SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 7 | July 2024 - Peer Reviewed Journal

# IMPACT ON YOGIC PRACTICE WITH PRANAYAMA ON SELECTED RESPIRATORY PARAMETERS AMONG OVERWEIGHT CHILDREN IN COIMBATORE DISTRICT

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**ABSTRACT**

*The rising prevalence of overweight individuals has shifted societal perspectives on lifestyle and health. This issue extends beyond aesthetics, impacting both mental and physical well-being, and increasing risks for chronic diseases. Understanding and addressing overweight requires a comprehensive approach that includes lifestyle changes, nutritional education, and mental health support. Yogic practices, especially pranayama, integrate physical postures and controlled breathing techniques to enhance overall well-being. By promoting mental clarity, physical strength, and emotional balance, these practices offer a holistic approach to health, fostering harmony between mind, body, and spirit.*

***Objective**: The motive of this study was to investigate impact on yogic practice with pranayama on selected cardiorespiratory parameters among overweight children in coimbatore district.*

***Methodology**: The purpose of the study was to determine the impact on yogic practice with pranayama on selected respiratory parameters among overweight children in coimbatore district. Two hundred overweight boys and girls were selected from various schools in Coimbatore district, Tamil Nadu, India Among the 100 subjects were divided into two experimental groups and two control group with fifty subjects (N=50) in each group. Experimental group I (YPPBG=50) underwent yogic practices with pranayama for boys and experimental group II (YPPGG =50) underwent yogic practices with pranayama for girls for a period of thirty six weeks, for three alternate days in a week, the workout lasted for 50 minutes approximately and Control group boys III (CGB=50) and Control group girls IV (CGG=50) do not undergo any sort of training except their routine. The data analysis was conducted using the dependent 't' test, and a confidence level of 0.05 was used to determine statistical significance.*

***Results**: The results indicate that there was a significant difference between the yogic practices with pranayama for boys and girls groups compared to their respective control groups, Suggesting that the yogic practices with pranayama had an impact on the overweight children. Specifically, the children who underwent the yogic practices with pranayama showed improvements in their respiratory parameters.*

***Conclusion**: The yogic practices with pranayama can significantly improve respiratory parameters among overweight children. The findings provide evidence that training programs that are tailored to the demands of the yogic practices with pranayama can be more effective in enhancing their respiratory performance than control group. This study provides valuable insights into the importance of yogic practices with pranayama for improving respiratory parameters, such as namely slow vital capacity, forced vital capacity, maximum voluntary ventilation, expiratory reserve volume and heart rate in overweight children.*

**KEY WORDS:** *Yogic Practices, Pranayama, Respiratory Parameters and Overweight.*

## INTRODUCTION

The prevalence of overweight individuals has shifted societal views on lifestyle, nutrition, and well-being, raising serious health concerns. This issue goes beyond aesthetics, impacting mental and physical health and increasing risks for chronic diseases like diabetes and cardiovascular disorders. The rise in overweight is driven by sedentary lifestyles, high-calorie diets, and environmental factors. Hereditary, socioeconomic, and environmental influences interact in complex ways, necessitating a comprehensive understanding that includes mental health support, nutritional education, and societal norm reassessment. Obesity is now a global epidemic, not limited to wealthy societies. The WHO highlights obesity's multifaceted effects as a major public health challenge. Modern eating patterns favoring processed, high-calorie foods and reduced physical activity due to urbanization and technological advancements contribute significantly. Environmental and socioeconomic factors also play crucial roles, with lower-income communities often lacking access to healthy foods and safe recreational spaces. Addressing obesity requires a holistic approach considering both individual behaviors and broader societal factors.

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Yoga, rooted in Indian philosophy, has evolved into a globally respected practice promoting mental, physical, and spiritual well-being. Beyond physical postures, yoga fosters harmony between mind, body, and spirit. It enhances flexibility, strength, and balance through various poses and movements. Additionally, mindful breathing and meditation techniques in yoga reduce stress and promote relaxation. Yoga offers numerous health benefits, including lowered blood pressure, improved cardiovascular health, and strengthened immunity. Its meditative aspects enhance inner connection and self-awareness, fostering composure and resilience. Adaptable to different lifestyles and fitness levels, yoga provides a sanctuary from modern life's pace. It promotes holistic health and harmonious coexistence of body, mind, and spirit, making it suitable for both beginners and experienced practitioners.

## METHODOLOGY

***Participation***: The purpose of the study was to determine the impact on yogic practice with pranayama on selected cardiorespiratory parameters among overweight children in coimbatore district. To reach the goal of the study, Two hundred overweight boys and girls were selected from various schools in Coimbatore district, Tamil Nadu, India Among the 100 subjects were divided into two experimental groups and two control group with fifty subjects (N=50) in each group. Experimental group I (YPPBG=50) underwent yogic practices with pranayama for boys and experimental group II (YPPGG =50) underwent yogic practices with pranayama for girls for a period of thirty six weeks, for three alternate days in a week, the workout lasted for 50 minutes approximately and Control group boys III (CGB=50) and Control group girls IV (CGG=50) do not undergo any sort of training except their routine. The data analysis was conducted using the dependent 't' test, and a confidence level of 0.05 was used to determine statistical significance.
***Criterion Measures***: It is evaluated the respiratory parameters where chosen as the criterion measures to this study for testing.

**TABLE - 1**
**CRITERION MEASURES**

| S.No | VARIABLES | TESTS | UNIT OF MEASUREMENT |
|---|---|---|---|
| **RESPIRATORY PARAMETERS** | | | |
| 1. | Slow Vital Capacity. | Digital Spiro Meter | Measure In Litres |
| 2. | Forced Vital Capacity | | |
| 3. | Maximum Voluntary Ventilation | | |
| 4. | Expiratory Reserve Volume | | |
| 5. | Heart Rate | Pulse Oximeter | In Counts |

***Statistical Methods***; The collected data before and after training period of thirty six weeks on the above said parameters due to the yogic practices with pranayama for school children was statistically analyzed with't' test to find out the significant improvement between pre and post-test. In all cases the criterion for statistical significance was set at 0.05 level of confidence. (P<0.05).

**TABLE – II**
**THE T- RATIO FOR YOGIC PRACTICE WITH PRANAYAMA FOR BOYS GROUP AND CONTROL GROUP BOYS ON RESPIRATORY PARAMETERS**

| Variables | Group | Test | Mean | SD | SEM | t-ratio |
|---|---|---|---|---|---|---|
| Slow Vital Capacity (Measure In Litres) | YPPBG | Pre Test | 1.45 | 0.19 | 0.03 | 4.82* |
| | | Post Test | 1.58 | | | |
| | CGB | Pre Test | 1.44 | 0.03 | 0.01 | 0.45 |
| | | Post Test | 1.44 | | | |
| Forced Vital Capacity (Measure In Litres) | YPPBG | Pre Test | 3.65 | 0.21 | 0.03 | 4.51* |
| | | Post Test | 3.79 | | | |
| | CGB | Pre Test | 3.63 | 0.13 | 0.02 | 0.52 |
| | | Post Test | 3.64 | | | |
| Maximum Voluntary Ventilation (Measure In Litres) | YPPBG | Pre Test | 82.98 | 5.15 | 0.73 | 7.20* |
| | | Post Test | 88.22 | | | |
| | CGB | Pre Test | 82.48 | 2.05 | 0.02 | 0.78 |
| | | Post Test | 82.52 | | | |
| Expiratory Reserve Volume | YPPBG | Pre Test | 0.93 | 0.11 | 0.01 | 5.04* |
| | | Post Test | 1.01 | | | |
| | CGB | Pre Test | 0.89 | 0.11 | 0.02 | 0.78 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| (Measure In Litres) | | Post Test | 0.91 | | | |
| Heart Rate (In Counts) | YPPBG | Pre Test | 75.92 | 5.37 | 0.76 | 2.32* |
| | | Post Test | 74.16 | | | |
| | CGB | Pre Test | 76.14 | 5.78 | 0.82 | 0.47 |
| | | Post Test | 76.52 | | | |

*Note: YPPBG- Yogic Practices with Pranayama for Boys Group, CGB- Control Group Boys. Significance at 0.05 level of confidence for df of 49 is 2.01.

Mean, standard deviation and t-value were calculated for each outcomes measure can be found in Table-II result shows that the pre-test mean values of yogic practices with pranayama for boys group and control group boys (1.45,3.65,82.92,0.93,75.92) and (1.44,3.63,82.48,0.89,76.14) respectively and the post-test mean values are(1.58,3.79,88.22,1.01,74.16) and (1.44,3.64,82.52,0.91,76.52) respectively. The obtained dependent t-test value on slow vital capacity (t=4.82*), forced vital capacity (t=4.51*), maximum voluntary ventilation (t=7.20*), expiratory reserve volume (t=5.04*) and heart rate (t=2.32*) of game yogic practices with pranayama for boys group respectively. The table value required for significant difference with degrees of freedom 49 at 0.05 level of confidence. The obtained 't' test value of yogic practices with pranayama for boys group was greater than the table value 2.01. The results clearly indicated that the slow vital capacity, forced vital capacity, maximum voluntary ventilation, expiratory reserve volume and heart rate of the yogic practices with pranayama for boys group improved due to impact on yogic practice with pranayama on selected cardiorespiratory parameters among overweight children in coimbatore district.

**TABLE – III**
**THE T- RATIO FOR YOGIC PRACTICE WITH PRANAYAMA FOR GIRLS GROUP AND CONTROL GROUP GIRLS ON RESPIRATORY PARAMETERS**

| Variables | Group | Test | Mean | SD | SEM | t-ratio |
|---|---|---|---|---|---|---|
| Slow Vital Capacity (Measure In Litres) | YPPGG | Pre Test | 1.26 | 0.08 | 0.01 | 7.65* |
| | | Post Test | 1.35 | | | |
| | CGG | Pre Test | 1.23 | 0.05 | 0.05 | 0.38 |
| | | Post Test | 1.23 | | | |
| Forced Vital Capacity (Measure In Litres) | YPPGG | Pre Test | 3.06 | 0.07 | 0.01 | 7.54* |
| | | Post Test | 3.13 | | | |
| | CGG | Pre Test | 3.03 | 0.06 | 0.01 | 1.37 |
| | | Post Test | 3.02 | | | |
| Maximum Voluntary Ventilation (Measure In Litres) | YPPGG | Pre Test | 69.22 | 3.64 | 0.52 | 6.83* |
| | | Post Test | 72.74 | | | |
| | CGG | Pre Test | 68.56 | 3.27 | 0.46 | 1.08 |
| | | Post Test | 68.06 | | | |
| Expiratory Reserve Volume (Measure In Litres) | YPPGG | Pre Test | 0.83 | 0.03 | 0.00 | 6.08* |
| | | Post Test | 0.85 | | | |
| | CGG | Pre Test | 0.81 | 0.03 | 0.00 | 0.60 |
| | | Post Test | 0.80 | | | |
| Heart Rate (In Counts) | YPPGG | Pre Test | 75.88 | 1.57 | 0.22 | 5.26* |
| | | Post Test | 74.70 | | | |
| | CGG | Pre Test | 75.92 | 2.77 | .039 | 0.05 |
| | | Post Test | 75.94 | | | |

*Note: YPPGG- Yogic Practices with Pranayama for Girls Group, CGG- Control Group Girls. Significance at 0.05 level of confidence for df of 49 is 2.01.

Mean, standard deviation and t-value were calculated for each outcomes measure can be found in Table-II result shows that the pre-test mean values of yogic practices with pranayama for girls group and control group girls (1.26,3.06,69.22,0.83,75.88) and (1.23,3.03,68.56,0.81,75.92) respectively and the post-test mean values are (1.35,3.13,72.74,0.85,74.70) and (1.23,3.02,68.06,0.80,75.94) respectively. The obtained dependent t-test value on slow vital capacity (t=7.65*), forced vital capacity (t=7.54*), maximum voluntary ventilation (t=6.83*), expiratory reserve volume (t=6.08*) and heart rate (t=5.26*) of yogic practices with pranayama for girls group respectively. The table value required for significant difference with degrees of freedom 49 at 0.05 level of confidence. The obtained 't' test value of yogic practices with pranayama for girls group was greater than the table value

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2.01. The results clearly indicated that the slow vital capacity, forced vital capacity, maximum voluntary ventilation, expiratory reserve volume and heart rate of the yogic practices with pranayama for girls group improved due to impact on yogic practice with pranayama on selected cardiorespiratory parameters among overweight children in coimbatore district.

**FIGURE-I BAR DIAGRAM SHOWING THE MEAN VALUES OF PRE AND POST-TEST ON SLOW VITAL CAPACITY, FORCED VITAL CAPACITY, MAXIMUM VOLUNTARY VENTILATION AND EXPIRATORY RESERVE VOLUME OF YPPBG AND CGB**

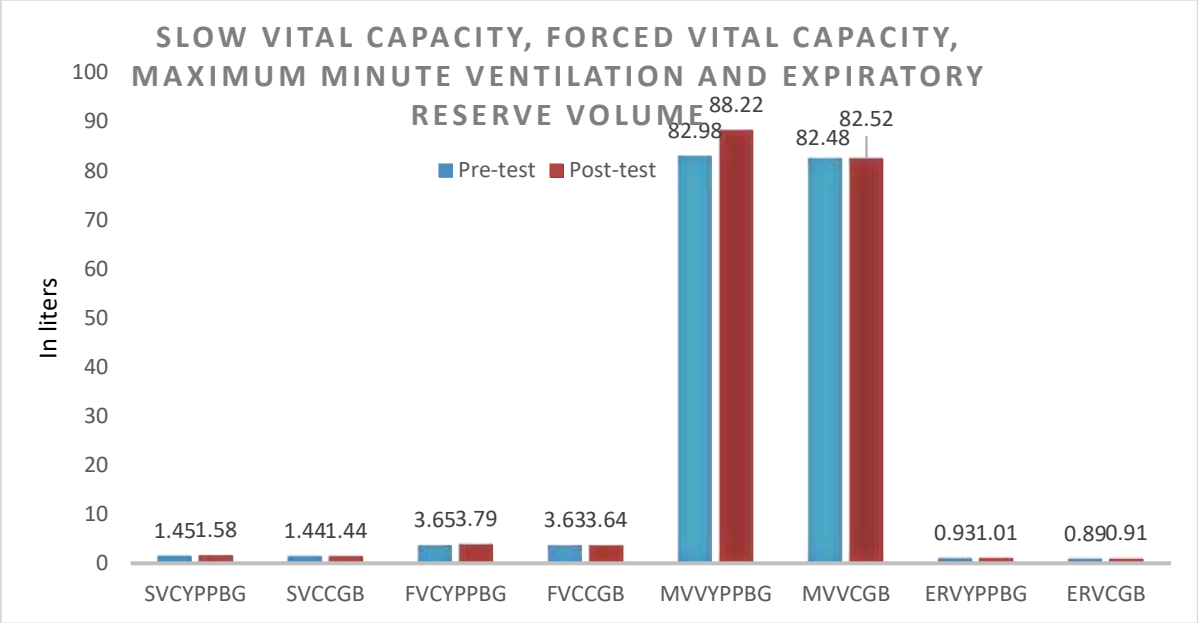
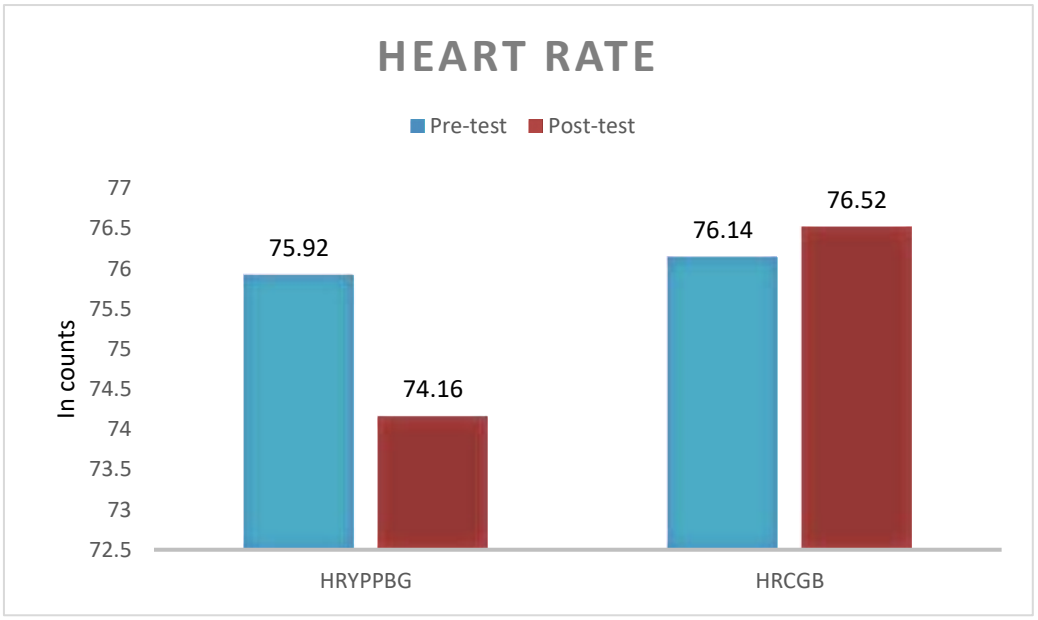



**FIGURE-2 BAR DIAGRAM SHOWING THE MEAN VALUES OF PRE AND POST-TEST ON HEART RATE OF YPPBG AND CGB**



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**FIGURE-3 BAR DIAGRAM SHOWING THE MEAN VALUES OF PRE AND POST-TEST ON SLOW VITAL CAPACITY, FORCED VITAL CAPACITY, MAXIMUM VOLUNTARY VENTILATION AND EXPIRATORY RESERVE VOLUME OF YPPGG AND CGG**

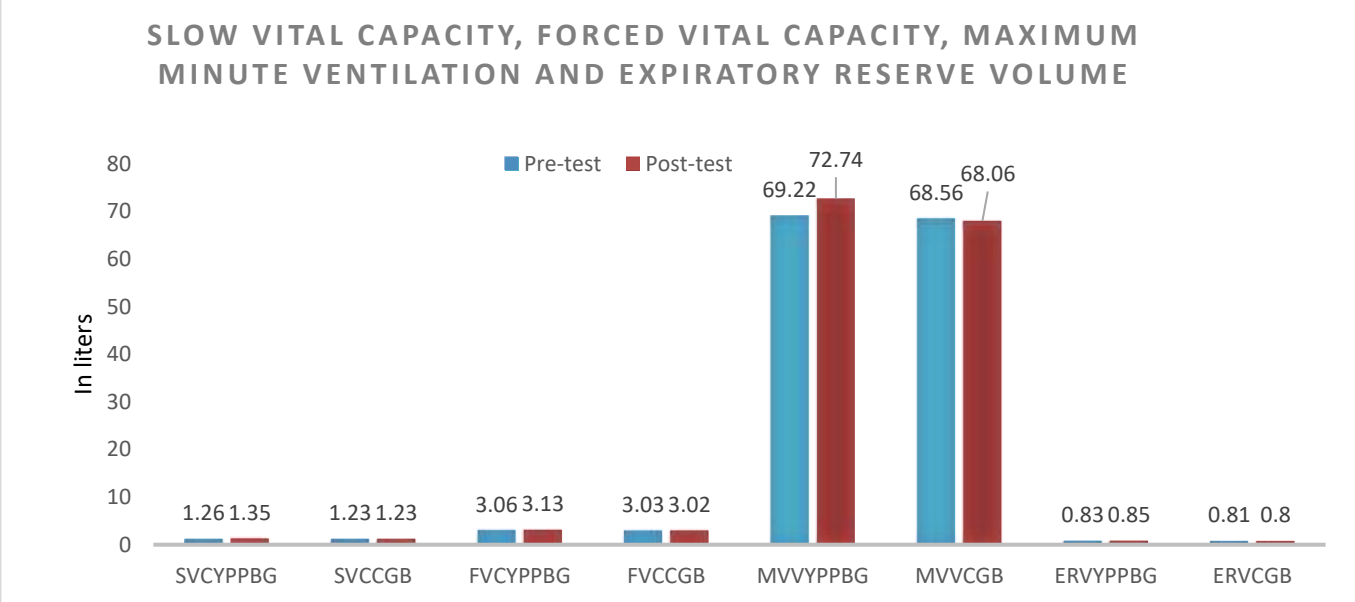
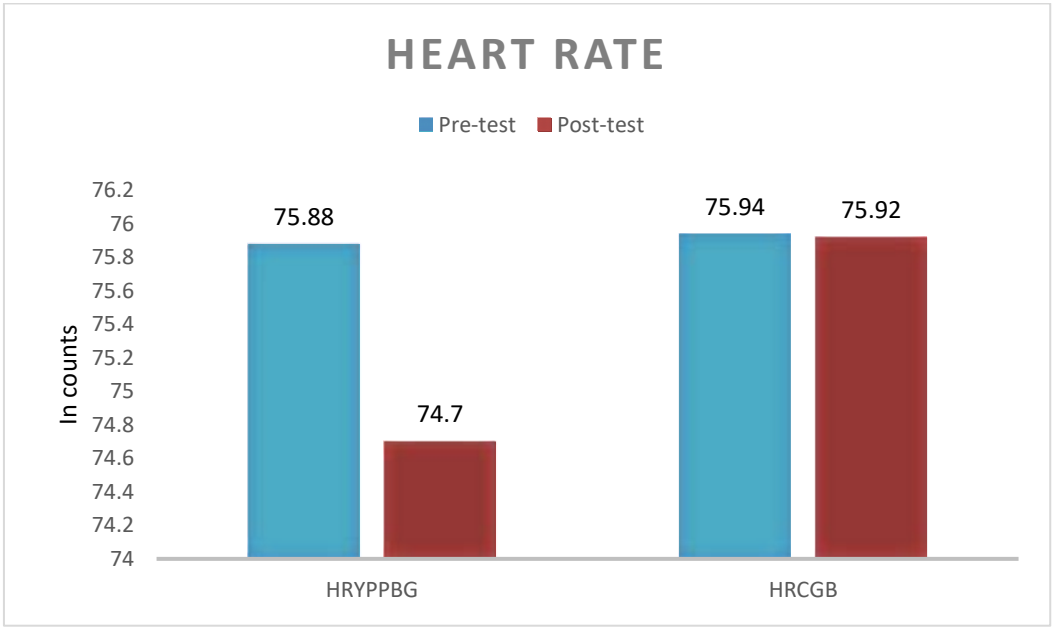



**FIGURE-4 BAR DIAGRAM SHOWING THE MEAN VALUES OF PRE AND POST-TEST ON HEART RATE OF YPPGG AND CGG**




## DISCUSSION ON FINDINGS

Based on the results, the yogic practices with pranayama for boys and girls group demonstrated significantly improved respiratory parameters, such as namely slow vital capacity, forced vital capacity, maximum voluntary ventilation, expiratory reserve volume and heart rate. The improvement was found to be caused by yogic practices with pranayama for boys and girls when compared to the control group. This study suggests that the yogic practices with pranayama for boys and girls had a positive impact on the development of respiratory parameters can be an effective approach to enhancing performance in these areas. Thus, the results are in line with other study of which has emphasized the effect of yogic practices and aerobic training on selected lung functions among physical education students .Results shows that there was a significant difference among experimental and control groups on slow vital capacity. **Palanisamy, A. (2020),** It was observed that the twelve weeks of yogic practices have significantly improved the selected lung functions of physical education students.

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From present study it can be concluded that regular practice of pranayama mainly improves respiratory efficiency as seen by highly significant in respiratory parameters. It also improves cardiac efficiency as indicated by significant decrease in pulse rate & highly significant increase in 40 mmHg endurance time. There was significant decrease in RR while FVC, MVV were significantly increased in subjects after the practice of pranayama **Waghmare, P et al., (2013).** ERV, which measures the additional air that can be forcibly exhaled after normal expiration, showed a considerable increase. This suggests that pranayama practices have strengthened the expiratory muscles, contributing to more effective and efficient breathing patterns. **Bal, B. S. (2015),** This study have significant differences were found in expiratory reserve volume (ERV), inspiratory reserve volume (IRV) in experimental group of university level girls.

The results are in line with other study of which has highlighted the Effect of yogic practice and aerobic exercise on selected physical and physiological variables among overweight school boys. Results show that asana, pranayama and asanas with pranayama practices group influence expiratory reserve volume when compared with the control group. Asana with pranayama practices may have a better influence on the expiratory reserve volume of obese men **Yokesh, T. P., & Chandrasekaran, K. (2011)**.

**Kalwale, P et al., (2013)** the present study shows that one month of pranayama training produces a significant decrease in pulse rate. The decrease in pulse rate may have been brought about by increased parasympathetic and decreased sympathetic activity.

## CONCLUSION

Yogic practices with pranayama plays a vital role in improving the respiratory parameters of overweight children. The study revealed significant improvements in Slow Vital Capacity (SVC), Forced Vital Capacity (FVC), Maximum Voluntary Ventilation (MVV), and Expiratory Reserve Volume (ERV) among the experimental groups. These findings suggest that pranayama is highly effective in enhancing lung capacity and respiratory muscle strength. The controlled breathing techniques fundamental to pranayama likely contribute to greater lung expansion, increased elasticity, and overall improved respiratory efficiency. Additionally, there was a significant decrease in resting heart rate, indicating enhanced cardiovascular efficiency and better autonomic regulation. Pranayama practices, especially those involving deep, slow breathing, promote increased parasympathetic activity, resulting in a calmer and more efficient heart function.

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