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THE EFFECT OF 8-WEEK TRAINING PROGRAM ON PHYSICAL AND ANTROPOMETRIC CHARACTERISTICS OF TEEN MALE NATIONAL BOXING TEAM

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Abstract

To obtain a high level of performance, outstanding performance of nowadays athletes be characterized as complement of physiological, psychological and biomechanical factors. The aim of this study is exploration the effect of 8 weeks training program on certain physical and anthropometric values of 13-14 years' male boxers. 24 boxers from TeenMale National Boxing Team Participating in the camp program realized in Kastamonu in 2011 are composed the research of study. 8 weeks training program determined by Boxing Federation applied to training group participated in the study. Weight, body fat percentage, body mass index, anthropometric measurements of biceps circumference, leg circumference, shoulder circumference, chest circumference, waist circumference are taken from the athletes at the start and end of the camp. It was applied Pre-test and post-test model. Independent t-tests implemented in data analysis. SPSS 15.0 packaged software to Window was used in analysis and level of significance taken as $p<0.05$.

It wasn't find out any statistical discrepancy among the measurements worth weight of athletes forming the study group. But it is significant discrepancy among the measurements in body fat rates ($p<0,05$).

Key Words: *Boxing, Physical fitness, Anthropometric features*

***This study is an extract from master's thesis.**

1.Introduction

Boxing is a martial art that requires practice and skill to succeed. The basic philosophy of the art of boxing is punching and not being punched. The physical capacity level which a boxer should have is demanded from very few athletes in sports (Zorba et al., 1999).

The perfection of movements during the realization of the performance depends on the training carried out beforehand. The more similar the trainings are to the conditions of the real competition, the better the performance fits for purpose. Many physical, motoric and biochemical factors affect the top level performance of the elite athletes. Boxing is one of the combat sports that require high levels of physical capacity and skill (Pala, 2011).
Today, body fat, besides being health criteria, is an important determinant of achieving optimal efficiency in physical performance. Variability of fat is of great importance for all activities that require physical fitness. Co-administration of an ideal exercise together with a diet can be conclusive in terms of body fat reduction in grams because the most important factor for good health is getting rid of excess body fat. As a matter of fact, one of the main reasons for regular exercise is to change the body composition (Yıldırım, 1999).

In the light of this information, the aim of this study is to investigate the effect of 8-week boxing camp program oncertain physical and anthropometric characteristics of teenagemale boxersaged 13-14.

2.Material And Methods

The sample consisted of 24 healthy male boxers aged 13-14. The research group of this study is composed of boxers who participated in the teen boxing camp held in Kastamonu Boxing Training Camp in April and May, 2011. The athletes were informed of the study and measurement protocols and then physical and anthropometric measurements were carried out. These measurements were made between 10.00 and 17.00 in the camping facility of the Boxing Federation of Turkey. Pretest and post-test model was applied in the study.

2.1.Body Weight Measurement

Weight was measured by a 0.1 kg precision scale and a metal rod on this scale. During the measurements, the subjects were wearing T-shirts and shorts. The subjects were barefoot or wearing only socks. During the measurements, the head was upright, the soles were straight, the knees were strained, the heels were touching each other and the body was in an upright position (Tamer, 2000).

2.2.Calculation of Body Fat Rate by Percentage (%)

A skinfold fat measurement tool was used to measure body fat rate. The thickness of the two layers of the skin and the subcutaneous adipose tissue were calculated in millimeters on the indicator of the caliber while the gripper arms of the device applied a constant pressure on the skin and the body fat was calculated using the East Formula (Tamer, 2000).

Calculation of body fat %: 2.662566*.5819738 XI+.2770687 X2.

2.3.AntropometricMeasurements

Circumference Body Measurements

- **Tool:** Gulick measuring tape
- **Shoulder Circumference:** The measurements were taken at the widest points of M. Deltoideus and at the joint of sternum and the second(Tamer, 2000).
- **ChestCircumference:** The measurement was taken at the level of areolae mammae when the chest was at the midpoint of the tidal volume (between inhalation and exhalation) (Tamer, 2000).
- **Biceps Circumference:** It was measured at the widest circumference of the muscle when the elbow was extended at the maximum and the biceps brachii was contracted (Şen, 2003).

- **LegCircumference:** It was measured at the upper part of both malleolus and the thinnest part of the ankle (Şen, 2003).
- **WaistCircumference:** The measurements were taken at the frontal symphysis pubis level and at the widest points of the lateral thigh muscles (Şen, 2003).

2.4.Statistical Analysis

SPSS 15.0 software was used for the analysis of the data and independent t-test was applied. The significance level was taken at p <0.05.

3.Findings

The tables below show certain physical and antropometric values of the pre-test and post-test model carried out before and after the 8-week training program of the 24 boxers aged 13-14 constituting the research group.

Table 1: Weight, Body Fat Percentage and BMI values of Research Group

	Subject Number	Subject Number	Mean	Minimum	Maximum	P
Weight(Kg)	Pre-Test	24	44.50	38.20	94.12	0.756
	Post-Test	24	43.62	36.94	91.60	
Body Fat Rate (%)	Pre-Test	24	9.32	7.65	17.50	*0.048
	Post-Test	24	8.59	8.04	16.22	
BMI(Kg/height m2)	Pre-Test	24	22.62	18.05	26.25	*0.032
	Post-Test	24	21.42	19.65	27.80	

***P<0.05.**

Graphic 1: Weight, Body Fat Percentage and BMI values of Research Group

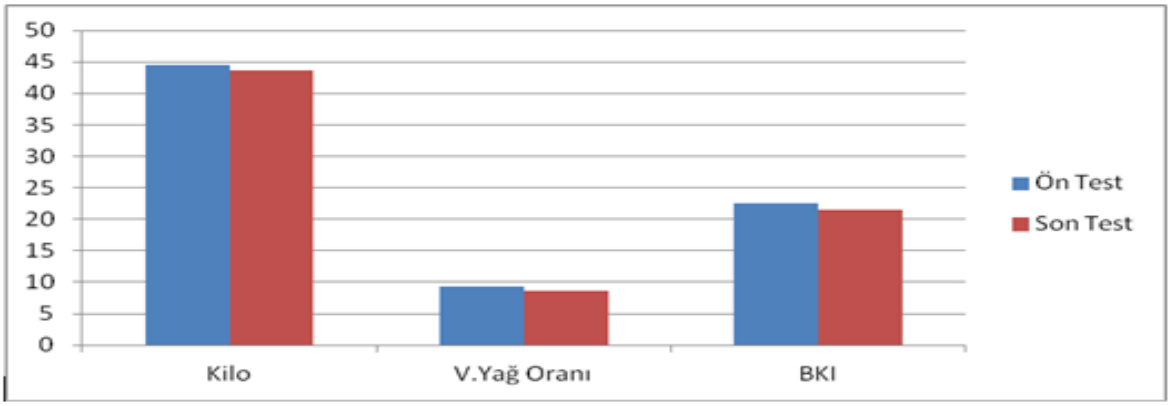


Table 1 shows no statistical difference in weight values between the measurements. However, the difference in the body fat rates of the research group between the measurements indicates that the body fat rate is 9.32% in the pre-test while 8.59 in the post-test. In this regard, the differences between the measurements is statistically significant in favor of the post-test measurement (P <0.05).

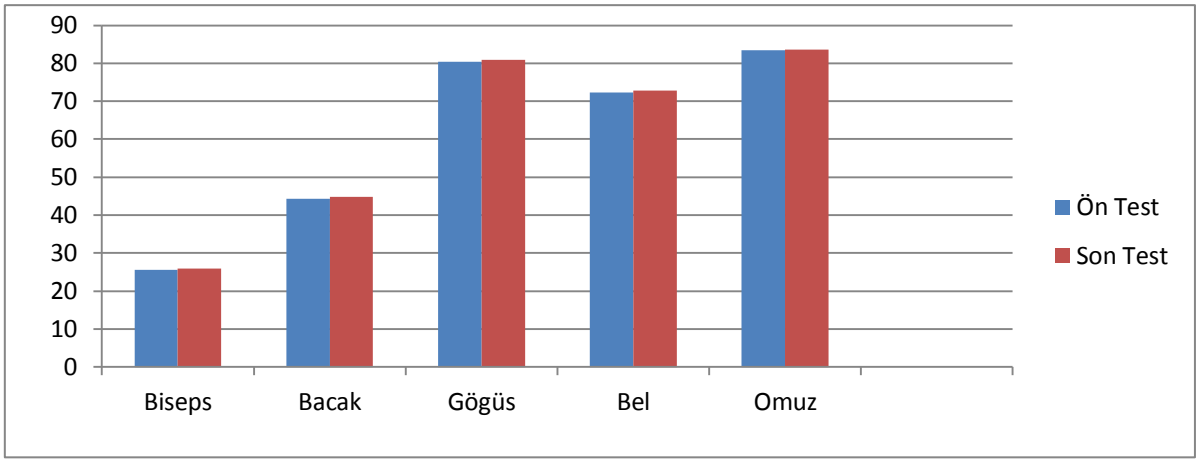
BMI is 22.62 and 21.42 in the pre-test and post-test measurements, respectively. These parameters also show statistical difference in favor of the post-test measurement (P <0.05).

Table 2: CertainAnthropometric CircumferenceValues of Research Group

	Subject Number	Subject Number	Mean	Minimum	Maximum	p
Biceps(Cm)	Pre-Test	24	25.57	23.60	27.40	0.659
	Post-Test	24	25.86	23.50	27.30	
Leg(Cm)	Pre-Test	24	44.31	43.00	47.50	0.389
	Post-Test	24	44.78	43.20	47.50	
Chest(cm)	Pre-Test	24	80.44	78.40	85.60	0.997
	Post-Test	24	80.84	78.10	85.80	
Waist(Cm)	Pre-Test	24	72.32	67.60	77.20	0.235
	Post-Test	24	72.85	67.90	77.40	
Shoulder(Cm)	Pre-Test	24	83.42	80.32	97.20	0.724
	Post-Test	24	83.56	80.36	97.40	

***P<0,05**

Graphic 2: Certain Anthropometric Circumference Values of Research Group



The differences between the measurements in terms of the anthropometric values of the research group indicate that the pre-test value is 25.57 cm and the post-test value is 25.86 which means that there is no statistically significant difference (P>0.05). There is also no statistically significant difference between the pre-test and post-test measurements of the leg circumferencewhich is another anthropometric value (P> 0.05).

Table 2 shows that the chest circumferenceis 80.44 cm and 80.84 cm in the pre-test and the post-test, respectively which indicates that there is no statistically significant difference between the measurements (P> 0.05). There is also no statistically significant difference between the measurements of the waist circumference(P> 0.05). the shoulder circumferenceis 83.42 cm and 83.56 cm n the pre-test and the post-test, respectively. There is also no statistically significant difference between the pre-test and post-test measurements in terms of shoulder circumference(P> 0.05).

4.Results And Discussion

Boxing is one of the combat sports that require high levels of physical capacity and skill. The perfection of movements during the realization of the performance depends on the training carried out beforehand. The more similar the trainings are to the conditions of the real

competition, the better the performance fits for purpose. Many physical, motoric and biochemical factors affect the top level performance of the elite athletes.

This study was carried out to investigate the effect of 8-week training program on certain physical and anthropometric values of the 24 teen boxers from the Turkish Boxing National Team using pre-test and post-test model. Physical measurements as weight, body fat rate, BIM and anthropometric measurements as biceps circumference, leg circumference, shoulder circumference, chest circumference and waist circumference were measured using the pre-test and post-test model and the differences between the measurements were determined and evaluated.

These results show differences from the results of our study. The reasons for these differences are that the physical characteristics of athletes in different branches vary and the weight of boys increases in length especially after the age of 12 (due to puberty). Moreover, physical exercise has a positive effect on bone development of children and such factors as physical environment, diet and genetics also play a role in the physical development (Mengütay, 1999).

The relationship between the measurements in terms of weight values in Table 1 indicates that it is 44.50 kg and 43.62 kg in the pre-test and the post-test measurements, respectively. Therefore, there is no statistically significant difference in these parameters. A study reports the mean value of weight of basketball players aged 13-15 as 53.67 kg. The results of this study are different from those of our study. The reason for this difference is due to the difference in the branches. Given the presence of low weight boxers in the boxing branch, it is meaningful to reach that conclusion. The examination of the human body reveals that it consists of muscle, fat and bone tissue at different rates and density depending on gender and weight. These components depend on the branch of sports (Fox, 1988).

The relationship between the measurements in terms of body fat indicates that it is 9.32% and 8.59% in the pre-test and the post-test measurements, respectively which means that there is a statistically significant difference in favor of the post-test measurement.

Kılıç (1993) divides athletes aged 14-16 into two groups and carries out a study on body fat. He reports body fat as 8.53% and 8.48% in the experimental group and the control group respectively.

According to Kaplan (1996), the mean body fat of the 1996 Atlanta Olympic Games Greco-Roman wrestling national team is 8.13 and that of the style wrestling national team is 10.03%. These values are normal and show similarities with the other studies on this subject. The results indicate that the body fat values of the boxers who do regular training are 11.23% and 10.22% in the pre-test and the post-test measurements, respectively which means that there is a statistically significant reduction in favor of the post-test measurement. This variation can be due to the composition of the training program

The difference between the measurements of body mass index of the boxers in Table 1 shows that there is a statistically significant difference ($P < 0.05$).

Watts et al. (2003) report a statistically significant reduction, a result of training, in the BMI values of the 11-12-year-old climbers who engage in various branches of sports. These results are similar to those of our study. This reduction in the BMI values is due to the training program which causes changes in weight values.

The differences between the measurements in terms of anthropometric values in Table 2 show that the pre-test value is 25.57 cm and the post-test value is 25.86 which means that there is no statistically significant difference ($P>0,05$). there is also no statistically significant difference between the pre-test and post-test measurements of the leg circumferencewhich is another anthropometric value ($P> 0.05$).

Table 2 shows that the chest circumferenceis 80.44 cm and 80.84 cm in the pre-test and the post-test, respectively which indicates that there is no statistically significant

difference between the measurements (P>0.05). There is also no statistically significant difference between the measurements of the waist circumference(P> 0.05). The shoulder circumferenceis 83.42 cm and 83.56 cm n the pre-test and the post-test, respectively. There is also no statistically significant difference between the pre-test and post-test measurements in terms of shoulder circumference(P> 0.05).

Boye et al. (2002) carried out a study on 91 male children between the ages of 6 and 18. They report that the arm circumference values of the pre- adolescent and adolescent children are 19.9 cm and 25.7±10.3 cm, respectively.

Aneesa et al. (2003) conducted a study on 249 adolescent male children between the ages of 12 and 17. They report the chest circumference values of the children depending on the age: 12-year-old children 77.5±8.9 cm; 13-year-old children 85.7±13.0 cm; 14-year-old children 91.1±12.1 cm; 15-year-old children 89.1±11.5 cm; 16-year-old children 93.2±12.3 cm and 17-year-old children 96.4±13.8 cm.

As is known, in certain sports, such structural factors as height, body weight and the length of limbs significantly affects sporting performance (Aneesa et al, 2003).

Therefore, anthropometric measurements taken at early periods of starting sports (height, body weight, length measurement, etc.) will be helpful for the selection of talent.

Anthropometric measurements contain standardized techniques which enable the systematic way of measuring the body and its parts. Each measurement provides specific information which helps to understand growth. From the sporting aspect, anthropometric measurements are used to determine the body proportions and sizes which are required by different branches of sports and to make comparisons among athletes (Maud and Foster, 1995).

Norms determined as a result of longitudinal studies carried out to reveal branch-specific body type characteristics and distinguishing body parts of athletes should be laid down in order to make these comparisons and evaluations. The formation of these norms are essential for high talent selection

The existing literature concludes that regular training significantly improves the anthropometric levels of athletes, however, it also emphasizes that time should be kept longer for these athletes. Training time for the development of muscle and circumference must be over 3 months.

The lack of difference between the anthropometric measurements is due to the fact that the development of circumference takes time and the type of training does not focus on circumference development. In order to achieve national and international success, norms based on existing talent selection criteria should be established,training programs with appropriate duration and intensity should be made and, both physical and physiological development of athletes should be made sure.

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