

**ASPECTS REGARDING THE MOTOR LEVEL OF THE EXPERIMENTAL
GROUP - GIRLS IN THE RESEARCH - COMBATING OBESITY IN
PRIMARY SCHOOL STUDENTS THROUGH VARIOUS CONTENTS IN
THE PHYSICAL EDUCATION LESSON**

Cojocaru Daniela¹

Leuciuc Florin ²

¹ *High School with Sports Program ,Suceava, România*

E-mail: danutza_087@yahoo.com

² *”Stefan cel Mare” University, Suceava ²*

florin.leuciuc@usm.ro ²

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Abstract: In order to increase the effectiveness of the physical education lesson in combating obesity and overweight, we systematized a number of categories of actuation systems according to certain criteria, which were applied in the experiment. The main objective of the experiment was to accelerate weight loss and promote a healthy lifestyle by practicing physical activity and exercise, both in physical education classes and during leisure time. We realized 3 alternative variants with exercise structures at 3 different levels of physical demand to accelerate weight loss over a 10-month period corresponding to one school year. The exercise structures were applied during the thematic segment for 30 minutes.

Introduction

Today's society and environment encourages overeating through an abundant supply of high-fat, energy-dense, easily accessible, relatively cheap, palatable, high energy-dense foods served in large portions. Lack of physical activity and a sedentary lifestyle lead to weight gain and obesity. [6]

Over time, many countries have considered obesity or overweight as a major problem facing more than half of the population, both adults and children. In modern Western culture, being overweight or obese is considered unattractive and is often associated with various negative stereotypes. As more and more people are obese, they have become a real cause of discrimination [8,10].

Overweight and obesity have now become a public health problem, with an alarming increase, especially if we look at the figures from studies that have been done especially among children. More and more people of all ages, and especially children, are overweight and obese and the rate of increase is very rapid. The most alarming weight gain is among children. [7] Obesity sets in when a person consumes more

calories than their body can burn. [1] Most researchers believe that obesity that starts in childhood and continues into adolescence is much harder to treat. [9] Physical activity is essential to keep overweight and obesity under control.[3] After the very low-fat diet, physical activity plays the most important role in modern complex obesity therapy.[5] Exercise can be a preventive or curative, recuperative, health-enhancing factor, carried out within certain limits and under certain conditions, even under medical supervision[4].

Material method

In order to increase the effectiveness of the physical education lesson in combating obesity and overweight, we systematized a number of categories of actuation systems according to certain criteria, which were applied in the experiment.

The main objective of the experiment was to accelerate weight loss and promote a healthy lifestyle by practicing physical activity and exercise, both in physical education classes and during leisure time.

During the research, the following control tests, which are part of the National Evaluation System for Physical Education, were used in the experimental group:

1. *25m sprint sprint with standing start (seconds)*
2. *Endurance run (endurance - minutes, seconds - maximum 3 minutes)*
3. *Long jump from the spot (cm)*
4. *Successive jumping rope on the move (m)*
5. *Bench pulls (maximum 3 bench lengths)*
6. *Trunk raise from supine 30" (no. repetitions)*
7. *Trunk extensions from prone to prone 30" (no. reps)*
8. *Throw to vertical target (no. repetitions)*

The research was conducted during one school year in physical education classes at schools in the city of Suceava. In the realization of the study we included girls of the fourth grade from the secondary schools of Suceava city as well as from the high schools that have in their structure the primary cycle.

After establishing the sample included in the research, we submitted the subjects of the experimental group to the control tests stipulated in the School Program, according to the National Evaluation System in the discipline of Physical Education and Sport, which were conducted in October 2021 through the initial testing, and in May 2022 the final testing was conducted.

Following the initial control trials, we realized 3 alternative variants with exercise structures on 3 different levels of physical demand to accelerate weight loss over a 10-month period corresponding to one school year. The exercise structures were applied during the thematic vertex for 30 minutes. These students in the thematic link did not participate with the whole class, they worked separately in the same class at maximum intensity the exercise structures proposed by me. These

exercise structures performed with their own body weight will be combinations of different motor actions. In structuring the exercises I took into account the age particularities of the young schoolchildren, concomitantly with each one's level of physical stress at maximum and supramaximal intensities. A criterion for the design and structuring of the actuation systems was the development of the form of resistance manifestation according to the duration of the effort:

- resistance of Short Duration (RDS) - lasts from 45 s up to 2 minutes, with the endurance loads being provided by anaerobic energy production
- medium endurance resistance (MDR) - lasting from 2 minutes to 8 minutes, with endurance loads provided mainly by aerobic energy production
- long endurance endurance (LDE) - covers all endurance endurance tasks exceeding 8 minutes, with endurance endurance tasks being provided exclusively by aerobic energy production.

The 3 alternative drive system variants consisted of:

Variant 1

- 10 minutes long-lasting effort
- 1 minute break
- 3x45 seconds short-duration exercise (maximum intensity) - break between sets 15 seconds
- 10 minutes long effort
- 1 minute break
- 3x45 seconds short burst (maximum intensity) - break between sets 15 seconds
- 2 minutes return

Variant 2

- 4x45 seconds short-duration exercise (maximum intensity) - break between sets 15 seconds
- 10 minutes long duration effort
- 1 minute break
- 4x45 seconds short burst (maximum intensity) - break between sets 15 seconds
- 10 minutes long duration effort
- 1 minute break

Variant 3

- 8 minutes medium effort
- 1 minute break
- 5x45 seconds short-duration effort (maximum intensity) - break between sets 15 seconds
- 8 minutes medium effort

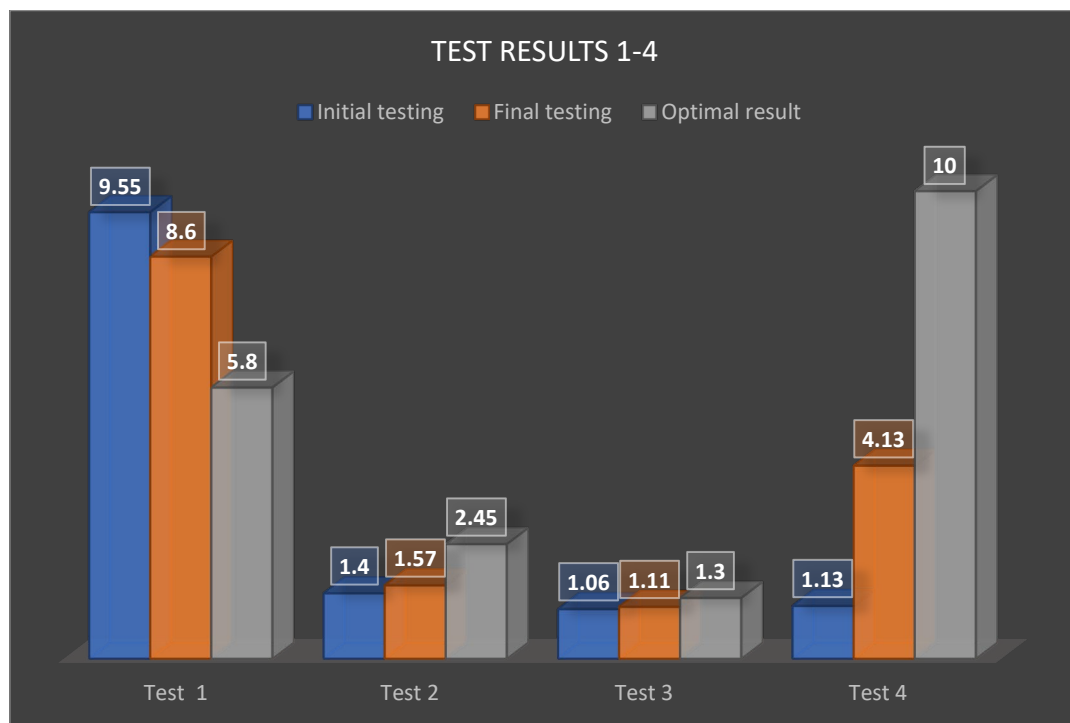
- 1 minute break
- 5x45 seconds short duration (maximum intensity) - break between sets 15 seconds
- 2 minutes return

Results:

Table no.1 - Analysis of statistical indicators of the experimental group - samples 1 – 4

Statistical indicators	Sample 1 (seconds)			Sample 2 (minutes, seconds)			Sample 3 (m/cm)			Sample 4 (m)		
	T.I.	T.F.	D	T.I.	T.F.	D	T.I.	T.F.	D	T.I.	T.F.	D
Arithmetic mean	9,55	8,60	0,95	1,40	1,57	0,17	1,06	1,11	4,6	1,13	4,13	3
Standard deviation	0,46	0,38	0,08	0,06	0,19	0,13	4,43	4,50	0,07	0,99	1,12	0,13
Coefficient of variability (%)	4,66	4,48	0,18	4,95	12,13	7,18	4,16	4,06	0,1	87,39	27,22	60,1

In Table 1, in the 25m sprint a difference in the arithmetic mean between the initial and the final test of 0.95 seconds can be observed, in the endurance run a difference in the arithmetic mean of 0.17 minutes, in the long jump from the spot a difference in the arithmetic mean of 4.6 cm, and in the successive jump rope with displacement a difference in the arithmetic mean between the initial and the final test of 3 repetitions can be observed.



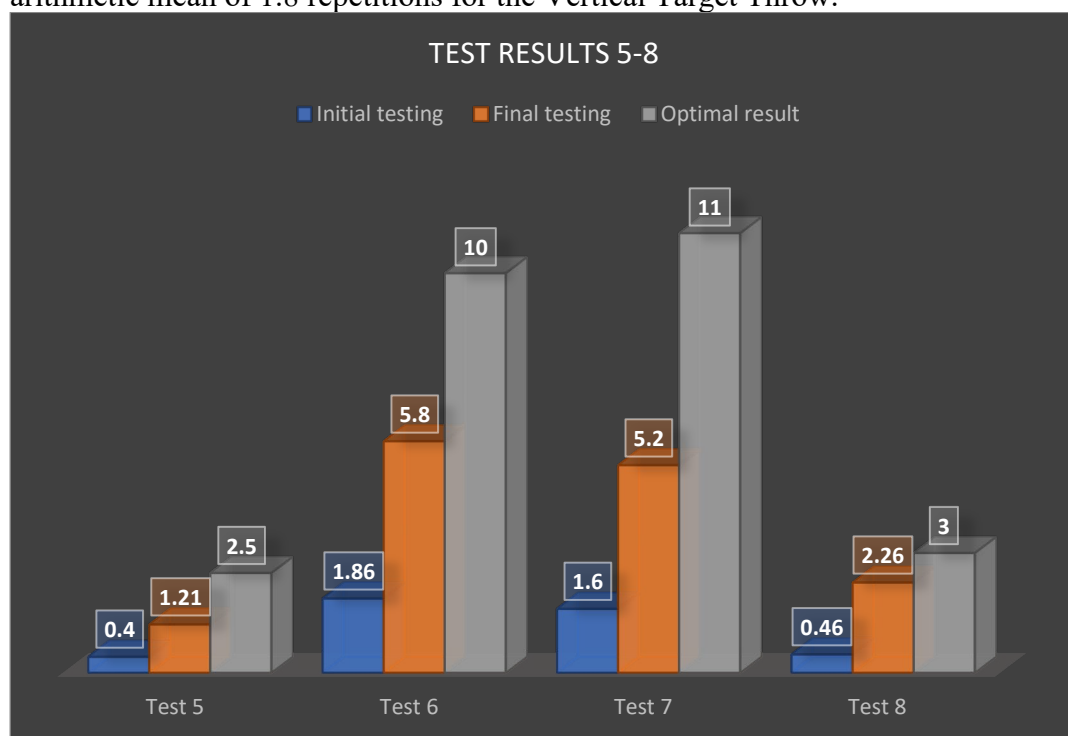
Graph nr. 1 - Results samples 1-4

Table no. 2 - Analysis of statistical indicators of the experimental group - samples 5 - 8

Statistical indicators	Sample 5 (3 bench lengths)			Sample 6 (no. repetitions)			Sample 7 (no. repetitions)			Sample 8 (no. repetitions - 3din3/6m)		
	T.I.	T.F	D	T.I.	T.F	D	T.I.	T. F.	D	T.I.	T. F.	D
Arithmetic mean	0,4	1,2	0,8	1,8	5,8	3,9	1,6	5,2	3,	0,4	2,2	1,8
Standard deviation	0,3	0,2	0,0	0,7	0,9	0,0	0,50	1,1	0,	0,5	0,7	0,1
	1	8	8	4	4	2	4	4	6	1	0	9
									4			

Coefficien t of variability (%)	77, 6	23, 1	54, 5	39, 8	16, 2	23, 5	31,6 9	22, 0	9, 6	11 0,6	31, 0	79, 6
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Table 2 shows a difference in the arithmetic mean between the initial and the final test of 0.81 for the Bench Pulls test, a difference in the arithmetic mean of 3.94 repetitions for the Front Lying Trunk Extensions test, a difference in the arithmetic mean of 3.6 repetitions for the Back Lay Trunk Raises test, and a difference in the arithmetic mean of 1.8 repetitions for the Vertical Target Throw.



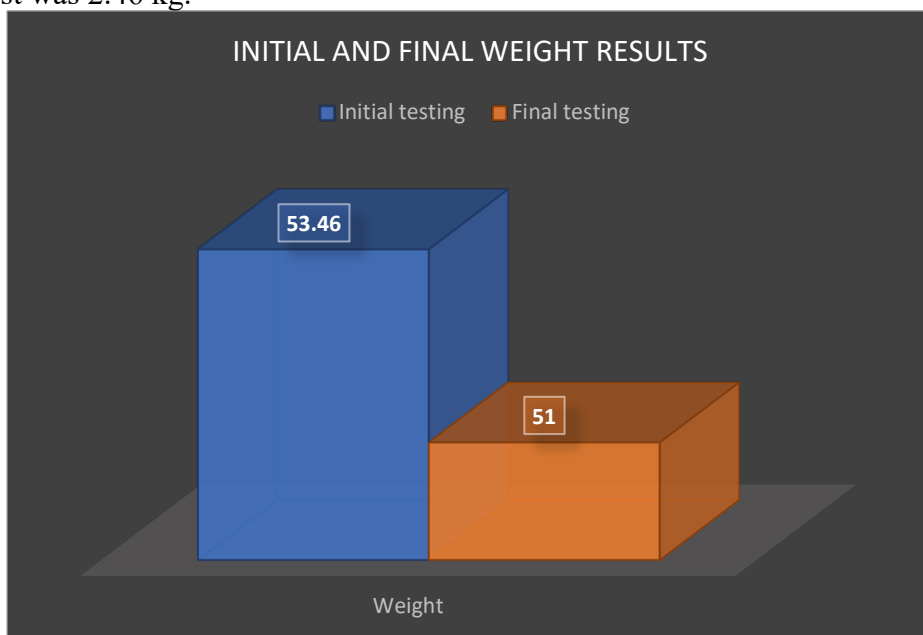
Graph nr.2 - Results samples 5-8

Table 3 - Analysis of results in terms of initial and final weight

Statistical indicators	Weight (kg)		
	T.I.	T.F.	D

Arithmetic mean	53,46	51,00	2,46
Standard deviation	3,62	3,47	0,15
Coefficient of variability (%)	6,77	6,82	- 0,05

Table 3 shows that the arithmetic mean difference between the initial and the final test was 2.46 kg.



Graphic nr.3 - Initial and final weight test results

Conclusions

As a result of carrying out the experiment and implementing the variants of drive systems according to the criterion of effort duration, we found a direct impact on the body weight of the subjects under research. Alternating aerobic and anaerobic exercise has a direct impact on weight loss. The actuation systems chosen in the

experiment in accordance with the parameters of the exertion made the chosen strategy more effective. A modern lifestyle approach, spending leisure time in front of the TV, computer, tablet and phone, accompanied by lack of physical activity, leads to overweight and obesity and favors the onset of chronic diseases such as cardiovascular disease and diabetes, which affect and decrease the quality of life. The problem of obesity and overweight can be prevented by acting on children from the earliest signs. An important role falls in particular to parents, but also to current teachers and future future specialists in this field, to encourage children to practise physical exercise and all forms of recreational leisure-time movement, with the aim of achieving beneficial prophylactic results for the body. Physical exercise, by virtue of its content and characteristics, can be an alternative form of health education.

References

- [1] ATKINSON, B., Obesity between being and not being, Alex-Alex Publishing House, Bucharest, 2001 pg. 14-16
- [2] BAROW H., MCGEE R., Measurements in physical education and sport, Globus Publishing House, Bucharest, 1980, pg.44-49
- [3] DRAGNEA A., Measurement and evaluation in physical education and sport, Sport-Turism Publishing House, Bucharest, 1984, pg.32-34
- [4] GRAUR, M., Obesity, Junimea Publishing House, Iași , 2004, pg. 57-58
- [5] GRAUR M., Healthy Eating Guide, Performantica Publishing House, Iași, 2006, pg. 1-7
- [6] PAVELIU, F.,S., Overweight and obesity: from prevention to treatment, Info Medica Publishing House, București, 2002, pg.24-26
- [7] POPA, I., Childhood obesity and adipose tissue, Mirton Publishing House, Timișoara, 2001, pg.28-35
- [8] SCARLAT, E., DRAGOMIR, P., School Physical Education - New landmarks - necessary changes, Didactic and Pedagogical Publishing House, R.A. București, 2004, pg.10-11
- [9] VERONICA, MOCANU, Childhood obesity prevention - Childhood obesity: a risk factor for lifelong health , Ed. Gr. T. Popa”, U.M.F. Iași, 2015, pg. 16
- [10] <https://ro.wikipedia.org/wiki/Obezitate>