THE STUDY OF THE MOTOR CAPACITY INDICATOR IN ACADEMIC MEDICAL STUDENTS

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Abstract: The study of motor capacity of students must be a permanent concern for factors that have attribute and responsibilities tangent to shaping generations in training. The present study presents the dynamics of the motor capacity and the efficiency of the didactic activity after the application of two different instructional programs specific to aerobic gymnastics, on two different groups of students from the University of Medicine and Pharmacy "Carol Davila" Bucharest, from the second year of study. In this paper we used the motor capacity indicator that synthesizes the results from a set of three general physical training tests. Following the results of the two testing - initial (at the beginning of the academic year) and the final (at the end of the academic year) it was found that both groups have had increases in average values, and at the student group from General Medicine, it is noted that the value of the growth size is higher, which shows that the instructional program applied to it was more efficient. In conclusion, increasing the level of general physical training of students in medical academic environment depends on the content and means used in the aerobic gymnastics lessons.

Key words: *aerobic gymnastics, motor capacity, students*

Introduction

The study of motor capacity of students must be a permanent concern for factors that have attribute and responsibilities tangent to shaping generations in training. The essential condition of teachers from the academic world with this orientation is the closure of a feed-back type pragmatic circuit in which findings shall not restrict to an end in itself, but automatically induce to the accurate analysis of the causes generating scarce aspects and effective measures for improvement.

General physical training ensures "the development of basic motor skills and functional capabilities of the body; it enriches the general background of motor skills, ensures the harmonious physical development of morpho-functional indexes that condition the practice of the sport branch "[1].

At the age when the growing and developing processes are still active it is necessary to develop the motor capacity through different kind of specific means" [2] and as novel as possible given the particularities of age, morpho-physiological and psychological particularities. After Colibaba (2007) [3], as an institutionalized activity, the physical education means to select from a multitude of physical exercises the most adequate and efficient ones, according to specific pedagogical, physiological and hygienic principles and norms adjusted to age, gender and educational objectives.

One of the teaching objectives of physical education and sport in higher education is also the development of motor skills, the improvement of physical condition of the students, in order to obtain an optimal health condition, while ensuring compensatory effects on the intellectual activity. Thus, aerobics is one of the means with which these goals can be achieved.

The results obtained during a research carried out by Popescu V. [4] have led to the conclusion that modern physical exercise programmes (fitness, Pilates and stretching), if systematically performed, contribute to increasing the motor potential and influence positively and significantly the personality dimensions pursued (Activity and Sociability), having beneficial effects also on the psychosocial life of students. These programs can offer

a great variety of moves and multiple possibilities for the structuring of motion sequences by combining various elelments and positions. The variety of technical elements that are permanently combined in a multitude of dynamic structures, combinations, compositions, rhythms and various choreographies, usually develop in conjuction with a musical background.[5]

Aerobic step exercise is aerobic training methodis aerobic training methods which have a great role in improvement of aerobic fitness, physical health, cardiovascular fitness and body composition profiles.Aerobic step exercise includes a series of dance movements in step by step form which are repeated frequently by music. [6]

The purpose. The aim of this paper is to study the dynamic of motor skills level , the stability of the teams and, last but not least, the efficiency of the teaching activity. Through this study we aim to find undiscovered ways in order to optimize the general physical training among the students in U.M.F. "Carol Davila" Bucharest so we can apply the most optimal variants of general physical training programs within the specific aerobics gymnastics classes.

The hypothesis. If we apply different instructional program specific to aerobic gymnastics within the physical education and sport classes, then we can establish their effectiveness through the results obtained after the tests concerning the motor capacity indicator?

Materials and methods

The research for the issue in question was performed by applying the following methods: reading and analysis of the specialized scientific literature (documentary analysis), the notes taken during the gymnastic lessons, the use of the experimental method, evaluation methods, the tests method and the statistical-mathematical method.

In order to assess and to have an overall picture of the level of physical training and of the motor capacity of students who practice aerobic gymnastics within the Physical Education and Sport discipline of the University of Medicine and Pharmacy "Carol Davila", was used in this paper, the motor skills indicator – MSI [7], indicator which summarizes the results to a set of three samples of general physical training, through a single assessment, calculated by adding the number of repetitions, converted into points (approximately 50 % of the final note). The three exercises aimed to highlight: a. the strength and resistance of the arms muscles and of the scapular-humeral belt (incline push ups), b. strength, resistance and speed of contraction of the abdominal belt (exercise for testing the abdominal muscles), c. reach, coordination and resistance under speed (jumps).

Subjects covered in this study were aged between 18 and 20 years, female students in the second year of study, who have opted for Aerobic Gymnastics at the basic training class within the Physical Education and Sports discipline. They were divided in 2 working lots, one consisting of 60 students from the Faculty of Medicine, where the "dance and aerobic step" instructional program was applied and the other group of 51 students from the Faculty of Pharmacy, where was applied another instructional program, containing yoga and pilates. These tests have been made on the two groups, at the beginning and at the end of the academic year 2016/2017.

Description of programs

The first program, which was addressed to the student group at the Faculty of Medicine (2nd lot) was made up of the following means of aerobic gymnastics:

Aerobic Dance - is a very rhythmic aerobic form, with choreographers using sequences and combinations of basic and specific aerobic steps adapted to the style of music (jumping-jack, lunge, knee-lift, kicks, march, jogg, skip, step-toch, pas in “V”, grap-fine, heel-up etc.), steps from sport dance (mambo, cha-cha, salsa, jive, rock and roll etc), steps from modern

dance (street dance, hip-hop, jazz, funky) etc.; this form contributes to the development of general body resistance, improved coordination, rhythm, and is an attractive form for any age.

Step Aerobics - is a form which contributes to functional improvement of the cardiovascular system and tonifies and keeps in shape, in particular, the lower limb muscles; is based on structures and combinations of aerobic and dance steps adapted to the step (the platform). They were used in different combinations and with other types of movements specific to gymnastics both standing and at floor level.

With this group there were 2 groups of 26 and 34 students respectively, one lesson per week.

The second program applied to the other group from the Faculty of Pharmacy (1st lot) included the following means: - exercises specific to *the pilates method*, both standing and at floor level - beginner and medium level exercises, *yoga exercises*, *classical ballet exercises* adapted to aerobic gymnastics for keeping in shape.

Also with this group there were 2 groups of 30 and 21 students respectively, one lesson per week.

Results

Table 1: The results of the inaitial and final tests at the two groups and the dynamics of the evolution of the motor capacity indicator

Statistical indicators	**Group 1**		**Group 2**	
	Ti	**Tf**	**Ti**	**Tf**
X	*39,05*	*44,31*	*41,21*	*47,71*
S	*7,87*	*9,43*	*8,89*	*10,16*
C.V.	*20,16*	*21,28*	*21,58*	*21,30*
T	*- 4,33*		*- 9,80*	
p	*< 0,05*		*< 0,05*	
Diff.of average	*5,26*		*6,5*	

Table no 2: Statistical indicators – initial testing

	No sub	**Mean**	**Median**	**Modul**	**Min**	**Max**	**Range**	**Average Dev.**	**Error Stand.**	**Sample Variance**
Group 1	*60*	*39,05*	*38*	*31*	*25*	*55*	*30*	*6,57*	*1,10*	*62,05*
Group 2	*51*	*41,21*	*41,5*	*40*	*26*	*73*	*47*	*6,71*	*1,14*	*79,15*

Table no 3**:** Statistical indicators – final testing

	No sub	**Mean**	**Median**	**Modul**	**Min**	**Max**	**Range**	**Average Dev.**	**Error stand.**	**Sample variance**
Group 1	*60*	*44,31*	*42*	*42*	*30*	*75*	*45*	*7,41*	*1,32*	*88,93*
Group 2	*51*	*47,71*	*48,5*	*38*	*28*	*84*	*56*	*7,89*	*1,31*	*103,39*

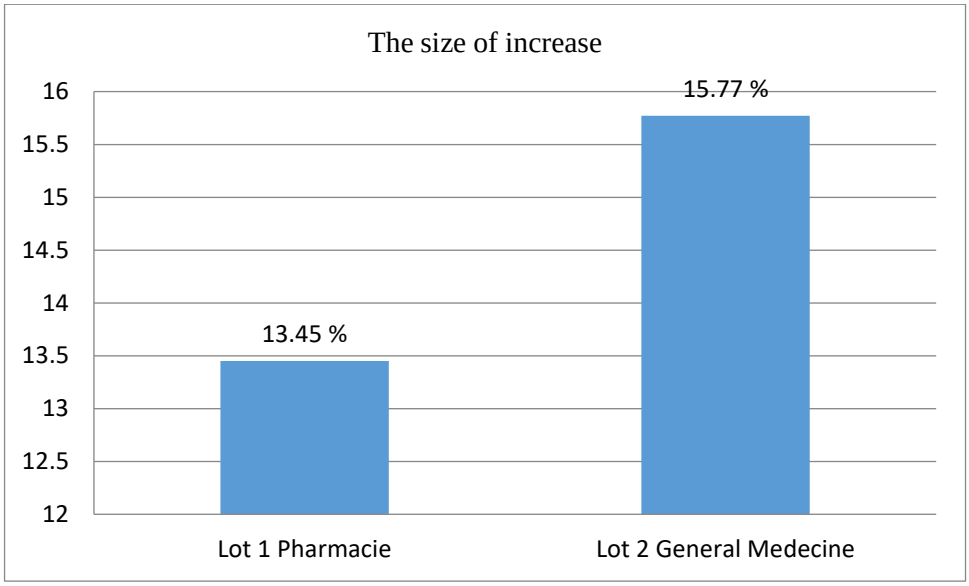

Figure no 1: The size of increase

Discussion

The average - At the first lot, the mean value recorded at the initial testing was 39.05 points and in the final testing the subjects had an average of 44.31 points with a difference of the averages of 5.26 (table 1,2,3);

At the second lot, the mean value recorded in the initial testing was 41.21 points and in the final testing the subjects had an average of 47.71 points with a difference of the averages of 6.5 (table 1,2,3);

The coefficient of variation (variability) - it expresses in percentage the measure to the degree of homogeneity of the subjects [9] and it was 20,60 at the initial testing and 21,28 to the final testing, at the General Medicine lot, which means that the homogeneity of the subjects was great, the average being representative. As for the second group of subjects, it had a coefficient of variation of 21.58 in the initial testing and the final testing of 21.30, which means that the homogeneity of the subjects was great and to this lot, the average being representative (table 1).

The size of increase – represent the medium progress expressed in percentage or the effect produced of the subjects by the pedagogical programs implemented and was calculated using the formula:

The size of increase = the difference between averages (X Tf – X Ti) / X Ti * 100

As shown in Chart 1, to the group 1, the recorded values have increased by 13,45 % to the indicator followed in this study and the second group recorded values with an increase of 15.57% from one test to the another.

After applying the *Student t test* between the initial and the final test at group 1 we obtained the value of - 4.33;

the value of "p" for group 1 being less than 0.05 shows that the null hypothesis is not confirmed, so there are differences between the two tests.

After applying the *Student t test* between the initial and the final test at group 1 we obtained the value of – 9,80;

the value of "p" for group 1 being less than 0.05 shows that the null hypothesis is not confirmed, so there are differences between the two tests.

Conclusions

From the statistical analysis presented above, from the information obtained from the initial and final tests to the three general physical training samples, respectively the motor capacity indicator,

it was noticed that following the application of the programs proposed by us on each lot, there were increases of the average in both lots, from one test to another.

Comparing the two lots, the one made up of the students at the General Medicine Faculty, who applied the program mainly made of aerobic dance and aerobic step, had a better percentage in the size of the growth than the other lot, where exercises from Pilates and yoga have been applied, which leads us to the conclusion that the first program was more effective in terms of content.

Training components within these programs should be exposed, as far as possible, in relation to their individual peculiarities, to the capacity of each participant in the training process; so, experience has shown that within each group the level of technical knowledge, specific to the sporting industry, as well as the general motricity, differs greatly; in the same group we can meet both beginners, advanced and performers.[9]. As a result, in higher education, aerobics gymnastics is an effective way of optimizing the classes conducted with the students, a means with multiple valences on the body.

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