The effect of an aerobic exercise program on some physiological and biochemical variables for type 2 diabetic men (45-55) years old.

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Introduction and research problem

Sport is a means for a better healthy life, and every member of society must protect himself from the modern diseases that are prevalent in this era by nourishing the body, and nourishing the body is not intended to eat and drink only, but rather it is intended to nurture the body through exercise Organized and based on scientific foundations and within the limits of the capabilities of the individual

Aerobic exercises are those that use the main muscle groups for more than several minutes through continuous, repetitive, rhythmic movements, as the respiratory system supplies the muscles with their oxygen needs, as the main goal of practicing them is to raise physical and functional fitness in addition to improving physical measurements and working to lose weight and reduce weight. Body fat percentage.

Aerobic training is considered one of the most famous healthy physical activities in the world, especially for women. The word (aerobic) and the word (aerobics) have become a word of Latin origin that means (with air), and it is associated with effort and air together. Aerobic exercises, cardio exercises, or aerobic exercises are Or cardio, all of them have one meaning: running, skipping rope, dancing aerobics (rhythmic exercises), the wheel (Bike) and also the stepping machine (stepper - orbit rack), and some exercises related to the swedish that help burn fat ... etc., where Aerobic

exercises depend first and foremost on burning fat by converting ("Fate fat" into "ATP tri-adenosine phosphate"), meaning "energy", and it is considered the best treatment for obesity, as it burns calories, reduces blood cholesterol and blood sugar, and also improves blood pressure in addition to improving The mental and mood state (7 : 102) .

Also, aerobic exercises are based primarily on the presence of oxygen and use the rhythmically large muscle group that works for a period of (15:45 s) or more when the performance is from (60:80%) of the pulse reserve, and she explained that aerobic exercises have an important role, which is Under the name of recreational exercises that achieve the purpose of acquiring aerobic fitness and improving the functional ability of the body's systems, and the benefits resulting from these activities may decrease when the individual stops that practice (5 : 143) .

Meliven Williams (2001) points out the need to improve body shape and develop physical fitness for women, and thus treat some of the diseases associated with obesity such as high blood pressure, heart disease, depression, and others through aerobic exercise (6 : 42) .

In view of the seriousness of obesity on health in general, doctors paid special attention to the study of obesity-related diseases and appropriate strategies for weight reduction. It almost helps to reduce the risk of developing diabetes by (85%). This motivated the researchers to pay attention to this study in order to limit its spread among normal people who are predisposed to contracting it on the one hand, and to prevent side complications resulting from the disease on the other hand, based on the principle of (future medicine). It is preventive medicine) and also (prevention is better than cure) .

Search goal:

The effect of an aerobic exercise program on some physiological and biochemical variables for type 2 diabetic men (45-55) years old.

Research hypotheses:

In light of the research objectives, the researchers assume the following:

1. There are statistically significant differences between the mean ranks of the pre and post measurements of the research group in the physiological and biochemical variables and in the direction of the post measurement .

search terms:

Aerobic exercise

One of the powerful rhythmic activities that works to adapt the circulatory and respiratory systems and increases their efficiency and works to improve health in general. It also includes the use of the legs and arms, which requires the performance of methods of exercises involving groups of large muscles that depend on continuity and rhythm (3 : 109) .

Type II diabetics

A chronic disease condition that may occur due to genetic or acquired factors, or as a result of other factors. It means an absolute or relative deficiency in the amount of insulin secreted by the pancreas, which results in an increase in blood and urine sugar levels and disturbances in the oxidation of fats, proteins, and carbohydrates (8 : 36) .

Research Methodology:

In order to achieve the objectives of the research and to test its hypotheses, the researcher used the experimental approach, as it is the appropriate approach for the nature of the research. He used a model of experimental designs, which is the pre- and post-measurement of one experimental group .

Research community and sample:

The research community is represented by type 2 diabetics in the age group from 45 to 55 years old in Minya Governorate and the participants in the youth centers of the Minya Youth Administration, and the researchers selected the research sample randomly from the research community. The second type.

search tools

- Rest Meter measures total body length to the nearest centimeter .
- -Taneta balance for measuring weight and body components.
- -Glass tubes with anticoagulant (EDTA) for preserving blood samples.
- Coleman with crushed ice in it.
- Stop watch to measure time to the nearest (0.01) second.

The proposed training programme

The total weeks of the sports program are 12 weeks, with a total of 36 training units, at the rate of 3 units per week. The shape of the daily load training cycle was determined in a ratio of (2:1), meaning that there are two days during which the load is of high intensity and one day of medium intensity.

Search steps:

Tribal measurement:

The researcher conducted a tribal measurement on the three groups under study, on Friday and Saturday corresponding to 6/4/3/2022 AD, in all tests and measurements under study .

Implementation of the proposed program:

The researcher applied the proposed program to the groups under research, during the period from Sunday 5/6/2022 to Thursday 25/8/2022 AD.

Dimensional measurement:

The researcher conducted the post-measurement for the three research groups, on Friday and Saturday corresponding to 26 and 27/8/2022 AD. All measurements were carried out as they were done in the pre-measurement in all variables. Data was collected, organized and tabulated for statistical processing.

Statistical treatment:

In order to achieve the objectives of the research and to test its hypotheses, the researchers will use the computer in statistical processing by using the spss statistical program in order to obtain statistical treatments.

research results

Verification of the research hypothesis, which states: There are statistically significant differences between the mean ranks of the pre and post measurements of the research group in the physiological and biochemical variables and in the direction of the post measurement.

A table showing the percentage change percentages between the pre and post measurements of the research group in physiological and biochemical variables (n = 10)

Variables		Pre-measurement average	Post-measurement	average Variation %
Physiological variables	pulse rate	٩٦,٧٠	٩٣,٧٠	% ٣,١٠
	Systolic blood pressure	١٣٩,٢	١٣١,٦	% ٥,٤٦
	diastolic blood pressure;	٩٣,٧٠	٨٩,٤٠	% ٤,٥٩
	vital capacity	١٩٥١	٢١٢٦	% ٨,٩٧
biological variables	Random sugar	٢١٢,٩	١٩٢,١	% ٩,٧٧
	cumulative sugar	٧,٤٠	٦,٦٥	% ١٠,١٤
	beneficial cholesterol	٤٥,٢٠	٤٧,٩٠	% ٥,٩٧
	harmful cholesterol	٨٦,٩٠	٨١,٠٠	% ٦,٧٩

It is clear from the previous table:

- The percentage change rates between the pre and post measurements of the group with which the sports program was used in biological variables and body composition ranged between (3.10%: 10.14%), which indicates the positivity of the proposed sports program in improving the biological variables and body composition of the research sample members.

The researchers attribute this result to the regularity in the proposed and regulated sports program, which is commensurate with the biological variables and body composition (the research sample), as it achieves its goal by improving the physical and biological condition, and the regularity in sports training and its training units weekly makes the body cope with the effort exerted, especially in burning Fat, and the composition of the energy expended necessary to equal the effort to be expended in the proposed sports program .

The researchers also attribute the nature of aerobic exercise in the proposed sports program, which lasts for more than twenty minutes, which leads to fat burning and thus improves body components. Also, the exercises within the proposed sports program that target the waist area and are characterized by repetition and a long period of time to burn belly fat and thus change the shape of the body. and body components .

Aerobic exercises are characterized by low intensity, which makes the performance of the exercises easier and helps with continuity and increases his feeling of happiness and pleasure and has an incentive to continue training, and increases his sense of positivity in the program. So that it becomes part of their daily lifestyle, which benefits them with physical, physiological, psychological and social health .

The researchers also attribute this result to the presence of statistically significant differences in the pre and post measurements in the biological variables and body composition, as the sample did not receive any instructions or information besides the sports program, although the improvement in weight or body mass appears as a result of the proposed program and the amount of calories lost .

This result is consistent with the results of the study "Jonker JTet al" (2013) (4), the study "Bandey et al" (2015) (1), and the study "Cassidy S et al" (2016) (2), which found a positive improvement in Fat percentage and sugar level for type 2 diabetics.

Conclusion

In light of the research imposition and the procedures that were followed and the research sample, and the results of the research, the researchers concluded that the proposed sports program was positive in improving the biological variables and body composition of the members of the research sample, as the percentage change rates ranged between the pre and post measurements of the group used with the sports program in biological variables and body composition between (3.10 % : 10.14 %).

Thanks and appreciation

The researchers extend their sincere thanks and great appreciation to everyone who contributed to the conclusion of this work to the fullest extent, especially the experts in the field of sports health, as well as members of the staff of the Department of Sports Health Sciences at the College of Physical Education who participated in the application of this research and the time and information they allocated in order to produce the research in the hoped way. And the ability to achieve the desired goal. Finally, the researchers extend their sincere thanks and great appreciation to the members of the research sample, the assistants, and the specialists in drawing the research samples.

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Research Summary

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The research aims to design a program that consists of aerobic exercises for patients with type 2 diabetes and to know its effect on some physiological variables (heart rate, vital capacity, blood pressure) and some biochemical variables (blood glucose level, blood cholesterol level, cumulative blood sugar) in diabetic patients. The second type, the researchers used the experimental approach as it is the appropriate approach to the nature of the research. A model of experimental designs was used, which is the pre and post measurement of one research group. The research community represented type II diabetics in the city of Minia. Youth centers and they numbered 10 men with type 2 diabetes, men (45-55) years old. The researchers reached several results. There are statistically significant differences between the mean ranks of the pre and post measurements of the group with which the sports program is used in biological variables and body composition and in the direction of the post measurement. The percentage change ranged between the pre and post measurements of the group with which the Riyadh program was used In biological variables and body composition between (3.10%: 10.14%), which indicates the positivity of the proposed sports program in improving the biological variables and body composition of the research sample members.

Key words
- Aerobic exercise .
- Physiological and biochemical variables .
- Patients with type 2 diabetes .

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تأثير برنامج التمارين الهوائية على بعض المتغيرات الفسيولوجية والكيميائية الحيوية للنوع الثاني الرجال مرضى السكر (٤٥-٥٥) سنة.

* أ.د / ناصر مصطفى الصويفي
** د / عبد الرحمن منصور عبد الجابر
***الباحث / ياسين أحمد اليمني.

يهدف البحث إلى تصميم برنامج يتكون من التمارين الهوائية لمرضى السكري من النوع الثاني ومعرفة تأثيرها على بعض المتغيرات الفسيولوجية (معدل ضربات القلب ، القدرة الحيوية ، ضغط الدم) وبعض المتغيرات البيوكيميائية (مستوى الجلوكوز في الدم ، مستوى الكوليسترول في الدم ، سكر الدم التراكمي) عند مرضى السكري. النوع الثاني استخدم الباحثون المنهج التجريبي حيث أنه المنهج المناسب لطبيعة البحث. تم استخدام نموذج التصاميم التجريبية وهو القياس القبلي والبعدي لمجموعة بحثية واحدة. يمثل مجتمع البحث مرضى السكري من النوع الثاني في مدينة المنيا. مراكز الشباب وعددها ١٠ رجال مصابين بالسكري من النوع ٢ رجال (٤٥-٥٥) سنة. توصل الباحثون إلى عدة نتائج. توجد فروق ذات دلالة إحصائية بين متوسطات الرتب للقياسات السابقة والبعادية للمجموعة التي يستخدم معها البرنامج الرياضي في المتغيرات البيولوجية وتكوين الجسم وفي اتجاه القياس البعدي. تراوحت نسبة التغيير بين القياسات السابقة والبعادية للمجموعة التي تم استخدام برنامج الرياض معها في المتغيرات البيولوجية وتكوين الجسم بين (٣.١٠٪: ١٠.١٤٪) مما يدل على ايجابية البرنامج الرياضي المقترح في تحسين المتغيرات البيولوجية وتكوين الجسم. تكوين الجسم لأعضاء عينة البحث.

الكلمات الدالة
-تمارين الأيروبيك.
-المتغيرات الفسيولوجية والكيميائية الحيوية.
-مرضى السكري من النوع الثاني.