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Effects of Four Week Body Building Training on Under Skin Fat Percent if Non-Athlete Female Students

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Abstract: The aim of this study is to study the effect of a training program using weight on under skin fat percent in various body parts of female students of Islamic Azad university of Shabestar. Among 70 students, 40 who had physical education 1,2 course aging 18 to 25 were selected. They were all physically healthy. Using Caliper Under skin fat thickness in areas triceps, Abdomen, femur was measured and categorized using age based woman fat percent estimation table. Average of three times measuring before and after training program was calculated as fat percent using "Raven". Training program by weight consisted of 4 week each containing 3 sessions of 45 min. Results revealed that although most of samples had Lost weight, under skin fat percent before and after program showed significant difference of $p<10\%$ yet training program by weight for weight control has been more effective than weight loss.

Key words: Non-athlete, training by weight, under skin fat

INTRODUCTION

Obesity is probably the most prevalent fat metabolism disorder in human which is caused by combination of both environmental and genetic factors. Obesity is not merely a concern of developed countries and can be viewed in very country in varying levels (Riahi, 1998). Researches recently performed in Iran reveals that increase of weight is much outspread in urban and rural societies (Rahimi and Jaafari, 2004). Obesity occurs because of positive balance of energy caused by taking of energy or decrease of energy consumption or combination of both yet, lack of physical activities and improper nutrition generally leads to problems such as cardio-vessel diseases and obesity in people. In this paper, the term obesity refers to excessive increase of under skin fat in the body which is a negative factor for human physical and mental health (Wilmore *et al*., 1970). If body during fat metabolism via physical activities couldn't take this fact to the cycle of energy, same of it will be gathered under the skin, especially in femur or lap, triceps, Abdomen. Hack man and fellows made a study on 18 non-athlete woman who were overweight. In a 7 week nutrition and hiking program all samples lost weight about 2.6 to 10 kg. A decrease in under skin fat percent and increase in fatless tissues observed in samples as well (Pencek, 1966). A scholar called Pencek (1966) examined the effects of training on body, body thickness and body fat. Results revealed that body weight and under skin fat percent has decreased. Ballor *et al*. (1988) in a study on 10 female sample indicated that after 8 week training fatless tissues of body have increased. But decrease of weight was insignificant. Butts in a study on the effects of training by weight on body composition of woman over 30 years old indicated that after 12 weeks training there is a significant decrease in fat percent and increase in amount of freed lubric acids within the blood (Butts and Price, 1996) . Also Dehganpor *et al*. (2011) examined the effects of three training method- isotonic, isometric and combination of both- on under skin fat percent of student. Results revealed that in all three methods under skin fat percent has decreased significantly.

Due to records in hand, the percent research intends to change the training program and reform the time, intensity and repetitions of training to make it endurance circular training. Then observe the effects of trainings on fat changes in different parts of students' body.

MATERIALS AND METHODS

This study was conducted during summer 2010 at Islamic Azad University, Shabsetar branch, Iran. Present research is semi-experimental and uses pretest and post-test patterns. The population contains all no athlete female students of Shabestar IAV aging 18 to 25 who are taking physical education course. 40 samples out of 70 were selected who were all healthy and have never had surgery on abdomen, femur or lap, triceps, Using Thickness of fat in triceps, femur, abdomen was measured and using age based fat percent estimation table, adapted from "Sairi",

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Fat percent of these three areas was determined and categorized in two groups-experimental and control-equally according to fat percent. None of samples have had regular physical activities before and they were taking these continuous trainings for fist time. Each measuring was performed three times and the average was calculated as fat percent using Raven Nome gram. In this research a training by weight was programmed for 12 week each containing 3 sessions about 45 min. At first 10 min was spent for general warming up. The circular training by a couple of 4 kg barbell and 10 body building set for upper and lower parts of body was performed in fixed time intervals. Each station contained 25 sec activity and 10 sec inactivity. Each activity in every sequence was performed 12 times. The time of each training sequence was 10 min. In first 6 sessions, training by weight was performed in 3 sequences; session 6 to 10 four sequences with 15 times repetition and the last 2 session 5 sequences with 18 repetitions. Al the end of each training session 1 to 2 min was spent for recovery. In order to analyze data, test was used to examine the differences between two groups. Finally in order to determine the amount of fat, fatless tissues and desired body weight following calculations were performed.

Body desirable weight = t weight = body weight* fat percent

Fatless tissues = body weight-fat weight

RESULTS AND DISCUSSION

Table 1 and Fig. 1 show the effects of training by weight on fat thickness in three areas of femur, triceps, Abdomen, an sum of these three thickness and total fact percent of samples as well.

Results of researches indicated that physical activities are very effective in fat percent reduction. Percent study revealed that fat percent and thickness in three parts of body after the examination are decreased. These results conform the findings of Rahimi and Jaafari (2004), Butts and Price (1996), Ballor *et al*. (1988), Hackman *et al*. (1994) and Pencek (1966).

According to Fax a little change in total body weight, reduction in fat amount and expansion of fatless muscular tissues are expectable after training program by weight. In woman reduction of body fat and in men increase of muscular tissues are greater (Boyer, 1995). Significant effects of training by weight may be due to changes made in training program type and time, intensity and repetitions of program. Since training program by weight is relatively close to a circular endurance training type, comparing with aerobic has the advantage to make all large groups of muscles active and cause muscles to be active in different times (Broder *et al*., 1992). According

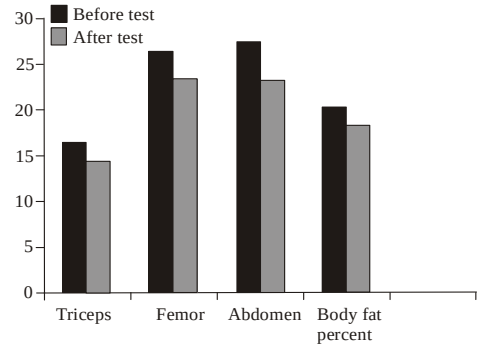

Fig. 1: Fat percent in 3 areas before and after test and body fat percent

Table1: Fat deposition characterizes in experimental candidates at pre- or post-test

Parameter	Pretest	Post test	T	Probability rate
Abdomen fat thickness	27.1	23.2	-4.5	0.0006*
Femur fat thickness	26.3	23.5	-4.6	0.0006*
Triceps fat thickness	16.5	14.5	-3.61	0.0038*
Sum of fat thickness in 3 areas	69.9	61.2	-46.3	0.00075*
Body fat percent	20/4	18.6	-3.6	0.0034*

*: It means that there is a significant difference in probability rate <00

to wilmore and Costil's view point, in such a condition, required energy for system's activity is greater that fat resources in the body. So, the activity of muscle onzyims, which are in change of fat beta oxidation. Increase due to training and this causes released lubric acids to be released increasingly to be used easily by muscles (Gettman and Riculter, 1980). More ever, there is no doubt that strength has an important role in topical endurance and significant expansion of topical blood circulation (Van-Etten and Verstappen, 1996). Increase in blood circulation leads to increase in metabolism and excretion of waste matters consequently. More probably, one of the out comes of strength and topical endurance expansion is increase in blood circulation (Hackman *et al*., 1994). This may cause to increase in FFA transition and fat oxidation. Scholars to explain the effects of strength training program, state that increase in muscular pile, increase person's metabolism during inactivity because muscle is more active than fat metabolically (Khan *et al*., 2007). This will increase daily caloric consumption. Therefore, circular training program by selected weight has had an important role in reducing under skin fat.

CONCLUSION

Results revealed that although most of samples had Lost weight, under skin fat percent before and after program showed significant difference of p<10% yet

training program by weight for weight control has been more effective than weight loss.

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