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The Comparison of the Effect of General and local Exercises on Blood lipid, MBI, WHR and the level of Subcutaneous Fat in Fat Middle-aged Women

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ABSTRACT

Aim:the studies show that there's a relationship between exercise and bloodlipid, WHR, MBI, and subcutaneous fat in fat people. The aim of present study is comparison of the effect of general and local exercises on the level of blood lipid, BMI, WHR, and subcutaneous fat in fat women. **Method:** this is a scientific-comparative study. 45 examples were selected. They were divided in three groups:general exercise group, local exercise group and control group, 15 people in each group. Some features such as height, weight, size of waist and hip, and the percentage of subcutaneous fat, were measured and recorded in pre-test. And then blood test was done to measure the blood lipid. General exercise group and local exercise group practiced professionally 8 weeks, three times in a week, and about 90 minutes each time. Relevant tests were done again, after completion of exercises. Variance analysis method (F test) and software package, SPSS-V.16 was used to analysis data. **Results:** the results of studies showed that there's a significant relationship between general and local exercises, MBI & WHR, and percentage of subcutaneous fat. But there is no relationship between general and local exercises and subcutaneous fat such as Cholesterol, LDL & HDL, and Triglycerides. **Conclusion:** both general exercise and local exercise have direct effect on MBI & WHR and the percentage of subcutaneous fat in fat women. But these exercises don't have any effect on blood lipid of these people.

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INTRODUCTION

Obesity is one of the problems in this century, especially for individuals who are not active. Nowadays, mechanical life causes more free time and reduction of physical activity. This issue makes people tend to inactive life and it causes the motion poverty in the life. The results of research represent that one of the reasons for increasing of adipose tissue is the lack of physical activity.

In daily life, we meet many people who are not satisfied with their weight. Although, some of these people try to gain weight, but there are many people who suffer from excess fat in abdomen, hip and thigh; because excess fat in this part endangers the person's health. In our present community, being in shape, especially among women is a value. And having a good-shaped body is taken into consideration not only physiologically, but mentally. These days, many organizations try to decrease fat, especially local fat among women, by using many methods such as massage, sauna, local heat systems, drug therapy, acupuncture, exercising and dieting. But many people complain about temporary effect or even ineffectiveness of them.

In the last few decades, obesity has been proposed as a serious problem and it's taken into consideration as one of the important cases of prophylaxis. Maybe it seems that this problem is just in developed and industrialized countries, but according to studies of Tehran Medical University Cardiovascular Center, increasing of fatness among residents of Tehran, especially among middle-aged ones, is as like as those who are living in the United States.

Studies done in the last decade of twentieth century show that obesity and how fat distribute in the body, (particularly in abdomen and waist) is a good way to predict the diseases such as Hyperlipidemia, coronary artery disease, high blood pressure, and cardiovascular risk factors. The most important way to minimize the rates of cardiovascular disease and its complications is to minimize the risk factors. Regal emphasize that it can be possible to decrease mortality rate by modification of risk factors.

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The goal of physical fitness program is not removal of fat in body, but it helps people to have desirable level of fat in their body. Normal fat for women is 23 percent and for men is 18 percent. An optimal level of fat for men is 12 percent or less and for women is 18 percent or less. The range of fat mustn't be less than 3 percent in men and less than 12 percent in women (high level of fat in women helps to reproductive organs). Very low levels of fat are dangerous for women's health. High fat and lack of movement is considered as a disease caused.

Many people try to decrease fat in some particular parts of body such as abdomen and hip and thigh. They think that sit-up exercise is a good way to reduce fat of abdomen. It should be noted that scientifically, reduction of fat in some particular parts of body like thigh and waist is not possible. In fact, try to reduction local fat is useless. While exercising, required energy doesn't provide just from fat reserves of active muscles; but it's prepared from whole body. So practicing on just some particular parts of body may strengthen them, but it reduces fat from whole body.

Research findings show that fat men and women with high level of fat in abdomen part, have serious metabolic disorders; whereas other fat people are facing with fewer problems. It doesn't mean that subcutaneous fat doesn't threat health. Accumulation of subcutaneous fat is a good way to predict total fat in body. This kind of fatness which is called Abdominal or Male Fatness, closely related to metabolic factors, increasing of blood pressure, insulin resistance and lipoprotein disorders. Female fatness has lower risk if accumulation of fat is in hip or thigh. Body mass index (BMI) is used, for ease of measurement epidemiology. Another index is proportion of waist to hip which is measured by tape measure.

Research findings have showed that BMI and WHR are good ways to predict density of critical fat VLDL and Triglyceride and Systolic & Diastolic blood pressure in both sexes.

This kind of fatness or increasing WHR is a good way to realize disorder in function of vascular wall. 0.9 WHR for men and 0.8 WHR for women are critical points for cardiovascular risk factors.

As Catherine Wolfe and her associates proved that regard to factors of fatness, cardiovascular diseases, more physical activity leads to less risk.

Experimental studies show that physical activities can have a very important role in weight control. Effect of exercise in weight control is clear increasingly. And even easy exercises that practice for a long time has a significant effect on weight control.

The present study compares the effects of general and local exercises on blood lipid, BMI & WHR, and the level of subcutaneous fat in fat women.

MATERIAL AND METHOD

this is a semi-experimental, scientific-comparative study and population of that are fat women in Bojnord. Randomly, among them 100 ones were selected.

According to it were a semi-experimental study and also general and local exercises and blood test on samples, they're placed in three groups: general exercise, local exercise, and control group. 15 people in each group. To find the samples, some ads were distributed in public places such as parks, theaters, hotels and streets in Bojnord. It was mentioned a summary of producer and volunteers' conditions in ads. Among 100 qualified volunteers, 45 ones were selected randomly; average between 30 to 40 years old.

To measure BMI, they used a scale and a meter on the wall. And to measure WHR of waist and hip, they used a meter.

To measure blood lipid, the samples were taken 5 cc bloods and then it was tested in two ways, in laboratory of hospital. First, blood sample was separated from serum, next they were put in AutoAnalyzer. It analyzes data by computer program. And then data is displayed on desktop. At last they were printed by a printer which is connected to the device.

At first, exercises began by warming up in both general and local groups. It was continued by slow walking, and stretching. It lasted 15 minutes, standing; while local exercise group was practicing specifically 40 minutes. They include, light weightlifting for body organs, flanks, hands, and the thigh. People in local group used specific equipment for above organs.

In general group, according to the samples were fat, so they were asked to calculate their heart rate by this formula before working: $220 - \text{age} = \text{maximum heart rate}$. If they weren't ready, they were asked to calculate the heart rate, for controlling of intensity exercise on them. As performance of general exercises cause durability of cardio-pulmonary, to begin slowly and generally is one of the principles of aerobic exercises that helps to continuity of this exercises. But as one of the major problems is an aerobic program for beginners and practicing a lot that may cause to make them bored, so it was tried to prevent it happen by various exercises, playing music and motivated them. These exercises continued 8 weeks and 3 times a week. During that blood lipid, BMI, WHR, the level of subcutaneous fat was measured and controlled on women in three groups, per- test and after test.

It's used descriptive and inferential statistic to analyze data. Its used frequency table, averages, and standard deviations in descriptive statistic; and its used Kolmogorov–Smirnov test to determine normal variables and also analyze of variance test (ANOVA) and post hoc test to compare average of variables in inferential statistic.

Results:

There is descriptive statistics of test variables in three groups, in table 1.

Table 1:

Control group	General exercise group	Local exercise group	triglycerides
6	8/7	-0/4	average
27/341	12/979	10/926	standard deviation
Control group	General exercise group	Local exercise group	LDL
2/16	3/27	3/153	average
2/16	3/27	3/153	average
Control group	General exercise group	Local exercise group	HDL
-1/27	-2/40	-1/76	average
3/036	6/946	4/197	standard deviation
Control group	General exercise group	Local exercise group	cholesterol
5/1	-4/7	-2	average
12/948	9/019	9/140	standard deviation
Control group	General exercise group	Local exercise group	WHR
0/0039	0/026	-0/011	average
0/023	0/028	0/023	standard deviation
Control group	General exercise group	Local exercise group	BMI
-0/69	-1/286	-0/498	average
3/383	0/583	0/161	standard deviation
Control group	General exercise group	Local exercise group	subcutaneous fat
0/6	-2/90	-1/6	average
1/137	1/640	1/256	standard deviation

In table 2, there are values of variance analysis, for every factor on subjects in post-test- pre-test of three groups. As you see in this table, there's a significant difference among BMI, WHR and the level of subcutaneous fat in post-test - pre-test of three groups. But there is no significant difference among total Cholesterol, Triglyceride, LDL and HDL in three groups.

Table 2: analysis of variance among the factors of subjects in post-test- pre-test of three groups.

Meaningful level	f-statistics	Degrees of freedom	Total squares	The source of changes
0/118	2/311	29	3505/467	Total(among groups and within the groups) cholesterol
0/539	0/633	29	9755/367	Total(among groups and within the groups) triglycerides
0/926	0/077	29	3164/199	Total(among groups and within the groups) LDL
0/88	0/128	29	682/271	Total(among groups and within the groups) HDL
0/046	3/453	29	0/023	Total(among groups and within the groups) WHR
0/029	0/427	29	109/665	Total(among groups and within the groups) BMI
0/00001	16/930	29	112/863	Total(among groups and within the groups) The level of subcutaneous fat

Discussion:

the present study shows that there's a significant difference between the effect of general and local exercises on BMI& WHR and the level of subcutaneous fat in fat women; however there is no significant difference between the effect of general and local exercises on the blood lipid (cholesterol, triglycerides, LDL and HDL).

Researchers think that the reason of reduction in BMI, the level of subcutaneous fat and WHR after exercising is increase the energy expenditure during exercising. So we can conclude that exercising regularly (with proper diet), cause weight lose. Then MBI will decrease and people can get fitness.

No wonder that someone can lose weight and decrease the level of subcutaneous fat by exercising. This issue points to this scientific fact that if a person does not add calorie and increases the level of energy expenditure simultaneously, this can cause reduction of body fat and subcutaneous fat.

Generally the studies show that general and local exercises lead to losing weight, MBI, WHR, and subcutaneous fat.

Mr. Ramadan poor studied about the effect of a good exercise program on aerobic fitness, MBI and waist in two men groups. Then he found that MBI and waist had a significant reduction in two groups.

On the other hand, Gaeini and assistants studied about the effect of 8 weeks exercise and controlled diet on cardiovascular risk factors and women fitness. Based on these findings it can be stated exercising and proper diet can control women variables.

Mr. Rahmanian and the assistants studied about the effects of walking on fat and insulin in fat girls. These studies showed that walking in experimental group reduced significantly fat mass and increased fat free mass in body. By the way, insulin was reduced significantly in experimental group. In the other hand, it can be said that a walking regularly can cause losing weight and reduction of insulin in fat girls.

Gvrys and Vstrtrp studied about the effect of exercise and nutrition on fatness. At last they concluded that exercise and nutrition control are two good ways for prevention of obesity.

Conclusion:

According to the results of this study, it can be said that exercising has the effect on losing weight. It also has the effect on blood lipid, however it's not significant. In short, it can be concluded that general and local exercises have the effect on MBI, WHR, the level of subcutaneous fat and blood lipid in middle-aged women.

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