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Is It Possible For Aerobic Dance To Slow Cognitive Decline In The Elderly? (Literature Review)

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Abstract

The purpose of writing this article is to analyze articles that are relevant to aerobic dance exercises in helping slow cognitive decline in the elderly. To collect material for this study, a literature review was conducted. This included searching for many publications using the search function on Google Scholar, Science Direct, Scopus, Web of Science, and books by entering relevant keywords "aerobic exercise", "aerobic dance", "cognitive" and "elderly" Literature sources used 2015-2024. Based on the results of a literature review, it was found that aerobic dance exercises can slow cognitive decline in the elderly. The mechanism when doing aerobic dance exercises is that blood flow to the brain will be smooth and by improving the cardiovascular system, it will help improve the entire metabolic system. So aerobic dance exercises can be used as an alternative way of slowing cognitive decline.

Keywords: Aerobic exercise, aerobic dance, cognitive, elderly

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INTRODUCTION

A person's concentration decline is caused by many things, one of which is increasing age and lack of exercise. World Population Prospects anticipates that by 2050, there will be 2.1 billion elderly people (those over 60) worldwide, up from 962 million in 2017. The effect of increasing age on the brain is a major risk factor for cognitive decline, and cognitive decline in lightweight has increased significantly, affecting mental and physical function as well as the quality of life in elderly people. Cognitive decline cannot be changed, therefore preventing and improving the stages of cognitive decline is very important for the current condition of the elderly.

Age-related cognitive decline is complex and multifactorial. The main risk factors associated with age-related cognitive decline are changes in cardiovascular parameters and related disease states (e.g., hypertension, obesity, diabetes, etc.). Changes occur even in the neural basis of cognition, especially frontal, in the areas of executive function and attention, as well as memory. This effect was stronger in individuals with mild cognitive impairment(Miyazaki et al., 2022).

Exercise is recognized as a cost-effective intervention to prevent and treat several diseases, including heart disease (Liew & Teo, 2018). Lack of physical activity and a sedentary lifestyle are the main reasons for the increase in overweight and obesity among the elderly (Li et al., 2015). This population is at higher risk of cognitive decline due to the harmful effects of excess weight, for example: oxidative stress, inflammation, and vascular function.. Aerobic exercise is one of the most popular sports today. Activities that use a lot of oxygen, or aerobics, increase the process that delivers

oxygen to the body. Because the heart and blood arteries supply oxygen, this system can be referred to as the cardiovascular system (Arfanda, 2019).

After reaching maturity, the recommended amount of aerobic exercise is dependent on the person's capacity to improve speed, strength, and flexibility, with a minimum of 60 minutes per day and 150 minutes per week (Pontone et al., 2021). Among the aerobic sports that can be engaged in are aerobic dancing activities, which are low-intensity, low-frequency exercises done for fun or instruction (Latuheru et al., 2022).

Therefore, this article was written to review the literature related to aerobic dance exercise which can help slow down the decline in cognitive function.

METHODS

This literature review analyzes relevant articles and focuses on cognitive decline in the elderly and aerobic exercise which can drastically slow down the cognitive decline of the elderly. To write this article, a literature review was conducted. Specifically, many articles were found by using the search function on Google Scholar, Science Direct, Scopus, Web of Science, and books. The keywords "aerobic dance," "aerobic exercise," "cognitive," and "elderly" were entered, as well as random keyword combinations. Use of literary materials from 2015 until 2024.

RESULT AND DISCUSSION

Physical activity interventions, including aerobic exercise, can improve cognitive function in adults, especially in elderly people with mild cognitive impairment (Zheng et al., 2016; Song et al., 2018). Aerobic is an exercise that activates large muscle groups, such as aerobics dance exercises, jogging, swimming, cycling, etc. Aerobic dance is a very popular community activity (Latuheru et al., 2022) and is the most common aerobic exercise worldwide. Aerobic dance exercises require emotional expression, social interaction, sensory stimulation, motor coordination, and body movements along with music. However, this exercise's intensity, duration, and frequency can vary, such as cha-cha, rumba, waltz, tai chi, etc (Karpati et al., 2017). Social relationships are thought to improve cognitive function in elderly people with mild cognitive impairment after group aerobic exercise (Horr et al., 2015).

Mind and body training is a therapy, that combines mental focus, breath control, and body movement, increasing flexibility and mental health. Several studies show that mind and body exercises, such as tai chi, yoga, aerobics, and pilates, can improve cognitive performance in the elderly with or without cognitive impairment. (Wu et al., 2019).

Aerobic exercise, in this context, 10 weeks of walking on a treadmill at a moderate to intense pace produces significant improvements in aerobic capacity, represented by maximal oxygen uptake, in people with heart disease. Likewise, physical education programs are effective in improving physical skills such as endurance, balance, coordination, and flexibility (Ammar et al., 2021). Physical activity can be increased through an aerobic exercise program. These results suggest that regular aerobic exercise can improve balance, cognitive impairment, and dementia (by stimulating neuroplasticity in certain brain regions (Rehfeld et al., 2017).

Aerobic exercise is a physical activity that has a positive effect on the possibility of increasing creativity. The study examined female students' creativity level, measured immediately after a 20-minute aerobics class, and compared with that measured before exercise. The results show that aerobic exercise training has a positive effect on creative potential both immediately and 2 hours after training, as well as showing long-term effects of the training. Physiological arousal from aerobic exercise may explain improvements in cognitive tasks. Other evidence suggests that acute aerobic dance exercise improves creative performance by improving convergent thinking skills. This will increase the ability to solve problems (Richard et al., 2021).

Aerobic dance exercise also includes other skills, such as coordinating movements with music, quickly memorizing movement sequences, strengthening spatial perception and memory, and executive function. This shows that elderly people who engage in aerobic dance exercise activities report significant improvements in balance and step consistency (C Noguera et al., 2020). Other

studies show that musical training has a stimulatory effect on the sensorimotor and auditory systems, which may improve cortical plasticity. Because aerobic dance exercise combines all of these factors, it can be concluded that aerobic dance exercises can improve cognitive function. Aerobic dance exercises can also improve mood, fitness, and self-confidence.

Having said that, many things can lessen or even eliminate the negative effects of aging. Specifically, through exercise, since several studies have shown that physical activity can enhance adult and older populations' spatial memory and executive function (Carmen Noguera et al., 2019). Exercise that involves aerobic dancing is thought to eventually enhance cognitive functioning, which is thought to be a neuroprotective factor against cognitive decline. Similar to other aerobic workouts like swimming, walking, or jogging, aerobic dancing exercises can also help regulate weight, lower the risk of cardiovascular disease, and relieve stress and sadness. symptom

Aerobic exercise can help prevent neurodegeneration and may be a solution for enhancing cognitive function in the elderly. Dancing corresponds to the genre of aerobic dance exercise and is regarded as the perfect way to decompress since it's a socially engaging activity that enhances physical fitness and promotes healthy living for the elderly and those suffering from dementia.

Dance is considered a combination of endurance, strength, coordination, and thinking, as well as social interaction. Additionally, dance as a form of physical activity can be practiced in many different settings and older adults are more likely to adopt it as part of their lifestyle compared to other more structured and/or intensive activities. It has been shown to stimulate many cognitive functions across the dementia spectrum, including visual and auditory improvements and the ability to follow directions. So dance mixed in the form of aerobic exercise has the advantage of stimulating emotions, increasing social interaction, and stimulating acoustics and music (Kattenstroth et al., 2013; Foster, 2013). Thus, aerobic dance exercises can be a more effective way to improve cognitive function than other aerobic dance exercises (Lazarou et al., 2017).

In the last decade, several reviews have shown that aerobic dance exercise is associated with improved cognitive function in the elderly (Predovan et al., 2019). Aerobic dance exercises can also improve memory in adults with mild cognitive impairment (Wong et al., 2020). Several other studies show that aerobic dance exercise can improve cardiovascular fitness, prevent several age-related diseases, and improve physical, cognitive, and psychological conditions (Vrinceanu et al., 2019). Aerobic dance exercise also involves focusing attention, memory, sensory stimulation, and social interaction. Aerobic dance exercise is a good exercise to improve cognitive abilities, mood, and physical function (Wong et al., 2020). The results showed that the average concentration before and after video intervention increased significantly between low-impact aerobic dance exercises (Arfanda et al., 2022).

The mechanism that occurs is that physical exercise increases blood flow to the brain improves the cardiovascular system's function and changes the entire metabolic system. Apart from that, physical activity also includes cognitive and social activities which can improve overall brain function (Zhu et al., 2020). Exercise also improves brain volume, memory, and executive function (Miyazaki et al., 2022)

CONCLUSION

Aerobic dance exercise is thought to be able to slow down cognitive decline in the elderly because when doing aerobic exercise, several movements must be done by rote, they are also required to adjust the movements to the tempo of the music, and the mechanism when doing aerobic dance exercise is that blood flow to the brain will be smooth and By improving the cardiovascular system, it will help improve the entire metabolic system. So the decline in cognitive function in the elderly can be slowed down by doing exercise, one of which is aerobics dance.

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