

Influence Of Fitness On Morphological Characteristics Of Women

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Abstract: *The main goal of the research was to determine the influence of fitness on the morphological characteristics of women. The study included 25 female respondents aged 25-35 years. To assess morphological characteristics, the following measures were applied: body weight, body height, chest circumference, waist circumference, thigh circumference, and upper arm circumference. The experimental program lasted 3 months, the frequency of training was 3 times a week for 60 minutes. The results showed that fitness has a positive effect on all morphological characteristics, except in one variable, but the numerical differences are obvious. Determining the real effects of such exercise programs has multiple meanings for theory and practice, because the effects of fitness on morphological characteristics have been determined in an exact way. Also, in future research, the impact of similar exercise programs should be studied and investigated if the extent and intensity of the content of the program itself were changed.*

Keywords: waist; size; programs; weight; testing

1. INTRODUCTION

Group fitness programs are a form of programmed physical exercise for women with the aim of improving health and improving aesthetic appearance. The most commonly exercised exercise programs for women are various group fitness programs. The goal of these programs for women is to satisfy the motives for maintaining health, improving physical appearance and reducing body weight [13]. When it comes to the female population, more and more of them exercise because they feel better, the tension is less, they are functionally and emotionally more capable, and thus more operational, more resilient in numerous jobs, family activities and many other obligations. Group fitness programs by structure, belong to the polystructural cyclic activities and have a positive effect on the anthropological characteristics and abilities of both women and men [9]. Some of the group fitness programs can be realized and can be selected in relation to the content of the activity. Group fitness programs differ from other exercise programs in that they act on human feelings, motivation, cheer up, and also help to perform physical movements with extreme dexterity and precision. If music is considered noble for the human spirit, then we can say that aerobic exercise with musical content is noble for the body and spirit of man [21].

The author [19] points out that the choice of music choreographies during classes, training of a particular group fitness program largely depends on the level of knowledge of program participants, type of program, personal goals and other segments that each program has. One of the most important characteristics for each group fitness program is music, ie a harmonious change of music tracks that are incorporated into the choreographic whole and last as a whole without mutual pauses and interruptions. Such phrases form a unique structure.

In their work [12], they proved in their research that it is possible to influence the reduction of body weight and certain segments of body circumference through physical exercise. Confirmation that aerobic physical activity can affect the reduction of body weight, ie nutrition in women aged 19 to 25 years has been proven in research [8] and other researchers have come to similar results. [18] found in their study that weight loss occurs after an aerobic exercise program. [15, 23] have shown in their research that recreational aerobic exercise, which is realized three to five times a week for 20 to 60 minutes, can contribute to quantitative and qualitative changes in certain variables of morphological characteristics [16, 17]. These changes are primarily related to their reduction, so it can be stated that the realized model of regular recreational aerobic exercise led to positive changes in the subjects of the experimental group.

2. METHOD

2.1 Sample of respondents

The research and measurement procedure were conducted on a sample (N = 25) of females. The population from which the sample was taken for research was defined as the population of women of chronological age from 25 to 35 years. The sample could be defined as appropriate.

The subjects who made up the experimental group had to meet the following criteria: that they did not have somatic defects or some diseases; that in addition to participating in the planned program of activities, they do not engage in any other forms of physical and sports activities; to participate in exercise regularly (twice a week); that they voluntarily agreed to join the exercise program.

2.2 Sample of measuring instruments

For the purposes of the research, the following measures were applied to assess the morphological characteristics: body weight (ATT); body height (AVIS); breast circumference (AOGRD); waist circumference (AOSTR); thigh circumference (AONAT); upper arm circumference (AONAD).

2.3 Experimental program

The experimental program was realized in the premises (hall) of the Fitness Center "Sokol" in Bijeljina (Republika Srpska). The experimental program lasted 3 months, the frequency of training was 3 times a week for 60 minutes [6].

Before the start of the experimental program (first week), the initial measurement of the subjects was performed. After the initial condition was determined, the examinees of the experimental group were included in the fitness programs. The experimental programs differed in the intensity of exercise, the intensity was controlled using a Polar FT1 heart rate monitor.

The aim of the experimental program was to determine whether the morphological characteristics of women change under the influence of a three-month exercise program.

Fitness programs were realized with a slightly different load intensity (55-75%). In the introductory part of the duration of 8-10 min. movements in place and space and complexes of shaping exercises (8-10 exercises, 10-12 repetitions) are realized. The main part of the training is performed with pre-prepared exercises that are divided into muscle partitions and each training has an emphasis on one large and one smaller muscle partition. The emphasis of the exercises is distributed on the leg muscles, back muscles, arm muscles, abdominal muscles, shoulder muscles and chest muscles. Exercises are performed with your own weight or additional load using the available props with the possibility of applying musical choreographies that are predetermined. The final part of the class lasting 5-8 min. aims to stretch and loosen all regions of the body, with a focus on proper breathing and controlled muscle stretching due to the possibility of injury. All classes are conducted by a qualified, licensed fitness instructor.

2.4 Statistical data processing

For the purposes of the research, the obtained results were processed in the statistical package SPSS 20.

Basic statistical indicators were calculated by basic descriptive statistics. The following parameters were calculated: arithmetic mean, (Mean); standard deviation, (St.Dev.); minimum value (Min); maximum value (Max); standard error (Std. Error).

Determining the differences between the groups for each variable was realized using univariate analysis of variance (ANOVA), while to determine the differences between the initial and final measurements, the Effect Size was applied [24].

3. RESULTS WITH DISCUSSION

Table 1 shows the basic statistical parameters at the initial and final measurement. Analyzing the mean values, we can observe numerical differences between the first and second measurements. The variable denoting body height (AVIS) was not considered because it is an invariant constant or variable. The results are in accordance with similar realized researches [1, 7, 20].

Table 1. Descriptive indicators of initial and phytal measurements in the space of morphological characteristics

Variable	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum	
ATT	inicijalno	25	64.56	7.779	1.556	50	85
	finalno	25	60.48	5.463	1.093	50	78
	Total	50	62.52	6.964	.985	50	85
AVIS	inicijalno	25	168.52	5.173	1.035	152	178
	finalno	25	168.52	5.173	1.035	152	178
	Total	50	168.52	5.120	.724	152	178

AOGRD	inicijalno	25	89.20	6.557	1.311	74	108
	finalno	25	86.96	5.891	1.178	71	99
	Total	50	88.08	6.272	.887	71	108
AOSTR	inicijalno	25	76.56	7.687	1.537	63	90
	finalno	25	72.12	7.288	1.458	60	83
	Total	50	74.34	7.745	1.095	60	90
AONAT	inicijalno	25	56.04	4.430	.886	48	65
	finalno	25	51.76	5.804	1.161	40	62
	Total	50	53.90	5.548	.785	40	65
AONAD	inicijalno	25	26.92	2.414	.483	21	30
	finalno	25	23.76	3.072	.614	20	30
	Total	50	25.34	3.166	.448	20	30

Changes in the segments of morphological characteristics are the effect of the application and realization of the experimental program [3, 4, 11, 14, 15]

Table 2 shows the differences between the first and second measurements, therefore we can conclude that there are statistically significant differences at the level of .05 present in all tested variables, except in the variable breast circumference (AOGRD) .210 where no statistically significant differences were found.

Some training programs are more suitable for achieving certain goals, while some programs are more effective for achieving other types of transformational effects. However, in general, it can be determined that exercise programs that can be performed in fitness centers have positive effects on changing the morphological status of a person, but on the basis of other studies and on muscle strength, functional and other abilities. Constant monitoring of morphological characteristics in both sexes and different age categories is important for determining the trend of changes in total weight or individual parts of body structure.

Table 2. Differences between initial and final measurements in the space of morphological characteristics / ANOVA

Variable		Sum of Squares	df	Mean Square	F	Sig.
ATT	Between Groups	208.080	1	208.080	4.606	.037
	Within Groups	2168.400	48	45.175		
	Total	2376.480	49			
AOGRD	Between Groups	62.720	1	62.720	1.614	.210
	Within Groups	1864.960	48	38.853		
	Total	1927.680	49			
AOSTR	Between Groups	246.420	1	246.420	4.393	.041
	Within Groups	2692.800	48	56.100		
	Total	2939.220	49			
AONAT	Between Groups	228.980	1	228.980	8.590	.005
	Within Groups	1279.520	48	26.657		
	Total	1508.500	49			
AONAD	Between Groups	124.820	1	124.820	16.352	.000
	Within Groups	366.400	48	7.633		
	Total	491.220	49			

It can be concluded that the fitness program influenced changes in morphological dimensions in the variables body weight (ATT) .037; waist circumference (AOSTR) .041; thigh circumference (AONAT) .005; upper arm circumference (AONAD) .000. Biological factors and lifestyle changes (reduced physical activity, increased energy intake) can lead to an increase in the amount of adipose tissue in the body, which together causes health problems and disease [10]. Compared to men, women are the more sensitive gender and according to anthropological status, they are more susceptible to change.

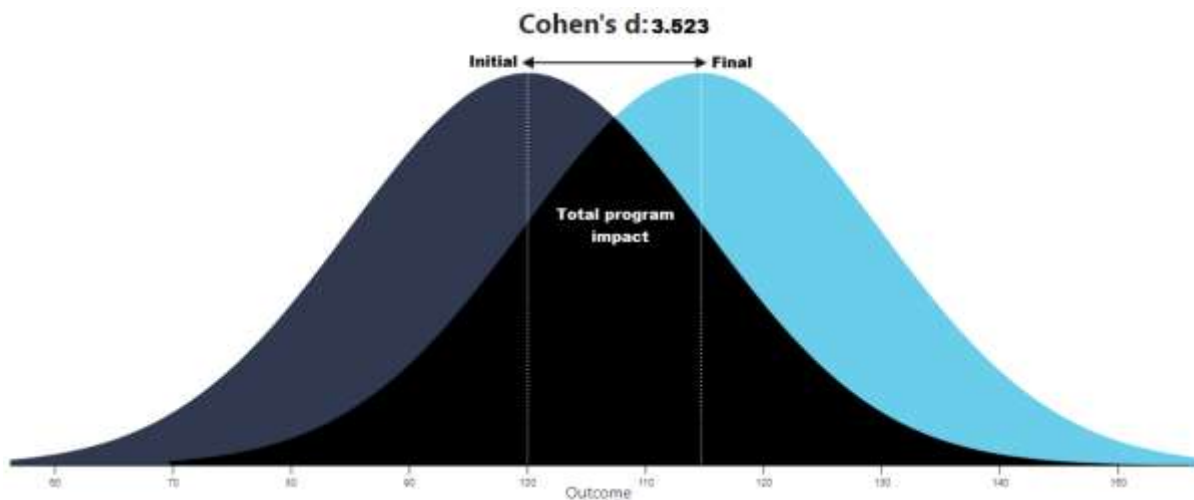
Table 3. The magnitude of the influence / difference between the initial and final measurement in the space of morphological characteristics

Variable	Merenje	Mean	Mean Diff.	SD	Cohen's d
ATT	inicijalno	64.56	-4.08	7.779	0.607***
	finalno	60.48		5.463	
AOGRD	inicijalno	89.20	-2.24	6.557	0.359**
	finalno	86.96		5.891	
AOSTR	inicijalno	76.56	-4.44	7.687	0.592***
	finalno	72.12		7.288	
AONAT	inicijalno	56.04	-4.28	4.430	0.828****
	finalno	51.76		5.804	
AONAD	inicijalno	26.92	-3.16	2.414	1.143*****
	finalno	23.76		3.072	

Legend: Cohen's d - magnitude of influence; trivial (*); small (**); moderate (***); large (****); very large impact (*****).

Table 3 shows the results of the Cohen's Effect Size analysis, which determined the magnitudes of the influence of differences between the initial and final state in the space of morphological measures in the subjects. Inspection of the obtained results can show a small influence on the variable - Breast circumference / AOGRD (.359), moderate influence on the variables Body weight / ATT (.607), and Waist circumference / AOSTR (.592), large influence on the variable Thigh circumference / AONAT (.828) and a very large influence on the variable Upper arm circumference / AONAD (1.143).

Figure 1. The total magnitude of the impact between the initial and final state - Cohen's Effect Size



For a better and clearer understanding, the magnitude of the impact is shown graphically, taking into account all variables and their relationship from the initial and final measurement.

Targeted physical activity, along with movement, is indisputably significant in health protection, which can be significantly improved [2, 5]. One of the forms of recreational exercise is working in fitness centers that offer several types of training in one place. Of course, with a professionally educated person, a kinesiologist, based on the diagnosis, it is best to make an individual training program for an individual. A one-month study indicates that in a very short period of time, programmed systematic exercise influences the transformation of the anthropological status of the respondents included in the program, and in particular the reduction of subcutaneous adipose tissue [22].

4. CONCLUSION

It is possible to conclude that significant changes in morphological space can be achieved through programmed physical exercise. Habits acquired through regular physical exercise have a positive transfer in a person's daily life, and this is mostly reflected in the long-term improvement of health status. It is certainly important to implement in each exercise program exercises that are multi-

joint and that activate multiple muscle groups when performing a single movement. Also, future research should study and investigate the impact of similar exercise programs if they change the extent and intensity of the content of the program itself.

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