Research Paper Physical Education

The Effect of Eight-Week Swimming Training on Body Composition in Adults

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ABSTRACT

The aim of this investigation is to explore the effect of eight of eight-week swimming training on body composition in adults. 40 sedentary males who are the mean age of 26.15 ± 2.77(years) mean eight 175.88± 3.68 (cm) participated in this investigation voluntarily. Swimming training was put in practise for 1,5 hours a day, three days in a week so it was practised eight weeks totally. Measurements of skinfold, diameter and circumference of participants were taken before and after exercise.
At the end of this measurements when compared participants' the measurement averages in pre-test and post-test, skinfold measurements of biceps, triceps, suprailliac, subscapula, Q. femoris and flexed biceps, body fat percentage, endomorphy, mezomorphy, ectomorphy values were found as significant in (p<0,01) level statistically. The abdominal skinfold thickness and calf circumference measured values of participants were found as statistically significant in (p<0,05) level in comparison to before exercise. As a result of this research it was observed that an eight-week swimming training has a positive effect on body composition.

Keywords : Swimming; Somatotype; Skinfold; Training

INTRODUCTION

In the today's world, regular exercises have become essential in terms of health. Systematical exercises which are regularly done two or three times in a week for the human health are considered to change body composition distinctly. This change can be observed in people of all ages.(Heyward 1998; Lohman 1995). Swimming ,through water, is a particular activity bringing physcical development to perfection.Performance oriented effects of aerobic and anaerobic energy metabolisms has been a study for scientists. (Francaux et all 1987; Heck et all., 1985)

The purpose of the study is to investigate the effects of 8 weeks swimming training on body composition of adult males.

MATERIAL AND METHOD

40 sendentary males, living in Sanlıurfa in Turkey, having no active sport life, average age of 26,15±2,77 (years), average height of 175,88±3,68(cm), particapated the investigation voluntarily. All participants attending to the research are assumed that they do not know how to swim, and are trained for swimming. Swimming exercises are done for totally 8 weeks, 1,5 hours a day, 3 days a week. As parameters of body composition, height (cm), BW (body weight/kg), skinfold measurements (mm) and diameter measurements (cm) are measured and recorded. Heath-Carter Formula is used for the calculation of somatotypes of participants (Heat and Carter 2005). Green Formula is used for calculation of body fat percentage (Green 1970).

Skinfold Measurements: For determine the percentage of body fat, holtan brand skinfold caliper was used to apply pressure 10 g/sq in every angle. Measurements were taken from the right side of all subjects who standing upright. For measure the skin thickness, subcutaneous fat layer leaved from muscle tissue using the fingers. Caliper placed about 1 cm away from the fingers and recorded all values from indicator (Çoruh and Müniroglu 1998). Measurements was taken from biceps, triceps, Q.Femoris, suprailliac, subscapularis, and abdomen, suprailliak and Q.femur and were recorded like milimeter.

Diameter-Circumference Measurements

Calf Circumference: The maximum thickness of the calf measured by using a tape

Flexed Biceps Circumference: biceps muscle was flexed and measured in the mid-point of the wider circumference of biceps

Diameter Femoral Bikonduler: Diameter of femur bikondular measured while the subject's legs were paralleled to the ground, their feet touched the ground by sitting in the chair.

Diameter humerus bikonduler: It measured while Hand in pronation and elbow in flexion position.

Body Fat Percentage Measurement: The following formula was used to calculate the percentage of body fat.

BFP (%) = (Total of 6 measurements (0.097)+ 3.64) (Green 1970)

Calculation of Somatotype: Heath-Carter formula used in the calculation of the somatotypes of respondents (Heat and Carter 2005).

Statistical Analysis: SPSS packaged software was used to process the data obtained from the measurements. For the comparison of pre and post test, paired samples t-test was used. Levels of p<0,05 and p<0,01 were found significant.

FINDINGS

When the average of pre and post test measurement is analysed, weight pre 78,13±11,41 and post test value 75,28±9,87, biceps pre 6,42±2,83 (mm) and post test 5,92±2,50 (mm), triceps pre 12,56±4,82(mm) and post test 10,30±3,64 (mm), Suprailliac pre 16,49±4,34 (mm) and post test 15,51±4,49 (mm), subscapula pre 15,47±6,23 (mm) and post test 14,49±6,05 (mm), Q.femur pre17,10±8,07 (mm) and post test 14,88±7,29 (mm), flexed biceps pre 31,39±1,97 (cm) and post test 33,02±1,77 (cm), body fat percentage pre 12,15±2,80 (%) and post test:11,39±2,52 (%), Endomorph pre 2,55±0,70 and post test 2,22±0,53, Mezomorph pre 6,45±1,03 and post test :

3,21±0,78, Ectomorph pre 1,66±1,31 and post test 2,00±1,13) observed as a statistically significant at level of (p<0,01). However, participants' measurements of Abdomen pre 20,01±7,32 (mm), post test 18,78±6,49 (mm) and Calf Circumference pre 37,97±1,97 (cm), post test 37,77±1,64 (mm) observed as a statistically significant at level of (p<0,05).

Table 1: Comparisons all the parameters of the experimental group pre-test and post-test

Parameters (n:40)	Measures	X	SD	t	p
Age (year)	Pre-test	26,15	2,77	-	-
Height (cm)	Pre-test	175,88	3,68	-	-
Weight (kg)	Pre-test	78,13	11,41	7,80	0,01**
	Post-test	75,28	9,87		
Biceps(mm)	Pre-test	6,42	2,83	4,61	0,01**
	Post-test	5,92	2,50		
Triceps(mm)	Pre-test	12,56	4,82	6,45	0,01**
	Post-test	10,30	3,64		
Suprailliac(mm)	Pre-test	16,49	4,34	4,41	0,01**
	Post-test	15,51	4,49		
Abdomen(mm)	Pre-test	20,01	7,32	2,17	0,05*
	Post-test	18,78	6,49		
Subscapula(mm)	Pre-test	15,47	6,23	4,97	0,01**
	Post-test	14,49	6,05		
Q.Femur(mm)	Pre-test	17,10	8,07	8,69	0,01**
	Post-test	14,88	7,29		
Calf Circumference (cm)	Pre-test	37,97	1,97	2,35	0,05*
	Post-test	37,77	1,64		
Flexed Biceps Circumference (cm)	Pre-test	31,39	1,97	-13,17	0,01**
	Post-test	33,02	1,77		
Body Fat Percentage(%)	Pre-test	12,15	2,80	11,14	0,01**
	Post-test	11,39	2,52		
Endomorph	Pre-test	2,55	0,70	6,43	0,01**
	Post-test	2,22	0,53		
Mesomorph	Pre-test	6,45	1,03	62,78	0,01**
	Post-test	3,21	0,78		
Ectomorph	Pre-test	1,66	1,31	-7,38	0,01**
	Post-test	2,00	1,13		

DISCUSSION AND RESULT

In our study it was founded that average of experimental grup's age 26,15±2,77 (year), Height 175,88±3,68 (cm). At the same time subjects' BW, Skinfold thikness of Biceps, Triceps, Suprailliac, Abdomen, Subscapula, Q.Femoris, and Calf Circumference, Circumference of Flexed Biceps, BFP(%) and somatotypes were compared and statistically significant differences were observed between pre and post tests (p<0,05, p<0,01; Figure 1).

In our study, subjects' value of BW founded as pre test: 78,13±11,41 (kg) and post test: 75,28±9,87 (kg)

Szmedra et all., administered 6 weeks of treadmill exercise in 7 lady who mean age 21.0 ± 0.8 years. Subjects' body weght were founded as pre test: 76,8±12,5 kg and post test: 75,0±12,0 kg (Szmedra et all., 1998); Amano et all., in a study, they administered 12 weeks, 3 days a week of 30 minutes of aerobic exercise to obese men and women. Subjects' body weight was founded as pre test: 74,1±2,6 kg, post test: 70,3±2,9 (Amano ve ark. 2001); Saçaklı et all., administered some cycling, gyms and weight training throughout a month to 16 obese women aged 35,2±5,2 (year). I was observed that percentage of body fat before and after exercise decrease from 37.8 (%) to 33.7 (%) (Saçaklı et all., 1997). Results of studies in the literature are similar to our study

In our study, skinfold thicknesses was decreased compare to before swimming training.

Kyle et all., in a research which performed on the 3853 european adults they reported exercise is effective in preventing the increase in fat mass. (Kyle et all., 2001); Akalın, in a research to investigate effect of swimming exercises on body composition and anthropometry they observed a significant decrease in subcutaneous fat of subscapula, triceps, biceps, suprailliac, abdomen (Akalın 2008). Results of studies in the literature are similar to our study

In our study, participant's value of BFP(%) observed as pre test: 12,15±2,80 (%) post test: 11,39±2,52 (%)

Kim and Park, As a result of their study performed on 90 male swimmer aged between 7-13 years, they found significant differences between pre-test and post-test in percentage of body fat values (Kim and Park 2005); Szmedra et all.,, administered 6 weeks of treadmill exercise on 7 women aged 21,0±0,8 years. They found significant differences body fat percentage of subjects as pre test: 33,0±4,00 %, post test: 31,7±3,9 % (Szmedra et all., 1998); Juricskay and Mezey, at the end of 3-month training program, in 40 elite swimmers aged 11-14 years they found significant differences between pre and post tests on body fat percentage of subjects (Juricskayand Mezey 2007) In generally, results of literature studies support our results of study.

In our research it is determined that before the exercises, the amounts of somatotypes of the participants are Endomorph 2,55±0,70, Mesomorph 6,45±1,03, Ectomorph 1,66±1,31 after the exercises, the amounts of somatotype of the participants are Endomorph 2,22±0,53, Mesomorph 3,21±0,78, Ectomorph 2,00±1,13.

In the research of Açıkada et all, it has been determined as meso-endomporph the somatotype measurements of footballers playing in minor league in Turkey. (Açıkada et all., 1998).

In the research of Gelen et all, to compare the physical fitness of the tennis players, it has been determined the somatotype measurements of the tennis players playing in major league are Endomorph:3,5 Mesomorph:3,9 Ectomorph:3,6 and the somatotype measurements of the tennis players playing in minor league are Endomorph: 3,92 Mesomorph: 4,02 Ectomorph: 3,17 (Glen et all., 2006)

In the research of Chan et all, it has beeen determined the somatotype measurements of taekwondo players Endomorph 4.2 ± 1.1, Mesomorph 4.7 ± 1.0, Ectomorph 2.9 ± 1.0 (Chan et all., 2003).

Generally, the somatotypes of the successfull swimmers are ecto-mezomorph. Unlike the people who are the same ages like them but don't do any sports, both female and the male swimmers are taller, weightier and they subsume less body fat. There is a research in America which is about this subject. It is reported in this research that unlike sedantary people, male swimmers are taller and they have less skinfold and less body fat. (Akgün 1994).

When the literature researches are analysed, it is noticeable that these and our researches show similarities. As a result, in our research we develop the idea that the swimming traning which is continued eight weeks reduces amount of body fat and has positive impact on the somatotype value.

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