

INCREASING STRENGTH AND RESISTANCE OF THE STUDENTS THROUGH AEROBIC GYMNASTICS MEANS

Andreea – Gabriela Boca (Lazăr)
„Ștefan cel Mare” University of Suceava

Keywords: *aerobic gymnastics, muscle strength, resistance, improvement, physical education and sport lesson, students*

Abstract

Developing strength and resistance is one of the objectives pursued in the lessons of physical education and sport of the young generation. Young people have difficulty in supporting a low-intensity effort. They must benefit from training because they have lost physical capacity through a misconduct. In this research we started from the hypothesis that the use of aerobic gymnastics involving different movements of body segments in various combinations with specific base steps, all deployed in a program with a predominantly aerobic effort, will increase the muscular endurance in the main body segments.

The experiment was carried out on a group of 32 students from the second year of study at the Faculty of Economic of the "Ștefan cel Mare" University of Suceava. The experiment group against which the independent variable was applied, was made up of 16 students, and the control group, which was prepared through traditional means, was also made up of 16 students from the same specialty but from another study group. At the end of the experiment, the results highlighted the fact that there are significant differences between the initial and the final results in all the tests in the experiment group.

Introductions

Aerobic gymnastics includes a system of movements that develops all muscle groups, physical condition and health. Through its rich and varied content and the music that regulates the tempo and the work rhythm, it gives attractiveness and a good feeling [4].

Aerobic gymnastics brings real value to students. [3], (p.138) says that "the formative function of aerobic gymnastics is realized by introducing into the physical education programs everything new and current in aerobic gymnastics and by including them in systematic structures, in order to prepare them. for work and life." According to the same author [3], (p.141), the formative function of the aerobic gymnastics lesson is realized by: accentuating the independent activity

stimulating the effort in acquiring new knowledge and in developing creative thinking; establishing a climate of collaboration, cooperation in the teacher-student relationship; permanent combination of the frontal activity with the individualized one.

Aerobics has managed to become, through its multiple effects, a form of motor activity. Aerobics can solve many of the problems of physical fitness and health. In the specialty literature [2], [4], (pp.118-122), [7], (pp.155-156), [6], [1], (p.7), [5] are presented a series of beneficial effects of practicing aerobic exercises:

- maintain or reduce body weight and increases vital capacity;
- increases the selfcontrol capacity of the movement;
- balances carbohydrate and increases immunity of the organism;
- produces psycho-physiological effects through the use of music;
- contributes to the increase of the quality of life;
- confers efficiency in acquiring superior means of communication and interrelation through movement;
- cultivates body aesthetics, beauty and elegance of movements;
- educates sense of rhythm, musicality and coordination of actions;
- improves self-image and increases self-confidence;
- develops a slim body attitude, an elegant and supple appearance in static and dynamic, forming a firm outfit.

The specific exercises in aerobic gymnastics are aimed to students and forming some of the most attractive lessons of physical education. The means are in accordance with the developmental characteristics of young people, are accessible comprising basic steps, dance steps combined with movements in different directions and plans of the arms and legs. Initially the rhythm is initiated by the teacher, following that after a period of preparation, the students initiate movements themselves.

Material and method

Hypotheses of the research: the use of aerobic gymnastics involving different movements of body segments in various combinations with specific base steps, all deployed in a program with a aerobic effort, will increase the muscular endurance in the main body segments.

The purpose of the research: the purpose of the study was to highlight the role of aerobic gymnastics in the development of endurance of the main muscle groups of the students.

Subjects of research: the experiment was carried out on a group of 32 students from the second year of study at the Faculty of Economic and Public Administration of the "Ștefan cel Mare" University of

Suceava. The experiment group against which the independent variable was applied, was made up of 16 students, and the control group, which was prepared through traditional means, was also made up of 16 students from the same specialty but from another study group.

The research methods: studying specialized literature method, method of analysis, test method, method of measurement, statistical and mathematical method, graphic and table method

Means used in research: the aerobic gymnastics programs included walking and running variants in various combinations with specific basic steps such as: march, jog, knee, kick, long, jumping jack, added steps, cross steps, split steps, steps with 360 degrees return. The duration of an aerobic gymnastics program was between 50-60 minutes, performed without dead times all the time on the music. The program consisted of three parts: the warm up part, the main part of the aerobic exercises and the part of the body's return (cool down).

Results

After applying the independent variable to the experiment group, (control group was prepared by traditional means of physical education and sports), the results of the groups were as follows in tables 1 and 2.

Table 1 Initial and final values - experiment group

No.	Subjects	Squat Test		Trunk Lift		Bent Arm Hang	
		T.I	T.F	T.I	T.F	T.I	T.F
1	A.V	48	89	19	22	24.22	33.32
2	A.F	74	94	16	21	29.44	39.52
3	A.A.A	57	76	15	19	42.52	50.32
4	C.M	81	93	16	21	33.63	39.53
5	C.F	66	89	18	24	39.53	44.24
6	C.I	50	68	17	21	27.28	31.63
7	D.D.O	67	83	22	26	31.30	36.43
8	D.A	64	75	21	24	40.02	46.29
9	E.I	63	77	17	19	32.44	37.65
10	I.I	49	61	16	20	42.13	46.50
11	I.A.O	69	85	22	24	24.53	33.98
12	I.D	71	87	20	25	29.43	33.99
13	J.A	69	79	21	25	23.13	29.70
14	J.I.A	56	63	15	18	37.43	41.04
15	J.D	59	67	17	21	40.00	44.24
16	L.A	68	73	16	21	37.43	41.53
X		63.18	78.68	18	21.93	22.40	39.36
S		9.38	10.47	2.47	2.43	6.63	5.96
CV%		14.85	13.31	13.75	11.09	19.85	15.14
Median		65	78	17	21	33.03	39.52
Mo		69	89	16	21	37.43	44.24
Min		48	61	15	18	23.13	29.7
Max		81	94	22	26	42.52	50.32
Ampl.		33	33	7	8	19.39	20.62
t		- 4.41 > 2.94		-4.53 > 2.94		-2.68 > 2.60	
p		p < 0.01		p < 0.01		p < 0.02	

Table 2 Initial and final values - control group

No.	Subjects	Squat Test		Trunk Lift		Bent Arm Hang	
		T.I	T.F	T.I	T.F	T.I	T.F
1	M.A	51	59	21	22	31.06	33.06
2	M.I.O	49	53	17	18	29.66	34.44
3	M.M	64	65	18	19	30.08	27.73
4	N.D	57	55	19	22	42.44	40.07
5	N.R.A	55	58	15	17	20.03	23.46
6	N.O	80	83	21	20	25.74	25.77
7	O.A	71	70	20	22	27.51	30.07
8	O.A.I	63	64	18	19	22.53	25.55
9	P.A	77	77	17	17	25.55	30.01
10	P.A.A	75	97	18	19	30.03	28.75
11	P.U.I	55	56	16	18	23.09	22.43
12	R.L	53	59	22	24	31.06	33.54
13	R.I	66	70	24	25	25.78	30.02
14	S.S	72	79	22	23	27.89	27.27
15	Ş.A	57	66	21	20	29.34	31.36
16	U.O.A	68	74	19	21	39.9	40.44
X		63.31	67.81	19.25	20.37	28.85	30.24
S		9.82	11.94	2.46	2.44	5.79	5.19
CV%		15.51	17.61	12.79	12.00	20.08	17.17
Median		63.50	65.5	19	20	28.61	30.01
Mo		57	59	21	22	31.06	30.02
Min		49	53	15	17	20.03	22.43
Max		80	97	24	25	42.44	40.44
Ampl.		31	44	9	8	22.41	18.01
t		- 1.16 < 2.13		-1.30 < 2.13		-0.71 < 2.13	
p		p (0.25) > 0.05		p (0.20) > 0.05		p (0.48) > 0.05	

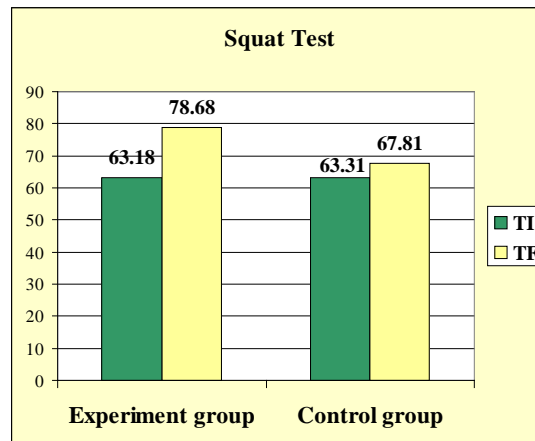


Figure 1. Initial and final averages - Squat Test

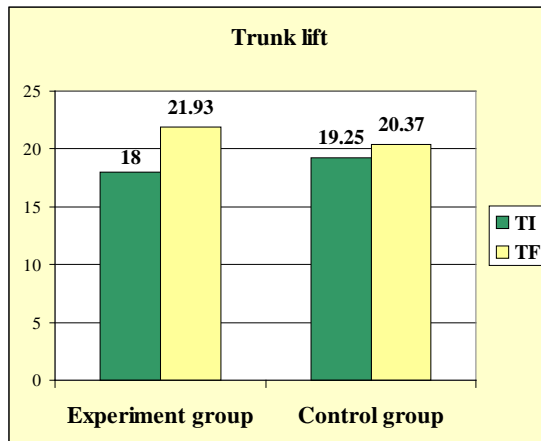


Figure 2. Initial and final averages – Trunk lift

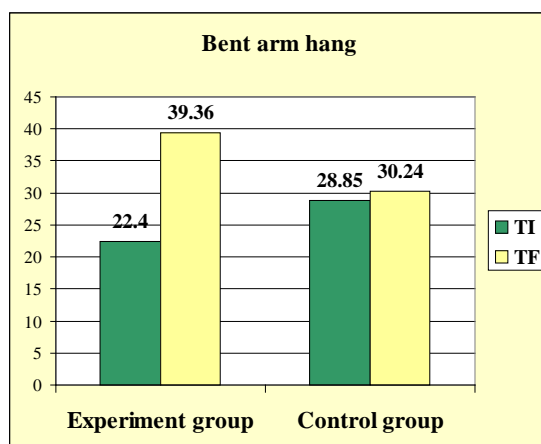


Figure 3. Initial and final averages – Bent arm hang

Conclusions and discussions

After training the students in the experimental group by specific means of aerobic gymnastics, it was found that the strength and endurance registered higher indices at the final test, compared with the results of the initial tests. The final averages were better compared to the initial ones, and CV% indicated a better homogeneity of the group.

In the case of the experimental group, for all three tests, the calculated t values were higher than the values of the t variable in Fisher's table (2.13, 2.60, 2.94 at significance thresholds 0.05, 0.02 and 0.01 respectively, at the n-1 degree of freedom; $16 - 1 = 15$), which means that the differences between the averages are statistically significant, $p < 0.05$. In the control group, for all three tests, the calculated t values were lower than the critical t variable, which means that the

differences between the averages were not significantly different, $p > 0.05$. However, increases in muscle strength and endurance index were also recorded in this group.

Aerobic gymnastics made students participate with greater interest and pleasure in physical education lessons. This led to the improvement of muscular endurance and physical condition of the body. Moreover, aerobic gymnastics creates a psychophysical balance and compensates to the negative effects of sedentary lifestyle. The correct execution of the variations of steps requires a good neuro – muscular coordination, suppleness, balance, orientation in space.

The attractiveness and dynamism that characterize aerobic gymnastics has determined the students to be more active and involved in lessons. After the whole experimental approach we can confirm the hypothesis established and the evidence that aerobic gymnastics can be used successfully during physical education classes with young students.

References

- [1] Chera – Ferrario, B., 2010, *Optimizarea condiției fizice prin gimnastică aerobică*, Editura Valahia University Press, Târgoviște
- [2] Dobrescu, T., 2008, *Gimnastica aerobică – strategii pentru optimizarea fitness-ului*, Editura PIM, Iași
- [3] Ganciu, M., 2009, *Gimnastica aerobică de întreținere – Îndrumar metodic pentru orele de educație fizică din învățământul superior II*, Editura Universității din București exerciții
- [4] Ganciu, M., Ganciu, O.,M, 2013, *Activități corporale - calea spre o sănătate mai bună*, Editura Universității din București
- [5] Macovei, S., 2007, *Ghid metodic pentru instructorii de gimnastică aerobică de întreținere*, Editura Bren, București
- [6] Pop, C., L., Hantău, C., Nae, C., I., Ciomag, R., V., 2015a, *Educația fizică în învățământul superior economic*, Editura Pro Universitaria, București
- [7] Pop, C., L., Ciomag, R.,V, 2015b, *Rolul activității fizice în promovarea stării de bine*, Editura ASE, București