THE EFFECT OF CHEST PHYSIOTHERAPY AND STATICBICYCLES ON IMPROVING CARDIOVASCULAR FUNCTION IN LONG COVID CASES: A NARRATIVE REVIEW

Siti Nadhir Ollin Norlinta[1], Atika Kurnia Sari[1]

[1]Universitas 'Aisyiyah Yogyakarta, Jalan Siliwangi, Yogyakarta, Indonesia

*Corresponding Authors: Siti Nadhir Ollin Norlinta, Atika Kurnia Sari

Email: sitinadhirollin@unisayogya.ac.id / Atikakurniasari23@gmail.com

Abstract

Introduction: Long Covid is a term used to describe illness in people who have recovered from COVID-19 but continue to report long-term effects of the infection or have the typical symptoms for much longer than expected. Cardiovascular function aids the heart's and vascular system's ability and endurance in carrying out daily activities without significant fatigue. Physiotherapy contributes to the medical team by providing Chest physiotherapy and Static bicycle interventions to Long Covid patients. Because there has been no review research, it is necessary to investigate the effect of chest physiotherapy and static cycling on cardiovascular improvement in Long Covid patients. This research aims to determine the effect of two exercise therapies, namely chest physiotherapy and static bicycle to improve cardiovascular function in Long covid cases. **Methodology:** The research method used was narrative review with the PICO framework (Population/Patient/Problem, Intervention, Comparation, and Outcome). The journals were searched from 2 databases, namely Google Scholar and PubMed. **Research findings:** After screening the title and relevance of the abstract, as well as full text screening, 10 journals were obtained from the search for all two databases, proving the effect of Chest physiotherapy and Static bicycles on cardiovascular improvement in Long Covid patients. **Conclusion:** There is an effect of Chest Physiotherapy and Static bicycle on cardiovascular improvement in Long Covid patients.

Keywords: Chest Physiotherapy, Static Bicycle, Long Covid, CardiovascularImprovement

1. Introduction

Long Covid is a term used to describe illness in people who have recovered from COVID-19 but still report the long-term effects of the infection or have had usual symptoms much longer than expected (Mahase, 2020). Cardiovascular In patients with Covid 19 and Long Covid Comorbid most of which occur in someone who is infected with COVID-19 and continues to Long Covid, where patients who have cardiovascular comorbidities have a worse prognosis for recovery from infection with this disease than patients who do not have comorbidities, comorbid prevalence was not much different (46% with comorbid, 72% required intensive care). How these comorbid mechanisms worsen patient outcomes is still unclear, but several hypotheses include advanced age, impaired immune system, elevated ACE2 levels or there may be an association between COVID 19 and cardiovascular disease (Putu Adiartha Griadhi, 2016).

2. Methods

On research this use PICO method used for help search literature . PICO is method search literature that uses acronym of 4 components . P: (*Population, Patient, Problem*), I: (*intervention*), C: (*comparison*), O: (*outcome*).

In this study, the method of *narrative review was used.* There are several stepstaken in the research including:

1. Articles containing *full text*
2. International articles
3. National Articles
4. Articles published 3 years final
5. Articles that discuss effectiveness *chest physiotherapy* to enhancementfunction cardiovascular in case of long covid
6. Articles that discuss effectiveness *static bicycle* to enhancement functioncardiovascular in case of long covid
7. Articles that have topics about case *Long Covid,* COVID -19, Post COVID-19, *Endurance, Chest physiotherapy* and *Stati bicycle*
8. Articles that have topics about case *Long Covid.*

Search results article through the database obtained 10 selected articles originated of the 4 databases used that is *pubmed* , and *Google scholar.* 10 articles this originated from various countries such as Switzerland, Italy, Singapore, Canada

, Japan, India , a number of Subject 322 people, tools measure used _ i.e. 6MWT AND TSMT, Following table results that contain 10 articles that have been obtained

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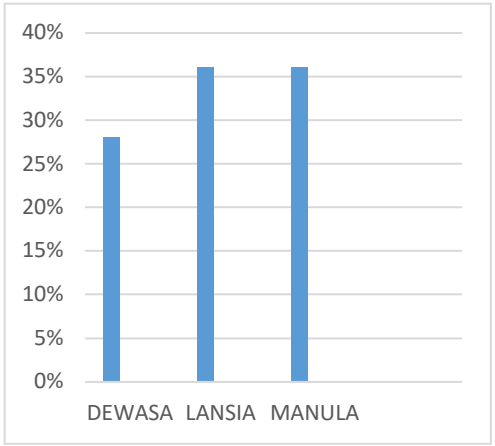
3. Results

After screening the title and relevance of the abstract, as well as full text screening, 10 journals were obtained from the search for all two databases, proving the effect of Chest physiotherapy and Static bicycles on cardiovascularimprovement in Long Covid patients

4. Discussion

The results of 10 articles that have been completely *reviewed* prove that

A. AGE



Age could influence happening *Long Covid* because disease this is disease multisystem /multiorgan, problem this is problems that can stay thatis will occur disorders of the heart , vessels blood and lungs , the occurrence of disturbance neurology stay like persistent joint and muscle fatigue .

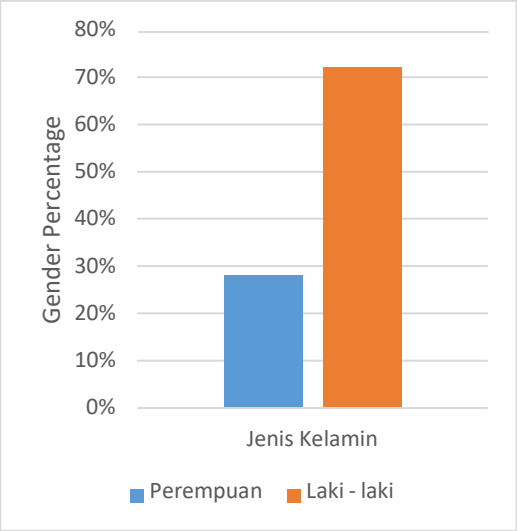
_Disturbance Disturbance this could occur from light until weight in group carry on age and seniors consequence from along with increase his age fromsystem immunity her body already experience

drop (Majdawati, 2021) , there are three category that is group age teenager i.e. 26-45, group elderly 46-65, group Seniors 66-74.

Based on with careful article by the researcher , there are respondent with various age , got youngest age _ i.e. 26 and the oldest 74 years old . Obtained result 28% of cases *Long Covid* experienced by the group age adult , which shows that age group teens can too have risk happening *Long Covid* , researcher (Mayorinalia *et al* ., 2022) state that age more young with system immunity still body _ good There are also exacerbating factors existence occur *Long Covid* that is condition disease that has there is before , as a result from remainder symptom COVID-19 infection still stay including like problem disturbance sleep , breathing problems , fatigue and disturbances cardiovascular like kidney chronic , disease heart , lung , and obesity . Obesity be a factor occur this *long covid* because , there is advantages from weight will _ cause emergence various type problems in health, so that will make it worse risk happening *Long Covid* (Mayorinalia *et al* ., 2022) .

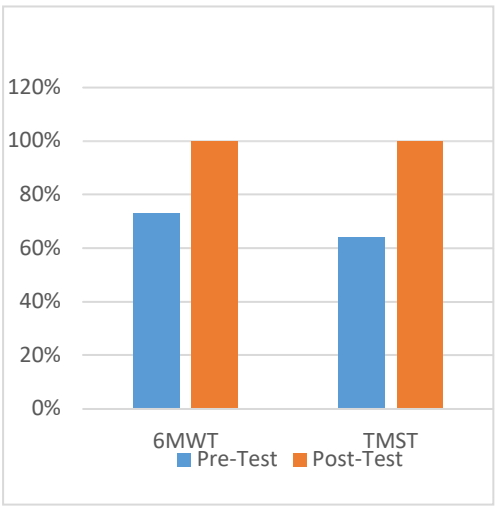
category carry on age or elderly and seniors where in the group this is group very risky age happening *Long Covid* that happened because existence remainder symptoms that are still stay consequence from COVID- 19 infection , Range age seniors and seniors is age vulnerable will happening still there is remainder symptom consequence from COVID-19 infection , other than comorbidity that is a risk factor for exacerbating for happening *Long Covid,* Researcher (Qiu *et al* ., 2020) say that the more increase his age system immunity in the body will reduce so from it's on the patient carry on possible age _ for got the virus Back or still there is symptom remainder consequence from COVID-19 infection , and become obstacle for the healing process .

B. GENDER



Total respondents used _ in study this totaled 322 people. Not all the article that became literature researcher mention amount type sex with a total as shown in the diagram with man man as much as 72% and womenas much as 28% and two of them that is articles 4 and 7 are not mention amount of each type sex respondents to researchers , researchers (Safarini *et al* ., 2021) say that respondent with type sex man male and _ biological have susceptible risk caught *Long Covid* because activity activity activity in men inclined man _ activities outside _ home , vulnerability man also happened because they more ignore apply the Health protocol compared girls , like no wearing a mask, rarely wash hand , and use sanitary hand , next other reasons obtained by the respondent manifold sex woman that woman more susceptible caught *Long Covid* because by average physiology in women _ power stand body or system immune more low than men _ male , researcher (Mayorinalia *et al* ., 2022) say that Obesity be a factor occur this *long covid* because , there is advantages from weight will _ cause emergence various type worry about health, so will make it worse risk happening *Long Covid* , because it 's average woman still many have experienced obesity , because not enough his outside activity . _

3. MEASUREMENT



results *review* 10 articles there is difference tool measure used _ in measure *Endurance* in patients *Long Covid* , 1 article state that measurement *Endurance* conducted with TSMT and 9 articles other using 6MWT. So that could concluded lower measurement *Endurance* using TSMT in journals The 6th and articles 1,2,3,4,5,7,8,9,10 use 6MWT.

Two minute step test is test Steps performed for 2 minutes where forsee *Endurance* somebody where test this lift knee between patella and crista ilika like marching rows (Bohannon & Crouch, 2019) . Six minute walking test is a 6 minute test exercise that is done walk with distance along 30 AD(Agarwala & Salzman, 2020) .

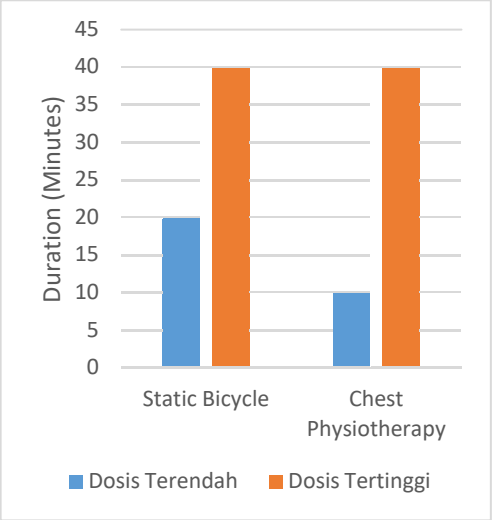
Reason existence using TMST as instrument determine *Endurance* because of one patients in this journal 6 have limitations that require use tool measure this TMST , Meanwhile , the use of more 6MWT many because instrument this is the most alternative instrument used in measure *Endurance* in patients heart coroner as well as usually could worn more carry on for determine dose exercise .

On every article , where on the exchange conducted *Pre* and *post* intervention . Measurement result *Endurance in the* form of distance in unit meter (m), then from that the more far distance traveled , then _ the more good at upgrade *Endurance.*

Measurements that occur in 10 journals this one uses 6MWT with show results significant improvement 36% with results *pre* intervention by 64% and increasing be 100% on *post* intervention . For Measurements using TMST show increased yield by 27% where at peuran *Pre* intervention obtained results 73% and at *post* intervention increase to be 100%.

On research this Measurements were also carried out at the level of congested breath on the patient , where in the article this at the moment intervention given , patient always monitored use scale borg that is not >6 for see level congested breath and breath patient moment do exercise, get the results in the articles examined by researchers that patient moment live and after conducted his intervention no occur congested breath .

4. DOSAGE



Exercise Dosage on intervention this where use two intervention used _ that is *Chest Physiotherapy* and *Static Bicycle* . Journal 1,2,3,4,5 using intervention *Static bicycle* and journal 6,7,8,9,10 *Chest Physiotherapy*

. The dose given to both intervention this given for dose Lowest that is with duration of 10 minutes and the highest with 40 minutes duration .

Based on *reviewed* journals , on interventions *static bicycle* where given dose is dose low with 20 minutes duration and dosage

tall with 40 minutes duration, Meanwhile, in the intervention *chest physiotherapy* dose

low given with 10 minutes duration and dosage tall given with duration of 40 minutes , on intervention *chest physiotherapy* on use of this technique The duration that is carried out is also in the form of session repetition ie 8-12 reps .

From result *reviewed* journals , influence gift dose low and high with static bicycle intervention and chest physiotherapy can Proven increased endurance could seen from results measurements that have been done .

Based on results analysis on articles, among gift *Chest Physiotherapy* and *Static Bicycle* with dose low nor tall no found factors that can aggravate to enhancement capacity functional in 10 articles that have been *reviewed.*

5. Conclusions

Based on results analysis article of 10 journals that have been reviewed, it can be concluded that in the articles coded A1, A2, A3, and A5 it is proven more effective P = 0.001 (P < 0.001) with dose 25-35 minutes at intervention *stationary cycling* and *cycle ergometer* in increase function cardiovascular disease in patients *long covid* .

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