

## The importance of physiotherapy during covid-19 and social isolation

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### **Abstract**

*Physical activity in older adults reduces the risk of developing the disease. It helps manage existing conditions as well as develops and maintains physical and mental functions. Encouraging safe and effective activities that can be performed at home is possible and necessary for maintaining or increasing the level of physical activity in elderly adults. For the purpose of this article, we reviewed the scientific literature, systematic reviews, meta-analyses, controlled clinical trials, and randomized controlled trials published between 2019 and 2021. We used databases, such as PubMed and PEDro. The inclusion criteria were articles published in English; access to the full text; relevant topic; original scientific research articles; selected words in the abstract; articles published between 2019 and 2021. The analysis of the results shows a positive effect of therapeutic exercises on physical and mental health of elderly adults. Our research was limited by a modest number of relevant studies and other inclusion criteria.*

## Pomen fizioterapije v času covid-19 in socialna izolacija

### **Povzetek**

*Telesna dejavnost starejših odraslih zmanjšuje tveganje za nastanek bolezni, pomaga pri obvladovanju obstoječih stanj ter razvija in vzdržuje telesne in duševne funkcije. Spodbujanje varnih in učinkovitih dejavnosti, ki jih je mogoče izvajati v domačem okolju, je možno in potrebno za ohranjanje ali povečanje ravni telesne dejavnosti pri starejših odraslih. Za potrebe članka smo preučili in pregledali znanstveno literaturo, sistematične pregledne članke, metaanalize, klinične kontrolirane raziskave in randomizirane kontrolne raziskave objavljene v obdobju od leta 2019 do leta 2021. Za iskanje smo uporabili baze podatkov, kot sta PubMed in PEDro. Vključitvena merila so bila: članki objavljeni v angleškem jeziku; dostop do celotnega besedila; tematska ustreznost; izvorni raziskovalni znanstveni članki; izbrane besede v povzetku; članki, objavljeni v obdobju 2019-2021. Analiza rezultatov kaže pozitiven učinek terapevtskih vadb na telesno in duševno zdravje starejših odraslih. Našo raziskavo je omejevalo skromno število raziskav tematske ustreznosti in drugih vključitvenih meril.*

## 1. INTRODUCTION

The world is currently facing the pandemic of the COVID-19, which struck in China towards the end of December 2019. The disease quickly spread around the world. On 11 March 2020, the World Health Organization declared the outbreak of a new coronavirus disease a pandemic (Vitale et al., 2020). However, the measures that were introduced to control the coronavirus, which included keeping the population in “social isolation”, have had a strong impact on our lives (Pelicioni and Lord, 2020). Elderly adults have been the most isolated category of the population and therefore exposed to depression and loneliness (Sacco et al., 2020).

Globally, physical inactivity and poor mental health are among the most important risk factors for higher morbidity. This is especially true for elderly adults and the chronically ill who are at increased risk of mortality from COVID-19 (Ammar et al., 2020). Physical activity in elderly adults reduces the risk of disease, helps manage existing conditions, and develops and maintains physical and mental functions. Inactive elderly adults are at increased risk of developing diseases, such as diabetes and cardiovascular disease, and lose mobility and functional independence due to decreased muscle mass. Measures involving social distancing and self-isolation for elderly adults have been implemented to protect elderly adults and vulnerable groups from an increased risk of more serious and potentially fatal diseases associated with COVID-19. However, they have also caused sudden and significant changes in habits. Concerning the increased time spent at home in compliance with local and national regulations, encouraging safe and effective activities in elderly adults, that can be performed at home, is possible and necessary to maintain or increase their physical activity levels (Klempel et al., 2021).

The mental health of the population has also deteriorated during COVID-19. Many authors report social isolation, frequency of depression and anxiety. Measures introduced due to COVID-19 have led to disruptions in daily routine, loss of social contacts, increased isolation, and loneliness, which represent powerful factors in mental health (Gilbody et al., 2021). It has been proven that the strategies that maintain social cohesion, for example, are important in ensuring the mental health of the elderly adult population. This is especially important during a pandemic and in the planning of recovery from the pandemic (Peçanha T. et al., 2020). Social isolation has caused general health problems and has had a major impact on several aspects of people’s health. Long staying at home has been linked to a sedentary lifestyle, changed dietary patterns and higher levels of stress. In this context, exercise at home represents a valid and alternative strategy for reducing physical inactivity in elderly adults (Vitale et al., 2020).

As a result of the pandemic, health associations around the world have issued recommendations on remote health care using communication and information technologies. Telemedicine is an alternative way of providing rehabilitation services. Technological development has proven to facilitate communication between a physiotherapist and a patient and represents a great potential as a substitute or as a supplement to current physiotherapy therapies. It includes health services as well as support and remote information via digital communication and devices. Its purpose is to facilitate an effective provision of health services, such as physiotherapy, by improving access and information (da Mata et al., 2021).

The purpose of the article is to review scientific findings and analyse the importance of physiotherapy and physical activity during Covid-19 and the social isolation of elderly adults.

## 2. METHODS

We reviewed the scientific literature, systematic reviews, meta-analyses, controlled clinical trials, and controlled randomized trials published between 2019 and 2021. The reviewed studies were in the English. We used databases such as PubMed and PEDro. An advanced search of databases was performed using Boolean search with the insertion of AND/OR between two or more keywords. The keywords or phrases in the search were: physical activity AND covid AND elderly. The inclusion criteria were articles published in English; access to the full text; relevant topic; original scientific research articles; selected words in the abstract; articles published between 2019 and 2021. Exclusion criteria were access to the summary only; literature that does not relate to the whole topic; duplicate articles. The literature review took place from 2 November 2021 to including 16 November 2021. The literature review procedure is shown in the PRISMA diagram, Figure 1.

## 3. RESULTS

The total number of eligible search results was 51 (PEDro) and 59 (PubMed). We reviewed the titles and abstracts of the studies. After removing the duplicates, 8 (PEDro) and 27 (PubMed) studies remained. Out of 30 studies, another 15 were excluded due to irrelevant content. Thus, 8 studies were included in the final analysis (Table 1). Most studies chosen were randomized controlled clinical trials.

Figure 1: Flowchart of the review according to PRISMA methodology

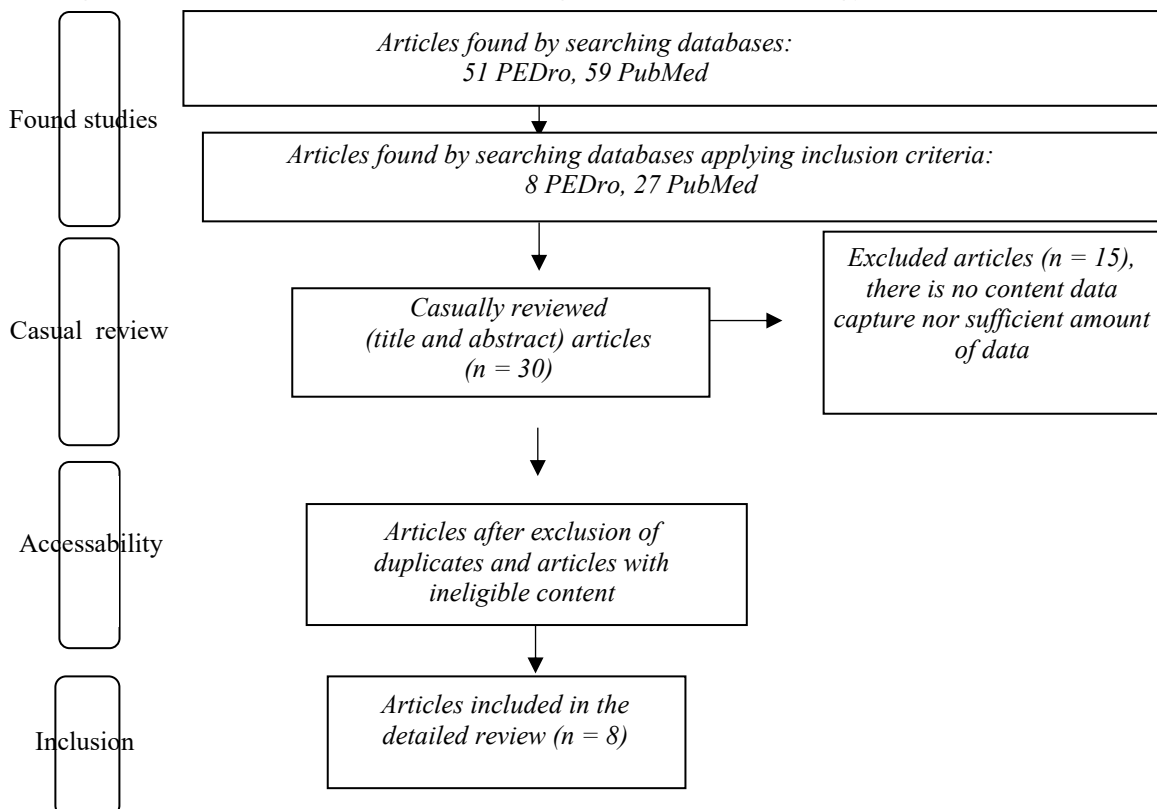


Table 1 shows the final list of articles included in the content qualitative analysis.

PUBLICATION	METHODS	PURPOSE	CONCLUSIONS
Beauchamp et al., 2021 Online-Delivered Group and Personal Exercise Programs to Support Low Active Older Adults' Mental Health During the COVID-19 Pandemic: Randomized Controlled Trial	N= 241, elderly adults, physically inactive (aged $\geq 65$ years); 12-week online exercise program; * RCT	Assess whether a group exercise program can improve the psychological health of elderly adults compared to an individual exercise program;	The effectiveness of physical activity during the COVID-19 pandemic may help maintain previously underactive elderly adults. In addition, the results showed that exercise has a positive effect on mental health;
Chaabene et al., 2021 Home-based exercise programmes improve the physical fitness of healthy older adults: A PRISMA-compliant systematic review and meta-analysis with relevance for COVID-19	N= 1447 (aged 65-82); exercises for muscle strength and balance, > 3 workouts per week and $\leq 30$ min;	To study the effects of home exercise programs on physical fitness in healthy elderly adults;	Exercise at home is effective for improving the components of health (i.e. muscle strength and muscular endurance) and related physical fitness (i.e. muscle strength, balance);
Chen et al., 2021 Otago exercise programme for physical function and mental health among older adults with cognitive frailty during covid-19	N= 62 elderly adults (aged 75-92) with cognitive impairment; *EG: 31;12-week exercise program; * CG: 31;* RCT	Assess the impact of the Otago exercise program on physical performance and mental health in elderly adults with cognitive impairment during the COVID-19 pandemic;	The results of the study show that * EG had better physical functions and better mental health than * CG;
Klempel et al., 2021 The effect of chair-based exercise on physical function in older adults: a systematic review and meta-analysis	N= 1388, (aged $\geq 50$ ); 2-week exercise program on the chair;	Determine the effects of chair exercise on the health of elderly adults;	Chair exercises are effective and should be promoted as simple and easy activities to maintain and develop strength in elderly adults.
Liu et al., 2020 Respiratory rehabilitation in elderly patients with covid-19: a randomized controlled study	N= 72 with a confirmed diagnosis of COVID-19, (aged 65 +, $\geq 6$ months after the onset of other acute diseases; MMSE> 21; without COPD or any other respiratory disease;36 respiratory rehabilitation;36 without rehabilitation	To investigate the effects of 6-week respiratory rehabilitation on respiratory function, quality of life, mobility, and psychological status in elderly patients with COVID-19	Six-week respiratory rehabilitation may improve respiratory function, quality of life, and reduce anxiety in elderly patients with COVID-19, but with few significant effects on depression in the elderly;
Muruksu et al., 2021 Physical Activity Patterns, Psychosocial Well-Being and Coping Strategies Among Older Persons with Cognitive Frailty of the "WE-RISE" Trial Throughout the COVID-19 Movement Control Order.	N= 42 with cognitive impairment; 21 multi-component exercise + cognitive stimulation, nutrition counselling and psychosocial support; 21 normal exercise; * RCT	Compare patterns of physical activity and well-being of elderly adults with cognitive impairment during 6 months of multi-component exercise, cognitive stimulation, nutrition counselling, and psychosocial support and routine exercise;	* EG participants were more physically active, functionally independent;

Nambi et al., 2021 Comparative effectiveness study of low versus high-intensity aerobic training with resistance training in community-dwelling older men with post-covid 19 sarcopenia	N=76, men with COVID-19 sarcopenia (aged 60-80);*EG:36, low-intensity aerobic exercise;*CG:36, high-intensity aerobic exercise;8-week aerobic exercise program;* RCT	Find and compare the clinical and psychological effects of low and high-intensity aerobic exercise combined with resistance exercises;	Low-intensity aerobic exercise is more effective in improving clinical (muscle strength) and psychological (kinesiophobia and quality of life) factors than high-intensity aerobic training in human sarcopenia 19;
Vitale et al., 2020 Home-Based Resistance Training for Older Subjects during the COVID-19 Outbreak in Italy: Preliminary Results of a Six-Months RCT	N=9; *EG: 5 (aged: 66 ± 4; ITM: 27,5 ± 3,7); *CG: 4 (aged: 71 ± 9; ITM: 24,2 ± 4,1); 6 months of guided exercise at home	Assess the impact of a six-month home exercise program on muscle and physical performance in healthy elderly adults;	An exercise program at home during self-isolation improves muscle strength of the lower extremities, but not muscle mass in the elderly;

\*RCT - randomized controlled trial; \*EG – experimental group; \*CG – control group

Table 1: The studies included in the final analysis

#### 4. DISCUSSION

By examining and reviewing the scientific findings, we wanted to analyse the importance of physiotherapy during Covid-19 and social isolation in elderly adults. The analysis of the results showed positive effects of therapeutic exercises on physical and mental health of elderly adults. Our research was limited by a modest number of topic-relevant studies and other inclusion criteria.

It has been demonstrated that home exercise during Covid-19 maintains the muscular and functional state in elderly adults. Emerging data show that physical activity has decreased significantly during the period of social isolation (Peçanha et al., 2020). This can lead to long-lasting inactivity of skeletal muscles, which is associated with the loss of functional ability in elderly adults (Vitale et al., 2020).

The authors established that a multi-component exercise program itself is effective enough to encourage the adoption of a physically active lifestyle. One of the reasons for the relatively good maintenance of physical activity in this study may be a multi-component body exercise program that included not only intensive controlled exercise but also exercise at home to promote self-motivated exercise (Savikangas et al., 2021).

The importance of online exercising during Covid-19 and social isolation is more effective in contributing to the well-being of elderly adults who live either alone or with others. Such online programs also have great potential to be implemented on a large scale. Online exercises were conducted to support inactive elderly adults while ensuring they maintain physical distance (Beauchamp et al., 2021).

The results show that Otago exercises are effective in improving functional mobility and mental health outcomes in the elderly population. The authors' findings support a recent study reporting that exercise has been an effective therapy for mental and physical health.

Prolonged physical inactivity is associated with a thinner medial temporal lobe, abnormal blood flow in the brain, increased hyperintensity of white matter, and decreased levels of neurotrophic factors emanating from the brain. These changes were associated with physical weakness and cognitive functions. The reason for the positive change in body functions may be that regular exercise reduced the effects of a sedentary lifestyle during the COVID-19 pandemic (Olanrewaju et al., 2020).

Regular and systematic physical activity can promote mental health by reducing chronic inflammatory reactions and promoting self-esteem. Social isolation can lead to depression and mental health

problems. Depression increases levels of inflammatory cytokines. These inflammatory factors cause a decrease in muscle density and skeletal muscle mass, which can lead to cognitive impairment. Several studies have reported that regular exercise can reduce the level of chronic inflammatory cytokines and symptoms associated with depression. Furthermore, a better self-image and self-esteem promote mental health and reduce the negative impact of social isolation (Maugeri et al., 2020; Santini et al., 2020; Paolucci et al., 2018).

A study (Yamada et al., 2020) that examined the effects of the COVID-19 pandemic on elderly adults reported a significant reduction in time spent on physical activity. In elderly adults who are physically inactive for a longer period, a decrease in functional independence and cognitive impairment has been observed compared to physically active (walking or moderate physical activity). They discovered that physical exercise is an essential component of coping with cognitive impairment. Abandoning it can lead to further degradation of functionality and eventually disability.

At a time of limited physical activity due to the pandemic, exercise at home is an alternative to prevent physical inactivity and maintain/improve the health and fitness of healthy elderly adults (Chaabene et al., 2021).

Respiratory rehabilitation significantly improved anxiety and quality of life in elderly patients with COVID-19. The mechanism of exercise in rehabilitation is mostly associated with the improvement of lung function, cardiovascular function, and limb muscle function. The data show that exercise significantly improves physical performance in patients with COVID-19 (Liu et al., 2020).

Lower level of physical activity in elderly adults is also associated with weakening the immune system. It consequently leads to the risk of chronic diseases, deteriorating health and mortality. Therefore, preventing physical inactivity and strengthening the body's immunity through regular exercise and functional activities could mitigate potentially harmful outcomes of social isolation (Mascherini et al., 2021).

Based on our research, we believe that regular physical exercise could reduce the risks and harmful effects of social isolation in elderly adults.

Unfortunately, the pandemic has limited the number of places where people could engage in physical activity, as many countries have prevented or restricted access to shared recreational facilities, both indoors and outdoors (Skotnicka et al., 2021).

The research focuses on the importance of physiotherapy during Covid-19 and the social isolation of elderly adults. There was a relatively small number of studies relevant for inclusion in the final analysis, considering the inclusion and exclusion criteria, which is a limitation of our research.

## **5. CONCLUSION**

One of the exciting elements observed during the pandemic is a change in physical activity. Prolonged stay at home and reduction of regular outdoor activities and exercise leads to an increased risk of chronic health conditions (Srivastav et al., 2021). Physical activity is an important factor of health in old age (Klempel et al., 2021).

Our research confirms that the current literature is still more focused on describing all possible aspects and complications of pathology rather than interventions or new organizational models. However, more and more data are being collected and reviewed, and guidelines are being developed for the management of the new coronavirus disease from a physiotherapy aspect.

We believe that long-term feasibility and effectiveness, perhaps in terms of individual approach to exercise in elderly adults in social isolation, need to be assessed. Good physical condition can also help

reduce the mental health pressures associated with the COVID-19 outbreak, which is an additional argument for promoting physical activity at all ages during the isolation caused by the coronavirus disease.

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