

OUR EXPERIENCE IN THE REDUCTION OF OVERWEIGHT AND CELLULITE

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Abstract

In the 21st century obesity has epidemic proportions and it is accepted by the WHO as one of the leading causes of premature death worldwide. The aim of this study is to evaluate the effect of our Weight Loss Program in women with overweight and cellulite for three month period. The research includes 123 overweight women (age 29-45 d), divided into three groups. Treatment program for group A includes aesthetic physiotherapy; group B – anti-cellulite massage, strength training and cardio training, and group C - high intensity interval training and anti-cellulite massage. The study focused on physical and body performance. Differences in the monitored indicators show the effectiveness of the three physiotherapy programs.

Key words: obesity, cellulite, physiotherapy, strength training, anti-cellulite massage

Introduction

Obesity is one of the leading causes of premature death worldwide and reduces life by an average of 6-7 years of age (Topuzov, 2000; 2002). This metabolic disorder with chronic nature is the result of complex interactions between endogenous and exogenous factors (Nikolovska, 2014). After the official recognition of obesity as a global epidemic in 1997, the World Health Organization (WHO) adopt standards for the classification of body weight according to body mass index - BMI (Barness et al., 2007; Nikolovska, 2012). It is believed that a BMI of 30-35 reduces life of two to four years (Topuzov, 2002) while severe obesity (BMI > 40) reduces life by about 10 years for men and five years for women (Topuzov, 2000). The main treatment for obesity consists of dieting and physical exercise (Nikolovska, 2013; Nikolovska et al., 2013). Exercise and rational nutrition should become a permanent part of a person's life to holding down the reduced weight after one year (Gavriel et al., 2010; Nikolovska, 2012). The optimization of weight and cellulite reduction reflects positively on the overall psycho-emotional status, self-esteem, mood, and performance (Nikolova et al., 2011; Nikolovska, 2013).

The aim and object

The aim of the study is to find efficient and rapid method for the reduction of cellulite and obesity and long-term maintenance of results, including healthy eating, aesthetic physiotherapy and exercise program. Object of study is the combination of separate feeding with aesthetic physiotherapy or kynesitherapy complex and their effects on obesity and cellulite in 123 women. The examined patients have cellulitis - second degree and overweight (mean BMI - 27, 30 kg/m²), at the age of 29 to 45 years.

Research methods

To solve the purpose and objectives of the study, women are subjected to testing twice (at the beginning and end of the three month experiment).

We tested: BMI; body weight; body composition; height and the circumference of the body; type of obesity; type and severity of cellulite;

Methodology

All women participating in the study were treated for three months three times a week (12 treatments per month). Before starting treatment of all respondents is determined daily consumption of calories and they are given instructions for separate meals. Patients were divided into three groups: Group A - control group (45 women), which was subjected to our proposed program of physiotherapy and aesthetic follows the principles of food combining; Group B - experimental group (37 women), which in addition to separate eating, after additional training program that included a combination of strength and cardio-training, after which they receive anti-cellulite massage with cellulite balsam; Group C - experimental group (41 women), which in addition to separate feeding perform 15 minutes of high intensity interval training (HIIT), then they get cellulite massage with cellulite balsam.

Aesthetic Physiotherapy (group-A):

- selective ultrasonic cavitation for mechanical disruption of the membranes of the fat cells of a certain body fat;
- pressotherapy immediately after cavitation to accelerate lymphatic drainage and disposal of metabolic products;
- radio frequency for firming the body by increasing the muscle tone and the elasticity of the tissue, activation of the fibroblasts and the production of collagen;
- complex exercises of vibrating platform in order to achieve a better shape of the body weight reduction.

Combination of strength and cardio workout (group - B):

Procedure lasted 55-60 min, of which: 5-10 min warm-up 25 min strength training and 25 min - cardio workout. It starts slowly with warming and light aerobic activity. Beginners first perform general purpose exercises for all muscle groups.

In strength training are chosen 2 exercises with weights for each muscle group performed 8-12 times. Cardio exercise bike is a moderately intense pace.

High intensity interval training HIIT (group -. C):

- Begins with the usual 3 minute warm-up; - Each minute is as follows: 30 seconds sprint for 80-85% of the maximum speed followed by 30 seconds light jogging (generally 8-10 minutes); - 2 minutes slowdown and gradual normalization of cardiac activity. *Massage* has a big role in accelerating the metabolism. Its main task is to improve drainage in areas affected by the accumulation of fat and cellulite (Tate et al., 2007). The duration of anti-cellulite massage is 20-30 minutes. 70% - 80% of the time used techniques for squeezing and rubbing. Technique for kneading the lower extremities are most commonly applied double fingerboard and double ring stroking and of the

additional techniques - rained. Abdominal and buttock respectively using additional techniques - kneading (Mokdad et al., 2004).

Results

Results were statistically processed by variation analysis (statistical confidence $p < 0.05$). Changes in body composition in group A are shown in Tab. 1, a group B of the Tab. 2 and group B of the Tab. 3. Obtained was a statistically significant reduction of: BMI, body weight, fat mass, fat free mass, the amount of body water, and reliably increase the active body mass. By reducing the weight, correlates the ball of 4 body circumference, which also significantly reduced at the end of the first month ($p < 0.05$). Using objective (thermo diagnosis) and subjective measures (inspection and "pressing test") we find that the response of cellulite becomes significant about the third month.

Table. 1 Changes in body composition of group A

Values	BMI kg/m^2 \bar{x}	Body weigh \bar{x}	Fat mass \bar{x}	Fat free mass \bar{x}	Body water \bar{x}	Active body mass \bar{x}
Initial	27,41 kg/m^2 s=0,382	76,76 kg s=3,060	22,03 kg s=0,349	54,73 kg s=2,768	36,49 l s=1,030	18,24 kg s=0,506
Terminal	23,70 kg/m^2 s=0,443	66,38 kg s=3,181	16,06 kg s=0,263	50,32 kg s=1,726	31,03 s=0,958	19,29 kg s=0,453
$d = \bar{X}_2 - \bar{X}_1$	3,71 kg/m^2 *	10,38kg*	5,97 kg*	4,41 kg*	5,46*l	1,05 kg*

*($p < 0,05$) - statistically significant difference

Table. 2 Changes in body composition of group. B

Values	BMI kg/m^2 \bar{x}	Body weigh \bar{x}	Fat mass \bar{x}	Fat free mass \bar{x}	Body water \bar{x}	Active body mass \bar{x}
Initial	27,30 kg/m^2 s=0,486	75,92 kg s=3,046	21,56 kg s=0,303	54,36 kg s=2,448	36,23 l s=0,862	18,13 kg s=0,448
Terminal	24,08 kg/m^2 s=0,351	66,96 kg s=3,018	15,44 kg s=0,384	51,52 kg s=1,335	30,72 l s=0,976	20,80 kg s=0,743
$d = \bar{X}_2 - \bar{X}_1$	3,22 kg/m^2 *	-8,96 kg*	-6,12 kg*	-2,84 kg*	-5,51 l*	+2,67 kg*

*($p < 0,05$) - statistically significant difference

Table. 3 Changes in body composition of group. C

Values	BMI kg/m^2 \bar{x}	Body weigh \bar{x}	Fat mass \bar{x}	Fat free mass \bar{x}	Body water \bar{x}	Active _ body mass \bar{x}
Initial	27,12 kg/m^2 s=0,428	75,12kg s=3,10	21,10kg s=0,318	54,02 kg s=1,978	36,00 l s=0,484	18,02 kg s=0,374
Terminal	23,57 kg/m^2 s=0,456	65,31kg s=2,329	15,04kg s=0,292	50,27 kg s=1,043	30,15 l s=0,905	20,12 kg s=0,654
$d = \bar{X}_2 - \bar{X}_1$	3,55 kg/m^2 *	-9,81kg*	-6,06 kg*	-3,75 kg*	-5,85 l*	2,10* kg

*($p < 0,05$) - statistically significant difference

Conclusions

1. The existing literature on the problem of obesity and cellulite, the data for combining strength training with cardio workouts and high intensity interval training is scarce and controversial.
2. As a result of applied three programs, is noted statistically significant decrease in body mass index, and all examined women at the end of the experimental period were in the normal range (BMI below 24.9).

3. Application of specifically targeting problem areas exercises, combined with specialized massage and cellulite balms leads to local response on hypoxia, relief drainage and removal of edema, stabilizing the elasticity of connective tissue and reduce the circumference of the upper arm, thigh, waist and hips.

4. From medical results in all three groups can be seen that a reduction of cellulite compared with the deposition of adipose tissue of gynoid type requires a prolonged treatment.

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NAŠE ISKUSTVO U SMANJENJU PREKOMJERNE TEŽINE I CELULITA

Sažetak

U 21. stoljeću pretilost ima razmjere epidemije i od strane SZO-je je prihvaćena kao jedan od vodećih uzroka prerane smrti širom svijeta. Cilj ovog rada je procijeniti učinak našeg programa mršavljenja u žena s prekomjernom težinom i celulitom za razdoblje od tri mjeseca. Istraživanje uključuje 123 pretile žene (dobi 29-45 g.), podijeljenih u tri skupine. Program mršavljenja za skupinu - A uključuje estetsku fizioterapiju; Za skupinu - B kombinaciju vježbe snage i cardiotrening plus anticelulitnu masažu, a za skupinu C visoko - intenzivni intervalni trening i anticelulitnu masažu. Studija se fokusirala na fizičke i tjelesne performanse. Razlike praćenih pokazatelja pokazuju učinkovitost tri fizioterapeutska programa.

Ključne riječi: pretilost, celulit, fizioterapija, trening snage, anticelulitne masaže

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