

**The effect of aerobic exercise on body components
in men after gastric sleeve surgery**

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Introduction and research problem:

There is a strong relationship between health and exercise, exercise reduces the rate of pulse speed and increases blood payment and that active physical exercise on a structured basis results in a clear protective effect on the various body systems and that the practice of sports activity strengthens and improves physical capabilities and makes them the basis for proper strength and internal organs, which makes their function more effective (3 : 154).

The latest statistics conducted by the World Health Organization in 2016 indicate that the percentage of adults (over 18 years) in the world who suffer from excess weight (39% of men and 40% of women) of the total number of adults in the world as a whole, while (11% of men and 15% of women) adults suffer from obesity. (World Health Organization 2016) (11: 50)

The World Health Organization (2016) also indicates that obesity is a chronic and common disease in developed societies and development, and it represents one of the common health problems in the contemporary world and has a prominent role in obesity and the resulting diseases such as sugar and blood pressure, resulting in more than 2.5 million deaths before the age of seventy, due to overweight and the resulting diseases, which can be prevented to a large extent through the adoption of Policies to create supportive environments for healthy lifestyles. (World Health Organization 2016) (11:50).

Obesity is the case in which the amount of body fat increases to the extent that it causes a negative impact on public health and there are different ways to determine normal weight and then determine obesity and its degrees, and the body mass index is one of the most important of these methods, where Mohammed Al-Amin and Ahmed Hassan (2005) mention that the body mass index (BMI) Body mass index, which is by expressing body weight in light of its relationship to height and calculated by the weight section in kilograms on the square of height in meters (8:95).

Many obese patients have tended to resort to performing surgeries called "gastric sleeve" or stomach stapling in order to reduce the size of the stomach and thus be able to eat less food for their ambition to reach a beautiful shape and a harmonious body, and gastric sleeve operations are one of the latest trends and revolutions in slimming science and surgical slimming for obese patients and their impact continues to reach the weight that the obese patient aspires to reach him, which achieves him self-satisfaction for two years and then it is A big role in maintaining his weight by eating less, exercising and other health guidelines (5: 7).

The purpose of reducing the size of the stomach is to remove a large part of the area that causes hunger and the rest of the stomach size 15% of its normal size, as well as remove the part of the secretion of 75% of the hormone that stimulates the sensation of hunger (ghrelin), where the stomach becomes in the form of a tube with fewer cells producing ghrelin, which helps to feel full with less food, The operation is performed laparoscopically by opening four holes in the abdomen and then stapling the stomach longitudinally (5: 12).

Through sleeve gastrectomy, the size of the stomach is significantly reduced so that only a limited amount of food can be received, during the following three years an average of 66% of excess weight is lost and 66% of diseases caused by excess weight also decline, and the way food is absorbed in this method of surgery is not affected, so the lack of vitamins and minerals does not occur to the patient except in rare cases, Since gastric sleeve leads to significant weight loss in a short time, taking vitamins and minerals after consulting a doctor is recommended.

Through the lack of the hormone Ghrelin, the patient's appetite decreases and his intake of meals decreases, and since the pyloric muscle in the stomach sleeve surgery remains present, the patient undergoing the operation does not have dumping syndrome, as is the case in gastric bypass surgery, which leads to the inability to digest foods full of sugars or full of fats. A patient undergoing sleeve gastrectomy can perform a gastroscopy (5: 21).

Osama Rateb (2004) argues that an increase in BMI is associated with the likelihood of an individual experiencing health problems in the future, such as high sugar, blood pressure and heart disease (1: 36).

Research Objective:

The research aims to study "the effect of an aerobic program on body components in men after sleeve gastrectomy", by identifying: body components (total body weight / muscle weight / fat weight / body mass index (BMI) / fat percentage)

Research hypotheses:

The percentage change varies between the averages of the pre- and post-measurements of the group under consideration in the variables of body composition (total body weight (Wight) / muscle mass (SMM) / fat percentage (PBF) / body mass index (BMI).

Terms used in the research:

1- Gastric Sleeve Operations:

It is a weight-loss surgical procedure, in which the size of the stomach is reduced to about 15% of its original size, through surgical removal of a large part of it along the large curvature. After this procedure, the shape of the stomach becomes similar to a tube or sleeve, and leads to a permanent reduction in the size of the stomach, but the stomach may expand later in life. This procedure is generally performed with ventiloscopy, which is irreversible (i.e. irreversible). (12) Twenty-five years ago

2- Aerobic exercises :

It is a set of diverse exercises that target the large muscles in the body, as well as the operation of the heart and lungs when practiced, such as running, swimming, cycling, horse riding, depends in its performance and continuity on oxygen to produce energy and thus works to improve the use of oxygen and stimulate and strengthen the heart muscle and lungs (9)

Previous studies:

1. Study of "Iman Muhammad Al-Kashef" (2021) (3) entitled: The effect of a sports program on some biochemical variables and body components and their relationship to the FTO gene in obese women: The current research aims to study the effect of a sports program on biochemical variables and body components and their relationship to the FTO gene in obese women, through :
 - Study the presence of the FTO gene in obese women .

- Study of body components in obese women .
- Finding the relationship between the presence of the FTO gene and the components of the body in obese women.

He concluded that :

The positivity of the proposed sports program in improving the research variables and this appeared in:

- There were statistically significant differences between the average of the pre- and post-measurements among obese women in the biochemical variables (leptin hormone).
 - The existence of statistically significant differences between the average of the pre- and post-measurements of women with obesity in the components of the body .
 - The existence of statistically significant differences between the average of the pre- and post-measurements among women with obesity in the physical variables under research and in favor of the post-measurement .
 - The existence of a non-statistically significant relationship between the FTO gene and the biochemical variants (Leptin hormone) in obese women under research.
 - The existence of a statistically significant direct correlation between the FTO gene and body components in obese women under research.
 - The existence of a statistically significant correlation between the FTO gene and physical variables in obese women under research.
 - Body components (fat mass / belly fat / trunk fat / body mass) can be predicted by the FTO gene in obese women.
 - Biochemical variables (leptin / leg muscles / back muscles / abdominal muscles / elasticity) cannot be predicted through the FTO gene in obese women.
2. Study of "Asmaa Mohamed Fawzy Mohamed" (2021) (2) entitled: The effect of an air program on some biological variables among middle school students surrounding sugar factories : The research aims to identify the effect of an air program on some biological variables among middle school students surrounding minting factories, and the researcher used the experimental approach for one experimental group using pre- and post-measurement, The research community is represented by the middle school students surrounding

the sugar factories in Hamoul, and the sample was selected deliberately from the original community of the research and their number is (40) students.

The most important results were : -

- There was a positive effect on anthropometric, physiological and biochemical variables in favor of the groups that implemented the aerobic program.
3. The study of "Andrea Herrera" (2021) (10) entitled: The effect of physical exercise in bariatric surgery patients: a randomized clinical trial protocol, and the study aimed to identify the effect of physical exercise in bariatric surgery patients on heart rate, pulmonary capacity and muscle strength, and the study used the experimental method, and the study sample reached 75 individuals with obesity and performed sleeve gastrectomy, and the sample was divided into four groups:
 - The first group practiced sports activity twice a week for four months.
 - The second group practices one week before surgery and three weeks after surgery.
 - The third group practiced four weeks before surgery and four weeks after surgery.
 - The study reached the amendment of the sports therapeutic protocol after surgical intervention of the stomach to become a period of four months after sleeve gastrectomy.
 4. Study of "Samar Saeed Hussein" (2020) (6) entitled: The effect of the Zumba Circle program on improving some components of physical fitness and reducing body fat in women: The current research aims to design a proposed training program using Zumba Circle to identify: The effect of the proposed training program on improving some components of physical fitness (muscular ability - strength - balance - flexibility) and reducing body fat in women, Percentage improvement in fitness and body fat components under research in women.

Through the work of the researcher as an aerobics trainer in one of the fitness centers in Zagazig, Sharkia Governorate, she noticed the demand of the participants to request the practice of Zumba exercises due to the interesting and enjoyable style of these exercises in terms of the nature of the movements and the accompanying music and the speed of performance, especially that this program contains a variety of methods suitable for all women of different physical, age and training conditions, and since there are

many fitness centers through which Zumba exercises are practiced The researcher saw that there is a type of Zumba known as Zumba Circle that has not been used before, as far as the researcher knows, as this type is performed in different kinetic forms, whether free performance or using some tools and devices, but within a circle and in a manner that brings joy and pleasure within the trainees and insistence on following the training without feeling tired and bored early.

Based on the above, the idea of the research emerged from the researcher and saw the development of a program for circular Zumba exercises to know its effect on some components of fitness and reduce body fat for women.

The importance of this research is highlighted in that the Zumba circle fitness program is one of the most modern training methods that gain the admiration of women and girls in different age stages and accept to participate in it enthusiastically and effectively because of its motor and musical diversity that can add positive effects on the physical, psychological and recreational level, and the results of many researches indicate the importance of physical fitness and its positive link to many vital areas of man, especially in the conditions of the modern era, which was dominated by the machine and the computer. And television and video, production is linked to quantity and quality of physical fitness.

Search Procedures:

Research Methodology:

The researchers used the experimental method due to its suitability to the nature of the research, and the experimental design of one group was used by following the pre- and post-measurements.

Research population and sample:

The research community is represented by men who have performed gastric sleeve operations (which is stapling about 85% of the volume of the stomach), and they also meet the following conditions:

- They accept to participate in the research application and commit to the training program.

The researcher will choose the research sample in a deliberate way from the research community, which numbered 10 men, and the researchers chose the research sample in a deliberate way, consisting of (10) people who were subjected to gastric sleeve and divided into two groups, an experimental group of (2) men and the research sample and the number (8) men.

Distribution of sample members moderately:

The moderate distribution of the research sample was found in the light of age, height and weight, and Table (1) illustrates this.

Table (1)
Arithmetic mean, median, standard deviation and torsion coefficient
for the sample under consideration in the variables under
consideration (n = 8)

Skewness	Standard deviation	median	Average	Variables
0.790	5.01	37.00	36.62	lifetime
2.66	6.17	160.00	162.12	Length
-1.58	15.04	94.50	89.12	Weight

It is clear from Table (1) the following:

The values of the torsion coefficients of the variables under consideration range between (-1.58, 2.66), that is, they were confined between (+3, -3), which indicates the moderation of the frequency distribution of the group in these variables.

Tools and means of data collection:

First: Devices and tools used in the research:

- IN BODY.
- Blood sampling instruments (syringes - tubes - reagent).
- Medical scale listed in kilograms (to follow up the balance of the sample).
- Pulse Bowler watch .
- Computer .

Statistical method used:

The following statistical coefficients were used (arithmetic mean, median, standard deviation, torsion coefficient, percentage change).

Presentation, discussion and interpretation of results:

Table (2)

The significance of the differences between the average scores of the pre- and post-standards

For the group under consideration in the variables of body composition (n = 8)

Proba bility of error	value (z)	Telemetry			Pre-measurement			Variables
		Tota l rank s	Aver age rank s	mean	Total ranks	Aver age ranks	mean	
0.011	2.53	0.00	0.00	84.62	36.0	4.50	89.12	الوزن الكلي (Kg)
0.012	2.52	36.0	4.50	32.78	0.00	0.00	29.91	وزن العضلات (kg)
0.012	2.52	0.00	0.00	19.31	36.00	4.50	33.81	وزن الدّهون (kg)
0.012	2.52	0.00	0.00	32.16	36.00	4.50	33.86	Body mass index (Kg/m2)
0.012	2.52	0.00	0.00	23.56	36.00	4.50	38.49	Fat Percenta ge (%)

* D at level (0.05)

** D at level (0.01)

It is clear from Table (2):

The existence of statistically significant differences between the average ranks of the pre- and post-standard of the group under research in the variables of body components and in favor of the post-measurement.

The researchers attribute this to the fact that the result of using the aerobic program led to the improvement of body components, especially body weight after application, and therefore fat was affected, as the weight of body fat decreased, and also the percentage of fat decreased, as well as body mass index, and muscle weight was relatively affected by the proposed aerobic program, and this is what this result has shown to an improvement in the results of the selected samples, which was increasing their weight, and this is what the researchers have noticed when they conducted the pre- and post-measurements, there was an improvement in All variables of the components of the body, and the nutritional program had an important role in reaching the samples applied to the aerobic program to the desired goal, which had a great impact on improving their physical condition as well.

Table (3)

Percentage change between the average of the pre- and post-measurements of the group under consideration in body components (n=8)

% Change	Telemetry	Pre-measurement	Variables
% 5.04	84.62	89.12	Average total weight
% 9.59-	32.78	29.91	Average muscle weight
% 42.88	19.31	33.81	Average fat weight
% 5.02	32.16	33.86	Average BMI
% 39.86	22.81	37.93	Average fat content

Table (3) shows the following:

- The percentage change between the pre- and post-measurements of the group under research in the variables of body components ranged between (-9.59%: 42.88%), which indicates the development and improvement of those variables in the samples.

The researchers attribute this result to the existence of a noticeable change in the group under research and improved significantly due to the fact that the exercise of aerobic exercise in the correct and regular ways leads to the improvement of the components of the body when the research samples who have been the work of gastric sleeve operations positively and efficiently, the use of sports in general and aerobic programs in particular strengthens the physical structure and develops the elements of physical

fitness and components of the body and maintain the body and get rid of chronic diseases .

This was confirmed by the study of "Nasser Al-Swaify, Mohsen Ibrahim" (2013) (10), where its results confirmed that the proposed sports aerobic program using the stationary bike led to improving the level of glucose in the blood, lipids, systolic and diastolic pressure, and the study of "Reem Abo Eleneen" (2012) (13), where its results confirmed that Team A was more improved than Team B, which received the diet only, and the difference A was reduced the dose of diabetes and pressure treatment.

Conclusions:

1. The aerobic sports program, especially cardio, is more effective in restoring fitness and muscular strength to people who have had gastric sleeve operations.
2. The existence of statistically significant differences between the average ranks of the pre- and post-standard of the group under research in the variables of body components and in favor of the post-measurement.
3. The percentage improvement rates differed between the pre- and post-measurements of the group under research in the variables of body components in the positive direction towards the improvement of those variables.

Recommendations:

1. Practicing aerobic sports such as cardio of medium intensity, especially at least 30 d per day for people who have had a sleeve gastrectomy.
2. Practicing aerobic exercises such as cardio and Zumba at home so as not to despair of practicing them due to the costs of gyms and the drain of time.
3. Attention to making IN BODY measurements to reassure the components of the body, especially for people who have had a sleeve gastrectomy.
4. Doctors in the field of surgery recommend specialized programs in nutrition and also to practice aerobic sports such as cardio and Zumba so that they recommend it to those who perform gastric sleeve operations.

References

First: Arabic References:

1.	Osama Kamel Rateb: Physical activity and relaxation: an introduction to face stress and improve the quality of life, Dar Al-Fikr Al-Arabi, Cairo, 2004.
2.	Asmaa Mohamed Fawzy (2021): " The effect of an aerobic program on some biological variables among middle school students surrounding sugar factories", published master's thesis, Faculty of Physical Education, Damietta University.
3.	Iman Mohammed Al-Kashef (2021): " The effect of a sports program on some biochemical variables and body components and their relationship to the FTO gene in obese women", PhD thesis, Faculty of Physical Education, Minia University.
4.	Bahaa El-Din Ibrahim Salama: Sports Health and Physiological Determinants of Sports Activity, Dar Al-Fikr Al-Arabi, Cairo, 2002.
5.	Al-Arab Newspaper (2013): Statistics of stomach stapling at Hamad Medical Corporation, Monday, January 14.
6.	Samar Saeed Hussein (2020): " The effect of Zumba Circle program on improving some components of physical fitness and reducing body fat in women", published master's thesis, Faculty of Physical Education for Girls, Zagazig University.
7.	Suha Abdullah Al-Samlawi (2007): "The effect of aerobic exercise program on blood lipids to lose weight for women", published master's thesis, Faculty of Physical Education for Boys, Tanta University.
8.	Mohamed El-Sayed El-Amin, Ahmed Ali Hassan: Aspects of Sports Health, Dar Al-Manar Printing, Cairo, 2005.
9.	Nasser Mustafa Al-Swaifi, Mohsen Ibrahim: The Effect of an Aerobic Program Using a Stationary Bicycle on Some Biological Variables for People with Metabolic Syndrome, Journal of Sports Sciences and Arts, Helwan University, Faculty of Physical Education for Girls, June 2013.

Second: Foreign References:

10.	Andrea Herrera-Santelices (2021) : Effect of physical exercise in bariatric surgery patients: protocol of a randomized controlled clinical trial , national Library of Medicine .
11.	who.int/entity/mediacentre/news/releases/2016/world-health-day.
12.	https://ar.wikipedia.org/wiki/%D8%AA%D9%83%D9%85%D9%8A%D9%85_%D8%A7%D9%84%D9%85%D8%B9%D8%AF%D8%A9

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The research aims to study "the effect of an aerobic program on body components in men after sleeve gastrectomy", by identifying: body components (total body weight / muscle weight / fat weight / body mass index (BMI) / fat percentage)

The researchers used the experimental method, and the researchers used one of the experimental designs, which is the experimental design of one group by following the pre- and post-measurements of it, the research community is the people who conducted the sleeve gastrectomy of the men, and the 10 men, and the researchers selected the research sample in a deliberate way, consisting of (8) men, and the researchers used some devices and tools as well as with the nutritional program.

One of the most important results was that the practice of aerobic exercise led to the improvement of the components of the body in men who applied aerobic exercises, after conducting gastric sleeve operations by two months and with the help of rationed food programs, and one of the most important recommendations was the use of aerobic exercises, especially cardio and Zumba when performing gastric sleeve operations because of its ability to positively affect the improvement of body components.

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