



The Effect of Physical Activity on Fitness and Cognition of Schizophrenia Patients

Istiyanta¹, Shanti Wardaningsih²

¹ Master of Nursing Study Program, Muhammadiyah University of Yogyakarta, Indonesia

² Master of Nursing Study Program, Muhammadiyah University of Yogyakarta, Indonesia

(Received: 04 August 2023

Revised: 12 September

Accepted: 06 October)

KEYWORDS

Physical Activity,
Fitness, Cognitive,
Schizophrenia

ABSTRACT:

Background: Schizophrenia is a severe mental disorder that affects several areas of individual functioning, such as thinking, emotions, behaviour, and daily activities. Cognitive function is the ability to recognise or know an object, state, or situation that is associated with a person's learning experience and intelligence capacity. People with lower cognitive function are more likely to experience psychosis than those with more significant cognitive function.

Objective: To determine whether there is an effect of physical activity on the fitness and cognition of schizophrenia patients.

Methods: Research design for a controlled experiment consisting of a pretest with just one group. All 174 participants were inpatients at Dr. RM Soedjarwadi Mental Hospital in Central Java Province, and they were all diagnosed with schizophrenia. Twenty case groups and twenty control groups were selected using a purposive sampling method. A questionnaire was employed as the data collection tool for this study. The Wilcoxon signed-rank test

Results: Before 35% and after 75% of the intervention, the fitness levels of individuals with schizophrenia were satisfactory. Both pre- and post-test fitness levels in the control group were satisfactory. Before 35% and after 50% of the intervention group, cognitive ability was poor in the control group, before weight, it was 50%, and after weight, it was 50%.

Conclusion: There is an effect of physical activity on fitness and cognition in the intervention group, and the control group has no effect.

INTRODUCTION

Schizophrenia is a psychotic disorder with an unknown cause that has characteristic symptoms of disturbances in thinking, mood, and behavior. Thinking disorders are manifested by distortions of reality, sometimes with hallucinations and delusions, along with disrupted associations that lead to impaired speech and mood disturbances, including ambivalence and limited affective responses. Bizarre activity or apathetic

withdrawal is a form of behavioural disorder (Kaplan & Sadock, 2015).

According to PPDGJ-III (Guidelines for the Classification and Diagnosis of Mental Disorders-III), schizophrenia is a description of a set of symptoms with various types of causes and symptoms. The course of the disease is not always chronic or "deteriorating," and the consequences caused depend on the influence of genetic aspects, physical aspects, and social aspects (Rusdi, 2013).



Mental disorders in Indonesia, based on the results of primary health research, continue to increase. The fact that 20% of Indonesia's population of 250 million is at danger of developing mental health disorders demonstrates the country's high prevalence rate of persons with such conditions. In contrast, the rate of schizophrenia in Indonesia is 7 out of every 1000 families. Seventy out of every thousand homes have a person with schizophrenia, according to the statistics.

Patients with schizophrenia have not been able to be handled and treated correctly because all provinces do not have mental hospitals. The prevalence of schizophrenia in the area of Central Java is 8.2%, meaning that 8.2% of the population of Central Java has severe mental disorders. Central Java province ranks 7th compared to other areas (Risksedas, 2018).

The prevalence of schizophrenia patients at the Dr. RM Soedjarwadi Regional Mental Hospital, Central Java Province, based on data obtained from the medical records of the Dr. RM Soedjarwadi Regional Mental Hospital, Central Java Province, was recorded at 7,636 people (100%) of all mental inpatients with a diagnosis of schizophrenia; there were 6,328 people (82.9%). From these data, schizophrenia shows the most significant percentage compared to other diagnoses (17.1%). (Medical Records of Dr. RM Soedjarwadi Mental Hospital, Central Java Province, 2021).

Schizophrenia is also a contributor to the 4.6% increase in DALY (Disability-Adjusted Life Year), when from the cause of disability, mental disorders contribute 13.4% the most compared to other diseases (Info datin Ministry of Health RI 2019).

Maramis (2009) Schizophrenia is a severe disorder of the brain that causes people with schizophrenia to interpret reality abnormally, as should people in general. Schizophrenia is a powerful and continuous brain disease that results in behavioural disorders, impaired personal relationships, impaired responses to information, flawed concrete thinking, and impaired problem-solving. Stuart (2013). Schizophrenia is defined as a severe mental disorder characterised by decreased communication skills, impaired reality, unnatural effects, cognitive dysfunction, and limitations in daily activities (Keliat, 2011).

Schizophrenia has a huge impact that can make the quality of life of sufferers decrease, so it must be treated in the long term. Schizophrenia also causes a decrease in several functions, including: Decreased social function: self-care, social activities, relationships between individuals and society, acting violently and disturbingly 2). Decreased cognitive function: unreal thinking, slow response to information, attention quickly switched, easy to forget, and difficulty communicating. 3). Decreased motor function: stiff body (catalepsy), unwilling to change the position of hands and feet when moved (waxy flexibility), silence (mutism), unwilling to respond to commands (negativism), being in a position against gravity (posturing), making excessive and strange movements (mannerism), making repeated movements (stereotypy), pacing not calm in place (agitation) Sabrina (2016). Also, in line with the results of David's research (2017), it was found that 72.8% of schizophrenia patients experienced cognitive impairment. Treatment in schizophrenia patients also causes side effects in the form of decreased cognitive function and motor disorders, especially when EPS symptoms appear (Extra Pyramidal Syndrome), and patients also sleep a lot. Daily activities become decreased and sluggish due to lethargy and a lack of enthusiasm.

In preliminary studies conducted in the Geranium inpatient room of Dr. RM Soedjarwadi Mental Hospital, Central Java Province, from January to June 2021, 182 patients (100%) were admitted to the Geranium Room, 174 were diagnosed with schizophrenia (95.6%), and 8 (4.4%) patients had other diagnoses. According to the results of observations of 182 schizophrenic patients who were hospitalised in the Geranium Room, almost 100% of patients experienced cognitive impairment characterised by poor attention, weak memory, a lack of ability to think logically, and a slow response to information received. Fitness was also marked by limp and passive patients, a lot of sleep in bed, laziness when doing daily activities, and complaining of fatigue.

Actions that have been carried out in hospitals for schizophrenia patients are generally in the form of providing pharmacotherapy as much as 15%, nursing care in accordance with existing nursing care standards as much as 35%, and group activity therapy activities as



well as rehabilitation activities as much as 45%. Physical activity actions that are planned, structured, and continuous have yet to be carried out optimally. The physical activity carried out at this time is morning exercise, and the implementation has yet to be made systematically and continuously.

Health advantages from moderate-to-vigorous exercise have been shown (WHO, 2018). Exercise is defined as a kind of physical activity that is performed on a regular basis with the goal of achieving or maintaining physical fitness and health (Diaz, 2014). This is consistent with findings from a study on adolescents' "Physical Exercise, Fitness, Cognitive Functioning, and Psychosocial Variables" by Rafael E. Reigal et al. Analysis of teenagers' cognitive and psychosocial skills reveals a strong correlation between physical activity and fitness. Selective attention ($p < 0.001$; $d = 0.10$), processing speed ($p < 0.001$; $d = 0.09$), and overall self-efficacy ($p < 0.001$; $d = 0.15$) were also areas in which teenagers who exercised more excelled. Furthermore, test scores for evaluating cognitive capacities and psychosocial characteristics were best predicted by cardiorespiratory fitness. Physical exercise

in schizophrenia patients is significant because it may enhance both patients' fitness and cognitive capacities, as shown by the fact that these individuals require and benefit from a high degree of fitness.

In light of this, the study's investigator is curious about the impact exercise has on the health and brainpower of patients at the RSJD DR RM Soedjarwadi's Geranium Room for Schizophrenia.

METHODS

This study makes use of both experimental and non-experimental methods. A quasi-experimental design including a single group and a control group comprising a pre- and post-test structure was adopted for this study. All 174 participants were inpatients at Dr. RM Soedjarwadi Mental Hospital in Central Java Province, and they were all diagnosed with schizophrenia. Twenty case groups and twenty control groups were randomly selected using a purposive sampling method. SOP was used to measure physical activity, a questionnaire was used to measure fitness, and a questionnaire was used to measure cognitive activity. Wilcoxon test for significance of data.

RESULT

1. Univariate Analysis

a. Respondent Characteristics

Respondents' characteristics include age, gender, education and occupation.

Table 4.1 Age Characteristics of Respondents

| Group | n | Mean | Min | Max | SD |
|---------|----|-------|-----|-----|------|
| Case | 20 | 38,35 | 26 | 49 | 6,58 |
| Control | 20 | 36,15 | 15 | 49 | 8,63 |

Source : Primary Data 2022

According to table 4.1, the mean age of respondents in the intervention group (case) is 38.35 years, with a standard deviation of 6.58. The youngest was 26 years old, and the oldest was 49 years old. While in the control

group, with an average age of 36.15 years, a standard deviation of 8.63 years, and the youngest age of 15 years, the oldest was 49 years.

Table 4.2: Frequency Distribution of Gender, Education, and Occupation of Schizophrenia Patients at RSJD Dr. Soedjarwadi, Central Java Province

| Characteristics | Group | | | |
|-----------------|--------------|---|---------|---|
| | Intervention | | Control | |
| | f | % | f | % |
| Gender | | | | |



| | | | | |
|--------------------|----|-----|----|-----|
| Male | 11 | 55 | 9 | 45 |
| Female | 9 | 45 | 11 | 55 |
| Total | 20 | 100 | 20 | 100 |
| Education | | | | |
| PRIMARY SCHOOL | 3 | 15 | 3 | 15 |
| JUNIOR HIGH SCHOOL | 6 | 30 | 6 | 30 |
| SENIOR HIGH SCHOOL | 11 | 55 | 11 | 55 |
| UNIVERSITIES | 0 | 0 | 0 | 0 |
| Total | 20 | 100 | 20 | 20 |
| Employment | | | | |
| Not Employed | 5 | 25 | 6 | 30 |
| Private | 7 | 35 | 6 | 30 |
| Self-employed | 5 | 25 | 5 | 25 |
| CIVIL SERVANT | 3 | 15 | 3 | 15 |
| Labourer | 0 | 0 | 0 | 0 |
| Total | 20 | 100 | 20 | 100 |

Source : Primary Data 2022

Based on Table 4.2, it was found that in the intervention group, the gender was primarily male, with as many as 11 respondents (55%), and the control group was female, with as many as 11 people (55%). Respondents in both the intervention and control groups had similar educational backgrounds: eleven respondents (or 55%) have only completed high school. Respondents in both groups also have similar occupational backgrounds: the

majority of 7 respondents (35%) are private, and the control group is primarily personal, as many as 6 respondents (30%).

Fitness of schizophrenia patients before and after being given physical activity
Fitness of schizophrenia patients before and after being given physical activity in the case group and control group

Table 4.3: Frequency Distribution of Fitness of Schizophrenia Patients at RSJD Dr. Soedjarwadi, Central Java Province, Before and After Physical Activity Intervention Group

| Fitness | Group | | | |
|-----------|--------|-----|-------|-----|
| | Before | | After | |
| | f | % | f | % |
| Very good | 1 | 5 | 3 | 15 |
| Good | 7 | 35 | 8 | 40 |
| Fair | 6 | 30 | 6 | 30 |
| Deficient | 6 | 30 | 3 | 15 |
| Total | 20 | 100 | 20 | 100 |

Source : Primary Data 2022

Based on table 4.3, it is found that the fitness of schizophrenia patients before physical activity is mostly good, with 7 respondents (35%), and after is good, with as many as 8 respondents (40%).

Table 4.4: Frequency Distribution of Fitness of Schizophrenia Patients at RSJD Dr. Soedjarwadi Central Java Province Before and After Physical Activity Control Group

| Fitness | Group | | | |
|---------|--------|---|-------|---|
| | Before | | After | |
| | f | % | f | % |



| | | | | |
|-----------|----|-----|----|-----|
| Very good | 2 | 10 | 3 | 15 |
| Good | 5 | 25 | 6 | 30 |
| Fair | 9 | 45 | 6 | 30 |
| Deficient | 4 | 20 | 5 | 25 |
| Total | 20 | 100 | 20 | 100 |

Source : Primary Data 2022

Based on Table 4.4, it was found that the fitness of schizophrenia patients in the control group before was sufficient for as many as 9 respondents (45%), and after was suitable for as many as 6 respondents (30%)

b. Cognitive of schizophrenia patients before and after being given physical activity

Cognitive of schizophrenia patients before and after being given physical activity in the intervention and control groups

Table 4.5 Frequency Distribution of Cognitive of Schizophrenia Patients at RSJD Dr. Soedjarwadi Central Java Province Before and After Physical Activity Intervention Group

| Cognitive | Group | | | |
|-----------|--------|-----|-------|-----|
| | Before | | After | |
| | f | % | f | % |
| High | 8 | 40 | 2 | 10 |
| Medium | 2 | 10 | 3 | 15 |
| Mild | 10 | 50 | 15 | 75 |
| Total | 20 | 100 | 20 | 100 |

Source: Primary Data 2022

Based on Table 4.5, the cognitive abilities of schizophrenia patients before being given physical activity are mainly in the mild category, namely 10

people (50%). Mental after being given the most biological activity is benign, namely 15 people (75%).

Table 4.6: Cognitive Frequency Distribution of Schizophrenia Patients at Dr. Soedjarwadi Hospital, Central Java Province, Before and After Physical Activity Control Group

| Cognitive | Group | | | |
|-----------|--------|-----|-------|-----|
| | Before | | After | |
| | f | % | f | % |
| High | 10 | 50 | 7 | 35 |
| Medium | 0 | 0 | 3 | 15 |
| Mild | 10 | 50 | 10 | 50 |
| Total | 20 | 100 | 20 | 100 |

Source: Primary Data 2022

Based on Table 4.5, the cognitive abilities of schizophrenia patients in the control group before were as heavy as 10 responses (50%), and after were as light as 10 responses (50%).

2. Bivariate Analysis

Bivariate analysis was used to examine the impact of several factors on the physical and mental health of patients with schizophrenia at Dr. RM Soedjarwadi Mental Hospital in Central Java.



Table 4.5: Normality Test

| Group | | | P value | α | Description |
|--------------|-----------|--------|---------|----------|-------------|
| Intervention | Fitness | Before | 0,015 | 0,05 | Not Normal |
| | | After | 0,023 | 0,05 | Not Normal |
| | Cognitive | Before | 0,000 | 0,05 | Not Normal |
| | | After | 0,000 | 0,05 | Not Normal |
| Control | Fitness | Before | 0,018 | 0,05 | Not Normal |
| | | After | 0,016 | 0,05 | Not Normal |
| | Fitness | Before | 0,000 | 0,05 | Not Normal |
| | | After | 0,000 | 0,05 | Not Normal |

Source : Primary Data 2022

Table 4.4 shows that the p-value for the normality test of the patients' fitness and cognitive levels in the intervention and control groups was less than 0.05, indicating that the data was not normally distributed. Patients in both the control and intervention groups had a p-value 0.05, indicating that the data was not normally distributed at the cognitive level of schizophrenia. The

hypothesis is tested using the Wilcoxon test since the data does not follow a normal distribution.

Table 4.6: Effect of physical activity on the fitness of schizophrenia patients at Dr. RM Soedjarwadi Mental Hospital, Central Java Province, in 2022 (n = 49) in the intervention group and control group

| Group | | n | Z | P value |
|--------------|----------|----|--------|---------|
| Intervention | Pretest | 20 | -2,530 | 0,011 |
| | Posttest | 20 | | |
| Control | Pretest | 20 | 1,000 | 0,317 |
| | Posttest | 20 | | |

Based on Table 4.6, the Wilcoxon test showed a p-value of 0.011 in the intervention group, which means that physical activity has an effect on the fitness of schizophrenia patients at Dr. RM Soedjarwadi Mental Hospital Central Java province in 2022. On the other

hand, a p-value of 0.317 in the control group shows that physical activity has no effect on the fitness of schizophrenia patients at Dr. RM Soedjarwadi Mental Hospital,

Table 4.7: Effect of physical activity on cognitive performance of schizophrenia patients in Dr. RM Soedjarwadi Mental Hospital, Central Java Province, in 2022 (n = 49) in the intervention group and control group

| Group | | n | Z | P value |
|--------------|----------|----|--------|---------|
| Intervention | Pretest | 20 | -2,598 | 0,009 |
| | Posttest | 20 | | |
| Control | Pretest | 20 | -1,732 | 0,083 |
| | Posttest | 20 | | |

Based on table 4.7, the intervention group has a p-value of 0.009, which means that there is an effect. Table 4.6: The impact of physical activity on cognitive

schizophrenia patients at Dr. RM Soedjarwadi Mental Hospital, Central Java Province, in 2022, while in the control group, the p-value is 0.083.



DISCUSSION

1. Characteristics of respondents

a. Age

According to Table 4.1, the average age of respondents in the intervention group (case) is 38.35 years, while respondents in the control group are 36.15 years. These results show that the average age of respondents in the intervention and control groups is close to 40 years. Mental disorders are diseases that last a lifetime, so this disorder will run continuously according to age, usually starting at the age of 25 years, and most are found at the age of 40 years. Almost 90% of patients on treatment are aged 15–55 years. Mental disorders occur mainly at productive age (21–40 years) because, at a formative period, many experience psychosocial problems such as life events (child abuse, parenting, sexual abuse), stress on the environment, work, household, biological factors, and personality factors (Lesmanawati, 2010).

b. Gender

The results showed that in the intervention group, the majority of respondents were male, with as many as 11 people (55%). In contrast, in the control group, the majority were female, with as many as 11 people (55%). This shows that men and women have different functional, anatomical, and physiological structures. When faced with stressors, men tend to display excessive stress and uncontrolled anger, so they tend to experience severe mental disorders. Meanwhile, in women, serotonin neurotransmitter levels are low, which reduces interest and pleasure in sufferers, so women are more likely to be depressed (Raung, 2017).

The results of Qosin's research (2018) show that men are more likely to experience negative symptoms, and women are more likely to have better social functioning than men. This may be one of the causes of patients being treated more men than women (Qosim, 2018)

c. Education

The results showed that in the intervention and control groups, the majority of respondents' education was high school, as many as 11 people (55%). Education affects a person's intelligence. The higher the education, the more knowledge a person has. This is because the level of education is something that also affects therapy. Patients with low levels of education tend to pay less attention to the quality of a healthy life; patients with higher education tend to be critical of the quality of their health (Nursyedan, 2015).

Research (Dhya, 2012) suggests that patients with lower levels of education are less likely to prioritize a healthy lifestyle, which in turn impacts their response to treatment. Patients with higher education levels, on the other hand, are more likely to be critical of their health care. According to the results of the study, it tends to be highly educated patients who pay attention to the quality of their health and mental therapy. The level of education is associated with the patient's knowledge about their illness, the importance of treatment, and their ability to understand it.

d. Occupation

The results showed that both intervention and control groups were private. Research (Eticha, T., Teklu, A., Ali, D., Solomon, G., & Alemayehu, 2015) and (Girma, S., Abdisa, E., & Fikadu, 2017) The situation of schizophrenia patients is that they do not have a job; the burden borne by the family is daily life and medication care. Efforts that can be made so that schizophrenia patients can work include doing positive activities to divert patients from relapse. By doing activities such as embroidery, the results can be traded, and income can be obtained to add to the needs of the schizophrenic patient.

2. Fitness

The results of this study found that the fitness of schizophrenia patients before physical activity was mainly good for 7 respondents (35%), and after was suitable for as many as 8 respondents (40%). This shows an increase in the physical fitness of schizophrenia patients after being given physical activity in the intervention group. Physical fitness, as measured by high and low peak oxygen uptake and maximum oxygen volume (VO₂ max), plays a vital role in controlling CVD risk factors. The results of this study are in accordance with the theory (Sceewe et al., 2013), which explains that aerobic training with high intensity can effectively improve physical fitness in schizophrenia patients. This will lead to a reduced risk of CVD. Physical exercise combined with psychological interventions can further enhance fitness and cognitive work.

While in the control group, it was found that the fitness of schizophrenia patients in the control group before was sufficient, with as many as 9 respondents (45%), and after was good, with as many as 6 respondents (30%). These results show an increase in fitness before and after. However, this increase in fitness is not caused by



physical activity. This is due to other factors that affect wellness, such as age and education (Scheweede, 2013).

3. Cognitive

The results showed that the cognitive abilities of schizophrenia patients before being given physical activity were mostly in the mild category, namely 10 people (50%). Mental after being given the most biological activity is benign, namely 15 people (75%). This shows a change in cognitive level from severe to mild. Mental activity is an activity of the mind that involves knowing something by thinking and understanding.

The reduction in cognitive capacity manifests mostly as a slowing of processing speed, a fall in the ability to execute tasks, and a drop in the ability to retain colors and spoken language. The decrease makes it tough to make ends meet on one's own and to obtain steady employment. Memory, focus, language structure and content, judgment, and thinking are all affected by cognitive decline. Disturbances in cognition or memory are characteristic of mental diseases, which in turn characterize substantial alterations in an individual's level of functioning (Noersyehan, 2015).

Ten individuals in the control group with schizophrenia reported moderate cognitive impairment following treatment, with a similar number reporting no change in their cognitive abilities. Evidence that the control group did not change. Cognitive impairment, emotional instability, and behavioral changes are all hallmarks of schizophrenia. The inability to think clearly and communicate one's ideas in a meaningful way are hallmarks of schizophrenia. Both the content and the methodology of the research show signs of conceptual disruption (Nurasyedah, 2015).

4. Effect of physical activity on fitness and cognitive performance of schizophrenia patients in the intervention and control groups

Results revealed that in the intervention group, a p-value of less than 0.05 was achieved, suggesting that exercise had a positive impact on the fitness levels of patients with schizophrenia at Dr. RM Soedjarwadi Mental Hospital in Central Java Province. A p-value of 0.371 was found in the non-exercised control group, indicating that exercise had no impact on the fitness levels of patients with schizophrenia at Dr. RM Soedjarwadi Mental Hospital in Central Java.

This is due to the fact that unlike the control group, those participating in the intervention group are exposed to stimulation in the form of physical exercise. Health advantages from moderate-to-vigorous exercise have been shown (WHO, 2018). Exercise is defined as a kind of physical activity that is performed on a regular basis with the goal of achieving or maintaining physical fitness and health (Diaz, 2014). This is consistent with findings from a study on adolescents' "Physical Exercise, Fitness, Cognitive Functioning, and Psychosocial Variables" by Rafael E. Reigal et al. Analysis of teenagers' cognitive and psychosocial skills reveals a strong correlation between physical activity and fitness. Selective attention ($p < 0.001$; $d = 0.10$), processing speed ($p < 0.001$; $d = 0.09$), and overall self-efficacy ($p < 0.001$; $d = 0.15$) were also areas in which teenagers who exercised more excelled. Statistical tests conducted on the intervention group had a p-value 0.05, indicating that physical exercise had a positive impact on mental performance. In contrast, the p-value for the control group was > 0.05 , indicating that exercise had no impact on those with cognitive schizophrenia.

The strongest predictor of performance on tests of intelligence and other psychosocial factors is cardiorespiratory fitness. These findings indicate the need for and that a good level of fitness will improve the cognitive skills of schizophrenia patients, so physical activity in schizophrenia patients is important because physical activity can improve the fitness and cognitive skills of schizophrenia patients.

Patients with schizophrenia often exhibit cognitive abnormalities in the areas of attention, executive function, working memory, and episodic memory, as explained by Sadock et al. (2017). Despite the fact that the majority of people with schizophrenia are of ordinary intellect, they may all suffer from some degree of cognitive impairment nevertheless. Although these deficits cannot be used as diagnostic tools, they have therapeutic relevance as prognostic factors and for treatment planning because of their substantial association with the functional outcome of the illness. Patients' cognitive deficits seem to have emerged at the time of their first episode and appear to have persisted during the first phase of illness.

Cognitive impairment in schizophrenia has been the target of treatment trials. Neurobiological factors are one



of the factors that also affect cognitive function. Previous observations of the links between schizophrenia and problems with working memory, neuronal integrity in the prefrontal area, structural changes in the prefrontal, cingulate, and inferior parietal cortex, and less blood flow to the brain, especially in the hippocampus, show that neuronal circuits are damaged, which then affects a person's average short-term memory. When the neocortex (one of the dopamine pathways in the brain) doesn't work right in people with schizophrenia, it's known that this is the main cause of cognitive problems and negative symptoms. This research is in line with a study conducted by Baharti et al. (2018), which found that more than 70% of schizophrenia patients experience cognitive impairment. Adarash et al. (2018) explain that in schizophrenia, brain development abnormalities begin in prenatal life, increase during childhood, and continue into adulthood, explaining the origins of schizophrenia in the background of neurodevelopment.

When viewed from the components of the variable signs of psychotic symptoms, some respondents who have positive signs of psychotic symptoms are respondents who have low and moderate activity levels. Meanwhile, respondents who had signs of negative psychotic symptoms were those who had high activity levels. This is because the average schizophrenia patient has various symptoms, such as cold feelings and no attention to what is happening around him. There is no emotional reaction to the people closest to him, whether emotions of anger, sadness, or fear. Everything is faced with indifference. Deep in daydreams far removed from reality, it is tough for people to understand his thoughts. He prefers to stay away from socialising with people and likes to be alone, not wanting to meet other people. Sometimes, it even goes as far as not wanting to eat or drink. Thoughts often arise in the form of untrue and unwarranted prejudices. There are often wrong responses or stoppages of view. The impact of the failure to think earlier leads to a problem where people with schizophrenia are unable to understand the relationship between reality and logic; in this case, fulfilling daily activities is also disrupted due to a split personality. Therefore, from the results of the above research, it can be seen that physical activity dramatically influences the recovery rate of schizophrenia patients with signs of existing psychotic symptoms.

CONCLUSION

Based on the results of the research and discussion, it can be concluded as follows :

1. In the intervention group, before being given the intervention, the fitness of schizophrenia patients was good before 35% and after 40%, while the control group was good before 45% and after 30%.
2. The cognition of schizophrenia patients in the intervention group was mild before 50% and after 75%. The control group was mild, as much as 50%, and after 50%.
3. There is an effect of physical activity on the fitness of schizophrenia patients at Dr. RM Soedjarwadi Mental Hospital, Central Java Province, in the intervention group.
4. There is no effect of physical activity on the fitness of schizophrenia patients with RSJD. Dr. RM Soedjarwadi, from Central Java province, is in the control group.
5. There is an effect of physical activity on the cognitive abilities of schizophrenia patients with RSJD. Dr. RM Soedjarwadi from Central Java province is in the intervention group.
6. There is no effect of physical activity on the cognitive abilities of schizophrenia patients in Dr. RM Soedjarwadi Mental Hospital, Central Java Province, in the intervention group 6.

Bibliography

1. Akter, H., Mali, B., & Arafat, S. M .Y. (2019). Socio-Demographic Analysis of NonCompliance among Patients withSchizophrenia: A Cross-sectional Observation in a tertiary Teaching. Hospital of Bangladesh. 28 No. 1
2. Annas, 2011. Hubungan Kebugaran jasmani Hemaglobin, Status Gizi dan Makan Pagi terhadap Prestasi belajar. Jurnal Media Ilmu Keolahragaan Indonesia. Vol 1. Ed. 2.
3. David, Fred R., Forest R. David (2017), Strategic Management: A Competitive Advantage Approach, Concepts, and Cases, Edisi 16, Global Edition, Malaysia: Pearson Education.
4. Diaz, Ferrer, AR, & Cascales. 2006. Sexual Functioning and Quality of Life of Male Patients on Hemodialysis, Nephrologia Journal, Vol. 26, No. 4



5. Erviana (2019) Hubungan Diet, Aktivitas Fisik, Pola Asuh Orang Tua Dengan Kejadian Overweight Pada Remaja Dengan Disabilitas
6. Eticha, T., Teklu, A., Ali, D., Solomon, G., & Alemayehu, A. (2015). Factors Associated With Medication Adherence Among Patients With Schizophrenia In Mekelle, Northern Ethiopia. *PLoS One*, 10(3) doi:<http://eresources.perpusnas.go.id:2130/10.1371/journal.pone.0120560>
7. Fatmawati, I, N. (2016). Faktor-Faktor Penyebab skizofrenia (Studi kasus di rumah sakit jiwa daerah Surakarta). Surakarta: Jurnal Psikologi.
8. Girma, S., Abdisa, E., & Fikadu, T. (2017). Prevalence of Antipsychotic Drug Non Adherence and Associated Factors Among Patients with Schizophrenia Attending at Amanuel Mental Specialized Hospital, Addis Ababa, Ethiopia: Institutional Based Cross Sectional Study. *Health Science Journal*, 11(4), 1– 7. <https://doi.org/10.21767/1791-809x.1000520>
9. Halim, S. (2012). Manfaat Tes Kebugaran/Kesegaran Jasmani Untuk Menilai Tingkat Kebugaran. *Jurnal Kedokteran Meditek*, 18 (47) : 0854-3988.
10. Hawari, D. (2016). Manajemen Stres Cemas dan Depresi. Jakarta: Fakultas Kedokteran Universitas Indonesia.
11. Hapsari, E.W.(2014). Perbedaan Kesegaran Jasmani dan Status Gizi Antara Perokok dan Bukan Perokok Pada Siswa Putra Kelas IX SMP N Tlogowungu Pati Tahunn Ajaran 2012/2014. *Jurnal of Public Health*. 3(2): 2252-6528.
12. Hidayanti (2018) Hubungan Antara Usia Dan Aktivitas Fisik Dengan Derajat Kekakuan Sendi Pada Pasien Fraktur Colles Yang Menjalani Fisioterapi Di RS PKU Muhammadiyah Gamping Sleman Yogyakarta .
13. Karssemeijer et al. *Alzheimer's Research & Therapy* ,2019) Individual Differences in the Effects of Physical Activity on Kognitif Function in People with Mild to Moderate Dementia
14. Kaplan, H.I., Sadock, B.J. 2010. Retardasi Mental dalam Sinopsis Psikiatri. Tangerang : Binarupa Aksara
15. Keefe, R.S.E, & Harvey, P.D. (2012). Cognitive Impairment in Schizophrenia. In. M.A. Geyer & G. Gross (Eds.). *Novel Antischizophrenia Treatments*. Berlin
16. Kementerian kesehatan RI. INFODATIN Pusat Data dan Informasi Kemeterian. Kesehatan RI Situasi Kesehatan Remaja. 2015.
17. Kemenkes RI, Leaflet Isi Piringku, Jakarta: Kemenkes RI, 2017. http://www.kemas.kemkes.go.id/assets/upload/dir_519d41d8cd98f00/files/LEAFLET-ISI-PIRINGKU-ilovepdf-compressed_1011.pdf [28 Desember 2018]
18. Kelliat, Budi Anna. Akemat. Novy Helena. Heni Nurhaeni. 2011. *Keperawatan Kesehatan Jiwa Komunitas*. Jakarta:EGC.
19. Lesmanawati, D. A. S. (2012). Analisis efektivitas biaya penggunaan terapi antipsikotika pada pasien skizofrenia di instalansi rawat inap RSJ Grhasia.
20. Linton, Ralph. *The Study of Man*, New York: Appleton Press. 1936.
21. Lutan, Rusli, dkk. (2001). *Pendidikan Kebugaran Jasmani: Orientasi Pembinaan di Sepanjang Hayat*. Jakarta: Direktorat Jendral Olahraga Depdiknas.
22. Maramis. 2009. *Catatan Ilmu Kedokteran Jiwa*. Edisi 2. Surabaya: Airlangga
23. Notoatmodjo,S. 2012. *Metodologi Penelitian Kesehatan*. Jakarta: Rineka Cipta
24. Nursalam. (2020). *Sosialisasi Panduan Penyusunan Skripsi Bentuk Literature. Review dan Systematic Review*. Dalam Fakultas Keperawatan Universitas. Airlangga,
25. Partini, S. 2011. *Psikologi usia lanjut*. Yogyakarta: Gajah. Mada Uniiversity Press.
26. Penggalih, M.H.S.T., Hardiyanti, M., & Santi, F.I. (2015). Perbedaan perubahan tekanan darah dan denyut jantung pada berbagai intensitas latihan atlet balap sepeda. *Jurnal Keolahragaan*. 3(2): 218-227.
27. Puspitasari, 2016, *Evaluasi Ketepatan Penggunaan. Antipsikotik Pada Pasien Skizofrenia Rawat Inap*
28. Purwanto, Ngalim. (2008). *Psikologi Pendidikan*. Bandung: PT Remaja Rosdakarya
29. Purwanto. (2012). *Metodologi Penelitian Kuantitatif*. Yogyakarta: Pustaka Pelajar.
30. Ram, D., Mathew, M., Bheemaraju, S. P. & Hathur, 2019).