

Research article

Nordic walking, a novel regime's impact on functional capacity, quality of life and depression and anxiety in Post Covid-19 patients**Pallavi R. Bhakaney, Vishnu Vardhan G.D.***

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ABSTRACT

In COVID-19, the respiratory system is most affected by cough, fever, and dyspnea. It has shown its impact on lung function and exercise is proven to aid in the restoration of the normal functioning of the lung. There have not been studies on Nordic walking in Covid-19 patients after discharge yet. The need for the research is aimed at documenting the efficacy of the Nordic walking program in Covid-19 patients after discharge. 70 patients with Post Covid-19 symptoms with age 20-50 years affected mildly to moderately will be included. Exclusion criteria will include Post Covid-19 patients not willing to participate, those who required invasive ventilator support during their hospitalization period, and Post Covid-19 patients with pre-diagnosed cardiovascular, pulmonary, nephrological, neurological, metabolic, oncological, or musculoskeletal disorders that can limit physical functioning. After randomly assigning the patients into two groups, a baseline assessment will be taken; the interventions will be for 4 weeks in which Group A will undergo walking as a training program and Group B will perform Nordic walking. Functional capacity, HRQoL (Health-related quality of life), depression, and anxiety will be checked. The result of this study will focus on examining the efficacy of Nordic walking on functional capacity, HRQoL, and depression and anxiety in Post Covid-19 patients. To present a novel and intriguing approach to rehabilitation and to achieve effective results in Post Covid-19 patients.

Keywords: Long COVID, Nordic walking, Pole walking, Rehabilitation.

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INTRODUCTION

COVID-19 got born in Wuhan, China, and escalated around the globe. On January 30, 2020, the WHO Emergency Committee declared a global health emergency due to an upsurge in cases. COVID-19 affects the respiratory system primarily. Cough, early onset of fever, and breathing difficulties are the symptoms that have been recognized thus far. Also, a lot of patients are been successfully given treatment and are discharged from the hospitals^[1]. Covid-19 also has side effects which include health issues. The major population having non-critical Covid-19 pneumonia has decreased diffusion capacity of lungs after discharge, as well as a worsened perception of their physical and mental wellbeing^[2]. Moreover, Covid-19 discharged patients are seen to be anxious, having PTSD (Post-Traumatic Stress Disorder), sleeplessness, and anxiety^[3]. Because Covid-19 reduces the lung functioning capacity, aerobic exercise aids in the restoration of normal lung function. Planning for an exercise program is proven to be beneficial. Research has been done on the importance of exercise

sessions influencing the armor functioning of the body. They have found that easy exercise such as regular brisk walking can outperform inactive lifestyles, resulting in fewer sick days. Studies have looked into the influence of moderate exercise training on immunological functioning^[4].

In the field of modern health services, the Nordic Walking program is beneficial. It is simple to learn and inexpensive. The HRQoL of the patients appears to be improving^[5]. Nordic Walking is already proven to have a great role in improving the HR (heart rate), BP (blood pressure), aerobic power, VO₂max (Maximum oxygen consumption), and HRQoL in people with various conditions^[6,7]. Walking is the most favored modality of exercise in a traditional aerobic training program for people with respiratory diseases. Normal walking is easily adaptive and monotonous over a length of time. In comparison to normal walking, Nordic walking features the use of poles, which makes exercise more exciting, engaging, and potentially

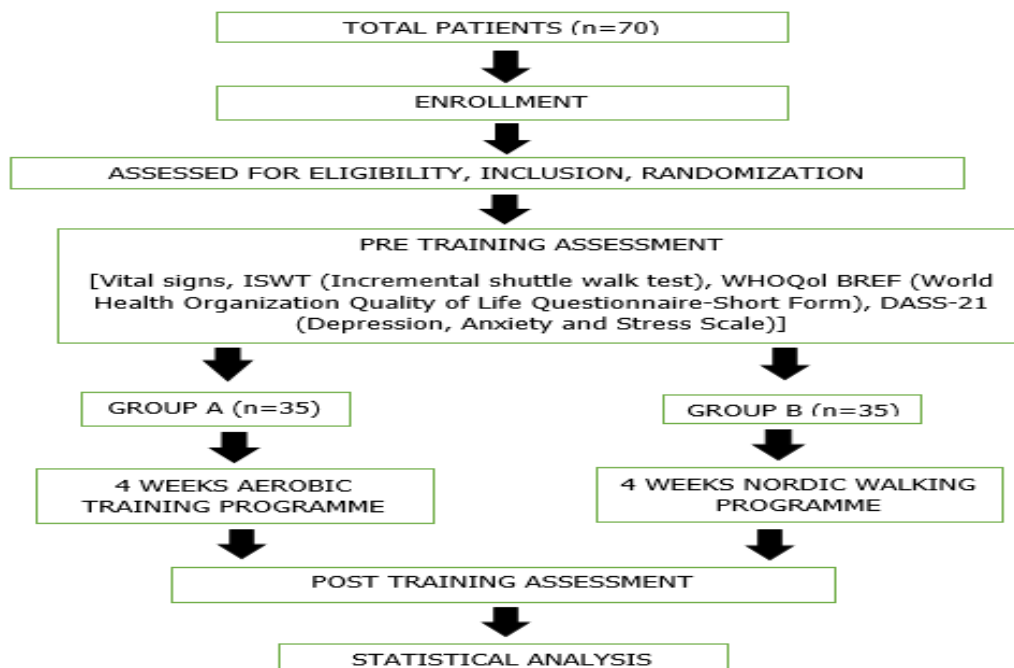
more taxing on the cardiovascular system. Nordic walking has a pattern that helps to load the body's various systems. Nordic walking includes a rhythmic movement of the upper and lower extremities, as well as the poles, which necessitates the integrated function of all systems and, as a result, has certain impacts on balance, coordination, and proprioception^{[8] [9]}. Correct walking technique, posture, and pole use are all important for Nordic walking. Despite this, it closely resembles normal walking patterns. Many studies have been conducted on postmenopausal women and diabetics in which the Nordic walking program was utilized to improve endurance. The Nordic walking program is used in this study as a technique of conditioning for Covid-19 patients after discharge in the course of a rehab program. Nordic walking has been shown to improve HRQoL, functional capacity, and anxiety and depression in very limited studies^[7]. The goal of the

current study is to compare how these parameters are affected by the Nordic walking program and traditional aerobic exercise in such patients.

METHODOLOGY

To examine the effectiveness of Nordic walking and an aerobic training programme on patients with Covid-19's functional capacity, HRQoL, and symptoms of depression and anxiety after discharge. The study will be done in OPD (Outpatient Department) of Ravi Nair Physiotherapy College, Wardha, after acceptance from the Institutional Ethics Committee of Datta Meghe Institute of Medical Sciences. Informed consent will be filled by participants. Group A will be receiving a 4-week aerobic training program and Group B receiving a 4-week Nordic walking program^[10]. Figure (1) shows the flowchart of the study design.

Figure 1: Flowchart of the study design.



Participants

70 patients will be included based on the prevalence of patients diagnosed with COVID-19. Inclusion criteria will be the Post Covid-19 patients with age 30-50years, Post Covid-19 patients willing to participate, and Mild to moderately affected patients based on CT severity score. Exclusion criteria will be the Covid-19 patients who required invasive ventilator support during their hospitalization period, and Post Covid-19 patients with pre-diagnosed cardiovascular, pulmonary, nephrological, neurological, metabolic, oncological or musculoskeletal disorders that can limit physical performance.

Sample size consideration

The study will involve 70 individuals in total, of whom 35 will be recruited for Group A and 35 for Group B.

Recruitment procedure

The patients will be contacted on the day of discharge and

counselled for the after-effects of COVID-19 on body function and the importance of rehabilitation after COVID exposure. Demographic details will be noted. The patients will be screened based on the norms for including and excluding the subjects. The patients will be briefed about the exercise training program.

Intervention design

Patients will receive a booklet for a home-exercise program on the day they are discharged from hospital, which will be instructed to perform till 6-8 weeks, followed by which the study will be carried out, as per ERS(European Respiratory Society)and ATS (American Thoracic Society)guidelines. There will be an informed consent acquired. The patients will be screened and assigned randomly in a 1:1 ratio. The patients will be told to wear cozy clothing, walking shoes, and mask. The patients will be briefed about the exercise training program. The complete assessment and evaluation of the

patients will be done on day 1 as well as at the end of the 4th week as mentioned in the case record form. The vitals of the patient will be monitored throughout the training program. The exercise training program will be advised on basis of the FITT (Frequency, Intensity, Time, Type) principle. Both the groups will be receiving conventional pulmonary rehabilitation protocol along with the mentioned interventions.

Group A will be receiving the Aerobic training program. The exercise prescription will be as follows- Frequency- 3 times a week, Intensity- Borg RPE (Rate of perceived exertion)- 10-13 (as tolerated by the patient), Type – Walking, and Time- 30-60 minutes/ day. Group B will be receiving the Nordic walking program. The patients will undergo a training of holding and walking with the Nordic poles before the treatment. A rest period of 1 hour will be given following the training. The exercise prescription will be as follows- Frequency-3 times a week, Intensity- Borg RPE- 10-13 (as tolerated by the patient), Type - Nordic walking, Time- 30-60 minutes/day

Data collection procedure

Data will be gathered on the first day and after the 4-week training period. In addition to gathering demographic information, all assessments will be made using physical performance tests and a questionnaire to evaluate overall quality of life.

Outcome measures

Incremental Shuttle Walk Test: The incremental shuttle walk test is reliable with an ICC value of 0.76 to 0.99. It was created as a field walking test to mimic a cardiopulmonary exercise test. The ISWT's change in walking distance can be used to evaluate the effectiveness of an exercise program and/or track changes in exercise ability over time^[11].

WHOQoL-BREF- It values for Cronbach's were acceptable (>0.7) for Domains 1, 2, and 4 i.e. physical health 0.82, psychological 0.81, environment 0.80, but marginal for social relationships 0.68.^[12] This survey asks 26 questions about a person's health, well-being, and quality of life in the previous two weeks. It's broken down into four sections: Physical health, mental health, social relationships, and the atmosphere are also things to think about^[13].

DASS-21-Cronbach's alpha for DASS-21 subscales were 0.94 for Depression, 0.87 for Anxiety, and 0.91 for Stress^[14]. The basic signs of depression, anxiety, and stress are measured using the Depression Anxiety Stress Scale. Every subscale has seven questions. A higher DASS score means that these negative emotional symptoms are more severe or occur more frequently^[15].

Follow-up

At the end of 4 weeks, the post assessment data will be taken and stored for further statistical analysis. If patients withdraw from the experiment for any reason, the reasons will be noted, and those who

have not been reached will be contacted and the therapy will be finished.

Statistical analysis

Statistical analysis will be done by Chi-square test and Student's paired and unpaired t-test, on SPSS 24.0 version. P<0.05 is considered as alpha.

RESULT

The result of this study will be serving as a new approach introduced in the treatment of COVID-19 survivors. This will not only improve the quality of treatment but also will be making it interesting, engaging, and demanding for the cardiovascular system, thus, yielding effective results.

DISCUSSION

A 9-week Nordic walking and free walking training program have shown a good impact on quality of life, motor symptoms, mood disturbance, and cognitive performance in the randomized control study. The study found that a 9-week Nordic walking program improved people with Parkinson's disease's quality of life while also reducing depressive symptoms^[16]. Physiological responses and RPE of COPD (Chronic Obstructive Pulmonary Disease) patients while Nordic produces higher Vo₂ than walking without them, with no differences in dyspnoea ratings^[17]. In Parkinson's disease patients, 6-week Nordic walking training has been shown to improve functional efficiency, gait consistency, and overall quality of life^[18]. Results of a 6-week program for inactive women to practice Nordic walking over the age of 55 showed improved body composition, cardiovascular function, and physical fitness^[19]. It has been suggested that walking can be given as an aerobic exercise in Covid-19 patients after discharge by WCPT (World Confederation for Physical Therapy) and NAPT (National Association of Physical Therapy)^[20,21].

CONCLUSION

To introduce a new interesting approach in the world of rehabilitation and get efficient results in the outcomes in post-COVID-19 patients. For patients with long COVID, personalized rehabilitation is an integrated model of care. In patients with persistent manifestations after COVID-19, rehabilitation is a beneficial treatment option. When compared to standard walking, NW is an appropriate walking modality for patients with respiratory diseases because it produces a greater training intensity at the same rate of perceived exertion. The study will provide valuable information in rehabilitating those suffering from long Covid symptoms. If the outcome of this study provides significant results then it will save the time and energy of the participants who are supposed to indulge in different aerobic exercises for upper limb and lower limb.

Research ethics approval

The trial will be performed following the Declaration of Helsinki and with the permission of the Departmental Research

Committee.

Confidentiality

Specific patient data will not be shared and will be maintained apart from the main dataset. All personal information will be safely stored before, during, and after the proceedings in order to guarantee confidentiality.

Funding

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Competing interests: The author(s) declare no competing interests.

Author's contribution: All the authors have given final approval of the manuscript.

Additional information: The protocol has been submitted to Protocol Exchange as a repository in Nature^[21]

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