

THE OBSERVATION, THE HANDLING AND THE CONTROL OF THE SELECTED VARIABLES APPLIED TO THE PILOT STUDIES' SUBJECTS

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ABSTRACT. This work is the second part of the thesis, respectively of the pilot research. Preliminary research was structured in three stages, in order to check the value of the handled variables, and the recording of the subjects' responses included in research. *Objectives:* - recording the level of the studied parameters for the initial testings; -designing, selecting and applying of all resources proposed as an independent variable in the experiment; -recording the researched parameters' level for intermediate testing; -processing and explaining the data. *Methods of research:* - in the pilot research we have used the following methods: the bibliographic study of the required material, observation method, experimental method, test method, graphics, statistical method and logical method. *Results:* Following the practice of physical exercise as aerobic gymnastics, during a semester, researches' students who formed samples (experimental and control) were tested at the beginning and after three months of research. The results obtained in control samples for , standing long jump' immediately length, mobility and body mass index were statistically processed, and their analysis shows the evolution of indices obtained by the experimental group versus the control group. *Conclusions:* Analyzing the obtained results during the pilot research, we can say that they confirm the pilot researches' hypotheses. Means and methods used in the pilot study proved to be good so that we could conclude that the research can continue.

Keywords: pilot research, exercise, health, independent variable.

REZUMAT. *Observarea, manevrarea și controlul variabilelor selectate și aplicate subiecților în studiul pilot.* Lucrarea de față este partea a -II- a a tezei de doctorat, respectiv studiul pilot. Cercetarea preliminară a fost structurată în trei etape, cu scopul de a verifica valoarea variabilelor manevrate și de a înregistra răspunsurile subiecților cuprinși în studiu. *Obiective:* - înregistrarea nivelului parametrilor investigați la testarea inițială; - conceperea, selectarea și aplicarea mijloacelor propuse ca variabilă independentă în experiment; - înregistrarea

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nivelului parametrilor investigați în testările intermediare; - prelucrarea și interpretarea datelor obținute. *Metodele cercetării*: - în cercetarea pilot s-au folosit următoarele metode: studiul materialelor bibliografice necesare, metoda observației, metoda experimentală, metoda testelor, reprezentarea grafică, metoda statistică, metoda logică. *Rezultate*: În urma practicării exercițiilor fizice sub forma gimnasticii aerobice, pe perioadă de un semestru, studențele care au format eșantioanele (experiment și control) supuse cercetării, au fost testate la începutul cercetării și după trei luni. Rezultatele obținute la probele de control lungime de pe loc, mobilitate și indicele de masă corporală au fost prelucrate statistic, iar analiza lor prezintă evoluția indicilor obținuți de grupa experiment față de grupa de control. *Concluzii*: Analizând rezultatele obținute pe parcursul cercetării pilot, putem spune că ele confirmă ipotezele cercetării pilot. Mijloacele și metodele folosite în studiul pilot se dovedesc a fi bune astfel încât tragem concluzia finală că cercetarea poate continua.

Cuvinte cheie: studiul pilot, exerciții fizice, sănătate, variabila independentă.

Introduction

Health's problem was, is and always will be studied. Exercises have a fundamental role to maintain a control over it.

The main objective of physical education and sport is to improve and maintain health. The importance of this objective for the human being is clearly shown from health's definition; if you are not physically, mentally and socially healthy you don't have a comfortable balance in life. This comfort is achieved by physical activity.

Given the overwhelming importance of health for humans, we propose to show the role of exercise in improving and maintaining it.

The American doctor Richard Stuart Downie considers that health involves two components:

- 1) "physical, mental and social;
- 2) Fitness - fitness optimum with four S;
 - Strength (physical force);
 - Stamina (force, physical strength);
 - Suppleness (physical suppleness);
 - Skills (skill, physical ability)."⁴

Physical inactivity is considered the largest worldwide public health problem of the XXI century. Nowadays it is well documented that chronic diseases are based on the lack of exercise and a sedentary lifestyle. This requires some

⁴ Downie, R.S. et al (1992) - Health promotion, models and values, Oxford, Oxford Univ. Press

intervention on our part, trying to change the mindset about the importance of youth physical exercises, through argumentation and application of physical education and sports methods for the improvement of health through exercise.

Material and Methods

Preliminary research was structured in three stages, in order to check the value of the handled variables and record subjects' responses in the study.

Phase I

At this stage we studied the available literature, we fixed the objectives, the scope, the assumptions and the researches' methods, and we settled the examined sample:

The purpose of the research:

Verifying all the methods and means that we will use in order to improve health and self-esteem of the subjects in this research.

Researches' hypotheses:

- We assume that applying aerobic body styling programs for the experimental group it improves the body mass index, compared to the control group, who performed regular physical education classes;
- We assume that applying aerobic body styling programs for the experimental group, the results obtained of the motion qualities, expansion and mobility, changes compared to the control group, who performed regular physical education classes;

Research sample:

Subjects included in this research were selected at the beginning of the academic year 2012-2013, among female students in their first of the Faculty of Letters of the North University Center in Baia Mare. Following discussions with the team of students from six majors, we formed the experimental group and control group, based on their choices to participate in aerobics program (experimental group) or normal physical education (control group). The age of female students making up these samples is more than 19 years and each sample is composed of 30 students.

Phase II

This is the stage in which the initial values have been measured and recorded, the stage where it was applied the aerobics styling program and the measuring and recording of the intermediate values.

Initial testing:

In October 2012 we made the measurements and recordings of initial values for samples and tests of the pilot research:

- Standing long jump;
- Mobility from sitting (flexion of the trunk before from the seated position);
- Body mass index;

Applying aerobic body styling programs with exercises taken from aerobics gymnastics was originally developed during the first semester. Thereafter measurements were carried out and recordings of the intermediate tests.

Phase III

It is the stage that provided the statistical processing, analysis and interpretation of data and conclusions drawn from the pilot research.

The statistic processing

The centralized data was processed using SPSS system.

The calculated statistical indicators are: the Mann-Whitney test – to identify the significant differences between the two samples, arithmetic mean and standard deviation.

Results

Results from initial testing of experimental and control groups were analyzed by logical comparison with results from tests of the two intermediate groups.

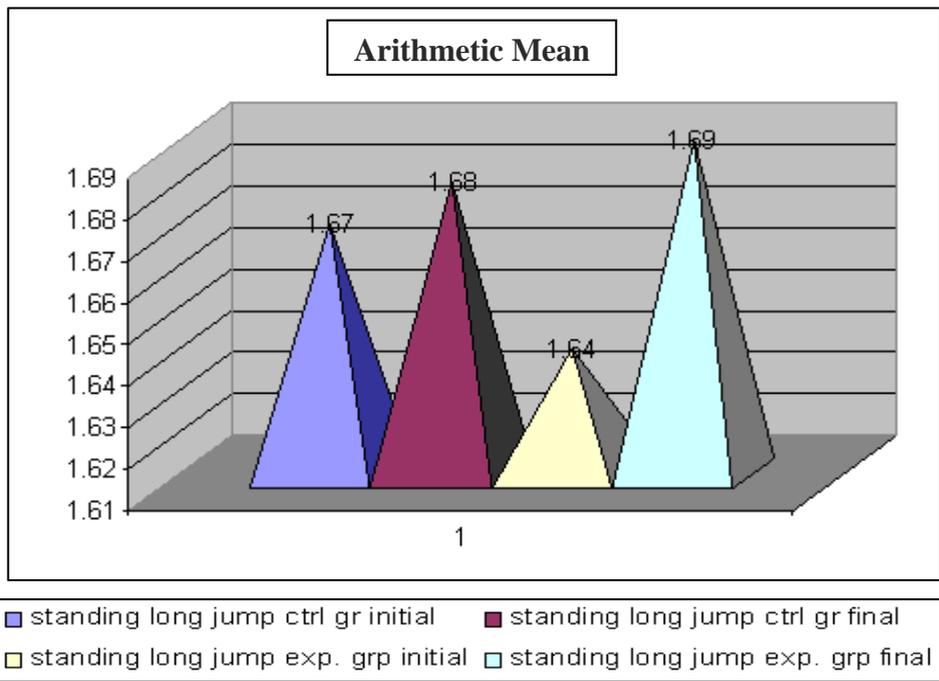
In order to compare increases for the two samples we applied the Mann-Whitney test, used to identify the significant differences between the data used in this research (data from aerobics class versus data from physical education class). By the theoretical interpretation of the U test results, for samples larger than 30 subjects, we used the two cases: $Z_e < Z_c$ - the case where the null hypothesis is accepted, and $Z_c > Z_e$ in which case both research hypotheses are accepted. Indicators calculated for the differences in the standing long jump through Mann-Whitney U test are: $Z_e=2.05$ and $Z_c=1.80$, as a result the research hypotheses are accepted. When analysing the 'mobility' test for the experiment sample $Z_e = 1.90$ while for the control group $Z_c = 1.68$. Both these case and the above, the research hypotheses are accepted. For the B.M.I. (body mass index) results are $Z_e = 2.51$ and $Z_c=2.26$ that confirmed the research hypotheses.

After being processed statistically, in terms of arithmetic mean and standard deviation, the obtained values for the 'standing long jump' are summarized in Table No.1, the ones of the 'SITTING mobility' in Table No. 2 and 'body mass index' values in Table No. 3.

Table 1.

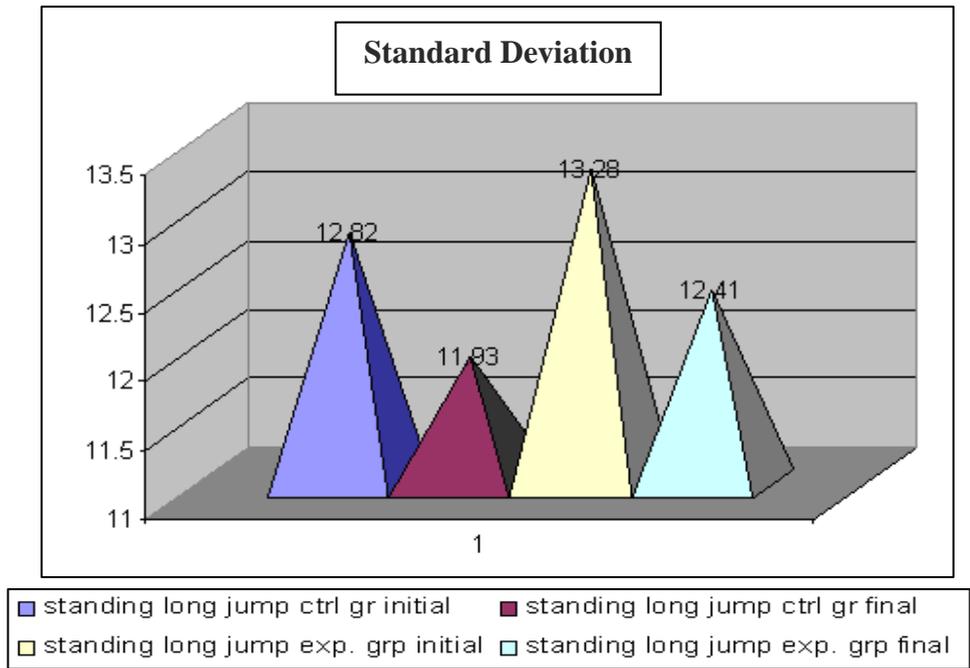
The values of arithmetic mean and standard deviation for the control sample "standing long jump"

Parameters	Control group		Experiment group	
	Long jump initial test	Long jump intermediate test	Long jump initial test	Long jump intermediate test
Arith. mean	1.67	1.68	1.64	1.69
Std. deviation	±12.82	±11.93	±13.28	±12.41



Graphic 1. Arithmetic means' values for 'standing long jump'

Table No. 1 and Chart No. 1 present the arithmetic means' evolution for the 'standing long jump', from initial testing on intermediate testing. In the control group it increased from 1.67 m to 1.68 m. In the experimental group increased from 1.64 m to 1.69 m. It appears that this parameters' arithmetic mean value of the experimental group improves at the intermediate testing compared to initial testing, with 0.05 m and 0.01 m in control group.



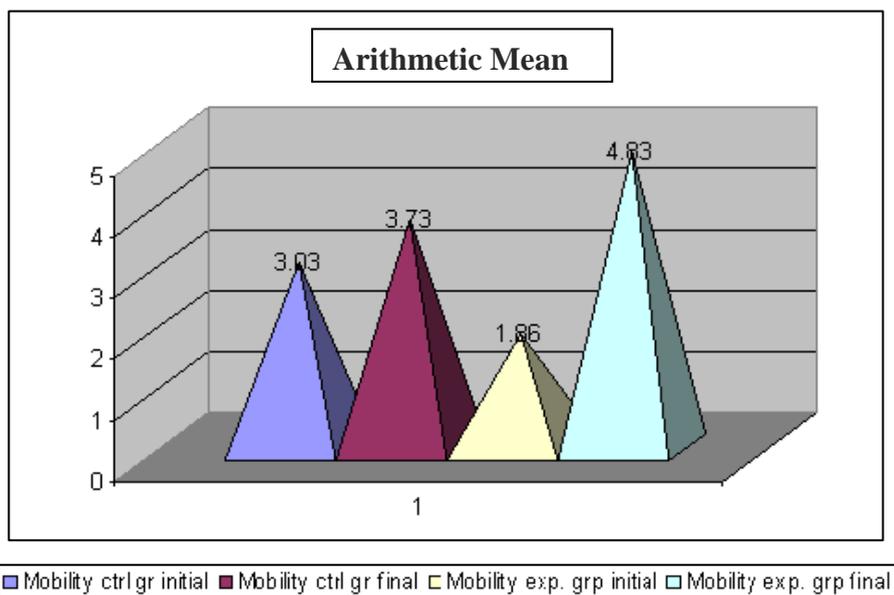
Graphic 2. standard deviations' values for 'standing long jump'

Table No. 1 and Chart No. 2 present the evolution for the standard deviation at 'the standing long jump'. In the control group it decreased from $12.82 \pm$ to ± 11.93 , from initial testing to the final one, so as to ± 0.89 points. In the experimental group it decreased from $13.28 \pm$ to ± 12.41 , meaning ± 0.87 points. Comparing, we observe an increase of homogeneity, both in the experimental group and the control group.

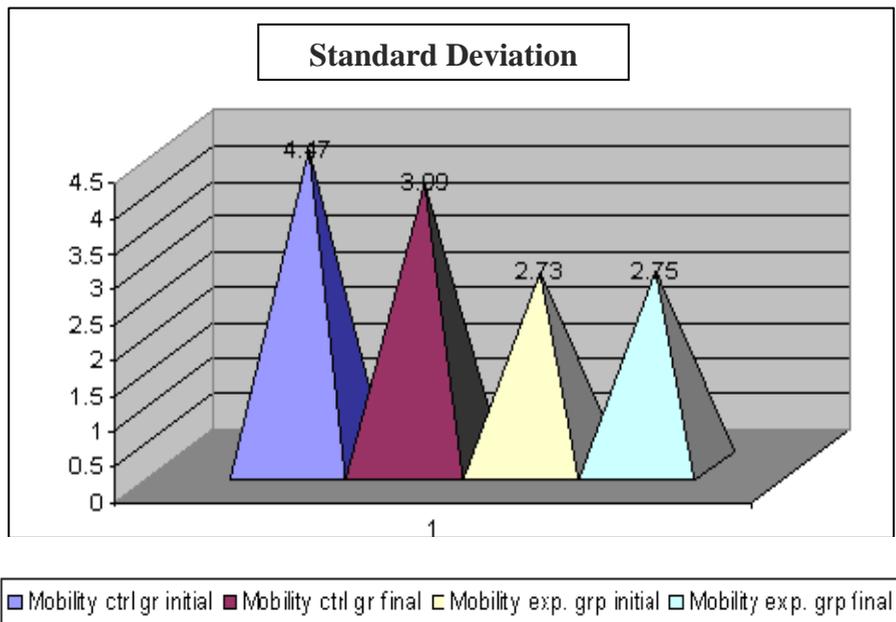
Table 2.

Values of arithmetic mean and standard deviation of the sample 'coxofemoral joint mobility'

Parameters	Control group		Experiment group	
	Mobility initial test	Mobility intermediate test	Mobility initial test	Mobility intermediate test
Arith. mean	3.03	3.73	1.86	4.83
Std. deviation	± 4.47	± 3.99	± 2.73	± 2.75



Graphic 3. Values of arithmetic mean of the sample 'coxofemoral joint mobility'



Graphic 4. Values of standard deviation of the sample 'coxofemoral joint mobility'

Table No. 2 and Chart No. 3 present the arithmetic mean for sitting mobility test. In the control group, the value increases from 3.03 to 3.73, meaning 0.7 cm. Arithmetic mean values, in the experimental group, increased from 1.86 to 4.83, meaning 2.97 cm. Comparing values between control group and experimental one, progress is visible positive in favor of the experiment group, as a result of the effectiveness of aerobic exercises.

Table No. 2 and Chart No. 4 present the standard deviation of sitting mobility test. In the control group, the value decreases from ± 4.47 to ± 3.99 , meaning ± 0.48 points, and hence an increase in the homogeneity of the group. Values in the experimental group increased from ± 2.73 to ± 2.75 , meaning ± 0.02 points, so hence an insignificant decrease in the homogeneity of the group.

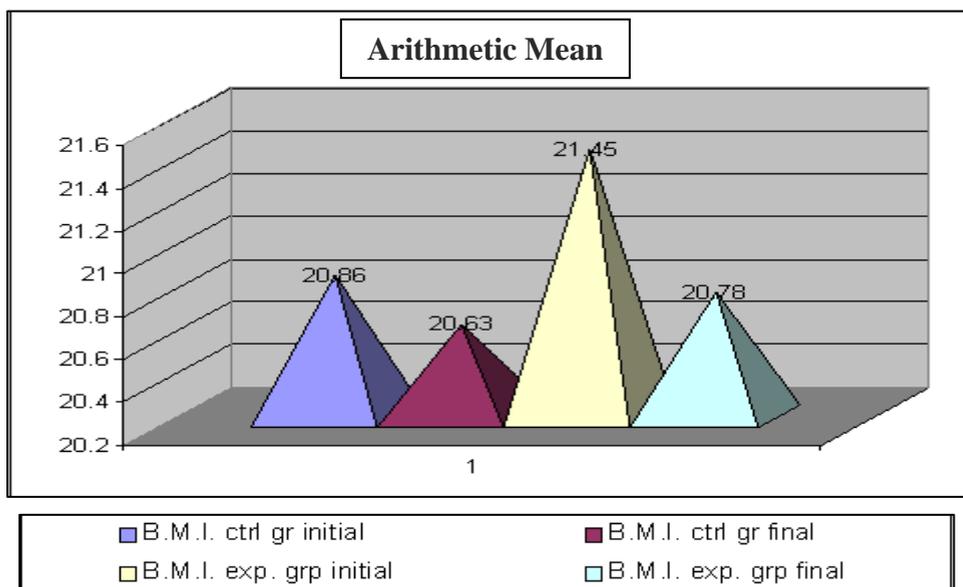
Table 3.

Values of the arithmetic mean and the standard deviation for the Body Mass Index (B.M.I.)

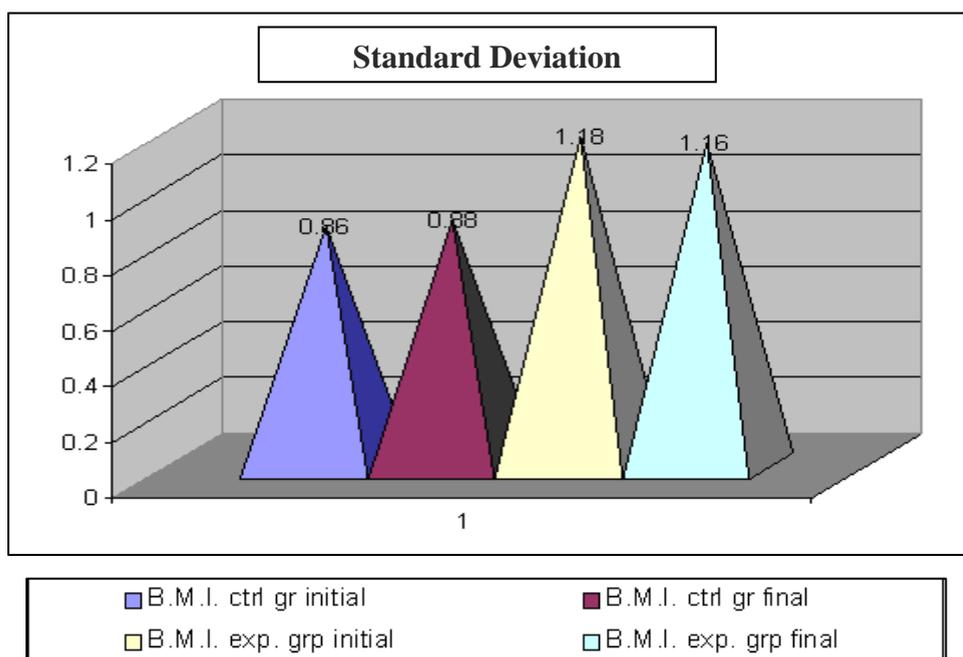
Parameters	Control group		Experiment group	
	B.M.I initial test	B.M.I intermediate test	B.M.I initial test	B.M.I intermediate test
Arith. mean	20.86	20.63	21.45	20.78
Std. deviation	± 0.86	± 0.88	± 1.18	± 1.16

Table No. 3 and Chart No. 5 present the evolution of the arithmetic mean for the B.M.I. In the experimental groups, it decreased from 21.45 to 20.78, i.e. 0.67 kg, while in the control group it decreased from 20.86 to 20.63, i.e. 0.23 kg. The result is a superior improvement for the B.M.I. in the experimental group versus the control group.

Table No. 3 and Graphic No. 6 present the evolution of the standard deviation for the B.M.I. In the experimental groups, the values decrease from ± 1.18 to ± 1.16 , i.e. ± 0.02 points. We deduce that the homogeneity of the experimental group during the analyzed period increases, as happens in the control group where the standard deviation is ± 0.86 at the beginning and ± 0.88 at after interim tests.



Graphic 5. Values of arithmetic mea for the Body Mass Index



Graphic 6. Values of standard deviation for the Body Mass Index

Conclusions

After the interpretation of the data we can conclude:

- The experimental group progressed more for the 'standing long jump' test, the 'mobility' test; as for the 'B.M.I.' there is an increase comparing to the to the control group;
- The aerobics body styling program applied to the experiment group were effective in reaching the goal;
- Students who participated in aerobics classes fared better for the B.M.I. than those who participated in regular physical education class.
- Analyzing the overall results obtained during pilot research, we can say that they confirm pilot research hypotheses.

Means and methods used in the pilot study proved to be good so that we can conclude that research can go on.

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