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The Effect of Physical Activity and Selected Games in Leisure Time on the Feeling of Loneliness, Self-Efficacy, and Life Expectancy of Elderly Women

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ORİGİNAL ARTICLE

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Abstract

This study aimed to determine the effect of physical activity and selected games in leisure time on the feeling of loneliness, self-efficacy, and life expectancy in elderly women. The research was a quasi-experimental, pretest-posttest with a control group. The statistical population included elderly women aged over 60 years old in Mashhad's elderly homes. 50 available women were selected as participants. The subjects were divided into three groups: physical activity, game, and control. The subjects (physical activity and game groups) participated in the exercise program with 45 minutes per session and three sessions per week for 8 weeks. The instruments included a questionnaire of UCLA loneliness scale (Russell, 1996), self-efficacy scale (Sherer et al., 1982), and Life expectancy scale (Snyder, 2002). SPSS 24 was used to analyze the data. The results indicated that there is a significant difference between the results of the game group and the control group based on loneliness ($P<0.05$). Also, there is a significant difference between the results of the game and physical activity groups with the control group based on self-efficacy and life expectancy of elderly women. It can be said that playing games in leisure time have a more significant impact than physical activity on loneliness, self-efficacy, and life expectancy in elderly women.

Keywords: Elderly Women, Game, Leisure Time, Life Expectancy, Loneliness, Physical Activity, Self-Efficacy.

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Boş Zamanlarında Uygulanan Fiziksel Aktivite ve Seçilmiş Oyunların Yaşlı Kadınlarda Yalnızlık Duygusu, Öz Yeterlik ve Yaşam Beklentisi Üzerine Etkisi

Bu çalışma, yaşlı kadınlarda boş zamanlarda uygulanan fiziksel aktivite ve seçilmiş oyunların yalnızlık duygusu, öz-yeterlik ve yaşam beklentisi üzerindeki etkisini belirlemeyi amaçlamıştır. Araştırma, kontrol gruplu, öntest-sontest yarı deneysel bir araştırmadır. Çalışma grubunu, Meşhed'in huzurevlerinde kalan 60 yaş üstü yaşlı kadınları içermektedir. 50 gönüllü kadın katılımcı olarak seçildi. Denekler fiziksel aktivite, oyun ve kontrol olmak üzere üç gruba ayrıldı. Denekler (fiziksel aktivite ve oyun grupları) 8 hafta boyunca haftada 3 seans ve seans başına 45 dakika egzersiz programına katılmıştır. Ölçme araçlarını; UCLA yalnızlık ölçeği (Russell, 1996), öz-yeterlik ölçeği (Sherer ve diğerleri, 1982) ve Yaşam beklentisi ölçeği (Snyder, 2002) oluışturmaktadır. Verilerin analizinde SPSS 24 kullanıldı. Sonuçlar oyun grubu ile kontrol grubu sonuçları arasında yalnızlığa dayalı olarak anlamlı bir fark olduğunu göstermiştir. Ayrıca oyun ve fiziksel aktivite sonuçları ile kontrol grubu arasında yaşlı kadınların öz yeterlik ve yaşam beklentisi açısından anlamlı bir fark vardır. Boş zamanlarda oyun oynamanın yaşlı kadınlarda yalnızlık, öz yeterlilik ve yaşam beklentisi üzerinde fiziksel aktiviteden daha anlamlı bir etkiye sahip olduğu söylenebilir.

Anahtar Kelimeler: Boş zaman, Fiziksel Aktivite, Oyun, Yalnızlık, Öz Yeterlilik, Yaşam Beklentisi, Yaşlı Kadın.

Introduction

The increase in the elderly population in the world has caused many social problems. According to the latest reports, 16% of the world's population is over 65 years old, and the number of people over 80 is expected to triple by 2050 (United Nations, 2019). The world's view of aging is changing. In today's world and with the importance of sports and its benefits for the elderly, it is possible to provide them with a healthier and better quality of life by encouraging them to participate in sports activities. Old age is considered to be a transition from one stage to a new stage of life, people over the age of 65 are called elderly. Aging causes changes in the physical and mental state, physical, and cognitive limitations, and functional capacities in the elderly, and the lack of proper understanding of the phenomenon of aging puts this age group at risk of experiencing pressures related to health and daily life (Beard et al., 2016).

Considering that the elderly have more leisure time, paying attention to their leisure time is a necessary issue. Leisure time for the elderly means time to do activities that are done voluntarily and with the personal desire of the person. The leisure time of the elderly can be divided into three main parts: "active leisure" with a specific purpose such as exercising, "social leisure" such as interacting with others, and "leisure for spending extra time" such as watching television. Elderly people can benefit more from health and exercise benefits by participating in leisure sports activities (Nawrocka and Mynarski, 2017). Leisure sports activities in the elderly can lead to an increase in happiness and satisfaction with the quality of life (Maher et al., 2015). The dissatisfaction caused by the aging process can be compensated by choosing an active lifestyle. Active leisure and leisure sports activities that a person is satisfied with, control the growth process of aging and create emotional-social stability for the elderly (Chul-Ho et al., 2020). Also, participating in leisure activities can improve mental health in the elderly and is associated with reducing the possibility of depression in them (Lee et al., 2018). With economic and social changes, participation in physical activities among the elderly is decreasing, and this highlights the increasing importance of physical activity in leisure time (Paudel et al., 2021). Sala et al. (2019), by examining active leisure and sports activities in the leisure time of the elderly, have stated that the pattern of leisure can have positive effects on the quality of life of the elderly. The activity and participation of the elderly in their free time can help them to maintain their cognitive-physical performance and mental health and thus experience a successful old age. Saint-Maurice et al. (2019) stated that long-term participation in leisure-time physical activity is important for reducing the risk of mortality and provides significant health benefits for the elderly.

Among the issues and problems of the elderly, their feeling of loneliness needs special attention. Because the elderly experience it due to various reasons, such as physical defects, loss of loved ones, and weakening of communication (Heravi Karimoy et al., 2007). Adams et al. (2004) and

Mclnnis and White (2001) show that the feeling of loneliness is the source of many psychological imbalances in the elderly such as depression, suicide, and severe despair. Research has shown that feeling of loneliness is a precursor to depression and forgetfulness (Mclnnis and White, 2001). Also, Brady et al. (2020) stated that membership of elderly in a fitness program directly increased physical activity and self-rated health directly decreased social isolation, and indirectly decreased loneliness. Decreased social isolation and loneliness were associated with better self-rated health: social isolation and loneliness had independent direct effects on health, while social isolation also had an indirect effect on health mediated through loneliness.

On the other hand, self-efficacy is one of the variables that are very important to investigate its relationship with loneliness, but in our country, this issue has been less investigated. People's self-efficacy beliefs reflect their level of social confidence so people who feel lonely have less ability in interpersonal relationships. Among the suffering problems that have received little attention is the issue of the feeling of loneliness and ineffectiveness in the elderly, which many of them experiences in different societies, because they are at risk of isolation and loneliness due to the reduction of interactions caused by the lack of physical health and the death of relatives (Shearer and Davidhizar, 1999). In social situations, people have different perceptions about their ability to interact with others. In other words, self-efficacy increases verbal communication and increases social participation, and it can affect all aspects of life and reduce feelings of loneliness by increasing social interactions (Heidari et al., 2016). Mahmudiono et al. (2021) found that self-efficacy in performing the physical activity was significantly related to the duration of physical activity.

Another consequence of aging is a decrease in life expectancy. Life expectancy is a criterion for determining the average lifelong of people in a society. This criterion shows us how many years each person should expect to live in the country where she/he was born (Burke, 2012). The increase in people's life expectancy has created an expectation in them to spend more years in health and activity so this issue has prompted the curators to replace the word life expectancy with the concept of hope for a healthy life, not the concept of the absence of disease with the meaning of life without functional limitations (Davidson and Goldfried, 1976). In this regard, Monma et al. (2019) found that for middle-aged males, the ratio of those engaged in exercise or sports in each year from 2005 to 2010 was positively correlated with healthy life expectancy; this relationship was found in the ratio of middle-aged engaging in exercise or sports “with families or friends”. For females, such a relationship could only be found in the ratio of middle-aged females engaged in exercise or sports in 2008, and those engaging in exercise or sports “with families or friends” in 2006, 2008 and 2010. Also, Mobaraki et al. (2022) stated that increasing adherence to physical activity can lead to improving the life expectancy of the elderly, ultimately providing a good quality of life for them.

Since the role of regular physical activities in reducing immobility, increasing life expectancy, improving mood, and preventing or delaying cognitive disorders in the elderly has been emphasized in numerous research (Chi et al., 2005), as well as the World Health Organization, introduces the health of a society in the amount of physical activity and physical mobility of that society (World Health Organization, 2004), therefore, it seems necessary to pay extra attention to the physical activity of the elderly because physical activities increase the functional ability of the elderly by 25% (Lee et al., 2005). In research by Rimmer et al. (2008), the most important inhibiting factors for starting and continuing an exercise program in the elderly are laziness, lack of interest, lack of a suitable companion, depression, disability, pain and chronic diseases, lack of social support and lack of facilities were reported. Among the encouraging factors for doing physical activities, we can mention encouraging messages to participate in programs, accompanying music with a sports programs and periodic examination of people by a doctor (Schutzer and Graves, 2004). Modifying the lifestyle and paying attention to its quality can greatly increase the efficiency and independence of the elderly and help them control the many complications of aging and its various treatments (Van Malderen et al., 2013).

Therefore, in the present research, an attempt has been made to investigate the effect of games and physical activity on feelings of loneliness, self-efficacy, and life expectancy in two groups of elderly women by playing games and physical activities in their leisure time.

Materials and Methods

The research was a quasi-experimental, pretest-posttest with a control group. At first, after explaining the research objectives, a consent letter was obtained from the subjects to conduct the research. After the physician's approval and issuing the necessary permission to participate in the exercises, the subjects were randomly divided into three groups (physical activity, games, and control group). Then the questionnaires were given to them (pre-test). Then two groups of physical activity (group 1) and game (group 2) did different activities over 8 weeks (3 sessions per week and each session for 45 minutes). So that the 1st group participated in the physical activity program compiled for the elderly (Appendix No. 1), and the 2nd group during this period participated in the selected games (Appendix No. 2), that are applicable to the elderly and that they are interested in playing these games and the control group did not participate in any activity. Finally, after 8 weeks, the questionnaires were given to them again to check the effect of physical activity and games and compare them on the level of loneliness, self-efficacy, and life expectancy.

Population and Sample / Study Group

The statistical population included elderly women aged 60 to over 80 years old hospitalized in Atef Nursing House of Mashhad city in 2022. An available sampling method was used, according to which 50 people were considered a sample. Of these, 16 people were randomly assigned to the physical activity group, 15 people to the game group, and 19 people to the control group. The subjects (i.e. physical activity and game groups) participated in the exercise program with 45 minutes per session and three sessions per week for 8 weeks. During this time, the control group did their daily activities. The criteria for entering the research were: 1) having at least 60 years of age; 2) a person's ability to engage in physical activity; 3) not having a physical disease or a history of any specific disease (which may endanger a person's health by doing physical activity); 4) interested in participating in a physical activity program; and 5) not having a regular exercise program inside or outside the nursing home.

Data Collection Tools

In order to collect information, three questionnaires were used.

UCLA Loneliness Scale

This scale was developed by Russell (1996). This questionnaire has 20 items and is designed to measure 4 components of isolation, being sociable, not having close friendships and not feeling alone. This scale is designed based on a 5-point Likert scale (never=1, rarely=2 , sometimes=3, often= 4 and always=5). The range of scores for this test is from 20 to 100. The reliability of the test was 0.81 by Cronbach's alpha method.

Self-efficacy Scale

This scale was developed by Sherer et al. (1982). This questionnaire has 17 items and is designed to measure 2 components of self assessment and self-esteem. This scale is designed based on a 5-point Likert scale (strongly disagree=1, disagree=2, no opinion=3, agree= 4 and strongly agree=5) for items 1, 3, 8, 9, 13 and 15 and (strongly agree=1, agree=2, no opinion=3, disagree= 4 and strongly disagree=5) for items 2, 4, 5, 6, 7, 10, 11, 12, 14, 16 and 17. The range of scores for this test is from 17 to 85. The reliability of the test was 0.79 by Cronbach's alpha method.

Life expectancy Scale

This scale was developed by Snyder (2002). This questionnaire has 12 items and is designed to measure 2 components of factorial thinking (items 2, 9, 10 and 12) and strateic thinking (items 1, 4, 7 and 8), and items 3, 5, 6 and 11 are deviant items. This scale is designed based on a 8-point Likert scale (from strongly disagree=1 to strongly agree=8). The range of scores for this test is from 8 to 64. The reliability of the test was 0.85 by Cronbach's alpha method.

Analysis of Data

SPSS (Chicago, IL, USA) 24.0 program was used in order to analyse the data. Descriptive statistics were given as number, percentage, mean and standard deviation. Kolmogorov-Smirnov test was used to check the normality of the data. Then, the ANOVA test was used to determine the homogeneity of groups and Bonferroni's post hoc test was used to determine pairwise differences between groups. Significance level was accepted as $P<0.05$.

Results

Of the individuals enrolled in the study most people (20.0%) were in the age group of 75-80 and the lowest frequency was in the age group of 60-65 (16%). Also, 74% of people were married ow and 26% of them were single. 72% of these people were illiterate and 28% of them were educated. Also, 32% of these people have stayed in the nursing home for less than one year, and the rest for more than one year.

In order to check the normality of the data distribution, the Kolmogorov-Smirnov test was used, and the significance level for the score of loneliness, self-efficacy, and life expectancy in the pre-test and post-test was greater than 0.05. This means that the distribution of all variables is normal.

Subsequently, the results show that the mean of loneliness and self-efficacy decreased in the post-test. In the case of Life expectancy, the mean was increased (Table1).

Table 1

Loneliness, Self-Efficacy, And Life Expectancy Scores

Variable	Stage	N	$\overline{X}$	Sd
Loneliness	Pre-test	50	2.99	0.89
	Post-test		2.80	0.96
Self-efficacy	Pre-test	50	3.27	0.49
	Post-test		3.15	0.74
Life expectancy	Pre-test	50	3.02	0.51
	Post-test		3.19	0.59

Next, in order to determine the homogeneity between groups, ANOVA test was used (Table 2).

Table 2

Results of ANOVA

Variable		Sum of Squares	df	Mean Square	F	Sig.
Loneliness	Between Groups	.51	2	.25	.31	.73
	Within Groups	38.41	47	.81		
	Total	38.92	49			
Self-efficacy	Between Groups	1.80	2	.55	.58	.056

	Within Groups	10.05	47	.21		
	Total	11.86	49			
Life expectancy	Between Groups	.16	2	.08	.30	.73
	Within Groups	12.06	47	.26		
	Total	12.76	49			

According to the p-value (Table 2), which is greater than 0.05, no significant difference was observed between loneliness, self-efficacy, and life expectancy between the control and experimental groups and they are homogeneous.

Next, Bonferroni's post hoc test was used to determine pairwise differences between groups.

Table 3
Results Of Bonferroni's Post Hoc Test For Loneliness

Group		**Mena Difference**	**Std. Error**	**Sig.**
Game	Physical activity	.15	.32	1.0
	Control	.84	.31	.02
Physical activity	Control	.69	.30	.08

According to Table 3, it is clear that there is a significant difference between the results of the game group and the control group based on loneliness (P<0.05).

Table 4
Results Of Bonferroni's Post Hoc Test For Self-Efficacy

Group		**Mena Difference**	**Std. Error**	**Sig.**
Game	Physical activity	.14	.24	1.0
	Control	.72	.23	.04
Physical activity	Control	.58	.23	.01

According to Table 4, it is clear that there is a significant difference between the results of the game and physical activity groups with the control group based on self-efficacy (P<0.05).

Table 5
Results Of Bonferroni's Post Hoc Test For Life Expectancy

Group		**Mena Difference**	**Std. Error**	**Sig.**
Game	Physical activity	.01	.20	1.0
	Control	.44	.19	.05
Physical activity	Control	.46	.19	.05

According to Table 5, it is clear that there is a significant difference between the results of the game and physical activity groups with the control group based on life expectancy (P<0.05).

Discussion

Based on the results, it is found that there is a significant difference between the results of the game group and the control group based on loneliness (P<0.05), which is in consistent with Brady et al. (2020) and Kwag et al. (2011).

Kwag et al. (2011), stated that performing desired activities, in addition to increasing self-confidence, is a way to obtain agreement and social support and reduce the feeling of loneliness. This means that probably by playing the games, the elderly will establish more communication with others, and the desired game, free from coercion and done with desire and interest during free time, will increase the interaction in the elderly and reduce their feeling of loneliness. According to the results, it can be said that if the game's duration is increased or played every day, the isolation of these people can be reduced to the desired level.

Also, results showed that there is a significant difference between the results of the game and physical activity groups with the control group based on self-efficacy ($P<0.05$), which is in consistent with Mahmudiono et al. (2021), and Brach et al. (2002).

In Brach's (2002) research, the results showed that doing moderate-intensity exercise (20-30 minutes a day) for elderly people helps to reduce activity limitations and increase role performance, and as a result, increase the quality of life and feeling good. As it was said, the participants of this research are the elderly living in the nursing home, which was often inactive during their free time and were unable to perform some sports movements, so this probably led to a feeling of inefficiency in them. The researcher believes that the duration of exercise can be effective so that if the duration is increased, a greater increase in the sense of self-efficacy of these people can be observed. Also, the elderly's self-efficacy has increased after playing the games, which is probably due to the victory of the elderly in the competitions that were held, or the desire and interest in playing their favorite games and creating satisfaction in them, these people came to the conclusion that they have a lot of ability to doing work and this increased their self-efficacy, so it shows that the elderly will feel more empowered by playing the game.

Finally, it was found that there is a significant difference between the results of the game and physical activity groups with the control group based on life expectancy ($P<0.05$), which is in consistent with Monma et al. (2019) and Mobaraki et al. (2022).

It has been repeatedly shown that staying active in late life is associated with less morbidity as much as it promotes health. The results confirm that the game, like physical activity, is effective in increasing life expectancy. One of the positive effects mentioned in most research is the effect of physical activity on people's life expectancy. So that the game can be effective like physical activity and even more than that on the life expectancy of the elderly and increase it. Probably, the reason for this increase can be seen in the fact that the elderly have gradually increased their abilities by playing and exercising, and therefore they have the hope that they can live more years.

Conclusion

Between the two groups of physical activity and games and their effect on the feeling of loneliness, self-efficacy, and life expectancy, the results indicate that the game was able to create a significant effect in reducing the loneliness of the elderly. Also, the significant effect of these exercises (physical activity and games) in preventing the decline of self-efficacy of the elderly was reported, and the strong effect of physical activity and games on increasing the life expectancy of the elderly was also emphasized.

In the current research, maybe because of the lifestyle in the nursing home, the elderly saw themselves as inefficient in doing many activities, but in the game, they had the chance to overcome their loneliness by playing group games. By winning, they will feel a higher sense of self-efficacy, and it will increase their life expectancy and enthusiasm, and interest in playing the selected games. Finally, considering that little research has been done in the field of games for the elderly in Iran, the results of this research have reported the greater impact of games in leisure time than physical activity in this group of the elderly.

Suggestions

Communicating with the elderly who live in the nursing home requires training, so it is suggested to trainers who want to practice with the elderly get proper information about how to communicate with these people before starting work.

It is suggested to conduct similar research in the community of elderly people who have mental disorders.

Considering that only elderly women were present in this research, it is suggested that the community of elderly men should also be investigated.

Also, considering that all the people in this research were staying in a nursing home, it is suggested to compare the elderly living in the nursing home with the elderly living with their families.

Ethical considerations

Ethics review board: International University of Imam Reza

Issue number of the ethics evaluation document: 1396/6/4 - 375112

Authors' contributions

All of the authors contributed equally at all stages of the research.

Conflicts of interest

The authors declare that they have no competing interests.

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Appendix No. 1

Physical activities designed for elderly women.

Touch the sky	**Standing eagle**
Heavy wing	**Bow down**
Pressing hands together	**Neck work**
Sitting on a chair	**Body lift**
Sitting scissors	

Appendix No. 2

Games designed for elderly women.

Throwing the ball	**Ring launcher**
Throwing the ball into the glass	**Passing the ball to the next person**
Throwing a straw into the glass	**Throwing the ball into the basket**
Droping the bottle	**Stacking glasses**
Guessing Game	**Dart**
Throw the ball inside the egg shell	**Droping glasses**