ISSN 2602-0440, ISSN-L 2602-0440

THE STUDY REGARDING THE PHYSICAL EFFORT CAPACITY OF FEMALE STUDENTS OF THE UNIVERITY OF BUCHAREST

Studiu asupra capacităţii de efort a studentelor din Universitatea Bucureşti

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Abstract
Research question aims to optimize functional training of female students in university physical education by practicing aerobic gymnastics. The experimental program was developed and then investigated functional parameters were female students were included in the experiment. Dynamic indices of control and experimental group was statistically interpreted one year after application of the experimental program. It was assumed that the use of specific aerobic gymnastics in physical education lessons with students in higher education, will contribute substantially to optimize their level of functional training.

Keywords. Physical education lesson, female students, general physical training, functional training, aerobic sports, aerobics.

Objectives

The aim of the research is improving the educational training process in physical education by applying the specific means of aerobic gymnastics to first year university students. In this sense was given an experimental program with aerobics classes has been applied during an academic year for experimental group. Worked in the control group after specific traditional planning general physical training lessons.

Methods

The scientific research used the following methods: measurement and evaluation methods, pedagogical experiment and statistical and mathematical methods of data processing and interpretation.

Results

Effort capacity varies from one individual to another, as it depends largely on genetic inheritance, natural skills and physical condition treated by training.

The research hypothesis

It was assumed that the use of specific aerobic gymnastics in physical education lessons with students in higher education, will contribute substantially to optimize their level of functional training.

To assess functional training level female students under study we applied a battery of functional tests, aimed at maximal anaerobic power, body recovery after exercise and body adapt to stress. To follow the dynamics of these results were compared with model profile developed specialist in the Department of Physical Education, University of Bucharest accomplished by monitoring a number of 5000 students during the five years of study. Level subjects undergoing functional training is not satisfactory experiment reported all professional models. The results obtained were the starting point in the development of experimental methods used to increase physical and functional potential of female students aged 18-22 years. We present in Table 1 the results obtained by students who took part in the experiment teaching.

ISSN 2602-0440, ISSN-L 2602-0440

Table no.1. Dynamic functional indices (n = 50)

Samples	Subjects	Initial testing $\overline{X} \pm m$	Final testing $\overline{X} \pm m$	t	P
Heart Rate, beats/min.	E	73,96±0,93	69,92±0,34	4,95	<0,001
	M	73,28±1,04	72,84±0,96	3,38	<0,05
t,p		0,48>0,05	2,85<0,01		
Vital capacity, cm³	E	3516±76,95	3876±80,2	5,10	<0,001
	M	3584±108,11	3612±97,18	0,80	>0,05
t,p		0,51>0,05	2,09<0,05		
Test RUFFIER- IR	E	11,62±0,25	9,96±0,38	5,10	<0,001
	M	11,4±0,19	11,08±0,22	1,51	>0,05
t; P	E-M	0,70>0,05	2.53<0,05		
Test SARGENT- P	E	103,39±4,31	131,07±4,99	5,38	<0,001
	M	105,30±3,78	110,85±4,17	2,76	<0,01
t; P	E-M	0.33>0,05	3,10<0,001		
Test HARWARD - IH	E	64,43±1,87	80,01±1,77	6,8	<0,001
	M	66,1±2,12	67±1,89	1,81	>0,05
t; P	E-M	0,58>0,05	5,00<0,001		

Heart rate (beats / min.)

During initial testing of the experimental group, the arithmetical mean values are 73.96 to 0.93 average error and the control group are 73.28 to 1.04 average error. At final testing, arithmetic mean values of the experimental group reached 69.92 with a mean error of 0.34, while the control group mean values reach 72.84 with a mean error of 0.96. It is noted that the experimental group exceeded the model in the literature (70.35 beats / min.).

Differences between initial and final testing experimental group shows that "t" calculated value 4.95 is greater than "t" spreadsheet (Fisher) to materiality 0.001, demonstrating significant differences between tests. Regarding the control group value of "t" is calculated is greater than 3.38 "t" statistic, also resulting in significant differences between tests, but at P <0.05.

Noting differences between the experimental and control environments initial testing, it shows that "t" calculated value is less than 0.48 "t" statistic at p> 0.05, the test result is insignificant and final "t" calculated the value 2.85 is greater than "t" statistically significant result at P <0.01.

Following these findings, we can say that the final testing results due to systematic effort subjects who underwent two groups during the experiment. Also, regardless of the means used (mainly physical, technical and tactical), the total effort that was applied to both groups, leading to cardiovascular adaptation to the requirements of sporting activity.

Spirometry (cm ³)

During initial testing, the arithmetic mean of the experimental group values are 3516 with 76.95 average error and the control group is 3584 with error 108.11. Final testing of the experimental group arithmetic average values reach 3876 with the average error of 80.2, while the control group mean values reach 3612 with error of the mean of 97.18. It is noted that the experimental group was closer to the model of literature values (4245 cm ³).

Differences between initial and final testing experimental group shows that "t" calculated value 5.10 is greater than "t" spreadsheet (Fisher) to materiality 0.001, demonstrating significant differences between tests. Regarding the control group value of "t" is calculated as less than 0.80 "t" statistically significant differences between test result at P <0.05.

ISSN 2602-0440, ISSN-L 2602-0440

Noting differences between the experimental and control group at initial testing, it shows that "t" calculated value is less than 0.51 "t" statistic at P> 0.05, and the test result is insignificant final "t" calculated the value 2.09 is greater than "t" statistic at P <0.05, resulting in significantly.

Thus, these tests confirm the fact that the training program applied experimental group had a significant contribution to the vital capacity of female students compared to control group. Confirmed by research, that the aerobic exercise has a positive influence on the functional capacity of female students and it can be said that the implementation of its specific means lessons students can make significant changes in effort capacity.

Ruffier Test

Initial testing it was found that the arithmetic mean of the experimental group values are 11.62 with a mean error of 0.25, while the control group is 11.4 with a mean error of 0.19. Final testing of the experimental group arithmetic average values reach 9.96 with a mean error of 0.38, while the control group mean values reaching 11.08 with average error of 0.22. It is noted that the experimental group was closer to the literature values model (7.13).

Differences between initial and final testing experimental group shows that "t" calculated value 5.10 is greater than "t" spreadsheet (Fisher) to materiality 0.001, demonstrating significant differences between tests. Regarding the control group value of "t" is calculated as less than 1.51 "t" statistically significant differences between test result at P <0.05.

Noting differences between the experimental and control groups at initial testing, it shows that "t" calculated value is less than .70 "t" statistic at P> 0.05, and the test result is insignificant final "t" calculated the value 2.53 is greater than "t" statistic at P <0.05, resulting in significantly.

Statistical final tests show values for the experimental group near professional model and fit the "medium" adaptation at effort. Control group's results are weaker adaptation is falling "weak" for effort. Body adapt to stress, determined using test Ruffier undergoes changes due to training. These changes are reflected in a more rapid return to normal pulse rate for subjects involved. Group confirmed the results statistic showing that the end of the experiment obtained a better adaptation to the control group effort because our proposed program with specific means aerobic gymnastics.

Sargent Test

Initial testing it was found that the arithmetic mean of the experimental group values are 103.39 with a mean error of 4.31, while the control group are 105.30 with a mean error of 3.78.

Final testing arithmetic mean values of the experimental group reached 131.07 with the average error of 4.99, while the control group mean values reach 110.85 by the average error of 4.17. It is noted that the experimental group was closer to the literature values model (127.34).

Differences between initial and final testing experimental group shows that "t" calculated value 5.38 is greater than "t" spreadsheet (Fisher) to materiality 0.001, demonstrating significant differences between tests. Regarding the control group value of "t" of 2.76 is calculated is greater than "t" statistically significant differences between test result at P <0.01.

Observing the differences between the experimental and control groups at initial testing, it shows that "t" calculated value is less than 0.33 "t" statistic at P> 0.05, and the test result is insignificant final "t" calculated the value 3.10 is greater than "t" statistic at P <0.001, resulting in significantly.

According to the literature, Sargent provides a qualitative test of the level of training they are students. Experimental group received the final test results that exceed the specific model and which employs a qualifying "satisfactory" for maximal anaerobic power. Control group also recorded significant values being included everything from "satisfactory". Given the progress in the development of the two groups arithmetic can say that the program has worked and experimental group was a better basic training to optimize functional training of female students included in pedagogical experiment

ISSN 2602-0440, ISSN-L 2602-0440

Harvard Test

During initial testing of the experimental group arithmetic mean values are 64.43 to 1.87 average error and the control group are 66.1 with 2.12 average error. Final testing arithmetic mean values of the experimental group reached 80.01 with average error of 1.77, while the control group mean values reach 67 with a mean error of 1.89. It is noted that the experimental group was closer to the literature values model (85.46).

Differences between initial and final testing experimental group shows that "t" calculated value is greater than 6.8 "t" spreadsheet (Fisher) to materiality 0.001, demonstrating significant differences between tests. Regarding the control group value of "t" of 1.81 is calculated is lower than the "t" statistically significant differences between test result at $P < 0.05$.

Observing the differences between the experimental and control group at initial testing, shows that "t" calculated value is less than 0.58 "t" statistic at $p > 0.05$, the test result is insignificant and final "t" calculated the value 5.00 is greater than "t" statistic at $P < 0.001$, resulting in significantly.

Therefore, recovery heart rate after performing a sub-maximal effort is an indicator for fitness evolution of students female included in the experiment . Experimental group was assessed at the beginning of the experiment with an average fitness (65-79) and the final testing statistical results showed that in the range of fitness (80-99). Progress control group throughout the experiment was insignificant placing it on it was between the initial test and the average fitness (65-79).

Analyzing the results of statistically we can confirm that aerobics classes with emphasis on cardio link effectively helped the students to improve fitness.

Conclusions

Summarizing the results of the functional tests can make some assessments and observations:

1. Comparative analysis of vital capacity shows that the experimental program that was implemented during the academic year managed to change the vital capacity of female students included in the experiment increasing it to 3876 cc., A value that is closer to the specialized model.

2. Final test statistic values for Ruffier test indicates for experimental group approaching by model specialized and fit "medium" to adapt to effort. To control group results are weaker adaptation is falling "weak" for effort.

3. Arithmetical mean of the Sargent test for the experimental group exceeds the specialist model and confirms the usefulness of our program, which was a better basic training to optimize functional training of female students included in the experiment teaching.

4. Fitness assessment using Harvard test shows significant results for the experimental group between initial and final test at $P < 0.001$ while the control group is significant results at $P < 0.05$. On the value of the Student test between the two groups at final testing can be seen that the results are statistically significant at $P < 0.001$. Return of heart rate after performing a sub-maximal effort is an indicator for assessing the fitness of female students included in the experiment . Experimental group was assessed at Harvard test at the beginning of the experiment with average physical condition (65-79) and the final testing statistical results showed that in the range of fitness (80-99). Progress control group throughout the experiment was insignificant placing it on it was between the initial test and the average fitness (65-79). Analyzing the results of statistically we can confirm that aerobics classes with emphasis on cardio link effectively contributed to improving student fitness.

Analysis of the results obtained by the two groups to the functional tests, lead us to conclude that their development is good for subjects experiment with more in favor of the experimental group. Functional ability at this age is in full transformation and can be influenced by the quality of sports training. All indicators were influenced favorably functional training program applied our experiment, with significant increases for the experimental group. They must be considered premises for good development effort towards optimizing capacity of female students.

ISSN 2602-0440, ISSN-L 2602-0440

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