



12 (2) (2023) 104 - 110

**Journal of Physical Education, Sport,  
Health and Receptions**

<http://journal.unnes.ac.id/sju/index.php/peshr>



**The Effectiveness of Physical Fitness Exercise Towards Cognitive Disorders in the Elderly**

**Hidayat<sup>1✉</sup>, Rasyidah Jalil<sup>2✉</sup>, Imam Pribadi<sup>3✉</sup>**

Pendidikan Jasmani, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Muhammadiyah Palopo,  
Palopo, Indonesia<sup>123</sup>

**Article History**

Received February 2022

Accepted April 2023

Published Vol.12 No.(2) 2023

**Keywords:**

Gymnastics; cognitive;  
elderly .

**Abstract**

Cognitive disorder in the elderly causes an economic burden on the family and less independence from the elderly. Cognitive decline will be a serious threat to the quality of life of the elderly. The purpose of this study was the effect of physical fitness gymnastics on cognitive impairment in the elderly for gymnastics participants in the Padang Sappa field, Ponrang sub-district. The design of this research is a qualitative descriptive with data collection techniques of unstructured interviews or free interviews where the researcher does not have to use interview guidelines that have been arranged systematically and completely. The approach taken is a phenomenological approach that brings to experience, by exploring and understanding the object of research. Sample selection is based on age 55 and over according to the World Health Organization (WHO). The results of this research show that the elderly who joins the gymnastic are still capable of following, aseting, and remembering the movements from the instructor, and from the interview results show that the elderly still have good responses which show that the cognitive function is still good in doing activities and thinking.

**How to Cite**

Hidayat, Jalil, R., & Pribadi, I. (2023). The Effectiveness of Physical Fitness Exercise Towards Cognitive Disorders in the Elderly. *Journal of Physical Education, Sport, Health and Recreation*, 12 (2), 104-110.

© 2023 Universitas Negeri Semarang

✉ Correspondence address :

E-mail: [hidayatmapakoeblack@gmail.com](mailto:hidayatmapakoeblack@gmail.com), [rasyidah@umpalopo.ac.id](mailto:rasyidah@umpalopo.ac.id)  
[imampribadi@umpalopo.ac.id](mailto:imampribadi@umpalopo.ac.id)

p-ISSN 2460-724X  
e-ISSN 2252-6773

## INTRODUCTION

Gymnastics comes from the Greek "gymnos" which means naked. In English it is known as "gymnastics" which means explaining the various movements performed by someone who is naked while according to the Big Indonesian Dictionary (KBBI) gymnastics is a body exercise with certain movements such as stretching, moving and stretching the whole body. Because at that time the technology for making clothes did not yet exist (Arifin, 2018). Gymnastics is very good for maintaining health in the body as a whole and can be done anywhere, at home, in a fitness center or on the field. The public's enthusiasm for fitness exercises accompanied by the rhythm of music is indeed very high, making people interested in following it (Siregar et al., 2022).

The benefits of aerobic exercise can not only improve physical fitness but can also make the body condition healthier (R. Dewi & Rifki, 2020). By doing regular exercise, you can improve your physical fitness, but if you don't do physical exercise regularly, your physical fitness is poor or bad, so when you do a lot of activities, you will feel very tired, which means you can even get sick due to the activities you have done (Astri et al., 2017).

Physical fitness is something that every human being must have (Aulia et al., 2022). Good physical fitness will certainly have a positive impact on us so that it does not cause health problems. Physical fitness is a person's dynamic health score which becomes the basic physical ability to carry out tasks that must be carried out by our bodies (Wardani & Nurudin, 2020). Physical fitness can also be interpreted as the ability of a person's body to carry out daily activities without causing fatigue (Sakti Rumpoko et al., 2022). Physical fitness is a condition that reflects the human ability to carry out activities productively without experiencing excessive fatigue and based on several expert opinions, it can be concluded that physical fitness is a very important human component to carry out daily activities efficiently without experiencing excessive fatigue (Idham et al., 2022).

Physical fitness functions to develop a person's ability to work, so that he can complete his work properly (Princess & Unib, 2019). The function of physical fitness is increasingly clear, because achieving good performance without being accompanied by a fresh and good body will result in unsatisfactory activities (Barantai, 2022). Physical fitness can be interpreted as a person's ability to complete daily work without significant fatigue, by expending considerable energy, to meet his movement needs and enjoy free time and also to meet emergency needs at any time when we are needed.

(Sukoharjo et al., 2022). The degree of physical fitness determines human physical abilities in carrying out learning activities, especially learning related to physical activity (Moh & Tomaso, 2020). Good and correct physical fitness can be obtained through some correct, regular and measurable physical exercise so that the impact felt on our bodies is enormous (Kusnandar et al., 2019). Physical fitness is the physical ability to work optimally and reduce the risk of health problems (Kamil & Prastia, 2022). Physical fitness in the elderly can inhibit the decline in function of cognitive impairment and impaired body balance in the elderly (Lanawati et al., 2015).

Cognitive disorder is the human ability to recognize and interpret the environment in the form of attention, language, memory, visuospatial and decision making functions (Basuki, 2022). Symptoms of this cognitive disorder can be followed by behavioral disturbances such as delusions of suspicion, auditory or visual hallucinations, agitation (restlessness, confusion), depression, sleep disturbances and appetite (Eni & Safitri, 2019). Decreased cognitive function can be assessed using the Indonesian version of the Montreal Cognitive Assessment test kit (MoCA Ina). This test is more sensitive than the MMSE test because the total score of this test is 30 points. The assessment includes executive function, visuospatial, language, delayed recall, attention, abstraction, and orientation (Akbar, Pitra, et al., 2020). Disruption of one or more of these functions can certainly cause some impairment of social functioning, work, and daily activities (Isnaini & Komsin, 2020).

The world's elderly population aged 60 years and over is growing rapidly compared to other ages. Indonesia is a country in the Southeast Asia region which is going through an aging structured era with a population of over 60 years around 7.81%. The increase in the elderly population was partly driven by an increase in the socio-economic level of the community, progress in the field of health services, and an increase in the level of public awareness (Mumtahanah & Fijianto, 2022). Data from the Central Bureau of Statistics in 2020, in Indonesia the number of elderly will reach 24.49 million and in 2045 it is estimated that the number of elderly will reach 63.31 million and will continue to increase every year. In Indonesia, around 5% of elderly aged 60 years and over are estimated to experience cognitive impairment and the incidence will continue to increase by around 20%.

. Decreased intellectual function is one of the most serious problems when the aging process occurs which will make it difficult for the elderly to live independently, causing the elderly to experience a decrease in their quality of life (Surya Rini

et al., 2018). According to the World Health Organization (WHO) the age of the elderly starts from 55 years and over, early detection, especially for the detection of cognitive disorders in the elderly, is carried out regularly which is useful for improving the quality of life and as a guide for families to provide support so that an independent life for the elderly can be achieved.(Akbar, Dian Ayu Hamama Pitra, et al., 2020). The definition of elderly according to the Indonesian Ministry of Health is someone who has entered the age of 60 years and over and has entered the final stages of his life phase (1). According to WHO there are several classifications for old age, including: Middle age, namely the age group of 45-54 years, then the elderly group, namely the age group of 55-65 years, Young elderly (young old), namely the age group of 66-74 years. And the last one is the old elderly (old), namely the age group of 75-90 years (2). In the final phase of life, you will experience an aging process or an aging process accompanied by a decrease in body resistance, changes in physical, psychological, spiritual and psychosocial health, so that you are very susceptible to disease, one of which is high blood pressure.(Muhammad GA Putra et al., 2023). The first aspect of cognitive impairment that will decrease in old age is a decrease in memory so that it can make it difficult to do activities(Pranata et al., 2021). Decreased cognitive function in the elderly is significantly associated with an increase in depression and has an impact on poor quality of life in the elderly(Pragholapati et al., 2021). One of the factors that can affect cognitive function in the elderly is a lifestyle with exercise that can increase the body's metabolic activity and oxygen demand(Farisi et al., 2021).

Based on the background description above, it can be understood that inElderly age is an age where there is a decrease in several body functions which causes one of them is cognitive impairment. This will result in a better quality of life for the elderly. So that the elderly will experience life difficulties such as hearing loss, dementia, decreased concentration which makes them not independent in carrying out activities. In this case, it is necessary to reduce the impact so that the quality of life of the elderly can increase. One way to reduce this risk is to improve the quality of physical fitness.

## METHODS

This study uses a qualitative descriptive method. Qualitative research is a research process to understand how phenomena occur in human nature by compiling a comprehensive and complex picture that can be presented in words.(Fadli, 2021).

There is an approach used in this study, namely a phenomenological approach that brings experience, by exploring and understanding the object of research(Darmayanti & Bahauddin, 2020). The subjects of this research were 3 informants 2 of the participants and 1 instructor of physical fitness gymnastics. This research was conducted at sample houses and gymnastic locations in the Padang Sappa field, Ponrang District. The techniques of data collection include observation, unstructured interviews and documentation.

Observations are made to see which samples we will examine which will later be taken as research data. Unstructured interviews are free interviews where researchers do not have to use interview guidelines that have been arranged systematically and completely in data collection so that the questions will be more developed(Untari, 2020). Interviews are used as a data collection tool by holding conversations or debriefing orally between the interviewer and the resource person(Fandini et al., 2018). The techniques of data analysis to be used are data collection, data reduction, data presentation and conclusion. Details can be seen in **Figure 1**.



**Figure 1.** Research stages.

## RESULTS AND DISCUSSION

In improving public health, especially in the Padang Sappa sub-district, the Padang Sappa Health Center carries out a healthy gymnastics program agenda which is carried out every Friday which is located in the Padang Sappa field, this activity is attended by all groups of people from children to the elderly/elderly so that it is expected to have a positive impact For the people of Padang Sappa, what is of particular concern here are the elderly participants who enter at the age of 55 and over, because in general the elderly have experienced a decline in cognitive function which makes it difficult for them to carry out their activities. Cognitive impairment in the elderly makes them experience a decrease in their quality of life so that they are required to exercise to improve their physical fitness. Before carrying out this research there were stages in the research such as finding the formulation of the problem to be studied, the formulation of the problem contained in this study was cognitive impairment in the elderly then continued with research planning which was divided into several stages which first

surveyed the location, collected initial information, and prepared materials for research then continued with data collection, data management, data analysis and research results. This research was conducted for 1 month in accordance with the stages carried out, namely from January 5 to January 31 2023 in Padang Sappa Village, Ponrang District, Luwu Regency. Informants 1 and 2 are elderly participants who take part in gymnastics. Informant 1 is a 65 year old woman, while the second informant is a 55 year old woman. Informant 3 is a gymnastic instructor, a woman aged 33 years. Based on interviews with elderly participants and gymnastic instructors, the following **Table 1.** answers were obtained:

From these interviews **Table 1.** it was con-

cluded that these elderly people were able to analyze and remember the gymnastic movements they saw so that their concentration abilities were still very good even though their bodies did not run the way they wanted due to body condition factors. With the physical activity that occurs it will affect cognitive, physical activity that is regulated in a structured manner and includes repetitive body movements and has the aim of improving health in the elderly. Lack of physical activity can also be one of the factors that affect cognitive function decline (Noor & Merijanti, 2020) it is certain that every structured gymnastic movement affects the cognitive health of the elderly. In the statements of informants 1 and 2 they can still follow the movements of gymnastics

**Table 1.** Results of interviews with informants 1 and 2 (elderly participants)

Question	Informant Answer
Have you been doing gymnastics for a long time?	(Informant 1) Yes, about 2 months I have participated in this exercise (inform an 2) I have been participating in gymnastics for more than 3 months because a neighbor invited me
After participating in the exercise, how do you feel?	(Informant 1) My body is more comfortable to move, I don't get tired easily and my mind is less burdened. I also experienced headaches before and tension in my neck during activities outside the home and exercise routines I rarely experience (Informant 2) Feel good body and sleep so comfortable
Do you often experience Dementia?	(informant 1) Very rarely, sometimes I forget small things like putting cabinet keys (informant 2) If you forget it once in a while
When you do gymnastics, how far do you follow the movements of the gymnastic instructor?	(informant 1) I testify in slow motion, if I move fast, I just move if I'm tired, I stop, sometimes we want to move like that but it's the body that's difficult to move (Informant 2) I followed it until it was finished but sometimes it didn't match the instructor's movements so I just moved my body as much as I could
How are your activities at home after participating in these gymnastic activities?	(Informant 1) As long as I participate in this exercise activity, I am more enthusiastic about doing activities at home and walking long distances to go to the mosque or to the garden. My eyesight has improved because I can still read well (Informant 2) Activities at home become more fluid, such as cooking, washing and cleaning the house. Moreover, I, my children are all boys, so I still have to clean the house, go to the market.

even though they are not perfect but have a very big effect for them.

It can also be seen that they are still very active in moving and doing activities at home and outside the home so that a lot of physical activity occurs, with a lot of activities involving cogniti-

on or what is referred to as cognitive activity. In statement (Iryana & Khan, n.d.) Cognitive impairment affects a person's capacity for attention, language, memory, visuospatial function, and decision making in relation to their environment, such as the elderly in general, cognitive impairment greatly af-

fects their quality of life but the physical activity and gymnastics carried out by the sample have a positive impact on them which makes his cognitive function still very good at remembering, speaking, and making decisions.

Not doing physical activity can lead to a fourth risk of death globally. Approximately 5.5% of deaths (3.2 million people) globally and increasing to 7.7% of deaths in high-income countries. Physically inactive people have a 20% to 30% increased risk of all-cause death compared to those who do at least 30 minutes of moderate-intensity physical activity on a regular basis every day of the week (Fatria, 2023). Not only from physical activity but in remembering they are better than the elderly whose physical fitness is less so they have dementia. Dementia is a disease that occurs as a result of a decrease in brain function such as memory, problem solving including progressive communication, resulting in disruption of activities. (Ida Kresna et al., 2022) this disease that the elderly need to watch out for as in the statement of informant 1 "It's very rare, sometimes I forget small things like putting cupboard keys" and informant 2 "If you forget it once in a while" this shows that the exercise activities they do do and other activities have a good influence on them. In the interview, their responses when interacting were still very good and this clearly proved that their cognitive function was still very good so that there was knowledge that they got from the exercise activities they did.

**Table 2.** Results of interviews with informant 3 (instructor)

Question	Answer
How do you respond to elderly participants who take part in gymnastics?	(Informant 3) With the participation of the elderly, it has an impact on all groups that gymnastics is suitable for all ages, not only for mothers but also the elderly or teenagers and adds to the excitement of exercising
How long can the elderly participants follow the gymnastic movements that you do?	The gymnastics that I present is aerobics, of course it will make them tired quickly, but these elderly people still follow the gymnastic movements until they are finished, even though they sometimes stop for a moment, especially when they have entered the core movements.

As a gymnastic instructor, what is the positive impact of the elderly participating in gymnastics?

The positive impact is that they are happier than just staying at home, here they can interact with other participants and make their minds calmer

In **Table 2.** the results show that the elderly who take part in gymnastics have a good physique that allows them to imitate, evaluate and remember what they see and feel and this greatly affects the cognitive abilities of the elderly. The impact experienced by the elderly makes their minds more pleasant and healthy. In other studies, it is said that in old age, the decreased ability of the brain and body makes the elderly body easily fall ill, senile, and frustrated. The brain as the power center of thought requires treatment. However, this decrease can be corrected by doing exercise or therapy (SR Dewi, 2016). Treatment or maintenance of the structure of the brain can be done by maintaining the structure of the brain, among others, with the basic principle of harmony of movement and breathing, namely by performing movements that involve various brain functions such as visual, imaginative, auditory and emotional, such as gymnastics. (Astuti, 2022) said that elderly gymnastics which is done regularly and gradually can reduce blood cholesterol levels in the elderly. If cholesterol levels decrease, it is very good for the body because it can prevent us from the risk of cardiovascular disease, from this statement gymnastics is an activity that really needs to be followed by the elderly in maintaining a better quality of life. As has been felt by the two samples.

The elderly who experience cognitive disorders by participating in this exercise slowly make their cognitive function improve again, even though it is gradual (Shahrudin, 2020). With regular and structured movements, gymnastics has many positive effects on cognitive development. Gymnastics is also a sport that can be done anywhere because it does not require a large area of equipment or space alone but has effectiveness for the health of the human body. This healthy exercise activity must be developed for the elderly by presenting elderly exercise which has the potential to be developed in the community considering that this sport is very easy to practice and develop and the provision of facilities and infrastructure is not too difficult. The existence of research on gymnastics carried out in the Padang Sappa sub-district, Ponrang sub-district, showed great enthusiasm from community participants, both teenagers and the elderly.

## CONCLUSION

Based on the description of the results of this study, as a whole it shows that the elderly with their attitudes and behavior can be concluded that the effectiveness or effects of these gymnastic activities really help the elderly reduce the risk of cognitive impairment which is often experienced by elderly people which causes cognitive function to deteriorate. If things don't go well, this will make them experience less independence and a poor quality of life. The description states that the exercises performed show that the elderly are able to imitate, evaluate and remember so that they have a positive impact on the elderly in thinking and doing activities. These results make the elderly live more independently and there is an increase in their quality of life.

## REFERENCES

- Akbar, R. R., Dian Ayu Hamama Pitra, Mutiara Anissa, Yuri Haiga, & Rahma Triyana. (2020). Deteksi Dini Gangguan Kognitif dan Depresi Pada Lansia. *Dinamisia : Jurnal Pengabdian Kepada Masyarakat*, 4(4), 673–678. <https://doi.org/10.31849/dinamisia.v4i4.4051>
- Akbar, R. R., Pitra, D. A. H., Anissa, M., & Anggraini, D. (2020). Hubungan Tingkat Kemandirian Dan Gangguan Kognitif Pada Lansia. *Human Care Journal*, 5(3), 671. <https://doi.org/10.32883/hcj.v5i3.814>
- Arifin, Z. (2018). Pengaruh Latihan Senam Kebugaran Jasmani (Skj) Terhadap Tingkat Kebugaran Siswa Kelas V Di Min Donomulyo Kabupaten Malang. *Journal AL-MUDARRIS*, 1(1), 22. <https://doi.org/10.32478/al-mudarris.v1i1.96>
- Astri, K., Putri, P., & Pranata, L. (2017). Pengaruh senam discorobic terhadap tingkat kesegaran jasmani remaja. *Jurnal Ilmiah Bakti Farmasi*, 2(2), 27–34.
- Astuti. (2022). Manfaat Senam Lansia Terhadap Kadar Kolesterol di Wilayah Kerja Puskesmas Noling Kecamatan Bupon. *Mega Buana Journal of Innovation and Community Service*, 1(2), 25–29.
- Aulia, W., Suryansah, S., & Januarto, O. B. (2022). Pengaruh Permainan Tradisional Terhadap Tingkat Kebugaran Jasmani Siswa SMP: Literature Review. *Sport Science and Health*, 4(1), 94–102. <https://doi.org/10.17977/um062v4i12022p94-102>
- Barantai, S. P. (2022). Tingkat Kesegaran Jasmani Mahasiswa Prodi Penjaskesrek Stkip Paris Barantai. 10, 1–11.
- Basuki, M. I. Y. H. O. (2022). Jurnal Keperawatan Medika Hubungan Kehilangan Gigi Dengan Fungsi Kognitif Pada Lansia. 1(1), 18–27.
- Darmayanti, T. E., & Bahauddin, A. (2020). Narasi Gerbang Rumah Peranakan Di Pecinan, Lasem, Jawa Tengah: Pendekatan Fenomenologi. *Modul*, 20(2), 126–133. <https://doi.org/10.14710/mdl.20.2.2020.126-133>
- Dewi, R., & Rifki, M. (2020). Pengaruh Senam Aerobik Terhadap Tingkat Kebugaran Jasmani Siswa. *Jurnal Stamina*, 3(6), 398–416. <http://stamina.ppj.unp.ac.id/index.php/JST/article/view/516>
- Dewi, S. R. (2016). Pengaruh Senam Otak Dan Bermain Puzzle Di Pltu Jember. 64–69.
- Eni, E., & Safitri, A. (2019). Gangguan Kognitif terhadap Resiko Terjadinya Jatuh Pada Lansia. *Jurnal Ilmiah Ilmu Keperawatan Indonesia*, 8(01), 363–371. <https://doi.org/10.33221/jiiki.v8i01.323>
- Fadli, M. R. (2021). Memahami desain metode penelitian kualitatif. *Humanika*, 21(1), 33–54. <https://doi.org/10.21831/hum.v21i1.38075>
- Fandini, P., Sulatani, S., & Susanto, D. (2018). Layanan Konseling Kelompok Dengan Teknik Behavioral Contract Dalam Menumbuhkan Karakter Disiplin Siswa Di Sma Pgri 2 Banjarmasin Tahun Ajaran 2017/2018. *Jurnal Mahasiswa Bk An-Nur : Berbeda, Bermakna, Mulia*, 4(1), 13. <https://doi.org/10.31602/jmbkan.v4i1.1322>
- Farisi, S., Rasni, H., & Susumaningrum, L. A. (2021). Hubungan Tingkat Kebugaran Jasmani dengan Status Kognitif pada Lansia di Desa Dukuh Dempok , Wuluhan , Jember Correlation between Fitness Level and Cognitive Function Status in Elderly at Dukuh Dempok Village , Wuluhan , Jember. 9(3), 182–188.
- Fatria, I. (2023). Program Aktivitas Fisik Untuk Menukurkan Risiko. 7, 702–706.
- Ida Kresna, M., Martini, N. K., Dedy, I. P., & Hardy. (2022). The Relationship Between Nutrition Knowledge and Physical Activities to Dementia on Elderly at Tista Village Kerambitan District Tanaban Regency. 1(2), 223–230.
- Idham, Z., Neldi, H., Komaini, A., Sin, T. H., & Damrah, D. (2022). Pengaruh Kebugaran Jasmani, Status Gizi, dan Motivasi Belajar terhadap Hasil Belajar PJOK. *Jurnal Basicedu*, 6(3), 4078–4089. <https://doi.org/10.31004/basicedu.v6i3.2196>
- Iryana, H., & Khan, A. (n.d.). Hubungan Kejadian Hipertensi dengan Fungsi Kognitif Lansia. 5(1), 120–134.
- Isnaini, N., & Komsin, N. K. (2020). Gambaran Fungsi Kognitif Pada Lansia. *Jurnal Human Care*, 5(4), 1060–1066.
- Kamil, A. Al, & Prastia, T. N. (2022). Senam Aerobik Sebagai Upaya Peningkatan Kebugaran Jasmani Pada Ibu-Ibu Rt 04 Desa Cikarawang. *Abdi Dosen: Jurnal Pengabdian Pada ...*, 6(1). <http://pkm.uika-bogor.ac.id/index.php/ABDIDOS/article/view/1168>
- Lanawati, L., Listyowati, R., & Kuswardhani, R. A. T. (2015). Hubungan antara Senam Kesegaran Jasmani dengan Fungsi Kognitif dan Keseimbangan Tubuh Lansia di Denpasar. *Public Health and Preventive Medicine Archive*, 3(2), 168. <https://doi.org/10.15562/phpma.v3i2.111>
- Muhammad G.A Putra, Makruf, A. K., Wava, M. V., Jannah, A. N., Rahmatina, A., Fitrianti, A. N., Azizah, A. F. N., Safitri, D. L., Widamayanti, L. N., Suryani, L., Meti, Dewi, M. A., Rahmawati,

- N. W., Sari, R. N., Jannah, S. N., & Marlina, S. (2023). Efektivitas Senam Lansia Terhadap Penurunan Tekanan Darah Di Padukuhan Benyo. *Jurnal Pengabdian Kesehatan*, 3(1), 23–32. <https://jpk.jurnal.stikescendekiautamakudus.ac.id/index.php/jpk/article/view/250/138%0Ahttps://akperyarsismd.e-journal.id/BNJ>
- Mumtahanah, N. A., & Fijianto, D. (2022). Literature Review : The Effectiveness of Elderly Gymnastics on Lowering Blood Pressure in the Elderly Literature Review : Efektivitas Senam Lansia Terhadap Penurunan Tekanan Darah Pada Lansia. 1245–1252.
- Noor, C. A., & Merijanti, L. T. (2020). Hubungan antara aktivitas fisik dengan fungsi kognitif pada lansia. *Jurnal Biomedika Dan Kesehatan*, 3(1), 8–14. <https://doi.org/10.18051/jbiomedkes.2020.v3.8-14>
- Pragholapati, A., Ardiana, F., & Nurlianawati, L. (2021). Gambaran Fungsi Kognitif Pada Lanjut Usia (Lansia). *Jurnal Mutiara Ners*, 4(1), 14–23. <https://doi.org/10.51544/jmn.v4i1.1269>
- Pranata, L., Elisabeth, N., & Sri, A. (2021). Pendampingan Lansia dalam Meningkatkan Fungsi Kognitif melalui Permainan Kartu Remi. *JPMB: Jurnal Pemberdayaan Masyarakat Berkarakter*, 4(2), 195–198. <http://journal.rekarta.co.id/index.php/jpmb>
- Putri, M., & Unib, P. (2019). Pengaruh Latihan Skj 2018 Terhadap Peningkatan Kebugaran Jasmani Mahasiswa Putri Penjas UNIB Intan Soraya Program Studi Pendidikan Jasmani FKIP Universitas Bengkulu. 3(2), 249–255.
- Sakti Rumpoko, S., Dwi Jayanti, K., Febrianti<sup>3</sup>, R., Rohman Hakim, A., Sunjoyo, S., & Septi Sistiasih, V. (2022). Tingkat Kebugaran Jasmani Mahasiswa Prodi Pendidikan Olahraga. *Jurnal Porkes*, 5(1), 260–271. <https://doi.org/10.29408/porkes.v5i1.5635>
- Siregar, I., Priono, J., & Nasution, A. F. (2022). Analisis Pengaruh Senam pada Lansia Terhadap Tingkat Kebugaran. *All Fields of Science Journal Liaison Academia and Society*, 2(2), 396–401. <https://doi.org/10.58939/afosj-las.v2i2.270>
- Sukoharjo, Adi, R., Febrianti, R., & Rohman, A. (2022). Survei Tingkat Kebugaran Jasmani Siswa Kelas Iv , V Dan Vi Sd Negeri. 8(2), 72–83.
- Surya Rini, S., Kuswardhani, T., & Aryana, S. (2018). Faktor – faktor yang berhubungan dengan gangguan kognitif pada lansia di Panti Sosial Tresna Werdha Wana Seraya Denpasar. *Jurnal Penyakit Dalam Udayana*, 2(2), 32–37. <https://doi.org/10.36216/jpd.v2i2.35>
- Syahrudin, S. (2020). Kebugaran Jasmani Bagi Lansia Saat Pandemi Covid-19. *JUARA : Jurnal Olahraga*, 5(2), 232–239. <https://doi.org/10.33222/juara.v5i2.943>
- Untari, S. K. (2020). Kreatifitas Guru Dalam Menyongsong Pembelajaran Masa Pandemi Covid- 19. *Buana Pendidikan: Jurnal Fakultas Keguruan Dan Ilmu Pendidikan*, 16(30s), 49–53. <https://doi.org/10.36456/bp.vol16.no30s.a2757>
- Wardani, D., & Nurudin, A. (2020). Pengaruh Senam Bugar Muhammadiyah Terhadap Kebugaran Jasmani Siswa SMP. *Physical Activity Journal*, 2(1), 100. <https://doi.org/10.20884/1.paju.2020.2.1.3330>