



WORKSHOP ON INCREASING CARDIOVASCULAR ENDURANCE AND CONCENTRATION THROUGH LOW-IMPACT LOW IMPACT AEROBIC DANCE

By

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Abstract: *The main problem is the decreased level of fitness and concentration. The reason is technological advances so that a person does not need the energy to carry out his activities and can be recorded and stored in an online database. The author provides a community service solution with low-impact aerobic dance to increase cardiovascular endurance and concentration in 36 female students aged 18-20 years. The pretest at the first meeting, low-impact aerobic dance material is 30 minutes long, 3 times per week is carried out for 6 weeks, and ends with a posttest. The pretest and posttests used the Multi-Stage 20m Shuttle Run Fitness Test for cardiovascular endurance and the Grid Concentration Test for concentration. There was an average increase in cardiovascular endurance of 3.34 and concentration of 2.11. This dedication is necessary in increasing cardiovascular endurance and concentration, so that daily activities do not experience fatigue and still have energy reserves to carry out other activities and be more focused.*

INTRODUCTION

In this 5.0 era, almost all aspects of life can be done effectively and efficiently. All activities carried out can be said to not need to spend energy to do so. However, this is in contrast to health and fitness, due to lack of it can cause hypokinesia, especially when the Covid-19 pandemic occurred. The community must continue to carry out physical activity, namely exercising independently to prevent and accelerate the recovery from Covid-19¹. However, the Enforcement of Restricting Community Activities or in Indonesia is *Pemberlakuan Pembatasan Kegiatan Masyarakat* (PPKM) was just revoked by the President of the Republic of Indonesia Jokowi on December 31, 2022, as stated by the Minister of Home Affairs Instructions Numbers 50 and 51 of 2022. This is a signal that people are able to carry out physical activities in public places and in groups.

Lack of physical activity is one of the causes of cardiovascular disorders such as respiratory disorders, hypertension, and coronary heart disease. There are many ways to

¹ Eva Sinaga, Fransisca B Batticaca, and Evi Sinaga, "Edukasi Protokol Kesehatan Olahraga Dan Vaksinasi Covid-19 Pada Atlet Di SMANKOR Papua," *Dinamisia : Jurnal Pengabdian Kepada Masyarakat* 6, no. 1 (2022): 181–188.



avoid cardiovascular disorders, namely by carrying out scheduled physical activities, consuming healthy foods, avoiding alcoholic beverages, and getting enough rest. Sport is a physical activity that really supports a person's physical and mental condition, the exercise that is carried out also depends on the goals to be achieved².

One of the sports that can be done is low-impact aerobic dance which is adjusted to the age and training goals of each individual. Low-impact aerobic dance is currently one of the most popular sports in parts of the world³⁴⁵. Low-impact aerobic dance can develop well and is loved by many people because it can be done by anyone (from children to the elderly), anytime, anywhere at a relatively low cost. Several previous studies have proven that low-impact aerobic dance can help reduce stress levels and reduce psychosomatically⁶⁷.

Low-impact aerobic dance is one of the most preferred cardiovascular endurance sports, especially for women. Research conducted by Latuheru stated that the female population in South Sulawesi likes sports that are aesthetically oriented, such as aerobics. Aerobics is further divided into several namely low-impact aerobic dance, psychologically oriented aerobics (yoga, pilates), self-defense-oriented aerobics (tae bo, kickboxing) low impact aerobic dance using tools (gym ball, stick, step), and aerobic dance in water (water aerobics)⁸. Increased cardiovascular endurance is caused by skeletal muscle contractions during low impact aerobic dance⁹.

Low-impact aerobic dance is also effective in preventing the decline in physical, cognitive, and aging functions¹⁰. Aerobic exercise can strengthen memory in someone with mild cognitive impairment and can improve mood¹¹¹². Someone who does aerobic dance

² Umar Nawawi, "The Effect of Low Impact and Mixed Impact Aerobic Exercise on Percentage of Body Fat," *Asian Social Science* 10, no. 5 (2014): 163–167.

³ Ricardo Valentino Latuheru, Poppy Elisano Arfanda, and Ians Aprilo, "The Popularity Of Aerobics Dance For Women ' s Society In Sedentary Lifestyle," *Journal of Physical Education, Sport, Health and Recreation* 11, no. 2 (2022): 86–91.

⁴ Krista Schroeder et al., "Dance for Health: An Intergenerational Program to Increase Access to Physical Activity," *Journal of Pediatric Nursing* 37, no. 2017 (2017): 29–34, <http://dx.doi.org/10.1016/j.pedn.2017.07.004>.

⁵ Kodrad Budiono and Pipit Fitria Yulianto, "Pengembangan Olahraga Senam Aerobik Pada Wanita Melalui Development of Aerobic Gymnastics in Women Through Various Types of Motion .," no. April (2019): 1–5.

⁶ Nia Sri Ramania et al., "The Effect of Social Interaction and Environment during Low impact aerobic dance on Salivary Cortisol," *Physiotherapy Quarterly* 28, no. 3 (2020): 14–20.

⁷ Poppy Elisano Arfanda et al., "The Effect of Low-Impact Low impact aerobic dance Exercise Video on Cardiovascular Endurance, Flexibility, and Concentration in Females With Sedentary Lifestyle," *Teoriâ ta Metodika Fizičnogo Vihovannâ* 22, no. 3 (2022): 303–308.

⁸ Latuheru, Arfanda, and Aprilo, "The Popularity Of Aerobics Dance For Women ' s Society In Sedentary Lifestyle."

⁹ Arfanda et al., "The Effect of Low-Impact Low impact aerobic dance Exercise Video on Cardiovascular Endurance, Flexibility, and Concentration in Females With Sedentary Lifestyle."

¹⁰ Xuegang Liu, Pei Lin Shen, and Yung Shen Tsai, "Dance Intervention Effects on Physical Function in Healthy Older Adults: A Systematic Review and Meta-Analysis," *Aging Clinical and Experimental Research* 33, no. 2 (2021): 253–263, <https://doi.org/10.1007/s40520-019-01440-y>.

¹¹ A. Wong et al., "Low impact aerobic dance for Cognitive and Physical Functions and Mood in Older Adults with Cerebral Small Vessel Disease: Abridged Secondary Publication," *Hong Kong medical journal = Xianggang yi xue za zhi* 26, no. 6 (2020): 38–41.

¹² Tudor Vrinceanu et al., "Dance Your Stress Away: Comparing the Effect of Dance/Movement Training to Aerobic Exercise Training on the Cortisol Awakening Response in Healthy Older Adults," *Stress* 22, no. 6 (2019): 687–695, <https://doi.org/10.1080/10253890.2019.1617690>.



regularly will experience an increase in concentration or memory^{13 14}.

Based on some low-impact aerobic dance training that can increase cardiovascular endurance and concentration, the problem formulation is as follows:

- a. How is the implementation of low-impact aerobic dance training in order to increase cardiovascular endurance and partner concentration
- b. How does the partner's body respond to the implementation of low-impact aerobic dance training to increase cardiovascular endurance and concentration
- c. What is the end result of low-impact aerobic dance training to increase cardiovascular endurance and concentration

It is hoped that the implementation of low-impact aerobic dance training in increasing cardiovascular endurance and concentration of women in the Makassar city area can help reduce the risk of cardiovascular-related diseases.

METHOD

This community service activity was carried out for 8 weeks. This activity begins with pretest in the first week, followed by giving aerobic dance exercise which is carried out with a duration of 30 minutes, a frequency of 3 times a week, and is carried out for 6 weeks, in accordance with the principles of cardiovascular endurance-building exercises, and ends with posttest to see improvements what happened to the participants. Pretest and posttests for cardiovascular endurance using the Multi-Stage 20-m Shuttle Run Fitness Test, and for measuring concentration with the Grid Concentration Test. The place of dedication is the Gymnastics Sports Building, Faculty of Sports Science, Universitas Negeri Makassar. The number of participants taken was 36 female students aged between 18-20 years and recorded as students programming basic gymnastics courses. This age was chosen because they are in a period of very rapid growth, where there will be changes in the function of the body's organs, especially the physiology associated with the onset of puberty¹⁵. Data processing to measure the increase in the training program for community service activities was analyzed using a qualitative descriptive method.

This service will be carried out in several stages, the first stage is the preparatory stage, where the implementation of activities is coordinated in advance with the person in charge of the partner, related to the cooperation agreement and implementation location, preparation of workshop materials, and preparation of time and implementation of activities. The second stage is the stage of holding an aerobics gymnastics workshop which can be seen in the table below:

¹³ Ramasamy Manikam, "Mindful Sport Performance Enhancement: Mental Training for Athletes and Coaches," *Mindfulness* 12, no. 1 (2021): 258–260.

¹⁴ Arfanda et al., "The Effect of Low-Impact Low impact aerobic dance Exercise Video on Cardiovascular Endurance, Flexibility, and Concentration in Females With Sedentary Lifestyle."

¹⁵ Arimbi et al., "Workshop Gizi Olahraga : Pengaturan Makan Atlet," *Jurnal Pengabdian Kepada Masyarakat* 2, no. 7 (2020): 5547–5552, <https://bajangjournal.com/index.php/J-ABDI/article/view/3994>.



Table 1 Workshop Activities

No.	Workshop Material	Expected Achievement
1.	Pretest Implementation	The implementation of this pretest is to determine the partner's ability so that in preparing low-impact aerobic dance movements it can be adjusted to the partner's characteristics.
2.	Workshop on the initial concept of low-impact aerobic dance movements	Introduction to the initial concept of low-impact aerobic dance for partners
3.	Low-impact aerobic dance workshop	Implementation of workshop activities after going through the revision stage during the introduction of the concept, this activity was held for 16 meetings. In 1 week there are 3 meetings with a duration of 30 minutes.
4.	Posttest execution	This test was conducted to find out whether there was an increase in cardiovascular and concentration before the low-impact aerobic dance workshop was held.

This posttest was conducted to find out whether there was an increase in cardiovascular and concentration after the low-impact aerobic dance material was given.

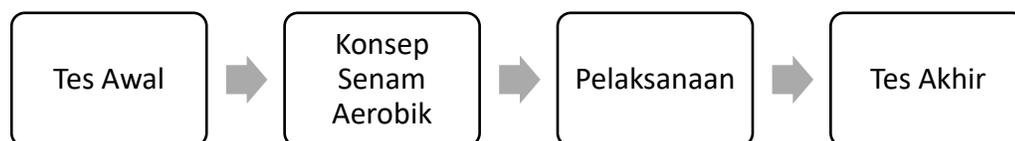


Figure 1. Service Activity Flow

RESULTS

The implementation of this community service took place according to plan. This community service activity can increase the cardiovascular endurance and concentration level of participants as shown in table 2.



Table 2. Pretest and Posttest Data

Method	Indicator	Preliminary Test	Final Test	Difference
Low Impact Aerobics	Cardiovascular Endurance	27,87	31,21	3,34
	Concentration	7,28	9.39	2,11

Table 2 illustrates that cardiovascular endurance in the pretest showed an average of 27.87 and in the posttest, it showed an average of 31.21, so there was an average increase of 3.34. Meanwhile, the concentration measurement for the pretest showed an average of 7.28 and an average of 9.39 for the posttest, meaning that there was an average increase of 2.11. The data above shows that low-impact aerobic exercise can improve cardiovascular endurance and concentration¹⁶.



Figure 2. Direction and Implementation of Preliminary Tests



Figure 3. Implementation of Low Impact Aerobic Gymnastics

¹⁶ Arfanda et al., "The Effect of Low-Impact Low impact aerobic dance Exercise Video on Cardiovascular Endurance, Flexibility, and Concentration in Females With Sedentary Lifestyle."



The implementation of this low-impact aerobics service requires participants to follow all the rules that have been agreed upon, namely the exercise must be carried out routinely 3 times per week and for a duration of 30 minutes by following the instructor's movements. Before and after low-impact aerobic exercise, pulse measurements are carried out to find out that they are still in a safe training zone.

DISCUSSION

Cardiovascular endurance is described as the contraction of large muscle groups that work for a long time using oxygen. Cardiovascular endurance refers to the ability of the heart and organs to work in relation to supplying oxygen and nutrient reserves and releasing burn marks¹⁷. The main goal of cardiovascular endurance is to increase cardiac capacity¹⁸. Aerobic dance is an exercise done repeatedly and continuously on large muscle groups. Regular aerobic exercise can improve cardiovascular function, increase cardiovascular endurance, and even have many other benefits¹⁹.

Concentration is the ability to focus on the changes that occur. Changes that occur quickly in the environment, causing the concentration must also be changed quickly to keep up. In low-impact aerobics dance, it requires the person doing it to continue to focus on the movements being carried out. One of the effects of aerobic dance is increasing concentration²⁰. Aerobic dance intervention is more effective in preventing and slowing the development of mild cognitive impairment because it combines physical, social, and cognitive activities together²¹.

Aerobic dance is a way to improve cognitive function, improve brain function and reverse brain atrophy associated with increasing age²². Aerobic dance can also improve memory power in adults with mild cognitive impairment²³. Several studies state that aerobic dance can improve cardiorespiratory fitness, prevent several diseases related to increasing age, and improve physical and cognitive conditions²⁴.

The advantage of this dedication is that using the aerobic dance model, it can increase cardiovascular endurance while increasing concentration if done according to the rules of increasing physical fitness. This is due to the driving factors including (a) the enthusiasm of the participants in participating in low-impact aerobics dance, (b) the variety of instructors in providing low-impact aerobics dance movements, (c) the support from the Faculty of Sports Science in facilitating the infrastructure used in this devotion. The weakness of this

¹⁷ Polyxeni Spiliopoulou et al., "Effect of Concurrent Power Training and High-Intensity Interval Cycling on Muscle Morphology and Performance," *Journal of strength and conditioning research* 35, no. 9 (2021): 2464–2471.

¹⁸ E Chandramouli et al., "Aerobic Exercise 's Effect On Bank Employees ' Organizational Commitment" 32, no. 3 (2021): 20079–20086.

¹⁹ Ying Li et al., "Effects of Different Aerobic Exercise Training on Glycemia in Patients with Type 2 Diabetes: A Protocol for Systematic Review and Meta Analysis," *Medicine* 100, no. 18 (2021): e25615.

²⁰ Manikam, "Mindful Sport Performance Enhancement: Mental Training for Athletes and Coaches."

²¹ Yi Zhu et al., "Effects of a Specially Designed Low impact aerobic dance Routine on Mild Cognitive Impairment," *Clinical Interventions in Aging* 13 (2018): 1691–1700.

²² Andrea Mendez, "6-Month Aerobic Walking Training Increases T1w/T2w Signal in The White Matter of Healthy Older Adults," *Diabetes Care* 40 (2020): S99–S104.

²³ Wong et al., "Low impact aerobic dance for Cognitive and Physical Functions and Mood in Older Adults with Cerebral Small Vessel Disease: Abridged Secondary Publication."

²⁴ Vrinceanu et al., "Dance Your Stress Away: Comparing the Effect of Dance/Movement Training to Aerobic Exercise Training on the Cortisol Awakening Response in Healthy Older Adults."



dedication requires a lot of time and consistency from the participants to achieve the desired results.

CONCLUSION

The conclusions from the dedication to low-impact aerobics are:

- a. Can increase participants' cardiovascular endurance, so that in carrying out daily activities participants do not experience significant fatigue and still have energy reserves to carry out other activities.
- b. Can increase the level of concentration of participants, so that in daily activities they will focus more on the activities being carried out.
- c. Training activities must be continued so that the participants' cardiovascular endurance and concentration are maintained properly.

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