Effect of structured exercise protocol and tele-counselling in 72 year old male COVID 19 subject with respiratory impairment - A Case report study

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ABSTRACT:
The case report has been presented to show the effects of structured exercise protocol and tele-counselling on oxygen saturation level and rate of perceived exertion rate in older men with COVID 19 using digital pulse oximeter and Modified Borg’s Scale. The present case is that of a 72-year-old male. He was guided for a structured exercises and tele-counselling for 3 weeks. The program included Chest percussion techniques, deep breathing and thorax mobility exercises, incentive spirometry exercise, performed daily twice a week, 30 min each session, for 3 weeks. Outcome measures included the oxygen saturation and rate of perceived exertion changes by Pulse oximeter and Modified Borg’s scale grading. The Pre and Post–test of the patient demonstrated significantly greater improvements in oxygen saturation level and rate of perceived exertion also. This case study provides a promising exercise intervention and tele-counselling that may improve chest compliance and improved activities in older men with COVID 19 respiratory issues.

Keywords: Deep breathing exercise; thoracic mobility exercise; tele-rehabilitation; COVID 19


CASE REPORT

A 72-year-old male with complain on fever, cough with expectoration, breathing difficulty during the activities and rest, malaise for past 3 weeks was referred to rule out COVID 19 and after the routine investigation of throat
swab and PCR test. Report showed positive for the COVID 19 along with the clinical symptom correlation. The history of co-morbidities like diabetic and hypertension are also present and subject is taking medication for the same along with the supportive care. The patient complained of a difficulty in breathing and general fatigue due to the fever and secretion that worsened while walking and sitting for a prolonged time. Even during the night also feeling difficulty in breathing and got disturbed sleep. On examination, he had a mucous secretion and decreased chest movement. After receiving an informed consent from the subject, he participated in the chest percussion techniques, deep breathing and thorax mobility exercises, incentive spirometry exercise, performed daily twice a week, 30 min each session, for 3 weeks under the supervision of the physiotherapist. It consisted of a five-minute warm-up free exercises and five-minute cool down relaxation exercises followed by 20 minutes of primary exercises. The exercises were conducted daily twice a week for 3 weeks. These structured exercises protocol aimed to improve the lung compliance (mobilize the secretion and improved breathing pattern), which is the structure most affected by COVID 19 subjects. Along with this exercise protocol, tele-counselling was given by the experts through the telephone conversation thrice a week for 15 minutes session to improve his mental health. The program consisted of chest percussion, shaking and vibration done manually by the physiotherapist for 10 minutes along with the 15 minutes of deep breathing and thorax mobility exercises, incentive spirometry exercises.

The 3-week exercise program was structured to include an initial phase for 1 week, an improvement phase for 1 week, and a maintenance phase for 1 week with the aim of gradually improving lung compliance, physical activities and mental well-being along with the supportive care\(^1\). The collected data were statistically processed using percentage difference method.

Pre and Post – test of the participant was measured using pulse oximeter, where the oxygen saturation level of initial and after 3 weeks of intervention were taken and analysed through the digital pulse oximeter. In the morning period with the subject in comfortable sitting position the oxygen saturation level was taken from the left side index finger. In this case, the oxygen saturation level initially was SpO2 88 and after the intervention it reached SpO2 97. Similarly, Pre and Post – test of the rate of perceived exertion of subject was almost maximal at baseline and mild after intervention which was measured using Modified Borg’s scale, with patient in relaxed walking\(^3\).

**DISCUSSION:**

Acute respiratory illness due to COVID 19 is a respiratory signs and symptoms that is associated with fever, cough, shortness of breath and frequently observed in elderly\(^4\). Novel Corona Virus occurs commonly due to droplet infection and transmit through person to person through this droplet infection\(^5\). Active exercises, respiratory rehabilitation and earlier physical activity along with the counselling will make the COVID 19 positive subjects in quarantine period to be healthier, reduced co-morbidities negative effect and mental wellbeing\(^6\).

The present case study was conducted on an elderly man with COVID 19 tested positive and respiratory difficulties to determine the effect of a 3-week Chest percussion technique, deep breathing exercises, thoracic
mobility exercises, incentive spirometer exercise and tele-counselling on oxygen saturation level and rate of perceived exertion. The results illustrated that the structure exercise and tele-counselling\(^7\) were effective in improving the oxygen saturation, physical and mental wellbeing. Oxygen saturation level was improved by SpO\(_2\) from 88 and rate of perceived exertion was improved by very slight (Rating grade 1) from almost maximal (Rating grade 9) exertion rate in Modified Borg’s scale (0 – 10 grading scale)\(^3\)after the intervention. A study by Lavie C.J et al., who aimed to improve the impact of sedentary lifestyle and lack of physical activities in risk of co-morbidity individuals with early physical activity and fitness program\(^8\). In response to this, the present study implemented a structured exercise program and tele-counselling that considered oxygen saturation level and rate of perceived exertion will be more beneficial in COVID 19 subject and both physical and mental well-being of the participant.

**LIMITATION:** There were several limitations associated with this report. This is a single case report of COVID 19 positive participant. In addition, the further respiratory investigations of the participant were not evaluated to predict the lung severity and changes due the infection and after intervention. We have not measured the mental status of the individual through the specific outcome measures. Furthermore, the application of a variety of intervention programs should also be studied in future research.

**CONCLUSION:** The exercise methods developed in the present study can be recommended for improving the oxygen saturation level and rate of perceived exertion level through specialized exercises focused on respiratory impairment in elderly men with COVID 19 tested positive. Tele-counselling also definitely boosted and motivated the subject with the mental wellbeing and reduced negative effect of quarantine period and augmented the exercise intervention program too.

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**REFERENCES:**


