

Therapeutic Physical Training, Sport Medicine and Physical Rehabilitation

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Fundamental Aspects of Complex Rehabilitation of Middle-aged Women in Overweight and i Degree Obesity

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Abstract:

This article presents the results of bio-impedance study of body composition of middle-aged women with problems of obesity and excess weight, the efficacy of a complex of actions with elements of physical rehabilitation, health-improving physical training, ergotherapy aimed at improving the functional status of women. Tasks of work: to assess the functional status and the level of motivation to cure women of middle age with overweight and obesity of the first degree. Based on these results to develop a comprehensive rehabilitation program for women based on the use of measures of improving physical training, physical rehabilitation and ergotherapeutic events and evaluate the effectiveness of the impact of the developed program. It was found that the use of a set of measures of physical rehabilitation is effective for middle-aged women in overweight and obesity of the first degree.

Key words:

obesity, overweight, bio-impedance analysis, comprehensive rehabilitation, middle-aged women, body composition component.

Increase in the number of people in the world suffering from obesity and excess body weight. Studies conducted by the Organisation for economic cooperation and development in 30 developed nations in the world [1] indicate that the problem of obesity and overweight become very serious and requires an immediate solution. According to research of The World Health Organization about 60 % of obese people live till the age of 60, up to 70 years – only 30 %, and a further 10 years can barely survive 10 %. In most EU countries over the past 20 years, the number of people suffering of overweight has increased by 50 % [6]. Among those people aged 50 to 59 years body weight which exceeded the 15–24 %, the mortality rate was 17 % higher average, and those exceeding the weight of the body on 24–34 %, increased mortality at 41 % [1;2].

Therefore, **research aimed** at finding the best solutions to this problem must be comprehensive and particularly they become relevant for middle-aged women with excess weight body and obese degree I.

The purpose of the study was to improve the functional status and level of motivation to recover for middle-aged women. When excess body weight and obesity of I degree, through complex events, incorporating elements of physical rehabilitation, physical culture and occupational therapy.

Research objectives:

1. Assess functional status and level of motivation to recover of middle-aged women with excess body weight and obesity degree I.
2. Develop a comprehensive rehabilitation programme for women of middle age in excess body weight and obesity degree I, based on the use of health-enhancing physical activities culture, physical rehabilitation and other activities.
3. Evaluate the effectiveness of the programme integrated rehabilitation on functional status and level of motivation to recover for middle-aged women with excess body weight and obesity grade I.

In the work of the research the following **methods** were used: an analysis scientific-methodical literature, pedagogical experiment, methods of centered research [4], the method of assessing the level of motivation to recover which carried out using a questionnaire «restoration of locus control» (RLC) (Rotter, 1966) [3] hardware complex «Neurosoft-Psihotest», the method of mathematical statistics and medico-biological methods study (study of body composition method bioimpedansnym hardware complex «FAA-01 «MEDASS» balance assessment Analyzer of water sectors of the body with the software») [5]. In the Protocol bioimpedance studies of body composition assessment were reflected the following options:

- primaryexchange (PE);
- specificexchange (SE);
- the body mass index (BMI);
- indexwaist-hip (IWH);
- fatbodymass (FBM);
- leanmass (LM);
- sharedwaterbody (SWB).

Experimental work was carried out from September 2013 to September 2015, based on physical culture and sports Centre EE «Polesky State University», involving women at the age from 38 till 56 years. The average age of the subjects in the control group (CG) was $44 \pm 1,1$ year, in the experimental group (eg) – $45 \pm 1,1$ years. The control group undertook a range of activities total physical training (group health), which provided for the dance aerobics, exercise, etc., with primaryfocusing on figure correction.

In classes of EG we have developed a set of measures which included: step aerobics, therapeutic physical culture mechanotherapy (classes at the gym), hatha yoga, music therapy, classes on abilities, applied sciences (decoupage) and entertaining-cognitive activities (movie therapy). Organized classes were held three times a week. Packages on step aerobics, exercise therapy, mechanotherapy and gardenotherapy, have helped reduce body weight and improve the functionality of the organism. And classes of the decoupage, musictherapy and kinotherapy were directly aimed at improving the level of motivation of women to recover.

The research results and their discussion. To determine the impact of a set of measures that includes physical elements rehabilitation, occupational therapy and physical culture of recuperation, the functional state of an organism of middle-aged women, as in experimental and control groups assessed body composition method before and after the study. Also in the study in order to assess the level of motivation to recovery questionnaire «restoration of the locus of control» was used.

Women of control and experimental groups, were participating in the pedagogical experiment, attended overweight and obesity grade I. Analysis of the average BMI for women who were under test with the experimental group the indicator registered as $29, 27 \pm 4,42$ kg/m², in the control group it was $28,2 \pm 4,23$ kg/m². Index average waist-hips of surveyed women exceeded the norm (who norm are indicators of 0,60 – 0,85 cm), EG has index $0,87 \pm 0,000,4$ cm³ KG – $0,86 \pm 0,005$ cm. The average body of fat for women exceeded the normal, in EG it amounted to $31,3 \pm 7,84$ kg KG– $30,7 \pm 7,69$ kg (who are the norm indicators, ranging from 25 to 30 kg). The average lean body weight in women uder surveyed both groups exceeded the norm, particularly in EG, it amounted to $55,8 \pm 3,9$ kg and KG – $54,7 \pm 4,15$ kg (norm are indicators of 34,6–54,6 kg). The overall average level of water body in women under pedagogical research of CG amounted to $35,2 \pm 3,06$ kg, and EG – $35,0 \pm 2,97$ kg.

Thus, in the experimental group 40% of women were overweight, 60% of women had I the degree of obesity. In a control group of 50% of women have excess weight, other 50% of women had the I degree of obesity. Level of motivation to recover according to the questionnaire averaged $15,8 \pm 4,98$ points, while it has been established that at the beginning of the pedagogical experiment, 50% of women had a low level of motivation, and the remaining 50 % – the average level of motivation to recovery. Level averaged to $16,4 \pm 4,25$ points, while 30 % of women of CG had a low level of motivation, 70 % of women-the average level of motivation to recover.

To determine the impact of this on functional status and level of manifestations of motivation to recover at the end of the study, women in the experimental and control group retesting was conducted and the results are in the table below (table 1).

Women who participated in the experiment, was observed positive dynamics of the results, as in the control and experimental groups.

The average BMI of women in experimental group amounted to $25,9 \pm 3,4$ kg/m², with an increase of $3,9$ kg/m². In the control group that index gain was $0,7$ kg/m², the average BMI amounted $27,5 \pm 2,78$ kg/m². A comparative analysis of the ITB had found credible differences ($p > 0,05$) between women and EG and CG. The average index of waist-hips amounted to $0,83 \pm 0,03$ cm., EG- $0,82 \pm 0,05$ cm consistent with the norm.

Comparative analysis of TMT was significantly better. Women of EG had $4 \pm 3,16$ kg and became conform to the norm, at CG, this figure averaged $47,9 \pm 3,95$ kg and they would be normal.

**Indicators of body composition studies and bioimpedance
of the level of motivation of middle-aged women**

Indicators	The mean values of bioimpedance analysis of body composition and level of motivation					
	at the beginning of the experiment			at the end of the experiment		
	EG (x±m)	CG (x±m)	Reliability of differences	EG (x±m)	CG (x±m)	Reliability of differences
Bodyweight (kg)	76,6±10,31	74,9±10,0	p>0,05	71,3±9,11	74,9±8,95	p<0,05
Waistcircumference (cm)	90,1±8,41	89,2±9,3	p>0,05	85,4±7,95	89,4±8,3	p>0,05
Hipcircumference (cm)	108,9±7,71	103,6±11,2	p>0,05	99,5±8,74	107,1±7,03	p>0,05
Body mass index (kg/m ²)	29,3±4,42	28,2±4,23	p>0,05	25,9±3,4	27,5±2,78	p<0,05
Basalmetabolism (kcal)	1467,5±58,05	1466±55,31	p>0,05	1580±46,7	1467±58,05	p<0,05
The share Exchange (kcal)	830±31,6	831±32,7	p>0,05	828,7±31,6	830±31,6	p<0,05
bodymass (kg)	31,3±7,84	30,7±7,69	p>0,05	25,8±7,04	26,8±6,23	p<0,05
(skinny) bodyweight (kg)	55,8±3,9	54,7±4,15	p>0,05	52,4±3,16	47,9±3,95	p<0,05
Totalbodywater (kg)	35,0±2,97	35,2±3,06	p>0,05	33,2±3,4	39±2,53	p<0,05
Level of motivation to recover	15,8±4,98	16,4±4,25	p>0,05	27,1±2,05	23,9±3,3	p<0,05

The PSBS have improved reliably indicators among women of EG, they would be able to rate and amounted to $33,19 \pm 3,4$ kg, in CG the average totaled 39 PSB $\pm 2,53$ kg. EG women occurred reliable improve motivation to recover and their average score became $27,1 \pm 2,05$ points, in CG the level of motivation to recover was recorded as $23,9 \pm 3,3$ points.

Conclusions. Effectiveness of comprehensive rehabilitation on functional status and level of motivation to recover for women of middle-aged with obesity of I degree and overweight confirmed the benefits of our range of activities, includes the elements of physical rehabilitation, recreational physical culture and occupational therapy. During the period of the experiment for women of EG body mass indices was significantly reduced. PE, SE, BMI, IWH, FBM, LM significantly increased level of motivation and recovered indicators, except for the result of waist and the results of the hips, where differences are not reliable as a result of research in the experimental group. The level of motivation to recovery rose to «high» among 60 % of women who had normal body weight, and level of motivation to recover became above average among 40 % of women who were are overweight in the control group and 30 % of women with an overweight, and 30 % of women who had I degree of obesity in experimental group.

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