



# Twelve Weeks Practice of Isolated and Combined Effect of asanas and pranayama on Selected Variables vital capacity and stress

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## Abstract

These studies examined the effects of asanas and pranayama programme on selected physiological and psychological variables of vital capacity and stress management among middle aged male. Thirty male were selected from Centre for Yoga Education, Alagappa University, Karaikudi. They were randomly assigned into three experimental groups of ten each, such as group I underwent asanas programme, group II underwent pranayama programme and group III underwent combined programme (asanas and pranayama ) for six days per week for the period of twelve weeks training. The physiological variable namely vital capacity was measured by conducting the spirometer measuring test and the psychological variable stress was assessed by administering the Latha Sathis stress questionnaire test. The data were collected from each subject before and after the training period and statistically analyzed by paired sample 't' test, one way analysis of covariance (ANCOVA), the Scheffe's test was applied as post hoc test to determine which of the paired mean differences was significant. It was concluded that combined training group is found to be better than asanas group and pranayama training group for improving the vital capacity and stress reduced among middle aged male.

**Keywords:** Vital capacity, Stress, Spiro meter, Latha Sathis stress questionnaire, asanas, pranayama

## Introductions

Yoga is an ancient discipline designed to bring balance and health to the physical, mental, emotional, and spiritual dimensions of the individual. It is long popular practice in India that has become increasingly more common in Western society. "Yoga" means union of our individual consciousness with the Universal Divine Consciousness in a super-conscious state known as Samadhi (Pallav Sengupta, 2012). Asana" is the Sanskrit word for a physical posture. Expressed in general terms Asana denotes a specific position which can be held in a relaxed and comfortable manner for a long period of time. In the 2nd Century before Christ, Patanjali wrote down the principles of Yoga practice in the "Yoga Sutras" (aphorisms). He named only the pranayama posture "Asana" and the physical postures he termed "Yoga Vyayam". However, in common usage the dynamic Yoga exercises also became known as Yogaasanas (Mahananda Sharanappa, H, 2021). Yoga is a philosophical system of exercise and pranayama originating in what is now India 2000-4000 years ago. There are many forms of yoga which differ in specific practices, while maintaining the purpose of directing the mind and body. Common elements of many forms include postures (yogaasanas), which are held for a certain period of time, controlled breathing exercises (pranayama) and pranayama (Siddappa Naragatti, 2020). Yoga is becoming popular in the world. For the restless mind it gives solace. For the sick, it is a boon. For the common man it is the fashion of the day to keep him fit and beautiful. Some use it for developing memory, intelligence and creativity. With its multifold advantages it is becoming a part of education (Siddappa Naragatti, 2020). Although yoga originated in India thousands of years ago, it was introduced to western world in 19 century. In the past few decades, it has been the subject of research as a therapeutic measure in mental stress, obesity, diabetes, hypertension, dyslipidemia, coronary heart disease, and chronic obstructive pulmonary disease (Davendra Kumar Taneja, 2014). Yoga provides one of the best means of self-improvement and attaining one's full potential. It is generally held that the advanced stages of yoga, super conscious states are attained which result in a feeling of bliss, deep peace and the emergence of psychic powers. Yoga was developed and perfected over the centuries by philosophers and mystics in India. It is basically a method by which we increase the body's supply of energy and remove any interference to the transmission of energy throughout the body (Sarojini Devi, M. K.S.S. 2013). Yoga is considered to be one of the most important, effective, and valuable tools available for man to overcome various physical and psychological problems (Archika Sudhanshu, 2023). Yoga is an ancient discipline designed to bring balance and health to the physical, mental, emotional, and spiritual dimensions of the individual (Saroj Maroik, 2017). Yoga breathing or pranayama is the science of breath control Pranayama means control of "prana" in Indian Philosophy, refers to all forms of energy in universe. The process of breathing is the essence of being, the main goal of these breathing techniques is to relax and to improve the respiratory efficiency (Ambareesha Kondam, 2015). Yoga is an ancient system of self development through which union occurring between the mind, body and spirit. Yoga is a science and is immensely useful for promoting total health which may assist in achieving recommended levels of physical activity for some individuals (Ambareesha K, 2017). Yoga as an alternate medicine has gained tremendous importance during the past few years. It is a holistic way of living that has innumerable physical and mental benefits.

However, it is still not clear as to how yogic practices bring about these benefits (Vijay Kumar B. A, 2014).

Pranayama is an important anga (limb) of the Yoga system of Patanjali, though only three aphorisms are dedicated to this in the Yoga Sutras. They may be roughly translated as follows: "Pranayama is the control of exhalation and inhalation"; "It is modified through external internal and motionless ways, controlled in place, time, number, being either long or short": and "The fourth is the complete cessation (of breathing) with reflection on external or internal objects" (Yoga Sutras: II 19 51). Dharana (Srinivasan T M, 1991). In addition, yoga-related terms like pranayama and samadhi occur repeatedly in Bhagavad-Gita. Ancient Indian rishis understood that performing Raja-yoga (procedure of concentration to liberate soul or atma from the bondage of maya into paramatma) always need a healthy body - "Sharirmadyam, khalu dharma sadhanam." So they developed "Hatha yoga," which includes asana, mudra, pranayama, etc (Pallav Sengupta, 2012).

To partaking yoga consistently it can make you into sound body and sound personality. Yoga rehearses are the costless permanent treatment for maladies. It is a pragmatic all encompassing way of thinking organized to achieve significant state too is a necessary issue, which contemplates human all in all. One can begin Yoga rehearsing at some random snapshot of time and you can begin with contemplation practice or legitimately with pranayama without doing the asanas, the study of Yoga Nidra depends on the receptivity of cognizance. At the point when it is working with the keenness and with all the basic detects, by making an individual feel that the person in question knows and wakeful, yet the brain is in reality not so much responsive but rather more basic.. The sports training can produce some physical fitness, Motor fitness, Physiological and psychological benefits to the person and attain performance related tasks. It is also promoting the individual overall health and wealth to the sports person (Dhanaraj, S. 2014).

### Aim of the Study

The aim of the study is to find out the effectiveness of asanas , pranayama and combined yogic training programme on selected physiological and psychological variables such as vital capacity and stress among middle aged male.

### Methodology

To achieve this purpose, thirty middle aged male subjects were selected from Centre for Yoga Education, Alagappa University, Karaikudi, Tamil Nadu, India. They were randomly assigned into three experimental groups of ten each such as asanas group (Group-I), pranayama group (Group-II) and combined training group (asanas and pranayama , Group-III). The experimental group I underwent asanas training in the morning session and group II underwent pranayama in evening session; Group III underwent asanas and pranayama yogic training in the morning session for six days per week (Monday to Saturday) for the duration of twelve weeks. The physiological variable namely vital capacity was selected as a criterion variable and it was measured by conducting spirometer test and psychological variable stress was assessed by handling the Latha Sathis stress questionnaire test. The data were collected from each subject before and after the training period and statistically analyzed by paired sample 't' test which was used to find out the significant improvement on selected criterion variables and Analysis of Covariance (ANCOVA) was used to find out the significant difference, if any among the adjusted post test means of experimental groups on each variables separately. Whenever, the obtained F-ratio for adjusted post test means was found to be significant, the Scheffe's test was applied as post hoc test to determine which of the paired mean differences was significant. All the cases 0.05 level of confidence was fixed as a level of confidence to test the hypotheses. (Dhanaraj, S., et.al) (2013).

### Results and Interpretations

The effects of independent variables on selected physiological and psychological variables were determined through the collected data by using appropriate statistical techniques and the results are presented below. Table 1 presents pre and post test means and the results of the paired sample t-test of asanas , pranayama and combined training groups on selected vital capacity and stress variables. Dhanaraj, S. (2013).

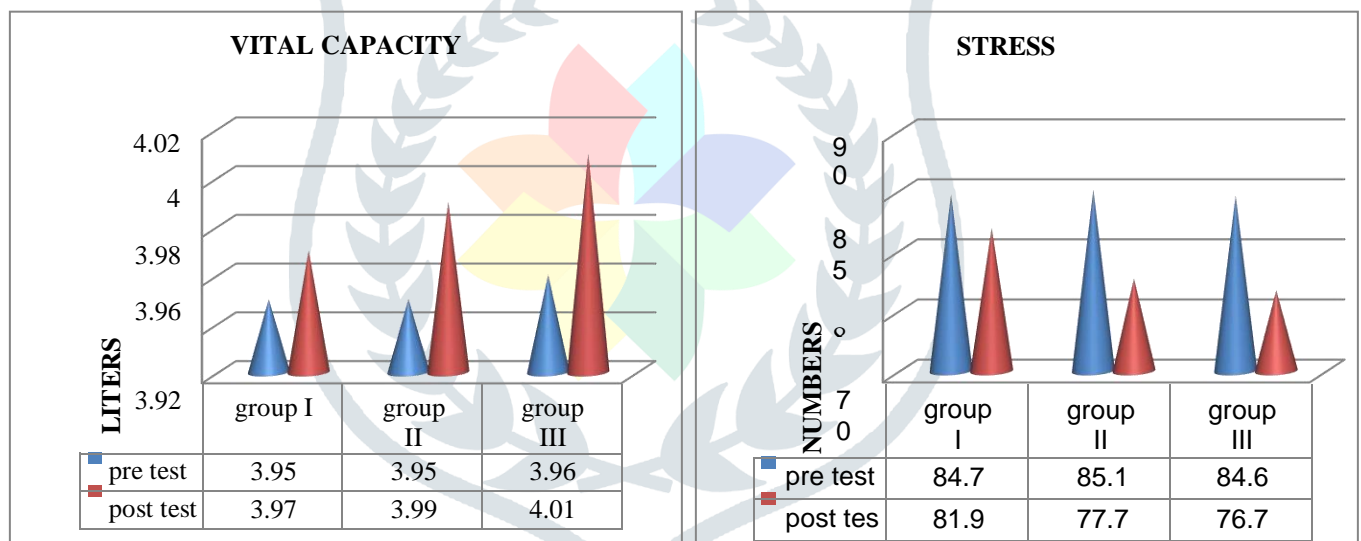
Table- 1

The Summary of Mean and Paired Sample ‘T’ Test for the Pre and Post Test on Vital Capacity and Stress of Three Experimental Groups.

Name of the Variables	Name of the test	Asanas group	Pranayama group	Combined training group
Vital capacity	Pre test mean ± SD	3.95 ± 0.02	3.95 ± 0.01	3.96 ± 0.00
	Post test mean ± SD	3.97 ± 0.02	3.99 ± 0.02	4.01 ± 0.00
	‘t’ test	<b>7.79*</b>	<b>12.40*</b>	<b>18.41*</b>
Stress	Pre test mean ± SD	84.70 ± 0.67	85.10 ± 0.73	84.60 ± 0.69
	Post test mean ± SD	81.90 ± 0.87	77.70 ± 1.41	76.70 ± 1.33
	‘t’ test	<b>11.22*</b>	<b>12.33*</b>	<b>15.01*</b>

\*Significant at .05 level. (The table value required for 0.05 level of significance with df 9 is 2.26) (Scores in number).

The paired sample ‘t’ was computed on selected dependent variables and the results are presented in the above Table 1. The ‘t’ value of asanas , pranayama and combined training groups for vital capacity and stress are 7.79, 12.40 and 18.41; and 11.22, 12.33 and 15.01 respectively. All the ‘t’ values are significantly higher than the required table value of 2.26 with df 9 at 0.05 level of confidence. The result of the study shows that asanas, pranayama and combined training groups has significantly improved the performance of vital capacity and stress. The pre and post test means of vital capacity and stress among three experimental groups are present in the



The analysis of covariance on vital capacity and stress of asanas , pranayama and combined training groups have been analyzed and are presented in Table 2.

Table – 2

Analysis of Covariance Computed for Asanas , Pranayama and Combined Training on Vital Capacity and Stress

Variables	Source	SS	Df	MS	F	P	ω <sup>2</sup>
Vital capacity	Groups	.003	2	.001	<b>14.48*</b>	.000	0.52
	Error	.003	26	.005			
Stress	Groups	150.81	2	75.40	<b>49.28*</b>	.000	0.79
	Error	39.78	26	1.53			

\*Significant at .05 level. (The table values required for significance at .05 level of confidence with df 2 and 26 is 3.37) (Scores in numbers).

The table 2 shows that the obtained ‘F’ ratio value of vital capacity and stress are 14.48 and 49.28, which is higher than the table value of 3.37 with df 2 and 26 required for significance at 0.05 level. Since the value of F- ratio are higher than the table value, it indicates that there are significant difference between the asanas , pranayama and combined training groups on selected dependent variables. However, only 52% and 79% ( $\omega^2 = 0.52$  and  $0.79$ ) of the total variance differences between the three experimental groups on selected vital capacity and stress were accounted by three experimental groups. In order to find out which of the three paired means significantly differ, the Scheffe’s post hoc test was applied and presented in the table 3.

Table – 3

Scheffe’s Post Hoc Paired Means Comparisons and Effect Size on Selected Variables

Variables	Groups	Adjusted mean	Adjusted post test mean differences (Effect size are indicated in parentheses)		
			Group I	Group II	Group III
Vital capacity	Asanas	3.98	-	-	-
	Pranayama	3.99	.01	-	-
	Combined training	4.09	.11 (1.56)	.10 (1.41)	-
Stress	Asanas	81.86	-	-	-
	Pranayama	77.79	4.07 (3.29)	-	-
	Combined training	76.63	5.23 (4.23)	1.16	

(\*Significant at 0.05 level of confidence; Scheffe’s C.I value of vital capacity and stress is 0.08 and 1.43)

Post-hoc test was conducted to evaluate the pair-wise difference among the adjusted post test means for experimental groups in vital capacity and stress. The Scheffe’s test was used to control type I error across the three pair-wise comparisons with confidence interval value of vital capacity and stress is 0.08 and 1.43.

The results showed that the adjusted post test means of combined training group (M = 4.09) had significantly better than asanas group (M = 3.98) and pranayama group (M = 3.99) in vital capacity performance and also combined group (M = 76.63) had shown significantly better than asanas group (M = 81.86) but there was not significant differences between the pranayama training group (M=) 77.79 and combined training group (M = 76.63) in stress management and also when compare to asanas group and pranayama group is better performance on stress management. The effects sizes for those significant differences between asanas groups and combined training groups and pranayama group and combined groups are 1.56 and 1.41 respectively but there was no significant difference between asanas and pranayama group due to the adjusted mean difference is .01 which is less than the confident interval value of 0.08 at .05 level of confidence. The effects sizes of stress between asanas and pranayama groups and asanas and combined training groups are 3.29 and 4.23 respectively but there was no significant difference between the pranayama and combined training group due to the adjusted mean difference 1.16 which is less than the confident interval value of 1.43.

Adjusted means of asanas , pranayama and combined training groups on vital capacity and stress are presented in Figure 3 and 4.

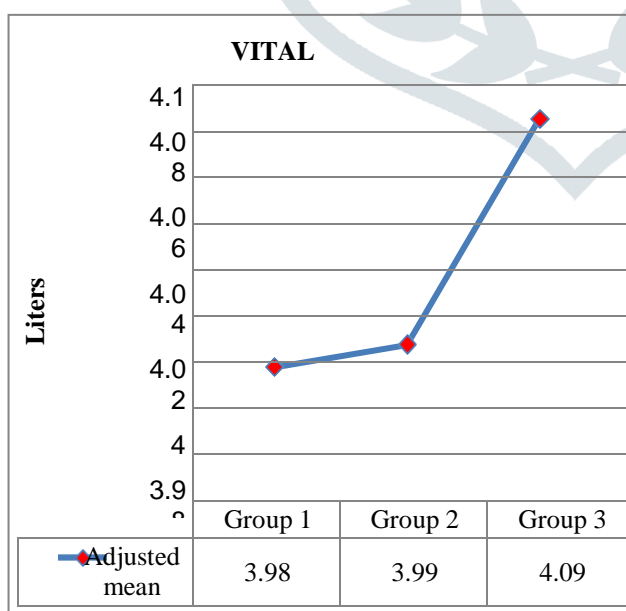


Fig – 3

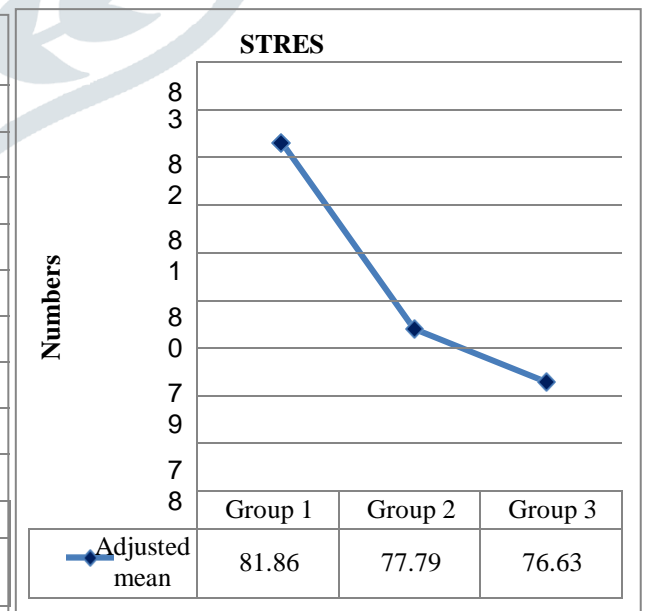


Fig -4

### Discussion on Findings

The results of the study indicates that both the experimental groups namely asanas , pranayama and combined training groups had significant improved the selected dependent variables namely lungs capacity and stress. It is also found that the improvement caused by combined training was greater when compared to the effects caused by asanas and pranayama programme.

**Chochalingam, D & Kaleeswaran, P. (2018)** found that yogic practices with sattvic diet group had shown significant improvement on vital capacity than the yogic practices without sattvic diet group and control group.

**Dhanaraj, S. (2014)** found that combined training (physical and yogic practices) group is better than physical exercise group and yogic practices group for improving the resting pulse rate and frustration among university male students.

**McLean (1979)** concluded stress is neither a stimulus nor a response, nor an intervening variable, but rather, a collective term which deals with any demands on the system (physiological, psychological or social) and the response of that system to taxing demands.

**Ramachandran P., Dhanraj S., Palanisamy A. (2023).** The collected data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significance difference, if any between the groups. The 0.05 level of confidence was fixed to test the level of significance difference, if any between groups

The results of the present study demonstrated that twelve weeks training programme of asanas, pranayama and combined training groups has showed significant improvement in physiological and psychological variables of vital capacity and stress. It is understood that, there were significant differences between the combined training and pranayama group, and asanas and combined training groups on vital capacity but there was no significant difference

Between asanas and pranayama . It is also found that there were significant differences between asanas and pranayama groups and asanas and combined training groups but there was no significant difference exists among combined training and pranayama group on stress.



## Conclusions

From the results of the investigation, this study has been done to determine the effectiveness of asanas, pranayama and combined programme for middle age male. The results concluded that the experiments programme has an influenced on the development of vital capacity and reducing the level of stress .Finally it was concluded that the combined training programme had better performance than the asanas and pranayama programme.

## Recommendations

The following recommendation for future research is based on the results of this investigation and the related literature.

The results of this research study clearly indicate that the combined training programme enhances the physiological and psychological variables of vital capacity and stress. Hence, it is recommended that physical education experts should give importance to the asanas and pranayama programme for the school students, college students and working people which help to develop their flexibility, muscular strength, lungs volume and blood flow as well as mental health. Hence they can be very active and alive in the class room as well as working environment and being healthy in their life style.

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