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The Impact of Annual Yoga Training on the Physical Fitness, Breath-Holding Time and BMI of Boarding Male Students

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Abstract: ***To conduct this study, ninety (N=90) male students from the Swami Brahmananda Hostel, Sri Ramakrishna Mission Vidyalaya in Coimbatore, Tamil Nadu, were chosen. Their ages ranged from 18 to 23 years. The participants underwent a year of yoga training, with sessions held daily from 6: 00 am to 7: 00 am. The physical fitness variables assessed included muscular strength, balance, hand - eye coordination, flexibility, breath - holding time, and BMI. Muscular strength was evaluated using the plank test, balance was assessed with the stork stand test, hand - eye coordination was measured with a ball toss and catch, flexibility was tested using the sit - and - reach test, and 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. The results indicated significant improvements in muscular strength, balance, hand - eye coordination, flexibility, and breath - holding time, along with a notable reduction in BMI after the year - long yoga training.***

Keywords: Yoga, BMI and Physical Fitness

1. Introduction

The conceptual background of yoga has its origins in ancient Indian philosophy. There are numerous modern schools or types of yoga (i. e., Iyengar, Viniyoga, Sivananda, etc.), each having its own distinct emphasis regarding the relative content of physical postures and exercises (asanas), breathing techniques (pranayama), deep relaxation, and meditation practices that cultivate awareness and ultimately more profound states of consciousness. The application of yoga as a therapeutic intervention, which began early in the twentieth century, takes advantage of the various psychophysiological benefits of the component practices.

The physical exercises (asanas) may increase patient's physical flexibility, coordination, and strength, while the breathing practices and meditation may calm and focus the mind to develop greater awareness and diminish anxiety (**G. Kirkwood, H. Rampes, V. Tuffrey, J. Richardson, and K. Pilkington, 2005),** and thus result in higher quality of life. Other beneficial effects might involve a reduction of distress, blood pressure, and improvements in resilience, mood, and metabolic regulation (**K. Yang, 2007).** Khalsa stated that a majority of the research on yoga as a therapeutic intervention was conducted in India and a significant fraction of these were published in Indian journals, some of which are difficult to acquire for Western clinicians and researchers (**S. B. S. Khalsa, 2004).**

In their bibliometric analysis from 2004, they found that 48% of the enrolled studies were uncontrolled, while 40% were randomized clinical trials (RCT), and 12% non - RCT (N - RCT). Main categories which were 2 Evidence - Based Complementary and Alternative Medicine addressed were psychiatric, cardiovascular, and respiratory disorders (**S. B. S. Khalsa, 2004).** Despite a growing body of clinical research studies and some systematic reviews on the therapeutic effects of yoga, there is still a lack of solid evidence regarding its clinical relevance for many symptoms and medical conditions. For many specific indications and conditions, there is inconsistent evidence with several studies reporting positive effects of the yoga interventions, but other studies are less conclusive. In some instances, these discrepancies may result from differences between the study populations (e. g., age, gender, and health status), the details of the yoga interventions, and follow - up rates. include a heterogeneous set of studies with varying effect sizes, heterogeneous diagnoses and outcome variables, often limited methodological quality, small sample sizes, varying control interventions, different yoga styles, and strongly divergent duration of interventions.

2. Methodology

To conduct this study, ninety (N=90) male students from the Swami Brahmananda Hostel, Sri Ramakrishna Mission Vidyalaya in Coimbatore, Tamil Nadu, were chosen. Their ages ranged from 18 to 23 years. The participants underwent a year of yoga training, with sessions held daily from 6: 00 am to 7: 00 am. The physical fitness variables assessed included muscular strength, balance, hand - eye coordination, flexibility, breath - holding time, and BMI. Muscular strength was evaluated using the plank test, balance was assessed with the stork stand test, hand - eye coordination was measured with a ball toss and catch, flexibility was tested using the sit - and - reach test, and 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 Programme

S. no	Asana	Week	Repetition	Rest between asana	Rest between Rep	Total Duration
1	Praiasana	1 - 4	3	30 sec	2 min	45in
2	Padhaastha asana					
3	Pachimottasana					
4	Bhujangaasana	5 - 8	5			50 min
5	Suryanamaskar					
6	Halaasana					
7	Dhanurasana	912	7			60 min

* Repetition gradually increase the repetition every 4 weeks up to annual year.

Table I: Computation with 't' Test of Muscular Strength on Annual Yoga Training of Boarding Male Students

Variable	Test	Mean	S. D	DM	σDM	't'
Muscular Strength	Pretest	12.1891	18.23483	1.270471	2.63700	4.818*
	Posttest	24.8938	19.75696			

*Significant Level of significant was fixed at 0.05 with df89Table value 1.98

Table I shows the mean and standard deviation for muscular strength in male boarding students following a year of yoga training. The pre - test and post - test mean values for the group are 12.8 and 24.89, respectively, with corresponding standard deviations of 18.23 and 19.75. The t - value obtained is 4.81, which exceeds the critical table value of 1.98 at df = 89. These results indicate a significant improvement in muscular strength among male boarding students after completing the year - long yoga training program.

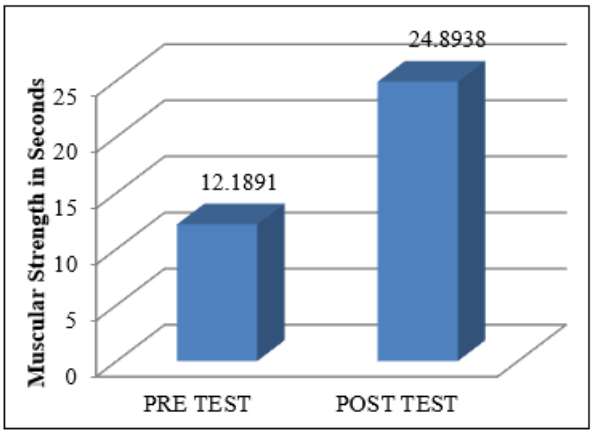

Figure 1: The Mean Values are Annual Yoga Training Group of Pre and Post Test of Muscular Strength onboarding Male Students

Table II: Computation with 't' Test of Hand Eye Coordination on Annual Yoga Training of Boarding Male Students

Variable	Test	Mean	SD	DM	σDM	't'
Hand Eye Coordination	Pre test	6.7582	3.43298	3.31868	0.50586	6.560*
	Post test	10.0769	3.56287			

*Significant Level of significant was fixed at 0.05 with df89Table value 1.98

Table II presents the mean and standard deviation for hand - eye coordination in male boarding students after a year of yoga training. The pre - test and post - test mean values for the yoga training group are 6.75 and 10.07, respectively, with standard deviations of 3.43 and 3.56. The calculated t - value is 6.56, which exceeds the critical table value of 1.98 at df = 89. These results demonstrate a significant improvement in hand - eye coordination among male boarding students due to the year - long yoga training.

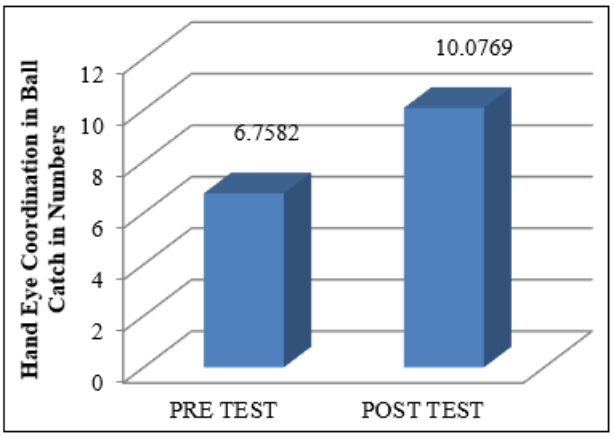

Figure 2: The Mean Values are Annual Yoga Training Group of Pre and Post Test of Hand Eye Coordination onboarding Male Students

Table III: Computation with 't' Test of Balance on Annual Yoga Training of Boarding Male Students

Variable	Test	Mean	SD	DM	σDM	't'
Balance	Pre test	14.5537	11.57705	5.39626	1.57054	3.436*
	Post test	19.9500	10.39655			

*Significant Level of significant was fixed at 0.05 with df89Table value 1.98

Table III indicates the mean and standard deviation of balance for the annual yoga training group among boarding male students. The pre - and post - test mean values for the yoga training group are 14.55 and 19.95, respectively, with standard deviation values of 11.57 and 10.39. The obtained t - value is 3.43, which is greater than the table value of 1.98 at df = 89. The findings of the study suggest that there is a significant improvement in balance among boarding male students as a result of the annual yoga training.

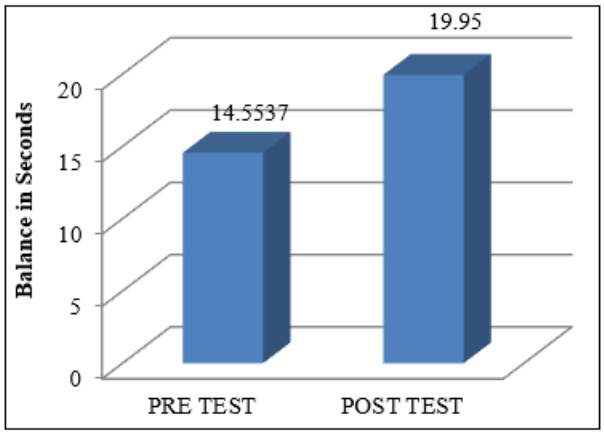

Figure 3: The Mean Values are Annual Yoga Training Group of Pre and Post Test of Balance onboarding Male Students.

Table IV: Computation with 't' Test of Flexibility on Annual Yoga Training of Boarding Male Students

Variable	Test	Mean	SD	DM	σDM	't'
Flexibility	Pretest	29.3077	10.20642	2.34066	0.91870	2.548*
	Posttest	31.6484	11.10593			

*Significant Level of significant was fixed at 0.05 with df89Table value 1.98

Table IV presents the mean and standard deviation for flexibility among boarding male students in the annual yoga training group. The pre - test mean was 29.30, while the post - test mean increased to 31.64. The standard deviation values were 10.20 and 11.10, respectively. With a 't' value of 2.54, which exceeds the table value of 1.98 at a degree of freedom (df) of 89, the study demonstrates a significant improvement in flexibility as a result of the annual yoga training

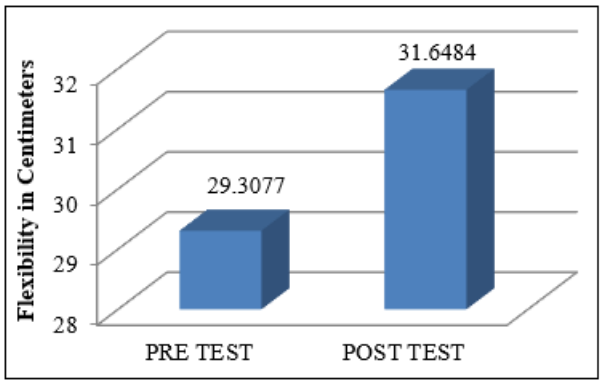

Figure 4: The Mean Values are Annual Yoga Training Group of Pre and Post Test of Flexibility Onboarding Male Students

Table V: Computation with 't' test of BMI on Annual Yoga Training of Boarding Male Students

Variable	Test	Mean	S. D	DM	σ DM	't'
BMI	Pre test	20.4790	4.31542	2.07487	0.45247	4.586*
	Post test	18.4042	4.17613			

*Significant Level of significant was fixed at 0.05 with df89Table value 1.98

Table V indicates the annual yoga training group's effect on the mean and standard deviation of BMI for boarding male students. The mean values for the yoga training group before and after the test are 20.40 and 18.40, respectively, with standard deviations of 4.31 and 4.17. The obtained 't' value is 4.58, which is greater than the table value of 1.98 with 89 degrees of freedom. The findings of the study indicate that the yoga training group experienced a significant reduction in BMI due to annual yoga training for boarding male students. "

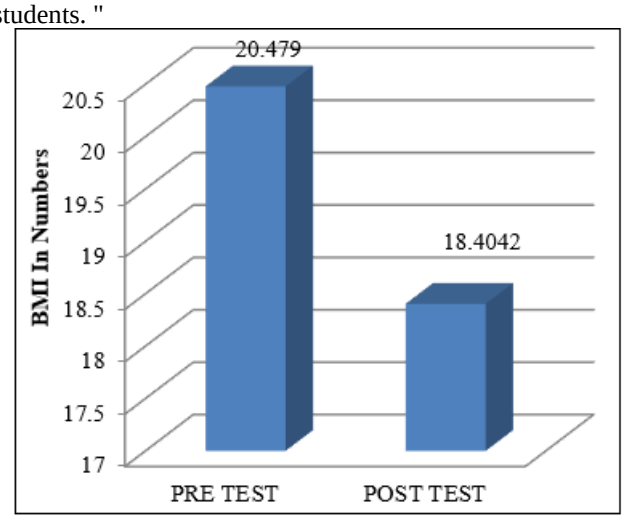

Figure 5: The Mean Values are Annual Yoga Training Group of Pre and Post Test of BMI Onboarding Male Students

Table VI: Computation with 't' Test of Breathe Hold Time on Annual Yoga Training of Boarding Male Students

Variable	Test	Mean	SD	DM	σ DM	't'
Breathe Hold Time	Pre test	28.8622	17.61537	6.78538	2.25342	3.011*
	Post test	35.6476	13.95534			

*Significant Level of significant was fixed at 0.05 with df89Table value 1.98

Table VI indicates the effect of annual yoga training on breath - hold time, with mean and standard deviation values for boarding male students. The mean values for the yoga training group before and after the test are 28.86 and 35.64, respectively, with standard deviations of 17.61 and 13.95. The obtained 't' value is 3.0, which is greater than the table value of 1.98 with 89 degrees of freedom. The findings of the study indicate that the yoga training group experienced a significant improvement in breath - hold time due to annual yoga training for boarding male students. "

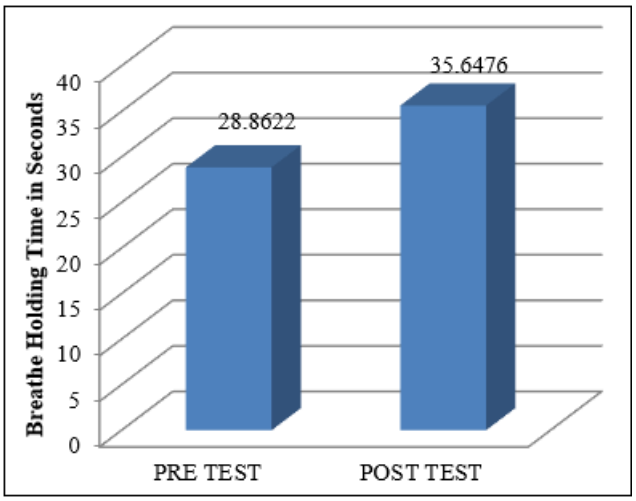

Figure 6: The mean values are annual yoga training group of pre and post test of breathe hold time onboarding male students.

3. Discussion on Findings

The study results reveal a significant improvement in physical fitness and breath - holding time among boarding male students due to a year - long yoga training program, along with a notable reduction in body mass index. These findings align with previous research, which includes training involving yoga asanas, concentration exercises, and pranayama. Studies by **Ramesh (2016**) and **Bandopadhyay (2012**) demonstrate significant changes in fitness components due to the effects of yogic practices, aerobic exercise, and interval training. Additionally, research by **Madanmohan (2008)** and **Jivan W. Mohod and Dr. A. M. Asanare** (2019) highlights the impact of six weeks of yoga training on weight loss, respiratory pressures, handgrip strength, and handgrip endurance in young, healthy subjects."

4. Conclusions

1) The year - long yoga training program for male students led to enhanced physical fitness across various areas, such as muscular strength, balance, hand - eye coordination, flexibility, and breath - holding capacity.
2) The year - long yoga training program for male boarding students brought about a notable decrease in body mass index.

References

[1] Bandopadhyay, K. (2012). Effects of yogasanas on selected physical and psychological parameters of school boys. *Yoga Mimamsa, 43* (4), 285–296.
[2] Jivan, W. M., &Asanare, A. M. (2019). Effect of yoga asana training program on selected motor ability, physiological, and psychological variables of football players of Nasik district. *International Journal of Physiology, Nutrition and Physical Education, 4* (1), 163–165.
[3] Khalsa, S. B. S. (2004). Yoga as a therapeutic intervention: A bibliometric analysis of published research studies. *Indian Journal of Physiology and Pharmacology, 48* (3), 269–285.
[4] Kirkwood, H., Rampes, V., Tuffrey, J., Richardson, J., & Pilkington, K. (2005). Yoga for anxiety: A systematic review of the research evidence. *British Journal of Sports Medicine, 39* (12), 884–891.
[5] Madanmohan. (2008). Effect of six weeks yoga training on weight loss following step test, respiratory pressures, handgrip strength, and handgrip endurance in young healthy subjects. *Indian Journal of Physiology and Pharmacology, 52* (2), 164–170.
[6] Ramesh, C. (2016). Effect of yogic practices, aerobic exercise, and interval training on selected health - related physical fitness components among school boys. *International Journal of Recent Research and Applied Studies, 3* (1), 102–106.
[7] Telles, S. (2010). Short - term health impact of a yoga and diet change program on obesity. *Medical Science Monitor, 16* (1), CR35–40.
[8] Yang, K. (2007). A review of yoga programs for four leading risk factors of chronic diseases. *Evidence - Based Complementary and Alternative Medicine, 4* (4), 487–491.