

**MINISTRY OF EDUCATION
CLUJ NAPOCA "BABES-BOLYAI" UNIVERSITY
FACULTY OF PHYSICAL EDUCATION AND SPORT
DOCTORAL SCHOOL**

**CONTRIBUTIONS TO OPTIMIZE FITNESS AND SELF-ESTEEM BY IMPLEMENTING
BODY ESTHETICS PROGRAMS**

DOCTORAL THESIS SUMMARY

Scientific Coordinator:

Prof. dr. Grosu Emilia Florina

Doctoral Student:

Matean Cuceu Doina Aurica

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Introduction

Humanity is constantly preoccupied with finding solutions for active aging. The general interest aims for a better quality of life throughout the course. All people want to cope with everyday tasks or to meet goals, for which they need physical and mental tone, physical and mental agility and also the ability to communicate with others and to engage in social matters.

Research conducted in recent years in this respect were multiple. Modern human life is increasingly dependent on technology, in the gradual replacement of exercise with machines, and long-term implications are not at all very beneficial. Physical inactivity is considered the largest worldwide public health problem of the XXI century.

Nowadays it is well documented that chronic disease is based on lack of exercise, sedentary lifestyle. It has been shown that exercise can be a means of preventing or improving various physical or emotional problems. The new vision considers physical activity a part of contemporary lifestyle. The support that can sustain all of these life's key milestones is the physical condition or fitness.

The status of preparation for the activity of an individual is closely related to the level of fitness. A good physical condition motivates you to perform your daily activities with sufficient energy, without excessive fatigue, in the direction on completing all the tasks successfully.

This requires some intervention by trying to change our mindset about the importance of youth movement through argumentation and application of physical education and sport means in terms of improving fitness.

Keywords

Fitness, self-esteem, self-confidence, optimization, body esthetics programs, aerobics, step aerobics, Zumba.

The rationale for choosing the theme

In recent years, there is a tendency to give up more and more to practicing physical exercises for a TV or computer activity. This sedentary behavior has reduced the physical condition of students. During physical education classes the get tired quickly and cannot support a longer effort.

In this context the main argument of the theme is the implementation of body esthetics programs of aerobics, step and Zumba in order to improve physical fitness and self-esteem of female students.

Solving this goal scientifically implies the introduction of aerobics programs, of applied tests, collection, analysis and interpretation of data and also research planning so that the assumptions would be solved.

The need to diversify the curriculum of physical education and sport by introducing the discipline program, aerobic gymnastics, step aerobics and Zumba complexes to improve the density lesson, increasing the attractiveness and modernization of lessons are the subject of this study.

The originality of this work consists in the development and implementation of body esthetics programs, in parallel, for all three experimental groups, with different independent variable. For the first group the aerobic exercises, for the second one step aerobic exercises and for the third one Zumba exercises.

Identifying differences between the results obtained from the application of independent variables should be the manner how one can choose the most effective means to improve physical fitness and self-esteem.

The benefits in body esthetics programs on human body are an important argument to attract a large number of students to choose aerobics, Step or Zumba both in physical education classes as well as for independent practice outside of the educational process.

The development of fitness, the harmonious physical development and the body contouring represent the basic reasons to be stimulated lesson by lesson, in order to improve the motor skills, their self-perception and also to eliminating inhibitions and strengthen self-reliance and individual opportunities, and not least to stimulate initiative and creativity.

The exercise diversification using means of aerobics, step and Zumba is a challenge to achieve the research purpose.

Body esthetics programs and aerobic classes designed for the physical education classes should seek to develop and maintain fitness and health. The contents of exercises used can be easily adopted to specific features of age, sex and physical condition of female students.

Through the created aerobics programs, the student is given the image of a harmonious movement, expressive and aesthetic, in order to develop physical fitness and the acquisition of knowledge for independent practice of body esthetics programs.

The attractiveness of practicing aerobic gymnastics, step aerobics and Zumba is also given by the permanent presence of musical accompaniment, which creates a pleasant ambience.

Aerobics is an essential means of developing physical fitness, perfecting body functions (circulation, respiration, digestion, metabolism, etc.), having psychiatric meanings such as relieving stress, depression combat, will education, overcoming sensibility and distrust in ones capabilities, improving self-esteem.

PART I – THE SCIENTIFIC BACKGROUND OF THE THEME

Theoretical background of physical exercises

In the Physical education and sport encyclopedia of Romania, vol. IV, (2002), we find the definition of exercise as a motor act consciously and systematically repeated, being the main mean of achieving the objectives of physical education and sport. It originated in the general motor act of man (in his movements) conducted by him to act on the external environment, for the maintenance of relationships, its own existence, that got diversified over time in different structures (shapes), depending on intended effect in physical education and sport activities. It can be taken as a behavior act performed using the locomotor system, in order to obtain an effect of functional adaptation of the organism to various levels of effort, or to build a driving action by association with others similar actions. Therefore, it can be extensive (specific physical education and sport for all) or intensive (for competitive sports), classification due to the different degree of recovery and dosing volume, intensity, complexity of structures and therefore on the realized and obtained effects in the two activities.

When speaking of exercise, most experts make the following observations:

- exercise has its origin in general human motor act (moving) made to maintain relationships with internal and external environment;
- exercise differs from the usual motor act in the deliberate designed intent that repeats itself after precise methodological rules, depending on the intended objectives;
- exercise influence both biological sphere (mainly this one) and the spiritual one (his performance requires attention, memory, thought, will, perseverance, etc.). This action is carried out in a full organic unity;
- its conducting involves deposition of physical effort, reflected in muscle contraction and also in the major work of functions of the body.

Exercise as means of physical education and sport

Exercise is part of physical education and sport specific means, ensuring the development of human motric, somatic and functional capacity.

"Exercise is a motor action with instrumental value, designed and programmed to achieve their targets, physical education and sports training. It should not be understood merely as a stereotyped repetition, rigid, but as an opportunity of permanent adaptation to various external and internal conditions. "(Hanțiu - basic course p. 44)

All type of exercise is characterized by two elements: its content and its form.

Physical education field specialists: Bârjega, M., Bucur CI (1972), Siclovan, I., (1979), Mitra, G., Mogoș A., (1980), Herczeg, L., (1995) Buruc, M., (2000), Todea, SF (2003), Hanțiu,

I., (2013) have described in detail the content and form of exercise. Therefore, the content of physical exercise is seen as:

1. all the elements that make up that exercise:

- movements of the body or its segments in its entirety, as they are carried out within that exercise;
- physical effort required by the execution of movements, resulted in the amount of work (volume), the intensity with which these actions are carried out and the complexity of the work done (in the application more or less diverse of the musculoskeletal and the major body functions);
- mental effort, resulted in the load of different mental processes, such as memory, attention, speed of thought, will, etc.

Physical exercise taxonomy

The classification of exercise has been a concern of great theoretical and practical importance, which is based on criteria that take into account their role in the achievement of educational objectives pursued.

To achieve a theoretical argument in classifying physical exercise we will present the views of experts in the theory and methodology of physical education and sport: Hanțiu, I., (2013), Bădău, D., (2010), Balint, L., (2009), Neagu, N. (2010) Mihailescu, L., (2009), Lupu, E., (2012), Duck, G., (2012), based on a range of criteria, the currently widely used in this area:

- in terms of structure and form: analytical exercises and simple or complex exercises; standardized exercise or variable ones; special exercises;
- the degree of coding: internal coding exercises (distance, estimate time, breaks, etc.); external coding exercises (routes utility applications, etc.); mixt coding exercises; exercises without coding; strict coding exercises;
- according to the nature of the effects they induce: preparatory exercises; specific exercises; competition exercises;
- after motor skills covered: exercises for strength; exercises for speed; resistance exercises; coordination exercises; flexibility exercises; exercises for accuracy; combinations of the above;
- after additional loading type: exercises with partner; exercises with dumbbells; exercises with sandbags; medicine ball exercises; gymnastic exercises with banks;
- after sports training components: physical training exercises; technical training exercises, tactical training exercises; artistic training exercises; psychological training exercises;

- after the biological systems required: neuromuscular exercises; cardio-respiratory exercises; endocrine-metabolic exercises;
- after the muscle contraction nature: dynamic exercises; static exercises; joint exercises;
- after physical exercise intensity: over-maximal exercises; maximal exercise; submaximal exercise; average exercises;
- by objectives nature: exercises for developing motor skills; exercises for the harmonious physical development; exercises for the development of effort capacity; exercises for learning motor habits and skills;
- by functions performed: introductory exercises – preparatory, heating; repetitive exercises - fixing the basic mechanism; associative exercises, exercises applied; creative exercises - as random game; competition exercises; recovery exercises – compensatory, body expression exercises;
- after the conducting social structure: individual exercises; group exercises; joint exercises; gender exercises;
- after the degree of constraint: standard exercises; semi-standardized exercise; free exercises.

Physical condition and its basic characteristics

The physical condition is the ability of the body to perform a particular physical effort in relation to constitutional type and age. A good physical condition means a person's ability to carry out daily activities without getting tired quickly and without overwhelming the body's physiological functions. A regular and adequate physical effort maintains an optimal physical condition.

An optimal physical condition is based on a healthy body where the heart, lungs, muscular system, skeletal joints do not reflect the emergence of disturbing signs such as pain or discomfort. The functionality of these organs and systems are good indicators of the general physical condition. Improving the functionality of organs and lowering the risk of disease maintain the physical condition of the body. The better the physical condition of the individual is, the healthier he is. This is achieved by performing regular exercise, improving heart and lung function, increasing muscle strength and immunity.

Over time, there have been a number of identifications of the parts of physical condition. But in recent years Orunaboka specialists, T., Ogulu, CB (2011), Jalal, AT, Abraham, G., (2013), Fedewa, A., (2011), Epuran, M., (2005), described the main components of fitness as: aerobic capacity, strength and muscular endurance, flexibility, body composition and nutrition.

Theoretical foundation of aerobic gymnastics

In modern society, the need for movement, of practicing physical exercise, has become vital. A form of movement, of gymnastics and body shaping is "aerobics", first appearance in the United States in the early 60s.

Aerobics is a discipline that has great potential in terms of physical training capacities, motor skills training and maintaining health.

The influent factors on aerobic exercise content, as shown by Macovei S. (2007) are:

- practitioners age. Practitioners will preferably be divided by age group, as its special features influence the request of the body during exercise. The intensity of effort can be monitored by recording heart rate, which can be investigated by training the student on how to act (taking carotid pulse or wrist). Age groups may be: between 20-30 years, between 30-40 years, between 40-50 years and over 50 years. There is not envisaged the school-age population, as for them, the ways of acting, objectives and tasks are different;
- physical condition at the moment. It depends on the physical training of each individual, the motric experience and training status. The students, divided into groups of beginners, intermediate or advanced, will have an exercise regimen tailored to their level, both in terms of tempo and work rhythm coordinated by the length of active breaks, and also the exercises complexity (contractions nature, level of coordination relaxation processes and engagement, etc.);
- priorities for preferential processing of certain areas. Depending on the structure of the team we will focus on certain areas with preferential dosages, special exercises or hindering free. In general, for the women groups, it insists on pelvis muscle, the coxal - femoral joint, the abdomen and thighs.

Theoretical foundation of self-esteem

Rosenberg (1979) defines self-esteem as a complex cognitive and affective synthesis. He believes that self-esteem dictates a more or less good attitude of the individual to himself. Self-esteem is how we evaluate ourselves in relation to our own expectations and the others, and is directly proportional with the awareness to our past, present and future value.

In his view Chior, L. - (2012), self-esteem is an emotional-appreciative component of I-concept, which is expressed in human positive attitude towards itself, in self-acceptance, in recognition of its social value and formed in ontogenesis personality based on mutual relationship of various factors, which ensures its inner world harmony and effective integration of rapidly changing society.

PART II – THE METHODOLOGICAL OPERATIONAL APPROACH OF THE RESEARCH

Preliminary research organization

Preliminary research was structured in three stages, in order to check the value of variables handled and recording the responses of subjects in the study, and was conducted in the second semester of the 2011-2012 academic year.

Phase I - Preliminary research

At this stage we studied the literature, we set the goals, the purpose and the hypothesis of the research and it was determined the sample studied:

Preliminary research purpose

Selection and validation of tests to be applied in research and the conditions of future research development themselves.

Preliminary research assumptions (H)

- H1: We suppose that by implementing body esthetics programs and aerobics, it improves body mass index;
- H2: We suppose that by implementing body esthetics programs and aerobics, it improves expansion;
- H3: We suppose that by implementing body esthetics programs and aerobics, it improves coxo-femoral mobility;

Preliminary research objectives:

The main objectives are the following:

- Establishing and preparing the tests;
- Initial and final testing due to partial implementation of the proposed program;
- Processing and interpreting the data.

Research methods used

The methods used in the research are: bibliographic material study required, observation method, questionnaire survey method, experimental method, test method, graphical representation and statistical method.

Preliminary research sample:

The subjects included in this research were selected in the second semester of the academic year 2011-2012, among female students of the first year of the Faculty of Letters, Baia Mare North University Center. The selection was random and formed Group I (experimental), whose was

applied, as an independent variable, body esthetics programs and aerobics; and group II (control), that took classical physical education lesson content. Student female age ranges between 19 and 21 years, and each group consists of 30 students.

Phase II of the preliminary research

This is the stage where we performed the measuring, the testing and recording of the initial values, the application of body esthetics programs and aerobics and also the measurement, testing and registration of intermediate values.

Phase III of the preliminary research

This is the stage where we passed on performing the statistical analysis, data analyze and interpretation and not least, we could draw conclusions from preliminary research.

The statistical processing of the results of the research

The statistical processing was performed with Excel (Microsoft Office 2007) and also with help from Stats Direct v.2.7.2 program. Graphical representation of the results was made also with Excel (Microsoft Office 2007).

There were calculated elements of descriptive statistics, data being presented using indicators of centrality, location and distribution.

To test the normal distribution, Shapiro-Wilk test was used. The variance was tested with Levene or F tests and/or Bartlett.

Preliminary research conclusions

The methodological operational approach of preliminary research aimed at selecting and validating tests that have been applied in the research and also presenting the development of future research conditions themselves.

The validation of assumptions was made by the statistical analysis and after evaluating the obtained results we can establish the following conclusions:

- after processing initial and final data by descriptive analysis, it's shown that the arithmetic mean for body mass index, standing long jump and mobility, all for the experimental group, registers a progress compared to the control group;
- comparing initial testing with the final one, when referring to the homogeneity of the statistically analyzed samples by the standard deviation, we note that the degree of data dispersion compared to the average decreased, resulting in greater uniformity in the experimental group;

- significance thresholds obtained by the experimental group in the t-student test for paired samples with $p < 0.05$ for body mass index analysis, with $p < 0.001$ for expansion and mobility, resulting in a reject of the null hypothesis and a support in the likelihood that the data obtained from the implementation of body esthetics program of aerobics be accepted;
- the resulting statistical significance, at a confidence level of 95% and 99%, indicates the confidence in the results obtained;
- results obtained for statistical analysis of Pearson correlation coefficient, between the values of the indicators studied in the two groups, indicate an opposite correlation linkage between body mass index, standing long jump and mobility, so that we can conclude that when values for standing long jump and values for mobility improves, body mass index decreases;
- best ascending statistical correlation is found between body weight and the body mass index, obtained by experimental group in final testing with $r=0.8861$, which indicates a causal relationship between the independent variable and the dependent one;
- the intensity of linear relationship between two variables is a very good one, resulting from the calculation of size effect, with a value of $r^2 = 0.785$, which is a very big value, meaning the 78.5% of the variation in body mass index can be explained by the linear relationship with body weight;
- all these specific results obtained in the operational approach, enables us to conclude that the advanced hypothesis in preliminary research are validated, which enables us to continue the research.

**PART III - PERSONAL CONTRIBUTIONS ON FITNESS AND SELF-ESTEEM
OPTIMIZATION, BY IMPLEMENTING BODY ESTHETICS PROGRAMS SPECIFIC
TO AEROBIC GYMNASTICS, STEP AND ZUMBA**

The research design

Premises

- It is well known that exercise is the primary means of physical education and sport.
- The physical condition of the body is the ability to execute a satisfactory muscular work, in accordance with the requirements of the external environment.
- It is known that exercise is the key to improving overall physical condition, which is responsible for executing daily requests.
- Exercise helps people feel better about themselves and this contributes to mental well-being and quality of life.

The purpose of the research itself

The goal of research aimed at improving physical condition and self-esteem, by applying body esthetics programs of aerobics, step and zumba, to the subjects included in the research.

Research Hypotheses

1. Supposing that we use exercise as body esthetics programs of aerobics, fitness will improve, indices obtained in this case are higher than the indices obtained for classical lesson of physical education and sport.
2. Supposing that we use exercise as body esthetics programs of step aerobics, fitness improves, indices obtained in this case are higher than the indices obtained for classical lesson of physical education and sport.
3. Supposing that we use body esthetics programs exercises of Zumba, fitness improves, indices obtained in this case are higher than the indices obtained for classical lesson of physical education and sport.
4. Supposing that we use exercise of aerobics, step aerobics and Zumba, it improves the self-esteem on subjects participating in research, indices obtained in this case are higher than the indices obtained for classical lesson of physical education and sport.

Objectives of the research

In order to achieve the purpose and confirmation of hypotheses, we will set the following objectives:

- Documentation;
- Carry out a preliminary stage;
- Recording data on initial and final tests;
- Determination of constituents in order to improve the physical condition and self-esteem;
- Developing action plans;
- Research methodological approach;
- Recording and monitoring results;
- Statistical processing of data;
- Analysis and interpretation of results;
- Drawing conclusions.

Subjects included in this research

The research was conducted using subjects drawn from Baia Mare North University. All participants were guaranteed confidentiality of the results obtained in samples and tests applied. Each subject signed an affidavit that has consented to be anthropometric and physiological measured and to answer all the questions in the self-esteem and self-confidence questionnaire.

The selection method of the female students, in order to participate in the experiment, was random. Subjects included in this research were 120 students of Baia Mare Faculty of Letters, divided into 4 groups of 30 students from first-year, aged between 19 and 21 years.

I, II and III group represent experimental groups, while the IV group represents the control group.

In group I the lesson focused on body esthetics programs of aerobics, especially designed for this study.

In group II body esthetics programs from step aerobics were applied.

In group III body esthetics programs from "Zumba" were applied.

In developing the exercise complex different parameters were taken into account as follows: in aerobic gymnastics the emphasis was placed on the amount of effort, for the step program the followed parameter was the intensity of effort and for Zumba class the focus has been on the complexity of effort.

In Group IV, a classic lesson was held, with content according to the academic curriculum for physical education lessons.

Experimental groups practiced body esthetics programs proposed, twice a week, for 50 minutes, during 2012-2013, also the control group recorded twice a week, for 50 minutes.

Measurements, tests and surveys used in research

We measure and assess the following indicators:

a) for the form and body structure:

- Anthropometric parameters: - Height (H);
- Body mass (B.M.)
- Thoracic perimeter (T.P.)

Height (H) - is measured in centimeters, sitting under the stature meter, chin to the chest, so the external angle of the eye is horizontal;

Body mass (BM) is measured in kilograms, using a medical scale.

Using the two parameters we calculate body mass index, which is the ratio between the body mass and squared height, using the following formula:

$$\mathbf{BMI} = \frac{\mathbf{Body\ Mass}}{\mathbf{Height}^2}$$

Thoracic perimeter (TP) - is measured in centimeters using metric tape placed at supramammary level;

- Thoracic perimeter was measured at rest, for inhale and exhale; parameters to calculate the thoracic elasticity and Erisman index in the formulas:

$$\mathbf{Thoracic\ Elasticity} = \mathbf{TP\ inhale} - \mathbf{TP\ exhale}$$

$$\mathbf{Erisman\ Index} = \frac{\mathbf{TP\ rest}}{\mathbf{Height}^2}$$

Erisman development chest index studies the harmony between the growth in thickness and body length increasement. Normal values are registered for adults that don't practice any type of sports, 6 cm for men and 4 cm for women.

b) For systems functionality we'll measure and record:

- Physiological parameters: - Blood pressure (B. P.);
- Heart rate (H.R.);
- Vital capacity (V.C.).

$$\mathbf{Ruffier\ Index} = \frac{\mathbf{(p1 + p2 + p3) - 200}}{\mathbf{10}}$$

Vital capacity (VC) - is measured in cubic centimeters, using the spirometer, the obtained values being used to calculate the Demeny Index (DI), using the formula:

$$\text{Demeny Index} = \frac{\text{Vital Capacity}}{\text{Body Mass}}$$

c) For physical condition we measure and record:

- Motric Parameters: - endurance: Cooper test;
- Expansion - standing long jump (SLJ);
- coxo-femoral joint mobility.

d) Psychological tests: 1) self-esteem Scale (Rosenberg 1965)

2) Confidence - used test is the test of Albert Bandula "Who am I?"

The development of body esthetics programs of aerobics, step and zumba

By body esthetics programs of aerobics exercises we understand those exercise complexes created to educate and train the body through specific gymnastic exercises, in order to get effects in a chosen form, in our case, improving fitness.

Action systems in aerobics practiced by research subjects were structured so as to integrate aerobics in the lesson structure. Thus, lesson's duration is of 50 minutes. The sequence of exercises considered the research purposes and also the objectives that we set in order to verify the research hypotheses.

Conducting research

Establishing the relationship between anthropometric parameters

This technique is based on anthropometric measurement and setting various parameters through statistical analysis of their relationship.

Analysis and interpretation of results

Data recorded at initial testing (T_1) and final one (T_2), for all four groups, was summarized in Tables No 39, 40, 41, 42, tables that you can find in Annex 2.

Table no. 9 indicates the results obtained from statistical analysis in terms of arithmetic mean, median, standard deviation (SD), minimum (min.), maximum (max.) and statistical significance of body mass index.

Table no. 9 - Comparative analysis of body mass index values in the four groups

Indicator	Group	Moment	Mean	SE	Median	SD	Min.	Max.	Statistical significance (p)		
									Unpaired samples		Paired samples (T ₁ - T ₂)
									T ₁	T ₂	
Body Mass Index	I	T ₁	21,04	0,4186	20,82	2,2926	16,56	25,65	I-II: 0,4382	I-II: 0,421	I: 3,79 x 10 ⁻¹⁰
		T ₂	19,69	0,2983	19,51	1,6341	16,56	23,44	I-III: 0,5512	I-III: 0,4774	
	II	T ₁	20,7	0,4132	20,05	2,2632	18,14	26,22	I-IV: 0,9211	I-IV: 0,0431	II: < 0,0001
		T ₂	19,49	0,3311	19,01	1,8133	17,31	24,56	II-III: 0,8516	II-III: 0,8978	
	III	T ₁	20,67	0,4365	20,99	2,3906	17,22	26,17	II-IV: 0,4082	II-IV: 0,0087	III: 1,14 x 10 ⁻⁷
		T ₂	19,39	0,2969	19,23	1,6261	16,33	22,68	III-IV: 0,4784	III-IV: 0,0072	
	IV	T ₁	20,94	0,3482	20,45	1,9069	18,5	25,08			IV: 0,0001
		T ₂	20,57	0,3002	20,14	1,6443	18,17	24,3		-	

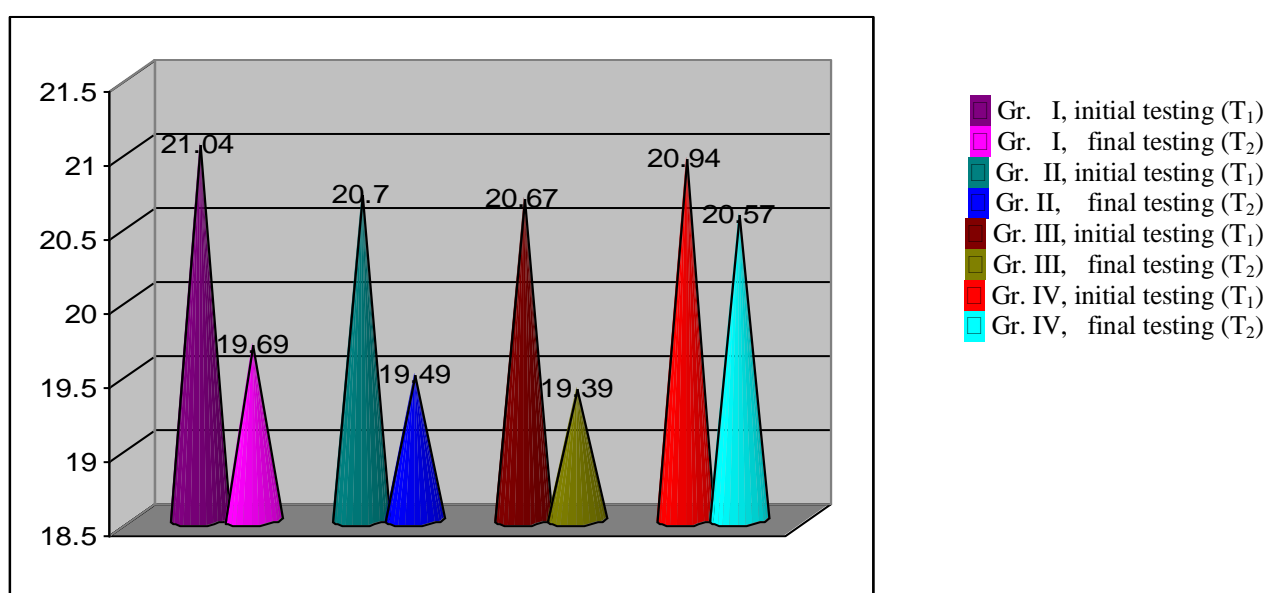


Figure no. 6 Body Mass Index in the studied groups

From Table 9 and Figure no. 6 we can track the comparative analysis of body mass index values (BMI), between T₁ initial testing and T₂ final testing, the arithmetic mean statistical indicator, as follows: gr. I from 21.04 kg/m² to 19.69 kg/m² (1.35 kg/m² improvement); gr. II from 20.7 kg/m² to 19.49 kg/m² (1.21 kg/m² improvement); gr. III from 20.67 kg/m² to 19.39 kg/m² (1.28 kg/m² improvement); gr. IV from 20.94 kg/m² to 20.57 kg/m² (0.31 kg/m² improvement).

Analyzing the values of standard deviation we can notice an improvement in data homogeneity compared to initial testing. In the experimental groups, the dispersion of data around the mean is lower than that of the control group.

For the statistical analysis of body mass index values, for paired samples (tests T₁-T₂), statistically significant intense differences were observed for all four groups (p < 0.001).

For the statistical analysis of body mass index values, for unpaired samples, in the final testing T₂, very statistically significant differences were observed between groups II-IV and III-IV (p <0.001) and statistically significant differences between groups I-IV (p <0.05).

The obtained BMI values fall within a normal weight according to the model given in the literature (18.5 to 24.9 kg/m² normal weight).

Table no. 12 Comparative analysis for Erisman Index values in the four groups

Indicator	Group	Moment	Mean	SE	Median	SD	Min.	Max.	Statistical significance (p)		
									Unpaired samples		Paired samples (T ₁ - T ₂)
									T ₁	T ₂	
Erisman Index	I	T ₁	2,08	0,3933	1,5	2,1539	-1	8,5	I-II: 0,0117	I-II: 0,4195	I: < 0,0001
		T ₂	4,62	0,3067	4,25	1,6799	2,5	10	I-III: 0,1565	I-III: 0,9091	
	II	T ₁	3,75	0,5190	4,5	2,8429	-2,5	8,5	I-IV: 0,2562	I-IV: < 0,0001	II: 3,48 x 10⁻⁸
		T ₂	4,97	0,4630	5,25	2,5357	-0,5	10	II-III: 0,3488	II-III: 0,6558	
	III	T ₁	3,07	0,5039	3	2,7597	-2	7,5	II-IV: 0,001	II-IV: < 0,0001	III: 3,33 x 10⁻¹¹
		T ₂	4,65	0,5340	4,25	2,9248	-1,5	9,5	III-IV: 0,0127	III-IV: 0,0016	
	IV	T ₁	1,18	0,5309	1	2,908	-5	8			IV: < 0,0001
		T ₂	2,02	0,5222	1,75	2,8602	-4	9	-		

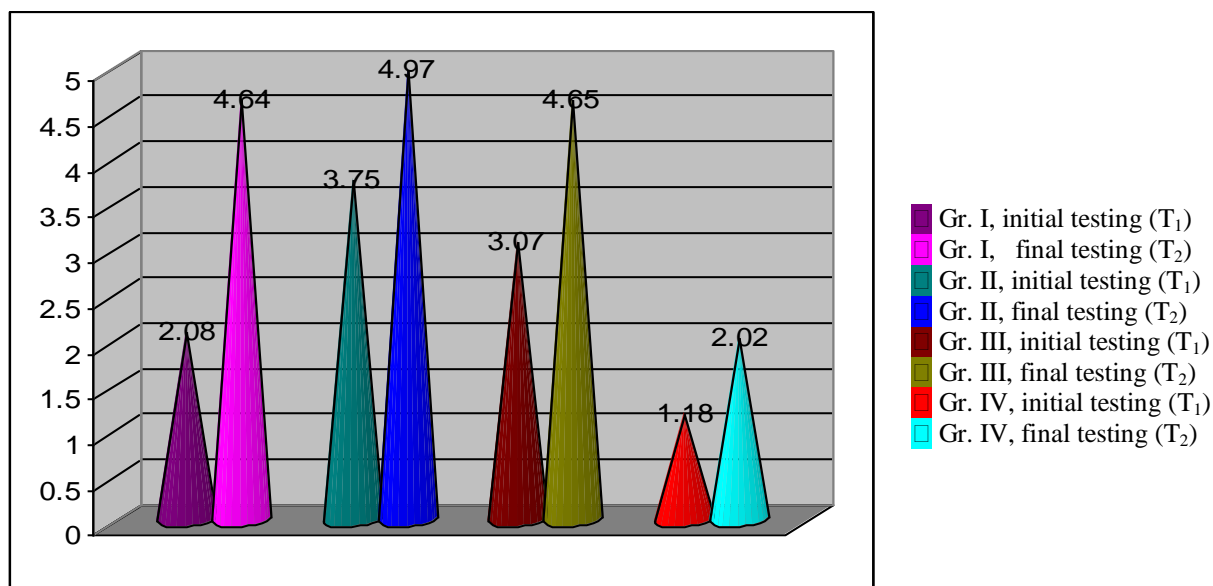


Figure no. 9 Erisman Index for the studied groups

For the final testing, the Erisman index (chart no. 9) has the values of the arithmetic mean, at the experimental groups, higher by 2.54 cm in first group, with 1.22 cm in gr. II, with 1.58 cm in gr. III and 0.74 cm in gr. IV, versus the initial testing.

Standard deviation records, at final testing of groups I, II and III, an assessment of data homogeneity in experimental samples, compared to control sample.

For the statistical analysis of Erisman index values, in paired samples (T_1 - T_2 moment), statistically significant intense differences were observed for all four groups ($p < 0.001$).

For the statistical analysis of Erisman index values, in unpaired samples, there were observed at the T_2 time, statistically significant intense differences between groups I-IV and II-IV ($p < 0.001$) and statistically highly significant differences between groups III-IV ($p < 0, 01$)

EI (Erisman Index) values obtained from experimental groups had a positive development, ascending from a value of less than 4 cm (average development) to values greater than 4 cm, thus falling within the margins of a good ribcage development, corresponding to the model given by literature, for adults who don't practice any type of sports (4 cm for women). The control group was still in medium development of the ribcage.

Anthropometric research findings

In our approach, we intended to highlight the contributions of body esthetics programs used as independent variables and on the optimization of anthropometric parameters.

Following the values obtained by statistical processing we can establish the following conclusions:

- The arithmetic mean after adjusting, in body mass index, in thoracic perimeter, thoracic elasticity and Erisman index, increases for all groups, but the progress registered in experimental groups I, II and III is higher than the one in control group;
- After final testing, by calculating the standard deviation we obtained values indicating a lower data dispersion, against the average of all studied anthropometric parameters, leading to an improved homogeneity of the experimental samples, greater than the control sample;
- At all the parameters taken into account, after the application of independent variables, the arithmetic mean improves, standard deviation and standard error of the mean decrease;
- Comparative analysis between the values obtained at initial and final testing shows significant difference between trials and groups;
- Statistical analysis performed with t-Student test on body mass index, for paired samples (T_1 and T_2 tests), shows statistically significant intense differences, best result being recorded in groups II and IV ($p < 0.001$);

- Statistical significance, in paired samples, for Erisman index, indicates statistically significant intense differences for all four groups ($p < 0.001$).
- T-Student test applied to the experimental groups I, II and III, in paired samples (T_1 - T_2 tests), to thoracic elasticity, produced statistically significant intense differences ($p < 0.001$) and in the control group only statistically significant differences ($p < 0.05$).
- significance thresholds, obtained by experimental groups, of $p < 0.05$ and $p < 0.001$ reject the null hypothesis and argue the alternative hypothesis, according to which the data obtained from the implementation of body esthetics program of aerobics, Zumba and step, probably improve physical condition;
- Results obtained in the statistical analysis of Pearson correlation coefficient between the values of anthropometric indicators, studied in four groups, indicate opposite and the same sense correlation links also weak and strong correlations;
- Best statistical ascending correlation resulted between thoracic perimeter in expiration and thoracic perimeter at rest, for the experimental II group on final testing $r = 0.9444$, which indicates a causal relationship between the independent variable and the dependent variable;
- The intensity of linear relationship between the two variables is very good, resulting from the calculation of effect's size, which has a value of $r^2 = 0.891$, which is a very large effect, meaning 89.1% of the variation of expiratory thoracic perimeter can be explained by the linear relationship with thoracic perimeter at rest;
- The value and safety of data, obtained by statistical processing, allow us to say that body esthetics programs of aerobics, Zumba and step, introduced as independent variable in the experiment, helped to improve anthropometric parameters of experimental groups, more than the control group, which confirms the research.

Establishing the relationship between physiological parameters

Analysis and interpretation of results

The physiological parameters data recorded at initial testing (T_1) and final one (T_2), for all four groups, were summarized in Tables number 35, 36, 37, 38, tables found in Annex 2.

Table 14 indicates the results of the statistical analysis in terms of the arithmetic mean, median, standard deviation (SD), minimum (min.) and maximum (max.) and also the statistical significance of physiological parameters.

Table no.14 Comparative analysis for Ruffier Index values in all the four groups

Index	Gr.	Mom.	Mean	SE	Median	SD	Min.	Max.	Statistical significance (p)		
									Unpaired samples		Paired samples (T ₁ – T ₂)
									T ₁	T ₂	
Ruffier Index	I	T1	14,66	0,5475	15,4	2,9987	7,6	19,4	I-II: 0,8825	I-II: 0,9609	3,52 x 10 ⁻¹⁴
		T2	12,61	0,4412	13,4	2,4164	7	16,6	I-III: 0,6256	I-III: 0,2035	
	II	T1	14,56	0,4298	14,6	2,3540	9,6	20,2	I-IV: 0,0006	I-IV: 3,8 x 10⁻⁹	3,72 x 10 ⁻¹²
		T2	12,59	0,3143	12,55	1,7216	9,3	16,2	II-III: 0,4729	II-III: 0,111	
	III	T1	15,01	0,4573	15,15	2,5046	9,6	19,5	II-IV: 1,92 x 10⁻⁵	II-IV: 8,67 x 10⁻¹³	1,97 x 10 ⁻⁸
		T2	13,32	0,3264	13,3	1,7878	9,4	16,5	III-IV: 0,0007	III-IV: 1,72 x 10⁻⁹	
	IV	T1	16,89	0,2321	17,2	1,2711	14,1	19,3	-		7,55 x 10 ⁻⁶
		T2	16,28	0,2467	16,5	1,3515	13,6	18,9			

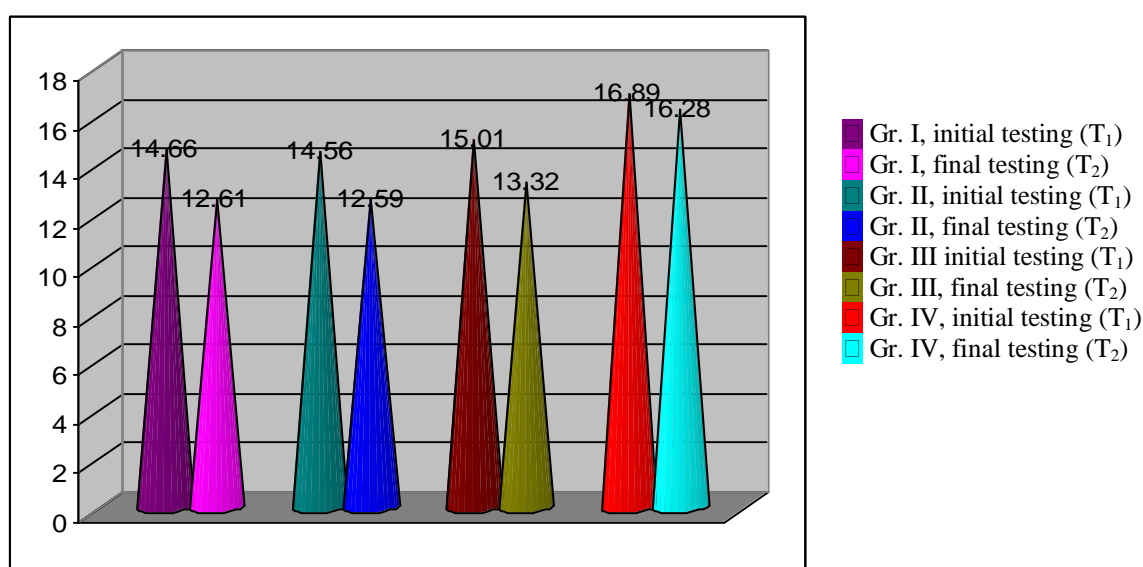


Figure no. 18 Ruffier index in the studied groups

From Table 14 and on the basis of the graphical representation No. 18 we can follow the comparative analysis of Ruffier Index values (IR), between initial testing T₁ and final testing T₂ of statistical indicator arithmetic mean, as follows: gr. I - from 14.66 to 12.61 (2.05 smaller); gr. II - from 14.56 to 12.59 (1.97 smaller); gr. III - from 15.01 to 13, 32 (1.69 smaller); gr. IV - from 16.89 to 16.28 (0.61 smaller). We notice an improvement for Ruffier Index in all groups. While the experimental groups pass in the upper part of the adaptive threshold with modest effort, the control group was maintained in the step of adjusting low exercise capacity.

Standard deviation values of the experimental groups showed greater progress, in favor of homogeneity, compared to the control group.

Table No.18 Comparative analysis of Demeny Index values to all four groups

Index	Gr.	Mom.	Mean	SE	Median	SD	Min.	Max.	Statistical significance (p)		
									Unpaired samples		Paired samples (T ₁ - T ₂)
									T ₁	T ₂	
Demeny Index	I	T1	49,93	0,4601	50	2,52	45,66	54,9	I-II: 0,902	I-II: 0,896	2,45 x 10 ⁻¹²
		T2	54,58	0,4165	54,68	2,2811	49,8	58,24	I-III: 0,7551	I-III: 0,5833	
	II	T1	50	0,3986	50,19	2,383	46,29	54,67	I-IV: 0,6021	I-IV: 5,59 x 10 ⁻⁷	6,35 x 10 ⁻¹³
		T2	54,66	0,4211	54,84	2,1065	50,68	59,3	II-III: 0,6512	II-III: 0,4984	
	III	T1	49,72	0,4808	49,37	2,6334	44,63	54,44	II-IV: 0,4874	II-IV: 3,84 x 10 ⁻⁷	2,00 x 10 ⁻¹²
		T2	54,26	0,4068	54,15	2,328	50,77	59,11	III-IV: 0,8592	III-IV: 3,36 x 10 ⁻⁶	
	IV	T1	49,61	0,4017	49,81	2,2999	45,08	53,54	-		1,00 x 10 ⁻⁸
		T2	51,26	0,4188	51,04	2,1937	46,67	57,08			

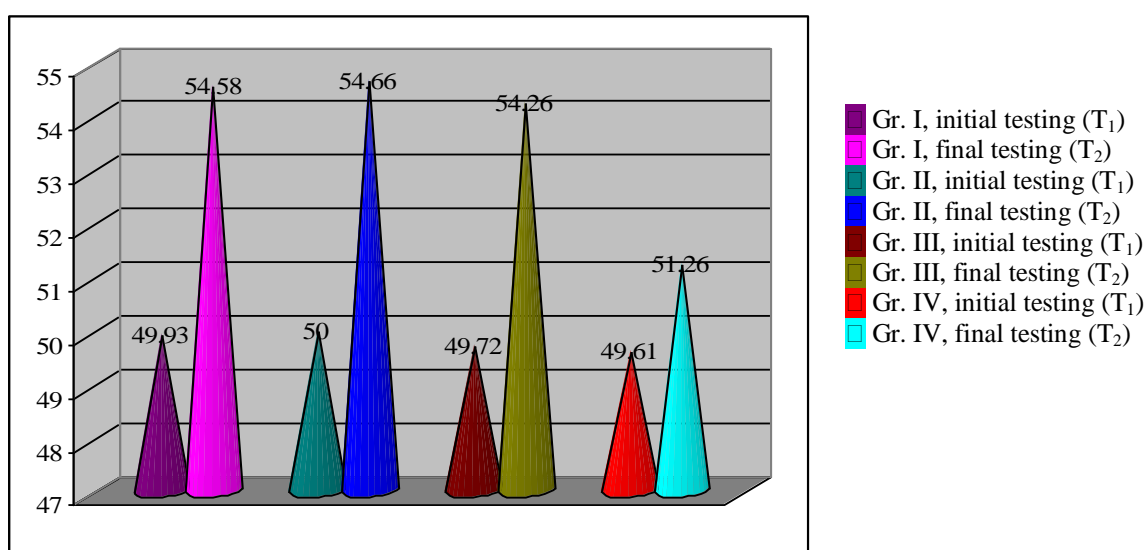


Figure no. 22 Demeny Index for the studied groups

The comparative analysis of Demeny Index values (ID), between initial testing T₁ and final testing T₂ for the statistical indicator arithmetic mean, indicates the evolution of values as follows: gr. I - from 49.93 cm³/kg to 54.58 cm³/kg (increases 4.65 cm³/kg); gr. II - from 50 cm³/kg to 54.66 cm³/kg (increases 4.66 cm³/kg); gr. III - from 49.72 cm³/kg to 54.26 cm³/kg (increases 4.54 cm³/kg); gr. IV - from 49.61 cm³/kg to 51.26 cm³/kg (increases 1.65 cm³/kg).

Standard deviation values indicate a lower data dispersion compared to the average with ±0.22 in gr. I, ±0.28 in gr. II, ±0.30 in gr. III and ±0.10 to gr. IV.

All groups have obtained intensely significant statistical differences at t-Student test, with a threshold of p < 0.001, calculated for paired samples.

Demeny Index values in the experimental groups, based on the theoretical model, lies very close to the normal range (55 cm³/kg), compared with the control group that remained almost the same.

Physiological research findings

The study of physiological parameters intended to highlight the contributions of exercise, used as independent variables, to the optimization of studied indices.

Following the obtained values by statistical processing we can establish the following conclusions:

- statistical processing of initial data (T_1 test) and final one (T_2 test) with help from the statistical indicators: mean, median, minimum, maximum and standard deviation, shows that the overall progress on the experimental groups I, II and III is higher than the control group in terms of physiological parameters;
- central tendency for values obtained in the final testing, by calculating the arithmetic mean for all three experimental groups, indicates an improvement to the central tendency of the values obtained from initial testing, but also to the control group;
- The values for Ruffier Index, Demeny index, systolic and diastolic, vital capacity, obtained by statistical processing, in terms of standard deviation, indicates improved homogeneity in experimental samples, at the time of final testing compared to initial ones, but also to the control group;
- For the comparative analysis of experimental data obtained by t-Student test, for Ruffier Index values in paired sample (T_1 - T_2 tests), intensely significant statistical differences were observed for all four groups ($p < 0.001$);
- For the statistical analysis of diastolic blood pressure values, for paired samples (T_1 - T_2 tests), intensely significant statistical differences were observed in groups II and IV ($p < 0.001$) and highly significant statistical differences for group I ($p < 0.01$).
- values obtained from statistical analysis of significance, for Demeny Index at t-Student test, indicate that all groups achieved intense statistically significant differences at a threshold of $p < 0.001$, calculated for paired samples;
- results in statistical significance test allow us to conclude that the probability of obtaining statistically significant differences between the three experimental groups and the control group cannot be attributed to chance, but the means used in the experiment;
- correlation statistical analysis performed to the studied physiological indicators in final testing T_2 indicates correlation links between indicators, with values of Pearson correlation coefficient, from weak correlation to very good ones;
- the best correlation between the resulting physiological parameters is the one resulted between the continuous quantitative variables normally distributed, systolic and diastolic blood pressure at a correlation coefficient $r = 0.9601$, effect size is $r^2 = 0.921$, expressing an

intensity of the relationship between parameters of 92.1%, resulting in a very powerful effect and a good correlation and in the same sense;

- Body esthetics programs of aerobics, Zumba and step, introduced as an independent variables in the experiment, have improved physical parameters of the experimental groups more than to the control group, conclusion resulted from the results values obtained by statistical processing.

Establishing the relationship between motric parameters

Analysis and interpretation of results

Table. 20 indicates the results of the statistical analysis in terms of the arithmetic mean, median, standard deviation (SD), minimum (min.) and maximum (max.) but also the statistical significance of the motric parameters.

Table no. 20 Comparative analysis for standing long jump values to all four groups

Index	Group	Moment	Mean	SE	Median	SD	Min.	Max.	Statistical significance (p)		
									Unpaired samples		Paired samples (T ₁ - T ₂)
									T ₁	T ₂	
Standing long jump	I	T1	165,63	2,4114	167,5	13,2078	132	195	I-II: 0,6192	I-II: 0,0496	< 0,0001
		T2	171,37	2,0100	172	11,0093	148	197	I-III: 0,1485	I-III: 0,1588	
	II	T1	167,30	1,6457	167	9,0140	151	193	I-IV: 0,1037	I-IV: 0,9382	1,25 x 10 ⁻¹⁷
		T2	176,37	1,4665	177	8,0322	160	195	II-III: 0,3723	II-III: 0,494	
	III	T1	169,33	1,5509	169,5	8,4948	145	185	II-IV: 0,2514	II-IV: 0,004	3,69 x 10 ⁻⁹
		T2	174,93	1,4785	174,5	8,0982	152	195	III-IV: 0,914	III-IV: 0,0343	
	IV	T1	169,53	0,9962	170	5,4566	160	182			< 0,0001
		T2	171,03	0,9595	170,5	5,2554	160	180	-		

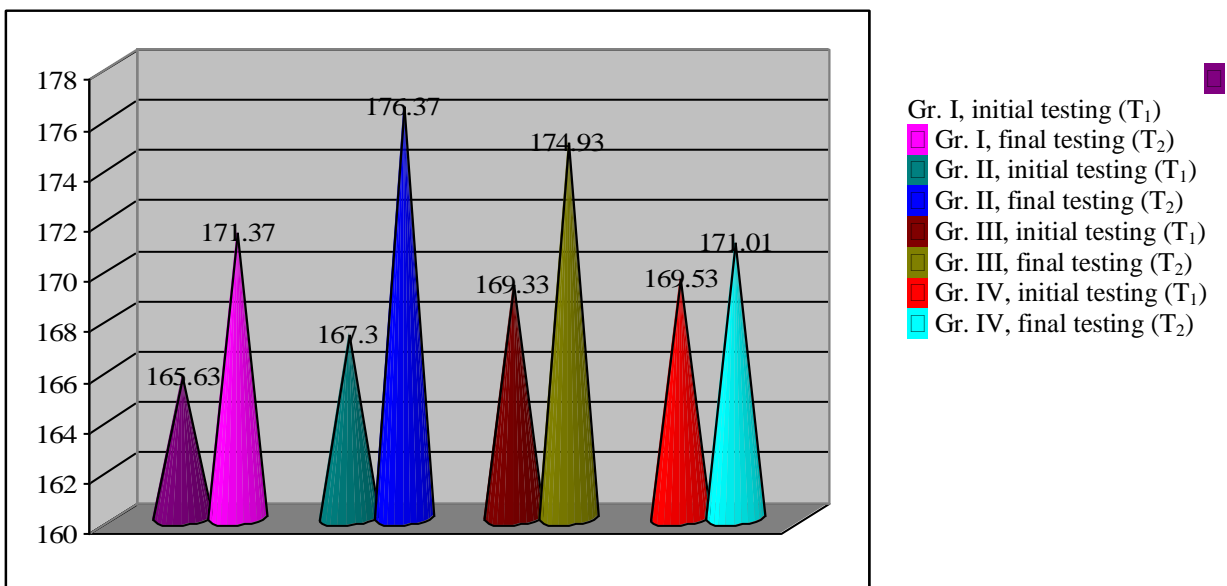


Figure no. 28 Standing long jump from to studied groups

From Table 20 and on the basis of the graphical representation No. 28 we can follow the comparative analysis of the standing long jump values (SLL), between initial testing (T₁) and final one (T₂), of statistical indicator arithmetic mean, as follows: gr. I - from 165.63 cm to 171.37 cm (5.74 cm increase); gr. II - from 167.3 cm to 176.37 cm (9.07 cm increase); gr. III - from 169.33 cm to 174.93 cm (5.6 cm increase); gr. IV - from 169.53 cm to 171.03 cm (1.5 cm increase).

Standard deviation drops to gr. I from ±13.2 to ±11.00, with a standard error of the mean of ±2.01, at gr. II from ±9.01 to ±8.03 with a standard error of the mean of ±1.46, at gr. III from ±8.49 to ±8.09, with a standard error of the mean of ±1.47 and at gr. IV from ±5.45 to ±5.25, with a standard error of the mea of ±0.95.

For the statistical analysis of standing long jump values for paired samples (T₁-T₂), intensely significant statistical differences were observed for all four groups (p < 0.001).

Table no. 22 The comparative analysis of Cooper Test values for all four groups

Index	Group	Moment	Mean	SE	Median	SD	Min.	Max.	Statistical significance (p)		
									Unpaired samples		Paired samples (T ₁ - T ₂)
									T ₁	T ₂	
Cooper Test	I	T1	1782,17	26,4517	1782,5	144,8821	1575	2100	I-II: 0,2039	I-II: 0,3676	< 0,0001
		T2	2055,67	38,0349	2062,5	208,3256	1790	2805	I-III: 0,0714	I-III: 0,6306	
	II	T1	1829,83	26,0045	1857,5	142,4326	1570	2085	I-IV: 0,036	I-IV: 0,0752	1,17 x 10 ⁻¹⁹
		T2	2002,83	24,2161	2025	132,6369	1750	2225	II-III: 0,611	II-III: 0,6077	
	III	T1	1848,00	24,2006	1872,5	132,5519	1600	2110	II-IV: 0,4966	II-IV: 0,1906	3,71 x 10 ⁻²⁸
		T2	2020,33	23,7261	2042,5	129,9531	1775	2260	III-IV: 0,8114	III-IV: 0,1292	
	IV	T1	1849,83	22,3098	1877,5	122,1960	1580	2005			< 0,0001
		T2	1963,50	22,1738	1990	121,4506	1700	2125			

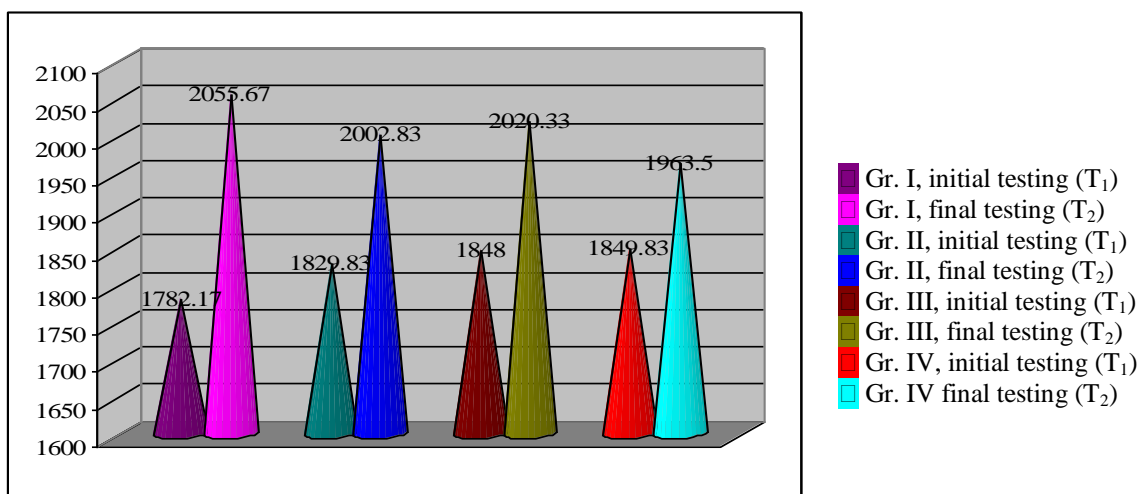


Figure no. 30 Cooper Test for studied groups

From figure no.30 we can follow the comparative analysis of Cooper test values (CT), between T_1 initial testing and T_2 final testing, of the statistical indicator arithmetic mean, as follows: gr. I from 1782.17m to 2055.67m (273.5m increases); gr. II from 1829,83m to 2002.83m (173m increase); gr. III from 1848m to 2020.33m (172.33m increases); gr. IV from 1849.83m to 1963.5m (113,67m increase).

The analysis of statistical significance for Cooper test values, to paired samples (T_1 - T_2), indicates intensely significant statistical differences for all four groups ($p < 0.001$).

The analysis of statistical significance for Cooper test values, to unpaired samples, revealed in final testing T_2 , highly significant statistical differences between groups II-IV ($p < 0.01$) and statistically significant differences between groups I-II and III-IV ($p < 0.05$).

CT values in the experimental groups had a positive trend, going from an average value indicating poor physical condition (1500m - 1799m) to corresponding values of average fitness (1800m - 2199m), based on the theoretical model, while the control group, having less of a progress, has remained in the lower part of the average level.

The motric research findings

In the study of motric parameters we intended to highlight the contributions of exercise used as independent variables, to optimizing the studied indices.

Following the values obtained by statistical processing we can establish the following conclusions:

- results obtained from processing the initial data (T_1 test) and final (T_2), through comparative analysis, of statistical indicators: mean, median, minimum, maximum and standard deviation, show that the progress of experiment groups I, II and III is higher than the control group in terms motric parameters;
- arithmetic mean values obtained in final testing for the standing long jump, mobility and Cooper test, increased in all groups, but the progress of experimental groups I, II and III is higher than the control group;
- after final testing, calculating the standard deviation resulted in values that indicate lower data dispersion, compared to the mean of the studied motric parameters, leading to an improved in experimental sample homogeneity, greater than the control sample;
- analysis of statistical significance for standing long jump values, mobility and Cooper test, for paired samples (T_1 - T_2), indicate intensely significant statistical differences for all four groups, at a significance level of $p < 0.001$;

- positive results achieved in statistical significance test allows us to conclude that the statistical differences obtained between the three experimental groups and control group, is due to used means in the experiment;
- Significant differences resulted validate the research hypothesis;
- Results obtained in the statistical analysis of the Pearson correlation coefficient, between motric indicator values, studied in all four groups, indicate correlational links, of opposite type and same sense, weak correlations, acceptable and only one good;
- the best correlation is that resulting from the experimental group III, between the standing long jump and mobility, in final testing, at a correlation coefficient $r=0.4995$, the effect size is $r^2=0.224$, fitting the medium effects scale, ie 22.4% of the variation in standing long jump can be explained by the relationship to mobility;
- statistical strength of the results, for the studied motric parameters, is given by the correlational type connections the and significant differences resulted in very high thresholds of significance, support the research hypothesis.

Analysis and interpretation of statistical results obtained from self-esteem

Applying the questionnaire: Self-esteem Scale (Rosenberg, 1965)

Data recorded at initial testing (T₁) and final test (T₂) for all four groups were summarized in Table 46 and are contained in Annex 3.

Table. 24 show the results obtained from statistical analysis in terms of arithmetic mean, median, standard deviation (SD), minimum (min.) and maximum (max.) and statistical significance of self-esteem.

Table no. 24 Comparative analysis of the values of self-esteem Scale questionnaire

Group	Moment	Mean	Se	Median	SD	Min.	Max.	Statistical significance (p)		
								Unpaired samples		Paired samples (T ₁ – T ₂)
								T ₁	T ₂	
I	T ₁	26,87	0,8048	27	4,4079	18	35	I-II: 0,0847	I-II: 0,5567	< 0,0001
	T ₂	33,47	0,6844	35	3,7484	24	39	I-III: 0,4815	I-III: 0,5032	
II	T ₁	29,03	0,8503	29	4,6571	20	39	I-IV: 0,5981	I-IV: < 0,0001	< 0,0001
	T ₂	33,33	0,5495	33	3,0096	28	39	II-III: 0,351	II-III: 0,8735	
III	T ₁	27,9	0,8715	28	4,7731	18	38	II-IV: 0,1991	II-IV: < 0,0001	< 0,0001
	T ₂	33,07	0,6176	33	3,3829	25	38	III-IV: 0,8454	III-IV: < 0,0001	
IV	T ₁	27,57	0,8033	28	4,3997	18	38			< 0,0001
	T ₂	28,7	0,7568	29	4,1452	20	39	-		

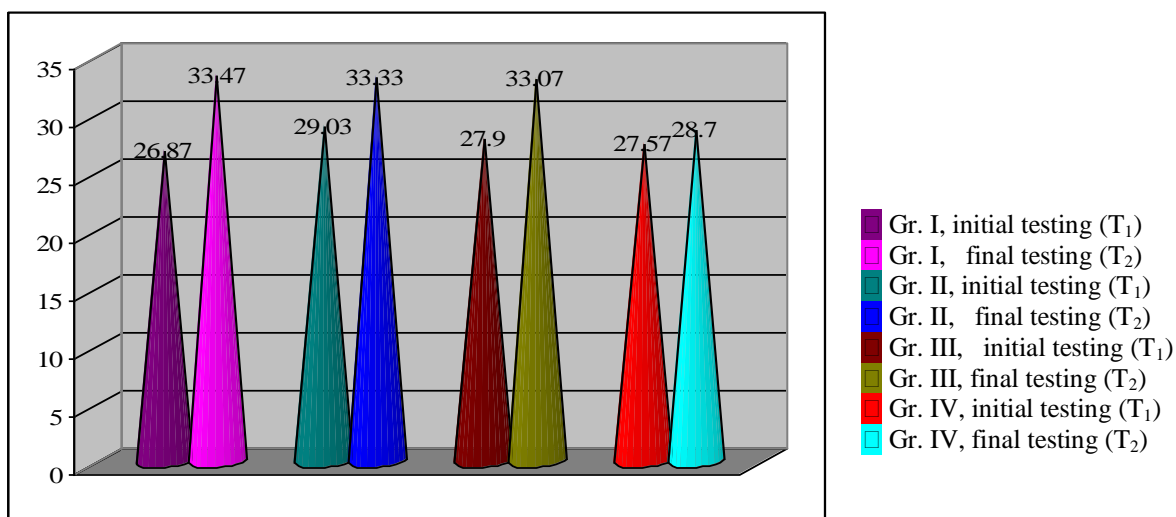


Figure no. 31 The arithmetic mean of the scores in self-esteem questionnaire

From Table 24 and on the basis of Figure No. 31 we can follow the comparative analysis of score values for self-esteem Scale questionnaire, between T₁ initial testing and T₂ final testing, as follows: in gr. I statistical indicator arithmetic mean increase 6.6 points from 26.87 points to 33.47 points, with a standard deviation of ± 0.66 points, lower compared to the initial testing and standard error of the mean \pm arrived at 0.68 ;

- in gr. II from 29.03 to 33.33 points, the arithmetic mean increases 4.3 points and standard deviation improves the homogeneity of the group from ± 4.65 points to ± 3 points and standard error of the mean reaches ± 0.54 ;

- in gr. III from 27.9 to 33.07 points, the arithmetic mean increase 5.17 points and the standard deviation improves the homogeneity of the group from ± 4.77 points to ± 3.38 points and the standard error of the mean reaches ± 0.61 ;

- in gr. IV from 27.57 to 28.7 points, the arithmetic mean increase 1.13 points and the standard deviation improves the homogeneity of the group from ± 4.39 points to ± 4.14 points and the standard error of the mean reaches ± 0.75 ;

In the statistical analysis of scores, for the questionnaire: Self-esteem Scale for paired samples (tests T₁-T₂), intensely significant statistical differences were observed for all four groups ($p < 0.001$).

In the statistical analysis of scores, for the questionnaire: Self-esteem Scale for unpaired samples, intensely statistically significant differences were observed in T₂ final testing, between groups I-IV, II-IV and III-IV ($p < 0.001$).

According to the theoretical model, self-esteem values in the experimental groups had a positive evolution reaching the intermediate limit, with values indicating the average self-esteem to values corresponding to high self-esteem. The control group had a smaller evolution.

Applying the "Who am I ?" Questionnaire

To test self - confidence - the used questionnaire is Albert Bandula's "Who am I ?"

Table. 25 indicates the results of the statistical analysis in terms of the arithmetic mean, median, standard deviation (SD), minimum (min.), maximum (max.) and the statistical significance of self confidence.

Table no. 25 Comparative analysis of questionnaire values "Who am I?"

Group	Moment	Mean	SE	Median	SD	Min.	Max.	Statistical significance (p)		
								Unpaired samples		Paired samples (T ₁ - T ₂)
								T ₁	T ₂	
I	T ₁	31,73	0,7047	32	3,4079	18	44	I-II: 0,0747	I-II: 0,5467	< 0,0001
	T ₂	50,56	0,5843	50	2,7484	28	68	I-III: 0,4315	I-III: 0,5020	
II	T ₁	30,85	0,7502	31	4,6571	20	41	I-IV: 0,5781	I-IV: < 0,0001	< 0,0001
	T ₂	48,55	0,4494	49	2,0096	27	67	II-III: 0,341	II-III: 0,8632	
III	T ₁	30,23	0,7714	30	3,7731	18	42	II-IV: 0,1891	II-IV: < 0,0001	< 0,0001
	T ₂	48,17	0,5175	48	2,3829	29	66	III-IV: 0,7453	III-IV: < 0,0001	
IV	T ₁	29,63	0,7032	29	3,3997	19	40	-		< 0,0001
	T ₂	31,93	0,6567	32	3,1452	25	41			

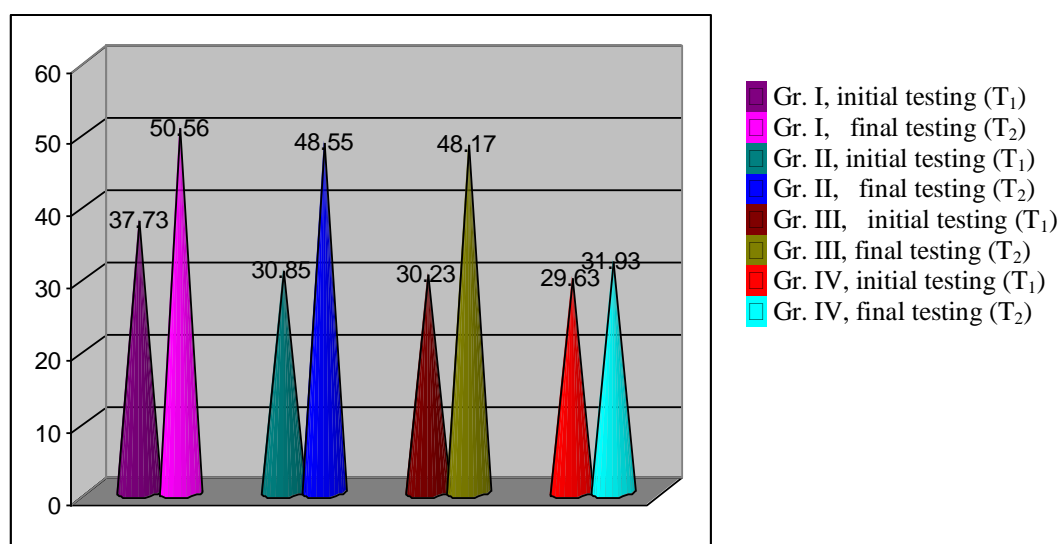


Figure no. 32 The arithmetic mean of the scores of self-confidence questionnaire

The comparative analysis of "Who am I ?" questionnaire values, between T₁ initial testing and T₂ final testing, indicates: to gr. I an increasement of 19,83 points, a lower standard deviation with ± 0.65 points compared to the initial testing and standard error of the mean arrived at ± 0.12 ;

- in gr. II from 30.85 to 48.55 points, the arithmetic mean increases 17.7 points and improves the homogeneity of the group standard deviation from ± 4.55 points to ± 2 points, the standard error of the mean reaches ± 0.31 ;

- in gr. III from 30.23 to 48,17 points, the arithmetic mean increases 17.94 points and improves the homogeneity of the group standard deviation from ± 4.77 points to ± 3.38 points, the standard error of mean reaches ± 0.61 ;

- in gr. IV from 29.63 to 31.93 points, the arithmetic mean increases 2.30 points and improves the homogeneity of the group standard deviation from ± 3.77 points to ± 2.38 points, the standard error of mean reaches ± 0.26 ;

In the statistical analysis for paired samples (T_1 - T_2 tests), intensely significant statistical differences were observed for all four groups ($p < 0.001$).

In the statistical analysis for unpaired samples, at final T_2 tests, intensely statistical significant differences were observed, in groups I-IV, II-IV and III-IV ($p < 0.001$).

Following the values from the theoretical model, for the self-confidence questionnaire, we note that the experimental groups had a positive development, from values indicating a satisfactory level of self-confidence to values consistent with good self-confidence. The control group had a lower evolution, remaining at a satisfactory level.

The self-esteem research findings

In this research, has sought to highlight the contributions of body esthetics programs, used as independent variables to optimize self-esteem and self-confidence.

Following in Table 24 and 25 values obtained by statistical processing, we can establish the following conclusions:

- results obtained from processing the initial data (T_1 test) and final (T_2 test), with compared analysis, for statistic indicators: mean, median, minimum, maximum and standard deviation, shows that the progress of experimental groups I, II and III is higher than the control group in terms of self-esteem and self-confidence;
- arithmetic mean increases between initial and final testing, standard deviation decreases, resulting in an improvement of the homogeneity of the samples and standard error of the mean decreases;
- analysis results with statistical significance for paired samples, between obtained values at initial and final testing, shows intensely significant statistical differences for all groups at a significance level of $p = 0.001$, both self-esteem and self-confidence;
- analysis of statistical significance for unpaired samples show intensely significant statistical differences, on final testing T_2 , between groups I-IV, II-IV and III-IV;
- the resulted significant difference values indicate that average scores for self-esteem of subjects in experimental groups is significantly higher than average scores for self-esteem of the subjects in the control group;

- after the interpretation of obtained data there is a 99% probability that the differences in average scores for self-esteem and self-confidence of subjects research, is not by chance but due to body esthetics programs;
- confirming the research hypotheses indicate that the study succeeded in showing the relationship between self-esteem, self-confidence and physical condition of young people, through age-specific behavior, which often requires intervention for improvement or prevention.

Comparing the efficiency of body esthetics programs

To see who is the group that has made the most progress by implementing body esthetics programs, in addition to the previous interpretation realized by statistical results as a personal contribution, we developed a hierarchy of research results obtained, by introducing a scoring scale personally designed. Table 26 centralized the results after calculating the differences of arithmetic means, between the initial and final testing but also calculating corresponding scores.

The best result of each measured and used parameter in the research receives 4 points, the second result gets 3 points, the third score gets 2 points and the final result gets 1 point.

Table no.26 Comparison table with arithmetic mean differences, between final and initial testing

Group Parameters	Difference between arithmetic means at T ₂ -T ₁ moment							
	Group I		Group II		Group II		Group IV	
	Medium difference values	Points	Medium difference values	Points	Medium difference values	Points	Medium difference values	Points
BMI	1.35	4	1.21	2	1.28	3	0.37	1
TE	4.36	4	4	3	3.87	2	0.71	1
TPr	2.7	4	1.36	2	1.7	3	0.83	1
EI	2.54	4	1.9	3	1.58	2	0.84	1
RI	2.05	4	1.97	3	1.69	2	0.61	1
AsT	1.9	4	1.27	2	0.27	3	0.16	1
AdT	3	4	0.6	2	0.73	3	0.44	1
VC	88.66	3	96	4	81	2	41.33	1
DI	4.65	3	4.66	4	4.54	2	1.65	1
SLJ	5.74	3	9.07	4	5.6	2	1.5	1
Mob	9	4	6.53	2	4.9	3	1.36	1
CT	273.5	4	173	3	172.33	2	113.67	1
SE	6.6	4	4.3	2	5.17	3	1.13	1
SC	19.8	4	17.7	2	17.9	3	2.38	1
Total		53		38		35		14

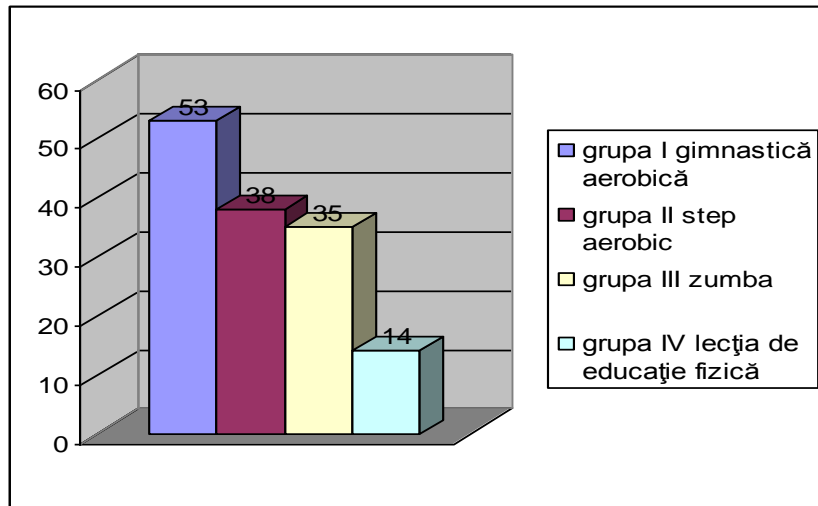


Figure no. 34 Sum of arithmetic mean differences, between the final and initial testing

Chart 34 plays the descending order among the four groups. Looking at the total points obtained, it appears that the highest score was obtained by the experimental group I with a total of 53 points, followed by the experimental group II with a total of 38 points, then the experimental group III with a total of 35 points and the last is the control group IV with a total of 14 points.

From these results we conclude that the most effective programs are those of body esthetic programs of aerobics, followed by step aerobics programs and then by Zumba programs and finally the classic lesson of physical education.

Progress is higher in the experimental groups, but it exists also in the control group, even though it is much smaller. It follows that the exercise, in any form and content, improves the anthropometric parameters, physiological and motric ones, studied in the research, representing a barometer of fitness. By improving these parameters it improves the physical condition.

General conclusions

In this study we aimed to investigate to what extent the body esthetics programs of aerobics, step and zumba, contributed to the development of female student fitness, by optimizing the anthropometric indices, the physiological and motric one. Also we would like to emphasize the importance of good physical conditions in strengthening the self-esteem.

The used programs structure was based on different instrumentation of independent variable content and the effort parameters: volume, intensity, complexity.

Measurements and tests used in the research were applied so that the thesis results brought out new evidence of the relationship between exercise and fitness.

The practical part of the thesis has analyzed in detail the interrelationship between anthropometric parameters, physiological and motric ones, measured and recorded in the research.

The fairness, security and confidence in the results were given by statistic- mathematic processing and also data analysis and interpretation of the theoretical models.

Real statistic-mathematical calculations and analysis made for each tested parameter, in order to confirm the research hypotheses, allow us to formulate the following conclusions:

- results obtained in the experimental groups, where the independent variable was the body esthetics programs of aerobics for group I, step aerobics programs for group II and zumba programs for group III, indicate greater progress in all anthropometric, physiological and motric parameters, studied in comparison with the control group;
- arithmetic mean increases between initial and final testing, standard deviation decreases, resulting in an improvement of the homogeneity of the samples and standard error of the mean decreases in experimental groups compared to the control group;
- t-student comparative statistical analysis examined differences between group means, resulting in significant differences at a significance level of $p < 0.05$, $p < 0,01$ and $p < 0.001$, values that allow us to reject the null hypothesis and accept that there is a probability at a degree of confidence of 95% or 99%, for the three independent variables (body esthetics programs of aerobics, step and zumba) to influence the dependent variable variation (physical fitness);
- the Pearson correlation coefficients obtained by statistical analysis of co-variance detected correlation between the parameters of the research;
- correlational links obtained in the research, opposite and in the same sense, weak correlations, acceptable, good and very good, indicates that the differences arising from the anthropometric, physiological and motric parameter values are associated with

differences arising on the dependent variable, in our case differences arising from physical condition;

- the best correlation obtained during the research is the one resulted between the diastolic and systolic blood pressure, in experimental group II, in the final testing, a strong positive correlation coefficient $r=0.9601$, where the effect size is $r^2= 0.921$, fitting in very large scale effects, ie 92.1% of the diastolic blood pressure variation can be explained by the relationship with systolic blood pressure;
- in terms of self-esteem, the results obtained from the analysis and statistical processing, shows higher values in self-esteem scale scores, in the experimental groups, after intervention, compared to the control group;
- there are intensively statistical significant differences at a significance level of $p<0.001$, in that self-esteem scores after the intervention were significantly higher than the original self-esteem score;
- We therefore support the research hypothesis that body esthetic programs of aerobics, zumba and step, improve self-esteem, the resulting differences between experimental and control groups being significant;

The applied model in longitudinal intervention study was useful, implementing body esthetics programs of aerobics, step and zumba helped to optimize physical fitness and self-esteem.

From a psychological point of view, we can talk about the fact that a program to develop physical fitness has a beneficial effect on subjects, making them realize a psychological accumulation in the individual perception on the ability to practice exercise, the realistic and positive self-esteem, the ability to mobilize in taking motric actions.

All these specific results of our research approach, reinforced by statistic- mathematical analysis made, lead us to conclude that body esthetic programs of aerobics, step and Zumba, optimized subjects research fitness.

RECOMMENDATIONS

Following the carried research, we think it would be necessary to apply multiple and varied forms of motor activity in university programs, including body esthetics programs of aerobics and step aerobics but also zumba programs.

Because of the motric and functional benefits obtained by aerobic gymnastics, step or zumba, we recommend guiding all female students towards practicing these activities in order to optimize fitness.

To establish a collaboration and cooperation climate in the relationship between a teacher and his students, it is desirable the application of some types of questionnaires to find out the preferences of female students on the types of motric activities that are willing or wanting to practice.

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