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ORIGINAL

Effectiveness of the "Slimming Down Olsztyn Residents" health program – motivation to participate and withdraw

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Authors' Contribution:
A Study Design
B Data Collection
C Statistical Analysis
D Data Interpretation
E Manuscript Preparation
F Literature Search
G Funds Collection

abstract

Background This study aimed to determine the motivation of overweight/obese persons to participate in and withdraw from a health promotion program, and to determine the program's effectiveness.

Material/Methods 91 women and 89 men enrolled in the program. Their motivation was described with modified EMI-2. The reasons for withdrawal were given by the participants. Body composition was determined with Tanita BC 418 MA.

Results Improved appearance, weight loss and health were the main reasons why overweight/obese persons decided to become physically active. Approximately 56% women and 60% men quit the program because they were unable to cope with the fitness regime, lost interest or could not find the time. The participants who completed the program (> 600 MET) significantly ($p < 0.01$) reduced their BM (1.84 kg and 2.37 kg), BMI (0.70 kg/m^2 and 0.74 kg/m^2), fat percentage (1.58% and 1.81%) and fat mass (1.70 kg and 2.20 kg). Significant loss of the adipose tissue and an increase in muscle mass were observed in various parts of the body.

Conclusions The 7-month health program involving physical activities with MET > 600 led to a significant decrease in fat mass and fat percentage and a significant increase in muscle mass.

Key words overweight, obesity, physical activity program, effects, physical training, participation, withdrawal

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INTRODUCTION

The most common health ailments associated with a sedentary lifestyle include cardiovascular diseases, hypertension, osteoporosis, type 2 diabetes mellitus, mental health problems, spinal deformities, flat feet, certain types of cancer and even shorter life expectancy [1, 2, 3]. Those conditions, known as lifestyle diseases, are mainly associated with a sedentary lifestyle and an unhealthy diet [4], and they are often diagnosed in overweight and obese individuals [5]. In the United States, obesity has reached epidemic proportions in all age and ethnic groups [6]. A sedentary lifestyle is also a major independent risk factor for coronary artery disease [7], which is the most common cause of death in the world. Similar trends are observed in Poland. According to the World Health Organization Report of 2008, 58.6% of Poles older than 20 (62.8% of men and 54.7% of women) were overweight and 25.3% (23.8% of men and 26.7% of women) were obese [8]. According to the WHO estimates, 23% of men and 17% of women will be obese by 2020, and this percentage will increase to 28% and 18%, respectively, by 2030. A report developed by the Target Group Index (TGI) and the Millward Brown Research Institute indicates that every other Pole was overweight or obese in the second half of 2015. Overweight and obese Poles accounted for 49.55% of the general population (36.94% were overweight and 12.61% were obese). Obesity and overweight were highest in the Świętokrzyskie Region (54.77%), whereas their incidence in the Region of Warmia and Mazury was determined at 45.87% [9].

Campaigns promoting a healthy lifestyle enable participants to exercise greater control over their health and create various opportunities for health improvement. One of the main goals of public health policy should be to promote higher levels of physical activity through various remedy measures, including health and fitness promotion programs. Various health programs are implemented at the global [10], national [11] and local level [12] to promote a more active lifestyle.

Campaigns promoting a healthy lifestyle and fitness programs are becoming increasingly specialized, which has led to the development of various categories and types of exercise. There is a wide range of fitness programs targeting people from different age groups, beginning from preschool children and grade school students [13], through secondary school [14] and university students [15], to adults and seniors [16]. Many programs involve personal training in aerobic and anaerobic workouts [17], interval training [18], training adapted to the specific needs of male and female subjects [19] as well as mentally and physically handicapped participants [20]. Aquatic fitness programs [21], yoga [22] and exercise routines involving pets, such as dogs [23], are also highly popular. Such a wide variety of fitness programs should contribute to an improvement in the awareness, lifestyle choices and, consequently, the health of contemporary consumers. Meanwhile, the effectiveness of physical activity programs is very low despite the involvement of many people and high costs. In fact, the number of people with a sedentary lifestyle continues to grow [24]. A reluctance to become physically active is observed already in young adolescents [25].

The aim of this study was to evaluate the effectiveness of the “Slimming Down Olsztyn Residents” program in promoting a healthy and physically active lifestyle among the inhabitants of the city of Olsztyn, Poland. To achieve

the main research objective, the authors attempted to answer the following questions:

1. What is the main motivation of overweight and obese people to become physically active?
2. At what stage of the program and why do overweight and obese people give up physical activity?
3. Do physical activity programs contribute to significant changes in body composition?

MATERIALS AND METHODS

PARTICIPANTS

The "Slimming Down Olsztyn Residents" program was carried out in the Body Perfect Fitness Wellness & SPA club in Olsztyn between 9 March 2015 and 24 October 2015. A total of 91 overweight and obese women and 89 overweight and obese men, residents of Olsztyn, Poland, volunteered for the program. The participants' mean age was 36.78 years for women and 35.78 years for men. The largest number of the participants were aged 20 to 40 years (women – 36.2%, men – 35.1%); there were far fewer participants from the 41–60 age group (13.36% and 11.68%, respectively), and very few participants were older than 60 years (3.66%). The participants were selected from among volunteers who: did not take any medication or nutritional supplements, were in good health, had no history of blood diseases or diseases affecting biochemical and biomechanical factors, and did not participate in any PA programs other than the "Slimming Down Olsztyn Residents" program. Only overweight or obese persons with physical activity levels < 600 MET were enrolled in the program.

DESCRIPTION OF THE "SLIMMING DOWN OLSZTYN RESIDENTS" PROGRAM

The "Slimming Down Olsztyn Residents" program was addressed to overweight and obese people with a sedentary lifestyle. As part of this comprehensive health program, the participants were encouraged to achieve their personal goals by following a nutritious and balanced diet and becoming involved in physical activities under the supervision of diet and fitness experts. The subjects were allowed to choose from a wide range of physical activities based on their preferences, motor skills and fitness levels. They could train at the club between 7 a.m. and 10 p.m. on week days and between 9 a.m. and 9 p.m. at weekends and on holidays. During the program, all participants received support from body building, functional fitness, aerobics, Callanetics, spinning, Zumba and kettlebell trainers in the Body Perfect Fitness Wellness & SPA club. The participants were provided with individual exercise plans that accounted for their needs and personal goals, with the aim of increasing their physical activity levels to > 600 MET. Due to their low physical activity levels, the participants were asked to try all types of activities offered by the club and participate in at least 3 training sessions. The trial period lasted two months. After that period, the participants were able to choose the preferred types of activity (at least three) which had to include aerobic, strength, flexibility and coordination (rhythm and balance) exercises. High intensity interval training (spinning, CrossFit) was offered mostly to younger persons in later stages of the program due to the participants' limited training experience, low motor skills and lack of familiarity with the proper technique for using

exercise equipment. Diet and fitness experts (scientists from the University of Warmia and Mazury in Olsztyn) gave 10 lectures about physical activity and healthy nutrition to motivate the participants to reach their personal goals. The participants' eating habits were not modified during the program, and it was up to the respondents whether they incorporated healthy eating principles into their diets. Nutritional guidance was provided only in the form of lectures with the aim of encouraging the participants to adopt a healthy diet. The lectures were not obligatory and were open to all participants wishing to improve their eating habits. The first consultation with a dietician involved a dietary questionnaire, and the participants were asked to complete a three-day food journal. They were provided with nutritional recommendations and suggestions, including the qualitative composition and the number of meals, eating before and after exercise, as well as dietary guidelines for the entire 7-month program. The main focus of the study was on physical activity in order not to introduce additional variables that could significantly influence the results of statistical analyses (by examining the effect of physical exercise rather than diet). All participants attended free personal meetings with a dietician once a week. They were also able to consult a physician every two weeks in the club. Counselling sessions were held once a month, but the participants could contact the counsellor by phone in urgent situations. The counsellor motivated the participants to exercise regularly during the program. The participants also received additional support from fitness instructors and the club's personnel.

ETHICAL APPROVAL

The research was carried out upon the prior consent of the Ethical Committee of the University of Warmia and Mazury in Olsztyn (UWM), Poland (Decision No. 39/2011). The study was performed on volunteers who signed an informed consent statement.

MEASUREMENTS OF PHYSICAL ACTIVITY LEVELS

The physical activity levels of all participants were evaluated before enrollment with the use of the Polish version of the International Physical Activity Questionnaire [26]. The participants declared the number of minutes dedicated to PA (minimum 10 minutes) during an average week preceding the study. The energy expenditure associated with weekly PA levels was expressed in terms of Metabolic Equivalent of Task (MET) units. The MET is the ratio of the work metabolic rate to the resting metabolic rate, and 1 MET denotes the amount of oxygen consumed in 1 minute, which is estimated at 3.5 mL/kg/min. Based on the frequency, intensity and duration of PA declared by the surveyed participants, the respondents were classified into groups characterized by low (L < 600 METs-min/week), moderate (M < 1,500 METs-min/week) and high (H ≥ 1,500 METs-min/week) levels of activity. Only participants with low levels of PA, a sedentary lifestyle and energy expenditure of up to 600 METs per week were chosen for the study. An analysis of physical activity levels based on the IPAQ revealed that none of the participants was sufficiently active. IPAQ results were used only to select a homogenous sample of women and men with similarly low activity levels who would form a homogeneous group of respondents. The results are not presented in this study.

DETERMINATION OF MOTIVATION FOR PHYSICAL ACTIVITY

Fourteen subscales of the modified Exercise Motivation Inventory (EMI-2) were used to determine the participants' motivation to undertake physical activity. In this study, only the 14 subscales of the EMI-2 version for physical activity were used because none of the participants was willing to become involved in sports [27]. The respondents were asked to indicate a single most important factor that most motivated them to participate in the health program. Only one factor was chosen because the main objective of this study was to determine the respondents' reasons for withdrawing from, rather than participating in the program, as well as its outcomes. Respondents who dropped out were asked to indicate in the enrollment chart the reasons for quitting, on a 5-point scale, and the withdrawal date. They were also encouraged to provide their own reasons for giving up the program.

ANTHROPOMETRIC MEASUREMENTS

Body composition was measured with the Tanita BC 418 MA bioelectric impedance analyzer (Tanita Corporation, Japan). The BIA method involves quick and simple measurements, and the results are similar to those produced by anthropometric measurements. For this reason, BIA results are generally regarded to be reliable [28]. The following measurements were performed: BH [cm] – body height in centimeters, BM [kg] – body mass in kilograms, BMI [kg/m^2] – body mass index, BF [%] – body fat percentage, FM [kg] – fat mass in kilograms, and PMM – predicted muscle mass [kg]. The last three indicators were calculated separately for lower and upper limbs (right and left) and the torso. All measurements were performed twice: before the program and after the program. Body composition before and after the program was measured in similar conditions (air temperature and humidity), before noon, at the club laboratory. The participants were examined in the same order (excluding persons who quit). The subjects were told to drink at least 1 liter of water on the day before the measurements and 0.5 liter of water 2 hours before the measurements. As of that moment, the participants did not consume any foods or fluids until the examination.

STATISTICAL ANALYSIS

The results were analyzed statistically in the Statistica PL v.10 program [29] using basic and nonparametric statistics modules and the Wilcoxon signed-rank test. All calculations were performed at a significance level of $\alpha = 0.05$. The following research hypothesis was tested: significant changes in body mass, BMI, fat mass, body fat percentage and PMM on upper limbs, lower limbs and the torso are observed in participants who complete a health program. The Kruskal–Wallis test by ranks, the non-parametric equivalent of one-way ANOVA, was used to describe the participants' reasons for quitting the program.

RESULTS

The motivations of participants for enrolling in the health program are presented in Table 1. The reasons for withdrawing from the program and the month of resignation are shown in Table 2. Changes in body composition resulting from the fitness regimen during the program are presented in Tables 3 and 4.

The highest number of women enrolled in the program to improve their appearance, lose weight and for health reasons (39.6%, 28.6% and 15.4%, respectively). Similar results were noted among men who were most likely to focus on weight management, followed by appearance and health maintenance (28.1%, 20.2%, and 12.4%, respectively). The number of females with the above motivation for exercise was significantly higher than the proportion of women who selected other answers. "Appearance" (B) and "Weight management" (N) were chosen significantly more often than "Health pressure" (F) by female respondents. Male participants were significantly more likely to select "Appearance" (B) and "Weight management" (N) than other categories, excluding "Health pressure" (F). Weight management" (N) was chosen more frequently than items A, E, G, H, J and M (Table 1).

Table 1. Motivation for participating in the health program

Subscale	Participation in physical activity (exercise)			
	Women (91)		Men (89)	
	N	%	N	%
A – Affiliation	2	2.2	2	2.2
B – Appearance	36	39.6	18	20.2
C – Challenge	0	0	4	4.5
D – Competition	0	0	4	4.5
E – Enjoyment	4	4.4	2	2.2
F – Health pressure	14	15.4	11	12.4
G – Ill-health avoidance	0	0	0	0
H – Nimbleness	0	0	0	0
I – Positive health	3	3.3	4	4.5
J – Revitalization	2	2.2	3	3.4
K – Social recognition	1	1.1	6	6.7
L – Strength and endurance	0	0	7	7.9
M – Stress management	3	3.3	3	3.4
N – Weight management	26	28.6	25	28.1
Total	91	100	89	100
Test results	B, N > F B, N, F > A, C, D, E, G, H, I, J, K, L, M		N > F B, N >A, C, D, E, G, H, I, J, K, L, M F > A, E, G, H, J, M	

Note: The participants were asked to choose only one reason for enrolling in the program.

A total of 51 women (56.04% of the female population) and 54 men (60.67% of the male population) dropped out of the program before its completion. The highest number of participants (47.1% women and 59.6% men) quit already in the second month, whereas 39.2% women and 24.1% men resigned in the third month of the program. A similar number of respondents withdrew 4 months into the program (9.8% women and 9.3% men) and the fewest number of participants decided to resign in the fifth month (3.9% women an 7.4% men). The results were processed statistically to reveal that most women quit the program for the following reasons: "Unable to cope" (A), "Don't feel like it" (B) and "Don't have the time" (C). Those reasons (A, B, C) were cited significantly more often than other factors (E, F, G, H, I). The remaining reasons were: "Got bored" (D), which was selected significantly more often than (G, H, I), and "Out of my comfort zone" (F), which was a more common reason for quitting than "Prefer other forms of exercise" (G), the least selected option. In the group of male participants, the main reasons for withdrawing from the program were: "Unable to cope" (A), "Don't feel like it" (B) and "Got bored" (D), which were selected significantly more often that the remaining categories (C, E, F, G, H, I). They were followed by "Don't enjoy it" (E), which was cited significantly more often than "Don't have the time" (C). Reasons F, G, H and I were somewhat less frequently chosen. Male participants were least likely to drop out due to reason (C): "Don't have the time" (Table 2).

The body composition of participants who completed the program is presented in Table 3. Changes in body composition, measured separately on upper limbs, lower limbs and the torso, are shown in Tables 4 and 5.

The women and men who completed the program were characterized by a significant ($p < 0.0000$) decrease in BM (by 1.84 kg and 2.37 kg, respectively) and BMI (by 0.70 kg/m2 and 0.74 kg/m2, respectively). Despite the above, the BMI values of both female and male participants were still in the overweight range after the program. In general, body fat percentage (BF) decreased significantly ($p < 0.0000$) by 1.58% in women and 1.81% in men. Fat mass (FM) decreased significantly ($p < 0.0000$) by 1.70 kg in women and 2.20 kg in men (Table 3). In women, fat percentage on lower limbs decreased significantly ($p < 0.0000$) by 0.85% on RL and 0.91% on LL. In men, a significant ($p < 0.0000$) reduction in fat percentage was noted on RL at 1.88% and LL at 2.09%. Fat mass was also significantly reduced (women: 0.73 kg on RL and 0.63 kg on LL; men: 0.41 kg on RL and LL each), whereas a significant ($p < 0.0000$) increase was observed in the predicted muscle mass (women: 0.35 kg on RL and 0.32 kg on LL; men: 0.42 kg on RL and 0.34 kg on LL) (Table 4).

A significant decrease ($p < 0.0000$) in fat mass and body fat percentage was also observed on upper limbs in both male and female participants. RA and LA measurements revealed a decrease in all parameters, including body fat percentage (RA: by 1.23% in women and 1.15% in men; LA: by 1.10% in women and 1.20% in men) and fat mass (RA: by 0.30 kg in women and 0.11 kg in men; LA: by 0.26 kg in women and 1.14 kg in men). PMM values increased significantly ($p > 0.0000$) in both female and male respondents (RA: by 0.31 kg in women and 0.22 kg in men; LA – by 0.29 kg in women and 0.18 kg in men). Measurements performed on the torso revealed a decrease in the values of BF [%] and FM [kg] at 1.34% and 0.71 kg in women, and 1.45% and 0.97 kg in men, respectively. Women improved their PMM scores by 0.67 kg, and men – by 0.37 kg (Table 5).

Table 2. Reasons for quitting and month of withdrawal from the program

Month of withdrawal	Women		Men	
	N	%	N	%
2	24	47.1	32	59.6
3	20	39.2	13	24.1
4	5	9.8	5	9.3
5	2	3.9	4	7.4
Total	51	100	54	100
Reasons for withdrawal	Mean rank	Mean	Mean rank	Mean
A – «Unable to cope»	318.83	3.04	378.93	3.70
B – «Don't feel like it»	317.51	3.02	333.33	3.11
C – "Don't have the time"	312.57	3.00	155.83	1.22
D – «Got bored»	261.92	2.43	336.55	3.15
E – «Don't enjoy it»	185.60	1.73	249.19	2.13
F – «Out of my comfort zone»	219.31	2.06	187.37	1.48
G – «Prefer other forms of exercise»	118.78	1.06	195.09	1.63
H – «Not what I expected»	144.02	1.33	187.29	1.50
I – «Feel pain during exercise»	191.45	1.78	167.91	1.30
Test results	A, B, C > E,F,G,H,I D > G, H, I F > G		A, B, D > C, E, F, G, H, I E > C	

Note: The participants were asked to grade their reasons for quitting on a 5-point scale.

Table 3. Changes in body mass, BMI, fat mass and body fat percentage in participants who completed the health program

Parameters		Women N = 40		Men N = 35	
		x̄	SD	x̄	SD
Age [years]		37.23	13.34	36.29	13.18
Body height (BH) [cm]		162.4	4.23	179.4	3.67
Body mass (BM) before the program [kg]		73.13	1.70	94.72	2.87
Body mass (BM) after the program [kg]		71.29	1.59	92.35	2.63
Change [kg]		1.84	0.21	2.37	0.24
Test result		p < 0.0000		p < 0.0000	
BMI before the program [kg/m²]		27.82	1.87	29.45	0.39
BMI after the program [kg/m²]		27.12	1.80	28.71	0.49
Change [kg/m²]		0.70	0.07	0.74	0.10
Test result		p < 0.0000		p < 0.0000	
Whole body	Body fat (BF) before the program [%]	34.18	2.25	22.06	0.54
	Body fat (BF) after the program [%]	32.60	1.94	20.25	0.72
	Change [%]	1.58	0.31	1.81	0.18
	Test result	p < 0.0000		p < 0.0000	
	Fat mass (FM) before the program [kg]	22.58	1.94	22.10	0.66
	Fat mass (FM) after the program [kg]	24.28	1.42	19.90	0.72
	Change [kg]	1.70	0.52	2.20	0.06
	Test result	p < 0.0000		p < 0.0000	

Note: x̄ – arithmetic mean, SD – standard deviation, (p) – probability of exceeding the calculated chi-square value

Table 4. Changes in the body composition of participants who completed the program, measured on lower limbs

	Parameters	Women N=40		Men N=35	
		x̄	SD	x̄	SD
Right Leg (RL)	BF before the program[%]	36.92	1.27	20.33	0.35
	BF after the program [%]	36.07	1.10	18.44	0.45
	Change [%]	0.85	0.17	1.89	-0.10
	Test result	p < 0.0000		p < 0.0000	
	FM before the program [kg]	6.20	0.65	3.25	0.38
	FM after the program [kg]	5.47	0.64	2.84	0.40
	Change [kg]	0.73	0.01	0.41	-0.02
	Test result	p < 0.0000		p < 0.0000	
	PMM before the program	6.71	0.68	11.63	0.60
	PMM after the program [kg]	7.06	0.58	12.05	0.41
	Change [kg]	0.35	0.10	0.42	0.19
	Test result	p < 0.0000		p < 0.0000	
Left Leg (LL)	BF before the program [%]	36.89	1.32	20.48	0.45
	BF after the program [%]	35.98	1.27	18.39	0.61
	Change [%]	0.91	0.05	2.09	-0.16
	Test result	p < 0.0000		p < 0.0000	
	FM before the program [kg]	6.09	0.77	3.31	0.40
	FM after the program [kg]	5.46	0.66	2.90	0.35
	Change [kg]	0.63	0.11	0.41	0.05
	Test result	p < 0.0000		p < 0.0000	
	PMM before the program	6.66	0.64	11.55	0.47
	PMM after the program [kg]	6.98	0.55	11.89	0.40
	Change [kg]	0.32	0.09	0.34	0.07
	Test result	p < 0.0000		p < 0.0000	

Note: x̄ – arithmetic mean, SD – standard deviation, (p) – probability of exceeding the calculated chi-square value

Table 5. Changes in the body composition of participants who completed the program, measured on upper limbs and the torso

	Parameters	Women N=40		Men N=35	
		x̄	SD	x̄	SD
Right Arm (RA)	BF before the program [%]	31.96	1.13	20.13	0.34
	BF after the program [%]	30.73	0.69	18.98	0.58
	Change [%]	1.23	0.44	1.15	-0.24
	Test result	p < 0.0000		p < 0.0000	
	FM before the program [kg]	1.59	0.47	1.23	0.30
	FM after the program [kg]	1.29	0.34	1.12	0.30
	Change [kg]	0.30	0.13	0.11	0.00
	Test result	p < 0.0000		p < 0.0000	
	PMM before the program [kg]	1.68	0.53	3.99	0.42
	PMM after the program [kg]	1.99	0.42	4.21	0.37
	Change [kg]	0.31	0.11	0.22	0.05
	Test result	p < 0.0000		p < 0.0000	
Left Arm (LA)	BF before the program [%]	31.95	1.08	20.44	0.61
	BF after the program [%]	30.85	0.69	19.24	0.77
	Change [%]	1.10	0.39	1.20	-0.16
	Test result	p < 0.0000		p < 0.0000	
	FM before the program kg]	1.58	0.45	1.27	0.33
	FM after the program [kg]	1.32	0.34	1.13	0.29
	Change [kg]	0.26	0.11	1.14	-0.04
	Test result	p < 0.0000		p < 0.0000	
	PMM before the program [kg]	1.69	0.53	4.00	0.44
	PMM after the program [kg]	1.98	0.39	4.18	0.40
	Change [kg]	0.29	0.14	0.18	-0.04
	Test result	p < 0.0000		p < 0.0000	
Torso (T)	BF before the program [%]	31.44	2.50	23.42	0.49
	BF after the program [%]	30.10	1.81	21.97	0.45
	Change [%]	1.34	0.69	1.45	0.04
	Test result	p < 0.0000		p < 0.0000	
	FM before the program [kg]	11.91	0.44	12.96	0.43
	FM after the program [kg]	11.20	0.37	11.99	0.42
	Change [kg]	0.71	0.07	0.97	0.01
	Test result	p < 0.0000		p < 0.0000	
	PMM before the program [kg]	24.11	1.70	38.18	3.43
	PMM after the program [kg]	24.78	1.46	38.55	3.34
	Change [kg]	0.67	0.24	0.37	0.09
	Test result	p < 0.0000		p < 0.0000	

Note: x̄ – arithmetic mean, SD – standard deviation, (p) – probability of exceeding the calculated chi-square value

DISCUSSION

The benefits resulting from participation in health programs vary across individuals and are determined by lifestyle, habits, physical activity level, gender, health status, overall fitness and character traits such as motivation, willpower and temperament. Environmental factors and the nature of the undertaken physical activities also play important roles [30]. This wide array of personal and environmental factors can increase or decrease an individual's chances of success, it determines the motivation for becoming physically active as well as the reasons for giving up the pursuit of personal goals and the moment at which it happens [31]. Even the best designed program will not bring about the anticipated changes if the participants are not sufficiently motivated to adopt a healthy and active lifestyle. Research into reasons for adopting a regular exercise routine indicates that motivation is the key factor for continued participation in physical activity programs [32].

In this study, the results of the EMI-2 subscales indicate that "Appearance", "Weight management" and "Health pressure" were the main reasons why both men and women enrolled in the health program. The above indicates that both sexes have similar goals for pursuing a fitness regime. A study of 70 female

clients (aged 18–55 years) attending fitness clubs in Gdańsk, Poland, produced similar findings, indicating that most women undertake some form of physical activity to change their body shape and lose weight, whereas an improvement in fitness levels ranked far on the list of reasons. Improved appearance and weight loss were the key motivations in the largest subgroup of respondents comprising women aged 18-35 years. Women in the 40–45 age bracket were more likely to exercise for health and improved well-being [33]. Similar results were reported by Lipowski [34] in a study of 1,300 Polish females aged 20–40 years who trained in fitness clubs mainly to improve their figure (23.2%), but were least likely to become physically active for reasons of health (2.4%) or improved well-being (3.1%). Those findings suggest that younger participants tend to focus more on esthetic factors linked to physical appearance, whereas older respondents pay greater attention to health benefits.

A study conducted in 14 fitness clubs in Łódź, Poland, revealed that significantly more clients are female (60%) than male (40%). Those findings were not confirmed by our study where women and men enrolled in the program in similar proportions. Opoka [35] demonstrated that most fitness club members were younger people aged 20-30 (36%) and 31–40 years (28%). Similar results were noted in this study, where respondents from the 20–40 age group accounted for 71.3% for all participants, respondents aged 41–60 years made up 24.99% of the studied population, whereas participants older than 60 years constituted only 3.66% of all the surveyed subjects. In a study by Opoka [36], fitness club members trained for 30–60 minutes (42%) or less than 30% (28%), the majority of respondents (53%) exercised once or twice a week, whereas 12% exercised less than once a week. Those results suggest that fitness club clients took significantly less exercise than the individuals who participated in the "Slimming Down Olsztyn Residents" program (> 600 MET), and that their physical activity levels were below those recommended by the American College of Sports Medicine and the American Heart Association. In accordance with the above guidelines, adults aged 18 to 65 years should get 30 minutes of moderate-intensity exercise five times a week or 20 minutes of vigorous-intensity exercise three times a week [37]. The surveyed fitness club members and the participants of the "Slimming Down Olsztyn Residents" were not used to exercising regularly over long periods of time, which is probably why many of them lost the motivation to pursue their goals at a certain point.

In general, 30% to 50% people enrolled in various health programs quit in the first months, regardless of age [38]. According to Robinson and Rogers [39], approximately 50% of individuals who take up an aerobic exercise program give up in the first 6 months. Participants who make it past the 6-month mark are highly likely to continue training [40, 41]. These observations were confirmed by our study where the highest number of both female and male participants resigned 2 or 3 months into the program for reasons such as "Unable to cope" or "Don't feel like it", whereas the overall number of persons who quit in successive months of the program was far smaller.

Women and men who completed the 7-month program significantly improved their body composition. The average BM [kg], BMI [kg/m2], BF [%] and BF [kg] values, measured over the entire body and in different body parts (legs, arms and torso), decreased in both female and male participants. An increase in PMM [kg] values was also noted in different body parts. Most

importantly, the participants who completed the program decreased their body mass as well as their fat mass, unlike in a study by Simkin-Silverman et al. [42], where the above parameters increased following a short-term physical activity program. Similar results were reported by Straight et al. [43] in an 8-week program involving resistance training and a diet plan for five overweight and obese individuals aged 55–80 years (BMI=33.4 ±4.0 kg/m^2). In a 24-month health program aiming to increase physical activity levels and improve the cardiovascular health of 116 men and 119 women with a sedentary lifestyle (daily energy expenditure of less than 36 and 34 kcal/kg body mass, respectively), the participants decreased their body fat percentage by 2.39% and 1.85%, respectively, but none of them achieved a statistically significant reduction in body mass (-0.05 kg and -0.69 kg, respectively) [44].

Most studies have demonstrated that body mass and fat mass are most effectively reduced when dietary changes are combined with higher levels of physical activity [45, 46, 47]. Forty obese women who participated in a 16-week aerobic exercise program combined with a diet plan were able to reduce their body mass by 8.3 kg and their fat-free mass by 0.5 kg [48]. In another study, 72 mildly obese males participated in several programs which involved either exercise or lack of exercise combined with various dietary regimes. Similar weight loss was reported in both groups, but the exercise group lost significantly more fat mass and did not lose any fat-free body mass. A significant loss of fat-free mass was noted in the group that did not exercise [49]. In programs that involve a diet plan, exercise is a factor that stimulates weight loss, but prevents the loss of fat-free body mass. This observation was confirmed by Kayman et al. [50], in whose study 90% of female participants who exercised for 30 minutes three times a week continued to lose weight, whereas only 34% of women continued to lose weight after they had given up the above exercise regime. Similar conclusions were formulated by Pavlou et al. [51], who compared the loss of body mass in sedentary subjects and respondents who participated in an 18-month exercise program. The effect of physical exercise on abdominal adipose tissue in adults with and without type 2 diabetes mellitus (T2DM) was studied by Dobrosielski et al. [52]. In the cited study, 97 hypertensive patients who participated in a 26-week supervised aerobic and resistance training program significantly reduced their weight by 2%, but no changes were reported in their subcutaneous adipose tissue after training. The exercise-induced reduction in visceral adipose tissue was lower in T2DM participants (-3%) than in non-T2DM subjects (-18%). A systematic review and a meta-analysis of the effects of exercise on visceral adipose tissue in overweight adults revealed that an aerobic exercise program can reduce visceral fat stores by more than 30 cm^2 in women and more than 40 cm^2 in men (CT scans) after 12 weeks without a reduction in their caloric intake [53].

It should also be noted that adipose tissue distribution and the initiation of changes in adipose tissue are determined biologically and are genetically programmed regardless of the type of undertaken exercise [54, p. 282] A decrease in the waist-to-thigh ratio was observed in women, indicating that the thigh region is more resistant to fat mobilization [55]. In men, adequate training led to relatively rapid loss of visceral fat and subcutaneous fat in the abdominal region [56]. In a study by Katch et al. [57], participation in a 27-day exercise program, during which every subject performed a total of 5004 sit-ups, induced similar changes in various parts of the body: the diameter of

fat cells decreased by 6.4% in the abdominal region, by 5.0% on the buttocks and by 3.7% under the shoulder blade, but the noted differences were not statistically significant. The above results indicate that exercise does not selectively target adipose tissue in different body parts.

LIMITATIONS

Changes in body composition parameters induced by different types of exercise were not analyzed in this study due to the small size of the sample. Moreover, most of the surveyed subjects were involved in various types of physical activity, and very few participants had specific preferences. The respondents were also reluctant to go on a diet; therefore, the diet-related part of the program was limited to lectures and talks.

CONCLUSIONS

The results of this study revealed that most overweight and obese persons undertake physical activity to improve their appearance, lose weight and improve their health. The highest number of participants withdrew from the program after 2 or 3 months, mostly because they were unable to cope with the fitness regime, they were not interested, lacked the time (women) or lost motivation (men). A 7-month health program involving physical activities with MET > 600 can contribute to a significant reduction in fat mass and body fat percentage, and it can promote a significant increase in muscle mass in different parts of the body.

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