The effect of a designed training field 0n developing some physiological variables for the elderly (60-65 years old).

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Abstract. The need for a high degree of physical fitness with the availability of a good health condition is very important for every human. It requires practicing sports activities on an ongoing basis, which should be done with consciously, awareness and understanding of its importance. Through the researchers' observations of the elderly category, they diagnosis the suffering experienced by this age group from the rapid decline and deterioration in the biomotor abilities, and the sport environment in their society that is considered to be a poor environment in which there are no playgrounds, if any exist, it is not suitable with their ages. In addition to their sport practices, if they do, may be less or higher than their capabilities because they are not scientifically legalized. The study aimed to prepare functional exercises using a designed training field to develop the most important physiological variables for the elderly (60-65) years and to know the effect of these exercises on some of the physiological variables. The researchers used the experimental approach by designing two equal groups. The research community included the elderly in the elderly home of Babylon Province, numbering 21 people with the sample consisted of 14 people who were randomly selected and divided into two groups, an experimental group and a control group. The functional exercises using a designed training field were applied after conducting the pre-tests on the experimental group by three training units per week for a period of 8 weeks. After that, post-tests were conducted and the data were statistically processed by using the statistical software (SPSS). The researchers concluded that functional exercises using a designed training field have a positive effect on some of the physiological variables of the elderly (60-65) years old.

Keywords: a designed training field, functional exercises, physiological variables of elderly.

1. Introduction

Physical fitness has become a necessity and a basic need for all members of society, as it constitutes an expression of health and activity. It is a different meaning for the lack of movement and lethargy, which in turn leads to lose the aesthetics of the body and making it more susceptible to many diseases. As much as an individual became older, as much his need to engage in low to medium intensity physical exercises and sports activities, on the contrary to the popular idea that encourages the elderly to rest and surrender, the ideas is wrong. The elderly can practice sports activities and exercises, and we know that each age stage has its appropriate exercises and activities in terms of the duration and quality of those exercises. According to the opinions of medical and fitness experts who conveyed a summary of their experiences, through which it becomes clear how can we maintain physical fitness in various age stages. The elderly stage is not considered a pathological stage, but it is a transitional stage in which the individual is exposed to many physical and physiological changes that make him an easy prey to contract many diseases. Therefore, sports for the elderly are

considered to be one of the basic things that fortify the body, keep muscle strength, and add an aesthetic character to the general structure of the body. Every individual who practices any form of the physical exercise has a harmonious, slim, and ideal physical body that is free from the flabbiness and grease that is common for individuals who do not engage in sports activity.

Therefore, the researchers decided to prepare and design a training field for the elderly (60 – 65) year old, including functional exercises that provide training loads and an appropriate sports environment for the elderly to develop their physical and health capabilities. It constitutes a serious contribution to improve the physical fitness of the elderly. The study aimed to prepare functional exercises using a designed training field to develop the most important physiological variables for the elderly (60-65) years and to know the effectiveness of them on the most important physiological variables.

2. The Research methodology and field procedures

The researchers follow the experimental curriculum due to its suitability to the nature of the research problem. They design equivalent groups for the purpose of comparison. The research sample was represented by elderly men in the elderly home of Babylon Governorate, ages (60-65), and their number was (21) elderly people, (14) from them were chosen randomly as sample from research community, they divided into two groups, experimental and control groups. The researchers designed a training field, consists of (10) stations, which included (Station for developing the arms' strength, Station for developing flexibility, Station for developing the legs' strength, Station for developing static balance, Station for developing agility, Station for developing motor balance, Station for developing the motor coordination of eyes and arms, Station for developing the motor coordination of eyes and legs, Station for developing the speed, and Station for developing the general endurance). In order to control the variables that affect the research experiment and its result' accuracy, the researchers resorted the members research sample to achieve homogeneity among them in the following variables (height - mass - chronological age) by using the F-test (Leven) as shown in Table (1). The researchers verifying the equivalence of the two groups, by using the (T-test) for the independent samples as shown in table (2) below, so they will be able to attribute the differences in the results of the post-tests of the variables under study to the effect of the experimental factor, and for the sample members to have one starting line.

The researchers conducted pre-tests, by exposing the testers to a physical training effort. Then measuring (heart rate, systolic and diastolic blood pressure and blood sugar) specifically after the effort directly and during rest time. The experimental program was applied in the training field prepared by the researchers on experimental group for a period of (8) weeks, at a rate of (3) units per week. The post tests were conducted for the experimental and control groups and included all the tests used under the same conditions as the pre-tests in terms of the time of conducting the tests, the place and the test specifications. The data was processed statistically using the statistical software (SPSS).

Table (1) The homogeneity of the research sample

No	Variables	Measure unit	mean	Std.Deviation	F-value	Sig	Sig type
1	Chronological age	Year	63.57	1.81	0.81	0.38	insignificant
2	Height	Cm	172.57	1.90	0.75	0.40	insignificant
3	Mass	Kg	78.57	2.22	0.63	0.44	insignificant

Through the results of Table (1), it is clear that the value of the significance level of the F-coefficient (Leven) for all variables is greater than the significance level (0.05), which indicates the homogeneity of the sample members.

Table (2) The equivalence of the research groups for the Physiological variables

No	Variables	Measure unit	Control group		Experimental group		T-value	Sig level	Sig type
			mean	Std.Deviation	mean	Std.Deviation			
1	**Heart rate at rest**	**Stroke / minute**	79	2.51	79.42	3.10	0.28	0.78	insignificant
2	**Heart rate after effort**	**Stroke / minute**	125	5,62	122.14	8.02	0.77	0.45	insignificant
3	**Resting systolic blood pressure**	**Millimeter of mercury**	13	0.56	13.18	0.84	0.48	0.63	insignificant
4	**Resting diastolic blood pressure**	**Millimeter of mercury**	8.72	0.38	8.58	0.43	0.64	0.52	insignificant
5	**Systolic blood pressure after effort**	**Millimeter of mercury**	13.81	0.57	13.42	0.53	1.29	0.22	insignificant
6	**diastolic blood pressure after effort**	**Millimeter of mercury**	10.61	0.53	9.17	0.64	2.51	0.57	insignificant
7	**Blood sugar**	**mmol/liter**	97.42	3.95	97.28	4.75	0.06	0.95	Insignificant
Significant level is (0.05) and the sample size is (7)									

Through table (2), it becomes clear to us that the (sig) value is greater than the significance level (0.05), and for all the variables under consideration, so the test is insignificant. This means that the two research groups are equivalent in the study variables.

3. Presentation, analysis, and discussion the statistical results:

In order to know the differences between the results of the pre and post-tests of the psychological variables, the researchers used the (T-test) for the corresponding samples, as shown in Table (3).

Table (3) The arithmetic means, standard deviations, and the calculated (t) value of the pre and post tests for measuring the psychological variables of the control group

No	Variables	Measure unit	Pre-test		Post-test		T-value	Sig level	Sig type
			mean	Std.Deviation	mean	Std.Deviation			
1	**Heart rate at rest**	**Stroke / minute**	79	2.51	80.57	4.85	1.11	0.30	insignificant
2	**Heart rate after effort**	**Stroke / minute**	125	5,62	126	5.80	0.55	0.59	**significant**
3	**Resting systolic blood pressure**	**Millimeter of mercury**	13	0.56	13.34	0.54	2.86	0.02	**significant**
4	**Resting diastolic blood pressure**	**Millimeter of mercury**	8.72	0.38	9.02	0.33	3.96	0.007	insignificant
5	**Systolic blood pressure after effort**	**Millimeter of mercury**	13.81	0.57	13.91	0.56	0.73	0.49	insignificant
6	**diastolic blood pressure after effort**	**Millimeter of mercury**	10.61	0.53	10.78	0.52	1.61	0.15	insignificant
7	**Blood sugar**	**mmol/liter**	97.42	3.95	97.57	6.45	0.09	0.92	insignificant
Significant level is (0.05) and the sample size is (7)									

In order to know the significant differences between the pre and post-tests of the psychological variables, the researcher used (T-test) for the symmetrical samples, as shown in Table (4) below

Table (4) The arithmetic means, standard deviations, and the calculated (t) value of the pre and post tests for measuring the psychological variables of the experimental group

No	Variables	Measure unit	Pre-test		Post-test		T-value	Sig	Sig type
			mean	Std.Deviation	mean	Std.Deviation			
1	**Heart rate at rest**	**Stroke / minute**	79.42	3.10	74.28	1.88	4.07	0.007	**significant**
2	**Heart rate after effort**	**Stroke / minute**	122.14	8.02	126.14	5.14	1.61	0.15	insignificant
3	**Resting systolic blood pressure**	**Millimeter of mercury**	13.18	0.84	12.88	0.24	0.92	0.39	insignificant

4	**Resting diastolic blood pressure**	**Millimeter of mercury**	8.58	0.43	8.04	0.31	3.84	0.009	**significant**
5	**Systolic blood pressure after effort**	**Millimeter of mercury**	13.42	0.53	14.28	0.56	2.66	0.03	**significant**
6	**diastolic blood pressure after effort**	**Millimeter of mercury**	9.17	0.64	9.62	0.54	6.35	0.001	**significant**
7	**Blood sugar**	**mmol/liter**	97.28	4.75	90.57	2.82	4.45	0.004	**significant**
Significant level is (0.05) and the sample size is (7)									

In order to find out the differences between the results of the psychological variables of the two research groups in the post test, the researcher used the (T-test) for the independent samples, as shown in Table (5).

Table (5) The arithmetic means, standard deviations, and the calculated (T-value) calculated between the psychological variables of the two research groups in the post-test

No	Variables	Measure unit	Control group		Experimental group		T-value	Sig	Sig type
			mean	Std.Deviation	mean	Std.Deviation			
1	**Heart rate at rest**	**Stroke / minute**	80.57	4.85	74.28	1.88	3.18	0.008	**significant**
2	**Heart rate after effort**	**Stroke / minute**	126	5.80	126.14	5.14	0.04	0.69	insignificant
3	**Resting systolic blood pressure**	**Millimeter of mercury**	13.34	0.54	12.88	0.24	2.03	0.06	insignificant
4	**Resting diastolic blood pressure**	**Millimeter of mercury**	9.02	0.33	8.04	0.31	5.71	0.000	**significant**
5	**Systolic blood pressure after effort**	**Millimeter of mercury**	13.91	0.56	14.28	0.56	1.22	0.24	insignificant
6	**diastolic blood pressure after effort**	**Millimeter of mercury**	10.78	0.52	9.62	0.54	4.06	0.002	**significant**

7	**Blood sugar**	**mmol/liter**	97.57	6.45	90.57	2.82	2.63	0.02	**significant**
Significant level is (0.05) and the sample size is (7)									

The pre and post-test results presented in Tables (3), (4) and (5) for the two research groups (control and experimental) in the psychological variables, for the control group, there are no huge significant differences in all tests except for two tests (Systolic blood pressure at rest and diastolic blood pressure at rest), while the results of the experimental group tests that used functional exercises in the designed training field prepared by the researchers showed that most of the results of the physiological variables under study were better in the post-test than in the pre-test, where the training field was designed by the researchers in proportion to the ability of the sample, which is from non-athletes, so there is a specificity in its design and the implementation period of the curriculum that continued for (8) weeks, which is a sufficient time to make changes in the trainees' body and affect the research variables. This was confirmed by (Wilmore and Costel), quoting from (Abu Al-Ula), that most of the resulting that changes because of training usually occur during the first period of the curriculum within 6-8 weeks. (Abu Al-Ula Ahmed, 1996, 32)

Therefore, practicing sports continuously in a legalized and regular manner that is suitable with the nature of the sample contributes to the success of the goal of the training, ensures occurring the physiological effects, raises the level of performance, and improves public health (Muhammad Hassan Allawi and Abu Al-Ula Ahmed, 1984, 22).

After reviewing the physiological variables results presented in Table (3), it is found that there are significant differences between the results of the two research groups and in favor of the experimental group. The researchers attribute this improvement to the fact that regular training, especially the oxygenated one, improve the trainee functional systems. Since the sample continued to implement the training curriculum and functional exercises with the oxygen system for a relatively long period, it if found that these exercises had an effect on the heart muscle, which worked to increase its work by supplying the working muscles to perform its duty, the heart muscle were adapted. This is what the post-test shown when the pulse rate at rest decreased from what it was in the pre-test. This coincide with (Hazaa Muhammed Hazza) who mentioned that regular training leads to a decrease in the heart rate at rest if it is compared to the case before training, due to the physiological adaptation of the body's organs and systems (Hazaa Muhammad Hazaa, 1992, 29). The adaptation that occurred to the heart muscle as a result of the regular and acquired responses through the regularity of the physical approach that included functional exercises and which stimulate the heart to increase blood pumping according to the need of the body's muscles in performing muscular effort. This led to an increase in the heart capacity accompanied by a decrease in heart rate during rest time, and this indicates the success of the training field in improving health fitness. Issam mentioned that, the heart rate is an objective physiological criterion and a valid indicator for the intensity of effort and the degree of adaptation (Essam Abd Al-Khalek, 1999, 64).

The diastolic and systolic blood pressure tests showed a significant difference in the dimensional measurement in favor of the post-test of the experimental group. The researchers attributed this to the characteristics of aerobic training and the nature of the performance movements and the training loads that were used, which affected positively to reduce the of diastolic and systolic blood pressure rates. The blood sugar test showed a difference in the post-test in favor of the experimental group, and the researchers attribute this to the

characteristics of aerobic training, the nature of the functional exercises, which positively affected the reduction of the sugar rates, as aerobic exercise usually leads to decrease the glucose concentration in the blood.

Anaerobic exercises rise the glucose concentration temporarily due to the need of the muscles for glucose, which would be a fuel for the body to compensate the increased demand for glucose during exercises, where the body will be adapted after exercise and restored the blood sugar levels to normal by secreting an adequate amount of insulin, which is required to return the blood sugar levels to be normal (Jabbar Rahmieh Al-Kaabi, 2007, 297). The reason behind the rise of the sugar levels after performing anaerobic exercises is that these exercises stimulate the body to secrete stress hormones such as (adrenaline, cortisol), where adrenaline stimulates the liver and adrenal gland to secrete glucose and cortisol, making the body more resistant to insulin. This is usually temporarily relieved by the lapse of effort (Arijal, T.U. Overtraining, 2001, 8).

4. Conclusions:

The researchers concluded that the designed training field had a positive impact on the physiological variables of the elderly, because it work to improve heart rate, systolic and diastolic blood pressure, besides improving the blood sugar.

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