14 (1) (2025) 58 - 62

Journal of Physical Education, Sport, Health and Recreations

https://journal.unnes.ac.id/journals/peshr

The Effect of Aquarobic on Physical Fitness Levels

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Article History

Received February 2025
Accepted February 2025
Published Vol.14 No.(1) 2025

Keywords:
Aquarobics; physical fitness; industrial employees

Abstract

In Indonesia, many industrial companies still pay little attention to the physical fitness of their employees. If physical fitness is not maintained properly, there could be chronic physical illness, which seems to cause middle age to depend on others in their lives, thus affecting their quality of life. Therefore, in order to maintain physical fitness with a small risk of sports injury, it is better to choose water sports because they are safer than sports on land and allow for increased amplitude of movement and energy expenditure for middle age, one of which is aquarobics. Therefore, the researcher aims to examine the effect of aquarobics on the level of physical fitness of industrial employees. This study uses a quantitative approach with an experimental method with a One Group Pretest-Posttest Design research design. The population in this study involved industrial employees in Sindang Palay, Rahayu Village, Bandung Regency, totaling 30 people, then the sample used was 7 people selected using purposive sampling techniques. The instruments used are the Harvard step test, sitting standing from a chair for 30 seconds, sit and reach, time up and go, to find out how much the level of physical fitness is. Based on data analysis through paired t test at Alpa 0.05, it can be concluded that there is a significant effect of aquarobic exercise on physical fitness. Thus because of this significance, it can be known that aquarobics can affect the physical fitness of industrial employees.

How to Cite

Fauzi, M. R. F., Nurjaya, D. R., Hidayah, N., & Mulyana. (2025). The Effect of Aquarobic on Physical Fitness Levels. Journal of Physical Education, Sport, Health and Recreation, 14 (1), 58-62.

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

INTRODUCTION

Water-based sports refer to physical activities performed in water such as in a swimming pool or shallow water (Press, 2020). Water sports are also called aquatic exercise programs, aqua aerobics, water aerobics, running or walking in shallow or deep water and aqua sports in shallow or deep water or the like are safer than on land. Therapy or exercise in water is a non-pharmacological treatment that can reduce pain, increase muscle and joint flexibility, thereby reducing muscle spasms and increasing muscle strength (Khanjari & Garooei, 2020). Exercise therapy is suitable for providing self-confidence, including improving sleep quality, reducing depression, maintaining or increasing functional capacity, and reducing behavioral disorders (KIM & LEE, 2021).

Therefore, aquarobics are believed to improve physical fitness. Fitness in the human body has different fitness levels. In the world of health, physical fitness is very important for all ages. The higher a person's level of physical fitness, the better their physical work ability, so fitness is a very important component for the human body (Arifianti & Mardhika, 2023). If physical fitness is not maintained properly,

it could be that there will be chronic physical illness, which seems to cause middle age to depend on others in their lives, thus affecting their quality of life. This condition not only reduces their quality of life but also certainly affects their psychological condition which of course increases anxiety, fear, and even depression. For that, in order to maintain physical fitness with a small risk of sports injury, it is better to choose water sports because they are safer than sports on land and allow for increased amplitude of movement and energy expenditure for middle age (Khanjari & Garooei, 2020).

There is a phenomenon in Sindang Palay, Rahayu Village, Bandung Regency, where industrial employees often feel tired while working. This phenomenon raises the need for in-depth research to understand the influence. A literature review shows the fact that in Piotrowska-Calka's study on cardiovascular fitness programs, there were 38% of unhealthy middle-aged women (30-62 years). These data show the importance of maintaining physical fitness in industrial employees because most industrial employees are around 30-62 years old, who are susceptible to disease if their body's immunity is poor (Piotrowska-Całka, 2010). In Indonesia, many industrial companies still pay little attention to the physical fitness of their employees. While in western society, both medical and social institutions pay greater attention to the health and well-being of all their people.

This research is important because the results can provide deeper insight to industrial employees about factors that improve physical fitness, which can be done with an aqua aerobics exercise program. This research has its own uniqueness where the public generally only knows that aerobic movements can only be done on land, but can be done in water or can be called aqua aerobics.

Aquarobics is the best gymnastics that has all the elements that include cardiovascular exercise by walking, jumping and running in the water, muscle exercise that aims to train and strengthen muscles, and relaxation exercise that aims to improve physical fitness (Park & Kim, 2018). Aquarobic has a lower risk effect on limbs, joints and muscles due to its water nature (SB Mukarromah et al., 2023). Aqua aerobics or water-based exercise is an alternative exercise program to achieve fitness goals (Abadi et al., 2017). Physical exercise if done routinely with a good dose can have an impact on health, fitness, performance, and the management program for body functions (S. Mukarromah et al., 2021).

The basic movements of aquarobics are bouncing, knee jogging, kicking, ankle reaching, turning, stepping and crossing, jumping, rock, scissors, jumping jacks, and sliding steps. The 60-minute aquarobics training program consists of three stages, namely 10 minutes of warm-up, 40 minutes of main training, and 10 minutes of cool-down training. We gradually increase the intensity of the main training portion so as not to burden the body (IS Kim et al., 2012). In the ACSM/AHA (American Heart Association) recommendations, aquatic exercise is considered beneficial, especially for people who have limited tolerance for weight-bearing activities. Water as a medium, can be considered very useful for these adults reducing the possibility of acute injury and fear of falling and is known to increase participation and compliance (Bergamin et al., 2012). Aerobic exercise, one of which is aquarobic, can be a choice of physical exercise to improve physical fitness.

Physical fitness is a person's ability to achieve certain sports goals optimally. The results of a person's sports or physical training will definitely differ depending on the time and habits of training their physical body (Pranata, 2022). Age, gender, exercise, smoking habits, and nutritional status (Afandi Ahmad, Miftah Azrin,

2019). Health-related physical fitness includes components related to a health condition, such as musculoskeletal fitness (S. W. Kim et al., 2021). A person's physical fitness is greatly influenced by sports activities and these activities also play a direct role in the composition of fitness, lack of physical activity is a serious health problem, epidemiological studies show that a sedentary lifestyle will contribute to the onset and development of atherothrombotic cardiovascular disease early and is associated with a two-fold increase in the risk of premature death (Vanheesa et al., 2005).

Health-related physical fitness and physical activity level are often used together, with physical fitness generally considered a more accurate measure of fitness level than self-reported assessments. Traditional physical fitness parameters such as muscular strength, cardiorespiratory endurance, and flexibility, but also include balance. Even in healthy adults, each component of functional fitness declines with age, negatively impacting quality of life (Takeshima et al., 2007) for example, decreased muscle strength and poor balance are major risk factors for falls. During the process of adulthood, significant changes occur or have occurred in the body, involving a variety of psychological and physiological impacts. Loss of bone mass, for example, decreased body strength, making it more susceptible to injury or disease in everyday life (Medrano-Ureña et al., 2020). Physical fitness can be divided into four main components that allow for the variety of training required: endurance, mobility, strength, and flexibility. Endurance is the body's ability to consistently perform repetitive tasks. Mobility is the ability to move the body with the precision necessary to overcome obstacles. Strength is the ability to generate force in an effort to overcome obstacles such as lifting one's own body weight. Flexibility is having the optimal range of motion of a joint as needed to achieve maximum performance (Roy et al., 2018).

The results of field observations that researchers conducted were that industrial workers were lacking in physical activity which later had an impact on physical fitness, therefore researchers had a research question, namely whether there was an aquarobic influence on the level of physical fitness, and the purpose of this study was to examine how much influence was given from aquarobic on physical fitness.

METHODS

The research method used in this study is an experimental method and uses a quantitative approach. The author uses an experimental research method with a One Group Pretest-Posttest Design research design. The population in this study involved industrial employees in Sindang Palay, Rahayu Village, Bandung Regency, totaling 30 people, then the sample used was 7 people selected using purposive sampling techniques with criteria, are native industrial employees of Sindang Palay, Rahayu Village, Aged 20-25 years, male, are active industrial employees, have never done aquarobic activities, very rarely do any sports activities. The location of the study was in the Bandung Indah Waterpark swimming pool. In this study using test instruments, namely the Harvard step test, sitting standing from a chair for 30 seconds, sit and reach, time up and go, to find out how much the level of physical fitness is. Data were obtained at the beginning of the experiment as initial data and at the end of the experiment as final data. The data that had been collected from the pre-test and post-test participants then carried out a normality test to determine the normality of the data that had been obtained. Therefore, the researcher used a statistical test approach (Shapiro-Wilk), because the sample used was less than thirty people, then it was analyzed using the paired simple T-test using SPSS 25 (Fadluloh et al., 2024). This test is to determine whether there is a difference or influence of data analysis used to determine whether there is a significant increase in aqua aerobics exercise on physical fitness.

RESULTS AND DISCUSSION

Descriptive Statistical Test is used to provide an overview of the characteristics of the data under study. This test is used to describe or summarize data in a simpler and easier to understand form, such as average, standard deviation, minimum value, and maximum value. This descriptive analysis provides a clear picture of the distribution of the data used in the study. In this study, descriptive statistical tests were carried out for all variables studied.

The pretest obtained an average pre-test score of 50.71 while the post-test obtained a score of 66.00, then the standard deviation of the pre-test was 1,799 while the standard deviation of the post-test was 1,414, the lowest pre-test score was 48, while the post-test was 64, the highest pre-test score was 53, while the post-test was 68. And the N value of the pre-test is 7, then the N value of the post-test is 7.

The normality test is used to find out whether the data is normally distributed or not.

To get the results of the normality test, a normality test calculation is needed. The data normality test was carried out using Shapiro-Wilk with the SPSS 25 series approach to all variables. The decision-making method for the normality test is if the significance> 0.05 then the data is normally distributed and if the significance <0.05 then the data is not normally distributed.

In this normality test for samples of less than 50 people using the Shapiro-Wilk normality test, while samples of more than 50 people use the Kolmogorov-Smirnov normality test. In this study, the Shapiro-Wilk test was used to test the normality of the data. The following are the results of the Shapiro-Wilk normality test using the SPSS version 25 application.

Shapiro Wilk Testto show the results of the data normality test. The pre-test statistical value is .955, df 7, and Sig. is .772. While in the post-test obtained a statistical value of .952, df 7, and Sig. of .752. Based on the test results, both data obtained a Sig. value > 0.05, then both data are declared "Normally Distributed". Therefore, the author uses a parametric approach in making a hypothesis.

After analyzing the normality test data, the next step is to conduct a hypothesis test or comparison test using the Paired sample t-test which is tested by the SPSS software version 25. This paired sample t-test analysis is carried out to determine the significant effect.

Decision-making guidelines in the paired sample t-test test based on the significance value in the help of SPSS software version 25, as follows:

If the probability value or sig. (2-tailed) <0.05 then Ho is rejected, which means there is a significant difference in aquarobic exercise on physical fitness. Conversely, if the probability value or sig. (2-tailed) > 0.05, then Ho is accepted, which means there is no significant difference in aquarobic training on physical fitness.

The results of the hypothesis test using-Paired Sample t-Test. Table 3 shows the t-test value of-31.106, with a Sig. (2-tailed) value of 0.000, Based on the test results, the Sig. (2-tailed) value < 0.05 so that H0 is rejected, it can be concluded that there is a significant influence.

Based on the results of research on aquarobics on physical fitness, researchers revealed that there was a significant influence of both variables. These results are in line with research conducted by (IS Kim et al., 2012), entitled The effectiveness of an aquabic exercise program for patients with osteoarthritis, in the study discussed the effectiveness of the aquabic exercise program, the results of which were that there was a significant influence of the aquabic exercise program.

This is related to aquarobics being a choice of physical exercise to improve physical fitness, because aquarobics is the best gymnastics that has all the elements that include cardiovascular exercise by walking, jumping, and running in the water, muscle exercise that aims to train and strengthen muscles, and relaxation exercise that aims to improve physical fitness (Park & Kim, 2018), and aquarobic has a lower risk effect on limbs, joints, and muscles due to its water nature. (SB Mukarromah et al., 2023). Many studies have shown that aquatic exercise can improve fitness components such as flexibility, muscle balance, muscle strength, cardiovascular endurance, and reduce body fat percentage in patients, arthritis and disabled populations and the elderly (De Mattos et al., 2016).

An individual's physical condition has a direct impact on work productivity.(Daniel Agung Syawang et al., 2024). There are five things that affect productivity, namely physical fitness, nutritional status, work capacity, additional burden due to the work environment (Fikar & Widjasena, 2016). If the employee's physical fitness is low, it will cause fatigue, loss of focus, and lack of concentration in working so that they will be less able to cope with the workload given (Arifin et al., 2024). Thus, this research can be a solution to problems in the industrial worker environment, especially in the Sindang Palay Village, Rahayu Village, Bandung Regency.

The results of this study indicate that the significant value is .000, based on the test results, the Sig. (2-tailed) value <.05 so that H0 is rejected, this shows that the aquarobic exercise program has a significant effect on physical fitness. So this study is expected to help to be a valuable input for swimming club managers in designing training programs and for industry workers in improving their physical fitness. This study is expected to provide benefits, both from various aspects, one of which is This study can be used as material and information for industry employees to understand how important it is to maintain physical fitness to support better work. For further research, the scope of the sample must be expanded to include populations from diverse cultural and socio-economic backgrounds and include various professions.

CONCLUSION

Thus it can be concluded that the effect of aquarobic exercise can improve the physical fitness of industrial employees, one of which is industrial employees in Sindang Palay, Rahayu Village, Bandung Regency. This shows that intense exercise using an aquarobic exercise program can be an effective program and a good strategy in an effort to improve physical fitness, especially for industrial employees.

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