

Relationship of research with scientific programs, plans, themes. The work was carried out in accordance with the research plan of the Department of Physical Education and Recreational Physical Culture of the Central State Pedagogical University named after Vladimir Vinnichenko.

Purpose of the study: to improve the level of physical preparedness of female students aged 17–20 by means of combined shaping.

Objectives of the study: 1. To develop the author's program of sectional sessions on combined shaping for students of 17–20 years. 2. Identify the positive impact of combined shaping on the physical fitness of students. 3. To increase the effectiveness of the program of sectional sessions on combined shaping on the dynamics of the basic indicators of the physical readiness of female students.

Material and Methods of the research

The study used the following research methods: analysis and generalization of literary sources, pedagogical experiment, pedagogical testing, methods of mathematical statistics.

The study was conducted on the basis of the Central State Pedagogical University named after Vladimir Vinnichenko. In the experiment, 30 female students aged 17–20 years of non-special faculties of this institution participated.

Pedagogical testing was conducted for three years (2013–2016) and contains six stages of the study. At the beginning and at the end of each academic year, pedagogical testing determined indicators of the level of general physical preparedness of female students (Table 1). For this purpose, part of the state tests and standards for assessing the physical preparedness of the Ukrainian population for student youth and the corresponding organization and methodology for their conduct [2].

Table 1
Indicators characterizing the level of general physical preparedness of female students

Complex of motor performance indicators		
Test	Indicators	Units of measurement
Running 30 m	speed	s
Walking 1200 m	endurance	min
Standing long jump	explosive power	cm
Push-ups	power endurance	times
Lifting the trunk into the sediment from the supine position for 1 min	power endurance	times
Squats on two legs	power endurance	times
Body tilt forward sitting	flexibility	cm
Shuttle Run 4x9	coordination of movements	s

In the course of the research, the author's program of sectional sessions on combined shaping was developed and introduced into the educational process of physical education of students of the Central State Pedagogical University named after Vladimir Vinnichenko. In this paper, the term "combined shaping" was used, which provides a rational

combination of exercises with shaping with elements of aerobics, exercises with fit-bol, dumbbells, skipping ropes and stretching exercises. That is, the main condition of the author's program is the combination of exercises with shaping with other types of physical activity, successfully complement and strengthen each other's actions, and make the lessons interesting and original. A methodical feature of building classes with combined shaping is the consistent performance of work of a power nature, aerobic orientation and stretching.

Separate trainings of the author's program have a predominantly combined character, that is, they provide for the application of several sets of exercises of various orientations. For example, in one training session it is possible to influence the development of general endurance and improve the flexibility and mobility of the joints of the whole body, in another training – to influence the development of coordination abilities and dexterity and improve the strength abilities of individual muscle groups with appropriately selected exercises from the complexes proposed in the program. There are various combinations.

But there can be training and one specific direction, namely:

- strength training;
- aerobic training;
- vitrolis training;
- training of restorative nature, etc.

The choice, combination, amount and orientation of the exercises (sets of exercises) for a separate training depends on the tasks set by the coach, the overall training plan and the stage of training athletes. According to the regulation and the magnitude of the load and the intensity of training. The duration of an individual workout is 60–80 minutes.

The positive influence of such training on the organism involved has been proved several times and is covered in scientific and methodological literature. Thanks to the training with combined shaping, there is an increase in the general level of physical fitness and its individual indicators, an improvement of the morpho-functional parameters of those involved is observed, which indicates a health effect on the state of the organism as a whole [5–7].

In order to determine the effectiveness of the introduction of the author's program of health-training sessions on combined shaping and its impact on the physical preparedness of female students, the dynamics of the change in the average group indicators of physical readiness during three years of study and comparison of the indicators of the first and sixth stages of the study was analyzed.

The results obtained during the study were processed using mathematical-statistical methods and included calculations of the following parameters:

1. Span of the arithmetic mean (\bar{X}).
2. Mean square deviation (σ).
3. Coefficient of variation (V).
4. Average error of the arithmetic mean (m).
5. Reliability of the changes (P) was determined on the basis of the t-test of the Student.

Results of the research and their discussion

At six stages of the study, conducted at the beginning and at the end of each academic year, based on the results of pedagogical testing, individual indicators of the physical preparedness of the female students of the experimental group were identified and attended classes on combined shaping. Using the methods of mathematical statistics, the average group indices of the physical readiness of the students of the experimental group were calculated. In order to determine the effectiveness of the developed author's program and determine the percentage increase in the studied indicators, the indicators of the first and sixth stages of the study were compared.

Table 2 and Figure 1 show the dynamics of changes in the average group indicators of physical preparedness of female students aged 17–20 over three academic years.

Analysis of the dynamics of changes in the average group indicators of the physical preparedness of female students during the three academic years revealed a general tendency to improve.

So, the students' high-speed abilities increased by 10,1%, that is, the time to overcome the distance by 30 m was less than in the first stage. This increase in the indicator is reliable ($P < 0,05$), but compared to other indicators is insignificant, because the program of training exercises on combined shaping has not been developed, it did not contain exercises aimed at developing the students' speed abilities. In addition, according to a number of specialists (P.V. Volkov, V. N. Platonov, B. M. Shiyan, V. P. Filin, etc.), the development of speed capabilities is largely genetically determined.

The general endurance of female students showed a tendency to increase, the shift of the results of walking for walking at 1200 m turned out to be not very significant (10,1%), but reliable ($P < 0,05$). The result is due to the fact that, within the framework of the developed method for shaping, there was no provision for cross training, lengthy cyclical exercises that contribute to improving the level of development of general endurance.

Analyzing the indices of the explosive power of female students, it was found that they significantly improved ($P < 0,05$), the result of long jump increased by 14,8%. To justify a slightly minor change in the indicator, in our opinion, it is possible to research specialists. Thus, in scientific works V. N. Platonov identifies three types of force: maximum, explosive and strength endurance, and the developed method of training

in shaping basically contained exercises aimed at developing strength endurance (both with the weight of his own body and with additional burdening) during lessons from combined shaping and this fact had its positive consequences. Strength endurance significantly ($P < 0,05$) increased during the study period. Thus, the results of the push-ups exercise improved by 367,4%, and the lifting of the trunk into the sediment from the prone position by 45,8%. More significant changes were observed in the power endurance of the muscles of the upper humeral girdle as opposed to the muscles of the trunk. The results can be explained by the characteristics of the female body and the presence of problem areas.

Flexibility indicators significantly ($P < 0,05$) improved during the period under study. After all, in the sixth stage of the study the result of the exercise, the inclination of the trunk forward from the sitting position increased by 117,7%. This fact is quite natural, because the technique of training exercises on shaping contained a sufficient number of exercises aimed at developing flexibility (stretching).

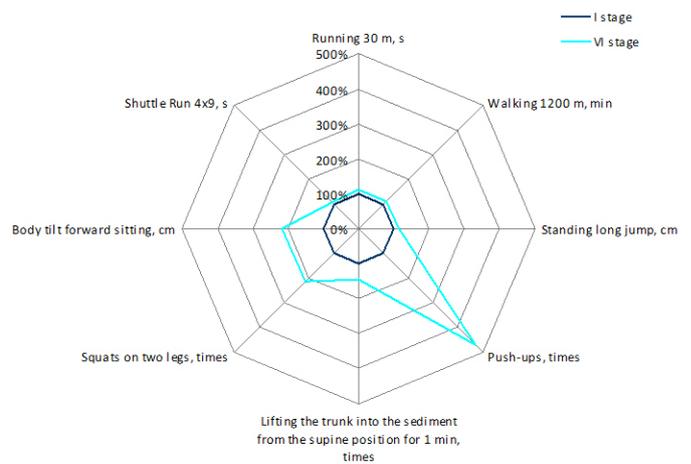


Figure 1. Dynamics of changes in the average group indicators of physical readiness of female students

Conclusions

1. The priority of physical education in universities is to create conditions for students to master the basic means of increasing physical performance and their functional state.
2. Combined shaping is one of the most accessible and effective systems of physical education and an effective means of harmonious development of the individual, promoting health, involving students in a healthy lifestyle, physical train-

Table 2
Dynamics of changes in the average group indicators of physical readiness of female students

No.	Tests	$\bar{X} \pm m$		$\Delta X, \%$	P
		I stage	VI stage		
1.	Running 30 m, s	5,47±0,04	4,92±0,02	10,10	<0,05
2.	Walking 1200 m, min	9,39±0,07	8,44±0,05	10,10	<0,05
3.	Standing long jump, cm	149,60±3,39	171,70±2,63	14,80	<0,05
4.	Push-ups, times	8,13±1,19	38,00±1,03	367,40	<0,05
5.	Lifting the trunk into the sediment from the supine position for 1 min, times	29,50±0,92	43,00±0,49	45,80	<0,05
6.	Squats on two legs, times	25,17±0,87	54,00±0,62	114,50	<0,05
7.	Body tilt forward sitting, cm	14,70±1,50	32,00±0,39	117,70	<0,05
8.	Shuttle Run 4x9, s	11,90±0,07	10,76±0,02	9,50	<0,05

ing and sports, and improving the physical preparedness of students.

3. In the course of the research, the author's program of sectional sessions on combined shaping for students of non-specialized to physical education of faculties was developed and introduced into the teaching and educational process of physical education of the Central State Pedagogical University named after Vladimir Vinnichenko.

2. The effectiveness of the program of sectional sessions on combined shaping on the dynamics of the basic indicators of

the physical readiness of students is proved. All the studied indicators of the physical preparedness of female students significantly and significantly improved after three years of classes developed by the author's program. So, the improvement in the level of physical preparedness of female students aged 17–20 is confirmed.

Prospects for further research. In future studies, we plan to confirm the effectiveness of this author's program on the basis of the dynamics of changes in morpho-functional indicators of female students during three academic years.

Conflict of interests. The author declares that no conflict of interest.

Financing sources. This article didn't get the financial support from the state, public or commercial organization.

References

1. Grinko, V.M. & Kudelko, V.E. (2017), "Effect of aerobic character employments on the special endurance of students in groups with sports orientation (sectional exercises) table tennis", *Slobozhans'kij naukovo-sportivnij visnik*, No. 5, pp. 48-52. (in Ukr.)
2. Ministry of Youth and Sports of Ukraine (2016), Tests and norms for the annual evaluation of physical preparedness of the population of Ukraine, available at: <http://zakon2.rada.gov.ua/laws/show/z0195-17#n15>.
3. Zaycev, S.S. (2010), "Evaluation of the factors determining the attitude of technical college students to physical education", *Slobozhans'kij naukovo-sportivnij visnik*, No. 1, pp. 21-25. (in Russ.)
4. Korobko, S.V., Scherbina, Z.I., Kudelko, V.E., Buymistrova, L.V., Teslenko, V.A. & Pavlenko, E.E. (2003), *Otsenka fizicheskoho sostoyaniya i fizicheskoy podgotovlennosti studentov* [Assessment of physical condition and physical preparedness of students], NFAU, Kharkov. (in Russ.)
5. Kosivs'ka, A.V. (2015), "Influence of shaping means on morpho-functional parameters of motor function of students of higher school of non-specialty faculties", *Pedagogika. Sovremennaya nauka. Noviy vzgliad: sbornik nauchnykh dokladov*, Part 2, pp. 79-83. (in Ukr.)
6. Kosivs'ka, A.V. (2016), "Improvement of the functional state of the cardiovascular system of students by means of shaping", *Fizychna kultura, sport ta zdorov'ya nacii: zbirnyk naukovykh prats'*, Vol. 2, pp. 74-79. (in Ukr.)
7. Malenyuk, T.V. & Kosivs'ka, A.V. (2015), "Section sessions – a priority form of organization of the process of physical education of students (shaping as an example)", *Pedahohika, psycholohiia ta medyko-biolohichni problem fizychnoho vychovannia i sportu*, No. 4, pp. 38-42. (in Ukr.)
8. Malyar, N.S. (2015), "Optimization of the process of physical education of students of higher educational institutions by method of circular training", *Naukovyi chasopys Natsionalnoho pedahohichnoho universytetu imeni M.P. Drahomanova*, Vol. 3 K2(57)15, pp. 217-220. (in Ukr.)
9. Martynova, N.P. (2014), "New types of aerobics as a means of developing the motor skills of students in higher education", *Slobozhans'kij naukovo-sportivnij visnik*, No. 1, pp. 62-65. (in Ukr.)
10. Novitskaya, N.A. (2015), "Organization of physical education classes for students of higher educational institutions, taking into account their interests and individual physical development", *Slobozhans'kij naukovo-sportivnij visnik*, No. 6, pp. 111-116. (in Russ.)
11. Pustolyakov, L.N. & Bolgar, M.A. (2015), "Mastering the main means of improving physical fitness, physical ability and functional state of students by using physical exercises", *Naukovyi chasopys Natsionalnoho pedahohichnoho universytetu imeni M.P. Drahomanova*, Vol. 3 K2(57)15, pp. 279-282. (in Ukr.)

Received: 11.03.2018.

Published: 30.04.2018.

Information about the Authors

Anastasiia Demchenko: *Kharkiv state academy of physical culture: Klochkivska 99, Kharkiv, 61000, Ukraine.*

ORCID.ORG/0000-0003-1555-2927

E-mail: nastys.kosivskaya@gmail.com