

The effect of comprehensive classes of health aerobics on women aged 18-25 years

Izarovskaya Irina Valerievna,
Associate Professor, Department of
Theory and Methods of Physical
Education and Sports, Institute of
Sport, Tourism and Service
South Ural State University
Chelyabinsk, Russia
izarovskaiaiv@susu.ru
0000-0002-8290-5334

Smirnova Larisa Viktorovna
Associate Professor, Department of
Theory and Methods of Physical
Education and Sport, Institute of Sport,
Tourism and Service
South Ural State University
Chelyabinsk, Russia
smirnovalv@susu.ru
0000-0001-6446-9164

Perelman Ekaterina Borisovna
Associate Professor, Department of
Theory and Methods of Physical
Education and Sports, Institute of
Sport, Tourism and Service
South Ural State University
Chelyabinsk, Russia
perelmane@b@susu.ru
0000-0002-4114-4428

Sumak Elena Nikolaevna
Senior Lecturer, Department of Theory
and Methods of Physical Education and
Sports, Institute of Sport, Tourism and
Service
South Ural State University
Chelyabinsk, Russia
sumaken@rambler.ru
0000-0001-5257-774X

Izarovskaya Olga Borisovna
Master's Student, Department of
Theory and Methods of Physical
Education and Sports, Institute of
Sport, Tourism and Service
South Ural State University
Chelyabinsk, Russia
izarovskaia@gmail.cjm.ru
0000-0002-6667-170X

Abstract. *The purpose of the article is to justify the effectiveness of a comprehensive methodology for health aerobics classes in women aged 18-25 years. Materials and methods: the study was conducted on the premises of the South Ural State University training and sports facilities. Thirty women aged from 18 to 25 years were selected. Among them, 50% are university students from Chelyabinsk, 40% are employed, 10% are housewives regularly engaged in health aerobics. Pedagogical research methods were applied, consisting of analysis and synthesis of scientific and methodological literature, pedagogical observation, interviews with trainers and students, questionnaires, a sociological survey, pedagogical control tests, pedagogical experiment, methods of mathematical statistics (data grouping, analysis of statistical material). Results: The paper provides convincing evidence that most of the types of aerobics have a targeted effect on the body. Thus, there is a need for developing integrated methods which is one of the promising directions for health-improving physical education. The features of our experimental methodology include: compliance with age, gender, individual and other characteristics of women; the motivation of women for aerobics; the use of elements of various types of aerobics, which allows trainers to influence positively the physical fitness of students.*

Keywords - *health aerobics, classical aerobics, step aerobics, power step, hip-hop, funk, fütball; physical, functional, emotional status.*

I. INTRODUCTION

According to the Russian Ministry of Health, women's reproductive health has deteriorated sharply in recent years. Life expectancy decreased from 74 to 71 years. The advantage of health-improving physical education is that it shifts focus from diagnosis and treatment to disease prevention [18].

Research conducted by I. Brekhman [4], A. Viru, T. Smirnova [11], P. Vinogradov, A. Dushanin, V. Zholdak [10] and other scientists have proved the positive impact of exercise on human

health. However, the problem of motivating people for regular activities remains extremely difficult due to the widespread use of various equipment that facilitate or replace the physical work of a person [14].

Recently, new types of physical activity have become popular, among them are shaping, fitness, aerobics, etc. S. Guskov, E. Degtyareva [15] and R. Dim [16] note that in Russia about 3% of women are engaged in new types of physical activity. Aerobics is one of the first places in the ranking of new types of physical activity and is developing rapidly. Despite the large number of published works [1, 11, 14, 20, 21, 22,], the health-improving movement does not stand still, it develops and sets its own requirements. The choice of the most effective programs and methods for health-improving aerobics is often carried out subjectively by trainers; there is also a lack of scientific and methodological support, which hinders the more active introduction of aerobics in everyday routine.

II. MATERIALS AND METHODS

Two groups were studied, consisting of women aged 18–25 years, regularly engaged in health-improving aerobics. The experimental and control group included women characterized by similar indicators of physical condition, motivation and desire to engage ($p > 0.05$), i.e. groups are maximally equalized. 60 classes were conducted using a comprehensive experimental program. In each group (15 people), classes were held three times a week for 55-60 minutes. The duration and frequency of classes was the same for the control and experimental groups. According to the recommendations of the Russian Fitness-aerobics Federation, repeated testing should be carried out every 3-6 months [1]. Therefore, it was carried out after 5 months. When developing a comprehensive program, the most effective and diverse tools and methods were taken from training courses. Classes were conducted in groups, with participants staying in line in front of a trainer and musical accompaniment. The expediency and effectiveness of such a form of classes is confirmed by world practice [22]. Our methodology is based on the principles of using a medium-

intensity load for 55-60 minutes in a pulse mode of alternating a long-term load of medium intensity with a load of high (155-160 beats / min) and low (95-110 beats / min) intensity.

The methodology of health aerobics classes includes the following: step aerobics, power and classical aerobics, fitball, terra-aerobics, taebo, dance elements (hip-hop, latin dance, funk) and control classes. The structure of the integrated methodology and the ratio of the means used are presented in Table 1.

TABLE I. STRUCTURE OF A COMPLEX PROGRAM AND THE RATIO OF MEANS

Aerobics	Contribution, %	Aims and tasks of classes
Step-aerobics	30	Cardiorespiratory and muscle strengthening activities
Classical aerobics	8.5	Complex tasks
Power aerobics	10	Strength and endurance training
Terra-aerobics	8.5	Strength training
Fitball	8.5	Balance, strength, coordination and posture training
Taebo	8.5	Cardiorespiratory and muscle strengthening activities
Dance elements: a) hip-hop b) latin dances	8.5 8.5	Stress reduction, positive emotionality Body control, coordination training, positive emotionality Bode fat mass reduction, cardiorespiratory activities
b) funk	8.5	
Control classes	0.5	

III. RESULTS AND DISCUSSION

The effectiveness of the developed methodology was evaluated by comparing the indicators of the physical, functional, emotional status and physical fitness of women in the control and experimental groups before and after the experiment. Dynamics of indicators in each group is given in Tables 2 and 3.

TABLE II. DYNAMICS OF INDICATORS IN THE EXPERIMENTAL GROUP

Parameter, test	Initial data (M±m)	Final data (M±m)	Dynamics, %	P
Body mass, kg	57.2 ± 5.5	55.6 ± 4.8	- 2.8	< 0.05
Chest circumference, cm	86.4 ± 5.8	85.8 ± 4.8	- 0.3	> 0.05
Neck circumference, cm	31.0 ± 1.0	30.9 ± 0.9	- 0.7	< 0.05
Waist circumference, cm	66.4 ± 4.7	64.6 ± 3.1	- 2.7	< 0.05
Hip circumference, cm	95.6 ± 4.8	93.4 ± 3.5	- 2.3	< 0.05
Hip circumference (right), cm	53.5 ± 2.8	52.9 ± 2.7	- 1.1	< 0.05
Shoulder circumference (right), cm	25.7 ± 1.8	25.4 ± 1.4	- 1.2	< 0.05
Strength endurance test	26.2 ± 6.7	29.9 ± 6.8	13.2	< 0.05
Flexibility test	5.4 ± 2.8	9.2 ± 3.9	52.1	< 0.05
Ruffier Index, c.u.	11.3 ± 4.1	9.9 ± 3.1	- 13.2	< 0.05
Stange's test, s	36.4 ± 9.3	38.4 ± 9.5	5.3	<

				0.05
Gench test, s	26.6 ± 7.1	25.6 ± 6.8	10.0	< 0.05
Romberg test, s	40.4 ± 25.0	49.4 ± 28.5	20.0	< 0.05
Well-being, scores	5.7 ± 0.7	6.5 ± 0.6	13.1	< 0.05
Activity, scores	5.5 ± 0.7	5.9 ± 0.7	7.0	< 0.05
Mood, scores	5.5 ± 0.5	6.1 ± 0.7	10.3	> 0.05
Step-test, c.u.	88.8 ± 8.6	91.7 ± 8.4	3.2	< 0.05
PWC _{170abs.} , kgm/min	890.2 ± 428.8	1250.2 ± 391.7	33.6	< 0.05
PWC _{170rel.} , kgm/min/kg	15.6 ± 6.3	22.5 ± 7.6	36.2	< 0.05
VO ₂ max _{abs.} , ml/min	2753.3 ± 635.9	3365.3 ± 819.5	20.0	> 0.05
VO ₂ max _{rel.} , ml/min/kg	48.1 ± 9.8	60.5 ± 10.4	22.8	< 0.05

TABLE III. DYNAMICS OF INDICATORS IN THE CONTROL GROUP

Body mass, kg	57.2 ± 5.5	56.1 ± 5.1	- 3.8	< 0.05
Chest circumference, cm	86.4 ± 5.8	87.9 ± 5.8	- 0.6	> 0.05
Neck circumference, cm	31.0 ± 1.0	31.5 ± 1.1	- 0.2	< 0.05
Waist circumference, cm	66.4 ± 4.7	66.7 ± 3.8	- 1.0	< 0.05
Hip circumference, cm	95.6 ± 4.8	95.1 ± 3.3	- 1.8	< 0.05
Hip circumference (right), cm	53.5 ± 2.8	53.9 ± 2.6	- 1.5	> 0.05
Shoulder circumference (right), cm	25.7 ± 1.8	25.8 ± 1.4	- 1.9	> 0.05
Strength endurance test	26.2 ± 6.7	27.6 ± 4.7	6.4	< 0.05
Flexibility test	5.4 ± 2.8	7.1 ± 4.1	11.9	< 0.05
Ruffier Index, c.u.	11.8 ± 4.2	11.4 ± 3.6	- 3.4	< 0.05
Stange's test, s	33.2 ± 8.6	31.9 ± 9.1	- 4.0	< 0.05
Gench test, s	24.1 ± 6.8	29.4 ± 7.8	6.0	< 0.05
Romberg test, s	38.0 ± 25.4	40.7 ± 18.1	6.9	< 0.05
Well-being, scores	5.3 ± 0.5	5.5 ± 0.6	5.6	< 0.05
Activity, scores	5.3 ± 0.5	5.4 ± 0.6	3.8	> 0.05
Mood, scores	5.1 ± 0.4	5.4 ± 0.5	5.7	> 0.05
Step-test, c.u.	83.2 ± 7.5	85.4 ± 8.1	2.6	< 0.05
PWC _{170abs.} , kgm/min	806.9 ± 373.8	1102.8 ± 453.8	31.0	< 0.05
PWC _{170rel.} , kgm/min/kg	13.8 ± 5.3	17.8 ± 9.6	25.2	< 0.05
VO ₂ max _{abs.} , ml/min	2611.7 ± 631.2	3114.8 ± 937.5	17.6	> 0.05
VO ₂ max _{rel.} , ml/min/kg	44.8 ± 8.4	55.5 ± 12.3	21.3	> 0.05

In both groups we see significant ($p < 0.05$) changes in the results. In the experimental group, 18 out of 21 indicators improved significantly: anthropometric indicators (body mass, chest, waist and hips circumference) decreased, strength endurance and flexibility increased, the status of the respiratory system and vestibular apparatus improved, the Ruffier index decreased, step test, $PWC170_{abs}$, $PWC170_{rel}$, $VO_2 \max_{rel}$ indicators increased, well-being and activity improved.

In the control group, there was a significant improvement in 14 indicators (67%): anthropometric indicators (body mass, chest, waist, hips circumference) decreased, strength endurance and flexibility increased, the status of the respiratory system and vestibular apparatus improved, the Ruffier index decreased, step test, $PWC170_{abs}$, $PWC170_{rel}$ indicators increased, well-being improved.

The results in the experimental group exceeded the results of the control group.

A comparative analysis of the growth rate according to S. Brody demonstrated the positive dynamics in both groups. However, according to 16 indicators out of 21 (76%), the growth rate in the experimental group is higher compared to the control group (Fig. 2).

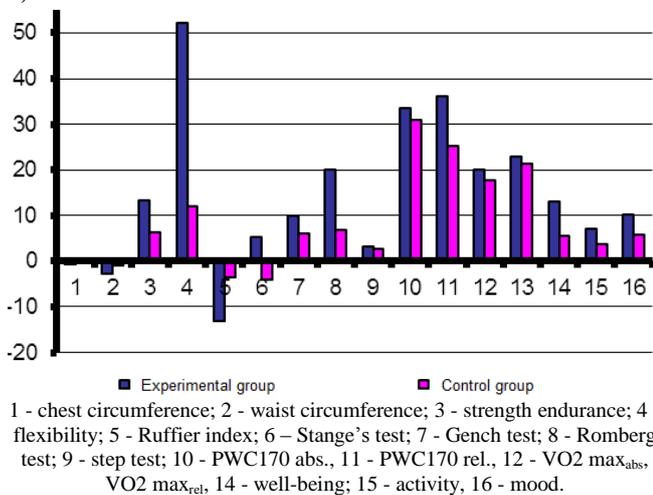


FIG. 1. DYNAMICS OF INDICATORS IN EXPERIMENTAL AND CONTROL GROUPS (%)

IV. CONCLUSION

The analysis of the data obtained showed that even within one group of students there is some variation in indicators, which is explained by the individual characteristics of women. At the same time, despite the general positive trend, the most significant growth rate was observed in the experimental group.

Thus, the results obtained during the experiment indicate that the integrated methodology is effective and can be used in classes with the participants of this age.

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