



Scoping Review on Impact of Covid-19 Pandemic on Physical Activity in Older Adults

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ABSTRACT: Corona virus disease 2019 (COVID -19) is highly contagious disease caused by a new corona virus that first appeared in Wuhan, China and was dubbed SARS-CoV-2. Physical activity lowers the risk of numerous chronic diseases and extends life expectancy. The number of older persons suffering from mental illnesses has risen dramatically in recent years around the world. Depression and anxiety are common mental disorders among older persons, and because of their serious implications, they should be considered a public health issue. Physically active lifestyle can help them cope with the psychological stress and drastic lifestyle changes that come with social isolation. The perceived comfort and attractiveness of environmental settings appear to play another important role for older persons in terms of their sense of security towards their own body and the environment. As we all know, a variety of factors such as environmental and social factors can have an impact on the physical and psychological health of the elderly, causing anxiety, depression, and loneliness. In order to overcome these symptoms, physical activity plays a critical role.

KEY WORDS: covid-19, elderly, immune system, physical activity.

INTRODUCTION

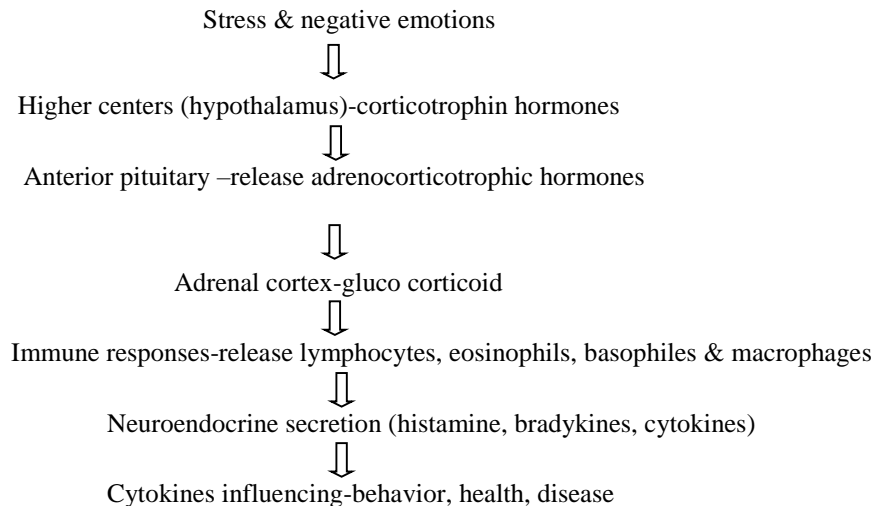
Corona virus disease 2019 (COVID -19) is highly contagious disease caused by a new corona virus that first appeared in Wuhan, China and was dubbed SARS-CoV-2 by the international committee on virus taxonomy. ⁽¹⁾ Since last December, it has swiftly spread around the world. The older person is more likely to have poor outcome, which can lead to higher death rate, which is five times higher than the worldwide average for those over 80 years old. ⁽²⁾ In early 2020, the corona virus illness 2019 (COVID-19) began to spread in the United States the pandemic had a disproportionately negative impact on older adults, with more severe complications, higher mortality, concerns about disruptions to their daily routines and access to care, difficulty adapting to new technologies like telemedicine, and fears that isolation would exacerbate existing mental health conditions. ⁽³⁾ Physical activity lowers the risk of numerous chronic diseases and extends life expectancy. However, the link between physical activity and effective ageing is not well understood. ⁽⁴⁾ The number of older persons suffering from mental illnesses has risen dramatically in recent years around the world. Depression and anxiety are common mental disorders among older persons, and because of their serious implications, they should be considered a public health issue. The elderly suffers from depression and anxiety. There are higher risks of dementia, suicide, and total mortality associated with medical co morbidities and cognitive impairment. ⁽⁸⁾ The purpose of this study is to get additional information regarding the degree of physical activity in Covid 19 pandemic and its risk factors by reviewing the following articles. How does it impact the mental and physical health of the elderly? Exercise intervention for the elderly was also included in the study.

1. Stress and depression

Recent physical activity intervention trials have included biochemical markers of inflammation. These same biological indicators, primarily pro inflammatory cytokines may however, be altered by an individual's stress and mood levels. According to this, those who participated in a daily 10-week exercise programmed saw significant improvements in stress, mood, and a variety of quality-of-life indicators. Additionally, serum IL-6 levels were shown to be much lower. In comparison to the other non-exercise group, the exercise group's stress, mood, and quality of life scores all improved significantly. This research adds to the body of knowledge on the type of exercise, intensity, duration, and frequency required improving psychological factors and IL-6 levels.



In older persons, increased IL-6 levels are linked to functional decline and decreased muscle strength. Stress and negative emotions have also been shown to be powerful immune system stimulators.



Older persons are more susceptible to the effects of psychological stress than younger people due to the age-related reduction in immune system control. Physical activity has been demonstrated to reduce stress levels while also enhancing mental health. In older adults, moderate exercise has been shown to improve immune system modulation by increasing T lymphocyte and natural killer cell activity and decreasing pro inflammatory cytokines, particularly IL-6, according to a number of studies. ⁽⁵⁾

2. Physical activity & Social isolation

Social isolation is linked to a decrease in physical activity, which may lead to immunological deregulation, but it has also been linked to heart disease, stress, anxiety, and emotional trauma. Stress, depression symptoms, and social isolation have been demonstrated in certain studies to decrease immunological responses, making a person more vulnerable to a viral infection, as well as deficits in glucose and lipid metabolism, physical malfunction, and mental discomfort. This study, encouraging people to live a physically active lifestyle can help them cope with the psychological stress and drastic lifestyle changes that come with social isolation. It's also a critical intervention for reducing the impacts of social isolation. ⁽⁶⁾

Physical activity should be promoted to everyone, but especially to older persons and other at-risk individuals, such as those with chronic diseases connected with age and lifestyle.

3. Physical activity & its impact on immune system

Physical activity is very important in older adult because of inactivation in them for week; month or year may increase risk of systemic inflammation. This also impaired natural killer cell catalytic activity & reduces cytokine production, T-cell proliferation. During prolong physical inactivity causes disturbances in immune system which may lead to develop urinary tract infection, viral infection most commonly.

Being physically active on a regular basis and engaging in bouts of exercise shows significant impact on the immune system. Exercise that ranges from moderate to vigorous intensity is good to immunological function. This is due to the significant hemodynamic changes that exercise causes (e.g., increases in cardiac output, vasodilatation, and blood flow), regular physical activity has been connected to enhanced T-cell proliferation and cytokine release in response to antigenic stimulation, increased neutrophil phagocyte activity, and enhanced natural killer cell cytolytic activity, all of which have been connected to reduce chronic low-grade inflammation ⁽⁷⁾

4. Physical activity correlation with exercises for elderly

Physical activity and exercise programs for older individuals should be based on current evidence and follow current guidelines. It included strength, balance, aerobic and walking exercises. for walking exercise current study said that it is advised as a low-cost, easy-to-access type of exercise; but, walking alone does not provide enough strength or balance challenge for older persons



to lower their risk of falling or fracture. As a result, many types of exercises can be included into an ageing programmed to improve ADLs. (Table no 1, (1), (2), (3), (4)) Sit-to-stand exercises are a wonderful alternative for older persons who are new to fitness or who are weak. These exercises target major lower-limb muscle groups and can be used to strengthen and balance: (8)

Tai Chi Chuan has been demonstrated to be useful in preventing falls and improving balance, muscle strength, proprioception, and endurance in older persons in a few studies. In older individuals, Chi Chuan is similar to a balance-focused training programmed in terms of improving lower limb muscle strength, agility, and balance, as well as aerobic endurance. (Table no 1(5)) (9)

Table 1		
Exercises	Positioning	Duration
1. Walking	Outdoor	10-15 min
2. Aerobic exercises	Chair sitting, standing	10 min
3. Sit to stand	-	10 min
4. Stretching	Sitting, lying	10 min
5. Tai Chi Chuan		Eight weeks, twice a week, 35min per session
6. Knee flexion to extension (TheraBand)	Sitting, standing	20 min, twice per week, 6 months
7. Elbow flexion to extension(t)	Sitting	
8. Hip extension to flexion(t)	Standing	

Exercise-based interventions have been found to help older persons with depression. There has already been evidence of a quantifiable effect of moderate-intensity mixed aerobic and anaerobic exercise therapies on depression. Regular physical activity has been shown to help older persons with anxiety problems & reduces the fear of fall. Daily physical activity can improve mental health & quality of life. According to a recent study, there are several exercises that the elderly can practice at home. For example, Elastic bands are commonly used to improve muscle strength and power since they are simple to use, portable, and inexpensive. Table no 1 (6, 7, 8) shows the TheraBand sessions which elderly can easily do with TheraBand. (10)

5. Death & near one dear one loss

When older persons suffer important life traumas such as retirement, close ones being ill or passing away, or moving into care, they are more likely to feel lonely and have lower social support. Physical activity (PA) is a fundamental modifiable factor of health that is especially relevant to Active Aging because it has been shown to offer numerous mental and physical health advantages for people of all ages. Social Support is a social determinant of health, defined by the World Health Organization as "emotional and practical support characterizing strong social interactions." Understanding the role of various types of social support (e.g., friends, family, or an exercise group) and PA levels in older persons may also be beneficial. People who received strong emotional support from their closest one and followed to physical activity requirements were more likely to continue to do adequate PA five years later.

Loneliness has been included in this review because social support and loneliness are not mutually exclusive, and one might be lonely without being socially isolated, they have been proven to be intimately associated among community-dwelling older individuals. (6)

6. Environmental factor

Parks are commonly considered as important environmental spaces where people can participate in a variety of recreational activities that have beneficial to their health. On the other hand, tourists to urban parks and people of the surrounding communities still do not use them for PA. According to findings from a park utilization study, more than half of city dwellers never visit parks for active or quiet activities during a typical week. Less than a third of park visitors surveyed or seen engage in park-based physical exercise. However, when it comes to "active ageing" and "healthy ageing," Low-intensity leisure and day-to-day activities, sport activities, and transportation activities characterize PA in the elderly, depending on a variety of



demographic parameters such as age, gender, and family status. In addition, psychosocial factors such as self-efficacy, perceived barriers, as well as the benefits of PA, enjoyment of PA, and social support, all have a substantial impact on PA behavior.

The perceived comfort and attractiveness of environmental settings appear to play another important role for older persons in terms of their sense of security towards their own body and the environment. These considerations include the design and use of transportation infrastructure such as walkways, railings, and rest breaks, among others. In the future, the interaction of perceived environmental elements and park-based physical activity in various metropolitan settings should be studied more thoroughly. The findings could be used by park designers and municipal policymakers to develop appropriate measures for encouraging elderly people to participate in physical activity.

To make parks more interesting, targeted interventions on sufficient equipment and accessibility for older persons could be especially beneficial in encouraging senior individuals to participate in park-based PA. ⁽⁷⁾

Table 2		
Exercises	Psychological Impact	Physical Impact
Walking	Improves mood and anxiety related symptoms	Improves cardiovascular health
	Decreases stress levels	Improves range of motion
	Increased cognitive function	Improves flexibility
Strength exercises	Reduces depression symptoms	Improves balance and stability
	Improves body image	Increases bone density and risk of osteoporosis
Tai Chi	Enhances body awareness and mindfulness	Helps to manage chronic pain and arthritis
	Prevents risk of falls	Increases leg strength and endurance

CONCLUSION

As we all know, a variety of factors such as environmental and social factors can have an impact on the physical and psychological health of the elderly, causing anxiety, depression, and loneliness. In order to overcome these symptoms, physical activity plays a critical role.

Physical activity is important for older adults since prolonged inactivity can lead to physical and psychological difficulties. Decreased mobility and social isolation can have a negative impact on the health of the elderly. It is extremely important in the old aged population in all aspects. In this scoping review, we look at all ten papers that provide more information on physical exercises and effect of isolation in covid pandemic in older adult. All of the variables that explain why physical activity is vital, as well as its relationships with conditions and exercises. The Study describes exercises (table 2) and how psychologically and physically the difficulties in elderly affecting the physical activities.

REFERENCES

1. Dhama K, Patel SK, Kumar R, et al. Geriatric Population during the COVID-19 Pandemic: Problems, Considerations, Exigencies, and Beyond. *Front Public Health*. 2020; 8:574198. Published 2020 Sep 22. doi:10.3389/fpubh.2020.574198
2. Sepúlveda-Loyola W, Rodríguez-Sánchez I, Pérez-Rodríguez P, et al. Impact of Social Isolation Due to COVID-19 on Health in Older People: Mental and Physical Effects and Recommendations [published online ahead of print, 2020 Sep 25]. *J Nutr Health Aging*. 2020;1-10. doi:10.1007/s12603-020-1469-2
3. Vahia IV, Jeste DV, Reynolds CF 3rd. Older Adults and the Mental Health Effects of COVID-19. *JAMA*. 2020;324(22):2253-2254. doi:10.1001/jama.2020.21753



4. Gopinath, B., Kifley, A., Flood, V.M. *et al.* Physical Activity as a Determinant of Successful Aging over Ten Years. *Sci Rep* **8**, 10522 (2018). <https://doi.org/10.1038/s41598-018-28526-3>
5. Stark weather AR. The effects of exercise on perceived stress and IL-6 levels among older adults. *Biol Res Nurs.* 2007;8(3):186-194. doi:10.1177/1099800406295990
6. Lindsay Smith G, Banting L, Eime R, O'Sullivan G, van Uffelen JGZ. The association between social support and physical activity in older adults: a systematic review. *Int J Behav Nutr Phys Act.* 2017;14(1):56. Published 2017 Apr 27. doi:10.1186/s12966-017-0509-8
7. Wagner, P., Duan, Y.P., Zhang, R. *et al.* Association of psychosocial and perceived environmental factors with park-based physical activity among elderly in two cities in China and Germany. *BMC Public Health* **20**, 55 (2020). <https://doi.org/10.1186/s12889-019-8140-z>
8. Said CM, Batchelor F, Duque G. Physical Activity and Exercise for Older People During and After the Coronavirus Disease 2019 Pandemic: A Path to Recovery. *J Am Med Dir Assoc.* 2020;21(7):977-979. doi:10.1016/j.jamda.2020.06.001
9. Hosseini L, Kargozar E, Sharifi F, Negarandeh R, Memari AH, Navab E. Tai Chi Chuan can improve balance and reduce fear of falling in community dwelling older adults: a randomized control trial. *J Exerc Rehabil.* 2018;14(6):1024-1031. Published 2018 Dec 27. doi:10.12965/jer.1836488.244
10. Tada A. Psychological effects of exercise on community-dwelling older adults. *Clin Interv Aging.* 2018;13:271-276 <https://doi.org/10.2147/CIA.S152939/>