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**COMMENTARIES**

## Dementia and Dance: Medication or Movement?

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The purpose of this paper was to examine the benefits of dance in providing a realistic and viable alternative to the provision of traditional physical activities for dementia patients. Physical activity, while beneficial for increasing the components of health and fitness in general populations, may not be dementia friendly. Dance seems to be more suited as a physical activity form for dementia patients providing specific benefits including cerebrovascular enhancement. The usefulness of dance in relation to the physiological, psychological, and societal benefits for dementia patients' needs serious consideration as a future complementary/alternative physical therapy intervention.

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**Keywords:** Physical activity; Dementia; Dance

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### Introduction

Dementia and central nervous system degeneration are common problems in aging populations (Lu et al. 2021). More than 50 million people suffer with dementia globally, and these numbers are set to increase dramatically over the next 20 years (Alzheimer's Disease International 2020). Neurological diseases are becoming more prevalent, particularly in countries that have low incomes. Low-income countries account for about 60% of the world's dementia prevalence (Prince *et al.* 2013). In South Asia, the number of individuals with dementia has been recorded as 5.1 million. Health provision and associated social care for people diagnosed with dementia, and for aged populations has been referenced as inadequate (Sabzwari & Azhar 2011). Dementia is associated with several escalating neurodegenerative conditions with Alzheimer's having the greatest prevalence contributing about 80% to recorded dementia cases (Alzheimer's Association Report 2020). Alzheimer's Disease (AD) is currently responsible for many deaths, globally and because of the progressive nature of dementia, individuals with the disease deteriorate differently in relation to severity, cognitive ability, memory recall, mental health, and other dementia related cerebral manifestations of the disease (Lyketsos *et al.* 2002). The increasing prevalence of dementia has initiated considerable public interest that has mainly focused on economics and problems associated with the care of dementia patients. The cost of the disease has been approximated to be one trillion USD per year (WHO 2017).

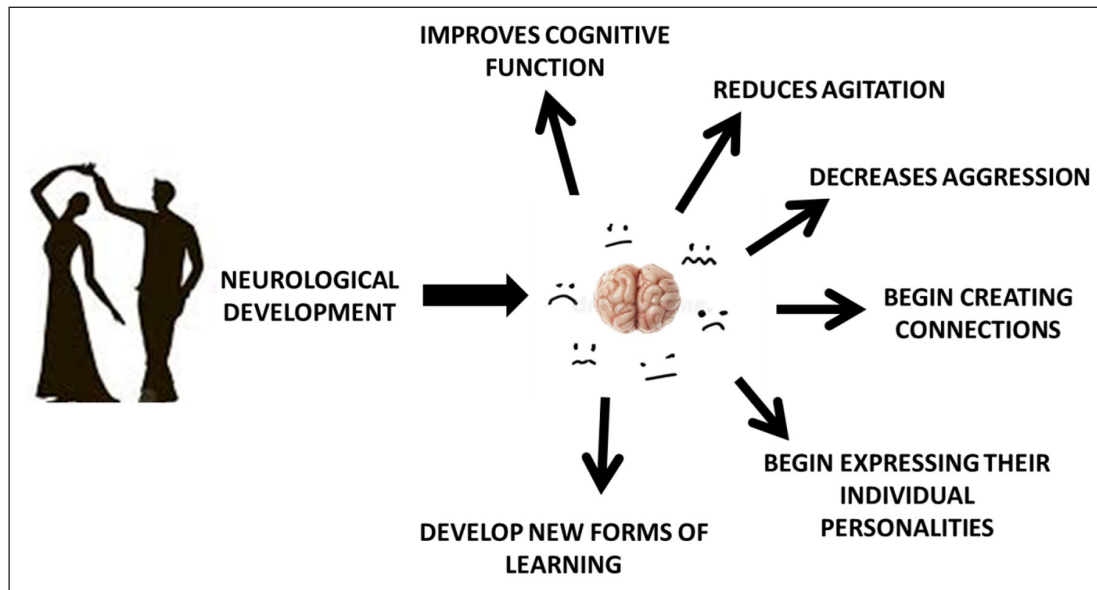
The behavioral changes and psychological problems associated with dementia experienced by dementia sufferers, place huge pressures on relatives, medical staff, and individuals providing dementia care for patients. Treatment regimens include the recommendation of non-pharmacological treatments. Despite this, powerful psychotropic medications are administered to patients to help alleviate the symptoms associated with dementia. These prescription practices continue despite limited success, and associated dangers relating to side effects and cumulative negative experiences for patients. When we consider the risks associated with psychotropic medications and inevitable related adverse events, psychotropic polypharmacy becomes a serious concern in this population (Moth *et al.* 2021). Minimizing prescription practices for dementia patients should be a priority and an objective of medical professions and pharmacologists (PHAM 2007, Canadian Geriatrics Society 2015). This practice should be deliberate, and follow a structured process of selectively reducing medication dosages for dementia patients under strict medical supervision.

This approach is generally introduced to evaluate the health of the patient, to examine the status of the patient while drug free and reduce any risks or adverse events associated with drug administration and withdrawal. Because of the problems connected with drug administration and the psychological and behavioral problems associated with drug use, the medical profession and related neurological disease organizations are investigating viable alternatives for the treatment of dementia. Recently, physical activity has been suggested as a possible alternative/addition to medication regimes and has proven to be successful for certain patient populations.

Physical activity has been reported to be beneficial in the prevention of many diseases, including chronic diseases (Östh *et al.* 2019). Regular exercise prevents high blood pressure, diabetes, obesity, osteoporosis, cerebrovascular disease, and ischemic heart disease, and certain types of cancers. Physical activity also has positive effects on the wellbeing of elderly populations and supports healthy aging (Östh *et al.* 2019). More attention is now being focused on the influence of exercise and its relationship with general and mental health, and cognitive ability. Physical activity has also been shown to have positive effects on the quality of life in both aged and frail individuals. This enables aged populations to have control and independence over their lives because of enhanced fitness levels and increased physical abilities (Wareham *et al.* 2005). Physical activity has also been demonstrated to improve the emotional state of individuals. This includes reduced anxiety and improvements in depression (Anderson & Shivakumar 2013). This positive effect is related to the fact that systematic exercise increases sympathetic nervous system activity and influences the responsiveness of the hypothalamic–pituitary–adrenal axis. In addition to this, it promotes neurogenesis and stimulates neurotransmission in the brain, facilitating increases in serotonin, dopamine, endorphins, and norepinephrine (Mandolesi *et al.* 2018). Physical activity has many benefits for this population, but physical activities require expensive equipment and extended use of exercise facilities which are limiting factors for poor communities and isolated populations (Teychenne *et al.* 2020, Teychenne *et al.* 2017). Several factors impact the relationship between physical activity and mental health, including enjoyment, mastery, autonomy, choice, social interaction, and belonging (Biddle *et al.* 2021). In contrast, these factors are more likely to be present when physical activity is undertaken for leisure or for transportation rather than for domestic/household or work purposes (Teychenne *et al.* 2020, Teychenne *et al.* 2017). Physical activity and mental health are related, but evidence of the role of social interaction is preliminary, and further studies are needed to determine whether it is more beneficial to engage in physical activity with others than alone (Kandola *et al.* 2019). However, future research should also consider the quality of relationships because belonging can improve mood and wellbeing more than being in the same room or taking a fitness class with someone else (White *et al.* 2018). For dementia patients, running and cycling outdoors, using sophisticated exercise equipment, and participating in team sports that require high skill levels may not be viable physical activity pursuits for the dementia patient. Problems relating to this type of physical activity include supervision and care issues, associated risks of becoming disorientated and selected cognitive problems.

Consequently, most exercise regimes for this population need to be performed under close supervision in a controlled environment. A further problem relates to the fact the certain exercise modalities require high levels of skill and tactics and do not predispose themselves to participation by patients with cognitive ability and thought processing issues. In relation to these problems, it appears that dance related physical activity may provide the perfect solution for dementia patients (**Figure 1**).

Recent research has outlined that dance and/or movement activity provides therapy that can ameliorate dementia-related symptoms and improve communication (Lyons *et al.* 2018). Further to this, a recent Meta-analysis was conducted to examine the effectiveness of dance interventions on physical health outcomes compared to other forms of physical activity. The results revealed that dance improves body composition, blood biochemistry, and the musculoskeletal system. Also, recent research has highlighted that dance or structured physical activity provided equivalent effects on cardiovascular function and self-perceived mobility (Fong Yan *et al.* 2018). Dancing is a social activity that provides rhythmicity, motor coordination, balance, and memory enhancement, while providing all the benefits of a physical activity regime (Gronek *et al.* 2021). These characteristics support the use of dancing methodologies as a potentially powerful treatment in the management of neurodegenerative disease. Increasing evidence also suggests that dance interventions/therapy can improve cognitive function, reduce agitation and aggression, and other difficult individual specific dementia-related issues (Motta-Ochoa *et al.* 2021). In addition, dance also provides potentially isolated individuals with the ability to form relationships, to socially interact with others and to improve their quality of life and societal meaningfulness. Research has also demonstrated that dance interventions increase the quantity and quality of social interactions and individual connections experienced by participants with dementia (Motta-Ochoa *et al.* 2021). Additionally, dance provides participants with mechanisms to examine



**Figure 1:** Benefits of dance on neurological development.

new movement patterns providing connections with like-minded individuals and with themselves (Motta-Ochoa *et al.* 2021). Motta-Ochoa *et al.* (2021) provide good examples of how dance and movement provide structured conditions for dementia patients to form connections, discover new knowledge, and express their personalities, in a safe and conducive environment. Many studies have demonstrated that dance provides individuals suffering with dementia a practical mechanism to form relationships using movement as the medium of interaction while obtaining both physiological and psychological benefits from dance participation (Low *et al.* 2016, Ho *et al.* 2018).

Dance intervention is an excellent form of physical activity and a non-pharmacological method to provide effective prevention, management, and treatment for dementia patients. Is it now time to seriously revisit medication strategies and avoid the detrimental consequences of psychotropic pharmaceutical interventions in this population?

Should the medical profession, health workers, governments and associated learned societies seriously consider the economically viable dance alternative, as a complementary or substitute regime to medication in this population? We hope this paper will stimulate debate in relation to dance as a realistic alternative/addition to traditional physical activity in the treatment of dementia. In summary, the benefits of dance appear to provide a realistic substitute/addition to medication and is also a viable alternative to the provision of traditional physical activities for dementia patients. Traditional physical activity may not be dementia friendly, and dance seems to be more suited and provides specific benefits for the dementia patient. The usefulness of dance in relation to the physiological, psychological, and societal benefits for dementia patients is unequivocal, and needs serious consideration as a complimentary or substitute therapy.

## Competing Interests

The authors declare that they have no competing interests.

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