The effect of Aerobic exercise on the rate of thyroid secretion and weight loss

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Introduction and research problem

Aerobic work activities are physical movements that lead, when there is a sufficient supply of oxygen to the body, to produce the necessary energy. The word aerobic means muscular work, which depends mainly on oxygen. Muscles need oxygen to perform their function, and their need for oxygen increases as their work increases. They depend on work. The circulatory and respiratory systems operate continuously over a period of ١٥-٣٠ minutes, with a heart rate of ١٦٠/١٣٠ per minute (٤ : ٢٦) .

Aerobic exercises use major muscle groups for more than several minutes through continuous, repetitive rhythmic movements, as the respiratory circulatory system supplies the muscles with the oxygen they need, as the primary goal of practicing them is to raise physical and functional fitness in addition to improving body measurements and working to lose weight and reduce the percentage of body fat (٩ : ١٠٢) .

Aerobic exercise increases the heart's ability to pump oxygen through the body and the oxygen inhaled and consumed. It causes improvement during the performance of aerobic exercise and makes the individual physically fit (١ : ١٨).

The thyroid gland is considered one of the most important endocrine glands in the human body, as it is located in the front part of the middle of the neck, directly below the Adam’s apple, specifically next to the trachea, esophagus, and pharynx. It wraps around the cricoid cartilage and the rings of the upper trachea, and consists of two lobes connected by a thin band of tissue. It is called the isthmus, and this is what gives it the shape of a butterfly (٢ : ٥٧٨) .

Thyroid hormones affect metabolism by making the T٣ hormone change the genetic expression of the genes responsible for the cellular production of some proteins and hormones, which affects the heart, muscles, digestive tube, brain, bone growth, and regulation of body temperature. Thyroid hormones also affect the metabolism of carbohydrates, increasing the thyroid hormones. The thyroid gland stimulates oxygen consumption and reabsorption of glucose in the intestines, muscles and adipose tissue by stimulating the process of gluconeogenesis and glycogenolysis. In addition, it stimulates the synthesis of glycogen in the presence of insulin and increases glucose utilization (٥ : ٢٠٠) .

From the above, researchers mention that sports training leads to physiological changes in the body during or after performing physical activity, and these changes are of two types, some of which are temporary, i.e. changes that occur temporarily in response to performing physical activity, then the blood returns to its state at a time of rest, and some changes. Relatively continuous, they are changes that occur in the blood as a result of regular exercise for a certain period of time, which leads to the blood adapting to perform physical training.

The researcher reviewed studies that focused on the role of the thyroid gland in the process of sporting activity and its impact on this activity, such as the study of “Mohammed Abd Elkader” (٢٠٢٠) (٦), the study of “Samuel, Getachew” (٢٠١٩) (٨), and from the above, the researchers did not find - To the best of his knowledge, there have been studies that were concerned with linking and finding the relationship between the effect of aerobic exercise on obese people, and studying the physiological state of this adaptation that occurs from practicing sporting activities from the hormones secreted by the thyroid gland. This is what prompted the researchers to prepare this study entitled: A sports program using aerobic exercise and its effect. On the rate of thyroid secretion and its role in weight loss.

Search terms :

Aerobic exercise

One of the powerful rhythmic activities that adapts the circulatory and respiratory systems, increases their efficiency, and improves health in general. It also includes the use of the legs and arms, which requires performing methods of Exercises that involve groups of large muscles that depend on continuity and rhythm (٣ : ١٠٩) .

Research objective

The research aims to design a sports program using aerobic exercise and study its effect on the rate of thyroid secretion and its role in weight loss .

Research hypotheses

In light of the research objectives, the researchers put forward the following hypotheses :

١. There are statistically significant differences between the pre- and post-measurements in the level of cumulative blood sugar, the level of thyroid hormones "TSH - T٣ - T٤" and the weight.
٢. The rate of improvement varies in the post-measurement level of (cumulative blood sugar, TSH - T٣ - T٤ hormones, the weight) in the research sample .

Proposed training program

Determine the total time of the program in weeks and then distribute it into periods :

- Total time of the program = (١٢ weeks) .
- Number of weeks in the general preparation phase = (٤ weeks) .
- Number of weeks in the special preparation phase = (٨ weeks) .
- The number of training units during the training program is (٤) training units per week (Saturday / Monday / Wednesday / Friday) .
- Training unit time: ٦٠ seconds (medium load and high load) .
- Total program time : ٩٦٠ s + ١٩٢٠ s = ٢٨٨٠ s .

Research Results

Table of significance of statistical differences between the average ranks of the pre- and post-measurements For the group in the variables under investigation (n = ٨)

variable		Pre-measurement			Dimensional measurement			Value (Z)	Error of probability
		SMA	Average rank	Total ranks	SMA	Average rank	Total ranks		
Blood sugar level		٨,٥٤	٤,٥٠	٣٦,٠٠	٧,٥١	٠,٠٠	٠,٠٠	*٢,٥٤	٠,٠١١
Thyroid hormones	T٣	٤,٨٣	٤,٥٠	٣٦,٠٠	٣,٥٦	٠,٠٠	٠,٠٠	*٢,٥٣	٠,٠١٢
	T٤	٢,٤٦	٤,٥٠	٣٦,٠٠	١,٨٦	٠,٠٠	٠,٠٠	*٢,٥٣	٠,٠١٢
	TSH	٥,١٠	٤,٥٠	٣٦,٠٠	٤,٤١	٠,٠٠	٠,٠٠	*٢,٥٢	٠,٠١٢
Body weight without fat		٨٠,٣٣	٤,٥٠	٣٦,٠٠	٧٥,٩٤	٠,٠٠	٠,٠٠	*٢,٥٢	٠,٠١٢
Body fat weight		٢٥,٩٨	٤,٥٠	٣٦,٠٠	٢٢,٨٨	٠,٠٠	٠,٠٠	*٢,٥٢	٠,٠١٢

Table of percentage changes between the pre- and post-measurements for the group under study in the variables under investigation (n = ٨)

variable		Average pre-measurement	Mean dimension measurement	Percentage change%
Blood sugar level		٨,٥٤	٧,٥١	% ١٢,٠٦
Thyroid hormones	T٣	٤,٨٣	٣,٥٦	% ٢٦,٢٩
	T٤	٢,٤٦	١,٨٦	% ٢٤,٣٩
	TSH	٥,١٠	٤,٤١	% ١٣,٥٣
Body weight without fat		٨٠,٣٣	٧٥,٩٤	% ٥,٤٦
Body fat weight		٢٥,٩٨	٢٢,٨٨	% ١١,٩٣

It is clear from the previous two tables:

- There are statistically significant differences between the average ranks of the pre- and post-measurements for the group under study in the level of blood sugar, thyroid hormones, and body weight in favor of the post-measurement .
- The percentages of change between the pre- and post-measurements of the group under study in the variables under study ranged between (٣,١٢ % : ٧٤,٤٥ %) , which indicates the effect of aerobic exercise on the rate of thyroid secretion and the components of healthy fitness for obese people with insulin resistance .

The researchers attribute this result to the proposed and codified sports program that is appropriate to the biological condition and body components of the research sample, as it achieves its goal by improving the physical and physiological condition, as the nature of the aerobic exercises in the proposed sports program lasts for more than twenty minutes, which leads to burning fat and thus improving the components of The body is characterized by repetition and a long period of time to burn belly fat and thus changes the shape and components of the body. Regularity in sports training and its weekly training units makes the body adapt to the exerted effort, and is also compatible with the physical and physiological condition of patients with insulin resistance and the resulting symptoms of obesity and physiological and physical problems. Regularity in sports training and its training units on a weekly basis makes the body adapt to the effort expended, especially in burning fat, and creating the energy expended necessary to equal the effort intended to be expended in the proposed sports program .

He also attributes this result to the physical components of healthy fitness, which consists of muscular strength, flexibility, and respiratory fitness, to which the researcher allocates ١,٤٤٠ minutes, distributed scientifically, to achieve the goal of the program. The program also pays attention to walking, running,

jumping, and exercises for all muscles of the body, and this is what is due to The research sample indicates that the level of physical abilities is improved as a result of the accuracy of preparing the program, its scientific codification, and its development through polling experts in the field of training and sports health, and that performing exercises is easier and helps with continuity, and that his feeling of happiness and pleasure increases, and he has an incentive to continue training, and his feeling of the program's positivity increases in The ease of the exercises in the program, which are characterized by a progression from easy to more difficult, and the performance appears smooth and easy, and continuing to exercise until it becomes part of the daily lifestyle .

The researcher also attributes this result to the content of the nutritional guidance program, which consists of (obesity - treatment and prevention of obesity, general nutritional advice for diabetes, groups of food alternatives for diabetics, diet recommendations for people with insulin resistance, foods that reduce insulin resistance, foods that increase the body's sensitivity For insulin, foods that increase insulin resistance, snacks approved by nutrition experts to combat insulin resistance, signs that the body is suffering from insulin resistance, "neglected" foods that stimulate insulin secretion and lower blood sugar, foods that are useful in treating insulin resistance, a sample of some nutritional guidelines for people with insulin resistance) And the topics that the researcher was interested in communicating to the research sample and the extent of their importance, whether they had the information or not .

Conclusion

In light of the results of the research to achieve its goal, which came through verifying the hypotheses that were set for this purpose, the researcher concluded that the sports program using aerobic exercises is positive and its effect on the rate of thyroid secretion and its role in weight loss. This was demonstrated by the presence of statistically significant differences between the average ranks of the two pre-measurements. The posttest for the group under study included the level of thyroid hormones " TSH - T٣ - T٤ ", blood sugar level, and body weight in favor of the posttest .

Thanks and appreciation

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Research Summary

The effect of Aerobic exercise on the rate of thyroid secretion and weight loss

The research aims to design a sports program using aerobic exercise and study its effect on the rate of secretion of the thyroid gland and its role in weight loss. The researchers used the experimental approach with an experimental design for one group using (pre-post) measurement for it. The researchers selected the research sample intentionally from the research community and it amounted to (٨) Patients with insulin resistance who attend the Beni Mazar City Youth Center affiliated with the Minya Youth Administration. In light of the results of the research to achieve its goal, which came through verifying the hypotheses that were set for this purpose, the researcher concluded that the sports program using aerobic exercises is positive and its effect on the rate of glandular secretion. The thyroid and its role in weight loss. This was shown by the presence of statistically significant differences between the average ranks of the pre- and post-measurements for the group under study in the level of thyroid hormones “TSH - T٣ - T٤” and the level of blood sugar and body weight in favor of the post-measurement.

Key words

- Aerobic exercises
- Thyroid gland

Weight loss