

EFFECTS OF ZUMBA FITNESS PROGRAM ON BODY COMPOSITION OF WOMEN

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SUMMARY

The aim of this research was to determine the effects of zumba fitness program on changes of women body composition. 12 women aged 25-35 participated in the conducted research. The zumba fitness program was estimated after eight weeks of exercise, total of 24 training sessions. Body weight, fat percentage, fat mass, fat free mass and total body water were measured at the beginning and at the end of the research. The effects of fat-free training model were analyzed by using Paired sample T test. The obtained result showed that zumba fitness program achieved statistically significant improvement in total body weight loss ($p=.019$), fat percentage ($p=.012$) and fat free ($p=.000$). Although the value of fat free mass (0.22 kg) and the total amount of body water (0.15 kg) recorded increase after completed program, they were not statistically significant. The study results clearly indicated that the zumba fitness exercise can be used as effective group fitness exercise for the change in body composition of women.

Key Words: body composition, effects of exercise, zumba fitness.

INTRODUCTION

Group fitness exercises represent the form of programmed physical activity to improve health and change body shape. The zumba fitness is a new kind of dance workout, inspired by Latin American music and Latin American dances. The exercise combines the basic of dance merengue, salsa, samba, cumbia, reggaeton and other Latin American dances, uses basic aerobic steps, but also enriches their composition of the other dance like hip-hop, belly dancing, Indian, African dance, etc. It is fusion of basic principles of aerobic interval training and strengthening exercises which promote consumption of calories, improve cardiovascular system and strength of the whole body (Perez & Greenwood-Robinson, 2009). This modern approach of fitness exercising satisfies goals such as harmony of the body, improving posture and strengthening bone-joint segments of the locomotors apparatus (Furjan-Mandić, Kosalec, & Vlašić, 2011). The researches confirm that the implementa-

tion of various forms of group fitness program contributed to statistically significant effects in improving functional and motoric abilities of a woman (Mandarić, Sibinović, Mikalački, & Stojiljković, 2011; Oreb, Matković, Vlašić, & Kostić, 2007; Park, Park, Kwon, Yoon, & Kim, 2003; Šebić, Šahat, Zuković, & Lukić, 2012), and changes in women body composition, as well (Donges, Duffield, & Drinkwater, 2010; Stasiulis, Mockiene, Vizbaraitė, & Mockus, 2010; Wong et al., 2002). Also, the latest researches separate dance aerobic as the most effective group fitness program (Hižnayova, 2013; Oreb, Matković, Vlašić, & Kostić, 2007; Kostić, Đurašković, Miletić, & Makalčki, 2006; Kostić & Zagorc, 2005; Luetgen, Foster, Doberstein, Mikat, & Porcari, 2012; Stojiljković, Mandarić, Todorović, & Mitić, 2010; Viskić-Štalec, Štalec, Katić, Podvorac, & Katović, 2007) which through motivating music implement creative choreography primarily aimed to entertain the trainees. The advantage of this model of exercise is that every practice is a new entertainment based on various dance steps with dif-

ferent intensity and form of exercising, what makes the participants more motivated (Perez & Greenwood-Robinson, 2009). This is very important from the aspect of maintaining interest for continuous exercise, since the main reason for leaving the group fitness program is monotony of each training session in long term of practicing (Stoiljković et al., 2010). What is the most effective group fitness program that include healthcare, aesthetic, social and entertainment character of exercising is the question that fitness instructors often ask themselves. The aim of this research is to reveal the effects of zumba fitness program on changes in women body composition.

METHODS

Sample of participants and variables

The study was conducted on a sample of 12 women aged 25 to 35 who participated in all training sessions during eight weeks of implementation of zumba fitness program. During this research (April and May) they did not practice any other kind of physical exercises. They were tested before and after the implementation of zumba fitness program. Testing was performed in a sports hall of Faculty of Physical Education and Sport where the temperature was about 20°C. All 24 zumba trainings were performed by a licensed zumba instructor. The basic descriptive statistic parameters were calculated for body weight (TM), fat percentage (FAT), fat mass (FATMASS), fat-free mass (FFM) and total body water (TBW).

Zumba fitness program

Zumba fitness exercise was performed three times per week in the evening. Each zumba training (60 minutes) contained basic principles of zumba exercise: warm-up, main part of the workout (zumba party section), cool down and stretching (Perez & Greenwood-Robinson, 2009). Exercise intensity is determined by the tempo of the music that changed during training sections. Warm up contained basic dance steps (march, step touch, side to side etc.) with gradually accelerating tempo of music (120-135 bpm), without leaps and jumps. In the second part of the warm-up the muscle toning exercises were performed with soft intensity through dance variations, slightly squats were allowed (tempo 125-140 bpm). The goal of warming up was to increase body temperature, muscle blood flow, joint mobilization and the psychological preparation, as well. Total warm-up time was 8-10 minutes (tempo 120-140 bpm). The main part of the zumba training was performed with 8-10 original zumba fitness songs. The dance choreogra-

phies and movements intensity was created in accordance with tempo changing of music (tempo between 140-160 bpm). All Latin American dance choreographies (merengue, salsa, samba, belly dance, cha cha cha, tango etc.) with their differences in character and dynamics of movement (Lukić, 2006) provide dosing of exercise intensity. Each dance lasts 3-5 minutes, with pause of 15-30 sec. The aim of the main part of the training is that trainees enjoy the music and dance, and practice at the same time. Cool down as the final part of the training contained easy dance movement with soft music with mental and physical relaxing purpose. Stretching was performed for muscle relaxation, as also to prevent muscle soreness and increase body flexibility. There were not any jumps or squats allowed, and all the movements could be performed in standing, sitting or lying position (tempo of music -100 bpm). When program was constructed it was considered that intensity of exercising can be changed according to previous adaptability. The intensity of exercise is dosed by using toning sticks (zumba toning program) as well as by changing character of the dance moves in presented choreographies.

Measurement description

All body parameters were measured by TANITA body analyzer BC-418MA III. Examinees were tested in sports equipment, barefoot, in women's fitness pants and shirts. During the data collection they were standing on the bottom of body analyzer and held electrodes in both arms. Data input contains body height and age, and for the testing "standard" category was selected. Also, data input contains weight equipment (0.300g). After signal the direct current goes through the body and analyzes necessary body parameters.

Data analysis

Data gathered during this research were analyzed using statistic programs for personal computers IBM SPSS 20.0. for Windows. For analysis of basic statistic data and distribution of results on initial and final measurement, basic descriptive parameters were calculated: arithmetic mean, minimal value, maximal value, standard error mean, standard deviation and K-S test. The effects of applied training model were analyzed using Paired sample T test. The level of statistical significance was set at $p < .05$.

RESULTS

Descriptive statistics in Table 1 indicates changes of values in all tested parameters after eight weeks of

zumba fitness program. On average, the body weight was reduced for 0.77 kg, fat percentage for 1.05%, fat mass for 1.01kg, fat-free mass (composed of muscle, bone, tissue, water and other non-fat mass) increased for 0.22 kg, and total body water increased for 0.15 kg. K-S test indicates a normal distribution of the obtained results.

Table 2 shows the effectiveness of applied zumba fitness program on changes in women body composition. The results indicate that there are statistically significant differences between initial and final mea-

surements in parameters: body mass (.01), fat percentage (.01) and fat mass (.00). However, even the results shown in Table 1 indicate the increase of means in fat-free mass (0.22 kg) and total body water (0.15 kg), they did not show as statistically significant (FFM $p=.50$; TBW $p=.54$).

DISCUSSION

Obviously, applied zumba fitness program has caused statistically significant changes in women body

TABLE 1

Results of descriptive parameters of initial and final body composition measurement.

		<i>n</i>	<i>M</i>	<i>Min</i>	<i>Max</i>	<i>SD</i>	<i>SE</i>	<i>K-S</i>
INITIAL	TM	12	66.85	59.10	83.60	8.30	2.39	.47
	FAT	12	30.05	24.90	38.70	4.59	1.32	.77
	FATMASS	12	20.83	15.20	32.40	5.49	1.58	.57
	FFM	12	46.48	43.40	56.10	3.74	1.08	.49
	TBW	12	34.03	31.80	41.10	2.74	.79	.47
FINAL	TM	12	66.08	58.20	83.50	8.35	2.41	.63
	FAT	12	29.00	24.00	36.70	4.08	1.17	.37
	FATMASS	12	19.37	13.90	30.60	4.90	1.41	.64
	FFM	12	46.70	43.50	58.40	4.46	1.28	.23
	TBW	12	34.18	31.80	42.80	3.28	.94	.24

Legend: **n** - Number of respondents; **M** - Sample mean; **Min** - Minimum; **Max** - Maximum; **SD** - Standard deviation; **SE** - Standard error; **K-S** - Normality of the distribution of results; **TM** - Body mass; **FAT** - Fat percentage; **FATMASS** - Total fat mass; **FFM** - Fat-free mass; **TBW** - Total body water.

TABLE 2

Effects of zumba fitness program exercise on body composition of women.

		Paired Differences					<i>t</i>	<i>df</i>	<i>p</i>
		<i>M</i>	<i>SD</i>	<i>SE</i>	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	TMI-TMF	.77	.97	.28	.15	1.39	2.75	11	-.01
Pair 2	FATI-FATF	1.05	1.20	.34	.28	1.81	3.00	11	.01
Pair 3	FATMASSI - FATMASSF	1.00	.92	.26	.42	1.59	3.78	11	.00
Pair 4	FFMI-FFMF	-.22	1.13	.32	-.94	.49	-.68	11	.50
Pair 5	TBWI-TBWF	-.15	.83	.24	-.68	.38	-.62	11	.54

Legend: **M** - Sample mean; **SD** - Standard deviation; **SE** - Standard error; **t** - Students' t distribution; **df** - Degrees of freedom; **p** - Probability; **TMI** - Body mass initial; **TMF** - Body mass final; **FATI** - Fat percentage initial; **FATF** - Fat percentage final; **FATMASSI** - Total fat mass initial; **FATMASSF** - Total fat mass final; **FFMI** - Free fat mass initial; **FFMF** - Free fat mass final; **TBWI** - Total body water initial; **TBWF** - Total body water final.

composition. The changes are reflected primarily on reduction of body mass ($p=.01$), fat percentage ($p=.01$) and fat mass ($p=.00$). Applied zumba fitness program achieved the most effects on the fat percentage that has been reduced for 1.05%, and the loss of body fat, in average -1.01kg. Body weight was decreased on average for 0.77kg. Comparing zumba fitness workout with tae bo aerobics trainings Hižnayova (2013) examined differences in the intensity of exercise. The study was conducted on 11 women during 6 zumba trainings and 6 tae bo aerobic trainings. The heart rates were assessed in three parts of the training: after warm-up, after the main part of the training and after relaxation and stretching. The results show that the intensity of exercise during the warm-up and the main part of the training statistically significantly increased in all 6 zumba trainings compared to tae bo aerobic trainings ($p<.05$). Energy consumption (measured in kilocalories) during all trainings was also significantly higher in favor of zumba fitness model exercise ($p<.01$). Similar results were obtained in the studies of Barene, Krstrup, Jackman, Brekke, and Holtermann (2013) who investigated the effects of twelve-week zumba fitness program at the percentage of fat mass and the total amount of fat mass, in a sample of women employed in the health sector. They practised 2 to 3 hours a week. The results showed that the group that exercised zumba fitness reduced total body fat mass (-0.6kg; $p<.05$) in comparison to the control group. In generally, zumba fitness training program outside of working hours can lead to certain health benefits for women employed in health care. The zumba fitness exercise, among other things, is based on the variety of zumba programs (zumba classic, zumba gold, zumba toning, zumba sentao, zumba kids, etc.) in which the complexity of dance choreographies and intensity of exercise are adapted to age and the goals that want to be achieved by practicing. In particular, it should be stressed that the conducted research on the effects of zumba fitness program in a relatively short time period of eight weeks caused a significant changes in the physical parameters of women, which is not negligible if we know that the most common motive of an individual to join the group fitness programs is the reduction of fat mass and weight loss.

CONCLUSION

The research of eight-week zumba fitness program on a sample of 12 women showed statistically significant effects on changes in body composition of women. They are reflected in the reduction of body weight, fat percentage and fat mass. Although, even

if the value of fat free mass and total body water increased, they were not shown as statistically significant. The research showed high efficiency of zumba fitness training program on the reduction of body fat, which is very important since it is the common motive for joining group fitness programs. The uniqueness of zumba fitness exercising is in the variety of Latin dance choreographies and dynamic music that create an atmosphere of fun (zumba party) in which trainees forget they are practicing. This approach to exercise enables long-lasting interest and continuous exercising. It would be interesting to examine the effects of Zumba fitness program on the reduction of body fat of individual body segments observed over the long period and continuous exercise (at least 3x per week), or to compare the effectiveness of applying Zumba fitness program compared to the other group fitness programs. It should be noted that researches about the effects of zumba fitness exercise are rare compared to studies of other aerobic exercise. This is because the zumba fitness is the latest "hit" that appeared in the domain of aerobic exercise and that its actual effects on different populations and for different purposes are yet to be examined. This paper is a contribution to the clarification of its actual effectiveness in the changes of physical parameters of women.

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