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### THE EFFECTS OF EXERCISE PROGRAM AND DIETARY SUPPLEMENT ON THE EFFICIENCY OF THE DYNAMIC SYSTEM IN OLD FEMALES

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#### ABSTRACT

Science the beginning of creation, man relied on movement to preserve his life, in denial or flight, as well as in climbing, jumping, attachment and crawling. But nowadays man's movement decreases, and he starts to depend on a machine to do his work. As a result, he suffers weak and a lot of diseases that he never suffered from before. Exercising and sports are considered necessary for all members in society to face negatives and harms resulted from technological progress which is combined with few movements and a lot of diseases. Through what the researchers has found in the studies about the importance of practicing sports on the healthy aspects for old ladies in recent age now adays especially after their number has increased according to the reports of the central agency for mobilization and statistics. The researchers did this study to improve the functional efficiency of the kinetic system in old ladies by designing a kinetic therapeutic program to improve the physical parameters, that will contribute to increasing the collagen level. The researchers also made a comparison between the influence of the suggested therapeutic program and the collagen as a dietary

supplement in improving the functional efficiency level of the kinetic system. The study aims to identify the influence of the therapeutic exercises program and collagen as a dietary supplement on the functional efficiency of the old ladies' kinetic system. The researcher used the experimental curriculum with a pre and post measuring design for three experimental groups. The thesis sample has consisted of 30 ladies aged ( $62 \pm 6.754$ ). One of the most important results of the therapeutic exercises program is the improvement in all the parameters of the functional efficiency of the kinetic system that includes backbone flexibility – weight – legs muscle power – back muscle power – bones density and collagen level.

## INTRODUCTION

Since the beginning of creation, man relied on movement to preserve his life, in denial or flight, as well as in climbing, jumping, attachment and crawling. But nowadays man's movement decreases, and he starts to depend on a machine to do his work. As a result, he suffers weak and a lot of diseases that he never suffered from before. Exercising and sports are considered necessary for all members in society to face negatives and harms resulted from technological progress which is combined with few movements and a lot of diseases.<sup>(1)</sup> So that regularly organized moving activities are considered a therapeutic style. The individuals' need to do physical activities is very important for them as their fitness participates greatly in the economic, social and civilized progress. The target age is old ladies which presented 7.3% percent of the population in 2011 in Egypt according to the reports of the central agency for mobilization and statistics and it is expected to be raised to 11.6% percent in 2030.<sup>(2)</sup>

Aging is considered a stage of gradually decreasing the human functions after the stage of growing up because of some variables which are biological and psychological accumulations that the human experienced. The age with years is not considered an objective indicator for the biological age that is a result of the biological changings happened at aging. In general, we can determine growing up through the human physiological, psychological and social image. The evidence on physiological aging is the status of the body organs, the evidence of the physicological aging is the mental disturbances and the evidence on social aging is the lack of social activities and interests. Aging is considered a biological process, not a disease. It is a gradual process starts from puberty and lasts all overgrowing, its most important characteristics are a group of physical, psychological and mental changes that are decreased at the beginning and then increase down. The growth in this stage turns from structuring in previous stages to deconstruction which leads to weakness in an individual's different capabilities.<sup>(3)</sup> One of the physiological manifestations that happened in aging is a weakness in producing collagen which is responsible for establishing body cells, decreasing joint pain and keep them and improve skin cells' nutrition and flexibility. Collagen forms normally inside the body in bones, skin, and cartilage. Cartilage has consisted of 70% water and 30% collagen which keep flexibility and prevent bones friction with each other during moving.<sup>(1)</sup> The bones tissues have consisted of a frame of collagen with different minerals, the most important of them are calcium and phosphate. The collagen is absorbed in the body through blood circular system. Colagene is important in constructing muscles, bones, strings, and

tissues in the body. Fibroblast cells made collagen normally in the body and growing the body's capability to make collagen decreased which lead to joints pain and lack in bone density<sup>(4)</sup> Through the researcher's survey and research in studies about the importance of sports on old ladies' health nowadays especially after increasing in number according to the reports of the central agency for mobilization and statistics.<sup>(4)</sup> The researchers did this study to improve the level of functional efficiency for old ladies' kinetic systems by designing a kinetic therapeutic system to develop the physical parameters which will contribute in increasing the collagen volume. The researchers compared the influence of the suggested kinetic therapeutic program with having collagen as a dietary supplement in improving the level of functional efficiency of the kinetic system and the collagen column for old ladies.<sup>(5)</sup>

### **OBJECTIVES:**

This study aims to identify the effects of therapeutic exercises program and dietary supplements on the functional efficiency of the dynamic system in old ladies.

### **HYPOTHESIS**

- 1 .The suggested therapeutic exercises program affects positively the thesis sample.
- 2 .There are statistically significant differences between pre and post measurements in the first experimental group (suggested therapeutic exercises program) for the sake of post measurements in all variables (physiological and functional efficiency) in the research.
- 3 .There are statistically significant differences between pre and post measurements in the second experimental group (dietary supplement) for the sake of post measurements in all variables (physiological and functional efficiency) in the research.
- 4 .There are statistically significant differences between pre and post measurements in the third experimental group (therapeutic exercises combined with dietary supplement program) for the sake of post measurements in all variables (physiological and functional efficiency) in the research.
5. There are statistically significant differences in the three groups of all variables (physiological and functional efficiency in the research) in post measurements for the sake of the third experimental group.

### ***Curriculum***

The researcher used the experimental curriculum with the design (pre-posts) for the three experimental groups because of its property to the research nature.

### ***Field***

The researchers chose the research field intentionally from the female committee. They were 30 ladies divided into three experimental groups in addition to 5 ladies for an exploratory sample.

### ***Sample***

The sample has consisted of 30 ladies aged between (50 – 60) years; they were selected intentionally from the members of the female committee. They were divided into three experimental groups each includes 10 ladies:

The first group: apply for the suggested therapeutic exercises program.

The second group: use only the dietary supplement.

The third group: apply for the suggested therapeutic exercises program in addition to dietary supplements.

### *Conditions of selecting the sample*

- They should have the desire to apply for the Study experiment.
- They should not suffer from any diseases.
- They should be healthy.
- They should not be athletes.
- They should be aged between 50 to 60 years.
- They should not be subjected to any other therapeutic program.
- They should be regular in the suggested physical program during the experiment timeline.
- They should accept to do all the necessary medical tests.

**Table (1);** SMA, standard deviation and torsion coefficient for study variables  
N = 30

NO	Variables	Measuring unit	SMA	Standard deviation	Mediator	Torsion coefficient
1	Age	Year	62.00	6.75	60.50	0.520
2	Height	Cm	154.40	9.46	156.50	-0.495
3	Weight	Kg	80.40	13.56	77.50	0.230
4	Legs power	Kg	4.33	2.41	3.35	1.691
5	Back muscles power	Kg	2.31	3.13	2.30	1.02
6	Backbone flexibility	Cm	25.60	5.20	24.55	-0.131
7	Bones density	Degree	2.94-	0.52	-3.05	0.465
8	Procolagen	MI/g	122.10	162.00	12.19	-1.19

**Table (1)** explains that torsion coefficient is between -0.132 and -1.693 which located between (+3) and (-3) which is considered an evidence of the sample homogeneity in all study variables.

After making sure that the thesis sample is distributed justly between all study variables, they have been divided randomly into three groups each one has consisted of (10) ladies. The researcher estimates the significant differences between them by using analyzing differences in all study variables to emphasize the groups' equivalence before using the experimental variable.

**Table (2);** Analyzing the differences between the pre measurements of the three groups in study variables N = 30

NO	variables	differences	degree	Quarter summation	Quarters average	F value	significance
1	Weight	Between groups	2	21.80	10.90	0.09	Not significant
		In groups	27	3301.00	122.26		
		Sum	29	3322.80			
2	Legs power	Between groups	2	18.01	9.00	2.25	Not significant
		In groups	27	96.42	3.75		
		Sum	29	114.43			
3	Back muscles power	Between groups	2	11.67	5.83	0.75	Not significant
		In groups	27	257	10.19		
		Sum	29	286.67			
4	Backbone flexibility	Between groups	2	67.55	33.78	1.45	Not significant
		In groups	27	628.03	23.26		
		Sum	29	695.58			
5	Bones density	Between groups	2	0.66	0.33	1.56	Not significant
		In groups	27	5.72	0.21		
		Sum	29	6.38			
6	Procollagen	Between groups	2	34.07	17.03	0.09	Not significant
		In groups	27	5394.60	199.80		
		Sum	29	5428.67			

F value in the table in level 0.05 and degree (2-27) = 3.3.

**Table (2)** explains that there are statistically significant differences between the three groups in the thesis variables which is an evidence of the groups' equivalence in these variables.

### *Tools of collecting data*

- \*Test the legs muscles power by a dynamometer.
- \*Test back muscle power by a dynamometer.
- \*FIGURE FINDER FLEX-TESTER to test backbone flexibility.
- \*Measure the bone density by using the device that depends on the ultrasonic waves to explain mineral density total bone.
- \* Blood test to measure the protein of collagen by drawing a blood sample.
- \*Test tubes for sample collection, medical cotton, injections, and alcohol.
- \*Application form to write the sample data (age – height – weight).
- \*Expert opinion survey form in therapeutic exercises program.

\* Measure weight by using the medical scale.

### ***Therapeutic exercises program***

#### ***General objective***

The researchers designed the suggested kinetic therapeutic program to improve the functional efficiency of the kinetic system and develop some physiological parameters in the study such as bone density and collagen volume. The thesis is divided into three stages each has its objectives as follows:

#### ***First stage:***

It takes two weeks and is consisted of 4 therapeutic units, two units per week.

### **OBJECTIVES**

- Improve general physical fitness.
- Improve the big muscle power.
- Improve the carrier joints flexibility (joints between backbone spines.)

#### ***Second stage***

It takes 8 weeks and is consisted of 16 therapeutic units.

Objectives:

- Improve specific physical fitness.
- Improve the functional efficiency in the kinetic system in the body as a whole (physical – physiological)
- Graduation in physical load commensurate with the abilities and physical preparations of the research sample.
- Legal equation of physical load (old ladies)
- The suggested kinetic therapeutic program is applied to the first and third groups of the research sample.

#### ***Third stage***

It takes 2 weeks and is consisted of 4 therapeutic units with 2 units per week.

Objectives:

Acquiring high physical skills in all physical and physiological capabilities. The group is divided into groups to practice some different physical activities such as waiting ball, the three windings, bowling, numbers game, and the ring and shooting.

The researcher presented the suggested program after designing it to a group of experts and specialists to survey their opinions about the program and to add or delete what they see suitable to the sample readiness and abilities and which is proper to their age. The percentage of acceptance was 76% percent.

## PROCEDURES

\*The suggested kinetic therapeutic program is applied to the first and third experimental groups.

\*The second experimental group takes the dietary supplement for three months without practicing any exercises.

\*The third experimental group applies the same program of the first group and at the same time but this group takes tablets of dietary supplement for three months.

### *The dietary supplement:*

It is tablets of Dorofen which is consisted of two effective materials inside a gelatine capsule. They work together to treat inflammation and roughness of joints. The first material is A – D- Glucosamine Sulphate which the body can use to form cartilage and synovial fluid. The second material is Ginkobilia leaves extract which stimulates blood circulation inside muscles. These capsules are designed to provide the body with glucosamine (which decreases by age) and which is necessary to reform cartilage in joints and reform synovial fluid which helps in moving and removes stiffness and as a result prevents more diseases and decrease pains during movement and walk. Doreen contains Ginkobilia leaves extract that contains Flavonoid which stimulates blood circulation in the body as a whole (legs muscles particularly) which helps in movements and walk without pains.

### *Exploratory studies*

The researcher used exploratory study in the period from 15/8/2019 to 22/8/2019 on a sample of 5 ladies in the research area and out of the main research sample.

The study aims at:

- Make sure of the expired of the used tools and devices in the research.
- Identify the correct ways to apply the measurements practically.
- Find out the weak points in the tools and devices and try to avoid them.
- Make sure of the accuracy of applicated tests on the thesis sample.
- Identify the time of each test.

The results lead to:

- Make sure of the assistant's efficiency.
- Identify the accuracy of measuring tools and devices.
- The exercises to be suitable for the thesis sample.

### *Excutive steps*

#### **A. Pre measurements:**

Apply the pre measurements on the study sample (three experimental groups) in the period from 2/9/2019 to 7/9/2019 for all thesis parameters.

#### ***B. Main experiment:***

The researcher applies the suggested program for three months, 12 weeks, with two exercising units per week in Saturday and Tuesday each week. The program includes 24 exercising units from 16/9/2019 to 9/12/2019.

#### ***C. Post measurements:***

After the researcher finishes applying for the program, she makes post measurements for the thesis sample on the study parameters according to what is followed in pre measurements in the period from Saturday 11/9/2019 to Thursday 16/9/2019.

#### ***D. Statistical treatment:***

The following statistical treatments are applied:

- SMA.
- Standard deviation.
- Torsion coefficient.
- T-test for significant differences between averages.
- Difference analysis.
- Spss.

## **RESULTS PRESENTATION AND DISCUSSION**

### **RESULTS PRESENTATION**

**Table (3);** Significant differences between pre and post measurements in study variables of the first selected group (Therapeutically exercises program) N = 10

variables	Measuring unit	Pre measure		Post measure		Average difference	T Value	significance
		SMA	Standard deviation	SMA	Standard deviation			
Weight	Kg	80.4	13.7	73.8	13.09	6.6	6.01	Significant
Legs power	Kg	4.23	2.40	12.71	3.68	-8.48	12.24	Significant
Back muscles power	Kg	12.80	3.54	25.00	3.43	12.2	11.82	Significant



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Back bone flexibility	Cm	24.6	5.19	34.3	3.71	-9.7	5.77	Significant
Bones density	Degree	-2.49	0.52	-2.74	0.42	-0.2	3.95	Significant
procollagen	Ml/g	121.1	12.19	126.3	9.27	-5.2	3.74	Significant

T value in the table in 0.05 level = 1.833.

**Table (3)** explains the statistically significant differences between pre and post measurements in all study variables as the estimated T value is greater than the T value in the table for the sake of the post measurements.

**Table (4);** Significant differences between pre and post measurements in study variables of the second selected group (Only the dietary supplement) N = 10

variables	Measuring unit	Pre measure		Post measure		Average difference	T Value	Significance
		SMA	Standard deviation	SMA	Standard deviation			
Weight	Kg	78.7	6.40	73.1	18.16	5.6	3.52	Significant
Legs power	Kg	5.96	1.76	10.25	2.49	-4.56	-6.76	Significant
Back muscles power	Kg	1.50	2.42	6.50	2.42	-5	8.51	Significant
Backbone flexibility	Cm	20.95	5.41	32	4.59	-11.05	-4.07	Significant
Bones density	Degree	-2.93	0.44	-2.78	0.40	-.015	-4.02	Significant
Procollagen	MI/g	119.2	17.54	126	15.95	-6.8	-3.93	Significant

T value in the table in 0.05 level = 1.833.

**Table (5);** Significant differences between pre and post measurements in study variables of the third selected group (Therapeutically exercises program combined with the dietary supplement) N = 10

Variables	Measuring unit	Pre measure		Post measure		Average difference	T Value	Significance
		SMA	Standard deviation	SMA	Standard deviation			
Weight	Kg	78.5	11.91	73.5	12.90	5	4.37	Significant
Legs power	Kg	3.91	1.37	11.84	2.89	-7.93	-10.23	Significant
Back muscles power	Kg	3	3.5	14	3.94	-11	11.23	Significant
Backbone flexibility	Cm	22.4	3.69	34.2	2.04	-11.8	-8.86	Significant
Bones density	Degree	-2.62	0.41	-2.39	0.47	-0.23	-5.13	Significant
Procolagen	ML/g	121.7	11.97	129.1	12.14	-7.4	-7.01	Significant

T value in the table in 0.05 level = 1.833.

**Table (6);** Analyzing the differences between post measurements in weight variable N = 30

NO	Variables	Differences	degree	Quarters sum	Quarters average	F Value	Second group	Third group
1	weight	Between groups	2	637.8	318.9	3.3	0.9	10.2*
		In groups	27	2611.0	96.7		-----	9.3*
		sum	29	3248.8			-----	-----

F value in the table in 0.05 level = 3.3.

**Table (6)** explains that the estimated F value in the table is greater than or equal the F value at the degree of (2 – 27).

As \* as least difference in weight in the first group (therapeutically exercises program) and the third group (dietary supplement program) for the sake of the third group. There are also statistically significant differences between the second group (dietary supplement only) and the third group (dietary supplement combined program) for the sake of the third group.

**Table (7);** Analyzing differences between post measurements in the variable of legs power N = 30

N O	Variab les	Differenc es	Deg ree	Quarter s sum	Quarters average	F Value	Secod group	Third group
1	Legs power	Between groups	2	54.4	27.2	4.7	1.86	1.43
		In groups	27	155.2	5.8		----- --	3.29*
		Sum	29	209.6			-----	-----

F value in the table in 0.05 level = 3.3. Table (7) explains that the estimated F value in the table is greater than or equal the F value at the degree of (2 – 27).

**Table (8);** Analyzing differences between post measurements in the variable of back muscles power N = 30

N O	Variab les	Differenc es	Degr ee	Quarter s sum	Quarters average	F Value	Secod group	Third group
1	Back muscle s power	Between groups	2	324.600	162.30	14.70	1.20	6.30*
		In groups	27	298.100	11.04		----- -	7.50*
		Sum	29	622.700			-----	----- --

F value in the table in 0.05 level = 3.3. **Table (8)** explains that the estimated F value in the table is greater than or equal the F value at the degree of (2 – 27).

**Table (9);** Analyzing differences between post measurements in the variable of backbone flexibility N = 30

N O	Variab les	Differen ces	Deg ree	Quarters sum	Quarters average	F Value	Seco nd grou p	Third group
1	Backb one flexibi lity	Between groups	2	96.9	48.4	3.5	2.30 *	-2.10
		In groups	27	374.5	13.9		----- ---	4.40*
		Sum	29	471.4				

F value in the table in 0.05 level = 3.3.

**Table (9)** explains that the estimated F value in the table is greater than or equal the F value at the degree of (2 – 27).

**Table (10);** Analyzing differences between post measurements in the variable of bones density N = 30

NO	Variables	Differences	Degree	Quarters sum	Quarters average	F Value	Second group	Third group
1	Bones density	Between groups	2	1.8	0.9	3.3	0.04	0.50*
		In groups	27	7.4	0.3		-----	0.54*
		Sum	29	9.2				

F value in the table in 0.05 level = 3.3.

**Table (10)** explains that the estimated F value in the table is greater than or equal the F value at the degree of (2 – 27).

**Table (11);** Analyzing differences between post measurements in the variable of procollagen N = 30

No	Variables	Differences	Degree	Quarters sum	Quarters average	F Value	Second group	Third group
1	Procollagen	Between groups	2	1242.6	612.3	4.8	0.30	13.50
		In groups	27	3505.7	129.8		-----	13.80*
		Sum	29	4748.3				

F value in the table in 0.05 level = 3.3.

**Table (11)** explains that the estimated F value in the table is greater than or equal the F value at the degree of (2 – 27).

## RESULTS DISCUSSION

The study objectives and hypothesis and through the used statistical data, the researcher can make sure of the hypothesis accuracy, and then the researcher discussed the results as follows:

**Table (3)** indicates that there are statistically significant differences between pre and post measurements in the first experimental group which apply for the suggested kinetic therapeutic program in the following parameters (weight – legs power – back muscles power – backbone flexibility- bone density – collagen). The program affects positively the first group which is presented in improving the functional efficiency of all parameters in the study. The kinetic therapeutic program affects positively bones density and collagen .The researchers emphasized that these positive differences between these parameters are due to the positive effects of the kinetic therapeutic program exercises which include load, flexibility, relax and walk exercises two times a week and apply exercises gradually till the end of the program. Hopman Rock (2006)<sup>(3)</sup> study agrees with the recent study in the fact that exercising regularly helps in control weight. The results emphasize that exercises protect strings, bones, and joints and improve life in general for all ages. It is not necessary to exercise severely but individuals should exercise regularly to achieve the best results. Layne Je (2003)<sup>(6)</sup> study agrees with the recent study in the fact that there is obvious improvement in muscular power, the ability of overload and joints flexibility by exercising with loads regularly. The researcher emphasizes that the improvement appears in old ladies aged 70 years and not in old ladies aged 60 years. Mona Mostafa Abdou Sakoury, Mohammed Nader Shalaby (2020)<sup>(7)</sup> study agrees with the recent study in the fact that physical power exercises help in compensating the loss in muscle mass that related normally with aging. Power exercises contribute to improving bone density and consequently limit osteoporosis and improve body stability and the kinetic system and also increases joints flexibility. So that the first hypothesis entitled "the suggested therapeutic exercises program has a positive effect on the sample", is achieved. The researcher used loads in the suggested kinetic therapeutic program because it helps in improving and increasing bone density. Loads help in hormonal excitability found in bones that are responsible for bone mass. Bravo, Roy and Goulin emphasized that loads exercising for 60 minutes, three times a week for 12 months improve bone density volume in all experimental groups .The researchers find out that the positive change happens due to the positive effect of the flexibility exercises because these exercises contribute to the flexibility level in old ladies in the thesis sample. Hopman Rock (2006)<sup>(3)</sup> study agrees with the recent study in the fact that mid exercises two times a week for 30 minutes (flexibility and kinetic) result in improving physical fitness and kinetic flexibility according to the physical measurements of the program. These results agree with Mohammed Nader Shalaby (2020)<sup>(8)</sup> study results that indicate the effect of physical exercises on increasing muscular power and flexibility volume. The suggested kinetic therapeutic program starts gradually with exercises using loads weigh from 1 Kg to 3 Kg which is the maximum ability of endurance of the study sample aged between 55 and 60 years. Exercising regularly by using loads stimulate producing collagen. Benjamin F. Miller (2005)<sup>(5)</sup> study agrees

with the recent study in the fact that collagen levels at rest and after exercising stimulates producing collagen in muscles and quadriceps in men. The researcher finds out that overload exercises stimulate producing collagen in strings of the ladies in the menopause stage . So that the second hypothesis entitled "there are statistically significant differences between pre and post measurements in the first experimental group (suggested therapeutic exercises program) for the sake of post-measurement in all parameters (functional and physiological efficiency) in the study" is achieved.<sup>(9)</sup>

**Table (4)** indicates that there are differences between post measurements in the selected thesis parameters for the second group (only the dietary supplement).

The researchers notice that these changes are results of having a dietary supplement regularly according to the dose specified for the thesis sample. The supplement returns the body's physiological status to its nature again; it also activates blood circulation in the body as a whole including legs muscles. The supplement also decreases pains during moving by constructing cartilage in joints which helps in walk and move easily. It helps in improving the level of muscular power and weight. The researcher notices that it is a result of not exercising in this group, in spite of that the researcher notices an obvious improvement in bone density and collagen. The results lead to the fact that lack in protein makes a loss in backbones and spines which is evidence of the fact that the less is a protein in the body, the less density of bones will be. So that the third hypothesis entitled "there are statistically significant differences between pre and post measurements in the second experimental group (dietary supplement) for the sake of post measurements in all parameters (functional and physiological efficiency) in the study" is achieved .

**Table (5)** indicates that there are statistically significant differences between pre and post measurements in the selected thesis parameters in the third group (the .(kinetic therapeutic program combined with dietary supplement

The researchers emphasize that the positive effects of all parameters happen because of the kinetic therapeutic program in addition to having a dietary supplement. The researcher applies the program on the third group which led to improving weight and increases backbone flexibility and develops muscular power and improves bone density besides stimulates producing collagen. patricia (2008)<sup>(10)</sup> study agrees with the recent study in the fact that exercising and having dietary supplements such as collagen or follow a proper diet includes nuts, calcium, potassium, and dairy products help old ladies to keep perfect weight and decrease diseases in cartilage and helps to form a muscle mass that has been lost in old ages and as a result, old people's kinetic system works vitally and efficiently. Mona Sakoury and Mohammed Nader Shalaby (2020)<sup>(11)</sup> study agree with the recent study in the fact that walk exercises are important in the treatment of osteoporosis in ladies. The study results explain the improvement in bone density volume for a group of ladies walks three times a week besides having medicines more than a group of ladies who do not practice any exercises. So that the fourth hypothesis entitled "there are statistically significant differences between pre and post differences in the

third experimental group (the kinetic therapeutic exercises program combined with dietary supplement) for the sake of post-measurement in all parameters (functional and physiological efficiency) in the thesis" is achieved. Both table (6) indicate that there are statistical significant differences between post measurements in weight parameter between first group (therapeutic exercises program) and the third group (the kinetic therapeutic exercises program combined with dietary supplement) for the sake of the third group and between second group (only dietary supplement) and the third group (the kinetic therapeutic exercises program combined with dietary supplement) for the sake of the third group. Both table (7) indicate that there are statistically significant differences between post measurements in the legs power parameter between second group (the dietary supplement) and the third group (the kinetic therapeutic exercises program combined with dietary supplement) for the sake of the third group. There are also no statistically significant differences between post measurements in the legs power parameter between the first group (therapeutic exercises program) and the third group (the therapeutic exercises program combined with dietary supplement). Both table (8) indicate that there are statistically significant differences between post measurements in back muscle power parameters between the first group (therapeutic exercises program) and the third group (the therapeutic exercises program combined with dietary supplement) for the sake of the third group. There are also differences between the second group (dietary supplement) and the third group (the therapeutic exercises program combined with dietary supplement) for the sake of the third group. Both table (9) indicate that there are statistical significant differences between post measurements in backbone flexibility parameters between second group (only dietary supplement) and the third group (the therapeutic exercises program combined with dietary supplement) for the sake of the third group and between the first group (therapeutic exercises program) and second group (dietary supplement) for the sake of second group. There are no statistically significant differences between the first group (therapeutic exercises program) and the third group (the therapeutic exercises program combined with dietary supplement). Both table (10) indicate that there are statistical significant differences between post measurements in bones density parameter between first group (therapeutic exercises program) and the third group (the therapeutic exercises program combined with dietary supplement) for the sake of the third group and between second group (only dietary supplement) and the third group (the therapeutic exercises program combined with dietary supplement) for the sake of the third group. Both table (11) indicate that there are statistically significant differences between post measurements in collagen parameters between the first group (therapeutic exercises program) and the third group (the therapeutic exercises program combined with dietary supplement). There are also statistically significant differences between post measurements in the collagen parameter in the second group (only dietary supplement) and the third group (the therapeutic exercises program combined with dietary supplement) for the sake of the third group. So that the fifth hypothesis entitled "there are statistically significant differences between the three groups in all parameters (the functional and physiological efficiency in the study) for the sake of the third experimental group" is achieved. (2, 5, 7, 8, 11, 12)



## CONCLUSIONS

Because of the research objectives and hypothesis and the used curriculum and according to the thesis sample and the used tools of collecting data, the researcher found out that doing physical exercises is useful in all life fields for old ladies which are as follows:

- The therapeutic exercises program which is established in the study sample leads to improving all the parameters of the functional efficiency of the kinetic system which includes the backbone flexibility – weight – legs power – back muscle power – bone density and collagen.

- The dietary supplement leads to improving the functional efficiency of the kinetic system which includes backbone flexibility – weight – legs power – back muscle power – bone density and collagen.

- The therapeutic exercises combined with dietary supplement programs lead to improving the functional efficiency of the kinetic system which includes backbone flexibility – weight – legs power – back muscle power – bone density and collagen. This program has statistical significance in the previous two groups.

## RECOMMENDATIONS

It is recommended to use both exercise and dietary supplement in old ladies

- Pay attention to safe places and suitable tools to practice athletic programs besides medical treatment.

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