STUDY ON THE INFLUENCE OF THE PRACTICING EXERCISES IN AN ORGANIZED MANNER ON THE EFFORT CAPACITY AND PSYCHOMOTOR SKILLS OF THE STUDENTS FROM THE UNIVERSITY OF BUCHAREST

Studiu privind influențele practicării exercițiilor fizice în cadru organizat asupra capacității de efort și a unor aptitudini psihomotrice, la studenții Universității din București

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Abstract

Lately, both in the online space and in the literature, we are assaulted by materials that highlight the beneficial aspects of physical exercise on the body, in all its spheres - physical, psychic and social.

However, in the current socio-economic context, when the budget of time allocated to recreational sports activities is more and more a luxury, inaccessible even to the young students, we believe that sports disciplines practiced in an institutionalized manner are one of the few means they have at their disposal, which respond to their need for movement, group membership, social affiliation etc.

In our approach we assume that in the applied programs, the content is attractive, accessible to students' level of motricity, the psychomotor peculiarities of young people are respected and the psychomotor skills assessed: strength, agility and speed are important components of the motor performance involved in the daily activities, not just in sports activities.

Therefore, in our investigation we proposed to verify the following hypothesis: The action systems specific to the chosen sport disciplines (table tennis and aerobics), applied in the lessons, lead to a better effort capacity, to higher indices of manifestation of the motor qualities force and speed and to the positive influence of psycho-behavioral states.

Keywords: effort capacity, psychomotor skills, students

Introduction

In the current socio-economic context, when the budget of time allocated to recreational sports activities is more and more a luxury, inaccessible even to the young students, we believe that sports disciplines practiced in an institutionalized manner are one of the few means they have at their disposal, which respond to their need for movement, group membership, social affiliation etc.

The World Health Organization states that "youth health is important for the well-being of this age group and also for the future of the public health."

We believe that practicing sports activities - whether organized or not, is an effect of a superior concept of health, physical and mental well-being, components of the quality of life, conception acquired through education and culture.

Physical inactivity, sedentaryism, inadequate lifestyle (with inadequate nutrition) are risk factors that must alert us to identifying, quantifying and preventing the disease in order to counteract the risk of illness.

The research organization

The research objectives

Establishing the spheres of influence of the physical exercises specific to Aerobic gymnastics and Table Tennis.

Determining the level of development of the different qualities necessary for practicing Aerobics and Table Tennis.

The hypothesis of the research: The action systems specific to the chosen sport disciplines (table tennis and aerobics), applied in the lessons, lead to a better effort capacity, to higher indices of manifestation of the motor qualities force and speed and to the positive influence of psycho-behavioral states.

The research stages

The data collection and the development of the training programs were carried out as follows:

The Experimental Group

The initial testing took place between October 14-18. 2013 and aimed at knowing the initial values of the research parameters - the dependent variable.

The final testing took place between May 19-23, 2014 in order to highlight the changes in the research parameters after developing the programs of the sports disciplines - aerobics and table tennis.

The Control Group

The initial testing took place between October 7-11, 2013.

The final testing took place between May 12-16, 2014.

The tests performed with both the experimental group and the control group were conducted in the gym of the Faculty of Foreign Languages, where there were optimal conditions for their development. The weeks in which the initial and final tests were conducted were not included in the training program. We proceeded on the experimental group for 22 weeks with the application of the independent variable - namely the specific content of aerobics and table tennis held in the Gym Pitar Mos.

The Subjects and the place of the research

To conduct the experiment, the sample was composed of 100 UB students, year I, aged 18-21 years, divided into two groups:

The experimental group consisting of 50 students enrolled at various faculties of the University of Bucharest who have opted for aerobics (25 students) and table tennis (25 students).

The control group consisting of 50 first year students at the Faculty of Foreign Languages, University of Bucharest, who do not participate in physical education lessons but who have sports concerns during leisure and who have accepted to be participants in this scientific approach. I mention that this group was created with the support of the Association of Students from the Faculty of Foreign Languages (ASLS), who understood the opportunity of our study and promoted our initiative among their colleagues, thus making it possible to form this group. We explained to these young people that during the research period they must continue their sports routines with the frequency and intensity they consider optimal and effective for achieving the goals they propose.

Both the initial and the final tests of the two groups, as well as the actual development of the training programs, took place in the Pitar Mos Sports Hall, which provided optimal conditions for our work.

The research methods

In our approach we used the following research methods:

- The bibliographic study;
- The observation
- The psycho-pedagogical experiment
- The statistical-mathematical method
- The tests method:
 - -The Ruffier Test

-Bruininks-Oseretsky battery of tests, Second Edition (BOT-2) - for the assessment of the psychomotor capacity : subtest 6 – Running speed angagility; subtest 8 – Strength.

During our experiment we applied the specific programs of aerobics and table tennis courses.

Table Tennis is what is called a "sport for all". It can be practiced by young people and the elderly, by men and women, by those with a good or poor physical condition, by the healthy ones, but also by those with disabilities. In other words, any wishing person can practice and enjoy this wonderful game.

Placed in the top of the most popular sports disciplines by the students, table tennis is found in the educational offer of the Department of Physical Education and Sport of the University of Bucharest since its foundation.

Because the aerobics program is specifically aimed at girls, then it should focus on developing specific female qualities. Strength can also be improved in girls, within the aesthetic limits of the female line. Mobility is more pregnant, being a native quality of girls; in the opinion of some specialists, this is a compensation for the lack of force. The programs will also focus on the

development of other motor skills, namely speed, coordination, detention, aerobic resistance, as well as their combined forms. As forms of manifestation of the speed, the development of the speed of execution, repetition and reaction will be pursued in particular.

Aerobics is part of the educational offer of the Department of Physical Education and Sports, being one of the most appreciated sports disciplines for which the students of the University of Bucharest can choose, if we take into account the large number of participants enrolled each year at this course.

Results

Test Ruffier: COMPARATIVE STATISTICAL-MATHEMATICAL INDICATORS -EXPERIMENTAL GROUP - CONTROL GROUP - FINAL TESTING (table 1) Table 1

Group	Average	Median	Standard Deviation	Module	Minimum	Maximum	Range	Coeff. of variation
Control	11.00	11.20	1.38	11.60	7.70	14.20	6.50	12.5%
Experiment	9.32	9.20	1.94	9.00	5.00	14.10	9.10	20.9%

Table 2 –	The H	Iomogenity	Dispersion	Test
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Tost Lovono	F	df_1	df_2	Р
Test Levene	1.958	1	98	0.165

Table 3 – Unifactorial ANOVA Test

Source of variation	SS	df	MS	F	F critic	P-value	Size effect
Between groups	70.90	1	70.9	24.997	3.938	<< 0.0001	0.51
Inside groups	277.95	98	2.8				
Total	348.84	99					

1 a 0 0 - 7 - 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Table 4 -	The robustness	test for the ec	juality of averages
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Test Proven Forsythe	Statistic	df_1	df_2	Р
Test brown-rorsyme	25.00	1	88.35	<< 0.0001

The average score for the average Ruffier index is equal to 11 in the control group respectively 9.32 in the experimental group. We notice that the average of the control group is higher by 1.68 units. Data dispersion is homogeneous in the control group and relatively homogeneous in the experimental group. According to the Levene test for homogeneity of dispersions, the two samples have equal dispersions, p = 0.165 > 0.05. the effect size (0.51) indicates large to very high differences between results. The unifactorial Anova test in the case of equal dispersions shows that there are statistically significant differences between the average scores of the subjects in the two groups, p << 0.0001 < 0.05. The research hypothesis is accepted that the differences between the average scores of the Ruffier indices in two groups are statistically significant. The graphical representation of the average scores and the scores recorded for this parameter are shown in Figure 1.



Fig. 1. The average values of the scale scores recorded in the Ruffier Test, the experimental group and the final group

THE SCALE SORES: RUNNING SPEED AND AGILITY (Subtest 6)

COMPARATIVE STATISTICAL-MATHEMATICAL INDICATORS - EXPERIMENTAL GROUP - CONTROL GROUP - FINAL TESTING (table 5)

Table	e 5							
Group	Average	Median	Standard Deviation	Module	Minimum	Maximum	Range	Coeff. of variation
Control	15.24	15	1.70	15	13	21	8	11.1%
Experiment	16.94	17	2.10	16	14	24	10	12.4%
Table 6 – The Homogenity Dispersion Test								
	т	ast Lavana	F	df_1	df_2	Р		
	Test Levene		1.879	1	98	0.174		
Table 7	- Unifactor	rial ANOVA	Test					
Source of	f variation	SS	df	MS	F	F critic	P-value	Size effect
Between gro	oups	72.25	1	72.2	19.781	3.938	<< 0.0001	0.45
Inside group	S	357.94	98	3.7				
Total		430.19	99					
Table 8 - The robustness test for the equality of averages								
	Test Bi	rown-Forsyth	Sta	tistic	df_1	df_2 l	P	
Test Brown-Porsythe				9.78	1 9	3.80 <<0.	0001	

The average scores for the RUNNING SPEED and AGILITY parameter are equal to 15.24 for the control group and 16.94 for the experiment group. We notice that the average score of the control group is less with 1.70 units. The data dispersion is homogeneous for the both groups. According to the Levene test for homogeneity of dispersions, the two samples have equal dispersions, p = 0.174>

0.05. The magnitude of the effect (0.45) indicates large differences between the results. The unifactorial Anova test in the case of equal dispersions shows that there are statistically significant differences between the results of the subjects in the two groups, $p \ll 0.0001 \ll 0.05$. The research hypothesis is accepted that the differences between the mean scores of the two groups in the final tests are statistically significant. The graphical representation of the average scores and the scores recorded for this parameter are shown in Figure no. 2, respectively figure no. 3.



Fig. 2 - The average values of the scale scores, recorded in the two groups, subtest 6, final test



Fig.3 - The individual scores for the two groups, subtest 6, final test

Table 9	JULKOL OI				· /)			
Group	Average	Median	Standard Deviation	Module	Minimum	Maximum	Range	Coeff. of variation
Control	14.70	14	2.40	14	11	22	11	16.3%
Experiment	16.28	16	3.08	16	10	25	15	18.9%
Table 10 – The	e Homogenity	Dispersion	n Test					
Test Lavana	F	df_1	df_2	Р				
Test Levene	2.322	1	98	0.13	1			
Table 11 – Un	ifactorial AN	OVA Test						
Source of	variation	SS	df	MS	F	F critic	P-value	Size effect
Between grou	ups	62.41	1	62.4	8.170	3.938	0.0052	0.29
Inside groups	5	748.58	98	7.6				
Total		810.99	99					
Table 12 - The	e robustness te	est for the e	quality of ave	erages				
Test Drown	Formatha	Statistic	df ₁	df ₂	Р			
rest Brown-I	rorsyme	8.17	1	92.44	0.01			

THE SCALE SORES: STRENGTH (Subtest 8) COMPARATIVE STATISTICAL-MATHEMATICAL INDICATORS - EXPERIMENTAL GROUP - CONTROL GROUP - FINAL TESTING (table 9)

At the STRENGTH parameter, the average scores are equal to 14.70 for the control group and 16.28 for the experiment group. We see that the average score of the control group is smaller by 1.58 units. Data dispersion is relatively homogeneous in both groups. According to the Levene test for homogeneity of dispersions, the two samples have equal dispersions, p = 0.131 > 0.05. The magnitude of the effect (0.29) indicates average to large differences between the results. The Anova unifactorial test for equal dispersions shows that there are statistically significant differences between the results of the subjects in the two groups, p = 0.0052 < 0.05. The research hypothesis is accepted that the differences between the mean scores of the two groups in the final tests are statistically significant. The graphical representation of the average scores and the scores recorded for this parameter are shown in Figure no. 4, respectively figure no. 5.



Fig. 4 - The average values of the scale scores recorded in the two groups, the subtest 8, the final test



Fig. 5 - The individual scores for the two groups, subtest 8, final test

Conclusions from the research

The achievement of Aerobics and Table Tennis programs in Physical Education lessons have led to some changes in the functional parameters (the Ruffier Index) as well as to the superior manifestation of the speed / agility and strength, qualities that have been assessed.

The comparison of the results between the initial and final tests as well as of the data obtained in the final testing within the two groups highlights the efficiency of the operational structures included in the training programs, validating the research hypothesis.

The verification of the statistical hypotheses was based on the scale score obtained through the BOT-2 ASSIST TM software, Scoring and Reporting System by converting the raw scores made by subjects during the tests.

After the final evaluation, there are statistically significant differences between the two groups (at the level of the score scale), both in the running and agility speed subtest, as well as in the strength subtest.

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