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THE EFFECT OF EXERCISE AS A SUPPLEMENT TO QUALITY OF LIFE IN ELDERLY MEN BASED ON EUROQOL: A CROSS-SECTIONAL STUDY

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ABSTRACT

Regular exercise and physical activity have great benefits for the elderly, and promoting physical activity among this population helps to maintain their basic functions and health. This study aimed to investigate the impact of exercise as a supplement on the quality of life of elderly men residing in the Maku Free Zone. The elderly participants were divided into an experimental group (EG) and a control group (CG). The experimental group underwent a 12-session exercise program, involving 65 minutes of exercise per week, while the control group was placed on a waiting list for two months. Information was collected using a quality of life questionnaire (EQ-5D), and the research data were analyzed using ANOVA. The results revealed that the experimental group (EG) exhibited better scores on quality of life measures compared to the control group (CG). Mobility emerged as the dimension most independently correlated with exercise participation. In light of these findings, relevant authorities should take decisive action to create environments that promote participation in sports and lifelong physical activity for the elderly.

Keywords: Elderly, Sport, Lifestyle, Quality of Life.

YAŞLI ERKEKLERDE YAŞAM KALİTESİNE EK OLAN EGZERSİZİN EUROQOL'E DAYALI ETKİSİ: KESİTSEL BİR ÇALIŞMA

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ÖZ

Düzenli egzersiz ve fiziksel aktivitenin yaşlılar için büyük yararları vardır ve bu nüfusta fiziksel aktivitenin teşvik edilmesi, temel işlevlerinin ve sağlıklarının korunmasına yardımcı olur. Bu çalışma, ek egzersizin Maku Serbest Bölgesi'nde yaşayan yaşlı erkeklerin yaşam kalitesi üzerindeki etkisini araştırmayı amaçladı. Yaşlı katılımcılar deney grubu (EG) ve kontrol grubu (CG) olarak ikiye ayrıldı. Deney grubuna haftada 65 dakika egzersiz içeren 12 seanslık egzersiz programı uygulanırken, kontrol grubuna ise iki ay süreyle bekleme listesi uygulandı. Bilgiler bir yaşam kalitesi anketi (EQ-5D) kullanılarak toplandı ve araştırma verileri ANOVA kullanılarak analiz edildi. Sonuçlar, deney grubunun (EG), kontrol grubuna (CG) kıyasla yaşam kalitesi ölçümlerinde daha iyi puanlar sergilediğini ortaya çıkardı. Hareketlilik, egzersiz katılımıyla en bağımsız olarak ilişkili boyut olarak ortaya çıktı. Bu bulgular ışığında ilgili otoritelerin yaşlıların spora katılımını ve yaşam boyu fiziksel aktiviteyi teşvik eden ortamların oluşturulması için kararlı adımlar atması gerekmektedir.

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Introduction

The world's population is aging, which is a serious medical and sociodemographic issue. The World Health Organization (WHO) defines healthy aging as maintaining the functions that support good health as we age (Rudnicka et al., 2020). There are controversies surrounding the definition of the elderly. An individual is considered elderly if he/she is over 60 or 65 years of age (Chentli et al., 2015, Kowal & Dowd, 2001). The process of aging is a necessary but inescapable part of human development, and because aging causes changes in the structure and functionality of the body's organs, it makes it difficult for an individual to adapt to their environment (Momeni & Karimi, 2011). Population expansion, particularly in emerging countries, as well as increases in life expectancy and longevity, have all contributed to the issue of aging societies. One issue affecting the lives of the elderly is the importance of exercise for both physical and mental health (Hamdami khotbesara et al., 2021). Regular exercise has substantial benefits for elderly persons as a supplement to green treatment and physical activity. For starters, it has been shown to lower the risk of cardiovascular disease, high blood pressure, osteoporosis, obesity, cancer, stroke, diabetes, anxiety, and depression (Haskell et al., 2007). Second, it is an effective treatment method for many chronic diseases. Exercise in the treatment of coronary heart disease (Thompson et al., 2003), high blood pressure, osteoarthritis (Pescatello et al., 2004), and chronic obstructive pulmonary disease plays an essential role (Pauwels et al., 2001). Third, there is evidence that physical activity improve cognitive performance (Franco-Martin et al., 2013) and even immunity (Bigley et al., 2013) in the elderly.

Exercise should so be encouraged and prioritized in elderly health care. Physical activity and mobility in the elderly enable them to do their daily tasks without depending on others, and in addition, these activities improve various aspects of the mental and physical health of the elderly, including increasing role playing, general health, satisfaction and vitality, reducing physical pain, and improving emotional and social functioning, and generally improve their quality of life (Hasanpoor Dehkordi et al., 2008). Performing sports activities of any type, high intensity interval training or countinues training, can have positive effects not only on the quality of life of overweight people, but also improves the inflammatory indicators and lipid profile of them, and this prevents cardiovascular diseases and diseases related to (Sari-Sarraf et al., 2020). Despite these health advantages, the recommended amount of physical activity for older persons is less than 150 minutes per week (Boulton et al., 2018). The global prevalence of inactivity is 21.4% (Dumith et al., 2011).

Sport is now seen as a valuable component for the whole life, and promoting physical activity among older people as a tool in promoting health policy (Dionigi, 2016). Yu et al., (2021) found in a study that the physical leisure activities of older people are influenced by various factors, especially environmental factors. Various types of exercise have been reported to be associated with quality of life (QoL) in the elderly (Janyacharoen et al., 2017). Elderly with chronic conditions like stroke can benefit from exercise to improve their quality of life (Park et al., 2015), coronary artery disease (Chen et al., 2014), chronic heart failure (Pihl et al., 2011), and Parkinson's disease (Lattari et al., 2014). By attending and participating in sports activities, elderly people can improve the quality and performance of their lives and reduce the probability of falling (El-Khoury et al., 2013; Gillespie et al., 2013; Tricco et al., 2017). Increasing focus on the association between exercise and QoL in the elderly reveals that an average level of physical activity combined with exercise components has a good influence on daily life activities. Balance training programs are also recommended to help the elderly avoid falls (Roberts et al., 2017). Global studies show an increase in the prevalence of these diseases among the older population in various societies around the world, with 36 million individuals suffering from Alzheimer's and 4.3 million suffering from Parkinson's. According to projections, the number of Alzheimer's patients will reach 115 million by 2050, and the number of Parkinson's patients will reach 9 million by 2050, as the world's old population grows (Bowen & Atwood, 2004). There is evidence that firmly supports the positive association between increasing physical activity levels, sports involvement, and improved adult health. Worldwide, about 3.2 million deaths are reported annually due to inactivity (Taylor, 2014). The findings of Oh et al., (2017) showed that all athletes had higher QoL scores than non-athletes among the elderly.

Elderly exercise promotion is an important clinical and health concern. In the meantime, it is an important issue how we can make the elderly to engage in physical activities and exercise. While participating in sports is not only a basic human right, but promoting and developing sports also leads to having a happy society, improving social security, supporting development, achieving social justice, strengthening physical fitness, and improving public health. Considering that international efforts to increase sports activity in adult or youth populations have been reported (Knuth & Hallal, 2009; Macera & Pratt, 2000; Sisson & Katzmarzyk, 2008; Stamatakis et al., 2007). According to Paudel et al., (2021) the elderly's participation in leisure-time physical exercise was at a bare minimum, and their leisure time was largely spent relaxing, socializing, or undertaking sedentary activities like watching TV. While there is limited information about the elderly's physical activity and exercise, as well as their compliance with current physical activity requirements. Chronic disease risk increases with inactivity and aging, and the elderly frequently have multiple chronic diseases. The WHO sports recommendations include aerobic and strength sports, as well as balancing exercises to lower the risk of falling, and the sports standards in this study were consistent with the WHO sports guidelines. As a result, if the elderly are unable to follow these standards owing to

chronic illness(Chodzko-Zajko et al., 2009). It should be noted that the amount of physical activity recommended is in addition to the usual activities of daily life. Therefore, this study was conducted with the aim of investigating the effect of exercise as a supplement to green therapy on the quality of life of elderly men in the Maku Free Zone. This research hypothesizes that the combination of exercise as a supplement can significantly influence and enhance the overall quality of life of older men.

Methodology

An experimental study design with pre-test and post-testing was conducted. The statistical population of the present study is the elderly men of Maku Free Zone in 2019. According to the availability of elderly men and based on the participation of people and the evaluations, it was determined that this research should be done on elderly men. In this research, due to the large number and dispersion of the statistical population, in order to reach the elderly people of Maku Free Zone, a purposeful-random sampling of 40 people (20 people for the control group (CG), 20 people for the experimental group (EG)) was done. The age group of 60–65 years is defined by the groups of the World Health Organization, and we analyzed it (Organization, 2001), for which complete information was available on the following variables: age, gender, body mass index (BMI), region of residence, and quality of life (QoL) questionnaire. To evaluate QoL, a questionnaire (EQ-5D) was used. This questionnaire was introduced for the first time in 1990 by the EuroQol group (Group, 1990). The questionnaire measured health-related QoL in five dimensions (mobility, self-care, usual activities, pain or discomfort, and anxiety or depression) (Chodzko-Zajko & Vegter, 2016).

The test-retest reliability of the questionnaire is 0.85, and Cronbach's alpha coefficients for the subscales of this questionnaire, which include mobility 0.78, self-care 0.90, usual activities 0.89, pain/discomfort 0.90, and anxiety/depression 0.90, were reported. Furthermore, Cronbach's alpha of the questionnaires in the research of Savoia et al., (2006), Cheung et al. (2016) is equal to 0.70 and 0.78, respectively, which shows the significant reliability of the questionnaire. In the present study, Cronbach's alpha method was used to check the internal consistency of the instrument, and its value was 0.89.

After pretesting and dividing the elderly into two EG and CG groups, the EG underwent 12 sessions of a 65-minute exercise program, including walking, strength, and balance exercises, one session per week; the CG was placed on a two-month waiting list. Following the conclusion of the training sessions, each group was given a post-test. ANCOVA was performed to analyze the data with SPSS22 software.

Conclusion

The demographic study variables' descriptive statistics are shown in Table (1).

Table 2 shows the mean (X) and standard deviation (Sd) in the pre- and post-tests of quality of life scores for seniors in the Maku Free Zone for the two EG and CG groups.

The results of Table 2 show that the average dimensions of the QoL of the elderly in the EG in the pre-test and post-test respectively in the dimension, mobility (X=37.47, X=36.32); self-care (X=29/02, X=36/21); usual activities (X=20/20, X=23/47); pain/discomfort (X=25.02, X=19.88); Anxiety/depression is (X=26.22, X=19.16), and the average dimensions of QoL of the CG in the pre-test and post-test, respectively, in the dimension of mobility (X=25.40, X=23.96); self-care (X=26/11, X=25/60); usual activities (X=19/35, X=21/01); pain/discomfort (X=28/46, X=24/78); anxiety/depression is (X=21/11, X=24/00). ANCOVA test was used to analyze the data. For this purpose, first, the assumptions of the ANOVA analysis test, i.e., the assumption of normality of the distribution using the Kolmogorov–Smirnov test (P=0.077) and the assumption of homogeneity of slopes (P=0.112; F=0.687) were checked and verified. became. Therefore, the necessary condition for using the ANCOVA test has been met. The test results are presented in Table 3.

Table 3 shows that after confirming the pre-test results, there is a noticeable difference between the post-test results of the EG and CG. Mobility is independently connected with sports participation among the QoL characteristics, indicating that regular exercise and aerobic exercise are necessary for gaining a higher QoL in the elderly. As a result, the null hypothesis of no difference between the two groups is rejected, and it is possible to conclude that sports involvement has a substantial influence on the QoL of the elderly (Sig=0.001).

Table 1. Frequency distribution of research demographic variables

	Variable	Frequency	%
Gender	Man	40	100.00
	Woman	0	00.00
Age	60-65	40	100.00
	5-10 years	12	30.00
Sports Background	10-15 years	4	10.00
	15-20 years	8	20.00

Table 1(Continued)

	Variable	Frequency	%
BMI	17.5 and less	0	00.00
	Between 20.4 and 24.9	19	47.50
	Between 25.1 and 29.7	1	02.50
	Between 30.06 and 33.71	14	35.00
	35.6 and above	6	15.00

A **Body Mass Index (BMI) numbers:
Index of 17.5 and less indicates low body mass.
Index between 20.4 and 24.9 indicates normal body mass.
The index between 25.1 and 29.7 indicates excess body mass.
Index between 30.06 and 33.71 indicates obese body mass.
An index between 35.6 and higher indicates excessive obesity.

Table 2. Descriptive indices of QoL according to group and test position

QoL dimensions		EG		CG	
		X	Sd	X	Sd
Mobility	pre-test	37.47	8.76	35.40	6.81
	Post-test	36.32	3.34	23.96	4.56
Self-care	pre-test	29.02	8.77	26.11	6.02
	post-test	36.21	4.40	25.60	3.14
Usual activities	pre-test	20.20	6.80	19.35	4.20
	post-test	23.47	3.99	21.01	4.57
Pain/Discomfort	pre-test	25.02	7.94	28.46	6.50
	post-test	19.88	3.29	24.78	4.80
Anxiety/Depression	pre-test	26.22	5.99	21.11	6.55
	post-test	19.16	3.78	24.00	3.67

Table 3. The results of univariate analysis of covariance (ANCVA)

QoL dimensions		sum of squares	df	mean square	F	Sig	Eta Squared (η)
Mobility	pre-test	978.43	1	920.43	511.11	.001	0.86
	group	721.80	1	721.80	815.10	.001	0.98
	error	101.15	37	2.76			
Self-care	pre-test	790.94	1	790.94	450.32	.001	0.80
	group	811.57	1	811.57	888.19	.001	0.68
	error	112.01	37	2.55			
Usual activities	pre-test	758.00	1	758.00	255.60	.001	0.82
	group	651.30	1	651.30	614.66	.001	0.95
	error	119.17	37	2.88			
Pain/Discomfort	pre-test	912.95	1	912.95	450.99	.001	0.79
	group	899.22	1	899.22	826.49	.001	0.91
	error	114.87	37	2.91			
	pre-test	777.02	1		506.37	.001	0.80
Anxiety/Depression	group	680.77	1	702.86	863.49	.001	0.89
	error	110.21	37	2.91			

Discussion

One of the significant findings of this study was the identification of mobility as a dimension that is independently related to sports participation. This emphasizes the important and vital role of regular physical activity, especially in increasing mobility, which is a key component of the overall quality of life of the elderly.

The results of this study showed that exercise as a green therapeutic supplement has a significant effect on the dimensions of the QoL of elderly men (mobility, self-care, usual activities, pain/discomfort, anxiety/depression). The result of this research is consistent with the findings of Oh et al. (2017), Musich et al., (2017), Langhammer et al., (2018). Regular and continuous use of exercise programs can improve the quality of life in different dimensions in elderly men and paving the way for good aging and health in this era. Exercise is vital in old age and it is important that older people try to stay active to avoid the consequences of inactivity. Other studies (Souza et al., 2015; Vogel et al., 2013) highlight that participating in physical activity improves spontaneity. Other results showed a moderately positive correlation between functional capacity and physical activity, indicating that older adults with better functional capacity exercise regularly. Therefore, the elderly tend to do aerobic exercises like walking to improve their QoL. Evidence shows that exercise and physical activity can lead to active independent living, reduce disability and improve QoL in the elderly (Sun et al., 2013). In fact, research shows that 15 minutes of extra physical activity per day reduces mortality by 4% (Wen et al., 2011). The findings revealed that the experimental group scored better on quality of life measures compared to the control group, with mobility showing a significant independent correlation with exercise participation. The study also provided descriptive statistics of demographic variables and quality of life scores for both groups. The research contributes to the understanding of the potential benefits of exercise as a supplement to improve the quality of life for elderly men. The study aligns with previous research indicating the positive correlation between physical activity and enhanced quality of life for the elderly (Sławińska et al., 2103, Abdelbasset et al., 2019, Vogel et al., 2013). It emphasizes the importance of promoting physical activity among the elderly and calls for efforts to create environments that encourage participation in sports and lifelong physical activity for this demographic. The findings have implications for public health and clinical practice, highlighting the potential of exercise as a supplement to improve the overall well-being of elderly individuals. In light of these compelling findings, it is imperative for governments and policymakers to recognize the importance of fostering environments that encourage and support sports participation and lifelong physical activity among the elderly. Creating and implementing policies that facilitate access to exercise programs and promote an active lifestyle for the aging population should be prioritized. Such interventions not only have the potential to improve physical well-being but also contribute significantly to the overall quality of life for elderly individuals.

In general, according to the included studies, the elderly participate less in physical activity and sports than young people do. In industrialized countries where people are living longer, the level of chronic diseases is increasing and the level of physical activity and sports participation is decreasing. The key factors in improving health are moderate to vigorous exercise at least five days per week, including aerobic and strength training. Few elderly people achieve the same level of physical activity or exercise that improves health. Increasing physical activity and sports participation among the elderly is a challenge for health professionals. In conclusion, the study not only adds valuable insights to the existing body of knowledge on the relationship between exercise and the quality of life among the elderly but also advocates for tangible actions at the governmental and policy levels to address the specific needs of this demographic in terms of physical activity and sports participation.

Conclusion

In summary, the results of this research underscore the significant role of regular physical activity and exercise in improving the quality of life for elderly men. The experimental group demonstrated notably better scores in various dimensions of quality of life compared to the control group, highlighting the tangible health benefits associated with incorporating exercise into a routine. Notably, mobility emerged as a crucial factor, independently correlated with exercise participation, emphasizing the need for targeted interventions to enhance physical function. The study's findings support the importance of creating supportive environments and opportunities for older individuals to engage in physical leisure activities. Practical interventions may range from community exercise programs to personalized activity counseling, addressing various factors influencing activity levels among the elderly, including socio-ecological elements, health status, and personal motivation.

Presently, professionals face the primary challenge of discovering more efficient ways to assist the elderly, boost their physical activity levels, and cultivate regular physical behaviors. Personal health practitioners play a crucial role in engaging in discussions and recommending sports activities. General practitioners need to possess a thorough understanding of prescribing exercise as a natural therapeutic intervention to guide the elderly and patients on the appropriate type, quantity, intensity, and frequency of physical activity to enhance health. Integrating physical therapists or exercise specialists into the general practice team to prescribe exercise instead of medication could be a valuable enhancement. Health issues associated with physical inactivity in the elderly must be addressed by healthcare professionals. Relevant authorities should take significant steps to establish environments that promote participation in sports and lifelong physical activities for the elderly. Overall,

encouraging active lifestyles among the elderly not only holds promise for improved physical capabilities and a decreased risk of chronic diseases but also makes a substantial contribution to mental health by alleviating symptoms of depression and anxiety. Recommendations should be focused on supporting active lifestyles across various populations, particularly middle-aged and older adults (Abdelbasset et al., 2019). Adhering to the World Health Organization's physical activity guidelines for older adults can serve as an effective framework for such initiatives. Achieving a more active and healthy elderly population necessitates a collective effort from community stakeholders, healthcare systems, and individuals to create an environment where physical activity is practical, enjoyable, and an integral part of daily life for the aging demographic.

References:

Abdelbasset, W. K., Alsubaie, S. F., Tantawy, S. A., Elyazed, T. I. A., & Elshehawy, A. A. (2019). A cross-sectional study on the correlation between physical activity levels and health-related quality of life in community-dwelling middle-aged and older adults. Medicine, 98(11).

Bigley, A. B., Spielmann, G., LaVoy, E. C., & Simpson, R. J. (2013). Can exercise-related improvements in immunity influence cancer prevention and prognosis in the elderly? *Maturitas, 76*(1), 51-56.

Boulton, E. R., Horne, M., & Todd, C. (2018). Multiple influences on participating in physical activity in older age: Developing a social ecological approach. *Health Expectations, 21*(1), 239-248.

Bowen, R. L., & Atwood, C. S. (2004). Living and dying for sex. *Gerontology, 50*(5), 265-290.

Chen, C.-H., Chen, Y-.J., Tu, H.-P., Huang, M.-H., Jhong, J.-H., & Lin, K.-L. (2014). Benefits of exercise training and the correlation between aerobic capacity and functional outcomes and quality of life in elderly patients with coronary artery disease. *The Kaohsiung journal of medical sciences, 30*(10), 521-530.

Chentli, F., Azzoug, S., & Mahgoun, S. (2015). Diabetes mellitus in elderly. Indian journal of endocrinology and metabolism, 19(6), 744.

Cheung, P. W. H., Wong, C. K. H., Samartzis, D., Luk, K. D. K., Lam, C. L. K., Cheung, K. M. C., & Cheung, J. P. Y. (2016). Psychometric validation of the EuroQoL 5-Dimension 5-Level (EQ-5D-5L) in Chinese patients with adolescent idiopathic scoliosis. *Scoliosis and spinal disorders, 11*, 1-12.

Chodzko-Zajko, W., Proctor, D., Singh, M. F., Salem, G., & Skinner, J. (2009). Exercise and physical activity for older adults. ACSM Position Stand. *Medicine & Science in Sports & Exercise. Special Comunications*, 1510-1530.

Dionigi, R. A. (2016). The Competitive Older Athlete. Topics in Geriatric Rehabilitation, 32(1), 55-62.

Dumith, S. C., Hallal, P. C., Reis, R. S., & Kohl III, H. W. (2011). Worldwide prevalence of physical inactivity and its association with human development index in 76 countries. *Preventive medicine, 53*(1 **.28-24 ,(2-**

El-Khoury, F., Cassou, B., Charles, M.-A., & Dargent-Molina, P. (2013). The effect of fall prevention exercise programmes on fall induced injuries in community dwelling older adults: systematic review and meta-analysis of randomised controlled trials. *BMj, 347*.

Franco-Martin, M., Parra-Vidales, E., Gonzalez-Palau, F., Bernate-Navarro, M., & Solis, A. (2013). The influence of physical exercise in the prevention of cognitive deterioration in the elderly: a systematic review. *Revista de neurologia, 56*(11), 545-554.

Gillespie, L., Robertson, M., Gillespie, W., Sherrington, C., Gates, S., Clemson, L., & Lamb, S. (2013). Intervenciones para la prevención de caídas en las personas de edad avanzada que residen en la comunidad. *Cochrane Database Syst Rev, 9*, CD007146-CD007146.

Group, T. E. (1990). EuroQol-a new facility for the measurement of health-related quality of life. *Health policy, 16*(3), 199-208.

Hamdami khotbesara, S., Doroudian, A. A., Moshir estekhareh, Z. s., & Rezayan Ghayehbashi, A. .(2021)Developing Strategies for the Development of Elder's Sports in Iran in the Horizon of 20 Years. *Public Policy In Administration, 11*(40), 111-127.

Hasanpoor Dehkordi, A., Masoodi, R., Naderipoor, A., & Poor Mir Reza Kalhori, R. (2008). The effect of exercise program on the quality of life in shahrekord elderly people. Iranian Journal of Ageing, 2(4), 437-444.

Haskell, W. L., Lee, I.-M., Pate, R. R., Powell, K. E., Blair, S. N., Franklin, B. A., . . . Bauman, A. (2007). Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Circulation, 116*(9), 1081.

Hatswell, A. J., & Vegter, S. (2016). Measuring quality of life in opioid-induced constipation: mapping EQ-5D-3 L and PAC-QOL. *Health economics review, 6*(1), 1-7.

Janyacharoen, T., Sirijariyawat, K., Nithiatthawanon, T., Pamorn, P., & Sawanyawisuth, K. (2017). Modified stepping exercise improves physical performances and quality of life in healthy elderly subjects. *J Sports Med Phys Fitness, 57*(10), 1344-1348.

Knuth, A. G., & Hallal, P. C. (2009). Temporal trends in physical activity: a systematic review. *Journal of Physical Activity and Health, 6*(5), 548-559.

Kowal, P., & Dowd, J. E. (2001). Definition of an older person. Proposed working definition of an older person in Africa for the MDS Project. World Health Organization, Geneva, doi, 10(2.1), 5188-9286.

Langhammer, B., Bergland, A., & Rydwik, E. (2018). The importance of physical activity exercise among older people. In (Vol. 2018): Hindawi.

Lattari, E., Pereira-Junior, P. P., Neto, G. A. M., Lamego, M. K., de Souza Moura, A. M., de Sá, A. S., . . . Mura, G **.(2014) .**Effects of chronic exercise on severity, quality of life and functionality in an elderly Parkinson's disease patient: case report. *Clinical practice and epidemiology in mental health: CP & EMH, 10*, 126.

Li, J., Theng, Y. L., & Foo, S. (2015). Depression and psychosocial risk factors among community-dwelling older adults in Singapore. Journal of cross-cultural gerontology, 30, 409-422.

Macera, C. A., & Pratt, M. (2000). Public health surveillance of physical activity. *Research quarterly for exercise and sport, 71*(sup2), 97-103.

Momeni, K., & Karimi, H. (2011). Comparison of mental health between elderly admitted in sanitarium with elderly in sited

in personal home. *Journal of Kermanshah University of Medical Sciences, 14*(4).

Musich, S., Wang, S. S., Hawkins, K., & Greame, C. (2017). The frequency and health benefits of physical activity for older adults. *Population health management, 20*(3), 199-207.

Oh, S.-H., Kim, D.-K., Lee, S.-U., Jung, S. H., & Lee, S. Y. (2017). Association between exercise type and quality of life in a community-dwelling older people: A cross-sectional study. *PloS one, 12*(12), e0188335.

Organization, W. H. (2001). *Men, ageing and health: Achieving health across the life span*. Retrieved from

Orimo, H., Ito, H., Suzuki, T., Araki, A., Hosoi, T., & Sawabe, M. (2006). Reviewing the definition of "elderly". *Geriatrics & gerontology international, 6*(3), 149-158.

Park, S.-Y., Kim, J.-K., & Lee, S.-A. (201 **.(5**The effects of a community-centered muscle strengthening exercise program using an elastic band on the physical abilities and quality of life of the rural elderly. *Journal of physical therapy science, 27*(7), 2061-2063.

Paudel, S., Owen, A. J., & Smith, B. J. (2021). Socio-ecological influences of leisuretime physical activity among nepalese adults: A qualitative study. BMC Public Health, 21(1), 1443. doi:10.1186/s12889-021-11484-3.

Pauwels, R. A., Buist, A. S., Calverley, P. M., Jenkins, C. R., & Hurd, S. S. (2001). Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease: NHLBI/WHO Global Initiative for Chronic Obstructive Lung Disease (GOLD) Workshop summary. *American journal of respiratory and critical care medicine, 163*(5), 1256-1276.

Pescatello, L. S., Franklin, B. A., Fagard, R., Farquhar, W. B., Kelley, G. A., & Ray, C. A. (2004). Exercise and hypertension. *Medicine & science in sports & exercise, 36*(3), 533-5 **.53**

Pihl, E., Cider, Å., Strömberg, A., Fridlund, B., & Mårtensson, J. (2011). Exercise in elderly patients with chronic heart failure in primary care: effects on physical capacity and health-related quality of life. *European Journal of Cardiovascular Nursing, 10*(3), 150-158.

Roberts, C. E., Phillips, L. H., Cooper, C. L., Gray, S., & Allan, J. L. (2017). Effect of different types of physical activity on activities of daily living in older adults: systematic review and meta-analysis. *Journal of aging and physical activity, 25*(4), 653-670.

Rudnicka, E., Napierała, P., Podfigurna, A., Męczekalski, B., Smolarczyk, R., & Grymowicz, M. (2020). The World Health Organization (WHO) approach to healthy ageing. *Maturitas, 139*, 6-11.

Sari-sarraf, V. , Parnian-khajehdizaj, N. & Amirsasan, R. (2020). High-Intensity Interval Training and Continuous Training with Intermittent Calorie Restriction in Overweight Women: Effect on the Inflammation and Lipid Profile . Spor Bilimleri Araştırmaları Dergisi , 5 (2) , 230-246 . DOI: 10.25307/jssr.819590

Savoia, E., Fantini, M. P., Pandolfi, P. P., Dallolio, L., & Collina, N. (2006). Assessing the construct validity of the Italian version of the EQ-5D: preliminary results from a cross-sectional study in North Italy. *Health and Quality of Life Outcomes, 4*(1), 1-9.

Sisson, S., & Katzmarzyk, P. (2008). International prevalence of physical activity in youth and adults. *Obesity reviews, 9*(6), 606-614.

Sławińska, T., Posłuszny, P., & Rożek, K. (2013). The relationship between physical fitness and quality of life in adults and the elderly. Human Movement, 14(3), 200-204.

Souza, A. M., Fillenbaum, G. G., & Blay, S. L. (2015). Prevalence and correlates of physical inactivity among older adults in Rio Grande do Sul, Brazil. *PloS one, 10*(2), e0117060.

Stamatakis, E., Ekelund, U., & Wareham, N. J. (2007). Temporal trends in physical activity in England: the Health Survey for England 1991 to 2004. *Preventive medicine, 45*(6), 416-423.

Sun, F., Norman, I. J., & While, A. E. (2013). Physical activity in older people: a systematic review. *BMC public health, 13*(1), 1-17.

Taylor, D. (2014). Physical activity is medicine for older adults. *Postgraduate medical journal, 90*(1059), 26-32.

Thompson, P. D., Buchner, D., Piña, I. L., Balady, G. J., Williams, M. A., Marcus, B. H., . . . Franklin, B. (2003). Exercise and physical activity in the prevention and treatment of atherosclerotic cardiovascular disease: a statement from the Council on Clinical Cardiology (Subcommittee on Exercise, Rehabilitation, and Prevention) and the Council on Nutrition, Physical Activity, and Metabolism (Subcommittee on Physical Activity). *Circulation, 107*(24), 3109-3116.

Tricco, A. C., Thomas, S. M., Veroniki, A. A., Hamid, J. S., Cogo, E., Strifler, L., . . . MacDonald, H. (2017). Comparisons of interventions for preventing falls in older adults: a systematic review and meta-analysis. *Jama, 318*(17), 1687-1699.

Yu, J., Yang, C., Zhang, S., Zhai, D., Wang, A., & Li, J. (2021). The effect of the built environment on older men's and women's leisure-time physical activity in the mid-scale city of jinhua, china. International Journal of Environmental Research and Public Health, 18, 1039. doi:10.3390/ijerph18031039

Vogel, T., Lang, P., Schmitt, E., Kaltenbach, G., & Geny, B. (2013). Bénéfices pour la santé de la pratique d'une activité physique chez le sujet âgé. *Les cahiers de l'année gérontologique, 3*(5), 257-267.

Wen, C. P., Wai, J. P. M., Tsai, M. K., Yang, Y. C., Cheng, T. Y. D., Lee, M.-C., . . . Wu, X. (2011). Minimum amount of physical activity for reduced mortality and extended life expectancy: a prospective cohort study. *The lancet, 378*(9798), 1244-1253.