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The Effect of a 12-Week Regular AeroPilates Exercise Program on Physiological Parameters of Sedentary Women Aged 30-40 Years

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ABSTRACT This research was conducted for determining the effects of a 12-week regular AeroPilates exercise program on physiological parameters of women aged 30-40 years. 40 sedentary women formed the Pilates exercise (n=20) and control groups (n=20), and participated in this research voluntarily. The experimental group performed Pilates exercise 3 days a week, with fifty to sixty percent of the target heart beat rate, 60 minutes a day for 12 weeks. Arithmetic mean and standard deviation values were determined for all variables. It was analyzed by a paired t-test whether there was a relationship between the variables at a $p<0.05$ significance level. As the result, positive developments were found in flexibility, weight, balance, leg strength, girth and the fat values in biceps, triceps, abdominal, quadriceps and suprailiac site of middle-aged individuals participated in the regular Pilates exercise. Thus, it is thought that Pilates may have positive effects on quality of life in individuals who participate in the exercises.

INTRODUCTION

Human beings have been working by using their own body for centuries. However, today they have lost their mobility as the result of facilities provided by technology. It is a government policy in many countries today to regain mobility by people because it is a scientific reality that it is possible to remain healthy by exercising. The results of medical methods (like, drug therapy, surgery) are not pleasing when the costs are considered. But it is possible to avoid health expenses to a great extent by exercising 10-15 minutes every day (Acikada et al. 1990).

Exercise physiology is the (Astrand 1977) "health status of a country that can be measured and evaluated only in direct proportion to quality of life of individuals." The individuals who do not exercise are under the risk of catching cardiovascular diseases 2-4 times more than the ones who do. Particularly smoking, use of alcohol, and other risk factors such as being overweight and hypertensive resulted from over nutrition and malnutrition and increase this risk. The people who have an active style of life keep the free fatty acid in their blood low with their mobility. Thus, they are prone to cardiovascular diseases less frequently since exercise prevents the fats from being metabolized and the fatty agents to cause arteriosclerosis by accumulating in the artery wall (Sharkey 1994).

Most of the medical, health and exercise scientists agree that exercising certain moves as fitness (physical fitness) successfully has a positive impact on physical health. This effect can also be seen in the development of emotional health indirectly due to exercising as the result of the direct development of physiological function of many organs and systems (Stanford et al. 1993). There's substantial information concerning the benefits of regular exercise for middle-aged individuals and people know that physical exercise in advanced ages have a positive effect on life quality (Aydos et al. 1997).

Physical exercise is beneficial for people at all ages. Exercise lowers the blood pressure, decreases the risk of losing one's balance and getting injured by falling (femur or wrist fractures), decreases the loss of muscle and bone mass of body, increases the flexibility, improves balance and mobility, ensures ideal weight, provides regular sleep routine, relieves stress and tension, and provides healthy and long life (Chapek 1994; Gunay 1999).

It is a known fact that regular exercise prevents the existence and progression of such

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diseases by improving physical fitness in individuals. Physical fitness is composed of cardiovascular resistance, muscular strength, balance, muscular resistance, body composition and flexibility (Kin 1996).

Although the level of flexibility is high in childhood, it decreases with increasing age. In other words, it is an age-related decrease. Yet, the level of this decrease is high in sedentary people while very low in people who have an active lifestyle. Moreover, no increase in flexibility is seen in those people who do these exercises regularly. Another effect of flexibility and stretching exercises is that they relax and prevent potential injuries (Zorba 2004).

Flexibility is related to muscles, tendons and joint capsules. It is possible to increase the flexibility of muscles, tendons and joint capsules within certain limits. There are various ways of increasing muscle tone. One of them is changing the mechanical characteristic of muscles at the chemical and structural level by means of continuous flexibility exercises. Another way is to warm-up considering the exercise type (Ziyagil et al. 1994).

Flexibility is also important for a healthy body structure that is good looking. Researches show that flexibility exercises decrease muscle pains and passive flexibility exercises treat muscle spasms (Zorba 2004). Aerobics, with or without equipment, and cardiorespiratory fitness have a positive effect on muscular strength of healthy women who are not under the risk of injury (Kravitz et al.1997).

The popularity of Pilates as a method of body conditioning has risen enormously in the last ten years. The exercise program contains increasing muscle strength, coordination, endurance and flexibility exercises while providing spine stabilization (Singh and Singh 2014). The beneficial effects of Pilates exercise training have been emphasized on body mass, body mass index, body composition and flexibility (Gonzalvo et al. 2012; Irez et al. 2011; Vergili and Yalman 2012; Fourie et al. 2013; Guimaraes et al. 2014; Singh and Singh 2014). Pilates is of high importance for a healthy body although it is gentler than other aerobic and dance exercises (decreases the risk of heart diseases, prevents osteoporosis, shapes the body, increases the level of balance and flexibility) (Robinson et al. 2003; Solomon 2003). The aim of the study is to research the effect of a 12-week AeroPilates exercise program on flexibility and balance in women aged between 30 and 40.

METHODOLOGY

The aim of the study is to research the effect of a 12-week AeroPilates exercise program on the flexibility and balance in women aged between 30 and 40. For this reason, 40 women study subjects (N=20 control group and N=20 experimental group) participated in this study. The following findings were obtained when fattiness, girth measurement, body mass index, flexibility and muscular endurance were examined for women before and after the study.

Research Model of the Study

This study was conducted to research and investigate the effect of a 12-week AeroPilates exercise program on the physiological parameters in middle-aged sedentary women at the Muðla Arts and Sports Center. The applied method for this study is experimental. All tests were standardized by taking stages of the study at a high reliability. 20 sedentary women participated in the AeroPilates exercises for 60 minutes a day for 12 weeks. The level of the exercises was determined with the Karvonen method (Fox 1999). The control group did not participate in any physical activity for 12 weeks. Music was used for the exercise was selected according to the rhythm of the exercise. Pilates exercise started with standing warm-up exercises and continued with a series of Pilates mat exercises and exercises were completed with cool-down exercises. In the Pilates mat exercise program, exercises to strengthen the abdominal muscles, the muscles around the hip, shoulder muscles, and “shoulder bridge (1-2)”, “corkscrew”, “roll-up”, “roll down”, “clam (1-2)”, “side kick (1-2)”, “staggered legs”, “scissors (1-2)”, “swimming” (front crawl), “swan dive (1-2)”, “breast stroke preparation”, “abdominal preparation”, “oblique preparation” styles and techniques were applied, and the exercise program ended with stretching exercises on the mat and exercises in a standing position (Bastug et al. 2014).

The Population and Sample Group of the Study

Women members of the Mugla Culture Arts and Sports Center located in Mugla Province form the population of this research. Women aged between 30 and 40 years were included in the study. The study subjects were asked whether they had participated in sports activities before and the answers were evaluated. Study subjects who wanted to participate in the research were informed before the beginning of the study by giving them an information form. Then the study subjects who participated in the study were requested to read the form, which indicates that they participate in the study voluntarily and the Risk Factor Assessment Form and asked to sign these two forms. After the assignment of 40 study subjects as the sample group of the study, these study subjects were divided into two groups named the control group and experimental group according to their study groups.

Collection of Data

Height and Weight Measurements

Weight was measured on a scale with sensitivity of 0.1 kg and a metal bar of this scale and height was measured with a digital stadiometer with a sensitivity of 0.01 cm (Verducci 1980).

Skinfold Caliper Method

Skinfold method is a method of measuring the subcutaneous fat lap. This method is used to calculate the body density and the body fat percentage. It was observed as a result of some researches that the values of subcutaneous fat taken from 12 different areas of body and measured with the Skinfold method and the values of magnetic resonance imaging subcutaneous fat are close to each other (Hayes et al. 1988). The thickness of the subcutaneous fat was measured using a skinfold caliper in millimeters at the triceps, biceps, thorax, quadriceps, suprailiac, abdominal, and subs scapular regions in order to determine the percentage of body fat. The Sloan and Weir formula was used to determine the percentage of body fat of the study subjects (Verducci 1980).

Dynamometer Strength Test

Dynamometer was adjusted according to the height of study subject in the position that the study subject leans forward without bending knees while measuring back strength. After placing the feet of the study subject on the dynamometer, a measurement was performed with a shouldering backwards while the head was looking forward and hands on the handgrips. This test was repeated with the people in the study group continuously and each study subject made 3 reps. The pointer was reset after every attempt and results were saved and the best grades of all study subjects were included in the comparison (Tamer 1995).

Flamingo Balance Measurement/Test

Flamingo balance beam was used in this study. Calculation of the whole body was based on a metal beam 50 cm long, 5 cm high and 3 cm wide. There are two supports—15 cm long and 2 cm wide to stabilize the beam. The stopwatch is stopped when the study subject touches his/her foot to the ground until s/he can re-balance his/her body. Test continues in this manner for one minute. Attempts by the study subject within one minute are recorded as the score (Tamer 1995).

Measurement of Flexibility

A sit-and-reach flexibility table was used for the flexibility test. The length of the test table is 35 cm, width is 45 cm and height is 32 cm. The upper surface length of the table is 55 cm and width is 45 cm. Upper surface is 15 cm outside from the surface where the feet stand up. The farthest point, which study subjects can wait for 1 to 2 seconds by reaching out, was determined and the best score was recorded on the measurement assessment form by the researcher after three trials in cm (Tamer 1995).

Girth Measurement

Waist and hip girth was measured with a tape measure. Hip girth was measured when the study subject was standing on his/her feet at the symphysis pubis level at the front and at the maximal protrusion level of hip muscles at the back (Zorba 2005).

Waist Girth

Waist girth of study subjects were measured in the manner that the tape measure is parallel to the narrowest point on the body and recorded in cm.

Hip Girth

Hip girth of study subjects were measured over their tights with tape measure by covering each two buttocks at the widest range and recorded in cm.

Statistical Analysis

Data obtained from this study was evaluated with the SPSS 15.0 software package program. Paired-samples t-test and Wilcoxon Signed-Rank Test were used for the assessment of difference between the pre and post measured values as the result of normality test of data. 0.05 was used as the significance level while assessing the difference between groups and stated that there is a significant difference between groups when $p<0.05$ and there is not a significant difference between groups when $p>0.05$.

RESULTS

In the experimental group, there is a statistically significant difference between pre-test and post-test results concerning flexibility variable ($p<0.05$) (Table 1). It is seen that post-test data averages are substantially higher than pre-test data averages. In the experimental group, there's a statistically significant difference between pre-test and post-test results concerning back strength variable ($p<0.05$) (Table 1). It is seen that post-test data averages are substantially higher than pre-test data averages. There is also a statistically significant difference between pre-test and post-test results concerning leg strength variable ($p<0.05$) (Table 1). It is seen that post-test data averages are substantially higher than pre-test data averages. In the experimental group, there is a statistically significant difference between pre-test and post-test results concerning waist girth variable ($p<0.05$) (Table 1). It is seen that post-test data averages are substantially lower than pre-test data averages. In the experimental group, there is a statistically significant difference between pre-test and post-test results concerning hip girth variable ($p<0.05$) (Table 1). It is seen that post-test data averages are substantially lower than pre-test data averages. In the experimental group, there's no statistically significant difference between pre-test and post-test results concerning chest girth variable ($p>0.05$) (Table 1). In the experimental group, there is a statistically significant difference between pre-test and post-test results concerning biceps (skinfold) variable ($p<0.05$) (Table 1). It is seen

Table 1: Comparison of the pretest and post test values of flexibility, strength and anthropometric characteristics of experiment group

		N	*Mean*	*Minimum*	*Maximum*	*SD*	*t*	*p*
Flexibility (cm)	Pre-test	20	30.45	17	45	6.74	-15.22	0.00*
	Post-test	20	33.35	21	46	6.34		
Back strength (kg)	Pre-test	20	59.45	33	87	16.03	-18.55	0.00*
	Post-test	20	62.85	36	89	15.93		
Leg strength(kg)	Pre-test	20	56.80	36	93	14.91	-14.40	0.00*
	Post-test	20	60.15	39	97	15.1		
Waist girth(cm)	Pre-test	20	79.85	67	98	8.78	7.93	0.00*
	Post-test	20	78.55	65	98	9.12		
Hip girth(cm)	Pre-test	20	100.00	93	113	5.71	10.28	0.00*
	Post-test	20	98.65	91	111	5.78		
Chest girth(cm)	Pre-test	20	93.10	82	112	7.53	1.00	0.33*
	Post-test	20	93.05	82	112	7.57		
Biceps (Skinfold)(mm)	Pre-test	20	9.60	4	16	3.53	7.76	0.00*
	Post-test	20	8.55	4	14	3.26		
Triceps (Skinfold)(mm)	Pre-test	20	17.30	9	26	4.87	10.25	0.00*
	Post-test	20	16.10	8	25	4.86		
Subscapular (Skinfold) (mm)	Pre-test	20	15.65	7	32	6.82	1.83	0.08*
	Post-test	20	15.50	7	32	6.83		
Abdominal (Skinfold) (mm)	Pre-test	20	19.00	8	28	6.215	6.99	0.00*
	Post-test	20	17.80	7	27	5.988		
Quadriceps (Skinfold) (mm)	Pre-test	20	22.25	14	34	5.51	8.32	0.00*
	Post-test	20	21.30	13	32	5.41		
Suprailiac (Skinfold) (mm)	Pre-test	20	16.70	5	26	5.06	4.68	0.00*
	Post-test	20	15.95	4	25	5.01		

*p<0.05

that post-test data averages are substantially lower than pre-test data averages. In the experimental group, there's a statistically significant difference between pre-test and post-test results concerning triceps (skinfold) variable ($p<0.05$) (Table 1). It is seen that post-test data averages are substantially lower than pre-test data averages. In the experimental group, there's no statistically significant difference between pre-test and post-test results concerning subscapular (skinfold) variable ($p>0.05$) (Table 1). In the experimental group, there's a statistically significant difference between pre-test and post-test results concerning abdominal (skinfold) variable ($p<0.05$) (Table 1), with the post-test data averages being substantially lower than pre-test data averages. In the experimental group, there is a statistically significant difference between pre-test and post-test results concerning quadriceps (skinfold) variable ($p<0.05$) (Table 1). It is seen that post-test data averages are substantially lower than pre-test data averages. In the experimental group, there's a statistically significant difference between pre-test and post-test results concerning suprailiac (skinfold) variable ($p<0.05$) (Table 1). It is seen that post-test data averages are substantially lower than pre-test data averages. In the experimental group, there is a statistically significant difference between pre-test and post-test results concerning weight variable ($p<0.05$) (Table 2). It is seen that post-test data averages are substantially lower than pre-test data averages. In the experimental group, there is a statistically significant difference between pre-test and post-test results concerning balance variable ($p<0.05$) (Table 2). It is seen that post-test data averages are substantially lower than pre-test data averages. In the experimental group, there's no statistically significant difference between pre-test and post-test results concerning pectoral (skinfold) variable ($p>0.05$) (Table 2).

For the control group, the following results were found with regards to the different variables.

There is a statistically significant difference between pre-test and post-test results concerning flexibility variable ($p<0.05$) (Table 3) with post-test data averages being substantially lower than pre-test data averages. There is a statistically significant difference between pre-test and post-test results concerning weight variable ($p<0.05$) (Table 3). It is seen that post-test data averages are substantially higher than pre-test data averages. In the control group, there is no statistically significant difference between pre-test and post-test results concerning back strength variable ($p>0.05$) (Table 3). There is a statistically significant difference between pre-test and post-test results concerning leg strength variable ($p<0.05$) (Table 3). The post-test data averages are substantially lower than pre-test data averages. There is a statistically significant difference between pre-test and post-test results concerning waist girth variable ($p<0.05$) (Table 3). The post-test data averages are substantially higher than pre-test data averages. There is a statistically significant difference between pre-test and post-test results concerning hip girth variable ($p<0.05$) (Table 3). The post-test data averages are substantially higher than pre-test data averages. There is a statistically significant difference between pre-test and post-test results concerning chest girth variable ($p<0.05$) (Table 3). The post-test data averages are substantially higher than pre-test data averages. There is a statistically significant difference between pre-test and post-test results concerning biceps (skinfold) variable ($p<0.05$) (Table 3). The post-test data averages are substantially higher than pre-test data averages. There is no statistically significant difference between pre-test and post-test results concerning subscapular (skinfold)

Table 2: Comparison of the pretest and post test values of weight, balance and pectoral measures of experiment group

		N	*Mean*	*Minimum*	*Maximum*	*SD*	*t*	*p*
Weight (kg)	Pre-test	20	64.60	62.5	54	78	8.13	0.00*
	Post-test	20	63.15	59	55	77	8.12	
Balance(Error)	Pre-test	20	2.45	2.5	1	3	0.60	0.00*
	Post-test	20	0.70	0	0	2	0.86	
Pectoral (Skinfold)	Pre-test	20	11.55	10	5	23	5.10	0.08*
(mm)	Post-test	20	11.40	9.5	5	23	5.06	

*$p<0.05$

Table 3: Comparison of the pretest and post test values of flexibility, strength and anthropometric characteristics of control group

		N	*Mean*	*Minimum*	*Maximum*	*SD*	*t*	*p*
Flexibility (cm)	Pre-test	20	19.00	10	28	4.588	2.74	0.01*
	Post-test	20	18.15	9	26	4.221		
Weight (kg)	Pre-test	20	73.95	61	84	5.453	-2.32	0.03*
	Post-test	20	74.75	60	84	5.250		
Back strength(cm)	Pre-test	20	59.10	45	73	8.991	1.14	0.26*
	Post-test	20	58.80	44	73	8.752		
Leg strength(cm)	Pre-test	20	59.30	35	78	10.732	2.99	0.00*
	Post-test	20	58.90	34	77	10.543		
Waist girth (cm)	Pre-test	20	74.10	62	83	6.315	-6.30	0.00*
	Post-test	20	75.65	62	86	6.401		
Hip girth(cm)	Pre-test	20	100.35	90	110	4.499	-3.46	0.00*
	Post-test	20	101.40	89	110	5.103		
Chest girth(cm)	Pre-test	20	96.85	83	112	8.922	-3.26	0.00*
	Post-test	20	97.45	83	113	9.168		
Biceps (Skinfold)(mm)	Pre-test	20	12.15	6	20	4.082	-2.34	0.03*
	Post-test	20	12.45	7	20	4.019		
Subscapular (Skinfold)	Pre-test	20	21.60	12	35	6.320	-1.75	0.09*
(mm)	Post-test	20	21.85	12	34	6.327		
Quadriceps (mm)	Pre-test	20	24.10	15	35	6.299	-3.90	0.00*
(Skinfold)	Post-test	20	24.75	15	36	6.447		

*p<0.05

variable (p>0.05) (Table 3). There is a statistically significant difference between pre-test and post-test results concerning quadriceps (skinfold) variable (p<0.05) (Table 3). The post-test data averages are substantially higher than pre-test data averages. There is a statistically significant difference between pre-test and post-test results concerning balance variable (p<0.05) (Table 4). The post-test data averages are substantially higher than pre-test data averages. There is a statistically significant difference between pre-test and post-test results concerning pectoral (skinfold) variable (p<0.05) (Table 4). The post-test data averages are substantially lower than pre-test data averages. In the control group, there is a statistically significant difference between pre-test and post-test results concerning triceps (skinfold) variable (p<0.05) (Table 4). The post-test data averages are substantially higher than pre-test data averages. In the control group, there is a statistically significant difference between pre-test and post-test results concerning abdominal (skinfold) variable (p<0.05) (Table 4). The post-test data averages are substantially higher than pre-test data averages. In the control group, there's a statistically significant difference between pre-test and post-test results concerning suprailiac (skinfold) variable (p<0.05) (Table 4). It is seen that post-test data averages are substantially higher than pre-test data averages.

DISCUSSION

This study is composed of 40 sedentary women aged 30-40 years in Mugla Culture, Arts and Sports Center. There are two groups used in the

Table 4: Comparison of the pretest and post test values of balance and anthropometric characteristics of control groups

		N	*Mean*	*Minimum*	*Maximum*	*SD*	*t*	*p*
Balance	Pre-test	20	1.70	2	0	3	0.80	0.00*
	Post-test	20	2.10	2	0	3	0.91	
Pectoral (Skinfold)	Pre-test	20	14.50	12.5	8	26	6.10	0.01*
(mm)	Post-test	20	12.15	12.5	6	20	4.08	
Triceps (Skinfold)(mm)	Pre-test	20	21.05	23	12	26	4.65	0.00*
	Post-test	20	22.45	24	14	28	4.45	
Abdominal (Skinfold)	Pre-test	20	23.40	23	19	32	3.48	0.00*
(mm)	Post-test	20	24.35	24	20	34	3.87	
Suprailiac (Skinfold)	Pre-test	20	19.15	21.5	7	29	6.99	0.00*
(mm)	Post-test	20	20.55	23.5	8	30	7.14	

*p<0.05

study, namely, the experimental group and control group. In the study, the experimental group performed AeroPilates exercises 3 days a week, with fifty to sixty percent of the target heart beat rate, 60 minutes a day for 12 weeks. On the other hand, the control group did not participate in any exercise for 12 weeks. In this study, while significant decreases were seen in body fat rate, body mass index and girth measurements, a significant increase was seen in strength, balance and flexibility measurements. No statistically significant change is in question for the control group who did not participate in the AeroPilates exercise.

Pilates alone is not sufficient for improvement in physical fitness. Pilates provides extraordinary multidimensional work when combined with the benefits of strength, flexibility and balance exercises. On the other hand, the October 2005 study of American Council on Exercise handled the issue cynically with the assertion that it increases cardiovascular fitness. Researchers examined throbs and oxygen consumption, standard evaluation of aerobics use, in 15 healthy young women who performed Pilates mat exercises from beginner to advanced level. When visible effort of women was relatively higher (probably the indication of how their muscles exercise hard), aerobics answers remained lower than the level necessary for providing cardiovascular benefit. Thus, Pilates and aerobic exercises complete but do not substitute each other (EBSCO 2006). Pilates exercises can reduce chronic pains and diseases and increase strength and flexibility. Thus, it's not just a fitness exercise performed in apparatus exercise centers but a lifestyle. It is composed of posture measurements, how to deal with problematic parts of the body and various exercise series at different difficulty levels for the purpose of making a good start for a basic work that exercise major muscle groups up and down (Broocker 2005).

Many researches showed that Pilates is a dynamic and functional exercise model that increases the stabilization of vertebras by especially strengthening the transversu abdominis muscle (Siler 2006). The researchers obtained a similar result in this study since a statistically significant decrease was seen in lipoidosis in abdominal, suprailiac area as the result of the AeroPilates exercise when fat measurement areas of individuals included in the experimental group aged 30-40 years were measures. ACSM suggested performing 20-25 minutes of aerobics exercise 3-5 days a week. It also highlighted that resistance exercises must be added to exercise programs of adults. Strength exercises have an important role for increasing or maintaining lean body weight. These exercises are also necessary for weight control because higher lean body weight provides the rested metabolic rate to increase (Cullinen et al. 1998). Pilates is a beneficial exercise especially for middle and advanced level performers to increase flexibility, muscular fitness and resistance. But it may have a limited potential for especially increasing cardiovascular fitness and decreasing bodyweight **(**Dickey et al. 2005). In this research, it was seen that performing Pilates exercise only once a week has an effect on the development of flexibility limited with body composition (Dickey et al. 2005). The researchers obtained a similar result in this study since a statistically significant increase was seen in flexibility and balance as the result of the AeroPilates exercise applied to the experimental group aged 30-40 years. In another study conducted on 32 subjects, the effect of Pilates on flexibility and body composition was examined. As the result of the study, no change was seen in lean body mass, body weight and other body composition parameters (Segal et al. 2004). Sekendiz et al. (2007) researched and examined the effect of Pilates exercises to abdominal and hip area muscle endurance, strength, posterior body flexibility and body composition. It was founded as the result of this study conducted on sedentary women that modern Pilates exercises increase the abdominal and hip area endurance and improved flexibility. A significant change was not observed in body weight and fat percentage (Sekendiz et al. 2007). Santa Clara et al. founded the increase on RMR as four percent per kilogram (Santa et al. 2006). Gilliat et al. examined the effects of physical activity on rested metabolism and body composition in their study. They created two groups. The first group consists of women aged between 35 and 50 who performed physical activity at an average of 9 hours per week and the second group consists of only sedentary women (Gilliat et al. 2001). Tsai et al. (2013) found that 12 weeks of Pilates exercises did not cause any statistically significant changes in body composition

There are some studies that aerobic exercises improves flexibility and balance (Irez et al. 2014; Saygin 2015). Mikalacki et al. (2012) examined the influence of Pilates exercises on the flexibility of women. The research was conducted on an adequate sample of women (n=60), aged 35-40, consisting of 38 participants who performed Pilates exercises (the experimental group) and 22 participants who did no type of recreational activities (the control group). The experimental program of exercises called Pilates was conducted over a period of 6 months, twice a week. They found statistically significant differences in flexibility between the experimental and control group. Bastug et al. (2014) reported that Pilates exercise method is one of the most important exercises in improving flexibility performance and body composition.

As the result, body fat weight and fat percentage were observed to be low and the lean body weight and rested metabolism speed were observed high when physically active women and sedentary women were compared. The lean body weight was stated to be the primary factor determining RMR in this study (Gilliat et al. 2001). In another study, 15 women performed aerobic exercises for 8 weeks and their physical and physiological changes were observed. It was stated as the result of the study that there are significant difference between their body fat weight, body fat percentage and body mass index (Çolakoglu 2003).

CONCLUSION

As a result, the effect of the 12-week regular AeroPilates exercises on physiological parameters of sedentary women was researched and obtained data was analyzed using the SPSS software. The study measured values of body fat weight, body fat percentage, flexibility, balance, strength, waist and hip girth of all individuals who participated in the study before and after the AeroPilates exercises. It was founded as the result of this study that AeroPilates exercises reduce body rate and body mass index in sedentary women but do not affect the values of muscle strength and increases balance and flexibility.

RECOMMENDATIONS

The Pilates exercise method is one of the most important exercises for all ages. Since the body composition, balance, strength, waist and hip girth and flexibility are important in terms of health and quality of life, it is recommended that the Pilates exercise program should be performed regularly. In this type of studies, it can be said that diet programs should be controlled.

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