

## The Effect of Physical Activity on some Physiological and Physical Variables among Expatriate Teachers in Kuwait

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### Abstract: -

**The Research Aims to** design a physical activity program and know its effect on some physiological variables (Aerobic fitness, Anaerobic fitness, Body components) and some of the physical variables (strength and Muscular endurance, Speed, Flexibility) for Expatriate Teachers in Kuwait. **Research Methodology:** the experimental method was used one group with pre-and post-measurement due to its suitability to the idea of the research. **Research Sample:** The sample of the research has (12) expatriate teachers and they are chosen by the intended way, their ages range (35:45) years, they are teachers in Om Malik Al-Ansariyah Primary School in Kuwait. they use the suggested program (aerobic exercise) for (12) weeks as three units weekly, time of the unit is (60min). the most important **Results:**

- 1- Where the highest rates of improvement in physical tests came the tilt pressure test with a rate of 89.5%
- 2- The highest improvement rate in body components came from the weight of fat mass 55.2%.

### The key words: -

Physiological Variables, Physical Variables, Expatriate Teachers.

## تأثير النشاط البدني على بعض المتغيرات الفسيولوجية والبدنية لدى المعلمات المغتربات بدولة الكويت

### المستخلص:

يهدف البحث إلى تصميم برنامج النشاط البدني ومعرفة تأثيره لدى السيدات المغتربات بدولة الكويت علي بعض المتغيرات الفسيولوجية المتمثلة في ( اللياقة الهوائية ،اللياقة اللاهوائية ، مكونات الجسم ) وبعض المتغيرات البدنية متمثلة في (القوة و التحمل العضلي ، السرعة ، المرونة )، منهج البحث : تم استخدام المنهج التجريبي لمجموعة واحدة مع قياس قبلي وبعدي نظرا لملائمته لطبيعة وفكرة البحث ،عينة البحث : تم اختيار العينة بالطريقة العمدية لعدد (١٢) معلمة من المعلمات المغتربات بمدرسة أم مالك الأنصارية الابتدائية بدولة الكويت ، خضعت المجموعة للبرنامج المقترح للتمرينات الهوائية لمدة ١٢ أسبوع بواقع ٣ وحدات تدريبية أسبوعيا زمن الوحدة ٦٠ دقيقة .

### وكانت من أهم النتائج :-

- ١- جاءت أعلى نسب تحسن في الأختبارات البدنية ( اختبار الضغط المائل ) بنسبة ٨٩,٥ %.
- ٢- جاءت أعلى نسبة تحسن في مكونات الجسم (وزن الكتلة الدهنية ) بانخفاضها بنسبة ٥٥%.

### الكلمات الرئيسية :

المتغيرات الفسيولوجية ، المتغيرات البدنية ، المعلمات المغتربات .

## The Effect of Physical Activity on some Physiological and Physical Variables among Expatriate Teachers in Kuwait

### Introduction and Research Problem:

Sport is an important component of national security and income, and an effective means of education and behavior modification, and it is a necessity to acquire health and physical, psychological and mental fitness, and sport has had a large share of progress. Its scholars relied on different sciences and the scientific method, until it became one of the fields that show the extent of the progress achieved by the country as evidenced by its access to sport to a better level(7: 51).

The practice of physical activity affects many vital systems in the body, the more the period of exercise increases, the level of adaptation of the body increases according to the stimuli. (1: 23).

Human physiology is considered one of the most important topics in physiology because of its practical applications in the field of work, sports, and nutrition, in addition to pathophysiology, which is an important aspect of physiology. The most basic and essential sciences on which sport is based; The improvement in the level of physical performance comes as a result of the physiological effects of training through which the process of adaptation of the various body systems takes place (2:54).

Therefore, the health level of the members of society is one of the measures that are inferred in measuring the progress, prosperity and advancement of people and the interest in gaining proper strength through the interest in practicing physical activity and eating healthy food is a must for living a healthy, balanced life at this age. (14:7)

Women in our time are exposed to many psychological pressures that are inside them due to pent-up emotions of fear, anxiety and tension that appear in the form of sadness and may reach depression at times, and one of the most important reasons for the emergence of this tension is the daily life responsibilities that fall on her shoulders that are characterized by routine leading To boredom and psychological tension. Thinking about personal and family commitments in the future puts this burden on both sadness, depression, feelings of fatigue, exhaustion, and lack of achievement.

With reference to what we are currently facing from the changes in the technological revolution that appeared in the means of transportation and the reliance on machines and household appliances to spend most of the daily work, which led to the lack of physical activity, which had an impact on health, the efficiency of physical performance and the level of physiological fitness, especially in the age group of (35: 45)

years of women because they are prone to accumulating fats in the body as a result of lack of physical activity and increased intake of saturated fat meals (fast food), as well as muscle sagging, especially in The buttocks and abdomen area as a result of pregnancy and childbirth, which negatively affects

the health and stature of the woman, as well as the psychological state, causing her to be dissatisfied with herself, some tension and depression, and lose the physiological fitness of the body by affecting its components (muscle strength and endurance, aerobic fitness, anaerobic fitness, flexibility, body components).

Through the researcher's work as a physical education teacher in one of the primary schools in Kuwait, I found the many responsibilities and situations that expatriate women are exposed to from work pressures and the burdens of life, especially the psychological state of loneliness and fear of the future, as well as lifestyle (lack of activity, movement and eating fast food that many return Among the scientists are the reasons for obesity, too much exposure to these pressures for a long time and not working to get rest of them makes women live their daily life with heavy burdens,

The idea of the current study crystallized, which is to design a physical activity program for expatriate women (35:45) years old and to know its effect on physiological fitness.

### **Research aims:**

This research aims to design a physical activity program and know its effect on:

- 1- Some physiological variables (Aerobic fitness, Anaerobic fitness , Body components) for expatriate women in Kuwait.
- 2- Some of the physical variables represented in (Muscle strength, Muscular endurance, Speed, Flexibility) for expatriate women in Kuwait.

### **Research hypotheses:**

- 1- There are statistically significant differences between the pre and post measurements in the physiological variables in favor of the post measurement.
- 2- There are statistically significant differences between the pre and post measurements in the physical variables under investigation in favor of the post measurement

### Research procedures:

#### Method:

The researcher uses the experimental method in order to achieve the aims of the research as this method is suitable for its nature.

#### Research Society:

The society of the research consists of expatriate teachers in “Om Malik Al-Ansariyah Primary School” in Kuwait at Mubarak Al Kabir educational area through the study year 2022/2023.

#### Research sample:

The sample of the research has (12) expatriate teachers and they are chosen by the intended way, their ages range (35: 45) years and they are divided into two groups:

- Experimental group of (12) teachers and they use the suggested program.
- (12) Teachers are chosen from the society of the research and outside the main sample in order to do the exploratory study on them.

The A medical is made for the sample, (2) teachers are excluded because one suffers from shortness of breath and has record of asthma, the other teacher suffers from hard low pressure so the number of the teachers becomes (10) teachers

#### Sample Homogeneity:

The researcher performed homogenization of the research sample in the variables of age, weight, height, systolic blood pressure and diastolic blood Pressure

**Table (1)**  
**Classification of the research sample**

(N = 24)

Sample statement	Number	Percentage
Experimental group	12	54.5%
Exploratory group	10	45.5%
Total	22	100%

**Table ( 2 )**  
**Homogeneity of the Sample at Descriptive Variables**

(N = 12)

Variables	Measuring Unit	M	P	To
Age	Year	40.83	4.76	0.179
Length	Cm	164.33	2.87	0.236
the weight	Kg	84	11.44	0.179
Systolic blood pressure	N / s	82.83	7.63	0.495
Diastolic blood pressure	N / s	107.83	10.09	1.19

**It is clear from Table ( 2 ) that:**

The Skew Coefficient Was Limited To (3±) For All the Descriptive Variables Under Investigation .This Indicates the Moderation of The Data.

**Table (3)**  
**Homogeneity of the Sample at Physical Measurements**

(12 = N)

The Exams	Measuring Unit	M	P	To
Harvard test	Number	45.8	13.6	1.18
The vertical jump test	Cm	18.8	6.42	0.73
The long jump test	M	6.33	3.33	0.1

**It is clear from Table ( 3 ) that:**

Vary arithmetic averages of the responses of the sample values on physical tests under the measurements and the torsion coefficient is limited between (±3) which indicates Moderation of data.

**Table ( 4 )**  
**Homogeneity of the Sample at the Body Compassion**

(N=12)

Body Components	M	P	To
Muscle mass weight	31.68	5.01	0,639
Fat mass weight	33,23	7,63	0,809
Body fat weight	38,86	4,99	0,372
Body mass weight( BMI)	31,73	3,05	0,86
The proportion of water in the body	37,91	2,54	1,54
Basal Metabolic Ratio (BMR)	1503	138,2	0,789

**It is clear from Table ( 4 ) that:**

The values of the arithmetic averages of the sample responses to the body components measurements, and the torsion coefficient was limited between ( $\pm 3$ ), indicating the moderation of the data.

**Search procedures:**

**Pre- measurements:**

The pre-measurements were made from Sunday 25/9/2022, to, Thursday 29/9/2022, as follows:

- Body components were measured in a gymnasium at “Om Malik Al-Ansariyah Primary School” for girls in the Mubarak Al-Kabeer Educational Zone in Sabah Al-Salem area on Sunday 9/22/2022.
- The pressure was measured by a specialist doctor on Monday 25/9/2022.
- Physical tests were applied at “Om Malik Al-Ansariysh Primary School” for girls inside the school's gymnasium on Tuesday and Wednesday 27-28 / 9 / 2022.

**Proposed training program:**

The program was implemented on the experimental group for a period of three months, starting from Sunday 2/10/2022 to Sunday 1/1/2023 on a number (12) weeks by three units per week, unit time (60 m), with a total of (36) training units. The components of the program were developed, and the levels of load intensity were determined according to the heart rate per minute, so training was carried out with a moderate intensity equivalent to 50%, with a gradual increase in the number of repetitions until it finally reached the lower than the maximum load that equates to 75% of the maximum heart rate Heart for every parameter.

**Basic study:**

Pre and post measurements were made and the proposed program was implemented for all members of the sample during the school day in the morning period, with the knowledge of physical education teachers, and because the researcher was one of the educated physical education teachers in the same school, this helped to apply during the first semester of the academic year 2022/2023.

**Post Measurements:**

Dimensional measurements were made from Sunday 1/1/2023 to Thursday 5/1/2023. Where it is done as follows:

- Body components were measured in the hall at Primary School, on Sunday 1/1/2023.
- The pressure was measured by a specialist doctor on Monday 2/1/2023.
- Physical tests were applied in one of the gymnasiums at Primary School, on Tuesday and Wednesday 3-4 / 1/2023

**The Proposed Training Program for Aerobic Exercises for Expatriate Teachers:**

In designing the program, the researcher relied on two main factors, namely: Arab and foreign scientific research and references. She designed the proposed program and was presented to the experts to express an opinion on its suitability for application.

**Objective of the proposed program:**

The proposed training program aims to use aerobic exercises to develop body components and some physiological variables to identify the level of serotonin, all types of cholesterol and triglycerides in the blood.

**Program principles and conditions:****▪ The content of the proposed aerobic exercise program:**

The researcher considered from the modesty of the content the following:

Choosing the appropriate aerobic exercises for the age group (35-45) years is based on the opinions of the experts. The researcher concluded the following:

- Some exercises have been omitted because they are not suitable for the age group of (35 - 45) years for women, and the program

was implemented after adding the opinions of the experts and excluding some from aerobic exercises.

- Some exercises were omitted due to the sample's inability to perform and the difficulty of implementing them.
- The exercises begin with a warm-up aimed at preparing the body.
- The exercises end with calming exercises for all parts of the body.

▪ **Shaping the training load:**

- Based on the findings of previous studies and some recent scientific references in sports medicine, the training load was formed where it starts with an average load that equates to (50-75%) of the maximum pulse rate. **Attachment (5)**
- As Raisin Khuraibet (2017) pointed out, based on the recommendations of the College of Sports Medicine, to form aerobic fitness programs:
- The goal should be to achieve continuous aerobic activity from (20 - 60 s) and (3 - 5) units per week of walking or any other aerobic activities.
- Weight training exercises (2 - 3) units per week.
- Training must be gradual to reach the required level (26:10).

**Time division of aerobic exercise:**

And based on what was shown by previous studies and some scientific references, and after taking the opinions of the experts, the time period that could positively affect the variables was determined with a total of (36) training units by three training units per week for teachers **Attachment (4)**, which shows the distribution The training load for the program, and based on what Nemat Abdel Rahman (2000) indicated, that the training unit must include three parts (warm-up / main part / calming exercises).

**Warm up:**

It is necessary to warm up all parts of the body.

**The main part:**

The contents of the main part are displayed using special tools for women suitable for the age group of (35 - 45) years for women, including basic exercises using a step box, dumbbells 1K - Resistance Eraser (TRX) - Resistant elastomers with two handles - Wall ladders). Musical

accompaniment for the purpose of gaining aerobic exercise a kind of excitement and suspense for female teachers, especially for those who did not exercise.

Emphasis was placed on increasing exercises that help develop (strength-speed-compatibility).

### **Relaxation exercises:**

It is important to recover from the intensity of the intensity of exercise, so you must complete the body with slow and more relaxed movements so that the body returns to its normal state.

### **Data collection tools and means:**

After reviewing specialized scientific references, related studies, and scientific courses, and seeking the opinions of experts and specialists, the researcher identified tools that fit the nature of the study, and the researcher used the following tools and tests:

- 1- Ristameter device to measure length.
- 2- A medical scale to measure weight (kg) after calibrating it with other scales.
- 3- In Body Composition, to measure [muscle mass weight - fat mass weight - body fat weight - body mass index - water percentage - metabolic rate].
- 4- Systolic and diastolic blood pressure measuring device (sphygmomanometer) is measured in mm / Hg. **Attachment (2,3)**
- 5- A tape measure is included.
- 6- Wall ladders.
- 7- Step box.
- 8- Stopwatch.
- 9- Dumbbells (1 kg) for women.
- 10- Two handles resistive elastomers - TRX resistant elastomers.
- 11- Swedish seat.

### **Physical Exams in Question:**

- 1- Running test in place (15) w.
- 2- The sitting test from lying down to measure the strength of the abdominal muscles.
- 3- The test of bending the trunk forward from standing to measure the flexibility of the trunk.

- 4- Muscular endurance test.
- 5- Harvard step test.
- 6- The vertical jump test.
- 7- Long jump test.

### Attachment (1)

#### Statistical treatments used in the research:

The researcher statistically processed the data and results obtained through: Descriptive statistics - percentage improvement (%) - test for the significance of differences between T. Test averages.

#### Of the results of the associated physiological tests:

Table ( 5 )

Significance of the differences between the two measurements (pre and post) for the experimental group in the physiological tests under investigation

(N=12)

The exams	Tribal		Dimensional		T	indication
	M	P	M	P		
Harvard Aerobic Fitness Test	45,8	13,6	60,8	18,7	5,45*	0
The vertical jump test	21,5	8,21	33,7	8,45	6,16*	0
The long jump test	6,33	3,33	12	1,59	9,14*	0

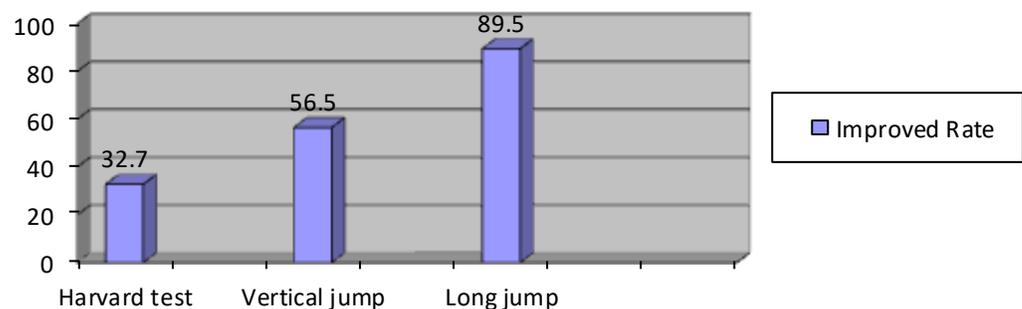
#### \*Significance . 0,05

Table ( 5 ) shows that there are statistically significant differences between the pre and post measurements in favor of the post measurement in the physical variables under investigation.

**Table ( 6 )**  
The percentage of improvement between the pre and post measurements of the physiological tests under investigation

The Exams	Percentage
Harvard test	32,70 %
The vertical jump test	56,50 %
The long jump test	89,50 %

**Table ( 6 ) shows that :** The experimental group has different rates of improvement in measuring the physiological tests under investigation, the highest improvement rate for the long jump test was 89,5 % and the lowest rate of 32,7 % for Harvard test .



**Figure (1)**  
The percentage of improvement between the pre and post measurements of the physiological tests under investigation

- View body composition results:

**Table ( 7 )**  
Significance of hypotheses between measurements  
(pre and post )of Body composition

(12 = N)

Body components	PRE		POST		T	indication
	M	P	M	P		
Muscle mass weight	31,67	5,01	40,3	7,15	5,96*	0
Fat mass weight	33,23	7,63	24,75	6,57	5,99*	0
Body fat weight	38,86	4,99	28,96	3,16	10,22*	0

Body mass index (BMI)	31,73	3,05	24,33	3,84	5,30*	0
The percentage of water in the body	37,91	2,54	38,4	1,83	1,73*	0,111
Basal Metabolic rate (BMR)	1	138.1	1512,3	110	5,43*	0.006

**\*Significance 0,05**

It is clear from Table (Y) that there are statistically significant differences between the pre and post measurements of the experimental group in all the variables.

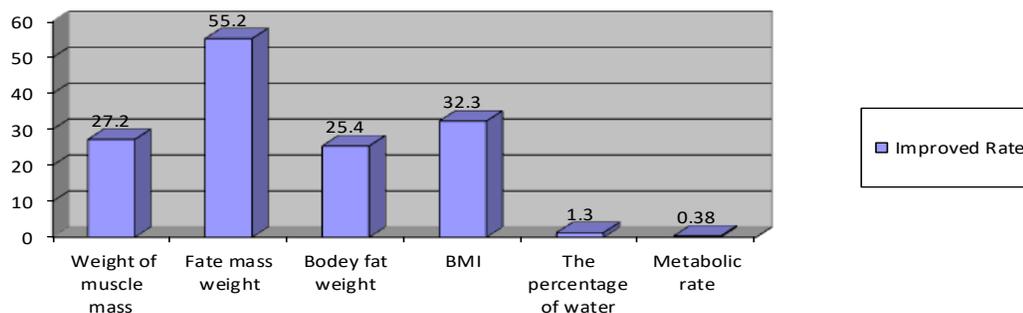
**Table ( 8 )**

**Improved body composition of the two measures ratio (pre / Post)**

Body components	Percentage
Muscle mass weight	27,20%
Fat mass weight	55,20%
Body fat weight	25,40%
Body mass index (BMI)	32,30%
The percentage of water in the body	1,30%
Basal Metabolic rate (BMR)	0,38%

**\*Significance 0,05**

It is evident from Table ( 8 ) that the rates of improvement in the experimental group are proportional, and the highest percentage of improvement in body components was weight of fat mass 55,2%



**Figure (2)**

**Table (9)**  
**Significance of hypotheses between measurements**  
**(pre and post ) of physical test**

(12 = N)

The exams	PRE		POST		T	indication
	M	P	M	P		
Running Tests in place (15 seconds)	44,66	13,82	45,33	18,87	0,116	0,909
The sitting test from lying down	24,0	3,56	39,50	11,50	5,88*	0,000
Trunk forward bend test from standing to measure flexibility	14,00	9,77	22,50	10,38	2,96*	0,13
Muscular endurance test	23,0	5,72	26,33	9,43	2,88*	0,015

**\*Significance . 0,05**

It is clear from Table (9) that there are statistically significant differences between the pre and post measurements of the experimental group in all the physical variables.

**Table (10)**  
**The percentages of improvement between the pre- and**  
**post measurements of the physical tests**

**\*Significance 0,50**

The exams	Percentage
Running in place Test to measure speed (15 seconds)	1,5%
Sit up test to measure abdominal muscle strength	64,5%
Trunk forward bend test from standing to measure flexibility	25,8%
Muscular endurance test	14,4%

It is evident from Table (10) that the rates of improvement in the experimental group vary in measuring the physical tests under study and the highest percentage of improvement in the sit up test was 64,5% and less 1,5% for the running in place test.

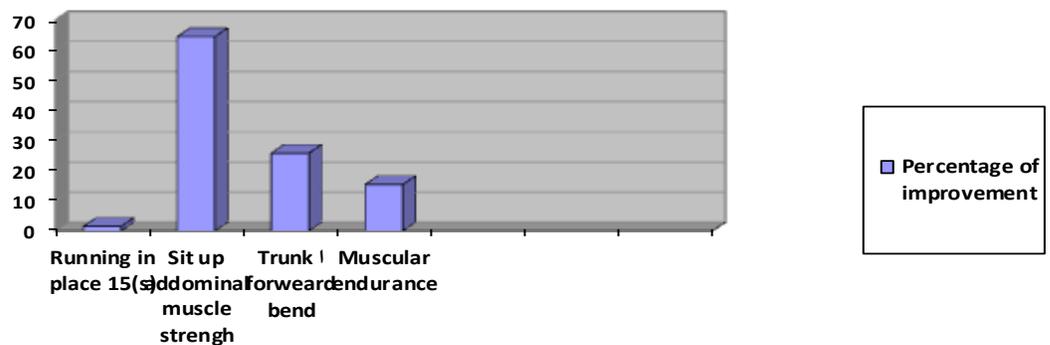


Figure (3)

### 1- Discussing the results related to physiological variables

It is clear from Table (5) that there are statistically significant differences between the pre-and post-tests for the experimental group in favor of the post-tests. The improvement rates in the physiological tests ranged between (32.7% - 89.5%), as represented in Figure (1). The researcher attributes this positive effect to the exercises. Aerobic exercise, which increases the body's capacity and coordinates with this. Abeer Abdullah Al-Tiri (2006), who reported the importance of Aerobic exercises improve physical fitness.

These results also agree with the study of Nada Muhammad Essam El-Din (2015), where the results showed a positive effect of aerobic exercise on the level of physiological fitness among the research sample, and Azza also indicated Abdel Monsef Muhammad (2006) pointed out the importance of water aerobic exercises for people Ladies, as it helped reduce weight and body circumferences, Abu also agreed Al-Ola Abdel Fattah (2016) Although aerobic exercise is sought by different countries It can be practiced at all ages due to its importance as it increases the rate of exercise Metabolism, which leads to an increase in muscle mass and a decrease in fat mass as well as getting rid of excess weight and its positive effect on improving fitness aerobic effect is also pointed out by Thomas, Larsen and Hollander (2014) .

Exercises to increase physiological fitness, as the fitness program was designed by aerobic exercises improve breathing rate, blood pressure, and blood pressure Heart rate and also metabolic responses demonstrate the

positive effect of exercise this is what the researcher attributes to the clear improvement in the experimental group vary, as he explains.

**Table (5, 6) :**

showed an improvement in the Harvard aerobic fitness test by 32.7%,the sit-to-recline test by 64.5%,and the incline push-up test by 89.5%.The researcher attributes the high percentage of improvement in the incline push-up test to the nature of the lives of female expatriate teachers, including the burdens that women bear, whether at work or at home, such as carrying children and chores. Manual homework, as well as carrying bags or school books and correcting students, as all expatriate teachers are responsible for teaching more than one class for different stages, which increased the physical and teaching burden for the research sample. This also agrees with Wahiba Ali Hassan ,where the effect of exercises .

**This fulfills the first hypothesis, which states:**

There are statistically significant differences between averages of measurements of the group.

Experimentation in the physiological variables under research in favor of post-measurement.

Discussing the results related to physical variables it is clear from Table ( 6 ) that there are statistically significant differences between the pre-and post-measurements in the physiological variables-aerobic fitness- anaerobic fitness-body components in favor of the post-measurement.

**At Table ( 9 ) :**

We find varying percentages of improvement among the experimental group.

For body components, it ranged between 1.3-55.2, with the highest percentages improvement in the body components in the percentage of fat mass weight ,and this is what the researcher reviewed.

The effect of the proposed program of aerobic exercise, which had a significant impact on reducing.

The weight of fat mass among expatriate female teachers in the research sample, as shown in Figure (2), This is consistent with WHO (2013) reports of the effect of exercise Aerobic exercise helps burn more fat and raises the level of metabolic activity, and this is also consistent with the study of Jihan Allam (2017, Ihab Muhammad Mahmoud (2006), who pointed out the positive effect of aerobic exercise on the components of body weight: muscle mass - weight of fat mass-weight of body fat-body mass index - percentage of water in the body-metabolic rate.

This is confirmed by Ahmed Nasr al-Din Abul-Ela Abdel Fattah (2003). By determining the body's components, it is possible to obtain real indicators that express both health and physical condition, and understanding the body's composition requires taking into account Consider two main components: the weight of adipose mass and the weight of non-adipose tissue physical composition, which refers to the quantities that make up the body, but it exists difference between composition, size and structure; Body size refers to the body - mass- length-surface of the body, while structure refers to classification and arrangement for different body parts such as the skeleton, fat and muscle distribution, so no It is necessary to distinguish the mutual relationships in the components of the body.

Considering Table (10), as the Journal of Sports Medicine and Fitness also explained physical Education (2017) on the effect of sports training on improving levels cholesterol for women, especially after menopause, where a significant decrease was observed they have in all variables of body components related to fat and the elements of physical fitness have improved significantly in terms of strength- agility - flexibility, and the largest percentage Noticeable improvement in abdominal muscle strength.

From the above, we find that the second hypothesis has been fulfilled, which states:

"There are statistically significant differences between the pre-and post-measurements of the experimental group in Physical variables in favor of dimensional measurement.

## Conclusions:

Considering the research objectives and hypotheses, and within the limits of the sample and discussing the results, the following conclusions were reached:

- 1- There are statistically significant differences between the measurement and dimension of the experimental group of variables in the body components, physiological variables, and serotonin hormone (during rest - after the effort). The highest improvement rate in body components came from the weight of fat mass 55.2%.
- 2- The presence of statistically significant hypotheses between the pre and post measurement of (the experimental group on the level of the hormone serotonin in favor of the post measurement.
- 3- Increasing improvement rates in favor of pre and post measurement of the experimental group in the variables under consideration.
- 4- The practice of physical activity affects raising the efficiency of the body's muscles and muscular endurance, which directly affects daily life, especially women, which helps to reduce fat mass, which has the highest rates of improvement in body components by 55%.
- 5- Exercising in physical activity influences raising the level of physiological and physical fitness of expatriate women. Where the highest rates of improvement in physical tests came the tilt pressure test with a rate of 89.5% and the lowest rates of running in the 15th place 1.5%.

## Recommendations:

Considering the research findings, the researcher recommends the following:

- 1- The application of the proposed aerobic training program to improve the physiological variables among women in gyms and teachers in general within the Ministry of Education in the State of Kuwait to various educational areas.
- 2- Creating a time plan in the educational district to implement the proposed program in all schools in the Mubarak Al-Kabeer educational district to spread the culture of health awareness and include it within the physical education directive scheme to improve the physical and health level of all teachers, especially expatriates.
- 3- The merging of the antenna training program within the school day for female teachers, especially the expatriates, the study sample.

- 4- Opening the way to similar studies that are applied to the expatriate teachers, the study sample because they are a large number within the educational zone.
- 5- Spreading health awareness among female teachers to practice sports, and the need to do sport to improve the physiological state.
- 6- In most studies, the aim of the study is (the learner / player) and not the one who carries out the educational and training process. It is necessary to shed light on (the teacher) a lot as he is the basis of the educational process.

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