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# Comparison of Regular Rehabilitation Program with Additional Reciting Holy Qur'an on Cardiorespiratory Fitness among Covid-19 Survivors.

*by* PaneRita Vivera

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# 1 Comparison of Regular Rehabilitation Program with Additional Reciting Holy Qur'an on Cardiorespiratory Fitness among Covid-19 Survivors

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## Abstract

**Introduction:** Rehabilitation program has been proven to be able to restore the cardiorespiratory function of Covid-19 survivors. Reciting Holy Qur'an are associated with a more relaxed and lowered heart rate of the reciter. The present study aims to compare the regular rehabilitation program with addition of Reciting Holy Qur'an on cardiorespiratory fitness among moslem Covid-19 survivors.

**Method:** This quantitative experimental study involved 18 moslem patients who were assigned into two groups. Eight patients in the interventional group received additional Qur'an recitation every day at least 20 pages, divided into several sessions according to the participants' ability and opportunity. Meanwhile, ten patients in the control group received regular rehabilitation programs with mild to moderate intensity. The cardiorespiratory fitness level was evaluated by a count test (CT), incentive spirometry test (IST), and a 6-minute walk test (6MWT). The measurement was performed three times: before intervention, the first week, and the second week after treatment.

**Result:** The participants were eight males and ten females with an age average of  $51.9 \pm 9.5$  years. Both groups showed significant differences before and after treatment in the first and second week in terms of CT, IST, and 6MWT ( $p < 0.05$ ). There was a significant difference between the two groups in the first week in the IST result ( $p < 0.05$ ), no significant difference in the second week was noticed.

**Conclusion:** The Covid-19 survivors receiving additional Holy Qur'an recitation exhibit faster cardiorespiratory fitness improvement than the control group.

**Keywords:** Holy Qur'an, Covid-19, Cardio-pulmonary Fitness

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**Perbandingan Program Rehabilitasi Reguler dengan Penambahan Terapi Membaca Al-Qur'an Terhadap Kebugaran Kardiorespirasi Penyintas Covid-19**

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**Abstrak**

**Pendahuluan:** Program rehabilitasi medis terbukti mampu mengembalikan fungsi kardiorespirasi para penyintas Covid-19. Membaca Al-Qur'an dapat menurunkan frekuensi nadi dan membuat rileks. Penelitian ini bertujuan untuk membandingkan program rehabilitasi medis reguler dengan membaca Al-Quran sebagai terapi tambahan terhadap tingkat kebugaran kardiorespirasi pada penyintas Covid-19.

**Metode:** Penelitian eksperimental kuantitatif ini melibatkan 18 responden muslim yang dibagi menjadi dua kelompok. Delapan responden pada kelompok intervensi mendapat tambahan bacaan Al-Qur'an setiap hari minimal 20 halaman yang dibagi dalam beberapa sesi sesuai dengan kemampuan dan kesempatan responden. Sementara itu, sepuluh responden pada kelompok kontrol menerima program rehabilitasi reguler dengan intensitas ringan hingga sedang. Tingkat kebugaran kardiorespirasi dievaluasi dengan tes hitung, tes spirometri insentif, dan tes jalan kaki 6 menit. Pengukuran dilakukan tiga kali yaitu sebelum perlakuan, minggu pertama, dan minggu kedua setelah perlakuan.

**Hasil:** Responden terdiri dari delapan laki-laki dan sepuluh perempuan dengan rata-rata usia  $51,9 \pm 9,5$  tahun. Kedua kelompok menunjukkan perbedaan bermakna sebelum dan sesudah perlakuan pada minggu pertama dan kedua dalam hal CT, IST, dan 6MWT ( $p < 0,05$ ). Ada perbedaan yang signifikan antara kedua kelompok pada minggu pertama dalam hasil IST ( $p < 0,05$ ), namun tidak ada perbedaan yang signifikan pada minggu kedua.

**Kesimpulan:** Para penyintas Covid-19 yang mendapat terapi tambahan berupa membaca Al-Qur'an menunjukkan peningkatan kebugaran kardiorespirasi lebih cepat daripada kelompok kontrol.

**Kata kunci:** Al-Qur'an, Covid-19, Kebugaran Jantung-paru

**Introduction**

A previously unidentified coronavirus, currently known as the 2019 novel coronavirus, emerged in Wuhan, China, in late December 2019 which caused a serious outbreak in that country before spreading globally.<sup>1</sup> Severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) infection can cause structural and functional changes in all organs. Persistent symptoms in patients recovering from coronavirus disease 2019 (Covid-19) are common and can be found in nearly 90% of patients with close follow-up in the first 60 days after diagnosed.<sup>2</sup> The lungs and nu-

merous extrapulmonary organs, including the cardiovascular system, have been documented to be affected by the post-acute complications of Covid-19.<sup>3</sup>

Covid-19 patients showing cardiac injury, vascular dysfunction, and thrombosis, including those who are asymptomatic or have mild symptoms during initial infection, can cause long-term cardiovascular effects such as hypertension, unstable heart rate and blood pressure, heart failure, cardiovascular disease, threatening arrhythmias, impaired myocardial flow reserve due to microvascular injury, coronary artery and aortic aneurysm formation, atherosclerosis, thromboembolic

disease, sudden cardiac death, mental disorders, and death.<sup>2</sup> Previous studies on changes in cardiorespiratory fitness after Covid-19 confinement among adolescents demonstrated a delay in the expected development of VO<sub>2</sub> max with respect to normal development rate. Strategies that promote an active lifestyle are necessary to avoid the trend of declining cardiorespiratory fitness among adolescents.<sup>4</sup>

One important part of cardiac rehabilitation is exercise, which has positive impact in the rehabilitation program that promotes significant functional improvement of the cardiovascular system in the recovery of endothelial dysfunction and to treat thromboembolic complications. During Covid-19 Pandemic, exercise was very useful as a rehabilitation program for patients with cardiovascular complications due to Covid-19. This program aims to trigger a systemic antioxidant response that modulates the occurrence of inflammation produced by the virus and plays a role in repairing viral-induced endothelial dysfunction.<sup>5</sup>

The Qur'an recitation therapy is a method that uses sound of verses from the Holy Qur'an when treating and overcoming a health problem during the Covid-19 pandemic. This therapy is believed to bring a peaceful mind for the listener due to unique vocal frequency and wavelength of Holy Qur'an verse that may affect damaged brain cells. Listening to the Holy Qur'an verse is believed to be helpful in relieving emotional, mental, and physical problems. Coronary artery bypass surgery patients who listen to Qur'an recitation and perform dhikr in the name of Allah ('asmā'u llāhi l-ḥusnā) reported a significant pain decrease in about three days after the operation.<sup>6</sup> Another study compared the effects of instrumental music to the Holy Qur'an recitation on the acute coronary syndrome (ACS) individuals' anxiety, and reported that listening to the Holy Qur'an may relieve their anxiety more significantly than listening to instrumental music.<sup>7</sup> The present study aims to compare the Holy Qur'an recitation addition therapy to the rehabilitation program of the cardiorespiratory fitness among Covid-19 muslim survivors.

## Method

This study applied a quantitative experimental method with cross sectional design. Participants were patients diagnosed with Covid-19 after hospitalized at RSU Haji Surabaya. They were randomly assigned into two groups. The intervention group received

a rehabilitation program with an additional daily Holy Qur'an recitation at least 20 pages a day, divided into several sessions according to the ability and opportunity of the patient. Meanwhile, the control group received a regular rehabilitation program, which includes breathing and aerobic exercises with mild to moderate intensity.

Count test (CT), incentive spirometry test (IST) and 6-minute walking test (6MWT) were performed three times during the study (i.e., before the intervention, the 7th day, and the 14th day intervention). CT is a simple, valid, and repeatable technique to screen and assess the lung function.<sup>8</sup> IST was performed using a device that gives the patient visual and positive feedback when patient inhale at a pre-determined volume and inflation for at least 3 seconds. IST measured the maximal continuous inspiration and was also considered as bronchial hygiene therapy.<sup>9</sup> The 6MWT is a submaximal exercise appropriate for functional activity used in daily-life activities, providing a measure for evaluating the cardiopulmonary, musculoskeletal, and nervous systems. In healthy individuals, 6MWT ranges between 400 and 700m, with gender, age, and height serve as the main predictors.<sup>10,11</sup>

This study was conducted from September to October 2021 at RSU Haji Surabaya with ethical approval from the Ethics Committee of RSU Haji with number 073/24/KOM.ETIK/2021. General data such as gender and age were analyzed descriptively. Dependent T-test was performed to analyze CT, IST and 6MWT three times mainly before intervention, seven days after, and fourteen days after intervention, while Independent T-test was performed to analyze among both of group using IBM SPSS version 24.

## Result

Initially, nineteen patients diagnosed with Covid-19 were recruited, but one patient withdrew from this study. Ten patients were assigned into the intervention group and eight patients into the control group as shown in the Table 1.

A significant difference was found in both groups before and after the treatment in the first and second week in terms of CT, IST, and 6MWT with dependent T-test ( $p < 0.05$ ). There was a significant difference between two groups in the first week, especially in the incentive spirometry test, where the intervention group exhibited better progress than the control group ( $p < 0.05$ ), although no significant difference was noticed in the second

**Table 1. Comparison Between Control and Intervention Group**

	Control	Intervention
<b>Age (Mean, years)</b>	45,2	54,125
<b>Gender (n)</b>		
Male	3	7
Female	7	1
<b>Mean before intervention</b>		
Count test (seconds)	17,4	19,4
Incentive spirometry test (ml)	630	750
6-minute walk test (meters)	250	284,5
<b>Mean seven days Intervention</b>		
Count test (seconds)	20,4	24,3
Incentive spirometry test (ml)	817,5	1087,5
6-minute walk test (meters)	356,5	495,6
<b>Mean fourteen days Intervention</b>		
Count test (seconds)	22,6	28,1
Incentive spirometry test (ml)	1065	1200
6-minute walk test (meters)	452,5	574,4

week.

### Discussion

Post-Covid-19 Syndrome or Long Covid-19 is a result of persistent symptoms of post-Covid-19 inflammation that caused organ damage in the respiratory system or another system including the cardiovascular system. The most prevalent functional impairments seen in individuals with long-term Covid-19 pneumonia are changes in the lungs carbon monoxide diffusing capacity (DLCO) and restrictive patterns.<sup>12</sup>

A recent observational study prospective<sup>4</sup> evaluated the symptoms in patients after recovery from acute SARS-CoV-2.<sup>13</sup> The evaluation used MRI more<sup>3</sup> an three months after diagnosis and showed two-thirds of them had persistent various lesions in one or more organs, primarily the heart and lungs. They also used a standard<sup>4</sup>ed questionnaire to evaluate the symptoms and organ function (heart, lung, kidney, liver, pancreas, spleen). As with the post-Covid-19 syndrome, these patients typically suffered fatigue, muscle pains, shortness of breath, and headache. These findings indicate that residual organ involvement might be a long-term cause of symptoms, even in mild cases, at least in several patients. Based on the findings, with a variety of cases and symptoms, exercise therapy with individ-

ualized and monitored training can be<sup>4</sup> an effective and comprehensive treatment therapy for the<sup>3</sup>ost-Covid-19 syndrome. Further evaluation on the impact of exercise-based therapy on the post-Covid-19 syndrome is needed to provide practical guidance on the sorts of exercise that must be prescribed, with attention to frequency, load management, and adherence<sup>2</sup> methods.

The Holy Qur'an is one of the countless blessings of Allah, because its revelation is a mercy from Allah to His servants, and it is their guide, and their reference in reading and action, and Allah has ensured in the Holy Qur'an that "Indeed We have sent down the warning and we will certainly be its guardians".<sup>14</sup> The recitation of the Holy Qur'an produces significant relaxation which effects several hormones and chemicals that<sup>2</sup> are responsible for relaxation.<sup>15</sup> A study on the effect of listening<sup>2</sup> the Holy Qur'an on heart sounds, showed that listening to the Holy Qur'an can lower the heart beat per minute. This shows that, a state of calm can be achieved by listening to these selected verses of the Holy Qur'an.<sup>16</sup>

This study found a significant difference between the intervention given on the first day, first week, and on the second week after the intervention. Furthermore, the intervention group exhibited a faster recovery time than the control group, which results in higher

quality of life as patients can return to their work and activities earlier.

Herdiana, et al.<sup>17</sup> compared the effectiveness of Holy Qur'an recitation to deep breathing techniques among congestive heart failure (CHF) patients in improving vital signs and reducing anxiety levels. The intervention group received Holy Qur'an recitation therapy and deep breathing exercises, while the control group received regular therapy. The intervention group exhibited an effective blood oxygen improvement and reduced anxiety. Sutjighassani<sup>18</sup> compared the Holy Qur'an recitation to the classical music reported that the former was more effective than classical music for relaxation and decreasing the heart rate response (HRR). Another study reported that the therapy influenced the quality of pain in coronary heart disease (CHD) patients. A higher mean reduction in pain was found in the Holy Qur'an recitation therapy group, compared to the music therapy group. It can be concluded that Holy Qur'an hearing therapy is more effective in reducing pain in patients with CHD.<sup>19</sup>

### Conclusion


This study concludes that the addition of Holy Qur'an recitation to the rehabilitation program for COVID-19 moslem survivors. It can improve cardiorespiratory fitness faster than regular rehabilitation program. Future studies are recommended which involve a larger number of samples.

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