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Effect Of Yoga Training Combined With Pranayama On Breath-Holding Capacity Among Residential School Boys

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ABSTRACT

This article seeks to determine the extent to which yoga instruction with Pranayama increases breath holding capacity in residential school boys. A total of 40 participants from residential school in Bengaluru rural district were randomly divided into 2 (two) groups: Experiment. Group X (YTCP, 20 residential students) underwent yoga training mixed with Pranayama, whereas Group Y (CG, 20 residential students) served as the control group. The pre-test scores were obtained for equal groups using the breath holding time (in seconds) to manually analyze the participants' breath holding procedures. Group-X participated in yoga instruction with Pranayama and particular skill exercises for six times per week continued for eight weeks, while the control group maintained their regular schedule. Following the training session, post-test scores for breath holding capacity were obtained. A paired dependent 't' test and an independent sample 't' test were used to determine the significance of the criterion variable scores at the 0.05 and 0.01 levels of confidence. The data, which were analyzed using SPSS along with MS Excel, demonstrated a substantial variation in breath holding capacity among residential school boys who received yoga asanas with Pranayama. The study reveals that a continuous yoga programme integrating Surya Namaskar, asanas and pranayama exercises improves the breath-holding ability of school children, particularly residential school boys.

Keywords: Yoga Training, Pranayama, Breath Holding Capacity, Residential school boys.

1. INTRODUCTION

Yoga, particularly pranayama exercises, has received extensive recognition in recent years for its multiple advantages to physical, mental and emotional health. Pranayama, which incorporates controlled breathing methods, has been demonstrated to have a significant influence on increasing lung function, respiratory capacity and breath-holding time. Breath holding, an important part of respiratory endurance is controlled by respiratory muscle efficiency, lung capacity as well as an individual's ability to control their breathing. Improving breath-holding ability in school children improves their general physical

fitness, help them do better in school by enhancing concentration and reduce stress also. As the emphasis on overall education rises, including pranayama exercises into school routines improves children's health and development, mainly in residential school environments where structured physical activity is vital.

The importance of this investigation is in investigating the specific effects of yoga, mainly pranayama activities, on school children's breath-holding capacity and this study is significant because it aims to add to the expanding body of research demonstrating how yoga therapies improves school children's physiological characteristics. By focusing on residential school boys, this study aims to fill a gap in the literature by investigating how continuous yoga practice with Surya Namaskar and specific pranayama techniques, affects breath-holding capacity in teenage boys in organized school settings. The results of this study could provide useful information into the function of yoga in boosting physical fitness in school curriculum, increasing students' ability to manage stress and potentially improving overall academic performance as well as well-being. Furthermore, this investigation may cover the way for future interventions in comparable educational environments, calling for the incorporation of yoga based activities as part of a well-rounded educational programme.

2. REVIEW OF RELATED LITERATURE

2.1 Introduction

Yoga and pranayama are the both techniques that help us link our bodies, minds and breaths. Pranayama is a breathing practice that helps us control and regulate our breath. Yoga and pranayama are beneficial to youngsters because they help them hold their breath longer. Regular practice of yoga and pranayama improves lung capacity, increases oxygen supply to the body and improves general physical and mental health. This makes it an ideal sport for children to increase their breath-holding time and overall health.

Yoga, particularly through practices such as pranayama and asanas is well-known for its benefits to physical fitness as well as overall health. Among its multiple benefits, improving breath holding capacity has received a lot of attention in recent research after covid. Breath holding capacity is an important physiological metric of lung function and stamina and increasing it leads to improved respiratory health, athletic performance and stress management. The present study is to examine the impact of yoga training, specifically Surya Namaskar, targeted asanas combined with Pranayama technique, on the breath holding capacity of residential school boys. This allows relevant studies that have investigated the impact of yoga associated with pranayama on breath holding capacity, with a focus on adolescents of school-age children, to contextualize the study topic and identify current gaps.

2.2 Studies related to effect of Yoga on Breath Holding Time

Several researches have shown that yoga activities improve breath-holding ability. Pailoor, Deth and Mahato (2024) did a study on adolescent females and found that a yoga program comprising pranayama and asanas resulted in significant gains in lung capacity and breath-holding time. Similarly, Kumar and Chaudhari (2024) found that male boarding students experienced significant increases in breath holding time after a year of daily yoga practice. Other research by Vijay et al. (2023) highlighted the impact of Vibhaga pranayama on enhancing breath holding time in healthy adults, while Singh et al. (2022) discovered that a six-week pranayama programme increased soccer players' breath-holding capacity. Furthermore, Telles et al. (2019) examined the effects of high-frequency yoga breathing and breathe awareness activities, discovering improvements in both concentration and anxiety, implying improved breath control. Other research, like those by Tamizhmaran and Pushpa (2017) and Murthy (2017) found that Surya Namaskar and pranayama improved breath holding time in men and adolescent girls significantly.

2.3 Research Gap

Although many researches have looked into the effects of yoga and pranayama on breath holding capacity, the majority of them have focused on certain age groups, namely adults, athletes or female participants. Furthermore, many of the research focuses on short-term interventions, with few looking at the long-term impacts of specific Yoga practices such as Surya Namaskar in adolescent boys. The present study seeks to fill this gap by assessing the impact of a structured yoga intervention consisting of surya namaskar, asanas and pranayama on the breath holding capacity of residential school boys. This study will add to the limited evidence on the usefulness of Yoga in boosting respiratory endurance in adolescent boys, mainly in a residential school situation.

3. STATEMENT OF THE PROBLEM

"**Effect of Yoga Training Combined with Pranayama on Breath-Holding Capacity among Residential School Boys**"

4. OBJECTIVE OF STUDY

The objective of examination is to know the effect of yoga training with Pranayama on breath holding capacity among residential school boys.

5. HYPOTHESES

1. There is no significant difference in the pre-test and post-test scores of Breath Holding Capacity among residential school boys in the control group (CG) and the experimental group (YTCP).
2. There is no significant difference in the Breath Holding Capacity of residential school boys between the control group and the experimental group in the pre-test and post-test scores.

6. METHODOLOGY

This article seeks to determine the extent to which yoga instruction with Pranayama increases breath holding capacity in residential school boys. A total of 40 participants from residential school in Bengaluru rural district were randomly divided into 2 (two) groups: Experiment. Group X (YTCP, 20 residential students) underwent yoga training mixed with Pranayama, whereas Group Y (CG, 20 residential students) served as the control group. The pre-test scores were obtained for equal groups using the breath holding time (in seconds) to manually analyze the participants' breath holding procedures. Group-X participated in yoga instruction with Pranayama and particular skill exercises for six times per week continued for eight weeks, while the control group maintained their regular schedule. Following the training session, post-test scores for breath holding capacity were obtained. A paired dependent 't' test and an independent sample 't' test were used to determine the significance of the criterion variable scores at the 0.05 and 0.01 levels of confidence. The data, which were analyzed using SPSS along with MS Excel, demonstrated a substantial variation in breath holding capacity among residential school boys who received yoga asanas with Pranayama.

7. DATA ANALYSIS

The analysis of the data gathered before and after the YTCP training period, focusing on the breath-holding capacity of boys from residential schools in the experimental (YTCP) and control (CG) groups, is presented below.

Table-1: Pre and Post Test Scores on Breath Holding Capacity of Control and Experimental Groups through paired 't' test

Group	Post	Mean Scores	SD	Std. Error Mean	't' and 'P' value	Level of Significance
CG Group (N=20)	Pre	27.356	1.948	0.435	1.77 [P=0.093]	NS
	Post	27.722	1.467	0.328		
YTCP Group (N=20)	Pre	28.468	1.990	0.445	10.30 [P=0.000]	**
	Post	31.987	1.457	0.325		

NS indicates Not Significant; ** shows significant at 0.01 level (df = 19, 2.88)

The paired 't' test results between pre-test and post-test scores of the CG and experimental groups on breath-holding capacity are outlined in the table-1. The CG group showed a slight increase in the breath-holding capacity from the pre-test (M=27.356) to the post-test (M=27.722), but the difference was not statistically significant (t=1.77, p=0.093). This suggests that the control group did not experience a meaningful change in their breath-holding capacity after the examination period.

In contrast, the YTCP group, which received yoga training with Pranayama exercises, demonstrated a significant increase in breath-holding capacity. The pre-test score was 28.468, while the post-test score increased to 31.987. This difference was statistically significant (t=10.30, p=0.000), indicating that the yoga training with Pranayama exercises had a substantial positive effect on the breath-holding capacity of the participants in the experimental group.

The data suggests that yoga training with Pranayama exercises significantly improved the breath-holding capacity in the YTCP group, whereas no significant change was observed in the CG group. The results highlight the potential of YTCP as an effective method for enhancing breath-holding capacity among residential school boys.

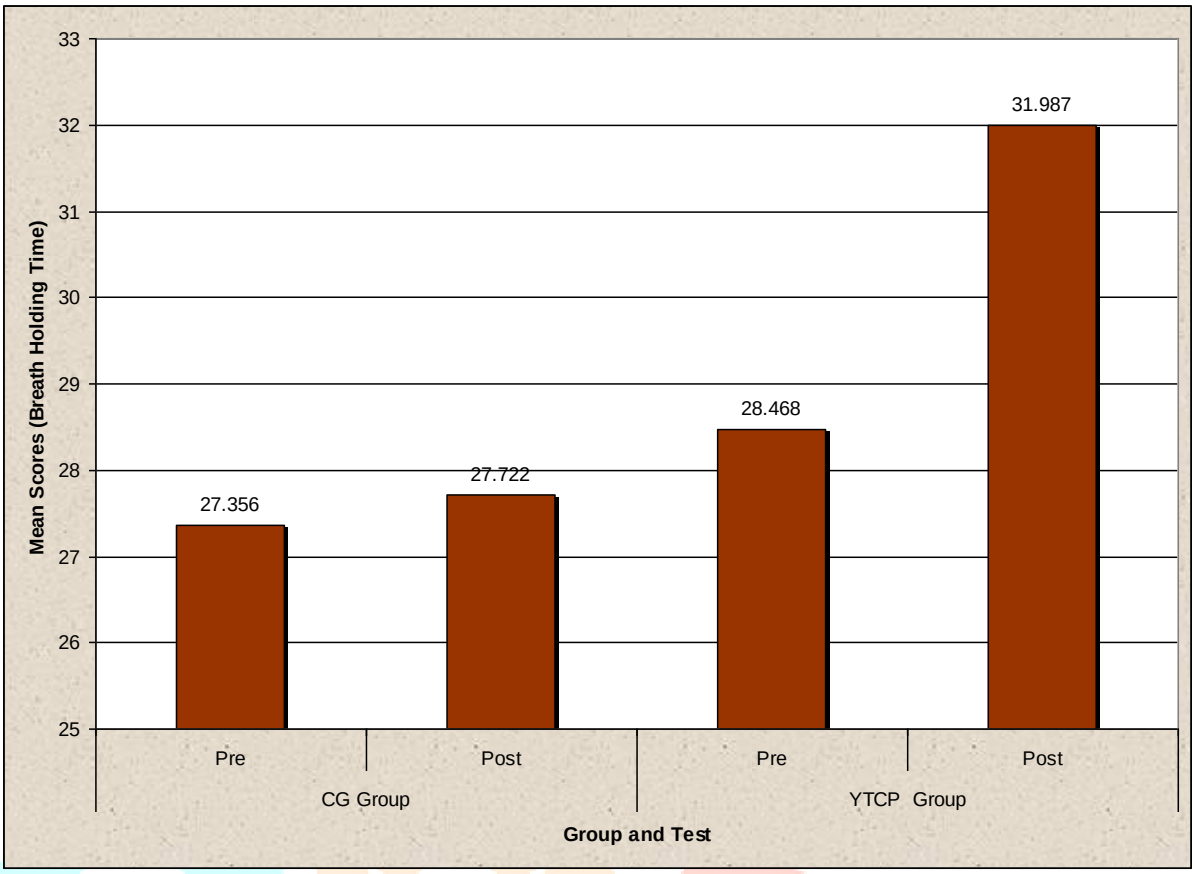

Fig.1: Assessment of Breath Holding Capacity between of pre and post tests scores of residential school boys in control and experimental groups.

Table-2: Pre and Post Test Scores of Breath Holding Capacity between Control and Experimental Groups through independent 't' test

Test	Groups	Mean Scores	SD	Std. Error Mean	't' and 'P' value	Level of Significance
Pre	CG Group (N=20)	27.356	1.948	0.435	1.78 (P=0.082)	NS
	YTCP Group (N=20)	28.468	1.990	0.445		
Post	CG Group (N=20)	27.722	1.467	0.328	9.22 (P=0.000)	**
	YTCP Group (N=20)	31.987	1.457	0.325		

NS explains Not Significant; **illustrate Significant at 0.01 level (df = 38, 2.71)

Table-2 presents a comparison of the pre-test and post-test breath-holding capacities between the Control Group (CG) and the Yoga and Traditional Conditioning Practices (YTCP) group through independent ''t' test.

In the pre-test, the CG group had a mean breath-holding capacity of 27.356, with a standard deviation (SD) of 1.948 and a standard error mean of 0.435. The YTCP group showed a slightly higher mean score of 28.468, with an SD of 1.990 and a standard error mean of 0.445. The difference between the two groups was not statistically significant, as indicated by the t-value of 1.78 (P = 0.082). This shows that both groups had similar breath-holding capacities at the baseline, with no significant advantage for either group before the intervention.

In the post-test, the CG group displayed a marginal improvement, with a mean score of 27.722, an SD of 1.467 and a standard error mean of 0.328. In contrast, the YTCP group exhibited a substantial increase, with a mean score of 31.987, an SD of 1.457 and a standard error mean of 0.325. The t-value of 9.22 (P = 0.000) indicates a highly significant difference ($p < 0.01$) between the two groups. This

highlights the effectiveness of yoga and traditional conditioning practices in enhancing breath-holding capacity, as the YTCP group demonstrated considerable improvement compared to the minimal changes in the CG group.

Overall, while the pre-test results showed no significant differences between the groups, the post-test findings clearly indicate that the YTCP intervention significantly improved breath-holding capacity and suggests that incorporating yoga practices can be an effective method to enhance physical performance parameters.

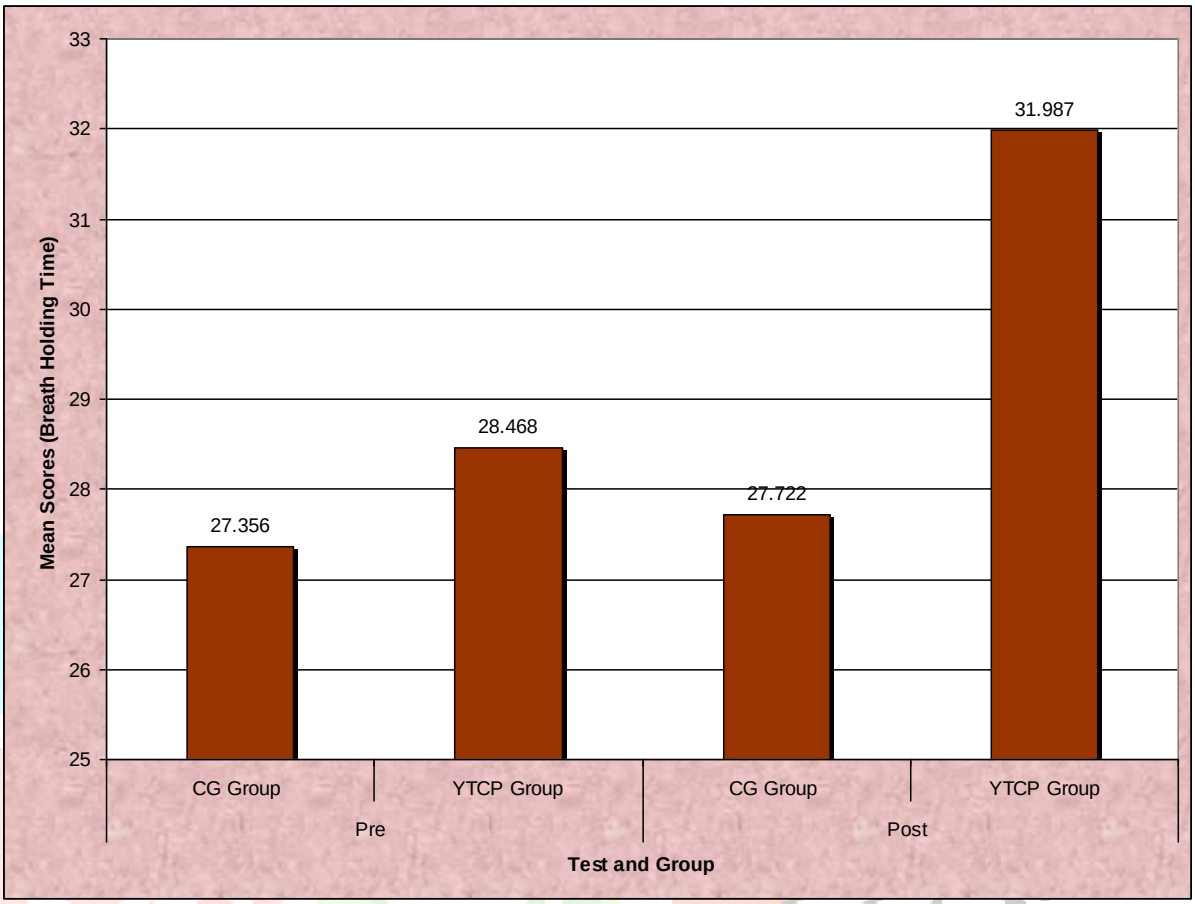

Fig.2: Assessment of pre-test and post-test scores of Breath Holding Capacity of residential school boys between control and experimental groups.

8. DISCUSSION ON FINDINGS

The study's findings show that residential school boys' breath-holding ability improved significantly after participating in a systematic yoga program that included Surya Namaskar and particular pranayama exercises. These findings are similar with prior research, such as Kumar and Chaudhari's (2024) study, which found a significant improvement in breath-holding time among male boarding school students following a year-long yoga program. Singh et al. (2022) noticed similar results, finding significant improvements in breath-holding ability in soccer players following six weeks of pranayama training. Furthermore, Telles et al. (2019) found that breath-focused yoga practices, such as pranayama, improve respiratory efficiency and can have a positive impact on physical performance and mental health. This study's improvement in breath-holding time adds to the evidence for yoga's good influence on lung capacity and ability to improve overall fitness levels.

9. CONCLUSION

The study reveals that a continuous yoga programme integrating Surya Namaskar, asanas and pranayama exercises improves the breath-holding ability of school children, particularly residential school boys. The findings confirms that even short-term yoga therapies results in measurable increases in respiratory endurance, which contributes to improved physical fitness as well as mental focus. It is reasonable to argue for the incorporation of yoga-based activities into school curricula as part of a more comprehensive approach to student health as well as well-being.

10. IMPLICATIONS AND SUGGESTIONS

The consequences of this research are far-reaching. Schools, particularly residential ones, can benefit from incorporating yoga activities into their daily routines to improve students' physical and mental wellness. Given the growing emphasis on academic success and the challenges that students encounter, yoga can be a useful technique for improving concentration, reducing anxiety and increasing overall well-being. The increased breath-holding capacity may potentially provide long-term benefits, such as improved athletic performance, stress management and cognitive capabilities. Furthermore, this study contributes to the expanding body of evidence demonstrating the relevance of incorporating physical activities such as yoga into school settings to promote holistic development.

Based on the findings of this study, it is recommended that schools incorporate structured yoga programs that involve both physical postures (asanas) and breathwork (pranayama) into their regular physical education curriculum. Further research should look into the long-term benefits of yoga on other physiological factors like cardiovascular health and flexibility, as well as how it affects academic achievement and behavior. Furthermore, future research might examine the effects of various pranayama or yoga practices to determine the most effective therapies for different age groups and educational settings. Encouraging educators to become trained in yoga instruction would also improve the efficacy of such programs in schools.

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