

Physical Inactivity, COVID-19, and the Future of Global Health. Is Dancing the Solution?

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Abstract The purpose of this paper is to stimulate debate and raise awareness of the increased physical inactivity problems during and post the COVID-19 pandemic. The paper initially outlines the detrimental effects of inadequate physical activity and suggests reasons for the decreases observed during the pandemic. Further to this, the paper then examines the potential benefits of dance as an alternative/addition to participation in physical activity. Also, the paper discusses the beneficial effects of dance on physiological and psychological parameters and implications for health benefits and social engagement. We hope that the contents of this paper will invigorate individuals and physical activity providers, to consider dance as a viable alternative/addition to traditional physical activity.

Keywords: *dance, physical inactivity, psychological benefits, physiological benefits, global perspectives*

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1. Introduction

Physical inactivity is a term defining inadequate physical activity levels that fail to meet the recommendations detailed by the World Health Organization (WHO) [1]. Physical inactivity is risk factor for poor health exceeded only by smoking, high blood pressure, and poor metabolic profiles [2]. Sedentary behavior (SB) and lack of physical activity are leading modifiable risk factors for cardiovascular disease mortality [3]. Engagement in physical activity (PA) leads to improved levels of cardiometabolic fitness and is essential for all ages, ethnicities, and genders for the prevention of diseases associated with inactivity and obesity [2]. Further to this, engagement in physical activity provides benefits in combating chronic noncommunicable diseases. Engaging in PA can help to modify obesity, develop bones muscles and joints, reduce bone degeneration in menopausal women, and therefore, helps prevent osteoporosis. In terms of psychological well-being, PA can be an excellent remedy for the treatment of both depression and anxiety. Conversely, non-participation in PA can promote obesity, cardiovascular diseases, and certain cancers [4]. Resulting from participation in physical activity, males and females may obtain different fitness benefits based on the level, type, and intensity of physical activity regimes. The differences in adaptation may be explained by biological

differences, existing fitness levels and different metabolic responses between genders [5]. Currently, 1 in 4 adults do not meet the recommended levels of PA suggested by the World Health Organization [1]. The WHO's global target is to reduce physical inactivity by 10% by 2025 and by 15% by 2030 [6].

2. The Decline in PA during the Pandemic

Recently, politicians and governments have fixated their attentions on the identification and control of COVID-19, and the development of effective treatments to combat the pandemic [4]. Therefore, the long-term effects of COVID-19 on PA levels globally, has not received adequate attention during this period and prior to the pandemic [7].

PA has been highlighted as being important for alleviating the harmful effects of the coronavirus, especially in adult populations [8]. Quarantine strategies are having negative impacts on physical activity, and studies have demonstrated a significant decline in PA (see Figure 1) resulting in increases in SB and obesity in comparison to pre COVID-19 values. In addition, social isolation has contributed to the reductions observed in global PA levels. As a result, the negative health implications of the lockdown, including psychological distress and sedentary behavior need to be addressed to ensure good physical fitness and associated health benefits [9].

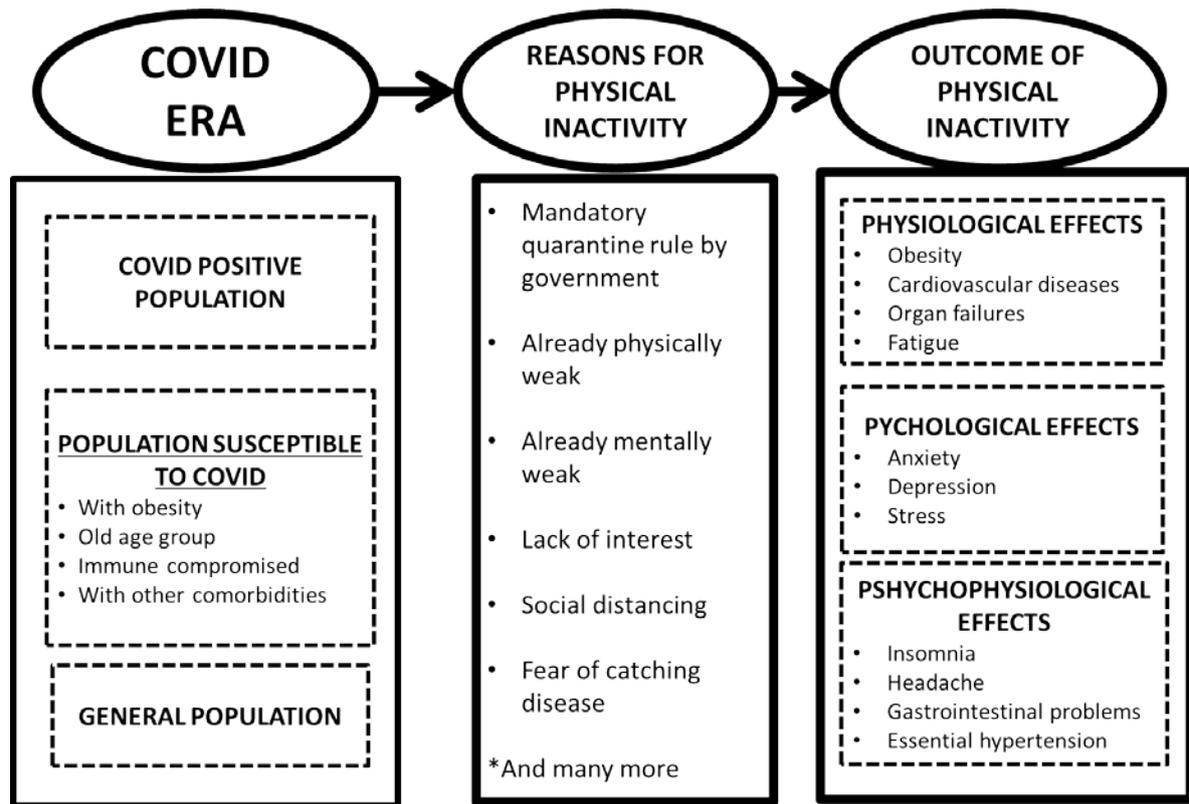


Figure 1. Short summary of reasons for physical inactivity during the COVID-19 era and its outcomes

3. The Physiological and Health Benefits of Dance

If we agree that PA is paramount to the health status of individuals of all ages, genders, and ethnicities, it is important for individuals to engage in a form of PA that is safe, inexpensive, accessible, that can be performed in groups or in isolation, can be practiced outdoors or indoors, requires little equipment, and is enjoyable for all participants [7].

Dancing is a form of PA that appears to have many physiological and psychological benefits and seems to be the perfect physical activity intervention to be implemented during and post COVID-19 [7]. Of course, all methodologies employed during dance sessions, during the pandemic, must consider health and safety precautions including mask wearing and social distancing particularly in non-vaccinated populations. Further to this, governmental advice, and local health board information regarding safety precautions during the pandemic must always be adhered to. There are further physiological benefits that can be gained from dancing in addition to those previously outlined. These include but are not limited to, increased endurance and co-ordination, improved aerobic ability, increased muscle quality, decreased obesity and body fat, increased strength of bones, reduction in osteoporosis, and increases in dexterity, and suppleness [10]. In addition to the physiological gains, dancing can also improve psychological health. Participation in dance alleviates mental health problems while increasing cerebrovascular function [8].

Dancing has effects on emotions, intelligence, and relationships. Many studies have reported the beneficial effects of dancing on Parkinson's disease, Alzheimer's disease, and depression [11,12]. In the era of the pandemic, dancing can provide social advantages by combining societal entertainment and physical benefits. Individuals can participate in dance at anytime and anywhere using network application software without being restricted by venue. This includes dancing at home in isolation or with family and friends.

4. Dance as a Psychophysical Activity

The learning and practice of dance routines can significantly enhance memory and skill acquisition. There are also benefits related to individual self-esteem. Benefits at an individual level include learning and mastering new movements and skills resulting in increases in confidence. Social interaction between groups of individuals during dance participation is also important to mental well-being [8]. Discussions with partners and other dancing practitioners and meaningful interactions with others improve mood status. These interactions also help individuals with issues such as loneliness and isolation, and the positive social interactions provide a feeling of security and belonging [13].

Dance can help minimize symptoms associated with depression and anxiety by increasing dopamine and neurotransmitter concentrations in the brain [8]. In a recent study, it was observed that dancers' brain structures were different when compared to a non-dancing control group. The findings were observed at both functional and structural levels. Findings from the study revealed that

changes were based on skill-acquisition and correlated with objective laboratory measures of dance skills and balance [14]. The findings of the study were interesting and exciting and suggest that in combination with motor coordination training could be effective in inducing neurological adaptations resulting from dance performance participation.

The findings suggest that dancing could be substituted or included in existing physical activity regimes for neurostimulation benefits that regulate cerebrovascular activity which may result in increased skill levels and motor coordination [14]. Dancing also provides a means to escape repetitive negative thoughts and worries. Learning new dance routines, including different moves and styles of dance, appears to help individuals recall information. This may have positive effects for the treatment of dementia and related neurodegenerative diseases [14].

The cerebrovascular benefits of dance participation may be related to the types of movements involved in different dances, and there are many different dance styles available for participants. Research has indicated that dancing involves many neurobehavioral processes in distinct areas, these areas include sensory, motor, cognitive, social, emotional, rhythmic, and creative [15]. Styles such as ballroom dancing may need large amounts of improvisation, which improves decision-making skills and are different to the processes involved in completely memorized movements and routines. In addition to this, it has been suggested that interpretive modern dance styles may offer more benefits for individual creativity [15].

5. Societal and Emotional Benefits of Dance

Dance is a multifaceted type of physical activity; it is a human behavior movement form that appears in early childhood. Previous research has revealed that infants move synchronously with musical rhythms, with synchronicity between movements and sound, and the movements themselves have been observed to be related to the experience of pleasure [15]. Dance music can also influence and change the activity of cerebrovascular regions involved in emotional regulation and social responses [10].

Dancing provides physiological, sociological, and psychological benefits that other exercise modalities fail to deliver. The social interaction benefits are extremely important to minimize the effects of loneliness and isolation resulting from the recent pandemic. The benefits outlined here suggest that dancing may be the perfect solution to the increasing physical inactivity problem, post COVID-19 and for the unforeseeable future.

Post pandemic, individuals need to pay more attention to physical exercise to improve their resilience, physical fitness, and adaptability. Dancing accompanied by music can not only strengthen the body, but also alleviate the psychological trauma caused by the pandemic.

6. Conclusion

Governmental administrators and leaders, social media, policy makers, the internet, schools, and education communities, etc. all need to promote the development and benefits of dancing as an effective physical activity intervention that provides lasting physical and psychological effects.

Competing Interests

The authors declare that they have no competing interests.

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