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# The effect of preventive physiotherapy training on physical activity level and functional capacity in postmenopausal women

Alavuddin Kurbonboyev, Beliz B Kaygisiz
*European University of Lefke, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Lefke, Northern Cyprus, TR-10 Mersin, Turkey*

**Abstract**. The aim of this study was to measure the physical activity level of postmenopausal women and to determine the effect of preventive physiotherapy training on physical activity level and functional capacity. *Material and Method.* A total of 88 postmenopausal women aged 44 to 75 were included in the study. The physical activity level of the participants was evaluated using the short form of the International Physical Activity Questionnaire (IPAQ). Afterwards, the participants were divided into two groups: (1) training group (n = 46); (2) control group (n = 42) by simple randomization. The training group was trained about menopause and its symptoms, and about the effect of physical activity on menopause symptoms. In addition, preventive physiotherapy program for posture and possible balance problems were taught. The control group continued their normal daily living activities without any training. The physical activity levels of the participants in both groups were evaluated with IPAQ, functional capacity with 6 min walk test and timed up and go test before and after an 8-week training program. *Results.* There were no statistically significant differences in demographics, physical activity level and functional capacity between the groups before the training. The mean physical activity level of the training group was found to be higher after the training, but when the training group and control group were compared, there were no significant differences between the groups in terms of outcome measurements. *Conclusion.* This study supports the importance of providing awareness training about physical activity for women in menopause period and supporting them with preventive physiotherapy programs. Physiotherapists should be well aware of the characteristics of menopause and the effects of changes related to physical functioning that may occur in this period.
**Key words:** *women, postmenopausal, physical activity, functional capacity.*

## Introduction

According to the World Health Organization, menopause is defined as the permanent cessation of the menstruation caused by the loss of the follicular activity of the ovaries (1). After the last menstrual period without breast-feeding or pregnancy, women who complete the 12-month period of amenorrhea pass into the postmenopausal period (2). Decreased estrogen level during menopause transition leads to the development of menopausal symptoms (3). The major symptoms are reported as difficulty in vasomotor (hot pressing, night sweats), psychological (anxiety, depression), urogenital (vaginal dryness, dyspareunia) and sleep (4-7). These symptoms may start a few years before the last menstrual period and may last for many years and sometimes up to old age (8).

Physical inactivity has a significant health impact worldwide. Hypertension is the fourth cause of global mortality (6% of annual mortality) after non-infectious diseases following cigarette and increased glucose in the blood, resulting in deaths between 3.2 and 5 million per year. The level of physical inactivity is increasing all over the world, and therefore has a large impact on the prevalence of non-communicable diseases and the overall health of the worldwide population. Physical inactivity is estimated to be the main cause of 21-25% of the breast and colon cancer load, 27% of diabetes and 30% of ischemic heart diseases (9). While the likelihood of women suffering from cardiovascular disease is lower than that of menopause, after the age of 60, the difference between genders is reduced. On the one hand, estrogen deficiency and physical inactivity increase the risk (10).

Osteoporosis is another common problem in the postmenopausal period and has a high mortality rate. Osteoporosis develops as a result of disruption of the balance between osteoblastic and osteoclastic activity.

Osteoblastic and osteoclastic cells have estrogen receptors, so the balance of bone resorption is impaired due to lack of hormones (11, 12).
As the daily environment changes significantly in recent years, it becomes more and more difficult to achieve adequate physical activity level (13). The causes of physical inactivity are predominantly the result of systemic and environmental factors that make everyday life and work environments increasingly immobile. The protection of individual health and social health with physical activity habits is thought to be an effective tool in reducing the cost of health expenditures (13, 14).
It has been reported that physical activity has positive effects on mental, psychological and emotional aspects in both healthy and chronic individuals (15-18). In addition, it has been reported that physical activity is effective in reducing cognitive functions, bone mineral density, sleep quality and quality of life, breast cancer risk, blood insulin level, exercise systole/diastole blood pressure, psychological symptoms and metabolic syndrome during postmenopausal women (19-24).
Health education is the main step of chronic disease management. The patients themselves play an important role in the treatment of diseases and prevention of diseases (24). The aim of the pre-menopausal or health education period is to provide women with knowledge about this life cycle and to have a positive attitude towards menopause and aging. Studies have shown that education about managing menopausal symptoms is effective in reducing early signs of menopause (25, 26).
The aim of this study was to determine the physical activity level of women in postmenopausal period and to investigate the effect of preventive physiotherapy education on physical activity level and functional capacity.

**Material and Method**

*Participants.* 94 women who were in the postmenopausal period were invited to this study. The physical activity level of 88 women, who accepted to participate in the study and who met the inclusion criteria were evaluated.
*Sampling technique.* Afterwards, the participants were divided into training group and control group by simple randomization method. 46 participants in group 1 received preventive physiotherapy training, 42 participants in group 2 continued their routine daily living activities without any training.
*Inclusion criteria* were: to be in amenorrhea for at least 12 months; not to be received hormone replacement therapy for climacteric symptoms in the last 3 months.
*Exclusion criteria* were: using drugs to relieve menopausal symptoms in the last 3 months; having chronic diseases affecting the movement system.
*Instruments.* First, physical and social demographics was obtained. Then, according to the short form of the International Physical Activity assessment questionnaire, the level of physical activity in the last week was recorded during face-to-face interview (27). The functional capacity of the participants was evaluated with 6-minute walking test (6 MWT) and timed up and walk test (TUG) (28, 29). The necessary rest periods between the tests were given and all evaluations were completed within 40 minutes per person. All evaluations were performed by the same physiotherapist.
*Procedure.* Randomized controlled study (as a thesis project of one of the authors) was approved by the European University of Lefke, Ethics Committee in Northern Cyprus (UEK 20/02/08/1718/01). The participants signed an informed consent form before the study.
The trainings were held in groups of 10-12 participants. The training program was constructed by the authors of this study including presentation / information, question-answer and discussion. The program lasted approximately in 60 minutes. The participants in the control group didn't received training program during the study. In order to comply with the ethical rules, all participants in the control group were given preventive physiotherapy training after the study.
The contents of the training program included the definition and symptoms of menopause, the definition and benefits of physical activity, the effects of physical activity on menopausal symptoms and the prescribed daily activity prescribed by WHO (30). After the training, women were given a leaflet on menopause and physical activity, exercise training for good posture and balance, and detailed descriptions. Participants were advised to do the exercises 4 sets of 10 repetitions a day for 3 days a week. Exercises included stretching of the shoulder girdle and upper body; and strengthening exercises for the back, hip and lower extremities.
*Data Analysis.* SPSS 24.0 data analysis software was used for the statistical analysis of the data obtained from postmenopausal women who have received and not received preventive physiotherapy training. In order to determine the hypothesis tests to be used in the study, the normal distribution the data obtained of

before and after the study were examined with Shapiro-Wilk test and it was determined that they did not comply with normal distribution. For this reason, non-parametric hypothesis tests were used in the study. Mann-Whitney U test was used to compare the measurement values of women according to the status of receiving preventive physiotherapy training. Wilcoxon test was used to compare the pre-test and post-test results.

## Results

*Physical characteristics of participants.* A total of 88 women participated in our study. Age of participants was 59,98±6,89; menopause age 49,16±5,51 years; menopause time 11,26±7,66 years; height 160,64±6.33cm; body weight 68,99±11,45kg and VKI 26,84 kg / $m^2$. The physical activity level of participants was evaluated first and it was seen that there was an average of 1036.33±4,97 MET

Then, 46 people were selected as the study group and 42 people were selected as the control group by simple randomization. 8 weeks after the training, 5 people in the study group and 1 person in the control group did not participate in the second evaluation. Thus, the second evaluation was completed with 82 people.

*Table 1* shows the physical activity level and functional capacity of the postmenopausal women who were included in the study. There was no statistically significant difference between the pre-study values of IPAQ, TUG and 6 MWT of the participants (p> 0.05).

**Table** 1. Comparison of values of participants before the study

| Variable | | | | Training group (n=45) | | Control group (n=43) | | p* |
|---|---|---|---|---|---|---|---|---|
| | | | | Mean | SD | Mean | SD | |
| **Physical activity** | IPAQ (MET) | | | 1295,21 | 1055,38 | 1589,81 | 1017,28 | 0,138 |
| **Functional capacity** | TUG (s) | | | 7,71 | 1,09 | 7,40 | 1,74 | 0,070 |
| | 6MWT | $SpO_2$ | P.T | 97,31 | 0,95 | 97,19 | 1,12 | 0,522 |
| | | | Post.T | 97,62 | 0,65 | 97,60 | 0,65 | 0,938 |
| | | | R.A.T | 98,00 | 0,37 | 97,49 | 1,80 | 0,208 |
| | | HR (bpm) | P.T | 78,07 | 12,17 | 75,93 | 9,92 | 0,573 |
| | | | Post.T | 90,31 | 13,59 | 92,37 | 13,28 | 0,425 |
| | | | R.A.T | 81,38 | 11,44 | 97,49 | 1,80 | 0,208 |
| | | SBP (mm/Hg) | P.T | 133,44 | 15,26 | 134,42 | 16,41 | 0,724 |
| | | | Post.T | 139,22 | 15,92 | 142,09 | 19,06 | 0,349 |
| | | | R.A.T | 132,44 | 14,13 | 135,12 | 16,09 | 0,354 |
| | | DBP (mm/Hg) | P.T | 83,11 | 8,74 | 83,95 | 9,42 | 0,660 |
| | | | Post.T | 85,44 | 11,91 | 88,49 | 11,98 | 0,556 |
| | | | R.A.T | 82,11 | 7,94 | 85,23 | 10,00 | 0,179 |
| | | Walking Distance (m) | | 451,00 | 72,74 | 446,80 | 85,24 | 0,977 |
| | | Fatigue (MBS) | P.T. | 2,38 | 2,15 | 2,74 | 2,76 | 0,733 |
| | | | Post.T | 3,47 | 2,14 | 4,30 | 2,48 | 0,086 |
| | | | R.A.T | 2,13 | 1,83 | 2,74 | 2,33 | 0,249 |
| | | Dyspnea (MBS) | P.T | 0,47 | 1,04 | 0,19 | 0,70 | 0,097 |
| | | | Post.T | 1,38 | 1,85 | 1,42 | 1,82 | 0,825 |
| | | | R.A.T | 0,51 | 1,04 | 0,47 | 0,80 | 0,713 |

*p*: Mann-Whitney U test; IPAQ: International Physical Activity Questionnaire; TUG: Times Up and Go; 6MWT: 6 minute walking test; HR: heart rate; SBP: systolic blood pressure; DBP: diastolic blood pressure; MBS: modify Borg scale; m: meter; P.T: pre-test; I.A.T: immediately after testing; R.A.T: recovery after testing.*

*Table 2* shows the comparison of the results of participants before and after the training who received preventive physiotherapy training. There was a statistically significant difference between the IPAQ values (p <0.05). Study group had significantly lower BMI values after the training compared to before the program (p <0.05).

Pre-study HR, Pre-study SBP, Post-study SpO2, Post-study SBP and Recovery SBP values measured after training of study group were found to be significantly lower than before (p <0.05). The walking distance of postmenopausal women who received preventive physiotherapy training was found to be significantly longer than before (p <0.05).

**Table 2.** Comparison of measurements of training group

| Variable | Measurements | Mean | SD | p* |
|---|---|---|---|---|
| **IPAQ/MET** | Before the study | 1286,68 | 1098,44 | 0,000* |
| | After the study | 3013,95 | 3307,61 | |
| **TUG/sec** | Before the study | 7,78 | 1,05 | 0,000* |
| | After the study | 7,17 | 1,01 | |
| **Pre Test SPO2** | Before the study | 97,29 | 0,96 | 0,747 |
| | After the study | 97,37 | 0,77 | |
| **Pre Test HR/bpm** | Before the study | 78,71 | 12,49 | 0,030* |
| | After the study | 75,76 | 10,41 | |
| **Pre Test Systole/mm/Hg** | Before the study | 133,66 | 14,83 | 0,021* |
| | After the study | 129,88 | 15,19 | |
| **Pre Test Diastole/mm/Hg** | Before the study | 83,05 | 8,51 | 0,255 |
| | After the study | 81,95 | 7,06 | |
| **Pre Test Fatigue/MBS** | Before the study | 2,37 | 2,18 | 0,878 |
| | After the study | 2,59 | 2,51 | |
| **Pre Test Dyspnea/MBS** | Before the study | 0,44 | 1,05 | 0,442 |
| | After the study | 0,61 | 1,05 | |
| **Post Test SpO2** | Before the study | 97,59 | 0,67 | 0,020* |
| | After the study | 97,20 | 0,84 | |
| **Post Test HR/bpm** | Before the study | 90,98 | 14,03 | 0,805 |
| | After the study | 91,93 | 15,44 | |
| **Post Test Systole/mm/Hg** | Before the study | 139,27 | 15,51 | 0,043* |
| | After the study | 135,49 | 15,56 | |
| **Post Test Diastole/mm/Hg** | Before the study | 85,00 | 11,83 | 0,441 |
| | After the study | 84,27 | 7,71 | |
| **Walking Distance/m** | Before the study | 453,56 | 71,94 | 0,007* |
| | After the study | 476,68 | 76,72 | |
| **Post Test Fatigue/MBS** | Before the study | 3,51 | 2,20 | 0,109 |
| | After the study | 4,34 | 2,42 | |
| **Post Test Dyspnea//MBS** | Before the study | 1,41 | 1,91 | 0,073 |
| | After the study | 2,07 | 1,85 | |
| **Recovery SpO2** | Before the study | 97,98 | 0,35 | 0,475 |
| | After the study | 97,88 | 0,75 | |
| **Recovery HR/bpm** | Before the study | 81,93 | 11,79 | 0,145 |
| | After the study | 79,95 | 11,18 | |
| **Recovery Systole/mm/Hg** | Before the study | 132,20 | 13,42 | 0,002* |
| | After the study | 127,56 | 11,13 | |
| **Recovery Diastole/mm/Hg** | Before the study | 81,46 | 7,00 | 0,876 |
| | After the study | 81,22 | 4,85 | |
| **Recovery Fatigue/MBS** | Before the study | 2,17 | 1,90 | 0,915 |
| | After the study | 2,32 | 2,14 | |
| **Recovery Dyspnea/MBS** | Before the study | 0,51 | 1,08 | 0,290 |
| | After the study | 0,71 | 1,12 | |

*p*: Wilcoxon test; IPAQ: İnternational Physical Activity Questionnaire; TUG: Times Up and Go; 6MWT: 6 minute walk test; HR: heart rate; MBS: modify Borg scale; m: meter; * Correlation is significant at the 0,05 level.*

*Table 3* shows the pre-study and post-study results of the control group. There were no statistically significant differences between IPAQ and TUG values (p> 0.05). There was statistically significant difference between pre-study and post-study values of the post-study SpO2, post-study systole, recovery and endometrial systolic parameters (p <0.05). Also, a statistically significant difference was found between the pre-study-post-study walking distance of study group and the distance of the last test was longer (p <0.05).

**Table** 3. Comparison of measurements of control group

| Variable | Measurements | Mean | SD | p* |
|---|---|---|---|---|
| **IPAQ/MET** | Before the study | 1610,15 | 1026,39 | 0,119 |
| | After the study | 2025,55 | 1389,75 | |
| **TUG/sec** | Before the study | 7,44 | 1,77 | 0,129 |
| | After the study | 7,20 | 1,52 | |
| **Pre-test SpO2** | Before the study | 97,22 | 1,13 | 0,572 |
| | After the study | 97,29 | 0,78 | |
| **Pre-test HR/bpm** | Before the study | 75,98 | 10,08 | 0,053 |
| | After the study | 74,85 | 10,17 | |
| **Pre-test Systole/mm/Hg** | Before the study | 134,39 | 16,48 | 0,438 |
| | After the study | 132,80 | 16,92 | |
| **Pre-test Diastole/mm/Hg** | Before the study | 84,02 | 9,63 | 0,190 |
| | After the study | 85,12 | 10,15 | |
| **Pre-test Fatigue/MBS** | Before the study | 2,80 | 2,79 | 0,836 |
| | After the study | 2,76 | 2,63 | |
| **Pre-test Dyspnea/MBS** | Before the study | 0,15 | 0,65 | 0,915 |
| | After the study | 0,12 | 0,46 | |
| **Post-test SpO2** | Before the study | 97,61 | 0,95 | 0,045* |
| | After the study | 97,27 | 0,78 | |
| **Post-test HR/bpm** | Before the study | 92,46 | 13,47 | 0,962 |
| | After the study | 91,95 | 12,80 | |
| **Post-test Systole/mm/Hg** | Before the study | 142,32 | 19,30 | 0,010* |
| | After the study | 137,80 | 17,71 | |
| **Post-test Diastole/mm/Hg** | Before the study | 88,41 | 12,27 | 0,230 |
| | After the study | 87,44 | 11,89 | |
| **Walking distance/m** | Before the study | 450,98 | 84,34 | 0,039* |
| | After the study | 471,21 | 71,21 | |
| **Post-test Fatigue/MBS** | Before the study | 4,27 | 2,50 | 0,076 |
| | After the study | 5,02 | 2,29 | |
| **Post-test Dyspnea/MBS** | Before the study | 1,37 | 1,76 | 0,380 |
| | After the study | 1,63 | 1,44 | |
| **Recovery SpO2** | Before the study | 97,46 | 1,85 | 0,534 |
| | After the study | 97,80 | 0,64 | |
| **Recovery HR/bpm** | Before the study | 82,49 | 12,05 | 0,021* |
| | After the study | 79,68 | 10,29 | |
| **Recovery Systole/mm/Hg** | Before the study | 135,12 | 16,14 | 0,001* |
| | After the study | 129,27 | 14,52 | |
| **Recovery Diastole/mm/Hg** | Before the study | 85,24 | 10,18 | 0,124 |
| | After the study | 83,18 | 10,17 | |
| **Recovery Fatigue/MBS** | Before the study | 2,78 | 2,34 | 0,842 |
| | After the study | 2,83 | 2,06 | |
| **Recovery Dyspnea/MBS** | Before the study | 0,44 | 0,78 | 0,339 |
| | After the study | 0,61 | 0,97 | |

*p*: Wilcoxon test; IPAQ: İnternational Physical Activity Questionnaire; TUG: Times Up and Go; 6MWT: 6 minute walk test; HR: heart rate; MBS: modify Borg scale; m: meter.*

*Table 4* shows results of comparison of post-study results of postmenopausal women participating in the study, including IPAQ, TUG and 6MWT parameters. According to the status of receiving preventive physiotherapy training, there was not a statistically significant difference (p> 0.05). Only, pre-study dyspnea values of women who received preventive physiotherapy training were lower than those who did not receive training (p <0.05).

**Table 4.** Comparison of values of participants after the training

| Variable | Group | Mean | SD | p* |
|---|---|---|---|---|
| **IPAQ/MET** | Training | 3013,95 | 3307,61 | 0,501 |
| | Control | 2025,55 | 1389,75 | |
| **TUG/sec** | Training | 7,17 | 1,01 | 0,673 |
| | Control | 7,20 | 1,52 | |
| **Pre-test SpO2** | Training | 97,37 | 0,77 | 0,555 |
| | Control | 97,29 | 0,78 | |
| **Pre-test HR/bpm** | Training | 75,76 | 10,41 | 0,948 |
| | Control | 74,85 | 10,17 | |
| **Pre-test Systole/mm/Hg** | Training | 129,88 | 15,19 | 0,352 |
| | Control | 132,80 | 16,92 | |
| **Pre-test Diastole/mm/Hg** | Training | 81,95 | 7,06 | 0,110 |
| | Control | 85,12 | 10,15 | |
| **Pre-test Fatigue/MBS** | Training | 2,59 | 2,51 | 0,758 |
| | Control | 2,76 | 2,63 | |
| **Pre-test Dyspnea/MBS** | Training | 0,61 | 1,05 | 0,005* |
| | Control | 0,12 | 0,46 | |
| **Post-test SpO2** | Training | 97,20 | 0,84 | 0,622 |
| | Control | 97,27 | 0,78 | |
| **Post-test HR (bpm)** | Training | 91,93 | 15,44 | 0,813 |
| | Control | 91,95 | 12,80 | |
| **Post-test Systole/mm/Hg** | Training | 135,49 | 15,56 | 0,493 |
| | Control | 137,80 | 17,71 | |
| **Post-test Diastole/mm/Hg** | Training | 84,27 | 7,71 | 0,206 |
| | Control | 87,44 | 11,89 | |
| **Walking Distance/m** | Training | 476,68 | 76,72 | 0,781 |
| | Control | 471,21 | 71,27 | |
| **Post-test Fatigue/MBS** | Training | 4,34 | 2,42 | 0,142 |
| | Control | 5,02 | 2,29 | |
| **Post-test Dyspnea/MBS** | Training | 2,07 | 1,85 | 0,303 |
| | Control | 1,63 | 1,44 | |
| **Recovery SpO2** | Training | 97,88 | 0,75 | 0,426 |
| | Control | 97,80 | 0,64 | |
| **Recovery KH/bpm** | Training | 79,95 | 11,18 | 0,756 |
| | Control | 79,68 | 10,29 | |
| **Recovery Systole/mm/Hg** | Training | 127,56 | 11,13 | 0,551 |
| | Control | 129,27 | 14,52 | |
| **Recovery Diastole/mm/Hg** | Training | 81,22 | 4,85 | 0,462 |
| | Control | 83,17 | 10,17 | |
| **Recovery Fatigue/MBS** | Training | 2,32 | 2,14 | 0,183 |
| | Control | 2,83 | 2,06 | |
| **Recovery Dyspnea/MBS** | Training | 0,71 | 1,12 | 0,710 |
| | Control | 0,61 | 0,97 | |

*p*: Mann-Whitney U test; IPAQ: International Physical Activity Questionnaire; TUG: Times Up and Go; 6MWT: 6 minute walk test; HR: heart rate; MBS: modify Borg scale; m: meter;*

## Discussion

After our evaluation, it was seen that the women who participated in our study were active during the day and they had the same level of physical activity with women of the same age in the literature (31). The mean age of women at the age of 60 and the majority of those who retired were at the level of moderate physical activity. However, we think that this result can only be caused by the fact that the study is carried out in a central city and the level of physical activity of women living in rural areas of our country should also be determined.

Carolina et al. (2008) divided 44 postmenopausal women into 3 groups. Group 1 included hormone replacement therapy, group 2 physical activity and group 3 as control group. After 24 weeks of treatment, only the physical activity group showed an increase in quality of life (32). As stated in this study, the hormone therapy that maintains its frequency of use is ineffective, on the contrary, the risk of developing breast cancer after hormone replacement therapy and the fact that women still accept these treatments unconsciously reveal that the awareness about physical activity in women should be increased. Although many studies have been conducted on the benefits of physical activity in postmenopausal women, studies on women's education are lacking. In our study, it was determined that the education given to women was effective in increasing the level of physical activity in daily life. Therefore, we believe that training for increasing physical activity is important in this population and making it a state policy is necessary to protect against the consequences of physical inactivity.

De Souza Santos et al. (2011) gave 323 women 30 sessions of walking or dance training. Functional capacity of women before and after 10 months of treatment was evaluated by 6 minutes walking test. There was no significant change in the functional capacity of women after this study (33). Contrary to this study, after the training for awareness, a significant difference was observed in the functional capacity of women in postmenopausal period in 6 minute walk test. We think that this difference is more effective than daily planned exercise program, and it is more effective to realize awareness activities about daily physical activity necessity.

Kemmler et al. (2011) reported that 46-year-old women, aged 69 years old, had received aerobic and dynamic resistant training for 18 weeks, both under the supervision of a physiotherapist and as a home program. They used TUG test to evaluate their functional capacity. The mean TUG data of the study before treatment (7.66) and the control group (7.51) were similar to the mean data of the study (7.78) and the control group (7.44). In our study, the similarity of TUG scores with the scores in the literature shows that the functional capacity of women is similar (33).

In our study, it was observed that women who received education before the training were 133.66mmHg before the 6 minute walk test, 139,27mmHg immediately after and 132.20mmHg after recovery. After 2 months, SBP values decreased statistically significantly: 129.88mmHg; 135.49mmHg; 127,56mmHg. Whelton et al. (2001), a total of 2419 participants in the meta-analysis of randomized controlled trials examined 54 clinical studies and aerobic exercise systolic blood pressure was 3.84mmHg, diastolic blood pressure was found to decrease 2.58mmHg (35).

We think that one limitation of our study is that the participants were not questioned whether they have already exercised before the study. Also, following participants about the prescribed exercises during the 8 weeks may have produced better results in advantage of study group.

## Conclusion

In our study, no statistically significant difference was found between the groups after the awareness training of women but better positive results were observed in the study group. We believe that different results can be obtained if different training model or larger group and long-term study are performed in the next studies. According to these results, it is recommended that women should be informed in detailed about physical activity before entering menopause. Physiotherapists should be well aware of the characteristics of menopause and the role of changes in the quality of life and their role in preventing them. Developing a “menopause school” style model for more modest lifestyle changes will also provide a significant benefit.

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*Corresponding author*
Beliz Belgen Kaygisiz
European University of Lefke, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Lefke, Northern Cyprus, TR-10 Mersin, Turkey
Affiliation ID: 60012620
E-mail address: *bkaygisiz@eul.edu.tr*

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