

# THE INFLUENCE OF AEROBIC GYMNASTICS IN FIGHTING AGAINST OVERWEIGHT AND OBESITY IN ADULTS (20-30 YEARS OLD)

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## Abstract

Overweight and obesity, besides their unaesthetic aspect and their negative influence on social life, influence the way the human body works. The negative effects on the human body are the more disastrous the earlier obesity becomes a fact. For this reason, it is highly necessary to focus on informing, preventing and fighting against this illness, and if it has already affected the body, we must focus on becoming aware of it and on forming the habit of doing exercise and keeping an individualized appropriate diet.

This study is aiming at decreasing the excess body fat of adults (20-30 years old), by the use of aerobic gymnastics exercises, improving their self-esteem, but also their level of general physical preparation.

By the chosen topic, the **aims** of this study are: to decrease body fat excess, to form the habit of independent and assisted practice of physical exercise, to create a general positive state and a good mood in the practice of physical exercise, to increase the self-esteem, to improve breathing, the effort capacity and the muscle tone, as well as to form an optimal physical training basis on the 20-30 year-old people included in this study.

In order to achieve our aims we have used the following *research methods*: analysis and generalization of the data in the literature of specialty, observation, investigation, the test method, the experimental study, statistical and mathematical methods and the tabular representation.

For the investigated group, we have conceived and applied a special experimental program, with aerobic gymnastics exercises of various degrees of difficulty, during 30 days, 2 training sessions per week, of 50 minutes each.

We have used Microsoft Excel for the statistical processing.

**The results** we have obtained as a result of observation and investigation, have shown the passive attitude of overweight people towards doing exercise, influenced by the embarrassment and the lack of self-confidence, the low self-esteem and the self disgust. After the application of the initial tests we have recorded the level of somatic and motor body development of the tested people.

After the analysis of the recorded results on the initial tests, we have formulated the working hypothesis and designed the experimental training program using aerobic gymnastics elements.

At the final testing, after the program was applied, we recorded better results for the tested indicators, therefore a significant progress between the two tests; **the main conclusion** is that the aerobic gymnastics may contribute to the decrease of excess body fat, improving the self-confidence and the self-esteem of those who practise it, and being a development factor of the general physical preparation level.

*Keywords: overweight, obesity, experimental programs, aerobic gymnastics*

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## Introduction

The everyday life of the contemporary people is dominated by the explosion of science, technique and computing, which create better living and working conditions, but also determine changes in the biological, physical and mental field of the individuals. If some of these changes have a positive influence on the health of the individuals and have a great contribution to the social and economic progress, others influence negatively the optimal functionality of the body, in terms of somatic, mental and motor development.

The most disputed factor, generator of negative effects on contemporary human health is *the sedentary lifestyle* which is the cause of most of the diseases that make the contemporary people's life shorter. It represents the natural consequence of the *civilization of comfort*, but by reducing the daily amount of motion, the volume and intensity of physical effort, people experience negative effects on their energy potential, crucial in fighting against the external stress factors. Some of the most frequent disorders generated by a sedentary life may be mentioned: the poor functional capacity of the respiratory system and the circulatory system, degenerative disorders of the osteoarticular system, increased irritability disorders, overweight and obesity. It is alarming that in Romania, over 30% of the pupils suffer from obesity, according to the statistics of the Ministry of Health, while in the European Union the number of overweight school children raises by 400,000 every year, and over 200 million adults are already overweight or obese.

Numerous authors, including Brick, L.G. (1996) and Dobrescu, T. (2008) reached the conclusion that physical exercise, manifested by any type of physical activity (outdoor walking, jogging, sports games, cycling, swimming, aerobic gymnastics, etc.) but also a controlled diet, low in calories, may guarantee a long and healthy life of the individuals, irrespective of the age, sex, level of training or job.

*The aerobic gymnastics* is a type of exercise that attracts a growing number of individuals due to the diversity of exercises, due to mixing exercises with dance steps, ballet elements, tae bo, zumba, pilates, stretching elements performed on appropriate music, thus contributing to the harmonious physical development, to the formation of a correct and aesthetic body position and, many times, to the elimination of the excess body fat and the creation of a good mood and self-esteem.

### Aims

To convince overweight and obese people to come to specialized gyms (Gym Club) to practise various physical activities and encourage the practice of aerobic gymnastics to reduce body fat, to increase self-confidence and self-esteem, to improve the capacity of physical and mental relaxation as well as to increase the effort capacity and the improvement of the general physical preparation.

### Hypothesis

The basis for the formulation of the *working hypothesis* is the supposition that the application of aerobic gymnastic exercise programs and the recommendation of keeping an appropriate diet may have positive effects on the state of health of 20-30 year-old people, improving the quality of their life.

### Methods and Materials

#### a. Research Protocol

The research took place at „Gym Club” sports center in Galați during a 3 month period (June – August 2015// 30 days of documenting, observation, formulation and application of the questionnaires regarding the image and amplitude of the effects of overweight on the daily life of the investigated people and the application of initial tests and measurements; 30 days of applying the experimental training program with the use of aerobic gymnastic elements and the recommendation of a food diet low in calories; 30 days of applying the final tests and data interpretation).

#### b. Subjects

The working group consisted of 12 women between 20 and 30, with jobs in various fields, who proved to be overweight or obese.

#### c. Groups

The selected group for the experimental study benefited from the same training conditions and equipment.

#### d. Assessment Tests

6 tests were applied in order to determine the level of somatic development (height, weight, waist circumference, hip circumference, body mass index, body adiposity index (according to Franks and Howley).

#### Tested Somatic Indicators:

- *height* (height meter – the dimensions in centimeters between the vertex and the plant plan). The subject is standing, with joints in extension, so that the vertical rod of the height meter can touch the heels, the intergluteal cleft and the spine in the scapular region (**H**);
- *weight* (personal weighing scale – the body weight in kilograms and hundred of grams, with one decimal) (**W**);
- *waist circumference* (metric tape – the dimensions measured in centimeters in the middle of the navel) (**WC**);
- *hip circumference* (metric tape – the dimension of the most voluminous muscular area of the segments) (**HC**);
- *body mass index (BMI)* – is calculated based on the formula:  $IMC = G \text{ (kg)} / I \text{ (m}^2\text{)}$ .

The internationally accepted values of the BMI are the following: *underweight* – 18.5; *normal* – 18.5-24.9; *overweight* – 25-29.9; *obesity* – 30-39.9; excessive obesity -40;

- *body adiposity index (BAI)* – is calculated according to the body fat percentage nomogram of Franks and Howley - it needs to measure the hip circumference (cm) and height (cm) – these data will be recorded each on a vertical line date and by linking the recorded data we obtain the adiposity value in percents, the data being analyzed according to table 1:

**Table 1**

Body Adiposity Assessment Criteria (according to Franks and Howley)						
Adipozitate/ procentul de grăsime corporală						
Sex Indicators	Very low	Low	Best	Moderately high	High	Very high
Female	under 12%	12-15%	15-25%	25-30%	30-35%	over 35%
Male	under 6%	6-10%	10-20%	20-25%	25-31%	over 31%

#### e. Statistical Methods

The statistical processing of the recorded results was done by using Microsoft Office Excel 2007.

**Results**

After applying *the experimental training program by elements of aerobic gymnastics* to the 20-30 year-old females in order to remove excess body fat, for the increase of their effort capacity and the formation of a general basis of physical training, we noticed an improvement of the recorded results, having achieved a significant progress between the two tests in determining the somatic values – table 2.

**Table 2**

**Average values and difference of the averages of somatic indicators IT and FT for the investigated group**

DYNAMICS OF THE SOMATIC INDICATORS													
Tests		H (cm)		W (kg)		WC (cm)		HC(cm)		BMI		BAI	
Subject	Testări	IT	FT	IT	FT	IT	FT	IT	FT	IT	FT	IT	FT
1.	Age (years): 21	172	172	76	70	97	93	106	102	25.6	23.6	26	23
	Occupation: student												
	Overweight factors: Sedentary life, Inappropriate diet												
2.	Age (years): 29	168	168	88	85	104	100	113	111	31.2	30.1	33	30
	Occupation: shop assist.												
	Overweight factors: Diet high in calories, Irregular meals												
3.	Age (years): 28	160	160	86	79	113	107	115	108	33.7	30.8	33	30
	Occupation: garment worker												
	Overweight factors: Sedentary life; Diet high in calories												
4.	Age (years): 20	170	170	78	72	92	90	103	98	26.9	24.9	27	25
	Occupation: student												
	Overweight factors: Hyperglucidic diet												
5.	Age (years): 24	160	160	73	70	102	97	107	103	28.3	27.3	28	27
	Occupation: pharmacy Assist.												
	Overweight factors: stress, diet high in cal.												
6.	Age (years): 23	170	170	70	69	86	84	102	101	24.2	23.8	24	24
	Occupation: student												
	Overweight factors: Sedentary life, Diet high in calories												
7.	Age (years): 29	163	163	85	82	103	89	125	123	32	31.5	32	31
	Occupation: nurse												
	Overweight factors: stress, bad diet												
8.	Age (years): 27	158	158	68	68	98	97	106	105	27.3	27.3	27	27
	Occupation: accountant												

	Overweight factors: Sedentary life, Inappropriate diet												
9.	Age (years): 27	164	164	75	69	94	87	113	106	27.8	25.7	28	25
	Occupation: economist												
	Overweight factors: stress, inappropriate diet												
10	Age (years): 30	164	164	76	70	88	82	106	100	28.2	26.1	28	26
	Occupation: accountant												
	Overweight factors: Energy balance disorder												
11	Age (years): 27	168	168	73	71	83	82	111	110	25.8	25.1	25	24
	Occupation: inspector												
	Overweight factors: inadequate lifestyle												
12	Age (years): 30	165	165	95	89	117	110	114	107	34.9	32.7	35	32
	Occupation: shop assist.												
	Overweight factors: stress, unbalanced diet												
$\Sigma$		1982	1982	943	894	1177	1118	1321	1274	345.9	328.9	346	324
$x$		165.1	165.1	78.5	74.5	98	93	110	106	28.8	27.4	28.8	27
$\pm m$		-		-4		-5		-4		-1.4		-1.8	

### Discussions

After the application of the initial tests we noticed that the tested subjects showed height values between 172 cm and 158 cm, values that were not modified at the final tests, the application period of the aerobic gymnastics training being very short and insignificant as an influence on the growth process of the tested people.

As to the body weight of the people included in the experimental study, we can appreciate that all people had excess body fat on initial tests, and after the training program, only one person recorded the same body weight values, all the others recording a lower or a bigger loss of weight, according to the personal features.

The results of the measurement of waist and hip circumference recorded positive changes, the difference between the two tests being of 4 cm, and 5 cm, values being different from one person to the other, depending on how they complied with the experts' recommendations, the intensity and the precision in executing the exercises, but also on the personal body building.

The body mass index of the people included in this study showed that at the initial tests, one of the researched people had normal values, 7 of the researched people (58.3%) were overweight, and 4 people were obese. At the final tests, the recorded results were positive, the difference of the recorded values between the two tests being 1.4 percents.

The determination of the percentage for the body adiposity index showed that 2 people in the investigated group had optimum adiposity, 6 had a high moderate level of adiposity and 4 people had high adiposity in initial tests; for the final tests, 5 people had optimum adiposity, 3 had high moderate adiposity and 4 had high adiposity.

### Conclusions

1. After having processed and interpreted the data resulting from the comparison of the initial and final values, recorded for the initial and final tests, we can confirm the working hypothesis stating that doing aerobic gymnastics exercises and using an adequate diet can have positive effects on the state of health of 20-30 year-old people who have excessive body fat, improving the quality of their life.

2. The aerobic gymnastics exercises are also involved in forming the ability to relax the muscles and the mind, giving a good mood to the performers, and guaranteeing self-confidence and self-esteem.

3. The diets that are low in calories may reduce body weight on the long-term to a small extent, if they are not supported by physical activities.

4. The combination of diet and constant exercise are the most recommended because they guarantee the loss of weight and a decrease in the level of body adiposity, improving at the same time the respiratory functions of the body, improving the effort capacity and the specific motor abilities.

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## **EXPERIMENT ON THE TRAINING OF JUNIOR FOOTBALL PLAYERS UNDER 17 ACTING IN THE CENTRAL AREA OF THE FIELD**

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#### **Abstract**

The central area of the field, also named the "laboratory" or the "brain" of a team, urged the experts to search for new training solutions for a high performance of junior players in competitions. The statistics show that it is in the central area of the field that the ball is mostly touched, and the domination of this area overwhelmingly determines who will be the winner.

In this context, our experiment has designed a differential training program, based on methods and means used to improve the physical and technical preparation by football specific means, that will finally lead to an increase in the number and efficiency of actions in the central area.

*Keywords: training, football, central area, junior players.*

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#### **Introduction**

The latest statistics regarding the way of scoring goals, both in the last editions of the World Championship and in the strong European leagues, show the fact that teams have restarted working more and more intensely on the actions in the central area of the field.

This is mainly due to the playing system which uses players, whose dominant foot is opposite to the area they act in. The increase in the number of actions initiated and developed in the central area have lately led to new approaches regarding the training of junior players, who play in the national leagues, precisely to prepare their future evolution, from the perspective of their football training. For this reason, the coaches' way of thinking (F. Gaspar; J .Lopez; M. Mazzantini; S. Bombardieri; D. Apolzan; V. Stanculescu; G. Neta) as well as the players' have evolved, new solutions being a necessity, solutions to make them deal with the situations occurring during the game. In our country, the practitioner coaches ( G.Manolache; A.Dragan; C. Ploesteanu; students for various bachelor degrees) have also discussed about the importance of the children, junior and young players' division. Important ideas resulted from these discussions:

-for junior players under 17, the modern training resembles the training of the first team; it aims at making junior players adapt to the professional concept of senior players.

- each training session is seen as a way of complying, as much as possible, with the content and the form of the game.

- during trainings sessions we must focus on differential training, according to the particularities of the player and the physical effort that is specific to the acting area for maximum performance.