

The effect of functional exercises on some of the biomotor abilities for the elderly (60-65) years old

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Abstract. People should practice different types of exercise such as running, swimming, cycling and other sports to reach a good and safe level of public health. This is because sports training affect directly on the physiological changes of the person's body. They work to improve important biomotor abilities, which are important for completing the daily functions of the life. 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 abilities because they are not scientifically legalized. The study aimed to prepare functional exercises to develop some of the biomotor abilities for the elderly (60-65) years and to know the effect of these exercises on some of the biomotor abilities. The researchers used the experimental approach by using the two equal groups design. 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 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 have a positive effect on some of the biomotor abilities of the elderly (60-65) years old.

Keywords: functional exercises, biomotor abilities, 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 considered 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 appropriate and effective training sessions, which are the functional exercises that provide training loads and an appropriate sports environment for the elderly to develop their physical and health abilities. It constitutes a serious contribution to improve the physical fitness of the elderly. The study aimed to prepare functional exercises to develop some of the biomotor abilities for the elderly (60-65) years and to know the effectiveness of them on some of the biomotor abilities.

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, of them (14) were chosen from the total research community. By using the lottery method, they divide the research sample into two groups, experimental and control groups. The researchers conducted pre-test tests, which included (the shuttle running test, which aims to measure agility) (1 : 25), (Standing on the instep test, which is intended to measure static balance) (22 : 2), (Walking on the crossbar test, which aims to measure balance through movement) (3 : 827), (Throwing and receiving the ball test, which aims to measure the coordination between the hands and eyes) (1: 26), (Movement within the numbered circles test, which aims to measure the coordination between the legs and eyes) (4 : 182), (Running a distance of 30 meters during time test, the goal of which is to measure the transitional speed) (5 : 59), (A frontal leaning based on the knees within 10 seconds test, which aims to assess the strength of the upper body) (4 : 185), (The strength by a Dynamometer test, which is designed to measure the strength of muscles of the arms, back and legs) (6 : 164).

The functional exercises prepared by the researchers were applied to the 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). 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 (Levin) as shown in Table (1).

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.

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.

Table (2) The equivalence of the experimental and control groups

No	Variables	Measure unit	Control group		Experimental group		T-value	Sig level	Sig type
			mean	Std.Deviation	mean	Std.Deviation			
1	Agility	Second	30.01	1.79	30.54	2.31	0.47	0.64	insignificant
2	static balance	Second	21.58	5.01	23.61	5.03	0.75	0.46	insignificant
3	dynamic balance	Second	7.65	1.25	7.55	1.00	0.16	0.87	insignificant
4	Motor coordination (eye and arm)	Repetition	5.42	2.63	4.14	2.73	0.89	0.38	insignificant
5	Motor coordination (eye and leg)	Second	22.7	3.37	22.94	3.38	0.13	0.89	insignificant
6	speed	Second	19.8	4.00	20.15	4.93	0.14	0.88	insignificant
7	Speed Strength (Arm muscles)	Repetition	5.42	1.90	5.42	2.57	0.24	0.84	insignificant
8	Physical flexibility	Cm	-1.71	2.56	-0.85	4.37	0.44	0.66	insignificant
9	Endurance strength	repetition	11.14	2.41	12	2.94	0.59	0.56	insignificant

	(Leg muscles)								
10	General endurance	Meter	300.28	11.14	329,71	8.65	0.26	0.79	insignificant
11	strength of arms muscles	Kg	59.57	9.89	58.57	7.72	0.21	0.83	insignificant
12	Strength of legs muscles	Kg	73.71	18.74	68.57	26.94	0.41	0.68	insignificant
13	strength of back muscles	Kg	41.42	6.13	46.42	6.42	1.48	0.16	insignificant
Significant level is (0.05) and the sample size is (14)									

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 biomotor abilities, the researchers used the (t) test for the corresponding samples, as shown in Table (3).

Table (3) The means, standard deviations, and (t) test value of the pre and post tests for biomotor abilities 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	Agility	Second	30.01	1.79	28.44	2.26	2.36	0.05	insignificant
2	static balance	Second	21.58	5.01	22.25	10.91	0.26	0.79	insignificant
3	dynamic balance	Second	7.65	1.25	6.92	0.88	2.14	0.07	insignificant
4	Motor coordination (eye and arm)	Repetition	5.42	2.63	5.57	3.1	0.25	0.8	insignificant
5	Motor coordination (eye and leg)	Second	22.7	3.37	21.42	2.82	4.35	0.005	significant
6	speed	Second	19.8	4.00	18.14	3.79	7.79	0.00	significant
7	Speed Strength (Arm muscles)	Repetition	5.42	1.90	5.85	1.67	1.44	0.2	insignificant

8	Physical flexibility	Cm	-1.71	2.56	-1	2.16	1.11	0.30	insignificant
9	Endurance strength (Legs muscles)	repetition	11.14	2.41	10.85	2.26	0.42	0.68	insignificant
10	General endurance	Meter	300.28	11.14	320.28	19.89	1.69	0.14	insignificant
11	strength of arms muscles	Kg	59.57	9.89	53.28	15.56	1.28	0.24	insignificant
12	Strength of legs muscles	Kg	73.71	18.74	73.42	18.21	0.29	0.77	insignificant
13	strength of back muscles	Kg	41.42	6.13	40.71	5.58	0.82	0.44	insignificant
Significant level is (0.05) and the sample size is (14)									

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

Table (4) The means, standard deviations, and (t) test value of the pre and post tests for biomotor abilities of the experimental group

No	Variables	Measure unit	Pre-test		Post-test		T-value	Sig level	Sig type
			mean	Std.Deviation	mean	Std.Deviation			
1	Agility	Second	30.54	2.31	23.45	0.74	7.35	0.00	significant
2	static balance	Second	23.61	5.03	42.85	10.33	7.11	0.00	significant
3	dynamic balance	Second	7.55	1.003	5	1.004	8.52	0.00	significant
4	Motor coordination (eye and arm)	Repetition	4.14	2.73	8	3.46	6.48	0.001	significant
5	Motor coordination (eye and leg)	Second	22.94	3.38	12.74	1.06	10.85	0.00	significant
6	speed	Second	20.15	4.93	12.35	1.40	5.88	0.001	significant
7	Speed Strength (Arm muscles)	Repetition	5.42	2.57	10	1.29	6.35	0.001	significant
8	Physical	Cm	-0.85	4.37	3	2.94	4.01	0.007	significant

	flexibility								
9	Endurance strength (Legs muscles)	repetition	12	2.94	16.57	2.99	4.95	0.003	significant
10	General endurance	Meter	329,71	8.65	409.14	42.85	5.85	0.001	significant
11	strength of the arms muscles	Kg	58.57	7.72	68.42	6.20	4.60	0.004	significant
12	Strength of the legs muscles	Kg	68.57	26.94	98.57	15.55	4.34	0.005	significant
13	strength of back muscles	Kg	46.42	6.42	48.71	7.07	5.26	0.002	significant
Significant level is (0.05) and the sample size is (14)									

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

Table (5) The means, standard deviations, and (T-value) between the biomotor abilities of the two research groups in the post-test

No	Variables	Measure unit	Control group		Experimental group		T-value	Sig level	Sig type
			mean	Std.Deviation	A. means	S. aviation			
1	Agility	Second	28.44	2.26	23.45	0.74	5.52	0.00	significant
2	static balance	Second	22.25	10.91	42.85	10.33	3.62	0.003	significant
3	dynamic balance	Second	6.92	0.88	5	1.00	3.80	0.003	significant
4	Motor coordination (eye and arm)	Repetition	5.57	3.1	8	3.46	4.60	0.001	significant
5	Motor coordination (eye and leg)	Second	21.42	2.82	12.74	1.06	7.62	0.00	significant
6	speed	Second	18.14	3.79	12.35	1.40	3.78	0.003	significant
7	Speed Strength (Arms)	Repetition	5.85	1.67	10	1.29	5.18	0.000	significant

	muscles)								
8	Physical flexibility	Cm	-1	2.16	3	2.94	2.89	0.01	significant
9	Endurance strength (Legs muscles)	Meter	10.85	2.26	16.57	2.99	4.02	0.002	significant
10	General endurance	A	320.28	19.89	409.14	42.85	4.97	0.00	significant
11	strength of the arms muscles	Kg	53.28	15.56	68.42	6.20	2.39	0.03	significant
12	Strength of the legs muscles	Kg	73.42	18.21	98.57	15.55	2.77	0.01	significant
13	strength of back muscles	Kg	40.71	5.58	48.71	7.07	2.34	0.03	significant
Significant level is (0.05) and the sample size is (14)									

The pre and post-test results presented in Tables (3), (4) and (5) for the two research groups (control and experimental) in the biomotor abilities tests, for the control group, there are no significant differences in all tests except for two tests (motor coordination, eye and leg test, and speed test), they have significant differences. The researchers attribute the differences in favor of the post-tests in the most important biomotor abilities due to the practice of some daily life activities followed by the sample members.

The researchers attribute the differences in the post-tests of the experimental group in the most important biomotor abilities to several things, the most important of which is that the functional exercises prepared by the researchers were effective and effect through the use of the scientific planning in preparing these exercises and taking into account the chronological age of the sample, which was performed with a sufficient training volume and an effective training intensity commensurate with the training objectives, taking into account the principle of repetition, in addition to the principle of diversification and the complexity of training loads. As well as the training loads put according to the methods used that were mentioned, which is appropriate to the level of development of the sample members because these exercises were built on a regular and scientific basis, taking into account the gradation in the training intensity and sufficient rest periods. Mohammed Reda Ibrahim emphasized this, indicating that “All components of the training load must increase in proportion to the total improvement achieved by the athlete, that is, the higher the player’s level of improvement, the more need to increase the components of the training load” (7: 88). This is suitable with the characteris of the sample and its capabilities. The novelty of the functional exercises and the addition of excitement, and the love of competition helped the sample to perform functional exercises with high efficiency, due to they move away from the traditional

character. In addition, the organized training process for the experimental group had a role in making that difference. The continuation of the training process and with its modernity of sports training load contributed to the development of the most important biomotor abilities (under research).

The exercises prepared by the researchers for the experimental group were functional physical exercises. In the opinion of the researchers, it is necessary to adopt these exercises in the elderly stage, because they have been scientifically proven to improve levels of physical fitness and development. They also have positive effects on public health efficiently in terms of avoiding injuries, increasing muscular capacity, building the body, helping in developing biokinetic capabilities, and preventing injuries. The benefit of the exercises is that they are directed and able to distribute the physical effects more than other exercises. In addition to the fact that the use of these exercises is towards the important body parts that help an individual to perform his daily duties in a proper manner and prevent him from injuries.

The maximum strength training sessions are directed to the maximum strength of arms, legs and torso, as they are special requirements in the daily activity of the daily life and other capabilities, especially, by using these exercises in the daily activity. One of the important things that the researcher was keen on implementing functional exercises is the use of exercises with different equipment, Abdul Ali Nassif and Qassem Hassan states that “Ensuring permanent progress at the level requires good planning methods so that athletes are able to reach the best results at higher levels” (8: 201). The functional exercises prepared by the researchers for the most important biomotor abilities took into account the correct sequence of work and sufficient rest between exercises and training units in which the gradation of stress was used so that the trainee would never be tired and his nervous system would be in its best condition.

Tables (3), (4) and (5) show that there are significant differences in all post-tests of the experimental group. The researchers attribute that the development in the experimental group in the test results (agility, static balance and dynamic balance) was due to the functional exercises prepared by the researchers because these exercises were performed regularly and codified, as well as they use of scientific foundations in organizing these exercises in terms of training intensity and the sufficient rest periods.

The researchers attribute the superiority of the post-test over the pre-test in the test results (agility, dynamic balance and static balance) to the fact that the content of the exercises given to the sample had a positive impact on the development of these abilities. As agility is a compound trait that contributed greatly to the development of other motor abilities, in addition to the fact that the development of physical abilities affected the development of the motor abilities. This was confirmed by (Muhammad Hassan Allawi, 1987) who state that “The research conducted in the field of studying motor traits and abilities have shown the overlap of many of these abilities and the effect of some of them on the others in terms of speed, balance, strength, flexibility, agility and endurance” (9: 133).

The researchers were keen to apply the priority to these capabilities in the training session, as they require complete preparation. It is necessary that the central nervous system be in a state

of readiness for these exercises. In addition, to sufficient rest periods between exercises. For the dynamic and static balance tests, the researchers attribute the differences in the experimental group to the effect of the functional exercises for developing both types of balance using exercises related to the nature of the daily activity. The researchers dealt with the issue of balance professionally through the functional exercises as well as exercises in agility, which led to develop this percentage, in the belief of the researchers that balance plays an influential role in preventing injuries and mobilizing the largest possible number of motor units for performance. Moreover, these exercises worked on the coordination between the work of eyes and legs, eyes and arms, which led to an increase in the coordination of performance requirements in the neuromuscular aspect. This was confirmed by Gamal Sabry in the training of biomotor abilities, who states that "The special development of biomotor abilities must be systematic with direct or indirect influence on other abilities" (10: 481).

The researchers attribute the superiority of the post-test over the pre-test in the results of the (speed) test to the content of the given exercises through which the greatest distance is cut in the least time, which was included in this ability in different forms, and the performance of those movements on different aspects had a positive impact on developing the speed. The researchers believe that the reason for the development of the physical test results to speed strength (of the arms) is due to the positive effect of the applied approach and its good organization. As well as the exercises given during the training program were, appropriate to the level of the sample in terms of intensity, volume and rest. This coincides with (Mahmoud Abdullah) statement, who claims that "giving exercises according to the correct scientific method enhances the work efficiency of the muscle groups involved in performing the various motor skills and the physical abilities that the player acquires during training session" (42:11). The researchers believe that the development in the post-tests of the experimental group members to (agility) test is due to the exercises that were applied within scientific bases in terms of legalizing the intensity of exercises as well as rest periods between repetitions, for a period of (8 weeks), which enables the sample members to perform other repetitions nearly the same speed and efficiency. This was confirmed by (Abdullah Hussein Al-Lami, 2010) who states that "It is possible for the training program to make constant changes and adaptations in the quality of flexibility, especially if it exceeds a period of (6 weeks)" (208:12).

The researchers believe that the development of the experimental group members in the (endurance strength and general endurance) tests, is due to the functional exercises that were prepared in a high interval, low intensity and repetitive manner, in addition to the regularity in training sessions. Moreover, the continuation of performance that is characterized by endurance requires the motor units action in an alternative system, where some motor units begin to work until fatigue, then a similar number of other motor units follow at work, and so on for the remaining kinetic units groups, where the entire muscle becomes tired. The researchers believe that the development of the maximum strength is due to the nature of the functional exercises used during the training process based on scientific foundations, in terms of the intensity of the exercise, the number of repetitions and rest periods, where the effect of training appears on the results of the post-tests, and this is confirmed by (Abu Al-Ela and

Ahmed), who claims that “the use of exercises that are consistent in the nature of their performance with the general form of performance of specialized skills leads to better results in gaining strength” (13:98). This is consistent with the principles of sports training science, which indicate that programmed training according to the correct scientific formulas and the principle of gradual increase leads to a positive effect.

4. Conclusions

The researchers concluded that the prepared functional exercises have positive effects on the biomotor abilities of the elderly (60-65) years, as it worked on improving (agility, balance, motor coordination, speed, speed strength, physical flexibility, endurance strength, general endurance and maximum strength).

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