



## Methods of teaching gymnastic exercises to students engaged in sports aerobics

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### Abstract

**The aim** - to substantiate and experimentally test the method of teaching gymnastic exercises to students engaged in sports aerobics.

**Material and methods.** The study involved 20 students of Kharkiv institutions of higher education engaged in sports aerobics in groups of sports improvements. At the time of the experiment, the subjects were 17 to 20 years old. *Method of research.* Theoretical analysis and generalization of scientific and methodological literature; analysis of rules and videos of competitions; pedagogical experiment; expert evaluation; methods of mathematical statistics.

**Results.** As a result of the study, a method of teaching and improving the technique of performing gymnastic exercises for students of higher educational institutions specializing in sports aerobics was developed. It is proved that the introduction in the educational and training process of students engaged in sports aerobics, special exercises that gradually lead to the implementation of gymnastic elements, and at the same time partially develop the necessary physical abilities contribute to their more effective assimilation and improvement. In particular, the execution quality control all gymnastic exercises (emphasis angle flairs out with 360° rotation; emphasis high angle; planche apart the legs; sagittal balance with the grip on the leg and rotate 360°; libel spin with the prop hands on the floor) in the experimental group, unlike the control, increased on average by 50%.

**Conclusions.** Thus, the paper highlights the main groups of gymnastic elements provided by the current rules of competition in sports aerobics. The method of training students specializing in sports aerobics to perform these elements is developed. Experimental verification of the effectiveness of the developed technique was carried out.

**Keywords:** gymnastic exercises, study, improvement, methodology, sports aerobics, students, emphasis, balance, libel.

### Анотація

**Кравчук Т.М., Бібель С.А., Сластина О.О., Коваленко О.І.** Методика навчання гімнастичним вправам студенток, що займаються спортивною аеробікою

**Мета:** обґрунтувати та експериментально перевірити методику навчання гімнастичним вправам студенток, що займаються спортивною аеробікою.

**Матеріал і методи.** В дослідженні взяли участь 20 студенток харківських закладів вищої освіти, що займалися спортивною аеробікою у групах спортивного вдосконалення. На час експерименту досліджувані виповнилися від 17 до 20 років. *Методи дослідження.* Теоретичний аналіз і узагальнення науково-методичної літератури; аналіз правил та відеозаписів змагань; педагогічний експеримент; експертна оцінка; методи математичної статистики.

**Результати.** У результаті дослідження розроблено методику навчання та удосконалення техніки виконання гімнастичних вправ для студенток закладів вищої освіти, що спеціалізуються зі спортивною аеробікою. Доведено, що впровадження в навчально-тренувальний процес студенток, які займаються спортивною аеробікою, спеціальних вправ, що поступово підводять до виконання гімнастичних елементів і при цьому частково розвивають необхідні фізичні здібності сприяє більш ефективному їх засвоєнню і удосконаленню. Зокрема, якість виконання всіх гімнастичних контрольних вправ (упор кутом ноги нарізно назовні з поворотом на 360°; упор високий кут; горизонтальний упор ноги нарізно; сагітальна рівновага із захватом рукою ноги і поворотом на 360°; лібела з опорою руками об підлогу) у експериментальній групі, на відміну від контрольної, зросла в середньому на 50%.

**Висновки.** Таким чином, в роботі виділено основні групи гімнастичних елементів, передбачених діючими правилами змагань зі спортивною аеробікою. Розроблено методику підготовки студенток, що спеціалізуються зі спортивною аеробікою до виконання цих елементів. Здійснено експериментальну перевірку ефективності розробленої методики.

**Ключові слова:** гімнастичні вправи, вивчення, удосконалення, методика, спортивна аеробіка, студентки, упори, рівноваги, лібела

### Аннотация

**Кравчук Т.Н., Бибель С.А., Сластина Е.А., Коваленко А.И.** Методика обучения гимнастическим упражнениям студенток, занимающихся спортивной аэробикой

**Цель:** обосновать и экспериментально проверить методику обучения гимнастическим упражнениям студенток, занимающихся спортивной аэробикой.

**Материал и методы.** В исследовании приняли участие 20 студенток харьковских учреждений высшего образования, занимающихся спортивной аэробикой в группах спортивного совершенствования. На время эксперимента исследуемым исполнилось от 17 до 20 лет. *Методы исследования.* Теоретический анализ и обобщение научно-методической литературы; анализ правил и видеозаписей соревнований; педагогический эксперимент; экспертная оценка; методы математической статистики.

**Результаты.** В результате исследования разработана методика обучения и усовершенствования техники выполнения гимнастических упражнений для студенток высших учебных заведений, специализирующихся по спортивной аэробике. Доказано, что внедрение в учебно-тренировочный процесс студенток, занимающихся спортивной аэробикой, специальных упражнений, которые постепенно подводят к выполнению гимнастических элементов и при этом частично развивают необходимые физические способности способствует более эффективному их усвоению и усовершенствованию. В частности, качество выполнения всех гимнастических контрольных упражнений (упор углом ноги врозь наружу с поворотом на 360°; упор высокий угол; горизонтальный упор ноги врозь; сагитальное равновесие с захватом рукой за ногу и поворотом на 360°; либела с опорой руками о пол) в экспериментальной группе, в отличие от контрольной, выросла в среднем на 50%.

**Выводы.** Таким образом, в работе выделены основные группы гимнастических элементов, предусмотренных действующими правилами соревнований по спортивной аэробике. Разработана методика подготовки студенток, специализирующихся по спортивной аэробике к выполнению этих элементов. Осуществлена экспериментальная проверка эффективности разработанной методики.

**Ключевые слова:** гимнастические упражнения, изучение, совершенствование, методика, спортивная аэробика, студентки, упоры, равновесия, либела.



## Introduction

In the context of ever-increasing competition and high demands on the health and physical fitness of young people, the forms, means and methods of physical education of students need to be reviewed and adapted to their needs. Today, more and more higher education institutions are replacing traditional forms of physical education of students with sports-oriented [1, 2, 3]. Numerous surveys of students from different higher education institutions about the sports they would like to do show that most boys have a craving for playing sports, and girls for aerobics and fitness [1, 3, 4, 5].

As a sport, aerobics was formed only in the mid-90s of the twentieth century, when the leadership of the International Gymnastics Federation (Federation Internationale de Gymnastique - FIG) began to cultivate this sport. Since 1995, world aerobics championships have been held regularly; since 1999 - European championships; since 2000 - World Cups; sports aerobics is included in the program of the World Games in non-Olympic sports [6].

Analysis of various sources shows that Ukrainian athletes are one of the leading in this sport on the world stage and constantly confirm their high class. These achievements are based on thorough research of individual aspects of training athletes of different classes in aerobic gymnastics. Thus, domestic experts have considered in detail the development and improvement of special endurance, speed, strength and coordination abilities of highly qualified athletes specializing in aerobic gymnastics [7, 8]. Methodical features of the system of training of highly qualified athletes in sports aerobics [9] and model characteristics of technical and physical training of athletes in sports aerobics at the stage of preliminary basic training [10] are revealed. Some works are devoted to the study of psychophysiological indicators of athletes and the peculiarities of the use of these data in improving the effectiveness of various types of training in sports aerobics [11, 12].

According to the analysis of scientific and methodological literature, since the establishment of sports aerobics as a sport, scientists have begun to conduct a thorough analysis and develop a classification of exercises, typology of training sessions, requirements for specialized halls for this sport [6, 13]. . At this time, the effect of sports aerobics on the anatomical and physiological parameters of athletes was also studied [14].

At the same time, in parallel with sports aerobics, health aerobics was widely introduced in higher education institutions. This contributed to the

emergence of a large number of works on the methodology of aerobics in higher education [15, 16, 17, 18], but the authors focused on the health potential of this sport. However, training processes in sports aerobics and health pursue different ultimate goals: in the first - to achieve high sports results, in the second - recovery [7].

Sports aerobics, as a modern competitive discipline, arose as a result of a synthesis of general developmental, dance exercises of health orientation and elements and their modifications from related complex coordination sports, such as sports and rhythmic gymnastics, acrobatics and others [6]. The presence in the rules of competitions in this sport a large number of complex gymnastic elements requires appropriate training. It should also be borne in mind that sometimes sports aerobics athletes begin to engage only in higher education with little experience in dance or other sports. Therefore, the study of the preparation of female athletes in sports aerobics to perform gymnastic exercises is relevant.

**The aim:** to substantiate and experimentally test the method of teaching gymnastic exercises to female students engaged in sports aerobics.

Objectives of the study:

- Based on the analysis of the curriculum and the rules of competitions in sports aerobics to identify gymnastic exercises used in sports aerobics.
- To develop a method of studying and improving the technique of performing gymnastic exercises used in sports aerobics.
- Carry out an experimental study of the effectiveness of the proposed method in the training process of students specializing in sports aerobics.

## Material and methods

### *Participants*

The study involved 20 students of Kharkiv institutions of higher education (Kharkiv National Pedagogical University named after GS Skovoroda, Kharkiv Institute of Trade and Economics KNTEU (KHTEI)), engaged in sports aerobics in sports improvement groups. n = 10) and the experimental (n = 10) group At the time of the experiment, the subjects were 17 to 20 years old.

### *Research methods*

Theoretical analysis and generalization of scientific and methodological literature helped to determine the degree of research of the problem. The analysis of the rules and videos of the competitions



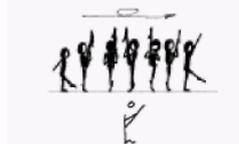
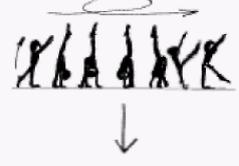
made it possible to identify the basic gymnastic elements. The pedagogical experiment was conducted in 2 stages. At the first stage, the existing level of technique of performing basic gymnastic elements was identified, which were taken as controls. After that, a special technique was introduced for the students who were part of the experimental group, which was to help improve the preparation of the subjects for gymnastic exercises. The girls of the control group continued to practice according to the traditional method of training. The experiment was conducted for 6 months from September 2018 to February 2019. Exercises were

used in the preparatory and main part of each lesson. Training was conducted 4 times a week for 2 hours.

In the control exercises, we included elements from group B static force from the subgroups emphasis on the angle of the leg apart and emphasis on the high angle and horizontal emphasis, as well as from group D balance and flexibility from the subgroups of turns in balance and spirit level [19]. Selected control elements, which were used to assess the level of gymnastic training of the studied control and experimental groups at the beginning and end of the experiment, are presented in table 1.

Table 1

Control gymnastic exercises

Item name	Image and symbol of the element
1. Emphasize the angle of the foot apart outward with a 360 ° rotation	
2. Emphasis high angle.	
3. Horizontal footrest apart	
4. Sagittal balance with hand grip and 360 ° rotation	
5. Level with support hands on the floor	

Evaluation of each of the control elements was performed on a 10-point scale. The athlete received the highest score for perfect performance of the element, for each gross error lost 3 points, medium 2, and small 1 point, loss of balance and fall during the performance of the element did not give the subjects any points (Table 2). When assessing the athletes for the performance of control elements, we also took into account the requirements of the current rules of judging in aerobic gymnastics 2017-2020 [19]. The main requirements and provisions for gymnastic elements are given below.

The athlete when performing the elements of complexity must properly maintain: the position of the torso, lower back, pelvis and tense abdominal muscles; position of the upper body, neck, shoulders and head relative to the spine; position of the feet relative to the ankle, knee and hip joints; maintain the maximum amplitude of movements during the execution of the entire element. In addition, each movement must have a precise starting and ending position, each phase must be performed with complete control of movements and maintaining stability.



Table 2

Evaluation of control gymnastic elements

Item name	Execution technique	Errors (discounts)
Emphasis at the angle of the foot apart outward with a 360 ° rotation	Starting position (S.P.) - sitting legs apart, focusing on the arms in front, lift the straight legs and pelvis (pull off the floor as high as possible), fix this position, make a 360 ° turn by crossing your arms, fix the final position.	- small errors in the position of the legs: bent knees - (-1 point); unstretched feet - (-1 point);
Emphasis high angle	Starting position - focus sitting behind, lift straight legs and pelvis up (pull off the floor as high as possible), fix this position for 2 seconds.	- small fluctuations of the torso during the element (-2 points);
Horizontal footrest apart	Starting position - focus lying down, bending the arms to transfer the center of gravity of the body, leaning on the elbows, abdomen and thighs to transfer the body to a horizontal position (legs off the support), legs apart, fix the position for 2 s.	- incorrect position of the torso, waist, pelvis and tense abdominal muscles - (-3 points);
Sagittal balance with hand grip and 360 ° rotation	Starting position - the main rack. 1 - Take a step forward with the left (right) leg with a squat and swing your arms in the direction opposite to the direction of rotation. 2 - simultaneously move the arms in the opposite direction and swing a straight leg forward to an angle of 180°, grab the leg with your hands or hand, fix this position when turning 360°, free hand to the side or up. The element is completed by placing the free leg to the support on the toes.	- incorrect position of the upper body, neck, shoulders and head relative to the spine - (-3 points); - incorrect position of the feet relative to the ankle, knee and hip joints - (-3 points); - during the element the amplitude of the form is not preserved (- 3 points);
Level with support hands on the floor	Starting position - the main rack. Take a step right (left) forward, tilting the torso down, while lifting the other leg back up, touch the floor with your hand and return to the foot of the supporting leg 360°, simultaneously raise the torso and lower the straight leg to the starting position.	- the element does not have an exact starting and ending position - (-3 points);  - the element is not fixed for a certain time - (-10 points);  - loss of balance with a fall - (-10 points).

Methods of mathematical statistics were used to process the results obtained during the study. Thus, for each indicator the arithmetic mean value, standard deviation (S) (standard deviation), coefficient of variation (V) and estimation of the probability of discrepancies between the parameters of the initial and final results by Student's t-test with the corresponding probability level (p) were determined.

## Results

As a result of the analysis of the curriculum [20], rules [19] and video recordings of sports aerobics competitions, the basic gymnastic elements were identified. Exercises for studying and improving these elements have been selected and

introduced into the educational and training process of students specializing in sports aerobics. Exercises are presented in table 3.

The use of specially selected exercises for six months in the training process of students of the experimental group showed their high efficiency in mastering and improving the technique of gymnastic elements used in sports aerobics.

Thus, a comparative analysis of the quality of control gymnastic exercises, evaluated in points, showed that the rate of emphasis on the angle of the leg apart outwards with a 360 ° rotation at the end of the experiment improved by 47.2%; high angle emphasis - by 56%; horizontal footrest apart - by 36%; sagittal balance with hand grip and 360 ° rotation - by 43%; level with support hands on the floor - by 54%.

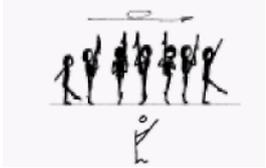


Table 3

Exercises to study and improve the technique of performing gymnastic elements used in sports aerobics

The gymnastic exercise being studied	Exercises to study and improve gymnastic exercises	Number of repetitions	Note
<p>Emphasize the angle of the foot apart outward with a 360 ° rotation</p> 	1. S.P. sitting, arms at the front. Raise the pelvis and fix it in this position, without taking your feet off the floor 8-10 counts.	10-12 approaches	Emphasis is placed on the full palm, pelvis try to raise as high as possible.
	2. S.P. the same. Raise the pelvis and right leg, fix this position 8-10 counts. Do the same with the left foot.	8-10 approaches	Emphasis is placed on the full palm, pelvis and leg to try to raise as high as possible. The rising leg should not bend at the knee.
	3. S.P. sitting legs apart, right hand resting in front, left behind. Lift the pelvis and fix it in this position without taking your feet off the floor 8-10 counts.	8-10 approaches	Try to raise the pelvis as high as possible, do not tilt the torso forward.
	4. S.P. sitting legs apart, right hand resting in front, left behind. Raise the pelvis and right leg, fix this position 8-10 counts. Do the same with the left foot.	8-10 approaches	Try to raise the pelvis as high as possible, do not tilt the torso forward. The rising leg should not bend at the knee.
	5. S.P. sitting legs apart, arms at the front. Raise the pelvis and fix this position 8-10 counts.	8-10 approaches	Try to raise the pelvis as high as possible, do not tilt the torso forward
	6. S.P. sitting on a step platform, hands resting in front. Leaning on your arms in front on the step platform, lift your pelvis and bent legs forward. Fix this position 3-5 accounts.	8-10 approaches	Try to lift the pelvis and legs as high as possible, the socks are taut.
	7. S.P .. sitting on a step platform legs apart, arms at the front. Raise the pelvis and legs to fix this position 3-5 counts.	3-5 approaches	
	8. S.P. sitting legs apart hands in focus in front. Raise the pelvis and both legs, fix this position 3-5 counts.	3-5 approaches	Try to raise the pelvis and legs as high as possible, do not tilt the torso forward. Legs do not bend at the knees.
	9. S.P. the same. Raise the pelvis and both legs, fix this position 3 counts, then return to this position at 90 °, 180 °, 360 ° moving your arms	3-5 approaches	Legs at the knees do not bend, socks are taut.
<p>Emphasis high angle</p> 	1. S.P. focus sitting behind. Leaning on your hands to lift the bent legs to the chest, fix this position 3-5 counts.	10-12 approaches	Do not bend your legs at the knees, do not tilt your torso forward, socks are stretched. Initially, the turn can be performed on a step platform
	2. S.P. the same. Leaning on your arms, lift your bent legs to your chest, gradually straighten up to a high angle position, fix this position 3-5 counts.	8-10 approaches	Try to bring the bent legs as close to the chest as possible.
	3. S.P. the same. Leaning on your arms, lift your pelvis and bent legs to your chest, fix this position 3-5 counts.	6-8 approaches	In the final position, the knees are straight, feet are stretched.
	4. S.P .. the same. Leaning on your arms, lift your pelvis and bent legs to your chest, fix this position 3 counts, and gradually straighten your legs up.	5-6 approaches	Try to bring the bent legs as close to the chest as possible.
			Try to raise your pelvis and legs as high as possible. You can straighten your legs with the help of a trainer or



	<p>5. S.P. the same. Leaning on your arms, lift your pelvis and bent legs to your chest, without fixing this position, gradually straighten your legs up and fix 3-5 points at the top.</p>	<p>3-5 approaches</p>	<p>partner. The knees are straight, the feet are taut.</p> <p>Try to raise your pelvis and legs as high as possible. In the final position, the knees are straight, feet are stretched.</p>
<p>Horizontal footrest apart</p> 	<ol style="list-style-type: none"> <li>1. S.P .. emphasis lying down. Transfer body weight to bent and straight arms.</li> <li>2. Take a position of horizontal emphasis on two and on one elbow with and without support, legs are on a gymnastic bench or supported by a partner.</li> <li>3. Adopt a horizontal stop position on two and one elbow with or without support, one leg on the gymnastic bench or supported by a partner.</li> <li>4. Adopt a horizontal stop position on two and on one elbow with and without support, two legs are on the gymnastic bench or supported by a partner.</li> <li>5. Take the position of the horizontal stop on two and on one elbow with and without support, one foot on the floor, the other in the air.</li> <li>5. Same as exercise 4, but legs apart.</li> <li>6. Perform a horizontal footrest apart on one elbow with support, then without support.</li> <li>7. Same as exercise 6 but on two elbows.</li> </ol>	<p>10-12 approaches in each of the provisions</p> <p>8-10 approaches in each of the provisions</p> <p>8-10 approaches in each of the provisions</p> <p>8-10 approaches in each of the provisions</p>	<p>The head, torso and legs form one line. All muscles are tense.</p> <p>The head, torso and legs form one line. Do not bend your knees</p> <p>The head, torso and leg form one line. All muscles are tense</p> <p>The body should be horizontal</p> <p>The head, torso and legs form one line. Do not bend your knees The socks are taut</p> <p>All stops are fixed 3-5 accounts</p>
<p>Sagittal balance with hand grip and 360 ° rotation</p> 	<ol style="list-style-type: none"> <li>1. S.P. standing on the left side near the support. Raise the right leg, bend the knee and grab the foot with your hand, slowly unbend the leg forward, fix this position 3-5 counts. Do the same with the left foot, standing with the right side to the support</li> <li>2. The exercise is performed in the same way, but the leg is stretched to the side.</li> <li>3. Perform forward swings to the side.</li> <li>4. Perform exercise 3 but grab the leg at the highest point of the swing and record 3-5 counts</li> <li>6. Perform exercises 3, 4, but without support in the middle.</li> <li>7. Perform exercise 4 in the middle of the hall but from a step forward left (right) with squatting and swinging your arms in the direction opposite to the direction of rotation.</li> <li>8. Perform exercise 7, but with a rotation of 90 °, 180 °, 360 °, 540 ° and 720 °</li> </ol>	<p>6-8 approaches</p> <p>10 moves in each direction.</p> <p>10 strokes</p> <p>6-8 approaches On each leg</p> <p>6-8 approaches On each leg</p>	<p>Straighten the leg as close as possible to the chest, bend the knee completely, do not bend the supporting leg.</p> <p>Performing the exercise to the side, bring the leg closer to the shoulder. Swings are performed with maximum amplitude right and left foot</p> <p>Support and working leg do not bend, follow the correct posture. Perform swings both on the whole foot and on the relay</p> <p>When performing turns, do not bend your legs at the knees, keep the correct posture.</p>



<p>Libel</p>	<p>1. S.P. standing with his back to the gymnastic wall. Leaning the torso forward, the left leg back up, lean it against the wall to the position of the twine, fix this position 3-5 counts. Then do the same with your right foot back.</p>	<p>8-10 approaches with each foot</p>	<p>Tilt the torso to the chest touching the knee of the supporting leg, the leg rising up in the final position in the knee do not bend, look at the toe of the supporting leg or in front of you.</p>
	<p>2. S.P. - standing facing the support. Perform swings back with the right and left foot.</p>		<p>When performing exercise 2, lower the torso to a horizontal position.</p>
	<p>3. S.P. - standing left (right) side to the support. Perform swings back left (right), with the torso tilted down. Before touching the floor with your free hand</p>	<p>10 swings with each leg 10 swings with each leg</p>	<p>When performing the exercise, 3 legs and torso create one line.</p>
	<p>4. S.P. - standing in the middle of the hall. Perform swings back left (right), with the torso tilted down to touch the floor with both hands.</p>		<p>When performing Exercise 4, try to touch the supporting leg with your chest. Do not bend your legs at the knees.</p>
	<p>5. Perform exercise 4, but fix the final position of 2-3 counts.</p>	<p>10 swings with each leg</p>	<p>When performing exercises 5-9 leg and torso create one line. The toe of the free foot is stretched. Do not bend both legs at the knees.</p>
	<p>6. Perform exercise 5, but do not fix the final position and continue the movement of the torso along the supporting leg pushing his hands on the floor.</p>		
	<p>7. Perform exercise 6, but perform the repulsion with the support leg of the same name.</p>	<p>Exercises 5-10 perform 8-10 times</p>	
	<p>8. Perform a spirit libel at a normal, then fast pace.</p>		
	<p>9. Perform 2-3 levels in a row without leaving the city.</p>		
	<p>10. Perform a spirit libel without touching the floor with your hand.</p>		<p>When performing the exercise, keep 10 arms along the torso</p>

Table 4

Indicators of the quality of gymnastic elements performed by students of the control (n = 10) and experimental (n = 10) groups before and after the pedagogical experiment

Control gymnastic elements		Before the experiment	After the experiment	t	p
Emphasis at the angle of the foot apart outward with a 360 ° rotation, points	CG	3,7 ± 0,63	5,2 ± 0,54	1,81	p>0,05
	EG	3,8 ± 0,38	7,2 ± 0,47	5,7	p<0,001
Emphasis high angle, points	CG	2,4 ± 0,50	4,0 ± 0,38	2,54	p<0,05
	EG	2,6 ± 0,45	6,0 ± 0,31	6,18	p<0,001
Horizontal focus of the legs apart, points	CG	4,6 ± 0,45	6,2 ± 0,47	2,46	p<0,05
	EG	4,9 ± 0,40	7,7 ± 0,47	4,52	p<0,002
Sagittal balance with hand grip and 360 ° rotation	CG	4,6 ± 0,45	5,8 ± 0,41	1,97	p>0,05
	EG	4,6 ± 0,53	8,2 ± 0,26	6,1	p<0,001
Libel with support hands on the floor, points	CG	4,0 ± 0,44	4,6 ± 0,63	0,78	p>0,05
	EG	3,1 ± 0,58	6,7 ± 0,39	5,14	p<0,001



Mathematical processing of the study results confirmed the statistical probability of this growth.

As a result of training, the indicators of acrobatic training of students in the control group also increased, but statistically significant only the emphasis on high angle (by 40%) and horizontal emphasis on the leg apart (by 26%). The results of statistical processing of acrobatic readiness of the subjects before and after the experiment are presented in table 4.

## Discussion

In our opinion, sport should enter the life of every student today, so we agree with N. Dovhan, who in order to ensure the proper level of physical education in higher education institutions of Ukraine, offers a wide introduction of section (sports training) in sports. Such implementation should take place through the creation of specialized sports sections, clubs, clubs that work on a fixed schedule in free time from the main training sessions. We also agree with the author, who believes that the use of such sports as aerobics can increase motivation to exercise and interest in their own health [21].

Observation of the subjects confirmed the conclusions of the authors [1, 4, 5] on the formation of students under the influence of systematic sports such important qualities as flexibility, strength, speed, endurance, coordination, attention, reaction, thinking. The studied students are also quite active, adhere to the daily routine, they have increased confidence in themselves and their abilities. Classes in sports aerobics, in which there is a competitive category of the group, also contribute to the development of sociable, resilience to criticism, stimulate willingness to cooperate.

We also agree with the opinion of A. Andres, E. Serbo, S. Festriga (2015), who believe that the sporting of the process of physical education avoids a number of shortcomings inherent in the traditional pedagogical process of physical education: training in sports involves physical abilities and mental characteristics of each student; sectional classes provide specialized sports motor skills and in-depth knowledge of sports; Sectional sports are more associated with competitions, which encourages students to engage in regular sports. Such organization of physical education determines the formation of a stable personal interest in sports during not only training but also the adult period of human life [1].

Sports aerobics in its content is fully suitable for use in higher education institutions for the purpose of sports orientation of the process of

physical education. The analysis of works [6, 9, 19] showed that the competitive program in this sport includes arbitrary exercises in which athletes demonstrate a continuous and high-intensity complex of acyclic movements with complex coordination, as well as elements of different structural groups and interaction between partners (in programs of mixed pairs, threes and groups). The basis of choreography and these exercises are traditional for aerobics "basic" aerobic steps and their varieties.

The indisputable definition of sports aerobics as a modern competitive discipline was made by A. Somkin (2001), who believes that this sport is an element (subsystem) of higher order systems: gymnastics, complex coordination sports and so on [6]. This is confirmed by the analysis of competitive exercises in sports aerobics and the fact of its inclusion in the International Gymnastics Federation.

Studying the technique of performing the elements of sports aerobics considered by the rules, we, like A. Somkin, came to the conclusion that the closest to this sport in such aspects as special technical training is gymnastics [6]. Given that gymnastic exercises borrowed from sports aerobics in gymnastics were slightly modified and the age of onset of training for these elements was 17-18 years, we proposed a method of step-by-step (programmed) training.

In selecting exercises for the effective study and improvement of basic gymnastic elements, which were taken as controls, we relied on the research of O. Khudoliy, O. Ivashchenko, S. Chernenko (2015). In the work of these authors it is emphasized that training tasks are effective, which gradually lead to the implementation of exercises while partially developing the necessary physical abilities [22]. At the same time, the program of special gymnastic training of the subjects did not end with the study and improvement of control exercises. The complexes also included derivatives of the basic exercises, complicated by the addition of turns, another starting position or more rotations.

We agree with N. Kasatkina (2015) that the quality of sports aerobics exercises depends on a rational combination of indicators of physical, functional and technical fitness [23]. Therefore, given that almost all the exercises studied require a high level of development of special flexibility, strength and coordination skills, the subjects in each lesson were asked to develop these abilities through general development and special exercises.

The results of the study confirmed the conclusions [23, 24] that one of the promising areas for improving sportsmanship in complex sports,



which is sports aerobics is to improve the methods of various types of training of athletes, taking into account the conditions affecting their level of technical fitness.

### Conclusions

Thus, the main groups of gymnastic elements provided by the current rules of sports aerobics competitions are singled out in the work. A method of preparing students specializing in sports aerobics to perform gymnastic exercises has been developed. An experimental test of the effectiveness of the developed method was performed. It is proved that

the introduction into the educational and training process of students engaged in sports aerobics of special exercises, which gradually lead to the performance of gymnastic elements and at the same time partially develop the necessary physical abilities contributes to their more effective assimilation and improvement.

### Conflict of interest

Authors state that there is no conflict of interest.

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