

Effectiveness of Buteyko Breathing Technique in Post-COVID Adult Patients - An Experimental Study

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ABSTRACT

Background: The Buteyko Breathing Technique has demonstrated efficacy in various conditions, including asthma. This study aimed to compare its effectiveness in post-COVID adult patients.

Aim: To assess the effectiveness of Buteyko Breathing Technique in post-COVID adult patients.

Objective: Evaluate the effectiveness of Buteyko breathing technique in post-COVID adult patients after 3 weeks.

Methodology: 120 post-COVID adult patients were selected using purposive sampling. An experimental study design was employed. Data were collected using standardized measures. Results: Pre- and post-intervention comparisons showed significant improvements in the six-minute walk test (SMWT), SpO₂ levels, fatigue severity scale, Modified Borg scale, and COVID-19-QoL scale ($p < 0.001$). Buteyko Breathing Technique significantly reduced dyspnea and improved breathing patterns.

Conclusion: The study concludes that Buteyko Breathing Technique effectively improves physical function, dyspnea, and quality of life in post-COVID adult patients.

Keywords: Buteyko Breathing Technique, COVID-19, SMWT, Asthma, Quality of Life.

INTRODUCTION

The current outbreak of corona virus disease 2019 (COVID-19) originated in the Wuhan city of China, and on March 11, 2020, it was declared a pandemic by the World Health Organization Emergency Committee. The most common symptoms include fever (89%), cough (68%), fatigue (38%), sputum production (34%), and shortness of breath (19%). A considerable proportion of the population with COVID-19 will not require hospitalization as the patients present a mild or uncomplicated form of the disease with a favorable prognosis.

However, older patients and those with chronic underlying conditions can develop severe illness and present complications such as acute respiratory disease syndrome (ARDS), septic shock, and kidney and cardiac failure, which require treatment in an intensive care unit (ICU) with invasive support. Approximately 14% of patients develop a severe form of COVID-19, requiring hospitalisation, and 5% require admission to an ICU. The corona virus attacks the lungs and respiratory system, sometimes resulting in significant damage. COVID-19 often leads to pneumonia and even acute respiratory distress syndrome (ARDS), a severe lung injury. Recovering lung function is possible but can require therapy and exercises for months after the infection is treated.

“Working toward recovery starts simple: with a focus on breathing,” says Johns Hopkins physical therapist Peiting Lien. The aim of this study is to provide the knowledge of Buteyko breathing exercises and importance of it while recovering from covid 19 and introducing the benefits of Buteyko breathing technique.

Introduction of Buteyko technique

A Ukrainian doctor, Konstantin Buteyko, created the Buteyko breathing technique (BBT) in the 1950s. This therapeutic breathing method uses breath retention exercises to control the speed and volume of your breath. This helps you to learn to breathe more slowly, calmly, and effectively the benefits of

Buteyko breathing include enhanced breath control, which helps to prevent breathlessness and promote proper breathing patterns. It's used to manage and improve a variety of conditions, including asthma, anxiety, and sleep concerns.

Benefits of Buteyko techniques

- Ability to improve breath awareness
- Encourage nostril breathing
- Practicing the technique, you'll learn to breathe properly and efficiently
- Prevent issues such as wheezing, coughing, and feeling short of breath
- It can also help to alleviate unnecessary coughing

Help to clear blocked nasal passages

MATERIALS & METHODS

- Table, chair, or bench
- Pulse Oximeter
- Stethoscope
- BP machine
- Stop-Watch
- Pre measured marks along the track/ corridor
- Access to oxygen and telephone in case of emergency.
- Portable supplemental oxygen if required by patient.
- Clipboard with reporting sheet and pen
- Research design: Experimental study was conducted

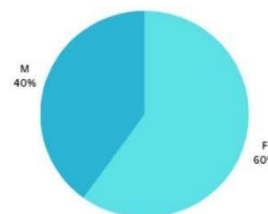
- Sample Population: Patients who had a Covid infection 3 months back.
- Type of Sampling: Purposive sampling
- Source of Sampling: Physiotherapy OPD, Post covid OPD
- Place of Study: Physiotherapy OPD, Post Covid OPD.
- Duration of Study: 6 Months

RESULT

The difference between Pre and Post were compared and analysed using paired “t” test for all the components.

- In this, study the subjects which have covid 19 before 3 months from intervention, we have found that the pre-test mean for six min walk test was 540.7 with SD 69.612 and post-test mean was 600.9 with SD is 63.319 the T value 12.767.
- SpO2 pre test mean 98.412 with SD 1.126 and post-test mean is 99.102 with SD 0.813 the T value is 7.476.
- Fatigue severity scale the pre-test mean is 5.6166 with SD is 1.014 and post-test mean is 2.25 with SD is 0.908 the T value is 25.658.
- Modified borg scale the pre-test mean is 2.6638 with SD 0.8262 and post-test mean is 0.546 with SD is 0.421 the T value is 25.903.
- COV-19-Qol scale the pre-test mean is 4.33 with SD 0.758 and post-test mean is 1.9 with SD is 0.7604 the T value is 24.875
- The “P” value <0.001 by convectional criteria which is considered to be statistically significant.

Gender wise distribution



1	Male	Female
2	40%	60%

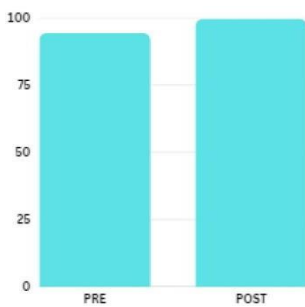
Pre and Post Six Min Walk test comparison



	MEAN	SD	P VALUE	T VALUE
PRE	540.7	69.612	<0.0001	12.767
POST	600.9	63.319		

The two-tailed P value is <0.0001 considered extremely significant

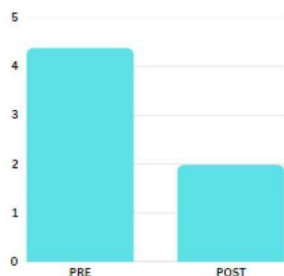
Pre and post Spo2 level comparison



	MEAN	SD	P VALUE	T VALUE
PRE	98.4	1.126	<0.0001	7.476
POST	99.1	0.813		

The two-tailed P value is <0.0001 considered extremely significant

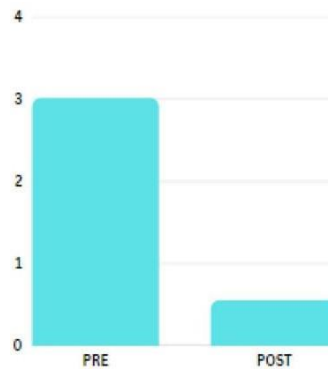
Pre and post fatigue severity scale comparison



	MEAN	SD	P VALUE	T VALUE
PRE	4.6166	1.014	<0.0001	25.658
POST	2.25	0.908		

The two-tailed P value is <0.0001 considered extremely significant

Pre and post modified Borgs scale comparison



	MEAN	SD	P VALUE	T VALUE
PRE	3.113	0.8262	<0.0001	25.90
POST	0.546	0.4282		

The two-tailed P value is <0.0001 considered extremely significant

Pre and post Cov-19- Qol scale



	MEAN	SD	P VALUE	T VALUE
PRE	4.84	0.758	<0.0001	24.875
POST	2.2	0.760		

The two-tailed P value is <0.0001 considered extremely significant

DISCUSSION

➤ Current study was conducted to study the effectiveness of Buteyko breathing technique on post covid adult patients. In this study 120 individuals (n= 120) that were selected according to the inclusion and exclusion criteria the protocol for 3 weeks, at the end of the protocol there were statistically improvement in six min walk test, Modified borg scale, fatigue severity scale, SpO2 levels and COV19-Impact-QoL scale.

- Rachna D. Arora et L (2015) in their study title “ To study the effect of Buteyko breathing technique in the patients with obstructive airways disease” conclude that Buteyko Breathing Technique was effective in improving breathing control, breath holding was reducing work of breathing in subjects with obstructive airway disease.[10] In the research conducted by Swi Swasti Pratiwi, that after being given Buteyko breathing therapy there was a change in respiratory frequency and oxygen saturation, breathing exercise cause the lung to receive more oxygen ,the amount of oxygen entering the lungs affects the work of body or tissue, so that it can affects the value of oxygen saturation, Buteyko breathing technique combines breathing control and deep breathing using breathing muscles allowing abdomen to slowly lifts and chest to fully expand, thereby the amount of air that enter in lungs increase.[11]
- In book, by Chris Gilbert, Recognizing and treating breathing disorders, states that the impact that Buteyko breathing method has on psychological factors should also be considered, Affective states such as fear of bodily sensation and sense of control all influence the quality and extent of dyspnoea, The Buteyko method can convincible reduce fear and help asthmatic patient have an increased sense of control, because it trains and encourages the patients willingness to accept and be present with unpleasant sensation.[17]
- In a study by Opat et al., the results showed a significant improvement in the quality of life in BBT patients compared to placebo. Buteyko technique is a technique of “retaining” body’s breathing pattern to correct for chronic hyperventilation and hypocapnia and thereby cure the body of these medical problems.[12]
- Bowler et al. The study showed a 54% improvement in the questionnaire on quality of life after 6 weeks. Cowie et al. A 2008 study in Canada, enrolled 129 asthma patients and randomized them to receive a series of breathing exercises. In Buteyko’s group, the proportion of patients who achieved good asthma control increased from 40% at the beginning to 79% after 6 months. [14]
- The quality of evidence of the Buteyko Method according to an Australian Department of Health report is stronger than any other complementary medicine treatment of asthma.[16]
- In book, Recognizing and Treating Breathing Disorders by Chris Gilbert, Leon Chaitow, Dinah Bradley state as BBT is intended to decrease pulmonary ventilation which raises the carbon dioxide levels in body. The increase in the levels of carbon dioxide leads to an increase in the oxygen partial pressure that forces the oxygen to be released from the haemoglobin (Bohr Effect). In other words, it increases the oxygen delivery to the tissues and cells, similar Study was conducted in Guru Nanak Dev University, Amritsar, Punjab.[17] A. Brutona’s, article describes the background to BBT and the physiology behind it, and reviews the available evidence for its effectiveness. There is currently no cure for asthma, so treatments are aimed at controlling or relieving symptoms. BBT is a complementary therapy that has been found by some to achieve this aim [16]

CONCLUSION

- The present study has concluded that Buteyko breathing technique has shown statically significant improvement in six min walk test, Modified borg scale, fatigue severity scale, Cov-19-QoL scale and SpO2 levels in post covid adult patients.
- Buteyko breathing technique is found to be effective in reduction dyspnoea and to improve breathing pattern thereby we accepted alternative hypothesis.

Declaration by Authors

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Conflict of Interest: The authors declare no conflict of interest.

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