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Impact of Yoga Training on Selected Physical Fitness and Physiological Variables among Non-Physical Education College Men

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ABSTRACT

This study aimed to examine the impact of a six-week structured yoga training program on selected physical fitness variables balance, and core strength and physiological variables breathe holding time among non-physical education college men at Swami Yoganandha Hostel, Sri Ramakrishna Mission Vidyalaya, Coimbatore. Thirty (N=30) male students, aged 17 to 20, participated in yoga sessions three days a week from 6:00 am to 7:00 am. The physical fitness variables assessed balance tested with the stork balance stand test core strength tested with plank test and physiological variables breath-holding time tested with breath hold test. Pre- and post-test data were analyzed using dependent t-tests with a significance level of 0.05. The results indicated significant improvements selected physical fitness variables are balance and core strength and physiological variable was breath-holding time of non-physical education college men.

Keywords: Yoga, Breath-Holding Time, Balance and Core Strength

Introduction

Yoga, an ancient practice originating from India, has gained global recognition for its ability to enhance physical fitness, mental clarity, and emotional well-being. Research over the years has shown that yoga offers multiple health benefits, particularly in areas like flexibility, strength, and respiratory health. Among the key elements of physical fitness, breath control, balance, and core strength are fundamental to overall health and performance. By combining asanas (postures), pranayama (breathing techniques), and mental focus, yoga serves as a holistic approach that can improve these essential fitness components **(Telles & Singh, 2013)**.

Breath control, a cornerstone of yoga, is cultivated through pranayama exercises that are known to improve lung capacity and increase breath-holding ability. Studies have highlighted the effectiveness of pranayama in boosting respiratory function and reducing stress, offering broad benefits to overall health **(Ramesh, 2016)**. Additionally, certain yoga asanas are designed to strengthen the core muscles, which are vital for stability, injury prevention, and functional fitness. Core strength is commonly measured through exercises like the Plank Test, which gauges endurance and stability in the trunk and abdominal regions **(Chtourou & Souissi, 2012)**.

Balance is another significant area in which yoga has proven to be beneficial. Many studies have demonstrated that yoga helps to improve balance by enhancing proprioception and coordination, which, in turn, supports better physical stability **(Mohod & Asanare, 2019)**. The Stork Balance Stand Test, a widely used tool to assess balance, evaluates a person's ability to maintain stability while standing on one foot, providing key insights into balance capabilities **(Khatri & Sharma, 2017)**.

The physical and mental benefits of yoga can be particularly advantageous for non-physical education college students, as it provides an accessible and low-impact means to improve their fitness levels. Yoga's emphasis on mindful movement, breathing techniques, and focus offers a comprehensive approach to enhancing both mental and physical health **(Garfinkel & Schumacher, 2000)**. Effects of yoga on physical health outcomes. The authors concluded that yoga significantly improves physical fitness, including flexibility, strength, and balance, which aligns with the findings of several studies showing the positive impact of yoga on motor skills and balance. The study also highlighted the role of yoga in improving breath control through techniques like pranayama (Cramer et al. (2016). Yoga for chronic arthritis patients, demonstrating that yoga's focus on breath control and postural alignment significantly improved lung function and overall strength (Garfinkel and Schumacher (2000). Yoga for anxiety and found that yoga's focus on mindfulness, combined with physical movement, contributed to improved mental and physical balance, especially in individuals who were not involved in regular physical activities. This review highlights the importance of yoga in improving balance and mental focus, factors that could also enhance physical balance and coordination (Kirkwood et al. (2005). Impacts of yoga in a diet change program for obesity. The study found that the practice of yoga significantly reduced body fat percentage and increased core strength, reflecting improvements in muscle engagement and stability Telles (2010). Yogasanas on the physical and psychological well-being of school boys. The study found that regular practice of yogasanas resulted in significant improvements in balance and flexibility, with an additional focus on improving strength and breath control. These findings support the idea that yoga can

positively influence balance and core strength, particularly in adolescents (Bandopadhyay (2012). Yoga asana training program on selected motor abilities, physiological, and psychological variables among football players. They found that yoga practice led to improved core strength, balance, and respiratory endurance. The study particularly noted the enhancement of breath holding time through pranayama techniques incorporated in the training program (Jivan and Asanare (2019). Yoga training on physical health indicators such as respiratory pressures, weight loss, and handgrip strength. The study reported that yoga not only improved respiratory endurance and core strength but also enhanced the participant's overall physical fitness, demonstrating the role of yoga in strengthening vital physical parameters like balance and strength (Madanmohan (2008). Effect of various fitness programs, including yoga, on the physical fitness of school boys. The study concluded that yoga significantly improved health-related physical fitness components, including strength, endurance, and balance. The study emphasized the holistic benefits of yoga, suggesting that even students who are not engaged in competitive sports can improve their core strength and balance through regular yogasana practice (Ramesh (2016).

Methodology:

To conduct this study, thirty (N=30) Non-Physical Education college men from the Swami Yoganandha Hostel, Sri Ramakrishna Mission Vidyalaya in Coimbatore, Tamil Nadu, were chosen. Their ages ranged from 17 to 20 years. The participants underwent 6 week of yoga training, with sessions Three days per week, held from 6: 00 am to 7: 00 am. The physical fitness variables assessed Balance was assessed with the stork stand test and Core strength was tested with plank test and physiological variable Breath - holding time was measured using a nose clip,. Pre - and post - training data were analyzed using the dependent t - test, with a significance level set at 0.05.

Training Schedule:

Week	Asana Name	Repetitions	Rest Between Asanas & Rest between Repetitions	Duration
Week 1	Ujjayi Pranayama, Nadi Shodhana	2	30 seconds	5-7 minutes
	Vrikshasana	2-3	30 seconds	1-2 minutes
	Navasana	2-3	30 seconds	1-2 minutes
Week 2	Kapalbhati	2-3	30 seconds	3-5 minutes
	Virabhadrasana III	2	30 seconds	1-2 minutes
	Phalakasana	2	30-45 seconds	1-2 minutes
Week 3	Anulom Vilom	2-3	30 seconds	5 minutes
	Natarajasana	2	30 seconds	1-2 minutes
	Vasisthasana	2	30-45 seconds	1-2 minutes
Week 4	Bhastrika	2-3	30 seconds	4-5 minutes
	Utkatasana	2-3	30 seconds	1-2 minutes
	Parivrtta Navasana	2	30 seconds	1-2 minutes
Week 5	Ujjayi Pranayama	2-3	30 seconds	5 minutes
	Garudasana	2	30 seconds	1-2 minutes
	Navasana	2-3	30 seconds	1-2 minutes
Week 6	Kumbhaka	2-3	30 seconds	5-7 minutes
	Ardha Chandrasana	2	30 seconds	1-2 minutes
	Eka Pada Vasisthasana	2-3	30 seconds	1-2 minutes

RESULTS

TABLE I

COMPUTATION WITH 'T' TEST OF BALANCE ON 6 WEEK YOGA TRAINING OF NON-PHYSICAL EDUCATION COLLEGE MEN

Variable	Test	Mean	S.D	DM	σDM	't'
Balance	Pre test	11.42	9.42	8.54	1.56	5.694*
	Post test	20.31	14.01			

*Significant Level of significant was fixed at 0.05 with df 29 Table value 2.04

Table I shows the mean and standard deviation for Balance in in Non-Physical Education College men following a 6-week yoga training. The pre - test and Post – test mean values for the group are 11.42 and 20.31, respectively, with corresponding standard deviations of 9.42 and 14.01. The t – value obtained is 5.69, which exceeds the critical table value of 2.04 at df = 29. These results indicate a significant improvement in Balance among in Non-Physical Education College men after completing the six – week yoga training program.

FIGURE-1

THE MEAN VALUES ARE 6 WEEK YOGA TRAINING GROUP OF PRE AND POST TEST OF BALANCE ON NON-PHYSICAL EDUCATION COLLEGE MEN

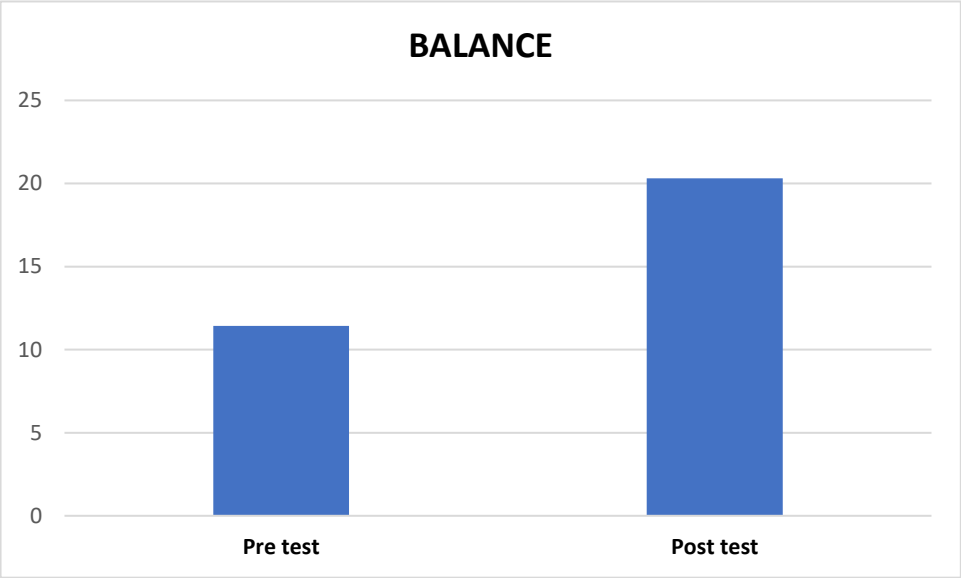

TABLE II

COMPUTATION WITH 'T' TEST OF CORE STRENGTH ON 6 WEEK YOGA TRAINING OF IN NON-PHYSICAL EDUCATION COLLEGE MEN

Variable	Test	Mean	S.D	DM	σDM	't'
Core Strength	Pre test	66.66	30.95	29.45	5.37	6.174*
	Post test	99.87	46.96			

*Significant Level of significant was fixed at 0.05 with df29 Table value 2.04

Table II shows the mean and standard deviation for Core Strength in in Non-Physical Education College men following a 6-week yoga training. The pre - test and Post – test mean values for the group are 66.66 and 99.87, respectively, with corresponding standard deviations of 30.95 and 46.96. The t – value obtained is 6.17, which exceeds the critical table value of 2.04 at df = 29. These results indicate a significant improvement in Core strength among in Non-Physical Education College men after completing the six – week yoga training program.

FIGURE-2

THE MEAN VALUES ARE 6 WEEK YOGA TRAINING GROUP OF PRE AND POST TEST OF CORE STRENGTH ON NON-PHYSICAL EDUCATION COLLEGE MEN.

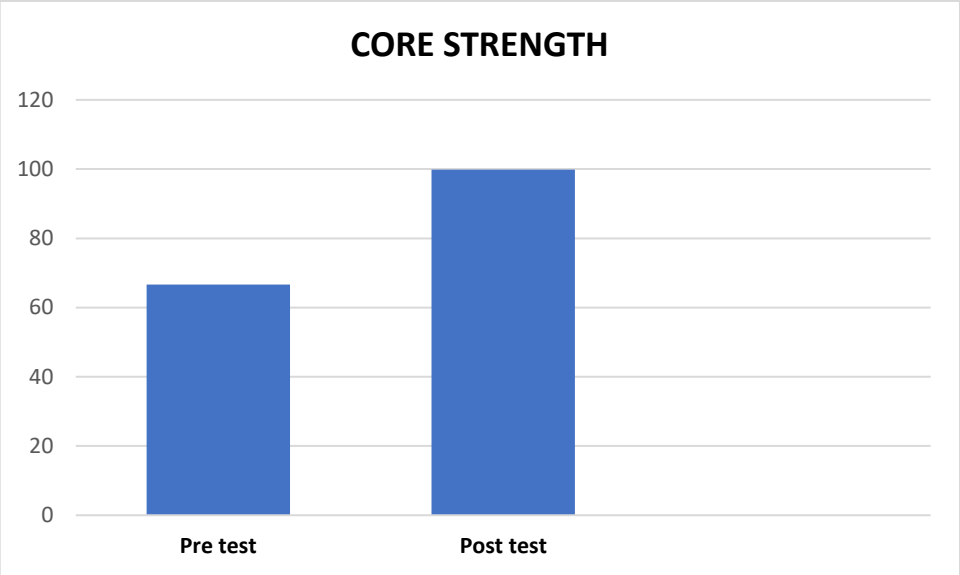

TABLE-III

COMPUTATION WITH 'T' TEST OF BREATH HOLD TIME ON 6 WEEK YOGA TRAINING OF NON-PHYSICAL EDUCATION COLLEGE MEN

Variable	Test	Mean	S.D	DM	σDM	't'
	Pre test	31.21	11.44	9.33	1.73	7.112*
	Post test	43.53	10.50			

*Significant Level of significant was fixed at 0.05 with df29 Table value 2.04

Table III shows the mean and standard deviation for Breath - Hold time in Non-Physical Education College men following a 6-week yoga training. The pre - test and Post – test mean values for the group are 31.21 and 43.53, respectively, with corresponding standard deviations of 11.44 and 10.50. The t – value obtained is 7.11, which exceeds the critical table value of 2.04 at df = 29. These results indicate a significant improvement in Breath Hold time among in Non-Physical Education college men after completing the six – week yoga training program.

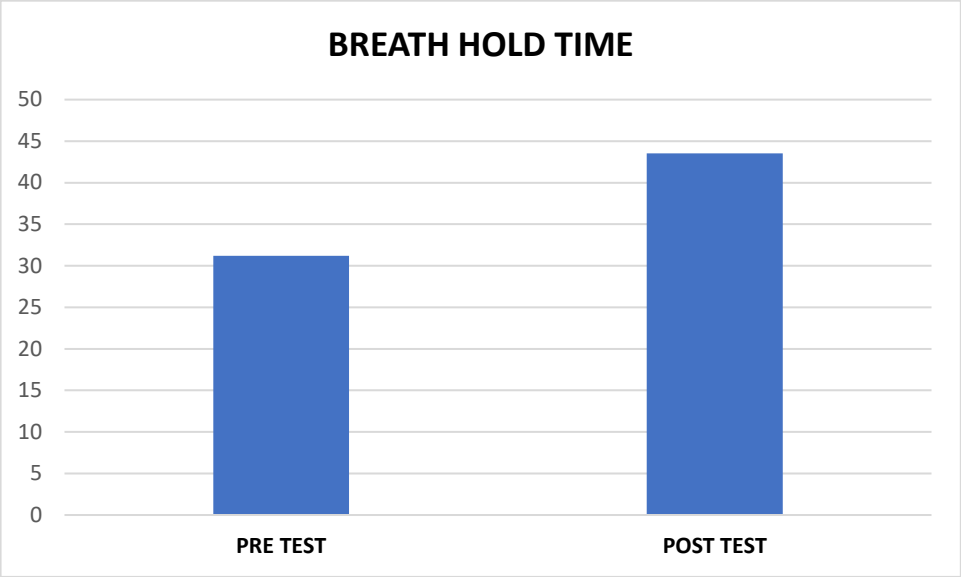

FIGURE 3

THE MEAN VALUES ARE 6 WEEK YOGA TRAINING GROUP OF PRE AND POST TEST OF BREATH HOLD TIME ON NON-PHYSICAL EDUCATION COLLEGE MEN

Discussion on Findings

This study indicates a significant improvement in breath-holding time, balance, and core strength among Non-Physical Education college men who participated in a structured yoga practice. These results are in alignment with previous studies that have demonstrated the positive impact of yoga on various physical fitness parameters. The results of this study demonstrated a significant increase in breath holding time among the participants who practiced yogasana regularly.

This finding aligns with the existing literature, which suggests that yogic breathing techniques (pranayama) contribute to improved lung function and enhanced respiratory endurance. Research by **Khatri et al. (2019)** found that pranayama and yogic breathing exercises significantly improve lung capacity and breath control, which leads to enhanced breath holding times. Moreover, asanas in yoga require deep, mindful breathing, which can improve the efficiency of the respiratory system by activating the diaphragm and promoting greater oxygen exchange **(Raghavendra et al., 2018)**. This study indicates that yogasana's emphasis on controlled breath may improve the autonomic regulation of breathing and increase breath holding capacity, even among individuals who are not physically trained.

yoga emphasizes mindfulness, which has been shown to enhance focus and concentration, contributing to better balance **(Hagins et al., 2013)**. The improved balance observed in this study may also reflect a positive neurophysiological adaptation due to the repeated practice of balancing postures, which requires continuous engagement of core and stabilizing muscles.

Core strength is critical for posture, stability, and overall functional movement. This study found a notable increase in core strength in participants who regularly practiced yogasana. Asanas such as Plank Pose (Phalakasana), Boat Pose (Navasana), and various backbends require significant engagement of the core muscles, particularly the abdominals, obliques, and lower back **(Sengupta, 2012)**.

A study by Garfinkel and **Schumacher (2000)** highlighted the holistic approach of yoga, which integrates physical postures, breath control, and mental focus, making it an ideal practice for students who are not involved in physically demanding disciplines. Incorporating yoga into the lifestyle of college students could serve as a proactive strategy to enhance their health and wellness, especially considering the sedentary nature of modern student life.

Conclusions

The yoga training had significantly improved balance, core strength and breath hold time of non-physical education college men.

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