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# MEMORY IMPROVEMENT IN THE ELDERLY THROUGH GHUNNAH THERAPY

## PENINGKATAN MEMORI PADA LANJUT USIA MELALUI TERAPI GHUNNAH

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**Abstract**

*The vibrations produced by reading ghunnah have a favorable influence on a person's cognitive function, specifically in the form of memory strengthening or improvement in order to prevent senile dementia. The ability of tajweed Ghunnah is thought to have a good impact on memory. Furthermore, this capacity can help to prevent senility, which is a typical problem among the elderly. The purpose of this study was to investigate the effect of ghunnah therapy on memory. The quantitative approaches utilized in this investigation were combined with a pre-post experimental design. The Reading Span Test method was used to assess respondents' memory before and after ghunnah therapy. The goal was to demonstrate that Ghunnah's intervention variable was the only one that had an effect on memory improvement. The findings revealed that respondents' memory scores improved before and after ghunnah therapy. As a result, it is possible to conclude that ghunnah therapy has a substantial association with memory.*

**Keywords:** Memory, Vibration, Ghunnah

**Abstrak**

Getaran yang dihasilkan ketika membaca ghunnah memberikan efek positif terhadap fungsi kognitif seseorang, yakni berupa penguatan memori atau peningkatan daya ingat sehingga dapat mencegah pikun. Kemampuan tajwid Ghunnah dipandang mampu akan memberikan dampak positif terhadap daya ingat. Selain itu, kemampuan tersebut secara positif dapat mencegah kepikunan yang biasa di derita oleh seseorang yang sudah memasuki usia senja. Penelitian ini dilakukan dalam upaya menganalisis pengaruh terapi ghunnah terhadap daya ingat. Penelitian ini menggunakan metode kuantitatif dengan desain pre-post eksperimen. Daya ingat responden diukur dengan menggunakan metode *Reading Span Test* pada saat sebelum dan sesudah diberikan terapi ghunnah. Tujuannya adalah untuk menunjukkan bahwa variabel intervensi Ghunnah adalah satu-satunya variabel yang berdampak pada peningkatan memori. Hasil penelitian menunjukkan bahwa terdapat peningkatan skor daya ingat pada responden sebelum dan sesudah diberikan terapi ghunnah. Oleh karena itu, dapat disimpulkan bahwa terapi Ghunnah memiliki hubungan yang signifikan dengan daya ingat.

**Kata Kunci:** Daya Ingat, Getaran, Ghunnah

## **INTRODUCTION**

The Quran has been proven to offer a wide range of health benefits, including improved memory. Proficiency in Ghunnah and Tajwid can have a positive impact on memory and help prevent cognitive decline. The act of reading the Quran with proper Makharijul (articulation points) and Tajwid is similar to brain gymnastics and tongue exercises. The tongue is the only organ that can generate vibrations that stimulate the brain. This can help in preventing Alzheimer's, stroke, and insomnia. Brain gymnastics primarily involve light movements. These exercises can open up parts of the brain that may be less active, leading to improved memory. Tongue exercises, on the other hand, help prevent Alzheimer's. The nerves in the tongue are connected to the brain, so tongue exercises stimulate the large brain (Dennison, 2009; Diana et al., 2017).

According to Sheikh Asyraf al-Ja'fari in the Tuhfah al-Athfal program, one of the scientific marvels of the Quran is that when Ghunnah is recited, vibrations occur on top of the reader's head (Al-Fadhil, 2019). These vibrations are believed to have positive health benefits for the reader, particularly in enhancing cognitive functions such as memory strengthening, and thus preventing cognitive decline (Al-Fadhil, 2019).

To determine whether Ghunnah is being recited correctly or not, it is indicated that no sound will come out when the nose is closed. This means that the perfect sound is one that emerges through the nasal cavity.

Through this mechanism, vibrations occur above the head when Ghunnah is recited. In other words, when Ghunnah is recited and the head is touched, vibrations can be felt on top of the head (Al-Fadhil, 2019).

In Putra's research, it is stated that listening to the Quran can also serve as a stimulus for brain memory (Suteja Putra et al., 2018). Enhancing memory is highly important. According to Schlessinger and Groves' theory, behavior is guided by the knowledge it acquires, and this knowledge primarily comes from memorizing facts about the world. This is because memory is a perfectly structured system (Rakhmat, 2000). Low long-term memory capacity can have consequences, with one of the burdens being dementia. In the world, there is one new dementia patient every 3 seconds (Indonesia, 2019).

The Islamic community is falling behind due to the fragmentation of knowledge. There is a need for the integration of knowledge as an effort to catch up and make the knowledge acquired by the Islamic community more comprehensive. The Quran and Hadith should be placed as sources of knowledge to Islamize the field of knowledge. One aspect of this knowledge is the many miracles and wisdom found in studying the Quran for health. As evidenced by the research conducted by Eviarty (2023), there is an influence of reading stimuli from the Quran on the reduction of systolic and diastolic blood pressure in the elderly with hypertension (Eviarty et al., 2023). However, there has been very little scientific research

and proof related to the Quran and its impact on health. Research and development in education that is currently taking place still predominantly focuses on formal education. However, studying the Quran, especially for the general public, is more often done through non-formal institutions. Therefore, the researchers are interested in conducting a study related to the influence of ghunnah Tajweed skills on memory.

### RESEARCH METHOD

This research employs a quantitative method with a pre-post experimental design to determine the extent to which proficiency in Tajwid Ghunnah affects the improvement of memory in the respondents. The study is conducted at the Fadhilah Quran Foundation. The sample for this research consists of 34 students from the Griya Fadhilah Qur'an Foundation, with inclusion criteria being female students aged over 40 years. Data collection involves the measurement of Ghunnah proficiency by the instructor and then testing their memory capabilities. The students are provided with Ghunnah Tajwid training for a duration of 3 weeks. After completing the training, both students and instructors' Ghunnah proficiency and memory capabilities are re-evaluated. Memory capacity is assessed using the Reading Span Test, consisting of 60 questions. The Ghunnah Tajwid proficiency is measured through 13 oral test questions, assessing factors such as tempo, pitch, and consistency in their Ghunnah. To analyze the influence of Ghunnah Tajwid proficiency on

memory levels, hypothesis testing is carried out using statistical tools like the T-test, Pearson correlation, and ANOVA at a 95% confidence level. Additionally, confounding variables that may affect the independent variable are controlled for. The aim is to demonstrate that the Ghunnah intervention variable is the sole variable that has an impact on improving memory.

### RESEARCH RESULTS AND DISCUSSION

#### Results of Ghunnah Intervention on Memory

Reading the Quran is not just about reciting ordinary text. The Quran must be read with proper Tajwid. When someone's Tajwid is accurate, it produces pleasant tones for the listener, especially for the reader. This has an effect on cognitive activity in the brain. As a result, individuals who regularly read the Quran have more active brains and a greater brain capacity for maintaining long-term memory. The Ghunnah therapy provided to the respondents shows results as presented in the research findings table below.

**Table 1**  
Distribution of Memory Scores (n=34)  
Source: Primary Data.

Memory	Average		Min		Max		SD	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Section 1	56.8	83.7	0	0	100	100	24.6	24.8
Section 2	57.8	77.8	11	0	100	100	31.7	23.0
Section 3	47.0	62.1	0	8	100	100	26.3	23.4
Section 4	43.5	54.7	0	7	87	87	24.8	21.6
Section 5	33.6	46.5	0	6	89	89	21.3	21.8
Average Score	47.7	65	10.4	15.8	86.2	90.6	21.6	19.6

Based on the table above, it can be observed that the pre-test memory score is 47.7 points, with the lowest score in the pre-test memory being 10.4 points and the highest score being 21.69 points. In the post-test, the memory

score is 65.5 points, with the lowest score being 15.8 points and the highest score being 90.6 points.

**Table 2**  
Analysis of the Influence of Ghunnah Therapy Intervention on Memory (n=34)

Variable		Mean	Selisih Mean (CI 95%)	Sig
Memory of section 1	Pre	56.8	26.9	0.000
	Post	83.7	(18.5- 35.2)	
Memory of section 2	Pre	57.8	20.029	0.000
	Post	77.8	(11.3 - 28.6)	
Memory of section 3	Pre	47.0	15.118	0.000
	Post	62.1	(7.1 - 23.1)	
Memory of section 4	Pre	43.5	11.176	0.001
	Post	54.7	(3.3- 18.9)	
Memory of section 5	Pre	33.6	12.853	0.002
	Post	46.5	(5.2- 20.5)	
Average total score	Pre	47.7	17.2176	0.000
	Post	65	(11.7 - 22.6)	

Source: Primary Data.

Based on the table above, it can be observed that there are results from 5 memory recall sessions before and after providing ghunnah therapy to the respondents. In part 1, there is an increase in memory scores from before Ghunnah therapy (56.85 points) to after Ghunnah therapy (83.76 points), with an increase of 26.91 points. This difference is statistically significant at a 95% confidence level, indicating that Ghunnah therapy can enhance memory. In part 2, there is an increase in memory scores from before Ghunnah therapy (57.85 points) to after Ghunnah therapy (77.88 points), with an increase of 20.02 points. This difference is statistically significant at a 95% confidence level, suggesting that Ghunnah therapy can improve memory. In part 3, there is an increase in memory scores from before Ghunnah therapy (47.06 points) to after Ghunnah therapy (62.18 points), with an

increase of 15.11 points. This difference is statistically significant at a 95% confidence level, implying that Ghunnah therapy can enhance memory. In part 4, there is an increase in memory scores from before Ghunnah therapy (43.53 points) to after Ghunnah therapy (54.71 points), with an increase of 11.17 points. This difference is statistically significant at a 95% confidence level, indicating that Ghunnah therapy can boost memory. In part 5, there is an increase in memory scores from before Ghunnah therapy (33.65 points) to after Ghunnah therapy (46.50 points), with an increase of 12.85 points. This difference is statistically significant at a 95% confidence level, suggesting that Ghunnah therapy can improve memory.

When considering the overall average across all sections, there is an increase in memory scores from before Ghunnah therapy (47.7 points) to after Ghunnah therapy (65.00 points), with an increase of 17.21 points. This difference is statistically significant at a 95% confidence level, indicating that Ghunnah therapy can enhance memory.

Additionally, the mothers who participated in this study are quite productive in their daily lives despite their age. In Shephali Dixit findings, workload was actually identified as a factor causing cognitive decline in the elderly. Her research showed that elderly females experienced more cognitive decline compared to males (Dixit et al., 2022). This is attributed to the fact that women who have a workload, combined with other factors

such as family circumstances, living conditions, and behavioral issues, can lead to high levels of anxiety, worry, and sadness, which can result in cognitive decline (Dixit et al., 2022).

The decrease in the point increase in memory from one level to the next, from part 1 to part 5, is attributed to the fact that as the test level increases, the number of sentences in each set also increases. This leads to respondents struggling to remember the last word of each sentence they've read. They assume that the difficulty in recalling sentences they've just read during the test is due to their older age. Individuals in the elderly age group often view memory decline as a natural part of the aging process. However, research conducted by Firdaus has shown that age is significantly related to cognitive function, with cognitive function gradually declining as individuals get older (Firdaus, 2020). Adults who have reached old age often experience a decline in their ability to remember information in a specific context, known as episodic memory, as a result of the aging process (Hertzog et al., 2021).

Furthermore, some respondents often shared their life experiences during the pre and post-test periods. For example, some respondents talked about feeling lonely because their children are married and no longer live at home. Such feelings can also be a contributing factor to memory decline among the elderly. This aligns with the findings of Min Roh (2021), whose research

showed that elderly individuals living with a partner tend to have more interactions with family members and experience emotional support in various situations at home. Consequently, they are at a higher risk of experiencing subjective cognitive impairment compared to elderly individuals who live alone (Roh et al., 2021). In a study by Zafar et al., it was found that elderly individuals with cognitive impairments living in nursing homes are more vulnerable to loneliness, depression, and poor quality of life compared to those living with their family members. One of the primary risks of living without family support is social isolation, which can lead to cognitive function disturbances, thus negatively impacting the quality of life of the elderly (Zafar et al., 2021). These findings are supported by a longitudinal study conducted by Sanna et al., conducted six times over the past ten years nationwide in the UK, which found that increasing social isolation among the elderly is associated with declining memory function over time (Read et al., 2020).

Based on the statistical tests conducted in this study, it is evident that Ghunnah therapy has a significant relationship with memory among the women attending the Griya Fadhilah Al-Qur'an religious study groups. These results are consistent with the research by Mavunda, who applied segmental vibration therapy to elderly respondents and found that the intervention improved cognitive function, impacting balance and executive function, particularly

visuospatial working memory (Mavundza, 2019). Both ghunnah therapy and vibration therapy, also known as Whole Body Vibration, provide vibration effects to the head, thus influencing the cognitive function capabilities. Similarly, the study conducted by Ida et al. (2022) showed that vibration therapy can enhance brain health and cognitive function in the elderly (Bonanni et al., 2022). Both Ghunnah therapy and segmental vibration therapy provide vibrations to the head. According to Al Fadhil, these vibrations have a positive effect, strengthening memory and preventing memory decline (Al-Fadhil, 2019). In line with the research by Tamas oroszi et al. (2022), who conducted whole-body vibration (WBV) experiments on male rats, the results indicated that daily 10-minute vibration therapy for five weeks improved brain function in older rats (Oroszi et al., 2022). Mice are commonly used as experimental animals because they have anatomical, physiological, and genetic structures that are similar to humans (Mutiarahmi et al., 2021). The research by Guangcong Peng (2021) and their colleagues also demonstrated that eight weeks of vibration training in rats resulted in a significant enhancement of cognitive function. The vibration effect provided neuroprotection, reduced nerve damage, and prevented nerve cell death (Peng et al., 2021). Furthermore, based on randomized clinical trial results from Ana et al., vibration therapy was found to be associated with memory improvement. The vibrations

produced by this therapy can enhance cognitive abilities related to thinking, learning, and memory in healthy individuals. Additionally, significant improvements in cognitive patterns and electroencephalogram activation were observed in elderly women suspected of mild dementia after eight weeks of therapeutic intervention using WBV, highlighting the stimulating effects of WBV (de Souza Freitas et al., 2022).

One promising behavioral intervention is cognitive training. Effective cognitive training in late adulthood aims to build resilience against age-related neuropathological diseases (Chandramallika Basak, Shuo Qin, 2021). Interventions that can prevent cognitive decline among the elderly in Islam itself can be carried out through several spiritual aspects believed to be beneficial in preventing cognitive decline in the elderly. These include practices such as prayer (Salat), reading or listening to the Quran, similar to Ghunnah therapy, fasting (Puasa), and others. (Basuki et al., 2023).

**Table 3**  
Distribution of Characteristics of Gunnah Contributions

Gunnah Deposit	N	%	95% CI	
			Lower	Upper
Poor	0	0.0	0.0	0.0
Fair	1	2.9	0.0	8.8
Good	24	70.6	55.9	85.3
Very Good	9	26.6	11.8	41.2

Source: Primary Data.

The table above is a table of the characteristics of Ghunnah abilities among respondents. It can be observed that the majority of respondents have a good level of Ghunnah contributions, with some having a

fair level of Ghunnah contributions

**Table 4**  
Distribution of Ghunnah Proficiency Spread

Gunnah	N	%	95% CI	
			Low	Upper
<b>Types of Gunnah</b>				
Poor	0	0	0	0
Fair	0	0	0	0
Good	25	73.5	58.8	88.2
Very Good	9	26.5	11.8	41.2
<b>Gunnah Tempo</b>				
Poor	0	0	0	0
Fair	1	2.9	0	8.8
Good	25	73.5	58.8	88.2
Very Good	8	23.5	8.9	38.2
<b>Gunnah Level</b>				
Poor	0	0	0	0
Fair	4	11.8	2.9	20.6
Good	22	64.7	50.0	79.4
Very Good	8	23.5	8.9	38.2
<b>Gunnah Consistency</b>				
Poor	0	0	0	0
Fair	1	2.9	0	8.8
Good	28	82.4	67.6	94.1
Very Good	5	14.7	2.9	29.4

Source: Primary Data.

Based on the table above, it can be observed that respondents have good categories for each Ghunnah ability variable.

**Table 5**  
The Influence of Ghunnah Proficiency on Memory

	N	r	Sig.
<b>Gunnah Score</b>	34	-0.45	0.799

Source: Primary Data.

Based on the table above, the correlation coefficient (r) is -0.45, indicating a very weak correlation between memory and Gunnah scores. Additionally, the p-value is 0.799, which is greater than 0.05, meaning there is no significant relationship between memory and Gunnah scores. The difference in statistical outcomes between Ghunnah scores and memory recall tests with Ghunnah therapy suggests that one does not necessarily need to have proficient Quranic reading skills to reap its benefits. Even with

less advanced Quranic reading abilities, individuals can still experience beneficial impacts. Despite respondents having relatively low or insufficient Ghunnah reading abilities, regular engagement in Ghunnah therapy and tongue stimulation can trigger sensory responses in the brain.

When someone learns to recite and uses their tongue to pronounce words, their brain and motor memory record the movements required to produce those sounds (A. Shukri et al., 2020). This knowledge can then be used to optimize ongoing sound production, as the brain has access to tongue movement memory that helps in shaping the tongue for better sound or word production (Heyne et al., 2019). Thus, Ghunnah therapy can influence memory, as seen in the memory scores of respondents before and after the intervention. Reading the Quran correctly and memorizing it can have a positive impact on memory performance (A. Shukri et al., 2020). Listening to, reading, and memorizing the Quran can provide similar benefits. Other benefits include activating and enhancing memory capacity and ensuring mental well-being (Che Wan Mohd Rozali et al., 2022).

The use of unique language is often linked to specific neurological conditions. Typically, the left brain functions as the language center in many individuals, while the right brain has different roles in cognitive processes (Rossi et al., 2020). Human speech production is complex, involving cognitive planning, muscle actions, and

sound generation. Two major brain pathways, the ventral (bilateral) and dorsal (left hemisphere), potentially play active roles in both speech production and comprehension and contribute to vocalization planning. Speech production involves three levels: cognitive planning, physiological (muscle actions), and acoustic (sound generation). Vocalization planning originates from the speaker's brain. The motor core in the brainstem and spinal cord sends the necessary instructions for muscle coordination activities. Vocal cord vibrations produce sound sources, which are modulated in the vocal tract area, including speech articulators. Finally, speech sounds emanate from the lips (Almaghrabi et al., 2023). The concept of sound placement in language, vocalization, and tongue positions can contribute to our understanding of how our brains associate sounds with locations or positions in the mouth (sound-space association) and how these sounds have symbolic meanings in language (sound symbolism) (Vainio et al., 2023).

**Results of Respondents' Physical Activity on Memory**

Different levels of physical activity improve symptoms and maintain and preserve brain structures that are crucial for motor and cognitive abilities in older age (Hammond & Stinchcombe, 2022). The pre-test and post-test activities also included providing a questionnaire containing questions about the daily physical activities of elderly women.

The research results obtained are presented in the following table.

**Table 6**  
Analysis of the Influence of Sleep Quality on Memory

Variable	Mean		F		Sig	
	Pre	Post	Pre	Post	Pre	Post
Poor Sleep Quality	59.80	-				
Almost Poor Sleep Quality	46.24	71.30	0.158	0.743	0.854	0.395
Good Sleep Quality	47.63	63.65				

Source: Primary Data.

The table above shows that there is no relationship between memory and sleep quality during both the pre-test and post-test, as indicated by the sig value > 0.05. This aligns with research conducted by Bian Yuan and colleagues, where their results indicated that sleep quality indirectly impacts learning and memory abilities (Bian et al., 2021). The relationship between sleep quality and memory (memory tests) is negative, meaning that poor sleep quality affects cognition, leading to a decline in memory (Cruz et al., 2022). However, other studies have reported inconsistent results regarding the relationship between sleep quality and memory (Zhu et al., 2020). In the Prete study, initial correlation results confirmed a significant negative correlation between sleep quality and cognitive performance (Prete et al., 2023). This might be because the majority of the respondents had good sleep quality. They were elderly housewives with reduced life demands, focusing on worship and further religious study, especially in reading the Quran. This was

revealed through respondents' statements describing their activities from waking up to bedtime.

In the findings from HavenBrook and colleagues, it was noted that sleep plays a significant role in the process of long-term memory consolidation. This means that while we sleep, our brains organize and integrate the information we've learned throughout the day into long-term memory (Harenbrock et al., 2023). The brain is active during sleep, and effective consolidation of associative memory occurs through regular collaboration between slow oscillations and spindles during non-REM sleep (NREM). This allows information being processed in the hippocampus to be transferred to long-term memory storage in the neocortex (Muehlroth et al., 2020). In another study conducted by Kevin and his colleagues, the role of sleep-in processing, strengthening, and perfecting post-learning memory was examined. Non-REM sleep is more focused on memory consolidation, while REM sleep is associated with memory refinement (MacDonald & Cote, 2021). It's important to note that sleep-related issues can significantly impact a person's quality of life (Winsor et al., 2023). Optimizing good sleep quality can help maintain brain health during aging, and poor sleep quality at an early stage was associated with changes in brain structure that may reflect the long-term effects of poor sleep on brain health (Tsiknia et al., 2023). Regarding interventions to improve sleep quality, moderate to substantial interventions

include the use of sleep aids, relaxation techniques, music, and manual therapies (Beswick et al., 2023).

In other studies, it's explained that by reading the Quran, a person can employ coping strategies. Reading the Quran is not only beneficial for individuals but listening to its recitation can also provide peace and blessings from Allah, which can positively affect a person's sleep quality (Abdullah et al., 2022).

In addition to sleep quality, there is a variable of respondents' activities that is addressed as a variable in this study. The distribution of observation results can be seen in the following table.

**Table 7**  
The distribution of the Respondents' Activity Index while working

Question	N		%	
	Pre	Post	Pre	Post
<b>What is the mother's primary occupation?</b>				
Low activity	17	9	50	26.5
Moderate activity	14	24	41.2	70.6
Heavy activity	3	1	8.8	2.9
<b>How often does the mother sit at the workplace?</b>				
Never	1	0	2.9	0
Rarely	9	3	26.5	8.8
Sometimes	9	12	26.5	35.3
Often	11	18	32.4	52.9
Always	4	1	22.8	2.9
<b>How often does the mother stand at the workplace?</b>				
Never	0	0	0	0
Rarely	6	4	17.6	11.8
Sometimes	11	7	32.4	20.6
Often	15	21	44.1	61.8
Always	2	2	5.9	5.9
<b>How often does the mother walk at the workplace?</b>				
Never	0	0	0	0
Rarely	7	2	20.6	5.9
Sometimes	10	4	29.4	11.8
Often	14	27	41.2	79.4
Always	3	1	8.8	2.9
<b>How often does the mother lift heavy objects at the workplace?</b>				
Never	19	21	55.9	61.8
Rarely	10	5	29.4	14.7
Sometimes	3	6	8.8	17.6
Often	2	2	5.9	5.9
Always	0	0	0	0
<b>After working, do you feel tired?</b>				
Never	5	7	14.7	20.6
Rarely	6	4	17.6	11.8
Sometimes	10	8	29.4	23.5
Often	6	12	17.6	35.3
Always	7	3	20.6	8.8
<b>Do you sweat at the workplace?</b>				
Never	4	8	11.8	23.5
Rarely	6	3	17.6	8.8
Sometimes	8	9	23.5	26.5
Often	12	11	35.3	32.4
Always	4	3	11.8	8.8
<b>Compared to people of the same age as you, is your job considered?</b>				
Much heavier	0	0	0	0
Heavier	5	2	14.7	5.9
Same weight	17	24	50	70.6
Lighter	8	7	23.5	20.6
Much lighter	4	1	11.8	2.9

Source: Primary Data.

Based on the table above, it is evident that the distribution of each variable in the Work Index on the primary occupation of the mothers during the pretest shows that some respondents reported engaging in heavy activities, but during the post-test, the number of respondents engaging in heavy activities decreased. Regarding how often mothers sit during the pretest, some respondents reported never sitting, but during the post-test, there were no respondents who reported never sitting. When it comes to how often mothers stand during the pretest, some respondents reported always standing, and during the post-test, respondents also reported always standing. When looking at how often mothers walk during the pretest, some respondents reported rarely walking, but during the post-test, the number of respondents reporting rarely walking decreased. When it comes to how often mothers lift heavy weights during the pretest, some respondents reported lifting heavy weights often, and during the post-test, respondents also reported lifting heavy weights frequently. In terms of feeling tired during the pretest, some respondents reported never feeling tired, but during the post-test, the number of respondents reporting feeling tired increased. As for sweating during the pretest, some respondents reported always sweating, but during the post-test, the number of respondents reporting always sweating decreased. When it comes to the physical demands of the mothers' work during the

pretest, some respondents reported that it was very light, but during the post-test, the number of respondents reporting very light work decreased.

The results of this study are consistent with research conducted in the Erasmus Ruchmen Family Study (ERF), which found that daily physical activity has no significant relationship with memory (p-value: 0.83) (Galle et al., 2023). Another study conducted in the Netherlands on 80 children also showed no significant relationship between Moderate Physical Activity (MVPA) and the range of visual memory or TMT (Loprinzi et al., 2021). In a study by Illesca-Matus (2023), it was also explained that engaging in moderate-intensity activities has no impact on short-term and long-term episodic memory (Illesca-Matus, Ricardo, Ardiles et al., 2023).

The study conducted by Suwabe et al (2021) found that physical activity performed within 10 minutes can enhance hippocampal activity, particularly in the dentate gyrus (DG), leading to improved pattern separation, a critical component of episodic memory (Suwabe et al., 2021). Additionally, several studies suggest that physical activity is associated with the gray and white matter volume of brain structures involved in motor and cognitive functions (Buchman et al., 2023; Zhidong et al., 2021). According to research by Wang et al. (2021), when an individual engages in moderate to intense physical activity, it can stimulate the brain to increase the production of Brain-Derived

Neurotrophic Factor (BDNF) (Wang et al., 2021). BDNF plays a crucial role in maintaining the fitness and health of nerve cells. The findings of this study indicate that physically active older adults tend to have better cognitive function. Conversely, low BDNF levels may potentially lead to cognitive impairment (Zou et al., 2023). In individuals who only engage in light physical activity, this can be associated with a decline in cognitive function, especially in memory and language functions. In this context, it can be concluded that physical activity plays a vital role in maintaining optimal blood flow to the brain, enhancing nutrient supply, and facilitating neurotransmitter metabolism. Furthermore, physical activity triggers neurogenesis, enhances molecular and cellular stimulation in the brain, which ultimately supports brain plasticity. These processes are essential for preventing brain tissue hypertrophy that can lead to neuronal degeneration and have negative impacts on cognitive function (Choi & Cho, 2022; Pearce et al., 2022).

Based on the researcher's observations, this may occur because the daily activities performed by the participants fall into the category of low intensity, such as prayer, recitation of religious texts, resting, eating, and cooking. Consequently, physical activity and daily activities among the elderly women in the Griya Fadhilah Al-Qur'an study group are not factors that affect memory. Apart from physical and daily activity factors, memory in elderly women can be influenced by other factors such as the environment,

nutrition, sleep quality, hormones, and health (BaHamam et al., 2022). In addition to physical activity and exercise, nutrition is a significant determinant of memory. Diets such as low saturated fat, low-fat vegan, modified Paleolithic, gluten-free, Mediterranean, intermittent fasting, and calorie restriction have shown promising results in memory processes (Santiago & Potashkin, 2023). Researchers hope to increase the sample size in future studies and develop the study's design and research instruments.

## **CONCLUSION**

The memory of the research participants showed a significant improvement in each section before and after being given Ghunnah therapy. There is a significant relationship between the respondents' memory and Ghunnah therapy.

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