# THE EFFECT OF USING THE KETO DIET AND STATION TRAINING ON SOME MOTOR ABILITIES IN OBESE PEOPLE

Search submitted by researchers
**Asaad Jassim Shanan*1**
**Prof.Dr Fairouz AZAIEZ*2**
.1Dhi Qar Education. University teacher / Physical -education and sports sciences
2.University of Sfax \ High Institute of sport and Physical Education of Sfax - Tunisia
asaad.j91@gmail.com
fairouz.kyranis@yahoo.com
هـ1446                    م 2024

## Abstract

The aim of the research was to determine the effect of keto diet and station training on some motor variables in obese individuals. In order to determine the effect of the keto diet and station training on some motor abilities and obese people, the research population was defined as obese people aged (20-25 years). 25) years old obese people who are present in the fitness halls, and the research sample was selected from obese people (8) individuals if a one-group experimental design with pre and post-test was used, and the sample was selected by the random method from obese people and (2) individuals were taken to conduct the exploratory experiment on them from within the same experimental group and the percentage of the sample was (100%) of those registered in the fitness hall.

The conclusions were: The station exercises effectively influenced the research variables and reduced their weight. The keto diet fulfilled its purpose by paying attention to the calories required for each individual and achieved success in reducing their weight, and the exercises selected by the researcher had a direct impact on reducing the weight of obese individuals because they focused on burning calories significantly in the post-tests. The use of the keto diet and station training significantly improved motor skills. Individuals were willing and motivated to implement the keto diet and station training because they wanted to reduce their weight in one way or another and this improved their ability to work better.

Recommendations:  The researcher recommends working on the keto-diet system with the stations because they have significantly reduced the weight of the individuals. The researcher recommends working on developing the motor abilities of obese individuals in order to encourage them to continue working on their physical structure. The researcher recommends diversifying the training work for obese individuals because there is more than one scientific method that can be applied to reduce their weight  .

Keywords / Keto Diet / Training Stations / Obesity / Biochemical

**-Introduction to the research**

Despite the development that has occurred in the field of physical education and sports science, which is clearly marked by the levels reached by countries in this field, this development was the result of the interest of many specialists in conducting research and studies in order to identify the best ways and means.

Food systems for weight loss are one of the systems that are often followed and have special rules and conditions for their use and application to people with obesity, including intermittent fasting, keto diet, special diet system and others, and because they work to regulate food proportions, type and amount of calories

entering the human body and thus control the rate of accumulated fat by controlling the input of food, many obese people have become dependent on these systems for the purpose of reducing their weight. But many suffer from the slow results of this process because it does not burn calories but only works to regulate calories and food for the individual and thus the individual becomes under pressure for a long time and this is what causes frustration and leaving the diet process at times despite its great benefit, but it has some disadvantages that if some regulated activities interfere with it, the matter becomes better for them, and these activities are diverse, including station training and others.

Station training is one of the circular training systems that work to diversify training through multiple stations that benefit the individual during the training period. These trainings have great importance as they were originally working to increase general physical fitness and were modified according to the requirements and objectives of the training units, through which obese people can work and train to lose weight and develop some motor abilities, improve their level and physical activity, and thus increase the possibility of working to lose their excess weight with work, activity and movement.

From the above, the importance of the research lies in the work of organising food units through the keto diet system and training stations that can work to raise the level of activity and movement in people with obesity in general.

**Research Problem:-**

Obesity is one of the problems of the modern era due to the well-being of life and thus the decrease in the rate of movement and physical activity and thus the level of obesity increased in general and many Iraqis suffer from dietary obesity as a result of modern activities characterised by lack of activity and dietary habits that greatly affect the level of obesity of individuals and young people in particular, so the researcher decided to study this issue and develop appropriate solutions to reduce that obesity and develop their motor abilities.

**Research Objectives: -**
1- Preparing a keto diet and station training to develop some motor variables in obese people.
2- Identify the effect of keto diet and station training on some motor abilities and obese people

**Research hypotheses: -**
1- There are statistically significant differences in the level of some motor skills of obese people between the pre-test and post-test and in favour of the post-test.

**Areas of research: -**

- **Human subjects**: A group of people with obesity.
- **Temporal domain:** 12/5/2024 to 22/7/2024.
- **Spatial area:** Closed hall for fitness and bodybuilding.

**Research Procedure**

Research methodology and field procedures:

One of the most important requirements in scientific research is the selection of the research method in a way that suits the nature of the problem and through which the researcher can achieve the research objectives to be achieved. The method is 'a method of thinking and action adopted by the researcher to organise, analyses and present his ideas in order to reach acceptable results and facts about the phenomenon under research' (Ghoneim, 2000, p. 52).

## Population and Sample

The research population was defined as obese people aged (20-25) years who are obese people who are present in the fitness halls, and the research sample was selected from obese people and the number of (8) individuals if the experimental design with one group with pre and post test was used, and the sample was selected by the random method from obese people and (2) individuals were taken to conduct the exploratory experiment on them from within the same experimental group and the percentage of the sample was (100%) of those registered in the fitness hall.

For the purpose of ensuring the homogeneity and equivalence of the sample members and the correctness of the normal distribution among its members, the researcher used the arithmetic mean, standard deviation and coefficient of skewness to homogenise the results of the field survey in the measurements (biological age, weight and height).

Table (1)

shows the homogeneity of the research sample by the torsion coefficient in the variables of height, weight and chronological age

| Torsion coefficient | Standard Deviation | Medium | Arithmetic mean | Unit of measure | Variables |
|---|---|---|---|---|---|
| 0.830 | 0.600 | 177 | 177.5 | cm | Height |
| 0.758- | 0.454 | 115 | 115.6 | Kg | Weight |
| 0.824 | 0.895 | 24 | 24.3 | Year | Chronological age |

The results indicated that all variables fall under the verification of the modal curve, and this indicates that the sample is well distributed and homogeneous in the research variables, because one of the characteristics of the typical modal curve is that the twist coefficient is confined between the two values (+1) (Al-Sayed, 1978, p. 455-456)

## Devices, tools and methods used in the research:

- **Devices and tools used in the research:**
1- Calculator with discs.
2- Towels (6)
3- Rubber ropes
4- Treadmill
5- Medical scale
6- Sony camera (1)
7- Electronic stopwatch (6) or a mobile phone with a counting timer.
8- Medical ball with a weight of 3kg.

## The methods used in the research:

1- Arabic and foreign sources and references.
2- Survey questionnaires of experts and specialists and personal interviews.
3- Questionnaires for recording and transcribing data and information.

**Field research procedures:**

**Identify the capabilities used in the research:**

After reviewing the sources dealing with abilities and referring to the experience of the researcher and the supervisor, the researcher selected a number of variables (motor abilities), and these abilities and skills were presented to the experts and specialists, to solicit their opinions on the nomination of what they consider appropriate from the variables of special and valid motor abilities from the variables under study, the researcher used the percentage law in knowing the percentage of agreement, and took the percentage (75%) and more as shown in Table (2), only the abilities that were approved were presented in the following table.

Table (2)

Motor abilities and agreement rates of experts

| Percentage | Disagree | Agree | Number of experts | Bio motor abilities | ت |
|---|---|---|---|---|---|
| 90.90% | 1 | 10 | 11 | Balance. | 1. |
| 81.81% | 2 | 9 | 11 | Flexibility. | 2. |
| 81.81% | 2 | 9 | 11 | Agility | 3. |

**Define the tests for the research:**

After reviewing the sources concerned with tests and measurement, the researcher selected a number of variables and tests for biochemical motor abilities variables, which have a high degree of reliability, stability and objectivity, and presented these tests to experts and specialists, to seek their opinions on the nomination of what they consider appropriate variables and special tests and valid to measure the variables under study, and the researcher used the percentage law to know the percentage of agreement, and took (75%) and more.

**Tests used in the research:**

- **Kinetic tests:**

**A test to measure flexibility** (Radwan, 1982, p. 234)

**Test purpose**: To measure the posterior flexibility of the spine.

**Tools:** A tape measure measured in centimetres.

**Performance specifications:** From a prone position, palms crossed over the back, the lower limb is stabilised by a colleague, the tester slowly raises the trunk backwards as far as he/she can and holds for (2 seconds) as in the figure.

**Conditions**:

*Three attempts are given.

*A one-minute rest between each attempt.

*Performance specifications are observed.

**Recording**

The distance from the bottom of the chin to the ground level is measured with the measuring tape, with the tape in a perpendicular position to the ground and in front of the tester's head during the measurement with the zero touching the ground, and the best attempts are recorded.

- **The name of the test: Standing on the instep of one foot**
  (Douclas N. Hostad, 1998, p. 203)

**- Purpose of the test**: To measure the ability to balance from a standing position.
**Tools** : Stopwatch, recording sheet
**Description:** The tester stands straight on the dominant foot (the most used foot) with the sole of the other foot resting on the knee of the standing foot, and the hands placed above the hip. When the signal to start is given, the tester lifts the heel of the foot resting on the floor and continues for as long as possible.
**Record** the best time from (3) attempts.
**Instructions:** The seconds should be read aloud for the tester to hear.

● **Multidirectional running test:**
(Sobhi, 1987, p. 193):
**Purpose of the test:** Measuring agility.
**Tools:** (4) beams. Backless chair. Stopwatch.
**Description of the performance:** The figures are placed at the same distance from the chair that is in the centre, at a distance of (4.5 m), the distance between the starting line and the first figure (1 m), and upon hearing the start signal, the tester runs from the starting point, following a specific path in four directions indicated by a drawing until he crosses the finish line from the end point.
**Performance conditions:-**
- The running line must be followed while running.
- Do not touch the figures while running.
**Recording method: -**
- The time travelled by the tester from the start of the umpire's signal until he/she crosses the finish line, provided that he/she has followed the route specified in the performance specifications.

**Exploratory experiments:**
The exploratory experiment 'is a preliminary experimental study carried out by the researcher on a small sample before carrying out his research in order to select the research methods and tools. In addition, the researcher can identify the obstacles that may face him during his applied research procedures, because the exploratory experiment is "a practical training for the researcher to identify the negatives and positives that meet him during the conduct of tests to avoid them" (Mahjoub, 1998, p. 52), as the researcher conducted several exploratory experiments, namely:

1- **The first exploratory experiment to train the stations used in the research:**
The researcher conducted the exploratory experiment on 27/4/2024, corresponding to Saturday, and the purpose of conducting this experiment was as follows:
   - Recognize the possibility of conducting the prepared exercises.
   - To determine the suitability of the exercises with the research sample.
   - To determine the time taken for each exercise per unit.
   - To determine the feasibility of applying the station exercises within the selected hall.
   - Determine the feasibility of applying the station exercises by the research sample.
   - Identify the appropriate angle of inclination to perform some exercises.
   - Identify the ability and adequacy of the support team.

**2- - The second exploratory trial of the test used in the research:**
The researcher conducted the exploratory experiment on 30/6/2024, corresponding to Monday, and the purpose of conducting this experiment was to

- Recognize the possibility of conducting the test according to its divisions.
- Identify the suitability of the test with the research sample.
- Identify the time taken for each test and each unit.
- Identify the ability and adequacy of the assistant team.

**Tribal tests:**
The researcher conducted the pre-tests for two days, the first day was for the motor abilities tests and the second day for the biochemical tests, on 11/5/2024 on Saturday at the sports hall at 3:00 p.m. The results were recorded according to the conditions of the tests and specifications in lists prepared by the researcher, and the researcher took into account the conditions related to the tests in terms of time, place, tools and devices used, implementation method, and supporting team, in order to provide them in the post-tests that will be applied later.

**The main experience:**
The researcher applied the exercises that were prepared for individuals with obesity on 13/5/2024, corresponding to Monday, in the private hall, as the number of units (24) units, with (3) units per week on days (Saturday, Monday, Wednesday) for a period of two months (8) weeks, which is a sufficient period for the appearance of the effect of training, on the research group, and the number of exercises used in one unit (5) various exercises with a total of (30) exercises, and the duration of the units ranged between (20 - 35 minutes). 35 minutes) as the researcher applied the exercises in the main part of the training unit as shown in Appendix (1), and the exercises were applied with the help of the assistant team and under the supervision of the researcher, and the training units were completed on (24/7/2024) on Wednesday.

**Description of the exercises used:**
The exercises varied in number and type according to the muscles involved in the performance and what is appropriate for the skills being studied, as the work focused on bringing individuals to the stage of fatigue in order to burn more calories and reach the fat system and burn it through the exercises that were used in training the stations. Motor abilities (balance, agility, flexibility) The exercises prepared by the researcher are characterized by their ease of performance, as they are applied to stations with appropriate devices and tools that can be used easily. These exercises are also characterized by the fact that they depend on the body weight in performance, so there is no need to add weights or other tools to work on it.

*Exercise application:*

The components of the exercise load were prepared according to references and sources and concluded as follows:

- Repetitions of (10) repetitions or more according to the type of exercise.
- Groups (1).
- Rest between groups (180 seconds)
- The time for each unit was (60-80 minutes).
- The intensity was determined according to the goal of each training unit and the difficulty of the exercises selected in that unit and ranged between (65%-85%).
- The load undulation (1:1) was applied.

The keto diet system used:

The researcher adopted the keto diet system suitable for each individual with nutritional obesity, which he was keen to apply their daily system accurately and calculate the appropriate calories for them by calculating their weight and the metabolic rate of each individual and paying attention to the appropriate calories they need and working on coordinating the exercises and taking into account the requirements of the training they undergo in order to reduce their excess weight.

**Post-tests:**

The researcher conducted the post-tests on the research sample on 7/24/2024, corresponding to Wednesday, as she conducted the test for the selected abilities and skills and recorded the data, and the researcher followed the same procedures in the pre-tests.

*Statistical methods:*

The researcher used the statistical package for theoretical sciences (SPSS) version (23v) to obtain all the research results, and the following laws were used.

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

**1- Displaying the results of the test (pre- and post-test) for the experimental group in the motor abilities tests and analyzing them:**

Table (3)

Arithmetic means, standard deviations, the value of the difference between means and deviations, and the calculated (T) value for the pre- and post-tests for the motor abilities variables of the experimental group

| Significance | SIG | Calculated T value | FH | F | Post-test | | Pre-test | | Unit of measurement | Variables |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | ± p | S | ± p | S | | |
| moral | 0.000 | 8.913 | 3.292 | 10.375 | 1.512 | 56.00 | 2.134 | 66.38 | Tha | Agility |
| moral | 0.000 | 24.014 | 3.327 | 28.250 | 2.605 | 5.25 | 1.690 | 23.00 - | cm | Flexibility |
| moral | 0.000 | 10.583 | 1.069 | 4.000 | 0.835 | 8.13 | 1.126 | 4.13 | Tha | Balance |

• At a significance level of (0.05) and with a degree of freedom of (7)

**Discussion of the research results for the motor abilities tests of the research group:**

By reviewing Table (3), we notice the significance of the research results for the motor abilities tests between the pre-test and the post-tests and in favor of the post-tests. The researcher attributes these results to the use of station training that has a direct benefit on the motor abilities of the research sample of those with nutritional obesity, as special exercises have been prepared for the selected motor abilities that are compatible with the weight of the research sample. Station training is one of the methods of circular training through which it is possible to focus on several training points and develop various abilities during a single training unit, as confirmed by (Mahmoud Al-Shatti and others) "that there is a close relationship between motor skills and the physical attribute that the player acquires in the training process" (and others, 1990, page 42).

Total resistance exercises also employ a large number of muscles that can be determined to work on at one time because they depend on body weight, and thus we were able to develop exercises that affect a number of muscles that participate in performance at one time and activate these muscles continuously during the training unit "It has a role in activating a large number of muscle fibers, the more strength the muscle can produce". The researcher prepared a proposed training method according to scientific sources and references and applying the concept of training load by studying the exercises that can be done on people with weight. The researcher took into account the appropriate work and rest times for these exercises and increased their intensity and the level of work efficiently during the training unit. He also gave importance to correcting errors by observing the exploratory experiments that he conducted "The training load is the main means of causing physiological effects on the body, which improves its responses and then adapts the body's systems and raises the level, so it is one of the most important factors for the success of the training program and then improves performance" (Alawi, 1992, p. 122). The researcher's interest in organizing the station exercises was distributed to suit the weight they have and how to lose their excess weight. The researcher was keen to attend the recording of every note for each training unit, whether positive or negative, it can be used in the next unit so that the exercises are suitable for all the abilities being studied. Thus, the focus on the exercises became broader and more accurate to benefit from them in improving the exercises set in order to affect the motor abilities accurately. (Hanfi Mahmoud) states, "Taking care in choosing the exercises that achieve the goal contributes to the players reaching the required level of performance through the specified time period for training" (Al-Mukhtar, 1998, p. 17). (Khairiya Ibrahim Al-Sakri and Muhammad Jaber Briqa'a) state, "When performing exercises for specific muscle groups, it results in adaptations in specific muscle areas. For example, the effectiveness of endurance can be increased only with endurance training, meaning when performing specific exercises, specific adaptations result. If you want to jump up or forward, the training content must be built and focused on jumping exercises, and if you want speed, you must focus on speed training, and so on.... "Training programmes must be developed according to the type of activity being practiced" (Buraiq, 2005, p. 25).

## Conclusions and recommendations

❖ **Conclusions:**

1- Station exercises have effectively affected the research variables and reduced their weight.
2- The keto diet system achieved its goal by focusing on the calories required for each individual and achieved success in reducing their weight.

3- The exercises selected by the researcher had a direct effect on reducing the weight of obese individuals because they focused on burning calories significantly in the post-tests.

4- The use of the keto diet system and station exercises greatly improved the level of motor abilities.

5- Individuals showed a positive willingness and drive to apply the keto diet system with station exercises because they wanted to reduce their weight in one way or another, and this improved the possibility of working better.

6- The use of modern and diverse training methods adds a kind of excitement and attracts the attention of players to practice exercises on them, and this was clearly evident during the experiment period.

❖ **Recommendations:**

1- The researcher recommends working on the keto diet system with stations because they work greatly to reduce the weight of individuals.

2- The researcher recommends working on developing the motor abilities of individuals suffering from nutritional obesity in order to encourage them to continue working on their physical structure.

3- The researcher recommends diversifying the training work for individuals suffering from nutritional obesity because there is more than one scientific method that can be applied to reduce their weight.

4- Generalizing the results of the research to different ages close to the age of (20-30) years because the keto diet and station training can be applied to these ages easily.

5- Conducting similar research for different categories and samples.

**Sources**

1. Hanfy Mahmoud Al-Mukhtar, Football Technical Director, (Cairo, Book Center for Publishing, 1998).

2. Khairiya Ibrahim Al-Sakri and Muhammad Jaber Briqa, Plyometric Training, Part 1, (Alexandria: Mansha'at Al-Maaref for Publishing, 2005).

3. Rabhi Mustafa Alian and Othman Muhammad Ghanem, Scientific Research Methods and Approaches (Theory and Application). 1st ed. (Amman, Safaa Publishing and Distribution House, 2000).

4. Fouad Al-Bahi Al-Sayed; Statistical Psychology: (Dar Al-Fikr Al-Arabi, Cairo, 1978).

5. Muhammad Hassan Alawi and Muhammad Nasr Al-Din Radwan, Motor Performance Tests, 1st ed. (Cairo, Dar Al-Fikr Al-Araba, 1982).

6. Muhammad Hassan Alawi; Sports Training Science. 2nd ed., Dar Al-Maaref, Cairo, 1992)

7. Mahmoud Al-Shati and others; Learning and Training Boxing. (Higher Education Press, University of Baghdad, 1990).

8. Wajih Mahjoub, Scientific Research Methods and Approaches, (Dar Al-Kutub for Printing and Publishing, 1998).

9. Douclas N.Hostad, Alan c.locy, Measurement and Evaluation in Physical Education and exercise science, (AVaicam pony, 1998).

| Number of calories | Snack 2 | dinner | Snack 1 | the lunch | Breakfast | today |
|---|---|---|---|---|---|---|
| For breakfast = 580<br><br>Lunch = 733 | Nestle Protein | Ketogenic salad filled with olives , lettuce, tomatoes, cucumbers, broccoli and olive oil | Orange piece 1 | Cut steak + mixed vegetables With black toast, 2 pieces With broccoli 250 grams | Keto pancake , 2 pieces + vegetables , 2 curries, and some | Sunday |

| | | | | | | |
|---|---|---|---|---|---|---|
| Dinner = 370<br>Snack 1 = 150<br>Snack 2 = 130<br>**Total = 1963** | | +<br>A cup of tea | | | low- carb toppings , such as Vanilla and others | |
| Breakfast = 480<br>Lunch = 610<br>Dinner = 475<br>Snack 1 = 80<br>Snack 2 = 210<br>**Total = 1855** | Nuts 50 gr | Tuna meat 250 grams<br><br>Cooked spinach 200 grams<br>+<br>Ketogenic salad without oils 400 gr | Protein cookies 2 | Fat-free yellow chicken broth dish<br><br>Chicken breast 450 grams<br>Black flour bread 150 grams<br>Boiled potatoes with broth, 105 grams | 2 boiled eggs<br>Olives 40 g<br>Lettuce 300 g<br>Green and red pepper<br>Number 2 | Monday |
| Breakfast = 350<br>Lunch = 590<br>Dinner = 722<br>Snack 1 = 210<br>Snack 2 = 110<br>**Total = 1982** | chocolate Protein Dark | 4 pieces of pure meat hamburger Wrapped in lettuce 200 gr<br>Ketogenic cheese slices used with hamburger, pieces 4<br>With black tea | apples green Number 1<br><br>2 pieces apricot | Charcoal grilled chicken thigh Number 2<br>With grilled vegetables 400 gr | Egg dish with broccoli 4 + 200 grams of broccoli<br><br>Saj bread 100 grams Basil and celery vegetables | Tuesday |
| Breakfast = 370<br>Lunch = 720<br>Dinner = 510<br>Snack 1 = 120<br>Snack 2 = 350 | Nuts Almonds and walnuts 200 gr | 3 boiled eggs olive<br>Broccoli + avocado salad olive oil | Chia and flax seeds + lemon juice | Grilled sea fish 500 gr<br>+ Vegetables: lettuce , tomatoes, cucumbers and peppers<br>100 grams of each type | 3 pieces of Kiri cheese<br>3 pieces of black toast vegetable Celery and basil | Wednesday |

| Total = 2070 | | | | Brown flour bread 100 grams | | |
|---|---|---|---|---|---|---|
| Breakfast = 203 <br><br> Lunch = 754 <br> Dinner = 512 <br> Snack 1 = 210 <br> Snack 2 = 80 <br> **Total = 1858** | Kiwi + strawberry <br><br> 2 of each type | Meat boiled in water 350 gr With cauliflower and cheese 150 gr + 50 gr | Banana with coconut milk 80 ml | Mixed chicken breast salad 350 gr <br><br> And vegetables: lettuce, peas, flax seeds , avocado , and cucumber 100 grams of each type Seeds 30 gr | Eggs with grilled eggplant Number 3 Eggplant 300 grams <br><br> A piece of brown saj bread | Thursday |
| Breakfast = 510 <br> Lunch = 690 <br><br> Dinner = 427 <br> Snack 1 = 290 <br> Snack 2 = 110 <br> **Total = 2007** | Green apple + a cup of coffee | spinach + half a cup of mozzarella cheese + 3 eggs + 30 grams of onions cut into slices + 58 grams of mushrooms + 40 grams of green pepper + oregano + spices + black pepper + a spoonful of sauce Tomatoes + a spoon of olive oil . | Nestle Protein + Love hearts 20 gr | Chicken stuffed with vegetables zucchini carrot pepper ( yellow, red and green), chopped Quantity of rice 30 gr | 4 boiled eggs vegetable (basil - celery - leeks) 30 grams of each type Avocado 1 piece Cucumber 50 grams | Friday |

An example of a station-style training unit

| Total calories spent | Number of calories expended per minute | Performance time in minutes | Activity |
|---|---|---|---|
| 150 | 15 | 10 | **Jogging at a speed of 9 miles/hour** |
| 20 | 4 | 5 | **Walking/passive rest** |
| 40 | 8 | 5 | **Swedish exercises** |
| 120 | 8 | 15 | **He walked** |
| 75 | 15 | 5 | **trot** |

| 75 | 15 | 5 | Swedish exercises |
|---|---|---|---|
| 120 | 8 | 15 | He walked |
| 24 | 4 | 6 | Trunk twisting |
| 24 | 4 | 6 | Standing or walking |
| 48 | 8 | 6 | Light weightlifting |
| 696 calories | - | 78 D | the total |
| Number of calories spent in one training unit = 696 calories | | | |