

## **The effect of suggested exercises according to the aerobic energy production system on body mass and some anthropometric measurements in obese men**

Asst.Prof.Dr. Abdullah Bahr Fayyad / Open Educational College - Anbar Studies Center

Email : [d.a.bahar1961@gmail.com](mailto:d.a.bahar1961@gmail.com)

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### **Research Abstract**

Some people, especially those are over the age of forty, suffer from their inability to control their weight gain, and obesity is considered to be a difficult problem, but overcoming it's problems is not impossible. so, this study aims to cognate the effect of exercises suggested by the researcher according to the aerobic energy production system on body mass and some anthropometric measurements in the research sample. However, the researcher assumes thatthe suggested exercises may lead to a decrease in the body mass and some of thecircumferences of its parts in the research sample after their implementation of thoseexercises. the researcher uses the experimental method because it is more suitable in solving his research problem.

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### **1-2 Research problem:**

The Increasing of stored fats above a certain limit exposes a person to manydiseases and health problems, including high blood pressure, diabetes, coronary heart disease, joint friction, as well as respiratory, glandular, and psychological disorders. Therefore, determining the percentage of obesity in the community is very necessary as one of the health indicators to be kept monitored and escort from time to time, in addition, knowing the percentage of fat helps us to accurately identify the changes that occur to the composition of the body as a result of engaging in a program of physical activity or following a specific diet for the purpose of reducing weight. In fact, the aim of these exercises are to reduce fat mass and maintain muscles as much as possible, so the researcher decides to study the problem of obesity by placing physical exercises according to the aerobic energy production system to help the research sample reduce their abnormal weight as a result of increasing the sizes of most parts of the body, which may help them to reach normal weights that are appropriate for their ages and lengths.

### **1 – Definition of research**

#### **1-1 Introduction and the importance of research:**

Obesity is considered to be one of the health problems that many people suffer from all over the world, although despite the fact that Obesity is different from being overweight, as obesity means an increase in the storage of fats in the body, whilst overweight is an excess of body weight than the ideal rate of weight compared with the length of the person. It is not necessary for this increase to be the accumulation of stored fat [1]. Obesity has been increased at the present time due to a large number of amenities and the abundance of food, especially fast-food restaurants that provide the body with high calories. The excessive consumption of them because of the poor nutritional culture for some people, as well as the lack of movement and sport exercises. The importance of this research lies in studying the effect of the exercises suggested by the researcher and knowing its effect in reducing the increase in body obesity in the research sample and reducing excess fat, especially in some parts of the body, to bring them to the normal limit of their weights.

training volume free of rest times when performing its exercises, and this training method works to positively enhance all components of the body, as it leads to "low body mass indicator and fat percentage in it ,as well as has positive effects on cholesterol andfat, especiallyhigh-densityfattyprotein (HDL)andlow levelsof triglycerides(TG) and thusreduce the incidence of cardiovascular disease"[2].Continuous loadtraining improves maximum air capacity (maximum oxygen consumption) and velocity of aerobic processes in oxygen availability conditions, and generally improves air endurance efficiency, improves and regulates the functioning of blood circulation and heart, improves oxygen consumption ofblood, as well as improve metabolism,and the first reaction of blood circulation for large oxygen consumption is increasingthe pulse rate of the body then adapts to continuous endurance by increasing the volume of blood came from the heart per pulse by expanding the heart chambers with slow pulse[3].

## 2 – 2 Obesity:

One of the concepts of obesity is that accumulates an excessive amount of fat in the body which leads to an abnormal increasein the weight of the person related to his length and age,and fats form (20 – 25%) of body weight, and if this percentage exceeds (25%) is considered that the person suffers from obesity, and It is necessary todistinguishbetween obesity andoverweight, obesity means an increase in body fat storage, while overweight is anincrease of body weightcompared to the ideal weight rate related to a person's length, and it is not necessary that this increase be the accumulation of stored fat[4].Intake highcalorie meals is one of the main causes of obesity, as excessive intake of sweets, sugars, starches and high-calorie fats is the

## 1-3 Research Aims:

Preparing suggested exercises according to the aerobic energy production system for the research sample. Identifying the effect of the suggested exercises on reducing body mass and some anthropometric measurements for the research sample.

## 1-4 Research Hypotheses

There are statistically significant differences between the pre-test and post-test in the indicator of body mass and some anthropometric measurements among the research samples.

## 1-5 Fields ofResearch:

**1-5-1 Human field:**a sample of people with abnormal excess weights.

**1-5-2 Time domain:**from 3 / 1 / 2018 to 30 / 4 / 2018

**1-5-3 Spatial domain:**The closed hallof The Ramadi Club inAnbar province.

## 2- Theoretical studies:

### 2-1 Airenergy production system:

This system is based on atmospheric oxygen and begins to function after the running out of the working cell reservoir of Adenosine triphosphate (ATP) and phosphocreatine(CP),asoxygen reaching the working muscles beginto interact withserum glucose sugar, which is present near to those muscle cells, as well as interacts with nutrients stored within the Working cells such as glycogen, amino acids,carbohydrates and fat to produce appropriate amounts of energy compounds are sufficient to perform the physical efforts involved in the exercises of the required training method.The method of continuous training is one of the best methods for developing the functional susceptibility of the body's organs according to the system of air energy production, as this method is characterized by continuous load performance with relatively little intensity and a large

### 3- Research methodology and field procedures:

#### 3-1 Research methodology:

The researcher uses the experimental method for its suitability to the nature of the research problem. As one group is designed with two tests, pre and post-tests.

#### 3-2 Research Sample

The research sample is tested in an intentional way and it consisted of (10) men who are characterized by abnormal obesity and whose ages ranged from (40-50) years. And table (1) showing the homogeneity of weight, length, age, and body mass for the research sample.

main factor in the widespread of this phenomenon, and the more calories that humans eat than he needs, the more he gets fat, and these excess calories turn into fat and stored in the form of grease in the body. Other causes of obesity include genetic and psychological factors, as well as the incidence of certain diseases, especially endocrine glands dysfunction, thus the use of certain medications leading to obesity such as cortisone and its derivatives, some antibiotics, and some medications given to people with mental and neurological conditions [5]. Obesity leads to many diseases, including heart disease, high blood pressure, dyspnea, diabetes, arthritis, fatty liver disease, biliary colic, Gout, varicose veins, skin diseases, as well as infertility and menstrual disorders in women [6].

Table (1)  
Showing the homogeneity of the research sample.

Variables	Measuring Unit	Mean	Standard deviation	Median	Kurtosis*
length	centimeter	170.9	5.704	170.5	0.210
Weight	kilogram	92.2	7.598	89.5	1.066
age	A year	44.9	2.846	44.5	0.421
Body mass	g/cm <sup>2</sup>	3.15	0.088	3.11	1.363

\* The distribution is equatorial if the values of the Kurtosis are less than ( $\pm 3$ ).

#### 3-3 Pre-Tests:

pre tests were conducted on the research sample on (3/1/2018) in the Al-Ramadi Sports Club Hall, as the researcher found the measurements (body length, body weight, chest circumference, mid-abdominal circumference, mid-thigh circumference) by using the following equations:

##### 3 – 3 – 1 Width Measurement [7]:

**Chest width:** It is measured by wrapping the measuring tape around the examinee's chest.

**Abdomen width:** It is measured by rolling the measuring tape at the level of the maximum frontal protrusion of the abdomen.

**Mid-thigh width:** It is measured by wrapping the measuring tape at the level of the anthropometric mark that is the mediastinal thigh, or the distance between the inguinal crease and the proximal border of the buttock bone.

**3 – 3 – 2Body mass indicator (BMI) [8]:**

This measurement aims to know the percentage of obesity between the research sample, and it is calculated after taking the weights and lengths according to the following equation:

$$\text{BMI} = \text{weight divided by the square of the length} \times 1000 \text{ (g/cm}^2\text{)}.$$

Then the results are compared with the values given by (Davenport) listed in Table (2).

Table (2)

The division of an individual's degree of obesity by body mass index(Davenport)

Value	1.80–1.40	2.14–1.81	2.15–2.56	2.57–3.05	3.06 and above
Obesity degree	Too slim	slim	Medium	fat	Too fat

**3-4 Main experience:**

The researcher prepared special exercises to reduce the body weight of the research sample according to the aerobic energy production system, which is characterized by low intensity and large volume, based on his experience and field and training knowledge and the resources to Arab and foreign. The duration of the suggested exercises took (12) weeks, four training units per week, as the number of units reached (48) training units. During the implementation of the suggested exercises, the researcher used a training load of intensity ranging between (40-70%) of the maximum sample capacity and a volume commensurate with the physical level of the research sample. The researcher relied on the following equation to extract the pulse corresponding to the required intensity:

$$\text{Pulse value} = \text{degree of the load \%} \times (\text{maximum heart rate} - \text{heart rate during rest}) + \text{average heart rate during rest [9]}.$$

The group sample began to apply the suggested exercises on (6/1/2018) and the aim of these exercises was to reduce the level of obesity in the research sample by gradually increasing the intensity, as the researcher relied on the principle of gradient and undulation in lifting training loads, and the training methodology in the first month included walking exercises For (20) minutes in raw in the first week and increased to reach (30) minutes in the second week until it reached (40) minutes in the fourth week, then the training intensity was increased in the second month to include light jogging to moderate exercises while the intensity was increased for each week gradually. In the third month, the research sample carried out exercises based on moderate jogging and more, meanwhile continuously monitoring the pulse of the heart rate of each member of the sample throughout their performance of the training unit exercises. The training methodology also included strengthening exercises for the muscles of the chest, abdomen and thighs by giving exercises to raise the trunk from a lying position with increasing recurrences that depends on the increase of their physical level in the subsequent weeks. The exercises also included bench press exercises according to the intensity used to strengthen the muscles of the chest and arms, and the exercises squat exercises to strengthen the thigh muscles, taking into account the start of the training unit with the appropriate warm-up by performing the group sample for a set of Swedish exercises that are fit with their physical level in order to prepare the functional organs of the body to perform the main exercises. finally, the training unit ended the training with cool-down workouts to return the body's organs to their normal position.

**3 – 5Post Tests:**

The post-tests were done in the same way as the pre-tests, as the researcher took the required measurements on (3/4/2018)

**3 – 6Staticall Means[10] :**

Arithmetic mean, Median, Standard deviation, Kurtosis, and (T) Test of symmetrical samples.

**4- Presentation, analysis and discussion of the results:**

**4-1 Presentationand analysis of the results:**

Table (3)

Statistical treatments ofpre and post-tests of research variables

Variables	Pre-test		Post-test		X Varia nce	S Varia nce	T-test Cal.	Results
	X	S	X	S				
<b>Body mass indicator</b>	<b>3.15</b>	<b>0.09</b>	<b>3.29</b>	<b>0.09</b>	<b>0.138</b>	<b>0.012</b>	<b>11.500</b>	<b>Significant</b>
<b>Chest width</b>	<b>92.8</b>	<b>3.299</b>	<b>88.2</b>	<b>3.116</b>	<b>4.6</b>	<b>1.056</b>	<b>4.356</b>	<b>Significant</b>
<b>Abdomen width</b>	<b>106.5</b>	<b>4.672</b>	<b>99.2</b>	<b>2.859</b>	<b>7.3</b>	<b>0.789</b>	<b>9.252</b>	<b>Significant</b>
<b>Mid-thigh width</b>	<b>55.9</b>	<b>2.424</b>	<b>50.7</b>	<b>2.002</b>	<b>5.2</b>	<b>0.827</b>	<b>6.287</b>	<b>Significant</b>

**4-2 Discussion of the results:**

The researcher attributes the significant differences obtained by the research sample between the pre and post-tests to the suggested exercises according to aerobic energy production system (the oxygenic system) in which the researcher took into account the principle of gradation and undulation, as well as following the scientific foundations in sports training. These exercises led to decrease the percentage of fat in their bodies and thus decrease their weights, as “the significant decrease in the body mass index is due to the decrease in body weight because the exercises of an oxygenic nature positively affect the body weight and the percentage of fats [11]. Although fat is the main source of energy for aerobic exercises, the percentage of fat decreased when implementing the research sample for the suggested exercises, because physical exercises based on scientific fundamentals and the aerobic energy production system which

The results of Table (2) of the pre and post measurements of the research variables (body mass index, chest width, abdomen width, mid-thigh width) indicated that positive differences were recorded between the pre and post measurements that amounted to (0.138, 4.6, 7.3, 5.2) respectively, while the deviations of those differences were (0.012, 1.056, 0.789, 0.827) respectively as well, and thus the (T-test) value calculated for the search variables reached (11.500, 4.356, 9.252, 6.287) respectively, when it was compared with the tabular score of (2.262) at the level of indication (0.05) and degree of freedom ( 10 – 1 = 9 ) to obtain the indication of differences between the two tests, it was found that the calculated (T) value was greater than scheduling value so the Significant differences in favor of the post tests of the all variables under consideration.

## 5- Conclusions and recommendations:

### 5 – 1 Conclusions:

1. The suggested exercises lead to a decrease in the body mass weight of the research sample.
2. The suggested exercises lead to a reduction in the size of the anthropometric measurements under consideration in the research sample.
3. Exercising according to the aerobic energy production system is more appropriate to reduce the body mass and some anthropometric measurements for these age groups.

### 5 – 2 Recommendations:

1. Use the suggested exercises to reduce body mass and some anthropometric measurements for people who have abnormal weights.
2. Conducting similar studies in anthropometric indicators other than these variables that are still under consideration.
3. Conducting similar studies on women at least or older age classification of the research sample.
4. Cultivate the community about the dangerous and harmful effects of obesity on the body and its functional organs.

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characterized by continuous load and relatively little intensity, require complex physiological processes associated with energy production and aerobic metabolism. For the majority of food storage of the cell, especially fat, as "aerobic exercises that Exercising regularly and for a long time increases energy consumption, which leads to a decrease in body fat percentage"[12].

The suggested exercises also led to a reduction in the volumes and widths of the body parts under consideration due to the low percentage of fat in those parts, because "regular exercise leads to a reduction in the fatty tissue around the muscle fibers, so the decrease of peripheral widths, body mass index, weight and fat percentage is due to the lack of adipose tissue"[13]. Therefore, this continuous training load reduced fat in most areas of the body and was not limited to the removal of fat from a specific area because "lipolysis procedure of the body is according to the density of accumulation, the areas which have high accumulation decompose in larger quantities than the areas of low accumulation"[14]. Therefore, aerobic sports activities are the proportions types of physical activities that affect and reduce the fat content of body mass from high accumulations areas, which has led to increase the proportion of muscle component as a result of the reduced percentage of fat surrounding it, as well as increased net body mass (muscle ratio without fat) as a result of the positive effect of the suggested exercises on muscle tissue which increase proportion of muscle component in the sample members, because "muscle tissue is one of the most affected types of tissues by training and motor activity. The physical activity is a factor affecting the size of muscles in the human body, and the increase in muscle width this due to the increased width of muscle fibers forming the muscle"[15].

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