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Araştırma Makalesi

Examination Of The Impact Of Zeybek Dances On Elderly People In Terms Of Their Falling Efficiency and Mobility

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Abstract

In this study, it was aimed to examine the effects of 12-week zeybek dance on the falling activities and mobility of the elderly. A total of 20 elderly individuals, 10 in the experimental group and 10 in the control group, living in the nursing home of Edirne Governorship, participated in the research group voluntarily. From the measurements of experimental and control group pre-test and post-test physical measurements, fall efficiency and mobility are taken respectively. In comparison of scores between (control-experiment) Mann Whitney U test; Wilcoxon signed-rank test was used to compare the pre-test and post-test scores within the group. Rosenthal's r statistics were used to calculate the effect size. A statistically significant positive difference was found between pre-test and post-test scores ($p<0.05$). According to the results of the research, statistically significant differences were found in the mobility and fall efficiency variables of the elderly individuals who participated in the 12-week Zeybek dance practices ($p<0.05$). Zeybek practices have shown that it significantly reduces fear of falling and affects mobility positively. It was concluded that the effect of physical inactivity on the anxiety of falling is high in the elderly. ($r > 0.50$).

Keywords: Falling in Elderly People, Zeybek Folk Dance, Mobility

Yaşlılarda Zeybek Oyunlarının Düşme Etkinliği ve Mobiliteleri Üzerine Etkisinin İncelenmesi

Öz

Bu araştırmada, 12 haftalık zeybek oyunlarının yaşlıların düşme etkinlikleri ve mobiliteleri üzerine etkisinin incelenmesi amaçlanmıştır. Araştırma grubuna, Edirne Valiliği huzurevinde yaşayan, 10 deney grubu, 10 kontrol grubu olmak üzere toplam 20 yaşlı birey gönüllü katılım göstermiştir. Deney ve kontrol grubu ön test ve son test fiziksel ölçümlerinden sırasıyla; düşme etkinliği ve mobilite alınmıştır. Bağımsız gruplar arası puanların karşılaştırılmasında Mann Whitney U testinden; grup içinde ön test ve son test puanlarının karşılaştırılmasında Wilcoxon işaretli sıralar testinden yararlanılmıştır. Etki büyüklüğünün hesaplanmasında Rosenthal'in r istatistiği kullanılmıştır. Deney grubu ve kontrol grubu ön test - son test puanları arasında istatistiksel olarak pozitif yönde anlamlı farklılık bulunmuştur ($p<0,05$). Araştırma sonucuna göre 12 haftalık Zeybek oyunu çalışmalarına katılan yaşlı bireylerin mobilite ve düşme etkinliği değişkenlerinde istatistiksel olarak anlamlı farklılıklara rastlanmıştır ($p<0,05$). Zeybek çalışmalarının düşme endişesinde anlamlı düzeyde

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azalttığı ve mobiliteyi pozitif yönde etkilediği ortaya konmuştur.Yaşlılarda fiziksel aktivitesizliğin düşme endişesi üzerindeki etkisinin yüksek olduğu sonucuna varılmıştır. (r > 0,50).

Anahtar Kelimeler: Yaşlılarda Düşme , Zeybek Halk Dansları, Mobilite

INTRODUCTION

The World Health Organization (WHO) defines aging as the gradual decrease in the body's capacity to respond appropriately to internal and external stimuli (Kesioğlu, Bilgiç, Pıçakçıefe, & Uçku, 2003). Physiological and physical changes in elderly individuals restrict their ability in the performance of certain activities and negatively affect their quality of life, especially in terms of health. Evaluation of the quality of life of the elderly, and especially, of their physical condition in relation to walking, balance, joint range of motion, and muscle strength has a critical place in clinical practice. Examination of the findings of the World Health Organization indicates that the highest rate of death in old age is related to circulation, while instances of falling takes the second place. Instances of falling are one of the biggest problems in old age, and care centers for the elderly. It has been determined that 46% of these elderly individuals are 65 and over, and the rate of instances of falling increases by 7.8% after the age of 80. It is seen that the falling rate of the elderly with mobility problems is 41.5% higher than those without mobility problems (Akgör, 2017). There is qualified evidence from clinical studies, systematic reviews and meta-analyses that regular strength and balance training can reduce the risk of falls by 15% to 50% in community-dwelling older adults (Kirsti, 2015). When the studies in the literature are examined, it is seen that dance practices improve physical fitness, static dynamic balance and lower extremity strength in elderly individuals (Vaccaro, 2019), walking positively affects dynamic mobility (Arguelles, Mansilla, Antunez, Ardila, & Munoz, 2015), When the effect of traditional folk dances on the elderly is examined, it is seen that it improves the static and dynamic balance (Noopud, 2019), also positively affects mobility (Lim, Park, Kim, Kim, & Chae, 2010), it has been determined that it affects physical fitness positively (Argiriadou, 2018). Studies show that the elderly are generally about to develop their physical and motoric features. *Zeybek* is a Turkish folk dance prevalent in Western Anatolia. *Zeybek* folk dance features movements such as intense zeybek which involves stepping from the heel to the sole, and turns and pulling the knees up whilst walking, squatting and foot steps, knee tapping, bouncing (swift). (Gülbeyaz, 2005). Zeybek folk dance was performed for 12 weeks, 2 days a week (Monday-Thursday). In the research, Harmandalı Zeybek was taught in the first four weeks of the 12 weeks, Kerimoğlu Zeybek in the second four weeks and Çökertme Zeybek in the third four weeks, all three being types of Zeybek. Experimental research, especially traditional dance interventions, aimed directly at reducing falls, which is one of the most life-threatening problems experienced by the elderly, is almost non-existent. In this respect, it is considered that our research will contribute to the literature..

Research Aims

The aim of this study is to investigate the effect of 12-week Zeybek dance on mobility and falling activities in the elderly aged 65 and over.

METHOD

Research Model

In this research, pretest-posttest design with experimental and control groups, which is one of the quasi-experimental methods, was used as a model. This design is one of the research models in which the data desired to be observed is produced under the direct control

of the researcher in order to try to determine the cause and effect relationships (Karasar, 2009).

Sample Group

The research group is located in the Edirne Governorship nursing home. It consists of 20 elderly individuals, 10 in control and 10 in experimental groups, aged 65 and over, who voluntarily participated in the study, who can speak and understand Turkish fluently, and who do not have any physical, psychological or mental disabilities. The research group is formed by the convenience sampling method, which is one of the non-random sampling methods.

Data Collection Tool

From the measurements of experimental and control group pre-test and post-test; FES-I Falls Efficacy Scale International was used to measure fall efficiency, and Rivermead Mobility Index Test and final tests were taken to measure mobility respectively.

Fes-I Falls Effiacy Scale

It consists of 16 items and two factors, developed by Ziegler et al. and adapted into Turkish by Ulus et al. (2011), and designed in a 4-point likert structure (Ulus et al., 2011). It is a self-report questionnaire that provides anxiety-level information about falls during activities of daily living.

The questionnaire contains 16 items scored above four points (1 = not at all concerned - 4 = very worried), providing a total score of 16 (no worries) to 64 (extremely worried). To assess the validity of FES-I, MBI was compared with RÖMORG and BBS. As the scores obtained from the scale increase, the level of anxiety also increases. The item internal consistency reliability coefficient of the scale is 0.94. The correlation between the test-retest and all the items used in the scale was found to be high and significant.

Rivermood Mobility Index

The scale, which was developed by Tinetti et al. (1990) and adapted into Turkish by (Akın and Emiroğlu, 2007), consists of 15 items. RMI is an index based on measuring mobility status and includes one-dimensional mobility activities. Only 1 item, consisting of 14 questions and one observation, including a series of sequential activities according to the Guttman Scale, is scored by the interviewer, based on the individual's self-report in the answers to the questions. 1 point is given for the "yes" answer given to the questions, and 14 points and below indicates a mobility problem, 15 points indicate that there is no problem in mobility, and 0-15 points can be obtained (Akın & Emiroğlu, 2007).

Procedure

Zeybek Dance Programme

Zeybek dances were practiced with the experimental group for 12 weeks, 2 days a week (Monday-Thursday). Harmandalı Zeybek was taught in the first four weeks of 12 weeks, Kerimoğlu Zeybek was taught in the second four weeks, and Çökertme Zeybek was taught in the third four weeks. When the literature is examined, it is stated that aerobic exercises should last at least 6-8 weeks. However, in the first training phase, when the exercise program is adapted in the first 3 months, it should include low-intensity aerobic or resistance and calisthenic exercises (Ergün & Baltacı, 2018). Therefore, we limited our study to 12 weeks. Harmandalı Zeybek, Kerimoğlu Zeybek & Çökertme Zeybek are performed in 9 strokes, 3+2+2+2 during which the weight distribution is transferred from one foot to the other during Walking; and also during the rotations in its own axis, the weight is on the left side in the anterior axis, and when the arms are raised, the right foot is externally rotated and bouncing is performed. The trunk and knees perform flexion while approaching the ground for squatting. In Kerimoğlu Zeybek, arms are raised to the level of head with a horizontal adduction on the shoulders while the right hip and the knee perform flexion. With the weight step, the right foot claw is put next to the left foot, while walking, one of the arms is lowered and the shoulder is internally rotated,

and the hand is taken to the back; after the same movement on both sides, the squatting movement is performed, while performing rotation in the trunk, one of the arms is lowered and both knees perform flexion. (Ötken, 2002). Çökertme is a single-episode folk dance with free hand movements. The first step starts with the left foot, and then walking is performed by cross-stepping of the right and left feet. During Çökertme Zeybek, which consists of 4 strokes and 2 measures, arms are taken to the open position in front and with bent at the elbows, from above the waist, to the sides, above the head, and lowered slowly to the sides, with right arm placed above and the left arm below. The other movement starts with the left step, turning from the left and walking with the right foot diagonally. It can be completed by stepping forward and squatting with the right foot (Gülbeyaz, 2005).

Table 1. Zeybek Dance Programme

	Training frequency	Training Days	Training Stint	Sort of Zeybek Folk Dance	Training Intensity	Pulse
1.Week	2	Monday-Thursday	40'	Harmandalı	%40-60	94-107 ±10
2. Week	2	Monday-Thursday	40'	Harmandalı	%40-60	94-107 ±10
3. Week	2	Monday-Thursday	40'	Harmandalı	%40-60	94-107 ±10
4. Week	2	Monday-Thursday	40'	Harmandalı	%40-60	94-107 ±10
5. Week	2	Monday-Thursday	50'	Kerimoğlu	%40-60	94-107 ±10
6. Week	2	Monday-Thursday	50'	Kerimoğlu	%40-60	94-107 ±10
7. Week	2	Monday-Thursday	50'	Kerimoğlu	%40-60	94-107 ±10
8. Week	2	Monday-Thursday	50'	Kerimoğlu	%40-60	94-107 ±10
9. Week	2	Monday-Thursday	60'	Çökertme	%40-60	94-107 ±10
10. Week	2	Monday-Thursday	60'	Çökertme	%40-60	94-107 ±10
11. Week	2	Monday-Thursday	60'	Çökertme	%40-60	94-107 ±10
12. Week	2	Monday-Thursday	60'	Çökertme	%40-60	94-107 ±10

Data Collection

The data were obtained face-to-face and on the basis of voluntary participation from the Edirne Governorship nursing home, by explaining the purpose and content of the research to the participants.

Data Analysis

IBM SPSS 26.0 program was used for data analysis. The skewness and kurtosis values were used to determine the normality distribution of the scale and test scores. The fact that the skewness and kurtosis coefficients used in the normal distribution feature of the scores obtained from the variable are within the limits of ±1 can be interpreted as the scores do not show a significant deviation from the normal

distribution (Büyüköztürk, 2011). Mann Whitney U analysis is used for comparison of scores between groups (control-experiment) because at least one of the variable pairs (eg, experiment-control, pre-post) did not show normal distribution and this problem could not be overcome despite the transformations; Wilcoxon signed-rank test was used to compare the intra-group pre-test and post-test scores. In data statistical analysis, the confidence interval was determined as 95% (significance level 0.05 $p<0.05$). Rosenthal's r statistics were used when there was a significant difference between the pretest and posttest scores of Zeybek studies to determine the effect size on fall anxiety and mobility. Rosenthal's formula for r is as follows. It can be calculated by dividing the standardized Z statistic as an absolute value by the square root of the total number of samples in both groups

(in the Wilcoxon test, the square root of the sample total at two different times). $0.10<d<0.30$ "small effect" in Rosenthal's r statistic; $0.30<d<0.50$ "moderate effect"; $d\geq0.50$ is accepted as "major impact" (Rosenthal, 1994; Rosenthal, 2000; Tomczak & Tomczak, 2014).

$$Rosentha's\ r\ = \frac{|Z|}{\sqrt{n}}$$

RESULTS

In this section, in line with the purpose and method of the research, the fall efficiency and mobility measurements of the volunteer participants in the experimental and control groups are presented in tables by interpreting the pre-test and post-test score comparisons both for the group and between the groups.

In Table 2, descriptive statistics of the pre-test and post-test scores of the experimental group (Zeybek practice group) are given.

Table 2. Descriptive statistics of the experimental group (Zeybek practice group) scores

Scale/Test	Test Time	n	Min.	Max.	$\bar{X}$	Std.	S.	K.
Fall Efficacy	Pre-test	10	20,00	46,00	25,10	8,01	2,34	5,95
	Post-test	10	18,00	33,00	21,40	4,35	2,47	6,88
Mobility Index	Pre-test	10	10,00	15,00	12,80	1,62	-0,19	-0,48
	Post-test	10	12,00	15,00	13,40	1,07	0,32	-0,88

S.: Skewness K.: Kurtosis $\bar{X}$: Mean Std. : Standart Deviation

The Fall Efficacy pre-test mean score of the elderly participants in the Zeybek practice group was 25.10±8.01; The mean of the Fall Efficacy post-test score was determined as 21.40±4.35. The range of score values that can be obtained from the scale is 16-64. Accordingly, the elderly participants in the Zeybek practice group had low concerns about the possibility of falling before and after the Zeybek practice.

The Mobility Index pre-test mean score of the elderly participants in the Zeybek practice group was 12.80±1.62; Mobility Index post-test mean score was found to be 13.40±1.07. According to the lowest (0) and highest (15) points that can be obtained, the elderly participants in the Zeybek practice group have a high level of mobility before and after the zeybek exercises, but there are mobility problems according to the cut-off score of 14.

Table 3. Descriptive Statistics of Control Group Scores

Scale/Test	Test Time	n	Min.	Max.	$\bar{X}$	SS	S.	K.
Fall Efficacy	Pre-test	10	17,00	41,00	23,70	8,26	1,42	0,88
	Post-test	10	17,00	44,00	25,70	8,81	1,21	0,60
Mobility Index	Pre-test	10	10,00	15,00	13,10	1,52	-0,68	0,62
	Post-test	10	11,00	15,00	12,40	1,26	0,69	0,59

S.: Skewness K.: Kurtosis

The Fall Efficacy pre-test mean score of the elderly participants in the control group was 23.70±8.26; the mean of Fall Efficacy post-test score was determined as 25.70±8.81. Elderly participants in the control group had low concerns about the possibility of falling on both measures.

The mean Mobility Index pretest score of the control group was 13.10±1.52; Mobility Index posttest mean score was found to be 12.40±1.26. Although the elderly participants in the control group had a high level of mobility in both measurements, they experienced mobility problems according to the cut-off score of 14.

Table 4. Comparison Of The Pretest Scores Of The Experimental And Control Groups

Scale/Test	Groups	N	Average	Total	Z	p
Fall Efficacy	Experiment	10	12,10	121,00	-1,22	-0,46
	Control	10	8,90	89,00		
Mobility Index	Experiment	10	9,90	99,00	0,224	0,643
	Control	10	11,10	111,00		

It was determined that the Fall Efficacy and Mobility Index pre-test mean scores of the experimental and control groups before the Zeybek practice did not differ significantly ($p>0.05$).

Table 5. Comparison Of The Post-Test Scores Of The Experimental And Control Groups

Scale/Test	Groups	N	Average	Total	Z	p	Rosenthal's *r*	Impact Level
Fall Efficacy	Experiment	10	9,00	90,00	-1,15	0,252	0,256	minor level
	Control	10	12,00	120,00				
Mobility Index	Experiment	10	12,80	128,00	-1,81	0,070	0,405	moderate level
	Control	10	8,20	82,00				

It was determined that the Fall Efficacy and Mobility Index post-test mean scores of the experimental and control groups did not differ significantly ($p>0.05$). However, the group effect on fall anxiety in the elderly was small ($0.10 < r < 0.30$); It was determined that the group effect on mobility was at a moderate effect level ($0.30 < r < 0.50$).

Table 6. Comparison Of Experimental Group Pre-Test And Post-Test Scores

Scale/Test		N	Average	Total	Z	p	Rosenthal's *r*	Impact Level
Fall Efficacy	Negative Rows	8	4,50	36,00	-2,53	0,012	0,799	Major
	Positive Rows	0	0,00	0,00				
	Equality	2						
	Total	10						
Mobility Index	Negative Rows	1	2,50	2,50	-1,73	0,084	0,547	Major
	Positive Rows	5	3,70	18,50				
	Equality	4						
	Total	10						

It was determined that there was a significant difference ($z=-2.53$; $p<0.05$) between the experimental group (Zeybek practice group) Fall Efficacy pre-test and post-test mean

scores. It was determined that the effect of It was determined that there was no significant difference between the mobility index pretest and posttest mean scores of the experimental group (Zeybek practice group) (p>0.05). It was determined that the effect of Zeybek practice carried out with the experimental group on mobility was at a high level (r > 0.50).

Zeybek practice carried out with the experimental group on fall anxiety was at a high level (r > 0.50) and Zeybek practice caused a significant decrease in fall anxiety.

Table 7. Comparison of Control Group Pre-Test and Post-Test Scores

Scale/Test		N	Average	Total	Z	p	Rosenthal's *r*	Impact Level
Fall Efficacy	Negative Rows	0	0,00	0,00	-2,55	0,011	0,805	Major
	Positive Rows	8	4,50	36,00				
	Equality	2						
	Total	10						
Mobility Index	Negative Rows	7	4,57	32,00	-2,11	0,035	0,667	Major
	Positive Rows	1	4,00	4,00				
	Equality	2						
	Total	10						

It was determined that there was a significant difference (z=-2.55; p<0.05) between Fall Efficacy pretest and posttest mean scores of the control group. Fear of falling increased significantly in the control group who did not do any physical activity (an increase was observed in falling anxiety in 8 participants, but there was no participant with a decreased anxiety score). According to Rosenthal's r coefficient, the effect of physical inactivity on the anxiety of falling in the elderly is at the highest level (r > 0.50).

DİSCUSSION and CONCLUSIONS

When the studies in the literature are examined, it is seen that the effects of exercise on existing cognitive and emotional problems and quality of life are generally examined instead of preventive studies against future problems (Albert et al., 2007; Argiriadou et al., 2017; Douka et al., 2019; Karakaya et al., 2009; Kattenstroth, Kalisch, Holt and Tegenthoff, 2013; Kim et al., 2011; Lykesas, Giosos, Douka, Bakirtzoglou and Chatzopoulos, 2019; Marks, 2016; Mavrovouniotis, Argiriadou and Papaioannou, 2010; McNeely, Duncan and Earhart 2015; Wu et al., 2010; Zilidou et al., 2018)

When the research results are examined; It was determined that the anxiety about the possibility of falling before the application was low in the experimental and control groups, but mobility problems were experienced in both groups.

It was determined that there was a significant difference between the mobility index pretest and posttest mean scores of the control group (z=-2.11; p<0.05). Mobility decreased significantly in the control group, which did not do any physical activity (7 participants had a decrease in mobility, only 1 participant had an increase in mobility). According to Rosenthal's r coefficient, the negative effect of physical inactivity on mobility in the elderly is at the highest level (r > 0.50).

It was determined that zeybek studies carried out with the experimental group caused a significant decrease in fall anxiety and its effect on mobility was at a high level. Fear of falling significantly increased in the control group. As a result of this information, we can say that the effect of physical inactivity on the

anxiety of falling and its negative effect on mobility in the elderly increase to a high level.

When the literature is examined, it is seen that the decrease in mobility increases the risk of falling in the intervention studies conducted on instances of falling in the elderly (Akgör, 2017), and that it increases the hand grip strength, lower extremity strength and flexibility values (Kaldırımcı, 2004), and that there are very few studies on traditional dances and these studies are carried out to examine the effects of motoric features. Studies have shown that it increases balance performance (Noopud, Suputtitada, Khongprasert and Kanungsukkasem, 2019), reduces the risk of falling (Nur, Susanto, Yunanto, Susumaningrum & Rasni, 2022), positively affects flexibility and strength values (Im, Bang and Seo, 2019, has positive effects on physical performance, balance and depression (Eyigor, Karapolat, Durmaz, Ibisoglu, and Cakir, 2009), improves physical fitness as well as psychological well-being (Agiriadou, 2018), increases physical fitness, static balance, lower extremity strength, and cognitive functions (Vaccaro et al., 2019; Serra et al., 2016). Studies in the literature support our research results.

For this reason, it has been concluded that Zeybek dances reduce their falling efficacy and increase their mobility in the elderly. With the decrease in bone density, increase in inorganic substances in the bone and decrease in organic substances as age progresses from adulthood, the probability of fracture is higher in old age than in young individuals. Considering that the self-renewal feature of cells also causes cellular destruction with age, it is seen that regeneration occurs later in old age, so the risks of falling can reach levels that threaten vital functions. In order to increase the quality of life, it is important to carry out studies to prevent falls. Research results support this.

Authors' Statement of Contribution to the Article

Idea/Concept: Sevinç Sermin Yaman, Emine İner; Article design: Sevinç Sermin Yaman, Emine İner; Consulting: Sevinç Sermin Yaman; Data Collection and Processing: Emine İner; Analysis/Comment: Sevinç Sermin Yaman, Emine İner; Literature review: Sevinç Sermin Yaman, Emine İner; Article writing: Sevinç Sermin Yaman, Emine İner; Critical Analysis: Sevinç Sermin Yaman, Emine İner; Source/Material: Sevinç Sermin Yaman, Emine İner; Article Submission Corresponding Author: Sevinç Sermin Yaman

Conflict of Interest

The authors have no conflict of interest to declare.

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Ethics Committee Approval

This study is in line with the Declaration of Helsinki. Ethics Committee. Permission was obtained from the Ethics Committee of Istanbul Gelişim University with its meeting dated 11.02.2022 and numbered 2022-04.

Peer Review

After the blind review process, it was found suitable for publication and accepted.

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