PSYCHOTONIC TRAINING – A MEANS TO IMPROVE COGNITIVE PROCESSES

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Abstract
The scientific intercession of the research is based on the premise that the application of psychotonic training in the physical education class represents an efficient solution to influence the entire psychosomatic system of the individual.
The research purpose consists in the construction of an overall image on the efficiency of psychotonic training in view of the improvement of the cognitive mental processes necessary for the learning process. Following the application of the general skill test on both groups (the control one and the experiment one), an average higher value of the number of correct answers is noted in the experiment group (23.13), in reference to the control group (21.03), which indicates that the use of relaxation techniques plays an important part in the mental processes of female students. In this context, the constant use of psychotonic training has a very important role, representing the premises required for efficient learning.
Key words: *Cognitive mental processes, female students, physical education.*

INTRODUCTION

The scientific intercession of the research is based on the premise that the application of psychotonic training in the physical education class represents an efficient solution to influence the entire psychosomatic system of the individual.

1. Assumptions that we based our research on:

1. If psyhotonic training can be learned and practiced easily by sample under investigation, then we propose its introduction into the physical education and sport lesson in higher education to improve female students' psychological potential
2. We anticipate that the introduction of psychotonic training in physical education lessons leads to improving the mental processes involved in the work of economist female students.

2. **Variable of the experiment**

The application of psychotonic training throughout the physical education lesson after effort cessation is the independent variable of the experiment.

Control parameters that were the dependent variable of the research were:

• self scale determined by different mental states;
• the TAG verbal test (General Skills Test)

3. Research objectives and tasks

- elaboration of a relaxation program adapted for the physical education lesson;
- assessing the qualities of cognitive processes;
- selection of research means and efficient operation in the instructive-educational process, as experimental independent variables;
- determining the sample under investigation;
- centralization of data obtained from measurements made on groups established, statistical and mathematical analysis and processing.

4. Methods and techniques used: the bibliographic information study method, teaching observation, the survey method, the experimental method, organization, analysis and presentation of data, statistical and mathematical methods.

The sample research subject consisted of 80 female students, the first year of study in the Faculty of Marketing and International Business. Student sample represents a homogeneous group in that it falls within close limits by age (19-21), have the same level of intellectual formation, and chose the same profession, having common aspirations. This sample was divided into two groups (control and experiment) each consisting of 40 students. The research was held in the sports complex of the Academy of Economic Studies, Bucharest.

The research lapse covered a four month period, respectively the second semester of the 2010-2011 academic year. The Control group conducted a physical education lesson specific academic education (aerobics). We applied for the experimental group on the penultimate link in the lesson of physical education, "body relaxation after exercise"-psychotonic training.

At the beginning of the semester students of both groups were subjected to an initial test using general skills test (TAG) followed by a final test at the end of the semester.

At the end of the semester, the experimental group was subjected to both a general skills test and a self-assessment scale of psychological states felt during psychotonic training.

Subjects included in this research were published on the penultimate link in the physical education lesson - psychotonic training. Due to its characteristics, this

method was performed at the end of the lesson of physical education, being very appropriate for the execution of the objectives of this part of the lesson.

5. **Stages of psychotonic training**:

5.1. Typical practice undertaking is to point out the correct position, eyes closing, calm determination.

"Please lie on your back with arms slightly away from your torso. Also legs laid slightly apart, with feet facing outward. In this position you should have a general feeling of comfort. Close your eyes, listen to what follows and try to focus on the commands".

To enhance the relaxation effect we used a musical background (pre-classic music, flute or harp have maximum relaxation effects by their particular sounds through uniform pacing and intensity).

Example:

I am entirely peaceful and completely calm. / All my muscles are unstrained and relaxed. / A nice quiet floods me. / Nothing disturbs my peace. / I feel a peace and profound quiet. / I'm completely calm.

5.2. Follow condition of weight sensation (first dominant arm)

Once the task "I'm completely calm" was properly understood, it is no longer practicing and the first practicing task that we set to the subjects was formula "the arm is heavy" and we used for this purpose the arm most practiced and shaped by use, namely the right arm for right-handers and the left arm for left-hander.

Subjects were informed that in this exercise as in all others, they must cease all external mechanical movements and strive "just to think'', to work only with "mental concentration''. The exercise should not be done by arm but it should "occur only in mind".

The first practice formula is "The right arm is heavy" and must be practiced 5-6 times, whereas the "I am completely calm" formula or "I feel rest and heaviness" only once as an additional guide.

5.3. Follow the third step representing heat experience

When subjects learned enough the heaviness exercise, we go to the next specific training step. As heaviness exercise, heat exercise repeated 5-6 times, then, ,,I am completely calm "

Example:

A pleasant warmth covers my right arm, right hand and reaches the fingertips./Right arm is warm, wrapped in soothing warmth. / I am calm, very calm and relaxed./A pleasant warmth covers my left arm, left hand and reaches the fingertips. Follows a long pause, then return.

5.4. Relaxation

At the end of the exercise should make return by vigorous flexing and extent of active arms at the elbow (1), deep breathing (2), and eyes opening (3).

Example:

Raise your arms, bend and stretch your arms vigorously in the elbow joint (3 times), / tighten fists ... deep breath ... / Once again ... and again! / Open your eyes. Get up slowly and resume your work.

For concluding the relaxation exercise, there are two possible situations:

a. when subjects have nothing special to do, conclude with formulations like ,,I feel a deep state of peace'', ,,I rested and I'm calm'', ,, my general condition is excellent''.

b. When an activity follows, we conclude by phrases like, ,,I feel a deep and profound quiet'', ,,my whole body is resting'', ,, my body is charged with energy'', ,,my general condition is excellent'', ,,I start happily solving my business.''

On exiting of relaxation in the latter case, you can make a wide extension followed by a few deep breaths. Then subjects will stand up and make some morning gym exercises.

After the first training sessions we found the subjects were subjected to the experiment that had a drowsiness state and feeling of ,,heavy legs" about 30 minutes after the end of the meeting. Given the states they have experienced we carried out on exiting of relaxation, a wide extension followed by a few deep breaths. All staff undergo experimental research made some morning gym exercises. In each case, the first few months of practice, the whole structure should conscientiously and systematically practiced during each exercise.

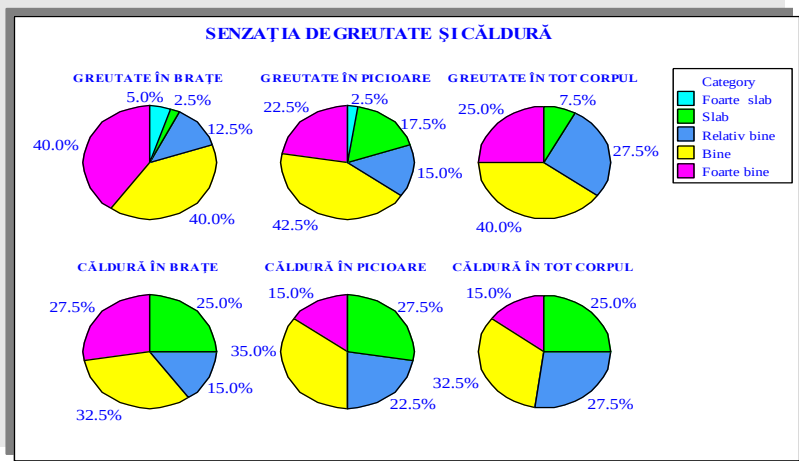
To determinate acquisition of psychotonic training techniques we have developed a self-assessment scale, with 10 items that I gave to female students at the end of the semester after I thought it had enough time to acquire psychotonic training. Here's the scale of the self-assessment:

1. How did you experience the sensation of weight during relaxation program?
2. How did you experience the sensation of heat?
3. How strong do you think was the sensation of weight?

a) in arms b) standing c) in the whole body:

4. How strong do you think has been sensation the heat?
5. a) in arms b) standing c) in the whole body:
6. To what extent did help relaxing music during the relaxation program?
7. To what extent did you feel peaceful after relaxation program?
8. To what extent did you feel rested after relaxation program?
9. How active were you after physical education class that had been used in relaxation program?
10. To what extent did you feel full of energy, vitality after psiho-controlling therapy through relaxation?
11. After relaxing session how you noticed an improvement in sleep?

At the end of the semester, after applying psychotonic training in each lesson of physical education after processing data from self-assessment scale of mental states resulting that 65% of subjects perceived good and very good sensation of heaviness in the whole body, 10% having a low perception, feeling of warmth being perceived well and very well by 47.5 % of subjects, 27.5% had a poor perception of heat.



Graph 1

Presentation of general skills test (T.A.G.)

The general skills test (TAG) was adapted in Romania by Pitariu in 1990. Containing 50 issues seeking the ability to understand and think in terms of verbal and critics, the ability to think in terms of symbols and ideas. The test measures general mental ability in adults. The time spent solving the test is 12 minutes. The individual must resolve as many issues.

Comparative analysis of results in T.A.G. verbal test administration (Correct answers) the experimental-control group (final test)

GENERAL SKILLS TEST
CORRECT ANSWERS
Control – Experiment

Indicatori statistici	**Valori calculate**	
	Control	Experiment
Media aritmetică	21.03	23.13
Mediana	21.00	22.50
Abaterea Standard	4.48	3.97
Valoarea maximă	35.00	32.00
Valoarea minimă	13.00	17.00
Amplitudinea	22.00	15.00
Coeficientul de variaţie (%)	21.31%	17.16%
Diferenţă medii (F - I)		2.10
Mărimea efectului (Cohen)		0.06

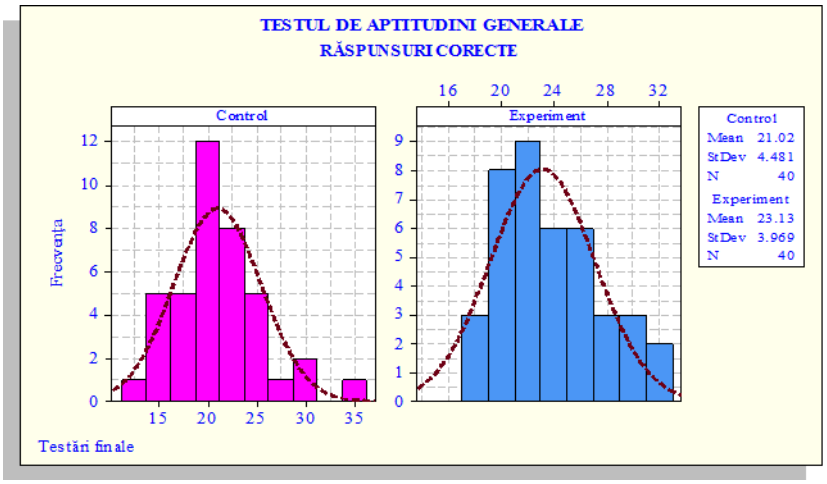
TESTUL ANOVA	
Pragul de încredere fixat - **α**	**α = 0,05**
Ipoteza nulă **H_0**	**m1 - m2 = 0**
Ipoteza alternativă **H_1**	**m1 - m2 # 0**
Numărul de subiecţi pe grup	**n = 40**
F critic (valoarea din tabele)	**3.96**
Grade de libertate - **df_1**	**1**
Grade de libertate - **df_2**	**78**

Rezultat test ANOVA	**F calculat**	**P**
	4.92	**0.029**

Table no. 1

INTERPRETATION OF RESULTS

The general skills test results were recorded for 40 subjects in each group, in the two final tests. The means made by control and experimental groups are 21.03 respectively 23.13. The difference between these values is 2.10 units. Cohen's index of effect size indicates that the differences between the results of the two tests are very small. The analysis of variance performed with ANOVA reveals a statistically significant difference between these averages, P = 0.029 is less than 0.05. The null hypothesis is rejected and the alternative hypothesis is accepted. The results indicate a higher average of numbers of CORRECT ANSWERS in the experimental group, as can be seen in the graph below.



Graph 2

After applying the general skills test, in both groups (control and experiment) are observed, on an average, a higher number of correct answers in the experiment group (23.13) than in the control group (21.03) which shows that the use of relaxation techniques is important in the mental processes of female students. In this context, a constant use of psychotonic training has an important role representing the necessary conditions for effective learning.

6. CONCLUSIONS

From the self-assessment scale applied to the experiment group we can draw the following conclusions:

- 65% of subjects had an intense and a very intense sensation of heaviness in the whole body, 10% having a low sensation;
- 47.5% of subjects had an intense and a very intense feeling of warmth throughout the body, 27.5% having a low perception of heat;
- 77.5% of subjects felt full of energy after the physical education class in which psychotonic training was applied.

- The research has revealed that there are subjects whose relaxation capacity forms spontaneously, as a natural reaction to the proposed task. The affectively balanced subjects, with polyvalent physical skills, are usually part of this group. The systematic use of the psychotonic technique provides the possibility of the formation of conditioned relaxation reflexes also in those subjects who do not independently get to this capacity, by their individual particularities and their own experience.
- After applying the general skills test in both groups (control and experiment), on average a higher number of correct answers was observed in the experiment group (23.13) than in the control group (21.03). Overall, statistical indicators calculated and presented above argue that the results obtained by the subjects of the experimental components are better than those of the control group of general skills test. The analysis of variance performed with ANOVA reveals a statistically significant difference between these averages, P = 0.029 is less than 0.05. We reject the null hypothesis and accept the alternative hypothesis.
- The previously specified aspects created the premises for a possible scientific research in the field of the possibilities and the effects that psychotonic training would have if it were practiced during the physical education and sport classes in higher education.
- As a consequence of the steps taken, we had the possibility to practically experiment and remark the impact that psychotonic training had on the mental states and on the cognitive processes of female students.

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