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Original Article

Fatigue and Physical Activity Levels of 65 and Over Older People Living in Rest Home†

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SUMMARY

Background: The purpose of this study was to investigate fatigue and habitual physical activity in older people aged 65 and over living in rest home and to examine the relationship between these two variables.
Methods: As a data-collecting device, the CHAMPS questionnaire (physical activity assessment questionnaire) was modified, and the Fatigue Severity Scale was used. An additional questionnaire was administered to obtain demographic data.
Results: One hundred and twenty-four individuals completed the study (mean age 74.98 ± 7.05 years, 37.1% female). Of these individuals, 50 (40.3%) reported fatigue symptoms. Weekly caloric expenditure in all activities was 3,896 ± 5,297 kcal. Individuals' average weekly energy consumption calculated in terms of CHAMPS was 2,158 ± 3,781 kcal for the fatigue group. Higher fatigue was associated with lower physical activity levels ($p < 0.00$, $r = -0.263$). According to binary logistic regression analysis, it was found that CHAMPS decreased as the value of fatigue increased ($p < 0.00$).
Conclusion: Fatigue is a symptom often found among older people. The results suggest that higher fatigue was associated with lower physical activity levels in older people.

1. Introduction

It is a universal fact that the human organism starts with birth and ends in death. Aging is an unavoidable and irreversible phenomenon which is true for all living beings. Research has shown that the population of the world is gradually increasing; aging and the number of the old in the total population are also increasing. It is reported that 2/3 of the 600 million old people in the world live in developing countries[1].

Recently, the importance of physical activity for elderly people who are productive members of society has been increasingly emphasized to minimize the disabilities, diseases, and the negative effects of aging so that the elderly can continue their lives independently. The studies showing the positive effects of physical activity on health and the prevention of diseases are on the increase. Physical activity in the elderly is defined as a behavioral risk factor which is convertible to quality of life and health[2]. The elderly's physical activity habits, specific to age, are necessary in order to plan physical activity programs and to encourage participation. More knowledge about the physical activity habits of the elderly who live in rest homes is needed.

Fatigue is a significant geriatric syndrome which has only recently been defined in the elderly population, and it can affect work performance, family life, and social relationships negatively[3]. While the fatigue rate in the general population is 10–25%[4], it is as high as 50% in the elderly population[5]. In the literature, we haven't found any information about the fatigue rate in the elderly people who reside in rest homes.

Fatigue is most commonly found in the elderly whose activities are limited[6], and it is reported that fatigue is the result of incapacity in elderly women[7]. The relationship between fatigue and physical activity in the elderly has been the subject of research in only two studies[8,9].

Therefore, the aim of this study was to determine physical activity habits and prevalence of fatigue in people aged 65 and over and the relationship between these two factors.

2. Material and Methods

One hundred and twenty-four individuals who live in state rest homes and who met the study's criteria were surveyed.

The criteria of the study were that the individuals be aged 65 and over, be able to do daily routines independently, and be able to

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Table 1
Sociodemographic variables related to fatigue in the elderly

	Fatigue group ($N = 50$, 40.3%)	Non-fatigue group ($N = 74$, 59.7%)		p	All groups ($N = 124$)
Age (yr)	75.94 ± 7.41[a] 75 (65–93)	74.33 ± 6.78[a] 75 (65–90)	$t = -1.24$	>0.05	74.98 ± 7.05 75 (65–93)
Gender					
Female	28 (56.0%)[b]	18 (24.3%)[b]	$\chi^2 = 12.83$	0.00	46 (36.2%)
Male	22 (44.0%)	56 (75.7%)			78 (61.4%)
Income (TL)	315.30 ± 195.44 300 (65–700)	356.55 ± 231.85 400 (65–900)	*t = 1.03*	>0.05	339.91 ± 218.02 350 (65–900)
Stay duration (yr)	3.46 ± 2.57 3 (1–11)	3.04 ± 2.74 2 (1–18)	$t = -0.85$	>0.05	3.20 ± 2.67 2.25 (1–18)
Marital status					
Married	10 (20.0%)	10 (13.5%)	$\chi^2 = 0.92$	>0.05	20 (15.7%)
Widow	40 (80.0%)	64 (86.5%)			104 (81.9%)
Education					
Not literate	42 (84.0%)	44 (59.5%)	$\chi^2 = 10.32$	0.01	86 (67.7%)
Primary school	8 (16.0%)	22 (29.7%)			30 (23.6%)
Middle school		3 (4.1%)			3 (2.4%)
High school		5 (6.8%)			5 (3.9%)
Disorders					
Stomach	2 (4%)	2 (2.7%)	$\chi^2 = 2.76$	*>0.05*	4 (3.1%)
Dyspnea	2 (4%)	1 (1.4%)			3 (2.4%)
Diabetes	6 (12%)	9 (12.2%)			15 (11.8%)
Hypertension	21 (42%)	27 (36.5%)			48 (37.8%)
Rheumatism	4 (8%)	5 (6.8%)			9 (7.1%)
Heart	5 (10%)	7 (9.5%)			12 (% 9.4)
KOAH	1 (2%)	0			1 (0.8%)
Osteoporosis	2 (4%)	1(1.4%)			3 (2.4%)
Asthma	3 (6%)	1(1.4%)			4 (3.2%)
Medicine use					
Yes	46 (92%)	54 (73.0%)	$\chi^2 = 7.31$	0.02	100 (78.1%)
No	4 (8%)	20 (27.0%)			24 (18.9%)
Mental scores	19.98 ± 4.56 20 (12–30)	21.41 ± 5.32 22 (12–30)	$t = 1.56$	>0.05	20.83 ± 5.06 21 (12–30)

[a] $\overline{X} \pm SD$ = mean ± standard deviation.
[b] N (%).

be communicated with. The study was ratified by the ethics committee of the medical faculty, and consent form was signed by the individuals who participated in the study.

2.1. Measurements

2.1.1. Fatigue severity scale

In our study, the Fatigue Severity Scale (FSS) validated by Keser et al.[10] was used. FSS contains nine statements, each is scored from 0 to 7. The scoring algorithm defines scores of 64 points as indicating no fatigue, 4.1–4.9 as indicating medium fatigue, and P5.0 as indicating serious fatigue. In the present study, the internal consistency of the FSS, according to Chronbach's alpha was 0.93 for older persons.

In this study, a modified version of the physical activity questionnaire CHAMPS (intra-society physical activity programs for the elderly) was used. The questionnaire developed by Stewart et al.[11] includes 41 questions. The number of the questions was reduced from 41 to 33 so that they could be suitable for the structure of the Turkish society, with the permission of Dr. Stewart. The participants were asked about typical activities that they had performed during the last week of the last month, and if they answered yes, they were asked how many times a week they did the activities and how long they took (they were given enough time to remember them easily). It took 20 minutes to answer the questions. Their weekly calorie consumption was calculated by judging all the physical activities noted in the questionnaire.

Cognitive function was evaluated by the Mini Mental Status Scale (MMSS). This is a scale which is suitable and reliable in a Turkish context and can be used in clinical and epidemiological studies[12]. The total score in MMSS is 30. Scores of 23 or below are accepted as a sign of cognitive disorder.

The body mass indices of the individuals in the study were calculated by measuring their heights and weights (kg/m^2).

2.1.2. Statistical analysis

To compare continuous variables, parametric and nonparametric analyses were performed by testing the appropriateness of variables to normal distribution. The Student's *t*-test was used to

Table 2
Physical activity scores related to fatigue in the elderly

	Fatigue group ($N = 50$, 40.3%)	Non-fatigue group ($N = 74$, 59.7%)		p	All groups ($N = 124$)
BMI (kg/m^2)	28.87 ± 4.76[a] 28.77 (18.67–40.86)	27.29 ± 4.12[a] 27.41 (19.30–41.46)	$t = -1.96$	0.05	27.93 ± 4.44 27.90 (18.67–41.46)
Physical activity total (kcal)	2,158.06 ± 3,781.14 1,814.95 (110–8,087.89)	4,071.79 ± 4,849.87 3,935.64 (214.99–18,801.89)	$t = 3.36$	<0.00	2,890.90 ± 3,297.65 2,875.15 (110–18,801.89)

BMI = body mass index.
[a] $\overline{X} \pm SD$ = mean ± standard deviation.

compare averages according to the variables. A Chi-square test was used to compare the qualitative variables. The Pearson coefficient was calculated in order to determine the level and direction between the variables. Binary logistic regression analysis was used to determine the variables which are considered to influence fatigue from the point of risk factors.

Parametric and nonparametric analyses were performed using SPSS for Windows, version 15.0. Values of $p < 0.05$ were considered significant.

3. Results

The average age of the study group was 74.98 ± 7.05 (65–93) years, and that of the fatigue group was 75.94 ± 7.4 (65–93) years. Forty-six women made up 36.2% of the whole group (Table 1).

The fatigue group included 50 individuals, and they made up 40.3% of the elderly people.

There was a statistical difference between the fatigue groups and non-fatigue groups from the point of gender, education, and use of medicine ($p < 0.05$) (Table 1).

There was also a statistical difference between the fatigue groups and non-fatigue groups as regards to total physical activity score ($p < 0.00$) (Table 2).

There was a significant relationship between the total physical activity score, FSS, MMSS, and age variables ($p < 0.00$) (Table 3).

According to binary logistic regression analysis, body mass index and physical activity variables which affect fatigue remained in the model (Table 4).

Table 4
Effective variables related to fatigue in the elderly

Binary logistic regression analysis			
Model 1	Odds ratio	95% CL	*p*
BMI	1.103	1.007–1.207	0.03
Physical activity total	1.000	1.000–1.000	0.00

BMI = body mass index.

4. Discussion

Our study showed that fatigue is a significant symptom in elderly people who live in rest home, and it is related to their physical activity levels. The rate of fatigue in the elderly living in rest home is 40.3%. In the literature, the rate of fatigue in elderly women who had myocardial infarct is 67%[9], but Liao and Ferrell[13] found that the rate of fatigue in the elderly is 98%. We think that the rate observed in our study is lower than in the literature because of the characteristics of our group. Our group was made up of individuals who were independent and able to perform daily routines and who didn't have many internal health problems. In the literature studies included only women who had suffered myocardial infarct and elderly individuals who were dependent on others for their daily routines. The results of our study are the first to determine the fatigue rate of a specific group.

Fatigue has multi-factors such as the result of an illness or a result of insomnia, depression, pain, and the use of medicine[14]. The pathology of fatigue has not yet been illuminated in elderly persons. Natural changes and the disadvantages of aging might contribute to fatigue[15].

When all activities were considered at the end of this study it was seen that there was energy consumption of 2,890 calories per week. When these values were compared to those found in the literature, it was seen that people of age 65 and over living in rest home were not physically active enough. Their weekly consumption of calories was lower than necessary for them to benefit from exercise. It was seen that resistant exercise that is necessary to enhance muscle strength and sturdiness was insufficient. It was found that individuals in rest homes preferred activities such as slow walks, visiting friends and their families, and walking to fulfill a task. In the study conducted by Stewart et al.[11], they found that individuals aged 65 and over expended 2,420 calories for all exercise-related activities. The study conducted by Goggin and Morrow[16] which was applied to individuals aged 60 and over showed that even though 89% of Americans knew that physical activity was good for health, 69% of them didn't participate in enough physical activities.

The advantages of participating in physical activities should be explained to the elderly, and the places they live in should be arranged in such a way that people can walk and perform their activities including walking easily. Participation in activities which strengthen the muscles or make them steady should be encouraged in order to prevent disabilities and disorders which arise from loss of muscle mass, the result of which is the loss of muscle strength.

We found that higher levels of physical activity were related to lower levels of fatigue. In the literature, it was found that there was a significant relationship between physical activity and fatigue in both the elderly living in society[8] and in elderly women[9] who experienced myocardial infarct.

4.1. The limitations of the study

The relationship between the cause and conclusion might be limited because this was a sectional study. Fatigue can affect physical activity and *vice versa*. It is necessary to repeatedly measure calorie consumption and physical activity levels and there is need for longitudinal studies.

5. Conclusion

Our study on elderly people aged 65 and over who live in rest homes showed that fatigue is a significant symptom, weekly consumption of calories in fatigue elders is low, and physical activity is related to fatigue. Future studies should concentrate upon types and levels of physical activities that can influence fatigue.

Table 3
Pearson's correlations between variables

	FSS	BMI	Mental test	Age
Physical activity total (kcal)	$r = -0.263$ $p < 0.00$	$r = 0.02$ $p > 0.05$	$r = 0.417$ $p < 0.00$	$r = -0.259$, $p < 0.00$

FSS = Fatigue Severity Scale; BMI = body mass index.

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