is no statistically significant difference between the average values of the data characterizing the readiness formation of the students in the control and experimental groups to activity according to the cognitive criterion before the pedagogical experiment. Consequently, we can assert that the control and experimental groups were homogeneous in their composition (at \(t\) emp. = 1.43).

Table 5 reflects the changes that have occurred in the data characterizing the readiness formation of the students in the control and experimental groups to
activity according to the cognitive criterion during the pedagogical experiment.

At the end of the determination stage of the pedagogical experiment, the average values of the data characterizing the readiness formation of the students in the experimental group to the activity according to the cognitive criterion increased from 28.02 ± 0.76 to 31.15 ± 0.59 points, in the control group - respectively, from 26.56 ± 0.68 to 28.48 ± 0.81 points. At the same time, a significant difference was found between the data (28.48 ± 0.81), which characterize the readiness formation of students in the control group to activity according to the cognitive criterion, and data (31.15 ± 0.59) that characterize the readiness formation of students in experimental group to activity according to the cognitive criterion (at temp. = 2.65).

Table 5 Dynamics of data characterizing the readiness formation of students in control and experimental groups to activity according to the cognitive criterion (points)

| Indices | Before the pedagogical experiment | After the pedagogical experiment |
|---------|-----------------------------------|---------------------------------|
|         | CG (n = 108)                      | EG (n = 116)                   |
| M ±m    | 26.56 ± 0.68                      | 28.02 ± 0.76                   |
| σ       | 7.02                              | 8.19                           |
| t emp.  | 1.43                              | 1.99                           |
| t lim.  | 1.99                              | 6.39                           |
| CG (n=108) | 28.48 ± 0.81                     | 31.15± 0.59                   |
| EG (n=116) | 2.65                            | 1.99                           |

Note: * - the results of the experimental group after the pedagogical experiment statistically significantly differ compared with the results of the control group (P <0.05)

The dynamics of the readiness formation levels of students in control and experimental groups to activity according to the cognitive criterion is reflected in Table 6.

It should be noted that before the pedagogical experiment, the high level of readiness formation to activity according to the cognitive criterion was demonstrated by 7 students of the control group, which makes 6.48%, and 8 students of the experimental group, which makes up 6.90%; the average level of readiness to activity according to the cognitive criterion was demonstrated by 30 students of the control group, which is 27.78%, and 55 students of the experimental group, which is 47.41%. The low level of readiness to activity according to the cognitive criterion was demonstrated by 71 students of the control group, which is 65.74%, and 53 students of the experimental group, which is 45.69%.

Table 6 Dynamics of the readiness formation levels of students in control and experimental groups to activity by the cognitive criterion

| Indices | Levels | Low | Average | High |
|---------|--------|-----|---------|------|
|         |        | abs. % | abs. % | abs. % |
| Control | Before the pedagogical experiment | 71 | 65.74 | 30 | 27.78 | 7 | 6.48 |
After the pedagogical experiment, the high level of readiness formation to activity according to the cognitive criterion was demonstrated by 13 students of the control group, which makes up 12.04% and 21 students of the experimental group, which makes up 18.10%; the average level of readiness to activity according to the cognitive criterion was demonstrated by 35 students of the control group, which is 32.41%, and 73 students of the experimental group, which is 62.93%; 60 students of the control group, representing 55.56%; and 22 students of the experimental group showed a low level of readiness to activity according to the cognitive criterion, which is 18.97%.

The result of the determination stage of the pedagogical experiment is the increase in the readiness formation level of the students in the control and experimental groups to activity according to the cognitive criterion. The confirmation of the aforementioned thesis is an increase in the experimental group by 11.21% of the number of students with a high level of readiness to activity according to the cognitive criterion as compared to an increase in the control group by 5.56% of the number of students with a high level of readiness to activity by the cognitive criterion. There was also an increase in the experimental group by 15.52% of the number of students with an average level of readiness to activity according to the cognitive criterion, as compared to an increase in the control group by 4.63% of the number of students with an average level of readiness to activity by the cognitive criterion. The positive dynamics was observed in the decrease in the experimental group by 26.72% of the number of students with a low level of readiness to activity according to the cognitive criterion, as compared to the decrease in the control group by 10.19% of the number of students with a low level of readiness to activity by the cognitive criterion.

Next we focus on analyzing the results of the pedagogical experiment concerning the readiness formation of the students in physical education and sports to activity according to the action criterion.
Table 7 presents the data characterizing the readiness formation of the students in control and experimental groups to activity according to the action criterion before the pedagogical experiment.

**Table 7** Data characterizing the readiness formation of students in control and experimental groups to activity by the action criterion before the pedagogical experiment (points)

| Indices | Control group (n = 108) | Experimental group (n = 116) |
|---------|------------------------|-------------------------------|
| M ±m    | 4                      | 14.3 ± 0.33                  |
| σ       | 3.43                   | 3.56                         |
| t emp.  |                        | 1.14                         |
| t lim.  |                        | 1.99                         |

The comparative analysis demonstrates the absence of statistically significant differences between the average values of the data characterizing the readiness formation of the students in the control and experimental groups to activity according to the action criterion before the pedagogical experiment. Consequently, we can assert that the control and experimental groups were homogeneous in their composition (at t emp. = 1.14).

Table 8 reflects the changes that occurred in data characterizing the readiness formation of the students in the control and experimental groups to activity by the action criterion during the pedagogical experiment.

**Table 8** Dynamics of data characterizing the readiness formation of the students in control and experimental groups to activity by action criterion (points)

| Indices | Before the pedagogical experiment | After the pedagogical experiment |
|---------|-----------------------------------|----------------------------------|
|         | CG (n = 108) | EG (n = 116) | temp. | t lim | CG (n = 108) | EG (n = 116) | temp. | t lim |
| M ±m    | 13.80±0.33  | 14.30±0.33  | 1.28  | 1.99  | 14.69±0.37  | 16.52±0.33  | 3.67  | 1.99  |
| σ       | 3.44        | 3.56        |       |       | 3.81        | 3.59        |       |       |

Note: * - the results of the experimental group after the pedagogical experiment statistically significantly differ compared with the results of the control group (P <0.05)

At the end of the determination stage of the pedagogical experiment, the average values of the data characterizing the readiness formation of the students in the experimental group to activity according to the action criterion increased from 14.30 ± 0.33 to 16.52 ± 0.33 points, as for the students in control group - respectively, from 13.80±0.33 to 14.69 ± 0.37 points. At the same time, a significant difference was found between the data (14.69±0.37), which characterize the readiness formation of the students in the control group to activity according to the action criterion, and data (16.52 ± 0.33)
characterizing the readiness formation of the students in the experimental group to activity according to the action criterion (at temp. = 3.67). The dynamics of the readiness formation levels of students in control and experimental groups to activity according to the action criterion is reflected in Table 9.

It should be noted that before the pedagogical experiment, the high level of readiness formation to activity according to the action criterion was demonstrated by 7 students of the control group, which makes up 6.48%, and 8 students of the experimental group, which makes up 6.90%; the average level of readiness formation to activity according to the action criterion was demonstrated by 30 students of the control group, which is 27.78%, and 56 students of the experimental group, which is 48.28%; The low level of readiness to activity according to the action criterion was demonstrated by 71 students of the control group, which is 65.74%, and 52 students of the experimental group, which is 44.83%.

Table 9 Dynamics of the readiness formation levels of students in control and experimental groups to activity by action criterion

| Indices                               | Levels          |                |                |                |
|---------------------------------------|-----------------|----------------|----------------|----------------|
|                                       |                | low           | average        | high           |
|                                       | abs. %         | abs. %        | abs. %         | abs. %         |
| Control group (n=108)                 | Before the pedagogical experiment | 71 65.74 | 30 27.78 | 7 6.48 |
|                                       | After the pedagogical experiment   | 56 51.85 | 38 35.19 | 14 12.96 |
|                                       | Difference (%)      | -13.89 | +7.41 | +6.48 |
| Experimental group (n=116)            | Before the pedagogical experiment | 52 44.83 | 56 48.28 | 8 6.90 |
|                                       | After the pedagogical experiment   | 23 19.83 | 71 61.21 | 22 18.97 |
|                                       | Difference (%)      | -25.00 | +12.93 | +12.07 |

After the pedagogical experiment, 14 students of the control group, which is 12.96%, and 22 students of the experimental group, representing 18.97%, demonstrated the high level of readiness to activity according to the action criterion; the average level of readiness to activity according to the action criterion was demonstrated by 38 students of the control group, which is 35.19%, and 71 students of the experimental group, which is 61.21%; The low level of readiness to activity according to the action criterion was demonstrated by 56 students of the control group, which is 51.85%, and 23 students of the experimental group, which is 19.83%.
As a result of the formative stage of the pedagogical experiment, we consider an increase in the level of readiness formation of the students in the control and experimental groups to activity according to the action criterion. The confirmation of the aforementioned thesis is an increase in the number of students with a high level of readiness to activity according to the action criterion in the experimental group by 12.07%, as compared to an increase in the control group by 6.48% of the number of students with a high level of readiness to activity by action criterion. Also, an increase was observed in the experimental group by 12.93% of the number of students with an average level of readiness to activity according to the action criterion, as compared to an increase in the control group by 7.41% of the students with an average level of readiness to activity for action criterion. The positive dynamics was observed in the decrease in the experimental group by 25.00% of the number of students with a low level of readiness to activity according to the action criterion, as compared with a decrease in the control group by 13.89% of the number of students with a low level of readiness to activity by action criterion.

We will focus on analyzing the results of the pedagogical experiment on the readiness formation of the students in physical education and sports to activity according to the personal criterion, which were determined in accordance with its components:

- formation of the need for approval among students of the control and experimental groups;
- formation of volitional potential among students of control and experimental groups;
- formation of empathy among students of control and experimental groups;
- formation of a need in search of new impressions among students in the control and experimental groups.

We concentrate on the analysis of data characterizing the formation of the need for approval in the students of control and experimental groups. Table 10 presents the indices characterizing the emergence of the need for approval by students of control and experimental groups before the pedagogical experiment. The comparative analysis demonstrates the absence of statistically significant differences between the average values of data characterizing the emergence of the need for approval by students of the control and experimental groups before the pedagogical experiment. Consequently, we can assert that the control and experimental groups were homogeneous in their composition (at t emp. = 1.59).

Table 10 Data characterizing the formation of the need for approval among the students of control and experimental groups before the pedagogical experiment (points)

| Indices | Control groups (n = 108) | Experimental groups (n = 116) |
|---------|-------------------------|-----------------------------|
| M ±m    | 11.35 ± 0.25            | 11.88 ± 0.21                |
| σ       | 2.63                    | 2.31                        |
| t emp.  |                         | 1.59                        |

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Table 11 shows the changes that occurred in the data characterizing the formation of the need for approval among the students in control and experimental groups during the pedagogical experiment.

**Table 11 Dynamics of data characterizing the formation of the need for approval among the students in control and experimental groups (points)**

| Indices | Before the pedagogical experiment | After the pedagogical experiment |
|---------|-----------------------------------|----------------------------------|
|         | CG (n = 108)                      | EG (n = 116)                     | CG (n = 108)                      | EG (n = 116)                     | t emp | t lim |
| M ± m   | 11.35 ± 0.25                      | 11.88 ± 0.21                     | 12.01 ± 0.27                     | 13.53 ± 0.25                     | 4.11   | 1.99  |
| σ       | 2.63                              | 2.31                             | 2.80                             | 2.71                             |        |       |

Note: * - the results of the experimental group after the pedagogical experiment statistically significantly differ compared with the results of the control group (P <0.05)

At the end of the determination stage of the pedagogical experiment, the average data values characterizing the formation of the need for approval in the experimental group increased from 11.88 ± 0.21 to 13.53 ± 0.25, in the control group students - respectively 11.31 ± 0.25 to 11.88 ± 0.21 points. At the same time, a significant difference was found between the data (11.88 ± 0.21), characterizing the development of the need for approval in the control group students, and data (13.53 ± 0.25) that characterize the development of the need for approval in students of the experimental group (at t emp. = 4.11). The dynamics of the levels characterizing the formation of the need for approval among the students of the control and experimental groups is shown in table 12.

**Table 12 Dynamics of levels characterizing the formation of the need for approval among the students of the control and experimental groups**

| Indices          | Levels                                      | Low | Average | High |
|------------------|---------------------------------------------|-----|---------|------|
|                  | abs. % | abs. % | abs. % |
| Control group (n=108) |                                                |     |         |      |
| Before the pedagogical experiment | 73     | 67.59 | 27     | 25.00 | 8    | 7.41 |
| After the pedagogical experiment  | 58     | 53.70 | 37     | 34.26 | 13   | 12.04 |
| Difference (%)    | -13.89 | +9.26  | +4.63  |       |      |      |
| Experimental group |                                                |     |         |      |
| Before the pedagogical | 50     | 43.10 | 58     | 50.00 | 8    | 6.90 |
After the pedagogical experiment

| (n=116) | experiment | 19 | 16.38 | 75 | 64.66 | 22 | 18.97 |
|---------|------------|----|-------|----|-------|----|-------|
| Difference (%) | -26.72 | +14.66 | +12.07 |

It should be noted that at the beginning of the pedagogical experiment, 8 students of the control group, which is 7.41%, and 8 students of the experimental group, representing 6.90%, demonstrated the high level of need for approval at the beginning of the pedagogical experiment; the average level of the need for approval was demonstrated by 27 students in the control group of 25.00% and 58 students in the experimental group of 50.00%; 73 students from the control group, 67.59%, and 50 students of the experimental group, showed a low level of need for approval, representing 43.10%.

At the end of the pedagogical experiment, 13 students of the control group, 12.04%, and 22 students of the experimental group, showed a high level of need for approval that is 18.97%; the average level of need for approval was demonstrated by 37 students of the control group, which is 34.26%, and 75 students of the experimental group, which is 64.66%; 58 students of the control group, representing 53.70%, and 19 students of the experimental group, representing 16.38%, demonstrated the low level of the formation of the need for approval.

The result of the determination stage of the pedagogical experiment is the increase in the level of the formation of the need for approval among the students in control and experimental groups. The confirmation of the aforementioned thesis is an increase by 12.07% of the students in the experimental group with a high level of formation of the need for approval in comparison with an increase in the control group by 4.63% of the number of students with a high level of formation of the need for approval. There was also an increase in the experimental group by 14.66% of the number of students with an average level of need for approval in comparison with the increase in the control group by 9.26% of the number of students with an average level of formation of the need for approval. The positive dynamics was observed in the decrease in the experimental group by 26.72% of the number of students with a low level of formation of the need for approval, compared to a decrease in the control group by 13.89% of the number of students with a low level of formation of the need for approval.

We analyze data characterizing the formation of volitional potential among students in control and experimental groups.

Table 13 presents the indices characterizing the formation of the volitional potential among the students in the control and experimental groups before the pedagogical experiment. The comparative analysis demonstrates the absence of statistically significant differences between the average values of data characterizing the formation of the volitional potential among the students in the control and experimental groups before the pedagogical experiment. Consequently, we can assert that the control and experimental groups were homogeneous in their composition (at t emp. = 1.27).
Table 13 Data characterizing the formation of volitional potential among the students in the control and experimental groups before the pedagogical experiment (points)

| Indices | Control group (n = 108) | Experimental group (n = 116) |
|---------|-------------------------|-----------------------------|
| M ±m    | 13.90 ± 0.34            | 14.50 ± 0.33                |
| σ       | 3.50                    | 3.60                        |
| t emp.  | 1.27                    |                             |
| t lim.  | 1.99                    |                             |

Table 14 reflects the changes that occurred in data characterizing the formation of volitional potential among students in control and experimental groups during the pedagogical experiment.

Table 14 Dynamics of data characterizing the formation of volitional potential among students in control and experimental groups (points)

| Indices | Before the pedagogical experiment | After the pedagogical experiment |
|---------|-----------------------------------|----------------------------------|
|         | CG (n = 108) EG (n = 116)        | CG (n = 108) EG (n = 116)        |
| M ±m    | 13.90 ± 0.34 14.50 ± 0.33        | 14.79 ± 0.37 16.55 ± 0.34*       |
| σ       | 3.50 3.60                    | 3.85 3.65                        |
| t emp.  | 1.27 1.99                    | 3.52 1.99                        |
| t lim.  |                             |                                 |

Note: * - the results of the experimental group after the pedagogical experiment statistically significantly differ compared with the results of the control group (P < 0.05)

At the end of the determination stage of the pedagogical experiment, the average values of the data characterizing the formation of volitional potential among the experimental group students increased, respectively, from 14.50 ± 0.33 to 16.55 ± 0.34 points, in the control group students - corresponding to 13.90 ± 0.34 to 14.79 ± 0.37 points. At the same time, a significant difference was found between the data (14.79 ± 0.37), which characterize the formation of volitional potential in control group students and data (16.55 ± 0.34) characterizing the formation of volitional potential among students in the experimental group (at t emp. = 3.52).

The dynamics of the formation levels of volitional potential among the students of the control and experimental groups is shown in table 15.

It should be noted that during the pedagogical experiment, the high level of formation of volitional potential was demonstrated by 7 students of the control group, which is 6.48%, and 8 students of the experimental group, which is 6.90%; The average level of the formation of volitional potential was demonstrated by 30 students of the control group, which is 27.78%, and 56 students of the experimental group, which is 48.28%; The low level of the formation of volitional potential was demonstrated by 71 students of the
control group, which is 65.74%, and 52 students of the experimental group, which is 44.83%.

Table 15 Dynamics of formation levels of volitional potential among students in control and experimental groups

| Indices                      | Levels          |           |           |           |           |           |
|------------------------------|-----------------|-----------|-----------|-----------|-----------|-----------|
|                              | Low  | Average | High      | Low  | Average | High      |
|                              | abs. | %       | abs.   | %       | abs. | %       |
| Control group (n=108)        |      |         |         |         |       |         |
| Before the pedagogical       | 71   | 65.74  | 30     | 27.78  | 7     | 6.48    |
| experiment                   |      |         |         |         |       |         |
| After the pedagogical        | 56   | 51.85  | 38     | 35.19  | 14    | 12.96   |
| experiment                   |      |         |         |         |       |         |
| Difference (%)               | -13.89 | +7.41 | +6.48   |         |         |         |
| Experimental group           |      |         |         |         |       |         |
(n=116)                       |      |         |         |         |       |         |
| Before the pedagogical       | 52   | 44.83  | 56     | 48.28  | 8     | 6.90    |
| experiment                   |      |         |         |         |       |         |
| After the pedagogical        | 23   | 19.83  | 71     | 61.21  | 22    | 18.97   |
| experiment                   |      |         |         |         |       |         |
| Difference (%)               | -25.00 | +12.93 | +12.07  |         |         |         |

After the pedagogical experiment, 14 students from the control group, 12.96% and 22 students of the experimental group, 18.97% showed high level of volitional potential formation; the average level of the formation of volitional potential was demonstrated by 38 students of the control group, which is 35.19%, and 71 students of the experimental group, which is 61.21%; The low level of volitional potential was demonstrated by 56 students of the control group, which is 51.85%, and 23 students of the experimental group, which is 19.83%.

As a result of the determination stage of the pedagogical experiment, we consider the increase in the level of formation of volitional potential among the students of control and experimental groups. The confirmation of the aforementioned thesis is an increase in the experimental group by 12.07% of the number of students with a high level of volitional potential formation in comparison with an increase in the control group by 6.48% of the number of students with a high level of volitional potential formation.

There was also an increase in the number of students with an average level of formation of volitional potential in the experimental group by 12.93%, as compared to an increase in the control group by 7.41% of the students with an average level of formation of volitional potential. Positive dynamics was observed in the decrease in the experimental group by 25.00% of the number of students with low level of formation of volitional potential, as compared to the decrease in the control group by 13.89% of the number of students with low level of volitional potential formation.
We analyze data characterizing the formation of empathy in students of control and experimental groups. Table 16 presents data that characterizes the formation of empathy in students of control and experimental groups during the pedagogical experiment. The comparative analysis demonstrates the absence of statistically significant differences between the average values of data characterizing the formation of empathy in students of the control and experimental groups before the pedagogical experiment. Consequently, we can assert that the control and experimental groups were homogeneous in composition (at t emp. = 1.75).

**Table 16** Data characterizing the formation of empathy in the students of the control and experimental groups before the pedagogical experiment (points)

| Indices | Control group (n = 108) | Experimental group (n = 116) |
|---------|------------------------|-----------------------------|
| M ±m    | 49.21 ± 1.58           | 53.38 ± 1.79                |
| σ       | 16.46                  | 19.23                       |
| t emp.  | 1.75                   |                             |
| t lim.  | 1.99                   |                             |

Table 17 reflects the changes that occurred in data characterizing the formation of empathy in students of control and experimental groups during the pedagogical experiment.

**Table 17** Dynamics of data characterizing the formation of empathy in the students of the control and experimental group (points)

| Indices | Before the pedagogical experiment | Before the pedagogical experiment |
|---------|-----------------------------------|-----------------------------------|
|         | CG (n = 108)                      | EG (n = 116)                      |
| M ±m    | 49.21 ± 1.58                      | 53.38 ± 1.79                      |
| σ       | 16.46                             | 19.23                             |

|         | t emp. | t lim. | t emp. | t lim. |
|---------|--------|--------|--------|--------|
| CG (n = 108) | 1.80   | 1.99   | 1.71   | 1.51*  |
| EG (n = 116) | 1.71   | 1.99   | 17.72  | 16.24  |

Note: * - the results of the experimental group after the pedagogical experiment statistically significantly differ compared with the results of the control group (P <0.05)

At the end of the determination stage of the pedagogical experiment, the average values of the data characterizing the development of empathy in the experimental group students increased from 53.38 ± 1.79 to 61.89 ± 1.51 points, in the control group students - correspondingly to 49.21 ± 1.58 to 53.45 ± 1.71 points. At the same time, a significant difference was found between the data (53.45± 1.71), which characterize the formation of empathy in the control group students and data (61.89 ± 1.51), which characterize the formation of empathy in students of the experimental group (at t emp. = 3.71).
The dynamics of the empathy formation levels in students of control and experimental groups is shown in table 18.

Table 18 Dynamics of empathy formation levels in the students of the control and experimental groups

| Indices                  | Levels | low | average | high | abs. | %    | abs. | %    | abs. | %    |
|--------------------------|--------|-----|---------|------|------|------|------|------|------|------|
| Control group (n=108)    |        |     |         |      |      |      |      |      |      |      |
| Before the pedagogical experiment |        | 69  | 63.89   | 32   | 29.63| 7    | 6.48 |
| After the pedagogical experiment |        | 55  | 50.93   | 40   | 37.04| 13   | 12.04|
| Difference (%)           |        | -12.96 | +7.41  | +5.56|
| Experimental group (n=116) |        |     |         |      |      |      |      |      |      |      |
| Before the pedagogical experiment |        | 51  | 43.97   | 58   | 50.0 | 7    | 6.03 |
| After the pedagogical experiment |        | 21  | 18.10   | 74   | 63.79| 21   | 18.10|
| Difference (%)           |        | -25.86 | +13.79 | +12.07|

It should be noted that before the pedagogical experiment, the high level of formation of empathy was demonstrated by 7 students of the control group, which is 6.48%, and 7 students of the experimental group, which is 6.03%; the average level of the empathy formation was demonstrated by 32 students of the control group, which is 29.63%, and 58 students of the experimental group, which is 50%; the low level of empathy was demonstrated by 69 students in the control group, representing 63.89%, and 51 students in the experimental group, which is 43.97%.

After the pedagogical experiment, the high level of the empathy formation was demonstrated by 13 students of the control group, which is 12.04% and 21 students of the experimental group, which is 18.10%; the average level of the empathy formation was demonstrated by 40 students of the control group, which is 37.04% and 74 students of the experimental group, accounting for 63.79%; The low level of empathy was demonstrated by 55 students of the control group, which is 50.93% and 21 students of the experimental group, which is 18.10%.

The result of the determination stage of the pedagogical experiment is the increase in the level of the formation of empathy in the students of the control and experimental groups. The confirmation of the above-mentioned thesis is an increase in the experimental group by 12.07% of the students with high levels of empathy, as compared to an increase in the control group of 5.56% of the students with high levels of empathy. Also, in the experimental group, the number of students with an average level of empathy increased by
13.79% compared to an increase in the control group of 7.41% of the students with an average level of empathy. Positive dynamics is observed in the decrease in the experimental group of 25.86% of students with low levels of empathy, compared with a decrease in the control group of 12.96% of students with low levels of empathy.

Then we analyze the data characterizing the formation of the need in the search for impressions in the students of the control and experimental groups. Table 19 shows the indices that characterize the need for impressions in the students of the control and experimental groups before the pedagogical experiment. The comparative analysis shows that there is no statistically significant difference between the average values of data that characterize the needs in the search for impressions in the students of the control and experimental groups before the pedagogical experiment. Consequently, we can assert that the control and experimental groups were homogeneous in composition (at t emp. = 1.31).

Table 19 Data characterizing the formation of a need in search of new impressions in students of the control and experimental group before the pedagogical experiment (points)

| Indices | Control group (n = 108) | Experimental group (n = 116) |
|---------|------------------------|-----------------------------|
| M ±m    | 6.37 ± 0.22            | 6.77 ± 0.21                 |
| σ       | 2.24                   | 2.30                        |
| t emp.  |                        | 1.31                        |
| t lim.  |                        | 1.99                        |

Table 20 shows the changes that occurred in the data characterizing the formation of the need for new experiences in students of control and experimental groups during the pedagogical experiment. At the end of the determination stage of the pedagogical experiment, the average values of the data characterizing the formation of the need in search of new experiences in students of the experimental group increased from 6.77 ± 0.21 to 8.34 ± 0.24 points, in the control group students – 6.37 ± 0.22 to 6.94 ± 0.25 points. At the same time, a significant difference was found between the data (6.94 ± 0.25) that characterizes the need for new experiences in the control group and data (8.34 ± 0.24) that characterize the need for new experiences in students of the experimental group (at t emp. = 4.09).

Table 20 Dynamics of data characterizing the formation of needs in search of new impressions in students of control and experimental group (points)

| Indices | Before the pedagogical experiment | After the pedagogical experiment |
|---------|----------------------------------|---------------------------------|
|         | CG (n = 108) | EG (n = 108) | emp. | t lim. | CG (n = 108) | EG (n = 116) | t emp. | t lim. |
| M ±m    | 6.37±0.22   | 6.7±0.21    | 1.31 | 1.99   | 6.94±0.25   | 8.34±0.24   | ±4.09 | 1.99   |
The result of the determination stage of the pedagogical experiment is the increase in the level of the formation of the need in search of new impressions after the pedagogical experiment statistically significantly differ compared with the results of the control group (P < 0.05).

The dynamics of the levels of need in search of new impressions for students in the control and experimental groups is shown in Table 21.

Table 21: The dynamics of the levels of the formation of needs in search of new impressions in the students of the control and experimental groups

| Indices | Levels | low | average | high |
|---------|--------|-----|---------|------|
|         |        | abs. | %       | abs. | % |
| Control group (n=108) | Before the pedagogical experiment | 65 | 60.19 | 35 | 32.41 | 8 | 7.41 |
|         | After the pedagogical experiment | 50 | 46.30 | 41 | 37.96 | 17 | 15.74 |
|         | Difference (%) | -13.89 | +5.56 | +8.33 |
| Experimental group (n=116) | Before the pedagogical experiment | 51 | 43.97 | 56 | 48.28 | 9 | 7.76 |
|         | After the pedagogical experiment | 20 | 17.24 | 73 | 62.93 | 23 | 19.83 |
|         | Difference (%) | -26.72 | +14.66 | +12.07 |

It should be noted that at the beginning of the pedagogical experiment, the high level of the formation of the need in search of new impressions was demonstrated by 8 students of the control group, which is 7.41% and 9 students of the experimental group, which is 7.76%; the average level of the need for new impressions has been demonstrated by 35 students of the control group, which is 32.41%, and 56 students of the experimental group, which is 48.28%; 65 students in the control group, 60.19%, and 51 students in the experimental group, 46.30%, showed a low level of need in new experiences in search of new impressions.

At the end of the pedagogical experiment, 17 students of the control group, 15.74%, and 23 students of the experimental group, representing 19.83%, demonstrated the high level of the need in new experiences; the average level of need in search of new impressions was demonstrated by 41 students of the control group, which is 37.96%, and 73 students of the experimental group, which is 62.93%; 50 students from the control group, 46.30%, and 20 experimental group students, representing 17.24%, demonstrated the low level of need in new experiences.

The result of the determination stage of the pedagogical experiment is the increase in the level of the formation of the need in search of new impressions...
impressions. The confirmation of the aforementioned thesis is an increase in the number of students with a high level of need in new impressions by 12.07% in the experimental group, compared to an increase in the control group by 8.33% of the number of students with a high level of need in search of new impressions.

There was also an increase in the experimental group by 14.66% of the number of students with an average level of need in new impressions compared to an increase in the control group by 5.56% of the number of students with an average level of need in new experiences. The positive dynamics was observed in the decrease in the experimental group by 26.72% of the number of students with a low level of need in search of new impressions compared to a decrease in the control group by 13.89% of the number of students with low level of need in search of new impressions.

Thus let’s focus on analyzing the results of a pedagogical experiment on the readiness formation among the students in physical education and sports to activity according to a personal criterion.

Table 22 presents data characterizing the readiness formation of students in control and experimental groups to activity according to the personal criterion before the pedagogical experiment.

The comparative analysis shows the absence of statistically significant differences between the average values of data characterizing the readiness formation of students in control and experimental groups to activity according to the personal criterion before the pedagogical experiment. Consequently, we can assert that the control and experimental groups were homogeneous in composition (at $t_{emp.} = 1.48$).

| Indices | Control group (n = 108) | Experimental group (n = 116) |
|---------|------------------------|-------------------------------|
| $M \pm m$ | 80.83 ± 2.39 | 86.53 ± 2.55 |
| $\sigma$ | 24.84 | 27.43 |
| $t_{emp.}$ | 1.48 | |
| $t_{lim.}$ | 1.99 | |

Table 23 reflects the changes that occurred in the data characterizing the readiness formation of the students in the control and experimental groups to activity by the personal criterion during the pedagogical experiment.

Thus, at the end of the determination stage of the pedagogical experiment, the average data values characterizing the readiness formation of the students in the experimental group to activity according to the personal criterion increased from 21.63 ± 0.64 to 25.08 ± 0.58, in the control group - from 20.14 ± 0.60 to 21.59 ± 0.65 points.

At the same time, a significant difference was found between the data (21.59 ± 0.65) that characterizes the readiness of the students in the control group to activity according to the personal criterion and data (25.08 ± 0.58),
characterizing the readiness formation of the students in the experimental groups to activity according to the personal criterion (at \( t_{emp} = 4.07 \)).

**Table 23** Dynamics of data characterizing the readiness formation of the students in control and experimental groups to activity according to the personal criterion (points)

| Indices | Before the pedagogical experiment | After the pedagogical experiment |
|---------|-----------------------------------|---------------------------------|
|         | CG (n = 108)                      | EG (n = 116)                    |
| M ±m    | 20.14 ±0.60                      | 21.63 ±0.64                    |
| σ       | 6.21                             | 6.86                            |
| t_{emp.}| 1.58                             | 1.99                            |
| t_{lim.}| 1.99                             | 1.99                            |
|         | CG (n = 108)                      | EG (n = 116)                    |
| M ±m    | 21.59 ±0.65                      | 25.08 ±0.58*                   |
| σ       | 6.72                             | 6.30                            |

Note: * - the results of the experimental group after the pedagogical experiment statistically significantly differ compared with the results of the control group (\( P <0.05 \)).

The dynamics of the readiness formation levels of the students in control and experimental groups to activity according to the personal criterion is reflected in table 24.

**Table 24** The dynamics of the readiness formation levels of the students in control and experimental groups to activity according to the personal criterion

| Indices | Levels |
|---------|--------|
|         | low    | average | high |
|         | abs.   | %       | abs. | %     |
| Control group (n=108) | Before the pedagogical experiment | 69 | 63.89 | 31 | 28.70 | 8 | 7.41 |
|         | After the pedagogical experiment | 55 | 50.92 | 39 | 36.11 | 14 | 12.97 |
|         | Difference (%) | -12.97 | +7.41 | +5.56 |
| Experimental group (n=116) | Before the pedagogical experiment | 51 | 43.97 | 57 | 49.14 | 8 | 6.90 |
|         | After the pedagogical experiment | 21 | 18.10 | 73 | 62.93 | 22 | 18.97 |
|         | Difference (%) | -25.87 | +13.79 | +12.07 |
It should be noted that during the pedagogical experiment, the high level of readiness formation to activity according to the personal criterion was demonstrated by 8 students of the control group, which is 7.41%, and 8 students of the experimental group, which is 6.90%; the average level of readiness to activity according to the personal criterion was demonstrated by 31 students of the control group, which is 28.70%, and 57 students of the experimental group, which makes up 49.14%; The low level of readiness to activity according to the personal criterion was demonstrated by 69 students of the control group, which is 63.89%, and 51 students of the experimental group, which is 43.97%.

After the pedagogical experiment, 14 students of the control group, which is 12.97%, and 22 students of the experimental group, representing 18.97%, demonstrated the high level of readiness to activity according to the personal criterion; the average level of readiness to activity on the personal criterion was demonstrated by 39 students of the control group, which is 36.11%, and 73 students of the experimental group, which is 62.93%; the low level of readiness to activity according to the personal criterion was demonstrated by 55 students of the control group, which is 50.92%, and 21 students of the experimental group, which is 18.10%.

The result of the determination stage of the pedagogical experiment is the increase in the readiness formation level of the students in the control and experimental groups to activity according to the personal criterion.

The confirmation of the aforementioned thesis is an increase in the experimental group by 12.07% of the number of students with a high level of readiness to activity according to the personal criterion compared to an increase in the control group by 5.56% of the number of students with a high level of readiness to activity according to personal criterion.

There was also an increase in the number of students in the experimental group by 13.79%, with an average level of readiness to activity according to the personal criterion, as compared to an increase in the control group by 7.41% of the students with an average level of readiness to activity by personal criterion. The positive dynamics was observed in the decrease in the experimental group by 25.87% of the number of students with a low level of readiness to activity according to the personal criterion, compared with a decrease in the control group by 12.97% of the number of students with a low level of readiness to activity according to personal criterion.

We characterize the readiness formation of students in physical education and sports to activity.

Table 25 presents data characterizing the readiness formation of the students in control and experimental groups to activity before the pedagogical experiment. The comparative analysis shows that there is no statistically significant difference between readiness indices. Consequently, we can assert that the control and experimental groups were homogeneous in their composition (at temp. = 1.40).
Table 25 Data characterizing the readiness formation of the students in control and experimental groups to activity before the pedagogical experiment (points)

| Indices | Control group (n = 108) | Experimental group (n = 116) |
|---------|------------------------|-----------------------------|
| М ±m   | 132.44 ± 3.7           | 140.70 ± 3.97               |
| σ      | 38.42                  | 42.74                       |
| t emp. | 1.40                   |                             |

Table 26 reflects the changes that occurred in the data characterizing the readiness formation of the students in control and experimental groups to activity during the pedagogical experiment. Thus, at the end of the determination stage of the pedagogical experiment, the average values of the data characterizing the readiness formation of the students in the experimental group to activity increased, respectively, from 140.70 ± 3.97 to 161.94 ± 3.61 points, in the control group students - respectively, from 132.44 ± 3.7 to 142.40 ± 4.10 points. At the same time, a significant difference was found between the data (142.40 ± 4.10), characterizing the readiness formation of the students in the control group to activity, and data (161.94 ± 3.61) characterizing the readiness formation of students in the experimental group to activity (at t emp. = 3.68).

Table 26 Dynamics of data characterizing the readiness formation of the students in control and experimental groups to activity (points)

| Indices | Before the pedagogical experiment | After the pedagogical experiment |
|---------|-----------------------------------|----------------------------------|
|         | CG (n = 108) | EG (n = 116) | t emp  | CG (n = 108) | EG (n = 116) | t lim. |
| М ±m   | 132.44±3.7 | 140.70±3.97 | 1.40   | 142.40±4.10 | 161.94±3.61 | 3.68   |
| σ      | 38.42     | 42.74       |        | 42.66       | 38.87       |        |

Note: * - the results of the experimental group after the pedagogical experiment statistically significantly differ compared with the results of the control group (P <0.05)

The dynamics of the readiness formation levels of the students in control and experimental groups to activity is reflected in table 27.

Table 27 Dynamics of the readiness formation levels of the students in control and experimental groups for activity

| Indices | Levels | low | average | high |
|---------|--------|-----|---------|------|
|         | abs.   | %   | abs.    | %    | abs. | %    |
| Control group (n=108) | Before the pedagogical experiment | 68 | 62.96   | 33   | 30.56 | 7    | 6.48 |
|         | After the pedagogical | 54 | 50.00   | 41   | 37.96 | 13   | 12.04 |
It should be noted that before the pedagogical experiment, the high level of readiness to activity was demonstrated by 7 students of the control group, which makes up 6.48%, and 8 students of the experimental group, which makes up 6.89%; 33 students of the control group, representing 30.56%, and 56 students of the experimental group, which is 48.28%, demonstrated the average level of readiness to activity; the low level of readiness to activity was demonstrated by 68 students of the control group, which is 62.96%, and 52 students of the experimental group, which is 44.83%.

At the end of the pedagogical experiment, 13 students from the control group, which is 12.04%, and 22 students of the experimental group, representing 18.97%, demonstrated the high level of readiness to activity; The average level of readiness to activity was demonstrated by 41 students of the control group, which is 37.96%, and 72 students of the experimental group, which is 62.06%; 54 students of the control group, which is 50%, and 22 students of the experimental group, showed a low level of readiness to activity, which is 18.97%.

The result of the determination stage of the pedagogical experiment is the increase in the readiness formation level of the students in the control and experimental groups to activity.

The confirmation of the aforementioned thesis is an increase in the number of students with a high level of readiness to activity in the experimental group by 12.08%, compared to an increase in the control group by 5.56% of the number of students with a high level of readiness to activity.

There was also an increase in the number of students in the experimental group by 13.78% with an average level of readiness to activity, compared to an increase in the control group by 7.4% of the number of students with an average level of readiness to activity. Positive dynamics is observed in the decrease in the experimental group by 25.86% of the number of students with a low level of readiness to activity compared to a decrease in the control group by 12.96% of the number of students with a low level of readiness to activity.

The effectiveness of the training system designed for students in physical education and sports was carefully analyzed, as well as the results of factor analysis of the experimental data obtained. The purpose of this was to study the structure of the readiness of students in physical education and sports to activity.
Factor analysis of the experimental data obtained allowed us to determine:

1) component structure of readiness of the students in control and experimental groups to activity;
2) the degree of the contingent uniformity in the control and experimental groups at the beginning of the pedagogical experiment;
3) the leading structural components of the readiness of students in physical education and sports to activity and their contribution to factors at the beginning and at the end of pedagogical research;
4) the estimation of the training system designed for the students in physical education and sports.

According to the results of the factor analysis, it has been established that the structure of readiness of students in the control group to activity at the beginning of the pedagogical experiment is determined by three factors. The most significant structural components that form factor 1 is the procedural component of readiness and such component of the emotional-volitional readiness component as the availability of volitional potential among students (which explains 29.2% of the total dispersion).

Factor 2 is formed by a motivational component of readiness and the presence of empathy among students which is a part of the emotional-volitional readiness component, (which explains 16.86% of the total dispersion).

Factor 3 is due to the cognitive component of readiness (which explains 15.72% of the total dispersion).

The cumulative contribution to the overall dispersion is 61.78%.

During the pedagogical experiment, in the experimental group, the results of the factor analysis indicate that the factor structure of readiness to activity is also determined by three factors, which explain 61.61% of the total dispersion of features - more than half that in the factor analysis is considered an acceptable result (table 28).

In particular, the most significant structural components that form factor 1 is the procedural component of readiness and such component of the emotional-volitional readiness component as the availability of volitional potential among students (which explains 29.85% of the total dispersion).

Factor 2 is formed by a motivational component of readiness and the presence of empathy among students which is a part of the emotional-volitional readiness component, (which explains 16.55% of the total dispersion).

Factor 3 is due to the cognitive component of readiness (which explains 15.21% of the total dispersion).

The cumulative contribution to the total dispersion is 61.61%.

Table 28 Factor structure of readiness of the students in control and experimental groups to activity before the pedagogical experiment

| Readiness structure components | Control group | Experimental group |
|-------------------------------|---------------|-------------------|
|                               | Factor 1     | Factor 2         | Factor 3 | Factor 1 | Factor 2 | Factor 3 |

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Consequently, during the pedagogical experiment, the readiness structure of the students in control and experimental groups to activity practically does not differ, both in the structure of factors and in the contribution of the factor to the general dispersion. This made it possible to assert that the contingent of the control and experimental groups was homogeneous before the pedagogical experiment and to confirm the pre-applied statistical methods.

At the end of the pedagogical experiment, the factor analysis of the structural components of the readiness of the students in the control group to activity has shown that the results are practically unchanged. Thus, the most significant structural components of readiness that form factor 1 is the procedural component of readiness and such component of the emotional-volitional readiness component as the availability of volitional potential among students (which explains 29.84% of the total dispersion).

Factor 2 is formed by a motivational component of readiness, and the presence of empathy among students that is a part of the component of the...
emotional-volitional readiness (which explains 17.45% of the total dispersion).
Factor 3 is due to the cognitive readiness component (which explains 16.2% of the total dispersion).
The cumulative contribution to the total dispersion is 63.49%.
The analysis of the components factor structure of the readiness of students in the experimental group to activity at the end of the pedagogical experiment shows that under the influence of the introduction of the developed and theoretically grounded system there were some qualitative changes that are reflected by the change in the significance of every structural components of readiness in each selected factor and in the overall readiness structure.
The structure of readiness in experimental group students to activity after the pedagogical experiment is determined by three factors, which explain 68.29% of the total dispersion of characteristics (table 29).
The most significant structural components of readiness that form factor 1 is the procedural component of readiness and such a component of the emotional-volitional readiness as the availability of volitional potential among students (which explains 29.2% of the total dispersion).
Factor 2 is formed by a motivational component of readiness, and the presence of empathy among students which is a part of the emotional-volitional component (which explains 20.84% of the total dispersion).
Factor 3 is due to the cognitive component of readiness and such a part of the emotional-volitional readiness component as the need for approval (which explains 18.25% of the total dispersion).
The cumulative contribution to the total dispersion is 68.29% (table 29).

Table 29 Factor structure of readiness of the students in control and experimental groups to activity at the end of the pedagogical experiment

| Readiness structure components | Control group | | | Experimental group | | |
|--------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                                | Factor 1 | Factor 2 | Factor 3 | Factor 1 | Factor 2 | Factor 3 | Factor 1 | Factor 2 | Factor 3 |
| Motivational component         | -0.0405 | 0.5394 | 0.2748 | -0.0538 | 0.6274 | 0.4355 |
| Cognitive component            | 0.0567 | 0.1642 | 0.6161 | 0.1064 | -0.2140 | 0.8719 |
| Procedural component           | 0.9711 | 0.1070 | -0.1931 | 0.9809 | -0.1372 | -0.0792 |
| Emotional and volitional component (need for approval) | 0.3575 | -0.2138 | 0.2252 | 0.1517 | 0.4398 | 0.7015 |
| Emotional and volitional component (volitional) | 0.9693 | 0.1089 | -0.2005 | 0.9833 | -0.1255 | -0.0767 |
| Emotional and volitional component (presence of empathy) | 0.2582 | **0.6658** | 0.3320 | 0.0113 | **0.6521** | -0.1066 |
|-----------------------------------------------|--------|--------|--------|--------|--------|--------|
| Emotional and volitional component (need for new impressions/ experiences) | -0.0823 | 0.2880 | -0.2626 | -0.2784 | **0.7296** | -0.2852 |
| % total dispersion %                          | 29.84  | 17.45  | 16.20  | 29.20  | 20.84  | 18.25  |
|                                              | 63.49  |        |        |        |        | 68.29  |

It should be noted that the readiness structure of the students in the experimental group to activity at the end of the pedagogical experiment distinguishes by the increase in the contribution of such components of the emotional-volitional component of readiness as the need in the search for new impressions and need for approval. While the overall structure of readiness and the contribution of its individual components to each factor of the control group at the end of the pedagogical experiment is practically unchanged.

Thus, we analyzed the results of experimental testing of the effectiveness of the professional training system designed for students in physical education and sports.

**Conclusions**

The pedagogical experiment has shown:

12 students of the control group, which is 11.11%, and 23 students of the experimental group, representing 19.83%, demonstrated the high level of readiness according to the motivational criterion; 13 students from the control group, 12.04% and 21 students of the experimental group, showed a high level of readiness according to the cognitive criterion, which is 18.10%; The high level of readiness according to the activity criterion was demonstrated by 14 students of the control group, which is 12.96%, and 22 students of the experimental group, which is 18.97%; The high level of readiness according to the personal criterion was demonstrated by 14 students of the control group, which is 12.97%, and 22 students of the experimental group, which is 18.97%.

55 students of the control group, representing 50.93%, and 68 students of the experimental group, which is 58.62%, demonstrated the average level of readiness according to the motivational criterion; The average level of readiness according to the cognitive criterion was demonstrated by 35 students of the control group, which is 32.41%, and 73 students of the experimental group, which is 62.93%; the average level of readiness
according to the activity criterion was demonstrated by 38 students of the control group, which is 35.19%, and 71 students of the experimental group, which is 61.21%; the average level of readiness on the personal criterion was demonstrated by 39 students of the control group, which is 36.11%, and 73 students of the experimental group, which is 62.93%; 41 students of the control group, representing 37.96%, and 25 students of the experimental group, representing 21.55%, demonstrated the low level of readiness according to the motivational criterion; the low level according to the cognitive criterion was demonstrated by 60 students of the control group, which is 55.56%, and 22 students of the experimental group, which is 18.97%; 56 students from the control group, 51.85%, and 23 students of the experimental group, representing 19.83%, showed a low level of readiness according to the activity criterion; The low level of readiness according to the personal criterion was demonstrated by 55 students of the control group, which is 50.92%, and 21 students of the experimental group, which is 18.10%.

The effectiveness of the system of training future specialists in physical education and sports was also analyzed according to the results of factor analysis of the experimental data obtained. The analysis of the factor structure of the readiness components of the experimental group's students at the end of the pedagogical experiment shows that under the influence of the introduction of the developed system there were certain qualitative changes that are reflected by the change in the significance of the individual structural components of readiness in each selected factor and in the overall readiness framework.

The results of the pedagogical experiment indicate that there were statistically significant changes in the level of formation of the readiness of the students of the experimental group in comparison with the levels of formation of readiness of the students of the control group, which testifies to the effectiveness of the developed system of professional training of future specialists in physical education and sport.

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