

**THERAPEUTIC EFFECTS OF YOGIC PRACTICES COMBINED WITH VARMA THERAPY ON BREATH HOLDING TIME AND VITAL CAPACITY IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)****R. Durairaji<sup>1\*</sup>, Dr. S. Murugesan<sup>2</sup>, Dr. S. Muthukrishnan<sup>3</sup>**<sup>1</sup>Ph.D. Scholar, Faculty of Yoga Sciences and Therapy, Meenakshi Academy of Higher Education and Research (Deemed to be University), Chennai-78, Tamil Nadu, India.<sup>2</sup>Professor, Faculty of Yoga Sciences and Therapy, Meenakshi Academy of Higher Education and Research, K. K. Nager Chennai-78. India.<sup>3</sup>Ph.D. Yoga.

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This work is licensed under Creative Commons Attribution 4.0 International license.**ABSTRACT**

Chronic Obstructive Pulmonary Disease (COPD) is a progressive respiratory disorder characterized by persistent airflow limitation, reduced pulmonary efficiency, and impaired quality of life. The present study was undertaken to examine the therapeutic effects of yogic practices combined with Varma therapy on Breath Holding Time and Vital Capacity among middle-aged men diagnosed with COPD. It was hypothesized that yogic practices integrated with Varma therapy would produce significant improvements in the selected respiratory variables when compared with the control group. A randomized group experimental design was adopted for the study. Among 120 invited participants, 90 individuals were screened and 40 eligible participants were randomly selected and equally divided into experimental and control groups consisting of 20 subjects each. The experimental group underwent yogic practices combined with Varma therapy for a period of 12 weeks, six days per week, whereas the control group maintained active rest without any structured intervention. Pre-test and post-test measurements were collected for Breath Holding Time and Vital Capacity. The obtained data were analysed using Analysis of Covariance (ANCOVA) at a 0.05 level of significance. The findings of the study revealed significant improvements in Breath Holding Time and Vital Capacity among participants who underwent yogic practices combined with Varma therapy. The study concludes that the integrated therapeutic approach may serve as an effective complementary rehabilitation strategy for improving respiratory efficiency among individuals with COPD.

**KEYWORDS:** Yogic Practices, Varma Therapy, Breath Holding Time, Vital Capacity, COPD, Pulmonary Rehabilitation.**1. INTRODUCTION**

Chronic Obstructive Pulmonary Disease (COPD) is a chronic and progressive respiratory disorder is shown by airflow limitation that is not completely reversible. The disease primarily includes chronic bronchitis and emphysema, affects pulmonary ventilation and gaseous exchange.

COPD is one of the major causes of worldwide mortality and continues to create a substantial burden in

healthcare. According to the WHO, millions suffer from COPD globally, and the prevalence is increasing due to environmental pollution, tobacco smoking, occupational exposure, and unhealthy lifestyle.<sup>[7,3]</sup>

COPD includes airway inflammation, mucus hypersecretion, narrowing of bronchioles, elimination of alveolar walls, and decrease of lung elasticity.

These abnormalities reduce oxygen transport capacity and lead to symptoms such as breathlessness, chronic cough, fatigue, wheezing, and decreased exercise tolerance. The disease affects psychological condition by increasing anxiety, stress.<sup>[2,7]</sup>

Treatments for COPD generally includes bronchodilators, corticosteroids, oxygen therapy, and pulmonary rehabilitation programs at present provided in global level. Above approaches help in symptom control; they often fail to restore complete respiratory efficiency and may produce adverse effects during long-term use. So, alternative therapies have gained increasing attention in recent years.<sup>[3,7]</sup>

Integrated approach Yoga is an essence of ancient Indian holistic science that asanas, pranayama, meditation, and relaxation techniques to promote physical, mental, and physiological wellbeing.

Yogic breathing techniques enhance lung expansion, improve respiratory muscle strength and regulates autonomic nervous system functions also increase oxygen utilization.<sup>[1,4,5,6]</sup> Similarly, Varma therapy, ancient therapeutic system practiced in South India, stimulates specific vital energy points called as Varma Nadis in the body to improve circulation, neuromuscular coordination, and physiological balance.<sup>[4]</sup>

Integrated yogic practices with Varma therapy provides synergistic benefits in respiratory management. Limited scientific investigations have combined their therapeutic effects on pulmonary variables among COPD patients.<sup>2 8</sup> Therefore, the present study attempts to evaluate the effectiveness of yogic practices combined Varma therapy on Breath Holding Time and Vital Capacity among middle-aged men with COPD.

## 2. OBJECTIVES

1. To evaluate the effect of yogic practices with Varma therapy on Breath Holding Time among middle-aged men with COPD.
2. To evaluate the effect of yogic practices with Varma therapy on Vital Capacity among middle-aged men with COPD.
3. To assess the post-test performance of experimental and control groups on selected respiratory variables.
4. To compare the therapeutic significance of yogic practices and Varma therapy in pulmonary rehabilitation.

## 3. Statement of the Problem

COPD is respiratory disorder that reduce lung function, efficiency and quality of life among middle-aged people, experience poor respiratory endurance and decreased pulmonary capacity. Breath Holding Time and Vital Capacity are important indicators of respiratory health, which are often significantly reduced in COPD patients. Integrated Yoga Therapy have been reported to improve overall wellbeing; includes Varma therapy is believed to

enhance physiological balance and circulation through stimulation of Varma points, have shown beneficial effects individually, limited research has been conducted on their combined therapeutic effects among middle-aged men with COPD.<sup>[2,4,8]</sup>

Current study was undertaken to evaluate the effect of yogic practices with Varma therapy on Breath Holding Time and Vital Capacity among middle-aged men suffering from COPD.

## 4. Hypothesis

1. There would be a significant improvement in Breath Holding Time among middle-aged men with COPD after undergoing yogic practices combined with Varma therapy.
2. There would be a significant improvement in Vital Capacity among middle-aged men with COPD after undergoing yogic practices combined with Varma therapy.
3. The experimental group would show significantly better improvement than the control group at the 0.05 level of significance.

## 5. Delimitations

1. The study was confined to middle-aged men diagnosed with COPD.
2. The age of the participants ranged from 30 to 40 years.
3. The study was limited to selected residents of Chennai, Tamil Nadu.
4. The duration of the intervention was restricted to 12 weeks.
5. The study focused only on Breath Holding Time and Vital Capacity as dependent variables.

## 6. Limitations

1. Dietary habits and lifestyle patterns of participants could not be completely controlled.
2. Psychological and environmental factors influencing respiratory health were beyond the investigator's control.
3. The sample size was limited to 40 participants.
4. The findings may not be generalized to women or other age groups with COPD.
5. Medication adherence and daily activity variations among participants may have influenced the results.

## 7. Review of Literature

### (i). Review Related to Yogic Practices and Pulmonary Function

Cramer, Holger et al. (2023) conducted a systematic review and meta-analysis involving more than 650 participants with chronic respiratory disorders, including COPD. The researchers reported that yoga-based interventions significantly improved pulmonary function parameters such as Forced Vital Capacity (FVC), respiratory endurance, and exercise tolerance. The study concluded that yogic breathing practices and relaxation

techniques enhance respiratory muscle efficiency and improve quality of life among COPD patients.<sup>[2]</sup>

**(ii). Review Related to Breathing Exercises and COPD Rehabilitation**

Zou, Liye et al. (2024) performed a meta-analysis involving approximately 720 COPD patients from multiple clinical studies. The findings demonstrated that pranayama and mind-body breathing exercises significantly improved lung function, oxygen saturation, and respiratory endurance. The investigators emphasized that regular yogic breathing practices reduce airway resistance and facilitate better oxygen utilization among COPD populations.<sup>[8]</sup>

**(iii). Review Related to Varma Therapy and Physiological Improvement**

Mukunda Stiles (2013) discussed the therapeutic applications of structural yoga therapy and traditional energy-based healing methods in improving neuromuscular and physiological functioning. The study observations involving therapeutic rehabilitation participants indicated that stimulation of vital points through Varma therapy improved circulation, muscular relaxation, autonomic balance, and respiratory coordination. The findings suggested that integrating traditional therapeutic techniques with yoga may enhance rehabilitation outcomes in chronic respiratory disorders.<sup>[4]</sup>

**Intervention Protocol (12 Weeks)**

| S. No. | Component     | Description                                     | Duration |
|--------|---------------|---|----------|
| 1.     | SKY Exercise  | 9 types of exercise for whole body system       | 27 min   |
| 2.     | Kayakalpam    | Intensify the vital energy to enhance longevity | 5 min    |
| 3.     | Relaxation    | SKY deep relaxation                             | 8 min    |
| 4.     | Meditation    | Simplified Kundalini Basic Meditation           | 15 min   |
| 5.     | Varma Therapy | Stimulation of vital points                     | 5 min    |
| Total  |               | 60 Min  |          |

**9. Variables**

**(i). Independent Variables** – Yogic Practices with Varma Therapy

**(ii). Dependent Variables**

- (1) Breath Holding Time (BHT)
- (2) Vital Capacity (VC)

**10. Statistical Analysis**

It showed researcher to examine the effectiveness of the treatment variables on the selected physiological and psychological parameters. By controlling the pre-test variations, ANCOVA enhanced the reliability and validity of the findings obtained from the study. Samples were statistically analysed using Analysis of Covariance (ANCOVA) to determine the significant differences

**8. METHODOLOGY**

**8.1. Research Design**

A randomized group experimental design consisting of one experimental group and one control group with pre-test and post-test measurements.

**8.2. Participants**

A total of 120 participants were invited for screening. Out of them, 90 individuals were screened clinically, and 40 eligible middle-aged men with COPD were selected for the study. The participants were randomly assigned into:

- Experimental Group (n = 20)
- Control Group (n = 20)

**8.3. Inclusion Criteria**

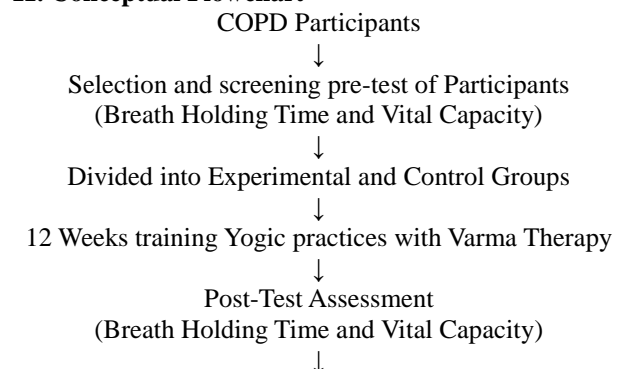
1. Diagnosed cases of COPD.<sup>[3,7]</sup>
2. Male participants aged between 30 and 40 years.
3. Residents of Chennai, Tamil Nadu.
4. Individuals medically fit to participate in yoga practices.<sup>[1,5]</sup>

**8.4. Exclusion Criteria**

1. Participants undergoing intensive medical intervention.
2. Individuals with severe cardiovascular complications.
3. Subjects with orthopaedic limitations preventing yoga practice.
4. Participants with uncontrolled lifestyle habits such as smoking and alcohol dependence.

between experimental and control groups. The level of significance was fixed at 0.05 confidence level.

**11. Conceptual Flowchart**



Statistical Analysis Using ANCOVA  
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 Interpretation of Results and Conclusion

**12. RESULTS AND DISCUSSIONS**

The obtained findings indicate that yogic practices integrated with Varma therapy produced significant improvement in respiratory efficiency among middle-aged men with COPD. The results are supported by earlier findings of Cramer et al. (2023) and Zou et al. (2024), who reported that yogic breathing practices improve pulmonary function and respiratory endurance among COPD patients.<sup>[2,8]</sup>

The significant improvement in Breath Holding Time may be attributed to enhanced respiratory muscle endurance, improved oxygen utilization, and autonomic balance achieved through pranayama, meditation, and relaxation practices.<sup>[1,5,6]</sup> Similarly, improvement in Vital Capacity indicates increased lung expansion and pulmonary efficiency resulting from regular yogic breathing exercises and Varma stimulation techniques.<sup>[4,8]</sup>

The findings further support the holistic therapeutic role of yoga and traditional energy-based interventions in pulmonary rehabilitation programs for chronic respiratory disorders.<sup>[1,4,6]</sup>

**Table 1: Pre- and Post-Test Comparison of Breath Holding Time Between Experimental and Control Groups.**

| Test                    | Yogic Practices Group | Control Group | SV | SS      | Df | MS      | F       |
|-------------------------|-----------------------|---------------|----|---------|----|---------|---------|
| Pre test Mean           | 45.47                 | 39.94         | B  | 39.93   | 1  | 39.93   | 0.95    |
|                         |                       |               | W  | 1192.67 | 28 | 42.60   |         |
| Post test Mean          | 57.27                 | 40.54         | B  | 1856.53 | 1  | 1856.53 | 34.09*  |
|                         |                       |               | W  | 1526.67 | 28 | 54.52   |         |
| Adjusted Post Test mean | 54.88                 | 42.93         | B  | 797.89  | 1  | 797.89  | 105.31* |
|                         |                       |               | W  | 204.67  | 27 | 7.58    |         |

\* Significant at 0.05 level of confidence. (The table value required for significance at 0.05 with, df 1 and 28 and 1 and 27 are 4.20 and 4.21 respectively)

Breath Holding Time in the experimental group compared to the control group.

**RESULTS**

As presented in Table I, the pre-test analysis showed that the obtained F value (0.95) was lower than the critical F value (4.20) at the 0.05 level of significance, indicating no significant difference between the groups at baseline.

Furthermore, the adjusted post-test analysis yielded an F value of 105.31, which was substantially higher than the required value of 4.20, confirming a highly significant effect of the intervention.

This confirms that the randomization process was successful and that both groups were comparable in terms of Breath Holding Time prior to the intervention.

These results demonstrate that yogic practices significantly improved Breath Holding Time among middle-aged men with COPD following the 12-week intervention period.

However, the post-test analysis revealed that the obtained F value (34.09) exceeded the critical value (4.20), indicating a statistically significant improvement in

**Vital Capacity**

Pre-test results showed no significant difference between groups. Post-test and adjusted post-test results indicated a significant improvement in Vital Capacity in the experimental group compared to the control group.

**Table 2: Analysis of Covariance (ANCOVA) Showing Between-Group Differences in Vital Capacity Between Experimental and Control Groups.**

| Test                    | Yoga Therapy Group | Control Group | SV | SS   | Df | MS   | F      |
|-------------------------|--------------------|---------------|----|------|----|------|--------|
| Pre test Mean           | 2.95               | 2.88          | B  | 0.04 | 1  | 0.04 | 0.20   |
|                         |                    |               | W  | 7.34 | 28 | 0.19 |        |
| Post test Mean          | 3.22               | 2.98          | B  | 0.59 | 1  | 0.59 | 4.56*  |
|                         |                    |               | W  | 7.65 | 28 | 0.20 |        |
| Adjusted Post Test mean | 3.20               | 3.01          | B  | 0.34 | 1  | 0.34 | 10.63* |
|                         |                    |               | W  | 1.18 | 27 | 0.03 |        |

Table F-ratio at 0.05 level of confidence for 1 and 28 (df) =4.20, 1 and 27 (df) =4.21.

\*Significant

**Results**

As shown in Table II, the pre-test analysis revealed that the obtained F value (0.20) was lower than the critical F value (4.20) at the 0.05 level of significance, indicating no significant difference between the groups at baseline.

This confirms that the random assignment of subjects was successful and that both groups were comparable in terms of Vital Capacity prior to the intervention.

The post-test analysis demonstrated that the obtained F value (4.56) exceeded the critical value (4.20), indicating

a statistically significant difference between the experimental and control groups.

Furthermore, the adjusted post-test analysis yielded an F value of 10.63, which was greater than the required value of 4.21, confirming a significant effect of the intervention after controlling for pre-test differences.

These findings indicate that yogic practices with Varma therapy produced a significant improvement in Vital Capacity among middle-aged men with Chronic Obstructive Pulmonary Disease (COPD) following the 12-week intervention period.

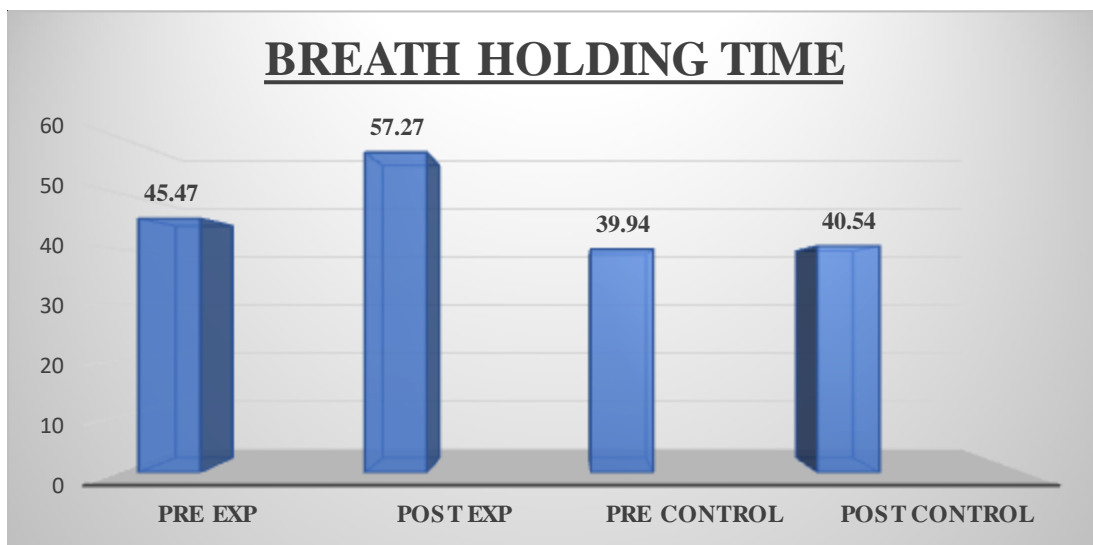


Figure 1: Pre- and Post-Test Comparison of Breath Holding Time Between Experimental and Control Groups.

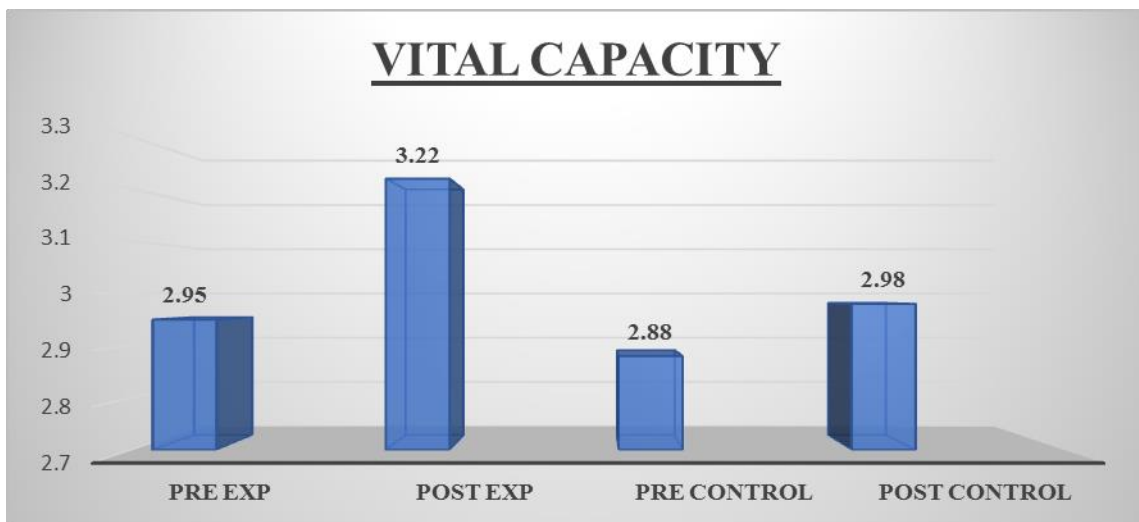


Figure 2: Pre- and Post-Test Comparison of Vital Capacity Between Experimental and Control Groups.

**13. CONCLUSION**

The findings of the present investigation clearly demonstrate that yogic practices combined with Varma therapy significantly improved Breath Holding Time and Vital Capacity among middle-aged men with Chronic Obstructive Pulmonary Disease (COPD). The integrated intervention enhanced respiratory efficiency, pulmonary

endurance, and functional lung capacity. Therefore, yogic practices and Varma therapy may be considered as effective complementary therapeutic approaches in pulmonary rehabilitation programs for COPD patients.<sup>[2,4,8]</sup>

#### 14. Recommendations

1. Similar studies may be conducted with larger sample sizes.
2. Future research may include female participants and elderly COPD patients.
3. Additional physiological and psychological variables may be examined.
4. Long-term follow-up studies may be undertaken to assess sustained therapeutic effects.
5. Comparative studies between yoga therapy and other rehabilitation approaches may be conducted.

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