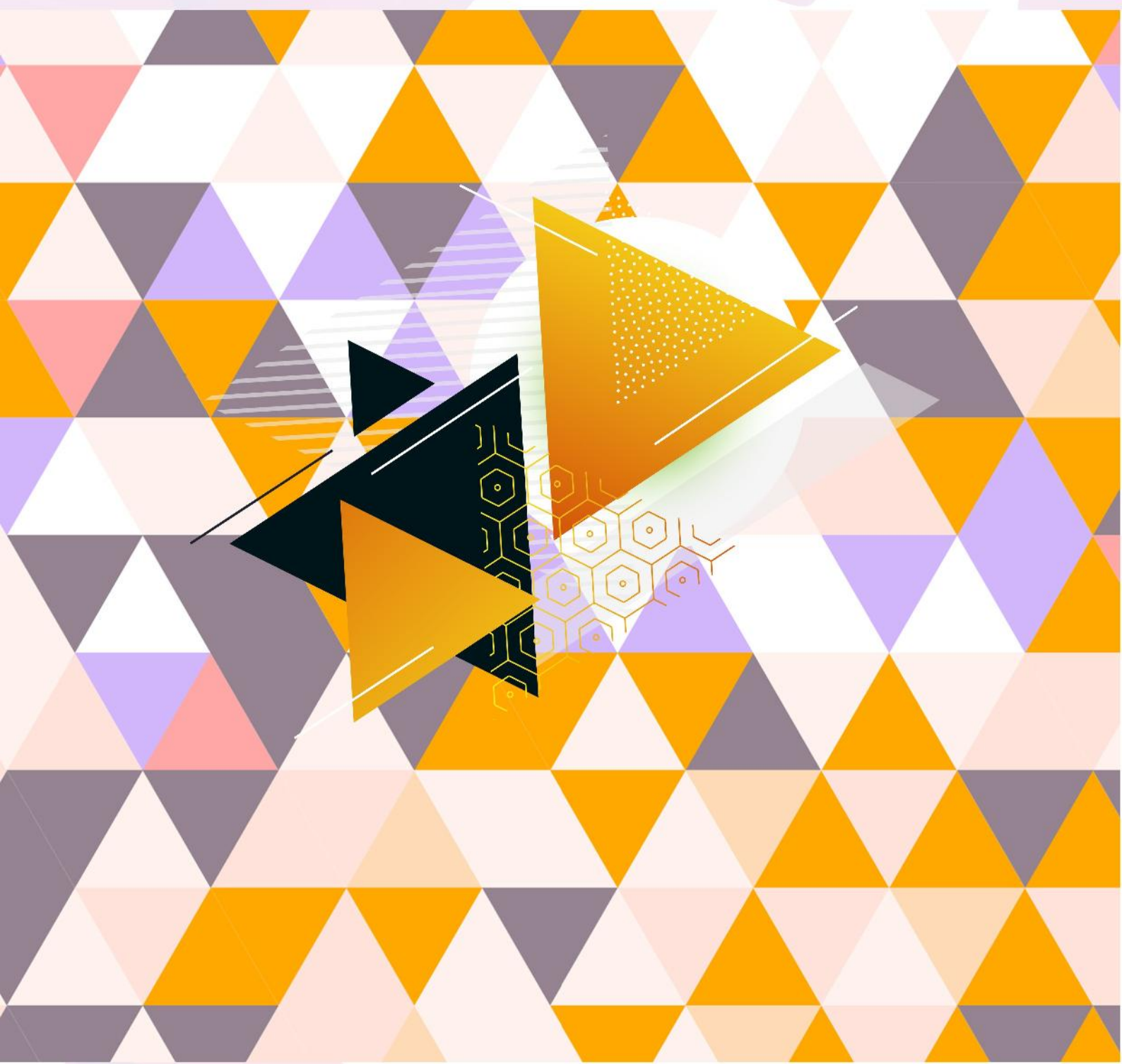


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TABLE OF CONTENTS

Multitasking On Health Promotors In Puskesmas At East Jakarta And Lebak Regency	1
Factors Affecting Husband Participation In Family Planning Acceptors In Lampulo Village Banda Aceh City In 2020	7
The Factors Associated With The Incidence Of Anemia In Pregnant Women In Pisangan Public Health Center Visitors In 2020	16
The Effect Of Yoga On Menstrual Pain Reduction In Adolescents	24
Determine The Effect Of Honey Combination Green Bean Soaking Water In Preventing Anemia Of Pregnant Women During The Pandemic	31
Relationship Between The Promotion Of Formula Milk, Breastmilk Production And Psychological Factor Of Mother With Exclusive Breastfeeding In The Work Area Of The Bireuen Peusangan Health Center	35
The Effect Of Physical Exercise On The Quality Of Life Of The Elderly : Systematic Review	43
Aids Stigmatization Among Teenagers	55
Portrait Of The Sedentary Lifestyle Among Students From Public Health School	65
The Effect Of Pre-Pregnancy Body Mass Index (BMI) With The Incidence Of Hypertension In Pregnancy	73

The Effect of Physical Exercise on The Quality of Life of The Elderly : Systematic Review

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ABSTRACT

Physical exercise is one of the activities that can improve the quality of life of the elderly if done routinely and correctly. The purpose of this study was to analyze articles from journals in order to provide reliable information about the effect of physical exercise on the quality of life of the elderly. This study method is systematic review by compare the results of tracking with literature that has been obtained regarding the effect of physical exercise on the quality of life of the elderly. The results obtained are 20 articles analyzed in a systematic review. Articles published in Elsevier B.V, PubMed, Google Scholar in the span of 2011 to 2019. All articles include physical exercise which affects the quality of life of the elderly. This physical exercise consists of balance exercises, gymnastics, and progressive muscle relaxation exercises. It can be concluded that the appropriate component of physical exercise can improve the quality of life in the elderly.

Keywords: *physical exercise, elderly, quality of life.*

INTRODUCTION

The elderly population has increased quite rapidly, the number of elderly people recorded recently has equalized the number of children under five and it can be said that 11 percent of the 6.9 billion human population in the world are classified as elderly (WHO, 2013). Reporting from the 2018 BPS projection, the proportion of people over 60 years old is 24,754,500 people (9.34%).

Basically, an increase in the number of elderly people from the development side has a positive impact, including increasing the standard of living and reducing the mortality rate. The elderly need to know that their health is still important to maintain so that their quality of life can be maintained. Healthier elderly people will make it easier for themselves and others because they can live independently and continue to live productively within certain limits.

The elderly are indeed synonymous with several decreases in health status, especially physical health status which is very vulnerable to health problems. Various theories regarding the aging process say the same thing. The quality of life of the elderly is certainly influenced by their health status. If it continues to decline, the quality of life of the elderly will not be classified as good.

Physical exercise that is carried out regularly and according to the rules is very important for the elderly to maintain health and improve quality of life. Physical exercise can maintain the health of the elderly so they can live independently and increase productivity that can be done by the elderly. One way to reduce the risk of disease and maintain the functions of the elderly's body so that they can live independently is by doing exercises (Ko & Lee, 2012) ⁽¹⁾. Exercise minimizes fatigue in physical function due to increased cardiovascular, central nervous system,

immune and endocrine functions. This can reduce the symptoms of depression that often occur in the elderly (Chung, 2008) ⁽¹⁾. However, there are still many elderly people who do not understand how important proper physical exercise is to maintain their health, which continues to decline as they age. This is due to various factors, such as most elderly people do not do physical activity that is too strenuous, such as sitting for too long or just lying down, the elderly do not or do not know the physical exercises that are in accordance with their needs, including not burdening the joints so that the only exercise they do is at muscles, blood circulation and respiration as well as the elderly who have diseases such as metabolism should be accompanied when they are doing physical activity.

Various research articles have been published on the effects of physical exercise on the elderly, but few research articles have discussed the effect of physical exercise on the quality of life of the elderly. The use of structured physical exercise is still rarely done by the elderly because the availability of information is still insufficient and inadequate so that the risk of poor quality of life in the elderly is still relatively high. In addition, currently there are no clinical guidelines for physical exercise components that can be carried out by the elderly independently. Therefore, this systematic review provides the best and important information on the components of physical exercise in the elderly so that the quality of life in the elderly can be maintained.

METHODS

Research Method

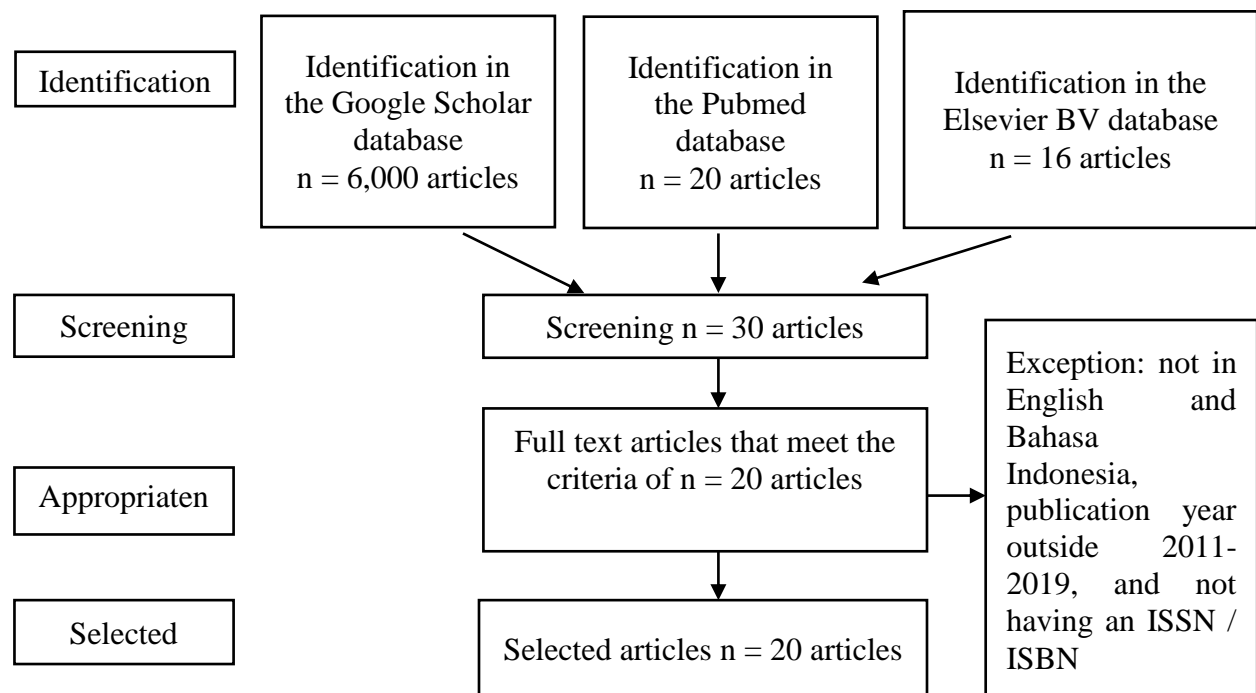
The method in this study uses systematic review. Sources of information and data, obtained from some literature obtained via the internet. From the search results, the authors obtained several research results regarding physical activity of the elderly who came from various universities and institutions both in Indonesia and abroad. The process of searching for data and information is reviewed through Google Scholar, PubMed, and Elsevier BV to find out the similarities or differences in the title. In the first stage the writer uses the keyword "The Effect of Physical Exercise on the Life of the Elderly" on the main page of the website Google Scholar. Furthermore, in the second search the authors used all keywords, indexes and titles in Pubmed and Elsevier BV. The final stage looked for a reference list of all additional identified information. The author uses a systematic study method in accordance with the PRISMA stages.

Inclusion and Exclusion Criteria

The inclusion criteria in question are the criteria from research articles that meet the relevant sample and with the provisions as a predetermined sample. The author carried out the reduction process by reducing the time interval, namely from 2011 to 2019 (publication of the last 8 years), published in Indonesian or English with full text, having an ISSN or ISBN, as well as research on a sample of the elderly (elderly).

While the exclusion criteria in question are the criteria for research articles that do not meet the sample, are irrelevant, do not comply with the provisions as a predetermined sample, the publication period of the article is before 2011, do not have complete text, and do not have an ISSN or ISBN.

Article Submission with PRISMA



RESULTS AND DISCUSSION

Based on the identification results obtained 6,036 articles which have titles according to the research. After screening, a total of 6,016 articles were excluded because they did not meet the predetermined inclusion criteria and obtained 20 articles for further review.

In this systematic writing, it discusses 20 articles that are in accordance with the assessment, namely physical exercise and the results of its application to the elderly. All articles cover physical exercise that affects the quality of life of the elderly.

Title	Author /Year	Country	Sample	Design	Result
The Effect of Trunk Stability Exercise on the Body Balance of the Elderly at PSTW East Jakarta	Theresia J (2019)	Indonesia	110 elderly respondents (28 elderly in the control group and 82 elderly intervention group)	quase experimental	Mann Whitney difference test Declare improvement differences body balance, p value 0.000 (<0.05). (2)
Improving the Quality of Life of the Elderly (LANZIA) in Depok City with Balance Exercise	Stefanus MK, Junaiti S, & Henny P (2018)	Indonesia	30 elderly (control group) and 30 elderly (treatment group)	Quasi experimental research	The results concluded that there was a significant effect on improving the quality of life of the elderly (p <0.001). (1)

The Effect of Physical Exercise on the Cognitive Ability of the Elderly in Ngesrep Village, Ngemplak District, Boyolali Regency	Andreany K & Endang SW (2017)	Indonesia	20 elderly (treatment group), 20 elderly (control group)	quasi experimental research.	The results showed a positive influence on the cognitive abilities of the elderly ($\alpha = 0.05$, $t = 2.492$, $p = 0.022$, $r = 0.657$) (3)
Benefits of a home based physical exercise program in the elderly subjects with type 2 diabetes mellitus	Garcia, et al. (2011)	Spanish	84 diabetic patients over 60 years of age. Patients enrolled in the intervention group followed standard treatment for diabetes as well as a specific 24 week physical activity program.	A prospective, randomized, comparative, parallel cohort, intervention study using a 24-week physical activity program was conducted.	Patients in the exercise group showed improved quality of life at 6 months based on EuroQol. Better glycemic control was also seen as well as a weight reduction of 1.7 kg.(4)
Home Exercise Improves Sleep Quality and Daytime Sleepiness in the Elderly: A Randomized Controlled Trial	Brandão, GS, et al (2018)	United States of America	Seniors from the community who are 60 years of age or older. One hundred and thirty-one (mean age 68 ± 7 years), and 88% women	Randomized controlled trial study	Demonstrated a significant improvement in sleep quality with a mean reduction of 4.9 ± 2.7 points in the overall PSQI ($p < 0.01$) and across all 7 evaluation components ($p < 0.05$), and an increase in secondary end points, daytime sleepiness, a 2.8 ± 2.2 point drop in ESS ($p < 0.01$) (5).
Effectiveness of Strengthening Exercises for the Elderly with Low Back Pain to Improve Symptoms and	Isaac NA (2015)	America	Review evidence regarding exercise for parents with LBP use searches between 2006-2016.	<i>Systematic Review</i> experimental study	Two articles presented significant results compared to the control group ($p < 0.05$)(6).

Function: A
 Systematic
 Review

Quality of life in older people: Benefits of productive involvement in physical activity	H. Yen, & LJ Lin (2018)	China	Used purposive sampling to recruit 163 participants from 14 long-term care facilities in Taiwan. Data were collected through individual interviews with a structured questionnaire.	The structured questionnaire contains closed and open questions. The questions consisted of four sections, including resident PA before and after moving to the LTC facility, HRQOL (SF-36), and background characteristics.	Older adults with increased productive engagement in physical activity reported better Mental Component Summary scores, social functioning and emotional roles than those who experienced decreased productive involvement in physical activity. (7)
Effect of group exercise frequency on health-related quality of life in the institutionalized elderly	Rugbeer, N. et al. (2017)	Africa	The study population consisted of individuals aged 60 years and over and occupying elderly care facilities within a 30 kilometer radius of the Durban business center (CBD).	A quasi-experimental design was used to compare the effects of a 12 week group exercise program on two groups of participants using the pre-test and post-test procedures.	The findings suggest that group exercise is an effective intervention for enhancing and preserving mental HRQoL. This can help the elderly to maintain their independence and carry out activities daily life safely and effectively (8).
Improvement of symptoms and quality of life after exercise training in adults with moderate / severe persistent asthma.	Turner S. (2011)	United States of America	35 subjects aged 67.8 ± 10.6 years, with an FEV ₁ of $59 \pm 16\%$ of predicted, were randomly assigned to follow a period of 6 interventions with supervised exercise training (n = 20) or usual care (n = 15).	The period ran for 3 weeks during which asthma control was assessed weekly. Functional exercise capacity (6 minutes on foot, 6MWD) and QOL (Asthma QOL Questionnaire, AQLQ) were measured before, immediately	The exercise group had greater improvement immediately after and 3 months after the intervention in the AQLQ symptom domain (0.61, p = 0.001, and 0.57 points per item, p = 0.005) and the AQLQ activity limitation domain (0.43, p = 0.04, and 0.55 points per item, p = 0.04). 6 MWD increased (36 ± 37 m, p <0.01) in the exercise group immediately after training and continued

				after and 3 months after the intervention period.	to increase (34 ± 45 m, $p < 0.01$) at 3 months follow-up (9).
Physical activity and quality of life in older adults: an 18-month panel analysis.	Phillips SM (2013)	English	Adults living in the community (N = 321, M age = 63.8 years) recruited to participate were then contacted to participate in the 18 month follow-up.	<i>Cross-sectional study</i>	Satisfaction from baseline to 18 months through changes in exercise self-efficacy, physical, and disability limitations regardless of baseline relationships and demographic factors (10).
Elderly Gymnastics Affects Blood Pressure In Menopausal Women	Wulandari, ST (2019).	Indonesia	90 elderly as population and 30 women entered menopause	Research design Preexperimental, with One Group Pretest - Posttest.	The results of exercising a week 3 times in 3 weeks, the classification of hypertension blood pressure became normal in 6 people (35.3%) and prehypertension became normal in 2 people (11.8%) (11).
The Effect of Physical Activity with the Quality of Life of the Elderly with Hypertension at the Maria Sudarsih Ambarawa Nursing Home.	Windri, TM Kinasih. (2019)	Indonesia	22 elderly people live in Panti Wredha Wredha Maria Sudarsih Ambarawa as a population and 8 elderly with hypertension as samples	experimental research by design pre experiment design One Group Pre test -post test	The quality of life of the elderly at the Ambarawa Nursing Home shows that the average quality of life before the start of the study was 62.8% and increased to 65.25%. From this average result, it can be concluded that there is an increase in the quality of life of the elderly, it can be seen from the increase in the average quality of life of the elderly by 2.48% (12).
Benefits of Ankle Strategy Exercise for the Elderly Against Dynamic Balance	Widarti R. (2018)	Indonesia	17 female respondents and 15 male respondents who fit the research criteria.	<i>Quasy Experiment.</i>	The test results indicate a significance value of $p < 0.05$, there is a benefit on the dynamic balance of the elderly (13).

Effect of Intervention 12 Balance Exercise against Postural Balance in the Elderly	Ninik M & Hartin S. (2019)	Indonesia	The sample was divided into 2, namely group 1 (balance strategy exercise therapy) and group 2 (12 balance exercise therapy)	<i>experimental quasy</i>	From the Wilcoxon test, the elderly who only did therapy without 12 exercises were 0.039, but the elderly with 12 balance exercise interventions were Asymp Sig (2-tailed) of 0.005. This means that the 12 balance exercise intervention is more effective in improving the postural balance of the elderly (14).
The Effect of Gymnastics for the Elderly on the Level of Physical Fitness in the Elderly based on the 6 Minute Walking Test	Nuraeni, R., Akbar, MR, & Tresnasari, C. (2019)	Indonesia	80 people each group of 40 people. The fitness level assessment was carried out twice in the elderly group routinely exercising 12 times a month and the elderly group did not exercise regularly.	<i>quasi experiment</i> using purposive sampling technique	The statistical analysis showed that there was a significant difference between the elderly with routine exercise and the elderly who did not exercise regularly (p <0.05) so that it had an effect (15).
The Effect of Gymnastics for the Elderly on Sleep Quality in the Elderly	Bellakusuma N, & Yosef P. (2016)	Indonesia	36 members of the WULANA group	Analytical observational study with cross-sectional design	The average sleep quality of the routine elderly group was 2.78 ± 0.88 , while the non-routine group was 6.00 ± 2.70 . This indicates that there is a significant difference (p = 0.000) (16).
Physical Activity Affects Elderly Cognitive Function	Mersiliya S & Ety R. (2016)	Indonesia	104 elderly who are predominantly female, aged 60-74 years, are married, have chronic diseases and do not complete primary school / do not attend school.	<i>cross sectional</i> with cluster sampling method	The results show that there is a relationship between physical activity and cognitive function in the elderly (p = 0.000; $\alpha = 0.05$). The results of the analysis showed that the elderly who have high physical activity have normal cognitive function (17).

Benefits of Physical Exercise Training on Cognition and Quality of Life in the Weak Elderly	Francis Langlois et al (2012)	Canada	A total of 83 participants aged 61-89 years were assigned to an exercise-group (3 times a week for 12 weeks) or a control group (waiting list).	<i>non specific method.</i> The pre-test and post-test measures assessed physical capacity, cognitive performance, and quality of life	Compared with the control, the intervention group showed significant improvements in physical capacity (functional capacity and physical endurance), cognitive performance (executive function, processing speed, and working memory), and quality of life (global quality of life, recreational activities, physical capacity, social / family relationships, and physical health) (18).
Effects of Chronic Exercise on Severity, Quality of Life and Functionality in Parkinson's Elderly Patients: A Case Report	Eduardo Lattari et al (2014)	Brazil	A female patient aged 77 years, 8 years with Parkinson's disease and in Hoehn and Yahr stage 4, without dementia fit the criteria.	<i>Case Report</i>	Exercise appears to be effective in promoting functional capacity and maintenance of cognitive and motor function in Parkinson's disease patients. Regular exercise protocols can be implemented as an adjunct treatment to reduce severity.(19)

The Effect of Foundation-Group Exercise Schedules on the Quality of Life and Well-Being of Elderly Men and Women	Reza Masoudi et al (2012)	Iran	50 men and women aged 60 years and over	<i>non specific method.</i> Measurements were in the short form-36 (SF-36) and well-being questionnaire.	Using a group-foundation exercise schedule resulted in improvements in QOL scores and well-being domains.(20)
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Based on the research of Kiik et al (2018), it is described that regular balance exercise affects the increase in the quality of life of the elderly ($p < 0.001$) and reduces physical problems, namely decreased pain. Pain reduction can also reduce dependence on drugs. The ability of the elderly in doing activities increases so that they are physically healthier than before participating in the exercise⁽¹⁾.

One of the physical exercises for the elderly is the Trunk Stability Exercise. Research from Theresia et al (2019) states that interventions given to the elderly 3 times a week show an increase in body balance.⁽²⁾ In line with that, the ankle strategy exercise can improve the performance of the gastrocnemius, hamstring, and back muscles. This movement is useful for reducing the risk of falling and increasing dynamic balance (Widarti & Eddy Triyono, 2018)⁽¹³⁾.

Gymnastics is a sport that the elderly can do so that blood flows properly. This, according to the results of research by Wulandari & Marlina (2019), blood pressure during menopause can be reduced by exercising the fitness of the elderly because the blood vessels relax. Hypertension blood pressure changed to normal in 6 people (35.3%) and prehypertension also changed in two people (11.8%) who followed exercise⁽¹¹⁾. The elderly group who routinely do exercise has a higher VO₂ max because there are physiological changes in the body when exercising, namely pulmonary ventilation, cardiovascular ventilation, and the amount of blood flow (Nuraeni et al, 2019)⁽¹⁵⁾.

Research by Windri et al (2019), at the Ambarawa Nursing Home, the average result of an increase in the quality of life of the elderly is 2.48%. Gymnastics activities can prevent decreased body function, reduce anxiety, create feelings of pleasure, and grow self-confidence so that the quality of life in the elderly can also improve⁽¹²⁾.

The effect of other regular exercise is sleep quality. The results of a study by Bellakusuma & Yosef (2016) found that the average waiting time before going to bed for the elderly who did not do regular exercise was in the 30–40 minute period, while the elderly who did regular exercise needed 5–40 minutes. 15 minutes⁽¹⁶⁾.

In Canada, 83 participants aged 61–89 years assigned to group exercise (3 times a week for 12 weeks) saw greater benefits in executive control, processing speed, and working memory. All of these things are important in everyday activities, such as driving, cooking, or managing finances. The participants also tolerated the physical training program designed by a kinesiologist very well. This is influenced by special exercises tailored to the needs of participants based on geriatric examinations and physical therapist updates (Francis et al, 2012).⁽¹⁸⁾ In Brazil, effective exercise was able to maintain the cognitive and motor functions of a 77 year old female patient with Parkinson's disease. Regular exercise protocols can be implemented as an adjunct treatment to reduce severity (Lattari et al, 2014)⁽¹⁹⁾.

This review provides information that physical exercise in the elderly has a positive impact, namely reducing the risk

of falling, improving sleep quality, preventing or slowing down functional loss, and improving cognitive function in the elderly, however, it must be noted that there are variables that affect study articles such as samples, research methods. and the type of assessment so that physical activity must be adapted to the condition of the elderly.

CONCLUSION

As they get older, the more problems experienced by the elderly will increase, which results in decreased body function which affects their quality of life. One of the activities that the elderly can do is physical exercise. This exercise consists of balance exercises, gymnastics, and progressive muscle relaxation exercises. The information obtained as well as evidence from existing research has shown that choosing a stage of physical exercise that is suitable for activity and muscle mass movement in the elderly can minimize the incidence of falls and make the elderly physically stronger. Thus, it is hoped that the application of physical exercise can be carried out by the elderly in general and those with limited mobility so that the elderly who perform physical activities properly and appropriately will have a balance according to their biological abilities.

There needs to be a follow-up research method on the effect of physical exercise on the quality of life of the elderly as a way to maximize independence and health for the elderly.

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