

The Effect of Sports and Diets Programs on Weight, Blood Pressure, and Biochemical Parameters of Tissue Oxygen in Aged Men

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ABSTRACT

The study seeks to identify the impact of two programs, a sport program and a dietary one on weight, blood pressure and biochemical parameters of tissue oxygen. The study includes a sample of 36 of aged men. The sample is divided into three equal groups. The groups were subject to pretest measures at 9 a.m. on 29th Oct. 2016 that included height, weight, blood pressure and biochemical parameters of tissue oxygen. The first group used a sport program of 5 units per week in which the time of each unit was 45 minutes. The second group used diet program of three meals daily, 7 days in a week. The third group was the control one. The two programs continued for (9) weeks starting from 1st Nov. 2016. The posttests were conducted at 9 a.m. on 5th Jan 2017. The raw data has been treated statistically. The results showed that there are significant differences in the study variables in favor of the two experimental groups in comparison to the control one. However, there is no statistical significance between the first and the second groups due to numerical approximation.

Keywords: diet, weight, blood pressure, and biochemical parameters of tissue oxygen

INTRODUCTION

The technological development of our daily life through using advanced systems and the dependence on them have led to less movement for the majority of the people, especially the aged men who received full care in the government nursing home. They received all kinds of services including feeding, dish and clothes washing, rooms cleaning, T.Vs and radios. The researcher has knowledge of the aged daily life, quantity of food, food distribution, lack of movement and the health efficiency on them. The use of a balanced diet of specific weight and calories, practicing sport according to the air system with gradual intensity that is not exceeding moderate ones have health results on the aged males. Due to the importance of this study, which is one of the rare studies on Iraq level, it tackles the use of two programs, diet and sport, which focuses on an important sector of society.

METHODS

The Study Problem

The aged men in the Diwaniyah nursing house suffer from limited movement and lack of tracking physiological situation and health problems because of the lack of sport and the balanced diet. Therefore, the researcher intends to study this issue due to its rarity in this field. The study aims at identifying the effect of the two sport and diet programs on weight, blood pressure and biochemical parameters of tissue oxygen for the aged men.

Study Hypothesis

There are differences of statistical and health significance for the two experimental study groups in comparison to the control group, and the differences between the first and the second groups.

Study Limitations

Human domain

The aged men in Al-Diwaniyah nursing house

Spatial domain

Nursing house restaurant and the sport hall.

Time domain

From 1st Nov. 2016 to 2nd Jan. 2017.

The Study Methodology and Field Procedures

The study methodology

The researcher uses the experimental approach of equivalent groups. He conducted pretests and posttests for each group to conform the nature of the problem. He basically depends on the idea that "the researcher attempt to control situations under investigations except the variable, which is believed to be the reason of certain change in the place of that situation" ([Appendix 1](#)).

The study sample

The researcher has contacted and interviewed the population of the study (36) and he got certain agreements and information of the aged in the two programs.

The sample includes the study population (36) of aged males in the government nursing house. It is divided randomly into three equal groups. Two of them are experimental (the first one (12) represents the sport program and the second (12) represents the diet program, and the third one is the control group of (12) persons.

The study tools

Instruments

- Two scales for measuring height and weight, two Sphygmomanometers and two stopwatches.
- Calibration has been done for the instruments on 25th Oct. 2016.

Means used in the study:

- The researcher designed an application for the data, results of measures and the tests of the three groups, attached in [Appendix 2](#).

Training and Dietary programs:

The researcher divided the study sample into two equivalent groups:

1- The researchers prepared a sport program for the first group through warming up, then light and gradual jogging taking into consideration the age of the men and their lack of movement as referred some of the resources that the researchers have checked in this respect like [3]. As cited in [2], Dr. Despres have found that practicing aerobics regularly helps burn fat ⁽²⁾. The researchers also consulted the international coach, Dr. Raheem Ruaeh specialized in sport training, and an instructor at Al-Qadisiyah university about their ideas. Based on these views and consultations, the researchers designed and implemented a sport program where the duration of the aged program was (9) weeks, (5) training units per week each unit is (16-45 minutes) of moderate intensity about (90-110 beat/ minute) using the aerobic method in which the pulse is about (60- 70%) according to the following equation:

(Rate of heart pulse %70) + Pulse at rest.

Rate of maximum heart pulse is $-220 = \text{age} = x$

Rate of heart pulse = $x - \text{pulse at rest}$.

The use of such a method is important to rate the pulse during warming up and light jogging. In order to control and follow up the required intensity, continuous and frequent pulse measures were taken during the training unit for every (3) minutes as shown in the [Appendix 3](#).

The researchers focused on the aged to drink water daily (3 liters per day).

2- The researchers prepared a dietary program for the second group depending on some Iraqi and foreign sources, including [1], [4] and [5] in addition to the researchers' experiences in the Iraqi diets and the consultation of nutrition specialist. The duration of the program is (9) weeks, three meals daily; breakfast, lunch and supper based on certain weights and specific calories taking into consideration the needs of the aged as mentioned in the tables of WHO. Food is the material (animal- vegetable) that is eaten by the living creature through the digestive system to grow, prevent and preserve their bodies ⁽⁴⁾. The researchers emphasized that the aged men should drink (3) liters of water daily.

3- The [Appendix 4](#) shows this issue where the attached program has been prepared for (7) days, but it is different during (9) weeks. It means that the program is rotated and changed in the meals (breakfast, lunch and supper) during the days of the week.

Exploratory Study

To ensure the accuracy and validity of the equipment, the researchers have made an experiment for the three groups on 26th Oct. 2016 at 9:00 a.m. The sample was (6) men where (2) men were chosen from each group.

The following procedures are applied:

Pretests have been conducted for the study groups (the first and the second experimental groups) and the third control group on Thursday 29th Oct. 2016 at 9:00 a.m. in the indoor hall of the nursing house. The measures included (height, weight, blood pressure and biochemical parameters of tissue oxygen). The assistant team entered the results of every aged individual application. The [Appendix 3](#) shows this. The posttests have been conducted for the study groups (the first and the second experimental groups) and the third control group on 5th Jan. 2017 at 9:00 a.m. The measures included (height, weight, blood pressure and biochemical parameters of tissue oxygen). The assistant team entered the results of every aged individual application. The [Appendix 2](#) shows this.

Equivalence among the Three Groups

Table 1. The results of one-way analysis variances among the three groups of equivalence variable

Source of variance	Total of squares	Freedom degree	Squares average	F value		Statistical significance	
				calculated	tabular		
Weight	Among groups	72.631	2	0.017	0.013	3.17	insignificant
	Within groups	0.035	54	1.345			
	Total		56				
Height	Among groups	0.245	2	0.122	0.096	3.17	insignificant
	Within groups	68.736	54	1.272			
	Total		56				
Age	Among groups	0.315	2	0.157	0.113	3.17	insignificant
	Within groups	75.157	54	1.391			
	Total		56				
Blood pressure and biochemical parameters of tissue oxygen	Among groups	0.245	2	0.122	0.046	3.17	insignificant
	Within groups	141.789	54	2.625			
	Total		56				

Statistical means:

Arithmetical mean, standard deviation and T- test of correlated samples.

Table 2. The results of one-way analysis variance among the averages of the three groups of the two variables of the posttests

Source of variance	Total of squares	Freedom degree	Squares average	F value		Statistical significance	
				calculated	tabular		
Weight	Among groups	39.614	2	19.807	12.544	3.17	significant
	Within groups	85.263	54	1.578			
	Total		56				
Blood pressure and biochemical parameters of tissue oxygen	Among groups	28.736	2	13.368	7.498	3.17	significant
	Within groups	103.473	54	1.916			
	Total		56				

Table 3. The results of analyzing comparisons among the average scores of the three groups in weight

Group	Averages	Variance of averages	Tukey (Q) value		significance
			calculated	tabular	
Sport program	69.684	1.684	5.842	3.4	significant
Control	71.318				
Dietary program	69.526	1.842	6.390	3.4	significant
Control	71.368				
Sport program	69.684	0.157	0.547	3.4	insignificant
Dietary program	69.526				

Table 4. The results of analyzing comparisons among the average scores of the three groups in blood pressure and biochemical parameters of tissue oxygen

Group	Averages	Variance of averages	Tukey (Q) value		Significance level at (0.05)
			calculated	tabular	
Sport program	100.105	1.421	4.474	3.4	significant
Control	101.526				
Dietary program	99.947	1.578	4.971	3.4	significant
Control	101.526				
Sport program	100.105	0.157	0.497	3.4	insignificant
Dietary program	99.947				

RESULTS

Table 2 shows the results of one-way analysis variance among the averages of the three groups of the two variables (weight, blood pressure and biochemical parameters of tissue oxygen) of the posttests. The results were significant. But in **Table 3**, the results of analyzing comparisons among the average scores of the three groups in weight. In weight variable, the variance of averages between the first experimental group (sport program) and the control group is 1.684 with significant results. The variances of averages between the second group (dietary program) and the control group is 1.842 with significant results. While the variance of the averages between the groups that practiced sport program and the dietary one is 0.157 with insignificant results. **Table 4** shows the results of analyzing comparisons among the average scores of the three groups in blood pressure and biochemical parameters of tissue oxygen, the variance between the groups of sport programs in comparison to the control group is 1.421 with significant results. The variance among the averages of the group of dietary program in comparison to the control one is 1.578 with significant result. But there is no significant result between the group of sport program and the dietary program in which they show 0.157.

The researchers believe that practicing sport is extremely important for the aged men due to their limited activities by using aerobic moderate sport. Sport exercise lead to contraction of veins and arteries passing through the muscles and the relaxation of muscles will help entering the nutritional materials.¹

The researchers see that the continuity of the process of veins and arteries contraction and relaxation along the aerobic training will lead to the elasticity of the internal membrane of veins and arteries. This process helps to transfer nutrients and oxygen to the muscles and the furthest point of blood capillaries. Therefore, practicing sport leads to raise the efficiency of respiratory and circulatory systems and acquire air prolongation. (2) [6] confirm that both physical conditioning, diet balance and duration of rest are considered to be the most important basics. (3) The present study agrees with [7] study in which aerobic training concurrent with weight losing is highly beneficial to reduce the risk factor. The study agrees with [8] study in which limited food* decreases several diseases that conjugate with age like myocardium diseases. Moreover, [9] confirm that the lack of physical activity and extra calories lead to obesity and other concomitant diseases. The researchers see that the two programs, sport and dietary one have achieved their results. The sport program burns calories due to the aged activity and the exerted efforts in comparison to their previous limited movement. It means that there is a kind of improvement they feel it in comparison to the control group due to the ideal consume of calories. The sport program has also achieved results because of the aerobic sport program and the diet and the balanced food they followed. The researchers referred that if the aged men do not have any movement with unbalanced food have certain indicators as referred by [10] that (the hyperalimantation has changed the style of life and new chronic diseases appeared especially obesity, which is the cause of modern diseases, which increases with the life development and health trend). Also, [11] refer that (losing weight and follow diet minimizes obesity). The researchers support this view in which balanced food in comparison to what is consumed by the aged men because of their limited movement. According to a food consultant whose name mentioned in **Appendix 2**. The consultant confirms that the aged men without movement consume (800-1200) calories. These numbers are similar to what is resulted in the two experimental

groups where there is no statistical significance between them though each group has achieved results individually. These results confirm the researchers' efforts in improving the health aspect and losing weight. [5] refers that "food experts' advice that the fixed and safe weight loss should be (0.9- 0.45 kg.) weekly. This level of losing weight is an acceptable average without risky loss of calories, which is an indicator of the influence of the two programs. Also, blood pressure and biochemical parameters of tissue oxygen is one of the health indicator, especially for the aged because these capillaries are the ends that carry oxygen and nutrients for the body organs and at the same time take out harmful materials [12]. Therefore, the indications of blood pressure and biochemical parameters of oxygen tissue have reached normal levels due to the efficiency of the two programs.

CONCLUSIONS

The use of two sport and dietary programs for the aged men have achieved a statistically significant result in comparison to the control group. They were limited in their movement and eat unbalanced food. Their weight has been reduced according to normal indicators and preserved an ideal level of tissue oxygen. The numerical and statistical results between the two groups (sport and dietary programs) were statistically insignificant due to their numerical approximation.

*Limited food: reduce the calories consumed the body.

RECOMMENDATIONS

1. The sport program should be amended to include a longer time with recreational exercises and quick walking.
2. To add for the dietary program an item of drinking 4 cups of water (Japanese program) before an hour of the three meals (breakfast, lunch and supper).

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APPENDIX

Appendix 1. Sample of health application for the three study groups

group	No.	age	Height/ cm	Weight/ kg		Oxygn tissue Blood pressure and biochemical parameters	
				pre	post	pre	post
	1						
	2						
	3						
	4						
	5						
	6						
	7						

Appendix 2. Supporting Team

No.	Name	Dept.	specialization
1	Asst. prof. Alaa Hadi Al-Esami, PhD	College of medicine/ Al-Qadisiyah university	Internal consultant
2	Lecturer. Fatima Kadhim Mohammed, PhD	College of medicine/ Al-Qadisiyah university	Nutrition consultant
3	Lecturer. Mukhalad Dhiya	College of education/ Al-Qadisiyah university	Training physiology
4	Kitchen employees	Al-Diwaniyah nursing house	Nutrition

Appendix 3. Sport training program

Week	Preparation & time	Major, final part and time		
		Warming up& preparation	Below average jogging	Cooling period
1 st	Standing in position, making flexibility movements for joints as rotating arms and feet. Moving hip left and right, rotating head right and left then walking slowly for 5 minutes.	8 min.	Slow walking, 3 min.	16 min.
2 nd	Standing in position, making flexibility movements for joints as rotating arms and feet. Moving hip left and right, rotating head right and left then walking slowly for 5 minutes.	10 min.	Slow walking, 3 min.	18 min.
3 rd	Standing in position, making flexibility movements for joints as rotating arms and feet. Moving hip left and right, rotating head right and left then walking slowly for 5 minutes,	12 min.	Slow walking, 3 min.	20 min.
4 th	Standing in position, making flexibility movements for joints as rotating arms and feet. Moving hip left and right, rotating head right and left then walking slowly for 5 minutes,	15min.	Slow walking, 3 min.	25 min.
5 th	Standing in position, making flexibility movements for joints as rotating arms and feet. Moving hip left and right, rotating head right and left then walking slowly for 5 minutes,	20 min.	Slow walking, 3 min.	30 min.
6 th	Standing in position, making flexibility movements for joints as rotating arms and feet. Moving hip left and right, rotating head right and left then walking slowly for 5 minutes,	25 min.	Slow walking, 3 min.	35 min.
7 th	Standing in position, making flexibility movements for joints as rotating arms and feet. Moving hip left and right, rotating head right and left then walking slowly for 5 minutes,	28 min.	Slow walking, 3 min.	38min.
8 th	Standing in position, making flexibility movements for joints as rotating arms and feet. Moving hip left and right, rotating head right and left then walking slowly for 5 minutes,	30 min.	Slow walking, 3 min.	40 min.
9 th	Standing in position, making flexibility movements for joints as rotating arms and feet. Moving hip left and right, rotating head right and left then walking slowly for 5 minutes,	35 min.	Slow walking, 3 min.	45 min.

Appendix 4. Sample dietary program for (9) weeks

Meal type	Tuesday	Thursday	Friday	Saturday	Sunday	Monday
Breakfast*	Skimmed cup of milk (40) C*, half loaf of bread (25)gr. (35) C., half cup of tea with half of spoon of sugar (50) C.	Skimmed cup of milk (40) C*, loaf of bread (25)gr. (70) C., half cup of tea with half of spoon of sugar (50) C	Medium size Boiled egg (75) C., loaf of bread (50) gr. (70) C., half cup of tea with half of spoon of sugar (50) C	150 gr. Of skimmed cheese (87) C., 50 gr. Bread (70) C., and half cup of tea with half of spoon of sugar (50) C	75 gr. Fried egg (100) C., 50 gr. Bread (70) C. and half cup of tea with half of spoon of sugar (50) C.	150 gr. Rice with milk (207) C., 50 gr. Bread (70) C. and half cup of tea with half of spoon of sugar (50) C.
lunch	125 gr. Rice (221) C., 125 gr. Broth without meat (40) C., 125 gr. Vegetable (cress) (36.25) C., 25 gr. And Half bread and half cup of tea with half of spoon of sugar (50) C	125 gr. Rice mixed with peas (217.5) C. and 150 gr. Tomato broth with meat (103.75) C. and half cup of tea with half of spoon of sugar (50) C.	250 gr. Stuffed calabash (135) C. and half cup of tea with half of spoon of sugar (50) C.	150 gr. Rice mixed with peas (217.5) C. and 150 gr. spinach broth without meat (116.25) C. and half cup of tea with half of spoon of sugar (50) C.	250 gr. Stuffed grape leaves (152.5) C., 125 gr. Salad with tomato and onion (112.5) C. and half cup of tea with half of spoon of sugar (50) C.	150 gr. Rice with milk (207) C., 50 gr. Bread (70) C. and half cup of tea with half of spoon of sugar (50) C.
Supper	125 gr. Macroni with skimmed cheese (207.5) C., 50 gr. Bread (70) C. and 75 gr. Basil (31.25) C. and medium size banana (60) C.	200 gr. Fried egg with tomato in sunflower oil (98) C., 25 gr. Bread (35) C. and small size of soda (36) C.	150 gr. Broth with skimmed veal (180) C., 50 gr. Bread (70) C., 125 gr. Lemon salad and cucumber (56.25) C. and pieces of watermelon (45) C.	200 gr. Grilled potato (70) C., 50 gr. Bread (70) C., 125 gr. Basil (62.5) C. and one small red apple (50) C.	150 gr. Grilled chicken skinned breast (187.4)C., 50 gr. Bread (70) C and 100 gr. Basil (50) C.	150 gr, grilled fish with sauce (241.5) C. 50 gr. Bread (70) C and 100 gr. Basil (50) C.
Total	844.75	966.50	700.25	731.25	842.4	893.5

*refers to daily meals for all weeks, gr= gram, C= Calorie. 12 cups = 3 liters of water daily

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