

## **THE BENEFICIAL EFFECTS OF THE PHYSICAL TRAINING ON THE QUALITY OF LIFE IN OBESE PATIENTS**

**Nistor Cseppento Carmen \*, Claudia Judea- Pusta\*\*, Laura Dumitrana Rath\*\*\***

\*University of Oradea, Faculty of Medicine and Pharmacy, Piata 1 Decembrie no 10, Oradea, Romania, e-mail: [delia\\_cseppento@yahoo.com](mailto:delia_cseppento@yahoo.com)

\*\*University of Oradea, Faculty of Medicine and Pharmacy, Piata 1 Decembrie no 10, Oradea, Romania, e-mail: [claupustaml@yahoo.com](mailto:claupustaml@yahoo.com)

\*\*\*Universitatea Agora, Oradea, Romania, e-mail: [dumitra1970@yahoo.com](mailto:dumitra1970@yahoo.com)

### **Abstract**

*Introduction. Our life style determines our healthcare. This refers to the daily stress, lack of exercise, sleep hours, eating habits and consumption of toxics etc. The life style accounts for over 50% of the four factors determining the health, that is alongside biological factors, the environment and the health system. The study has as scope the evaluation of the physical training benefit in patients with obesity, in relation with losing weight, equilibration of the clinical and paraclinical parameters. Material and method. The study batch is made of 20 overweight or obese patients. The inclusion criteria were the following: age between 40 and 68 years old, firm diagnosis by determination of anthropometric parameters (weight measurement; skin fold measurement; waistline measurement; body mass index measurement; waist circumference measurement). The pursued targets were: the incidence of comorbidity related to obesity, the pain evolution due to losing weight, the monitorization of anthropometric parameters. Results and conclusions. A 10% loss of the body weight will determine, according to the expert studies, a reduction of the blood pressure values with 10mmHg systolic and 20mmHg diastolic and the reduction of the glycaemic values. As concerns the studied batch, after 3 months of kinetic program and observance of the diet recommended by the nutritionist we can see that 45% responded to the treatment by losing weight, in 10% of the patients the blood pressure values had a normalization trend. 35% of the patients reacted by the return of their fasting blood glucose to normal values, so continuing the diet does not imply the initiation of the medicinal treatment. Calculating the cardiovascular risk with SCORE test, the results obtained show that 4 patients undergo a diminished risk, 6 a moderate risk, 8 a high risk and 2 a very low risk.*

**Key words:** obesity, lack of exercise, pain, high blood pressure, high blood sugar, physiotherapy.

### **INTRODUCTION**

Our life style determines our healthcare. It refers to the daily stress, lack of exercise, sleep hours, eating habits and consumption of toxics etc. The life style accounts for over 50% of the four factors determining the health, that is alongside biological factors, the environment and the health system.

Lack of exercise, associated or not with a poor diet, favours the apparition of comorbidities. On one hand there will appear the obesity accompanied by heart diseases, diabetes, on the other hand - osteoporosis and osteoarthritis. Fat cells secrete adipokines and cytokines have a role in regulating insulin resistance, satiety, inflammation, sexual function and endothelial functions. The most important substances are adiponectin,

resistin, leptin, visfatin, interleukin-6, TNF- $\alpha$  - tumor necrosis factor- $\alpha$ , omentina and angiotensin II (Koh KK, 2012). An obese is prone to a lot of medical complications: general, pulmonary, cardiovascular, osteo-articular, endocrine-metabolic, etc. (Anghelescu M., 1984).. The term „obese " was accepted by the medical community until 1611 and has been proposed in French(Ichim P, Mircea Ene, 2012).

The studied sources claim that the lack of exercise makes over 7 million victims yearly. The obesity is caused by triggering factors and favouring factors: the food intake. Over time it has been observed, especially in the United States, an increase in the average of calories intake, from 3654 calories/inhabitant in 1996, to 3754 calories/inhabitant in 2003. In Europe, the consumption of 3394 calories/inhabitant, in certain developing places in Asia 2648 calories/inhabitant, and in certain places in Africa, especially in the Sub-Saharan area, 2176 calories/inhabitant. Obesity is a frequent pathology in our era. It will increase the morbidity and death in general population. This study has as scope the evaluation of the benefit of physical training in patients with obesity, in relation with losing weight, the normalization of the clinical and paraclinical parameters. People who smoke have a tendency to gain weight after giving up smoking. There is an increase in weight with a value between 2.5 and 3.5 kg(Flegal KL et al, 1995). To spend free time for children and adults face TV version an increased prevalence of obesity among their version. Of the 86% was an increase Studies showed the number of obesity cases among children version after a media exposure above average. Values increased direct Proportional number of hours spent watching television version(Ezekiel J, Emanuel, 2008).

## **MATERIAL AND METHOD**

The study batch is made of 20 overweight or obese patients. The inclusion criteria were the following: age between 40 and 68 years old, firm diagnosis by determination of anthropometric parameters (weight measurement; skin fold measurement; waistline measurement; body mass index measurement; waist circumference measurement).

The study was made with the patient's agreement, the possibility of re-evaluation in 3 months, carrying out the treatment according to the medical recommendation. The food diet was a energy-restricted one, adapted to the calories need of every patient depending on the activity he/she performs, between 1200-1300 calories/day considering a normal or smaller effort in fasting, with a balanced intake of proteins between 1,2 - 1,5 g/kg/day, fats between 40-50 g/day and carbohydrates, in a significantly smaller quantity, between 120-150 g/day taken especially from fruit and vegetables.

The pursued targets were: the incidence of obesity related comorbidities, the evolution of pain by determining the VAS score once with losing weight, assessment, registration and monitorization of the anthropometric parameters, elaboration and implementation of a program that promotes a healthy life style, a sanitary education program for the modification of the life style and losing weight in obese and overweight patients.

## RESULTS AND DISCUSSION

The studied batch had the following design, presented in diagram 1:

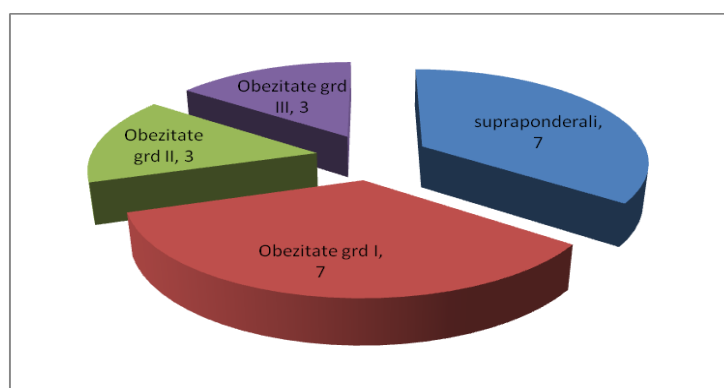


Diagram 1. Patients distribution depending on the diagnosis

The patients included in the study were between 40 and 68 years old, the average age being 55,6 years old.

The batch distribution depending on the environmental origin is shown in diagram 2.

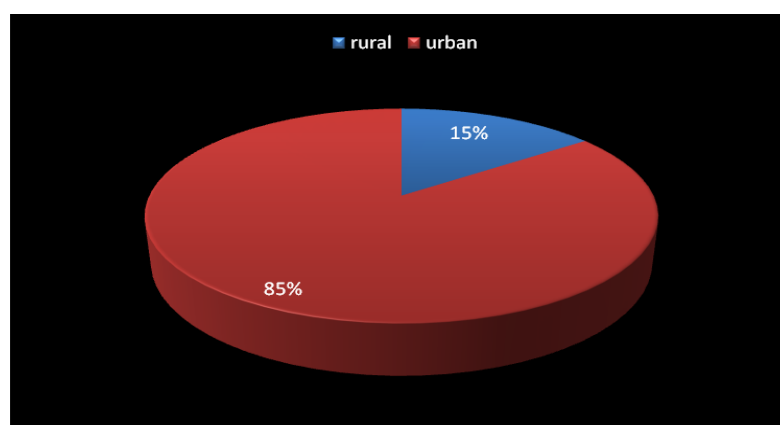


Diagram 2. Batch distribution depending on the environmental origin

In the study batch we have included 16 women, which represents 80% of the batch, and 4 men, that is 20%. We have measured the waist and hip circumference, which gives us information on the area fat and indirectly, on the visceral fat (Eisenmann JC, 2005). We have made the ratio of the waist circumference and hip circumference to evaluate the cardiovascular risk and to identify the android or gynoid type of obesity.

In adults, the fat distributed mainly on the abdomen, associates obesity with heart diseases, AHT, diabetes, cerebrovascular accidents and certain types of cancer or increases the risk of these affections. If the obtained size exceeds 102 cm in men and 88 cm in women, the risk of obesity associated with other diseases is high, especially if it is also associated with a body mass index higher than 25 (table 1).

Table 1

The risk of obesity associated with other diseases

BMI	Waist size			
	Women		Men	
	< 88 cm	>= 88 cm	< 102 cm	>= 102 cm
25 – 29,9	Increased	High	Increased	High
30 – 34,9	High	Very high	High	Very high
35 – 39,9	Very high	Very high	Very high	Very high
>= 40	Extremely high	Extremely high	Extremely high	Extremely high

The average values of weight, height, BMI, the average waist size are included in table 2:

Table. 2

Correlations between weight, height, BMI

Name	Weight (kg)	Height (cm)	BMI (kg/m <sup>2</sup> )	Waist size	Risk
<b>AVERAGE</b>	105.3	171.7	35.802	95.4	1 Increased 4 High 2 Very high 2 Extremely high

The comorbidities risk is presented in table 3:

Table 3

Comorbidities Risk

No. of patients	Risk
1	increased
11	high
7	Very high
1	Extremely high

The type of obesity in the study batch, depending on the measured perimeters, reveal the following (table 4)

Table 4

Type of obesity	
No. of patients	Type of obesity
10	android
4	gynoid
6	mixed

50% of the total number of patients are smokers and 50% are non-smokers. The HTN incidence is presented in table 5:

Table 5

Type of obesity			
	I-st degree HTN	II-nd degree HTN	Without HTN
No. of patients	5	10	5

All patients included in the study had a degenerative impairment of the hip or knee. The graphic representation shows the gonarthrosis and coxarthrosis incidence.



Diagram 3. The degenerative impairment of the hip or knee

The incidence of diabetes or the decrease of the glucose tolerance was present in all patients included in the study(table 6).

Table 6

Diabetes incidence			
pathology	Normal values	Type II Diabetes mellitus	Decrease of glucose tolerance
No. of patients	-	7	13

During the study, we have evaluated the pain in the hip and knee area, the main reason for which the patients came to the out-patient

specialized clinic, using the VAS scale. This scale is simple and easy to handle and interpret, it gives the patient the numerical expression of the severity of his pain. There is also the visual analogue scale from „0-10”, but this is less accurate than the „0-100” scale(Mihailov M., Cevei M, 2006).

A 10% decrease of the body weight will cause, according to speciality studies, a decrease of the blood pressure values with 10mmHg systolic and 20 mmHg diastolic and the decrease of blood glucose values. As concerns the studied batch, after 3 months of kinetic program and observance of the diet recommended by the nutritionist

The general objectives of the kinesitherapy treatment are the improvement/increase of the body’s capacity to effort, the decrease of the body weight down to the normal values, the improvement of breathing, peripheral circulation, muscle tone, mental state of the subject, blood pressure values and biochemical parameters.

Three months later, on re-evaluation, the study batch has the following structure(table 7):

Table 7

Re-evaluation after three month of therapy				
	Treatment, diet and KT dropout	Decrease of blood pressure	Decrease of fasting blood glucose down to normal values	Decrease in weight
No. of patients	3	3	10	13

We can see that 45% responded to the treatment by losing weight, in 10% of the patients the blood pressure values had a normalization trend. 35% of the patients reacted by the return of their fasting blood glucose to normal values, so continuing the diet does not imply the initiation of the medicinal treatment.

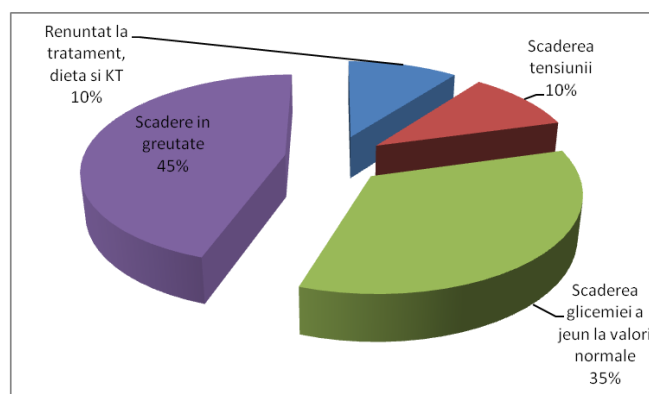


Diagram 4. Re-evaluation after three month of therapy

The total value of the abdominal perimeter decreased with 65 cm, that is 6.8%.

Calculating the cardiovascular risk with SCORE test, the results obtained show that 4 patients undergo a diminished risk, 6 a moderate risk, 8 a high risk and 2 a very low risk. As concerns the cardiovascular risk, the SCORE number decreased in all patients. In three patients it decreased significantly and they fit in a lower risk level. Therefore, we can say that physical exercise made regularly, together with an energy-restricted and salt-restricted diet for patients with HTN, had a major impact on their life.

As concerns the pain, the VAS score variations show us that the initial average, of 45.5, dropped after 10 days of treatment, to 17, and together with loosing weight and keeping a sustained kinesitherapy program, the practical results remain (Table 8).

*Table 8*

The VAS score variations			
Patient No.	Initial VAS (on admission)	VAS on discharge	VAS on 3 months
AVERAGE	45.5	17	15

The scientists have shown that easy physical exercise, made 5 times a week, can contribute to the maintenance of the body health and can prevent ageing, maintaining a good mental and muscle tone, prevents the apparition of osteoporosis and fractures and it also delays the apparition of high blood pressure.

## CONCLUSIONS

1. The number of women who come for recovery treatment is higher.
2. We notice a higher incidence of obesity in women, in a percentage of 80% in the studied batch.
3. The pain level in all patients dropped in time (after 3 months).
4. The blood glucose and blood pressure values dropped as well. After the 3 months period, during which they had a diet and physical exercise, the patients reported that they feel better and is much easier to keep the blood glucose and blood pressure under control.
5. As concerns the cardiovascular risk, the SCORE number decreased in all patients. In three patients it decreased significantly and they fit in a lower risk level.
6. The physical exercise helped in the decrease of the adipose tissue by increasing the muscle system capacity to use fat for energetic purposes.

## REFERENCES

1. Alexandrescu T, Motocu M, Negrean V., Țărmure S, Lencu M., 2009, Obezitatea și sindromul metabolic (Obesity and the metabolic syndrome). Epidemiologie și etiopatogenie (Epidemiology and Etiopathogeny), Editura Clujul Medical, pp.353-359
2. Eisenmann J.C, 2005, Waist circumference percentiles for 7 to 15 year old Australian children, (Procentul circumferinței abdominale la copiii australieni cu vârsta cuprinsă între 7 și 15 ani) Editura Acta Paediatric, p. 1182
3. Ezekiel J. Emanuel, 2008, [Media+Child and Adolescent Health: A Systematic Review](#), Common Sense Media
4. Flegal K.M, Troiano R.P, Pamuk E.R, Kuczmarski R.J, Campbell S.M, 1995, [The influence of smoking cessation on the prevalence of overweight in the United States](#), N. Engl. J. Med.
5. Koh K.K, Park S.M, Quon M.J, 2008, Leptin and cardiovascular disease: response to therapeutic interventions, Circulation, Iunie 2008, p.117
6. Anghelescu L., 1984, Obezitatea, Editura Facla, Timișoara , p.6
7. Mihailov M, Cevei M, 2006, Recuperare funcțională în boli reumatologice (Functional recovery in rheumatological diseases), Editura Universității din Oradea (Oradea University Publishing House), p.190, p.228
8. Medical Psychology - Course, Craiova University of Medicine and Pharmacy
9. Ichim P., Ene IM, 2012, Kinetoprofilaxie, Editura Zigotto, Galați p. 37
10. [WORLD HEALTH ORGANIZATION](#), [Physical Inactivity: A Global Public Health Problem](#), 22 februarie 2009