AHMAR METASTASIS HEALTH JOURNAL
Available online at: http://journal.ahmareduc.or.id/index.php/AMHJ
Vol. 4. No. 2. June 2024, Page 35-43
P-ISSN: 2797-6483 E-ISSN: 2797-4952

# The Effectiveness of Dance Movement Therapy (DMT) and Tai Chi on Independence and Activity Daily Living (ADL) among Elderly

**Heni Sigarlaki[1*], Fery Agusman Motuho Mendrofa[2], Sonhaji[2]**

[1]Magister of Nursing Program, Universitas Karya Husada Semarang, Semarang, Central Java, Indonesia
[2]Department of Community Health Nursing, Universitas Karya Husada Semarang, Semarang, Central Java, Indonesia

**ARTICLE INFO**

***Article Type*:**
Research

***Article History:***
Received: 8 May 2024
Accepted: 30 June 2024
Published: 30 June 2024

***Corresponding author***
***Email:*** *sigarlakiheni@gmail.com*

**ORIGINAL ARTICLE**

**ABSTRACT**
The aging population in Indonesia is facing an issue of health and productivity. Moreover, the elderly are a population group that is vulnerable to decreased independence in carrying out daily activities. Existing studies found Dance Movement Therapy (DMT) and Tai Chi Gymnastics can be effective alternative therapy in improving the independence of the elderly. However, there have not been many studies that combine these two therapies in the context of elderly care in Indonesia. This study aimed to test the effectiveness of the combination of DMT and Tai Chi Gymnastics in improving independence and Activity Daily Living (ADL) among the elderly. This study is quasy-Experiment with pre-test and post-test nonequivalent group design. The sample in this study totalled 60 respondents (30 intervention group dan 30 control group). The participants of this study were selected based on the inclusion criteria which included the elderly with decreased functional activity. The results of data analysis showed a significant increase in the independence and moving of ADL of the elderly after receiving a combination intervention of Dance Movement Therapy and Tai Chi Gymnastics. This study is important to arrange more efforts for related stakeholders to improve the health and productivity of the elderly. Future studies can include a larger number of respondents and more independent and control variables.

**Keywords:** Elderly, Dance Movement Therapy (DMT), Tai Chi, Independence, Activity Daily Living (ADL)

**ABSTRAK**
Populasi tua di Indonesia menghadapi masalah kesehatan dan produktivitas. Lebih lanjut, lansia adalah populasi yang beresiko pada penururunan kemandirian dalam aktivitas sehari-hari. Studi terdahulu menunjukkan efek Dance Movement Therapy (DMT) dan Tai Chi dapat secara efektif meningkatkan kemandirian lansia. Sedangkan, belum ada studi yang menunjukkan kombinasi DMT dan Tai Chi meningkatkan produktivitas lansia. Studi ini bertujuan untuk menguji efektivitas kombinasi DMT dan Tai Chia pada lansia di Indonesia. Studi ini merupakan quasy-eksperiment dengan kelompok intervensi dan kontrol. Kedua grup diuji sebelum dan sesudah intervensi. Jumlah sampel yaitu 60 lansia (30 kelompok intervensi dan 30 kelompok kontrol). Pemilihan sample dilakukan berdasarkan kriteria inklusi dan eksklusi. Hasil penelitian ini menunjukkan signifikan peningkatan kemandirian lansia and kemampuan berpindah setelah diberikan intervensi DMT dan Tai Chi. Studi ini sangat penting untuk menyusun lebih banyak upaya dari pihak terkait untuk meningkatkan kesehatan dan produktivitas lansia. Studi selanjuntya dapat menambah jumlah respondent, variabel bebas dan variabel kontrol.

**Keywords:** Lansia, Dance Movement Therapy (DMT), Tai Chi, Kemandirian, Activity Daily Living (ADL)

## INTRODUCTION

In demographic transition, the existing issues are related to the aging population. Indonesia is now an aging population. As of 2022, Indonesia's senior population amounted to nearly 19 million. The number of elderly citizens has gradually increased over the past decade (Bhugolshastra & Patrika, 2021; Central Bureau of Statistics Indonesia, 2019; Maretalinia & Suyitno, 2022; Statistics, 2022). The elderly population in Indonesia faces various challenges related to social support, healthcare access, quality of life, and specific health issues. Existing studies highlighted the importance of social support in mediating loneliness and depression among the elderly (Liu et al., 2014). Empowering caregivers and implementing programs to enhance the quality of life for the elderly in social institutions are important in addressing the needs of aging individuals in Indonesia (Irianto et al., 2022). Factors affecting medication adherence and hypertension knowledge play a significant role in the health outcomes of the elderly in rural areas of Indonesia (Rahmawati & Bajorek, 2017).

The conditions of the elderly in rural Indonesia have relevance to the research in rural China (Zhuori et al., 2019). Vulnerabilities among the elderly in Indonesia, including ethical considerations and cultural shifts, emphasize the need for tailored support and interventions (Jena, 2014). The prevalence of non-communicable diseases among the elderly in Indonesia underscores the importance of addressing health problems specific to this demographic (Bagus et al., 2022). Utilization of healthcare services, family functionality, and cultural consonance are essential aspects to consider when designing interventions for the elderly in Indonesia (Fanany et al., 2014; Madyaningrum et al., 2018; Sunarti et al., 2022). Barriers and enablers of healthcare services for elderly individuals in rural settings must be identified to improve access to care (Aji et al., 2023).

To improve the ability and productivity of the elderly efforts to promote inclusive health services, community-based care, and empowerment programs for the elderly in Indonesia are essential for addressing their diverse needs (Dewi et al., 2020; Hidayati et al., 2022; Sumini et al., 2020). To have a healthy aging population, there are several ways can be efforts such as a good medical approach, social support, and nutrition balance (Acob et al., 2022; Chen & Baithesda, 2020; Pratono & Maharani, 2018; Sari et al., 2022; Sutanto & Basrowi, 2021).

There are some treatments and interventions to improve the elderly's health, such as gym and therapy. This study aimed to test the effectiveness of Dance Movement Therapy (DMT) and Tai Chi on independence and activity daily living among elderly in Indonesia.

## METHODS

This study is a quasi-experimental approach with a nonequivalent group design. This study was done from September to October 2023 in Tobelo Primary Health Care, North Halmahera District, North Maluku Province, Indonesia. The population in this study are alderlies with issues of activity daily living total of 1512 persons. To select the sample, the authors used non-probability sampling which is purposive sampling. The inclusion criteria include: having an issue of ADL, dependence, age 60 years old or older, not receiving other therapy (drugs or gym), being able to communicate, and willingness to participate. The exclusion criteria included immobility, having an issue of sitting for a long time, having cardiovascular diseases, not fully joining the intervention, and being against the procedure. The sample size for case-control study follows the formula:

$$\mathrm{n} = \frac{\mathrm{N}\, Z^2_{1-\alpha/2}\, P\,(1-P)}{(\mathrm{N}\text{-}1)\, d^2 + Z^2_{1-\alpha/2}\, P\,(1-P)}$$

$$\mathrm{n} = \frac{126 \text{ x } 1{,}96 \text{ x } 0.01\ (1-0.01)}{(126\text{-}1)\ 0.01^2 + 1{,}96 \text{ x } 0.01\ (1-0.01)}$$

$$\mathrm{n} = \frac{2{,}444}{0.0125 + 0.0194}$$

$$\mathrm{n} = \frac{2{,}444}{0.0319}$$

$$\mathrm{n} = 76{,}6$$

The sample in this study consisted of intervention and control groups that measured some variables pre- and post. Based on the result above, the total required sample is 76 elderlies with 38 intervention and 38 control. However, due to the limited number of elderlies during the survey time, each group only consisted of 30 elderlies.

The intervention group was given a combination of Dance Movement Therapy and Tai Chi whereas the control group was given Tai Chi. The intervention was given for 4 weeks with frequency 3 times a week. Before the intervention, both groups were asked about the dependence by using the Katz Index.

The main independent variable in this study is Dance Movement Therapy. It is the creative art of psychotherapy that utilizes movement and dance to support the physical, intellectual, and emotional health of an individual. Both groups are given Tai Chi, it is Tai chi is an art embracing the mind, body, and spirit. Originating in ancient China, tai chi is one of the most effective exercises for health of mind and body.

The dependent variables in this study are dependence and ADL. Independence is the elderly's ability to control and regulate actions based on their functional status. Being independent means not depending on other people to meet their daily needs. The maximum score for dependence is 17 with a cut-off score of 0-12 categorized as having dependence and a score 13-17 categorized as dependence. Daily activities (ADL) are activities that elderly people do every day, including 6 things, namely: 1) bathing, 2) getting dressed, 3) going to the toilet; 4) moving; 5) continent and 6) eating. In detail the Katz Index Questionnaire to assess bathing activities (questions no. 1&4); dressing (question no.2); going to the restroom (questions no. 5 & 7); moving (questions no. 9,11,12,14,17); continent (questions no. 6 &8); eating (questions no. 3 & 15). The independence was categorized for those who could be able to do all items. Those with at least one that could not be categorized as dependent. The data in this study was tested for univariate and bivariate. To examine the differentiation between independence and ADL for pre and post-intervention, the Wilcoxon test was performed. To test the effectiveness of Dance Movement Therapy and Tai Chi to improve independence and ADL, the Mann-Whitney test was done. This study used a 95% Confidence Interval to define the significant level. The validity and reliability of this study were done. Ethical approval was established with number 204/BAAK/S2KEP/SA/X/2023.

## RESULTS

The results in this study consisted of univariate and bivariate. Table 1 below shows the univariate analysis result for the intervention and control group. The total respondents in this study were 60 elderly consisting of 30 in intervention groups and 30 in control groups. It revealed that most of the elderly in this study are aged 60 years old (58.3%), female (81.7%), and farmers (81.7%).

**Table 1.** General characteristics of the sample

| Characteristics | Intervention group (%) | Control group (%) | Total |
|---|---|---|---|
| Age (years old) | | | |
| 60 | 18 (60.0%) | 17 (56.7%) | 35 (58.3%) |
| 61 | 5 (16.7%) | 4 (13.3%) | 9 (15.0%) |
| 62 | 2 (6.7%) | 4 (13.3%) | 6 (10.0%) |
| 63 | 2 (6.7%) | 2 (6.7%) | 4 (6.7%) |
| 64 | 1 (3.3%) | 1 (3.3%) | 2 (3.3%) |
| 65 | 2 (6.7%) | 2 (6.7%) | 4 (6.7%) |
| Sex | | | |
| Male | 5 (16.7%) | 6 (20.0%) | 11 (18.3%) |
| Female | 25 (83.3%) | 24 (80.0%) | 49 (81.7%) |
| Occupation | | | |
| Retirement | 2 (6.7%) | 0 (0.0%) | 2 (3.3%) |
| Farmer | 24 (80.0%) | 25 (83.3%) | 49 (81.7%) |

| | | | |
|---|---|---|---|
| Fisherman | 4 (13.3%) | 5 (16.7%) | 9 (15.0%) |
| Total | 30 (100.0) | 30 (100.0%) | 60 (100.0%) |

Table 2 below describes the cross-tabulation of variables of interest for intervention and control as well as pre and post-test. According to Independence, the majority of elderlies reported they were dependent before the intervention for both groups and reported all as independent after intervention for both groups. According to ADL, before the intervention, almost all of them reported they were independent in bathing, dressing, going to the bathroom, continent, and eating. However, they reported dependence on moving before the intervention and it became independent after the intervention. In detail, it is 20% independence and becomes 100% after intervention for the intervention group.

**Table 2.** Cross-tabulation of dependence and ADL for pre and post-test of both groups

| **Variables** | **Intervention group (%)** | | **Control group (%)** | |
|---|---|---|---|---|
| | **Pre-test** | **Post-test** | **Pre-test** | **Post-test** |
| Independence | | | | |
| No | 24 (80.0%) | 0 (0.0%) | 24 (80.0%) | 0 (0.0%) |
| Yes | 6 (20.0%) | 30 (100.0%) | 6 (20.0%) | 30 (100.0%) |
| Activity Daily Living | | | | |
| Bathing | | | | |
| Dependence | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| Independence | 30 (100.0%) | 30 (100.0%) | 30 (100.0%) | 30 (100.0%) |
| Dressing | | | | |
| Dependence | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| Independence | 30 (100.0%) | 30 (100.0%) | 30 (100.0%) | 30 (100.0%) |
| Go to bathroom | | | | |
| Dependence | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| Independence | 30 (100.0%) | 30 (100.0%) | 30 (100.0%) | 30 (100.0%) |
| Moving | | | | |
| Dependence | 24 (80.0%) | 0 (0.0%) | 24 (80.0%) | 0 (0.0%) |
| Independence | 6 (20.0%) | 30 (100.0%) | 6 (20.0%) | 30 (100.0%) |
| Continent | | | | |
| Dependence | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| Independence | 30 (100.0%) | 30 (100.0%) | 30 (100.0%) | 30 (100.0%) |
| Eating | | | | |
| Dependence | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| Independence | 30 (100.0%) | 30 (100.0%) | 30 (100.0%) | 30 (100.0%) |
| Total | 30 (100.0) | 30 (100.0%) | 60 (100.0%) | |

Table 3 below describes the differences between the intervention and control group which showed significantly different independence variables with p-value <0.001. However, according to ADL, there are no significant differences in bathing, dressing, going to the bathroom, continent, and eating between the intervention and control groups. The differences are only shown by a variable of moving. The interpretation is there are significant differences between the intervention and control groups related to independence and moving.

**Table 3.** Homogeneity test result of independence and ALD pre and post-test (Wilcoxon test)

| **Variables** | **Group** | **Differences** | | **p-value** |
|---|---|---|---|---|
| | | **Improvement** | **Statis** | |
| Independence | | | | |
| | Intervention | 24 (80.0%) | 6 (20.0%) | <0.001 |
| | Control | 24 (80.0%) | 6 (20.0%) | <0.001 |
| Activity Daily Living | | | | |
| Bathing | | | | |
| | Intervention | 0 (0.0%) | 30 (100.0%) | 1.000 |
| | Control | 0 (0.0%) | 30 (100.0%) | 1.000 |
| Dressing | | | | |

| | | | | |
|---|---|---|---|---|
| | Intervention | 0 (0.0%) | 30 (100.0%) | 1.000 |
| | Control | 0 (0.0%) | 30 (100.0%) | 1.000 |
| Go to bathroom | | | | |
| | Intervention | 0 (0.0%) | 30 (100.0%) | 1.000 |
| | Control | 0 (0.0%) | 30 (100.0%) | 1.000 |
| Moving | | | | |
| | Intervention | 24 (80.0%) | 6 (20.0%) | <0.001 |
| | Control | 24 (80.0%) | 6 (20.0%) | <0.001 |
| Continent | | | | |
| | Intervention | 0 (0.0%) | 30 (100.0%) | 1.000 |
| | Control | 0 (0.0%) | 30 (100.0%) | 1.000 |
| Eating | | | | |
| | Intervention | 0 (0.0%) | 30 (100.0%) | 1.000 |
| | Control | 0 (0.0%) | 30 (100.0%) | 1.000 |

Table 4 below shows the effectiveness of the intervention comparing before and after. For the variable of independence, there is significant improvement between before and after giving the intervention. According to ADL, the significant improvement only shows for the variable of moving and there is no significant improvement for other variables in ADL such as bathing, dressing, going to the bathroom, continent, and eating.

**Table 4.** Effectiveness of intervention on independence and ADL (Mann-Whitney test)

| **Variables** | **Group** | **Mean rank** | **p-value** |
|---|---|---|---|
| Independence | Intervention | 30.50 | <0.001 |
| | Control | 30.50 | <0.001 |
| Activity Daily Living | Intervention | 30.50 | 1.000 |
| Bathing | Control | 30.50 | 1.000 |
| Dressing | Intervention | 30.50 | 1.000 |
| | Control | 30.50 | 1.000 |
| Go to bathroom | Intervention | 30.50 | 1.000 |
| | Control | 30.50 | 1.000 |
| Moving | Intervention | 30.50 | <0.001 |
| | Control | 30.50 | <0.001 |
| Continent | Intervention | 30.50 | 1.000 |
| | Control | 30.50 | 1.000 |
| Eating | Intervention | 30.50 | 1.000 |
| | Control | 30.50 | 1.000 |

Overall, the majority of elderlies in this study were aged 60 years old, female, and farmers. The significant differences between the intervention and control groups are only shown by the variable of independence and moving. The significant effectiveness between pre and post-tests only showed by the variable of independence and moving. The variables under ADL such as bathing, dressing, going to the bathroom, and eating found no significant difference between the intervention and control group and no effectiveness between pre and post-test.

## DISCUSSION

The results of this study revealed that improvement in independence and moving in activity daily living (ADL). However, there is no improvement for other categories of ADL such as bathing, dressing, going to baht room, continent, and eating comparing between the intervention and control group or comparing pre and post-test.

There is some evidence from previous research. Existing studies in the United Kingdom revealed that Dance Movement Therapy (DMT) is effective in the treatment of adults with depression and dementia (Karkou et al., 2019, 2023; Meekums et al., 2015; Vankova et al., 2014). A similar study focused on dementia also found the effectiveness of DMT especially for older adults (Ho et al., 2020). Another study related to DMT but focused on the impact on health-related psychological outcomes in Germany revealed that 22 weeks after intervention showed most effect remained stable or slightly increased (S. C. Koch et al., 2019). Earlier study by Koch

revealed moderate effects on quality of life and clinical outcomes (depression and anxiety) (S. Koch et al., 2014). Moreover, another study identified an improvement in well-being after DMT (Bräuninger, 2014). An additional existing study on Parkinson's disease found improvement due to dance therapy (Michels et al., 2018). The study in Greece revealed more focus on physical fitness and the well-being of the elderly after interventing by traditional dance (Douka et al., 2019).

Dance/Movement Therapy (DMT) and Tai Chi are beneficial interventions for the elderly population. Dance therapy involves socialized movement activities aimed at enhancing individual functioning and adaptation to the challenges of aging (Lindner, 1982). On the other hand, Tai Chi, characterized by slow and gentle movements, has shown effectiveness in preventing falls, improving balance, and enhancing cognitive and physical functions in the elderly (Lee, 2010; Sun et al., 2015; Zheng et al., 2017). Tai Chi's slow and continuous movements are well-suited for the physical condition of the elderly, making it easy to learn and beneficial for improving cerebrovascular function and lower body strength (Li et al., 2020; Yang et al., 2021).

Moreover, Tai Chi has been found to positively impact various aspects of health in the elderly, such as cardiovascular and cardiopulmonary function, muscle strength, arterial compliance, and cognitive abilities (Lu et al., 2012; Nguyen, 2015; Sun et al., 2015; Zhu et al., 2021). Studies have also highlighted Tai Chi's role in improving sleep quality, reducing daytime sleepiness, and enhancing the quality of life in older adults (Hakamies-Blomqvist et al., 2004). Additionally, Tai Chi has been associated with benefits for individuals recovering from the pandemic, showing improvements in heart function, blood pressure, lung function, and blood circulation (Anam et al., 2017; Luo et al., 2020; Wang et al., 2010).

Overall, existing studies found the effectiveness of Dance Movement Therapy (DMT) and Tai Chi on the elderly's health. However, previous studies more likely focused on the psychological and cognitive health aspects, instead of physical health that this study focused on. There are limitations of this study such as the lack number of respondents and the condition of the elderly before intervention were independences.

## CONCLUSION

The elderlies in this study were mostly aged 60 years old, female, and farmers. The findings revealed that intervention such as Dance Movement Therapy (DMT) and Tai Chi was found to effectively improve the independence and ADL of moving among the elderly. However, there is an insignificant impact of the intervention on the other ADL aspects such as bathing, dressing, going to the bathroom, continent, and eating. The literature review and existing studies mostly focused on mental and cognition aspects instead of physical health. This study is important to arrange more efforts for related stakeholders to improve the health and productivity of the elderly. Future studies can include a larger number of respondents and more independent and control variables.

## REFERENCES


Acob, J. R. U., Yusuf, A., & Nugroho, H. S. W. (2022). Supportive Attitude of Nursing Students From the Philippines and Indonesia Towards Elderly Care. *International Journal of Health Sciences*. https://doi.org/10.53730/ijhs.v6ns3.9476

Aji, B., Masfiah, S., Anandari, D., Intiasari, A. D., & Widyastari, D. A. (2023). Enablers and Barriers of Healthcare Services for Community-Dwelling Elderly in Rural Indonesia: A Qualitative Evidence Synthesis. *Portuguese Journal of Public Health*. https://doi.org/10.1159/000530047

Anam, S. K., Moelino, M. A., & Pratiwi, Y. S. (2017). Balance, General Cognition and Lower Motoric Strength in Elderly: Tai Chi Versus Brisk Walking. *Althea Medical Journal*. https://doi.org/10.15850/amj.v4n2.1063

Bagus, W. I., Mayastuti, M., & Kristyono, J. (2022). Trends, Problems, and Policies of the Elderly Population in East Java Indonesia. *Technium Social Sciences Journal*. https://doi.org/10.47577/tssj.v37i1.7726

Bhugolshastra, M., & Patrika, S. (2021). Demographic Transition And India: A Statistical Analysis. *International Research Journal of Geography*, *38*(2), 30–38.

Bräuninger, I. (2014). Specific dance movement therapy interventions—Which are successful? An intervention and correlation study. *The Arts in Psychotherapy*, *41*(5), 445–457. https://doi.org/https://doi.org/10.1016/j.aip.2014.08.002

Central Bureau of Statistics Indonesia. (2019). *Statistik Penduduk Lanjut Usia 2019 (Statistics of Elderly in 2019)*.

Chen, C. M., & Baithesda, B. (2020). Primary Healthcare Utilization by the Elderly: A Secondary Analysis of the 5th Indonesian Family Life Survey. *Working With Older People*. https://doi.org/10.1108/wwop-01-2020-0001

Dewi, U., Yuanjaya, P., Kuncorowati, P. W., & Fitriana, K. N. (2020). *Elderly Healthy Home for Promoting Inclusive Health Services in Indonesia*. https://doi.org/10.2991/assehr.k.200204.049

Douka, S., Zilidou, V. I., Lilou, O., & Manou, V. (2019). Traditional Dance Improves the Physical Fitness and Well-Being of the Elderly. *Frontiers in Aging Neuroscience*, *11*. https://doi.org/10.3389/fnagi.2019.00075

Fanany, R., Fanany, I., & Tas'ady, R. (2014). The Experience of Old Age in West Sumatra, Indonesia: Culture Shift and Cultural Consonance in the Modern Era. *The International Journal of Aging and Society*. https://doi.org/10.18848/2160-1909/cgp/v03i01/35232

Hakamies-Blomqvist, L., Fisher, K., Harmer, P., Irbe, D., Tearse, R. G., & Weimer, C. (2004). Tai Chi and Self-Rated Quality of Sleep and Daytime Sleepiness in Older Adults: A Randomized Controlled Trial. *Journal of the American Geriatrics Society*. https://doi.org/10.1111/j.1532-5415.2004.52255.x

Hidayati, N., Sudarmo, S., & Wahyunengseh, R. D. (2022). Empowerment Program for a Poor Elderly Group in Boyolali, Indonesia. *Kne Social Sciences*. https://doi.org/10.18502/kss.v7i5.10560

Ho, R. T. H., Fong, T. C. T., Chan, W. C., Kwan, J. S. K., Chiu, P. K. C., Yau, J. C. Y., & Lam, L. C. W. (2020). Psychophysiological Effects of Dance Movement Therapy and Physical Exercise on Older Adults With Mild Dementia: A Randomized Controlled Trial. *The Journals of Gerontology: Series B*, *75*(3), 560–570. https://doi.org/10.1093/geronb/gby145

Irianto, G., Habil, M. H., & Hashim, F. (2022). Empowering Caregivers to Improve Quality of Life of Elderly in a Social Institution in Lampung Province, Indonesia. *Journal of World Science*. https://doi.org/10.58344/jws.v1i8.81

Jena, Y. (2014). Multiple Vulnerabilities of the Elderly People in Indonesia: Ethical Considerations. *Philosophy Study*. https://doi.org/10.17265/2159-5313/2014.04.004

Karkou, V., Aithal, S., Richards, M., Hiley, E., & Meekums, B. (2023). Dance movement therapy for dementia. *Cochrane Database of Systematic Reviews*, *8*.

Karkou, V., Aithal, S., Zubala, A., & Meekums, B. (2019). Effectiveness of Dance Movement Therapy in the Treatment of Adults With Depression: A Systematic Review With Meta-Analyses. *Frontiers in Psychology*, *10*. https://doi.org/10.3389/fpsyg.2019.00936

Koch, S. C., Riege, R. F. F., Tisborn, K., Biondo, J., Martin, L., & Beelmann, A. (2019). Effects of Dance Movement Therapy and Dance on Health-Related Psychological Outcomes. A Meta-Analysis Update. *Frontiers in Psychology*, *10*. https://doi.org/10.3389/fpsyg.2019.01806

Koch, S., Kunz, T., Lykou, S., & Cruz, R. (2014). Effects of dance movement therapy and dance on health-related psychological outcomes: A meta-analysis. *The Arts in Psychotherapy*, *41*(1), 46–64. https://doi.org/https://doi.org/10.1016/j.aip.2013.10.004

Lee, M. S. (2010). Effect of Tai Chi on Body Balance in the Elderly. *Focus on Alternative and Complementary Therapies*. https://doi.org/10.1111/j.2042-7166.2010.01057_8.x

Li, L., Wang, J., Guo, S., Xing, Y., Ke, X., Chen, Y., He, Y., Wang, S., Wang, J., Cui, X.-W., Wang, Z., & Tang, L. (2020). *Tai Chi Exercise Improves Age-Associated Decline in Cerebrovascular Function: A Cross-Sectional Study*. https://doi.org/10.21203/rs.3.rs-90840/v1

Lindner, E. (1982). Dance as a Therapeutic Intervention for the Elderly. *Educational Gerontology*. https://doi.org/10.1080/0380127820080207

Liu, L., Zheng-gang, G., & Zuo, J. (2014). Social Support Mediates Loneliness and Depression in Elderly People. *Journal of Health Psychology*. https://doi.org/10.1177/1359105314536941

Lu, X., Hui-Chan, C. W. Y., & Tsang, W. N. (2012). Effects of Tai Chi Training on Arterial Compliance and Muscle Strength in Female Seniors: A Randomized Clinical Trial. *European Journal of Preventive Cardiology*. https://doi.org/10.1177/2047487311434233

Luo, Z., Chen, Y., Wang, L., Chi, W., Cheng, X., & Zhu, X. (2020). The Effect of Tai Chi on the Quality of Life in the Elderly Patients Recovering From Coronavirus Disease 2019. *Medicine*. https://doi.org/10.1097/md.0000000000023509

Madyaningrum, E., Chuang, Y.-C., & Chuang, K. Y. (2018). Factors Associated With the Use of Outpatient Services Among the Elderly in Indonesia. *BMC Health Services Research*. https://doi.org/10.1186/s12913-018-3512-0

Maretalinia, M., & Suyitno, S. (2022). Readiness of healthcare providers to face the aging society in Indonesia. *Philippine Journal of Health Research and Development*, *25*(4), 61–64.

Meekums, B., Karkou, V., & Nelson, E. A. (2015). Dance movement therapy for depression. *Cochrane Database of Systematic Reviews*, *2*.

Michels, K., Dubaz, O., Hornthal, E., & Bega, D. (2018). "Dance Therapy" as a psychotherapeutic movement intervention in Parkinson's disease. *Complementary Therapies in Medicine*, *40*, 248–252. https://doi.org/https://doi.org/10.1016/j.ctim.2018.07.005

Nguyen, H. M. (2015). An Assessment of Tai Chi Exercise on Cognitive Ability in Older Adults. *International Journal of Science Culture and Sport*. https://doi.org/10.14486/intjscs436

Pratono, A. H., & Maharani, A. (2018). Long-Term Care in Indonesia: The Role of Integrated Service Post for Elderly. *Journal of Aging and Health*. https://doi.org/10.1177/0898264318794732

Rahmawati, R., & Bajorek, B. (2017). Factors Affecting Self-Reported Medication Adherence and Hypertension Knowledge: A Cross-Sectional Study in Rural Villages, Yogyakarta Province, Indonesia. *Chronic Illness*. https://doi.org/10.1177/1742395317739092

Sari, D. N., Utami, W., & Zairina, E. (2022). The Influence of Feeling Lonely and Received Social Support on Medication Adherence in Elderly With Hypertension. *Jurnal Farmasi Dan Ilmu Kefarmasian Indonesia*. https://doi.org/10.20473/jfiki.v9i32022.252-261

Statistics. (2022). *Statistik Penduduk Lanjut Usia 2014*.

Sumini, Sukamdi, Pangaribowo, E. H., Keban, Y. T., & Darwin, M. (2020). Elderly Care: A Study on Community Care Services in Sleman, DIY, Indonesia. *Journal of Aging Research*. https://doi.org/10.1155/2020/3983290

Sun, J., Kanagawa, K., Sasaki, J., Ooki, S., Xu, H., & Wang, L. (2015). Tai Chi Improves Cognitive and Physical Function in the Elderly: A Randomized Controlled Trial. *Journal of Physical Therapy Science*. https://doi.org/10.1589/jpts.27.1467

Sunarti, S., Candradikusuma, D., Indiastari, D., Prehatiningsih, S. F., Wibowo, B. P., & Waafi, A. K. (2022). Perceived Family Functionality Among Elderly Patient With Covid-19 Infection: A Perspective From Developing Country. *Jurnal Kedokteran Brawijaya*. https://doi.org/10.21776/ub.jkb.2022.032.02.8

Sutanto, L. B., & Basrowi, R. W. (2021). Nutrition Interventions for Healthy Ageing in Indonesia. *Amerta Nutrition*. https://doi.org/10.20473/amnt.v4i1sp.2020.1-5

Vankova, H., Holmerova, I., Machacova, K., Volicer, L., Veleta, P., & Celko, A. M. (2014). The Effect of Dance on Depressive Symptoms in Nursing Home Residents. *Journal of the American Medical Directors Association*, *15*(8), 582–587. https://doi.org/https://doi.org/10.1016/j.jamda.2014.04.013

Wang, Q., Sawada, M., Noriyama, Y., Arita, K., Ota, T., Sadamatsu, M., Kiyotou, R., Hirai, M., & Kishimoto, T. (2010). Tai Chi Exercise Versus Rehabilitation for the Elderly With Cerebral Vascular Disorder: A Single-Blinded Randomized Controlled Trial. *Psychogeriatrics*. https://doi.org/10.1111/j.1479-8301.2010.00334.x

Yang, Y., Li, J., Xu, N., Yang, W., & Liu, J. (2021). Meta-Analysis of Elderly Lower Body Strength: Different Effects of Tai Chi Exercise on the Knee Joint-Related Muscle Groups. *Evidence-Based Complementary and Alternative Medicine*. https://doi.org/10.1155/2021/8628182

Zheng, G., Xiong, Z., Zheng, X., Li, J., Duan, T., Qi, D., Ma, K. L., & Chen, L. (2017). Subjective Perceived Impact of Tai Chi Training on Physical and Mental Health Among Community Older Adults at Risk for Ischemic Stroke: A Qualitative Study. *BMC Complementary and Alternative Medicine*. https://doi.org/10.1186/s12906-017-1694-3

Zhu, X., Luo, Z., Chen, Y., Wang, L., Chi, W., Jiang, L., Liu, K., Zhao, L., & Zhang, H. (2021). Tai Chi for the Elderly Patients With COVID-19 in Recovery Period. *Medicine*. https://doi.org/10.1097/md.0000000000024111

Zhuori, N., Cai, Y., Yan, Y., Cui, Y., & Zhao, M. (2019). Does Social Support Affect the Health of the Elderly in Rural China? A Meta-Analysis Approach. *International Journal of Environmental Research and Public Health*. https://doi.org/10.3390/ijerph16183471