

Influence of Asanas and Combination of Asanas and Pranayama on Respiratory Rate among College Men

¹A. Sellaperumal, ²Dr. V.S.T. Sai Kumar

¹Director of Physical Education Ramakrishna Mission Vivekananda College, Chennai-04, Tamilnadu, India

²Principal, Maruthi College of Physical Education, Coimbatore-641020 Tamilnadu, India

Abstract: The purpose of the study was to find out the influence of asanas and combination of asanas and pranayama on selected physiological variable in Respiratory rate among college men. To achieve the purpose of the study, sixty students were selected from RKM Vivekananda college students, Chennai as subjects at random and their age was ranged from 17 to 22 years. The subjects were divided into three equal groups. The subjects (N=60) were randomly assigned to three equal groups of twenty men students each. The groups were assigned as experimental group-1 experimental group-2 and control group in an equivalent manner. Training programs for experimental group were designed separately. The scientifically designed programmes were given to the subjects of experimental group. The subjects of the control group were not participated in training. The treatment groups underwent the programme four days a week for a period of sixteen weeks with sixty minutes per session. In order to find out whether the obtained difference between the means of the selected variables in the pre test, mid test and post test are statistically significant, Repeated measures ANOVA was applied. When the F ratio was found to be significant Newman-Keuls post hoc test was applied to test which of the possible comparison among the means are significant. Analysis of Covariance was applied to determine the significant difference among the three groups namely Asanas training group, Asanas with Pranayama training group and the control grouping the development of selected variables after 16 weeks of training. If the mean difference was significant, the pairs of adjusted final group means was tested for significance by applying Scheffe's post-hoc test. The results of the study reveal that the asanas training, asanas with pranayama training and control group had differed significantly in respiratory rate. The asana training group and asanas with pranayama training group had significantly decreased the respiratory rate than the control group, and the asanas with pranayama training group had significant decrease in respiratory rate than the asanas training group. In the context of the present trend, the rational use of asanas training and asanas training with pranayama training is essential to decrease the respiratory rate.

Keywords: Asanas, pranayama training, scientifically designed program, respiratory rate.

INTRODUCTION

Yoga provides one of the best means of self-improvement and attaining one's full potential. In 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. Yoga has specialized in this subject for thousands of years, and streamlined the methods to attain this aim.

METHODOLOGY

To achieve the purpose of the study, sixty students were selected from RKM Vivekananda College, Chennai as subjects at random and their age was ranged from 17 to 22 years. The subjects were divided into three equal groups. The subjects (N=60) were randomly assigned to three equal groups of twenty men students each. The groups were assigned as

experimental group-1 experimental group-2 and control group in an equivalent manner. Training programs for experimental group were designed separately. The scientifically designed programmes were given to the subjects of experimental group. The subjects of the control group were not participated in training. The treatment groups underwent the programme for four days a week for a period of sixteen weeks with sixty minutes per session.

The method of measures in Respiratory Rate.

Test Items: Observation in Respiratory Rate,

Purpose: The purpose of this test was to measure the respiratory rate of the subjects.

Equipment: Stop watch,

Procedure: The subjects were asked to lie down position in the bed. Than the investigator counting the number of breaths for one minute by counting how many times the chest rises.

Scoring: Than the investigator counts the breath for fifteen seconds. And the investigator multiple the scores into four for one minute account. That was taken as score.

Model Weekly Training Schedule for Asanas training (one to eight weeks)

Duration: 60 min (6.30.a.m to 7.30.a.m)

Table-I

Day	Treatment group	Means of training	Rep	Time (min)	Density In seconds
Monday	Group-I (Asanas Training)	Prayer & meditation		4 min	
		Halasana	3 Re	6 min	30 sec
		Dhanurasana	3 Re	6 min	30 sec
		Bhujangasana	3 Re	6 min	30 sec
		Matsyasana	3 Re	6 min	30 sec
		Padahastana	3 Re	6 min	30 sec
		Salabhasana	3 Re	6 min	30 sec
		Trikonasana	3 Re	6 min	30 sec
		Ardha Matsyendrasana	3 Re	6 min	30 sec
		Shavasana & Prayer		4 min	
Wednesday	Group-I (Asanas Training)	Prayer & meditation		4 min	
		Mayurasana	3 Re	6 min	30 sec
		Janu Sirsasana	3 Re	6 min	30 sec
		Dhanurasana	3 Re	6 min	30 sec
		Sarvangasana	3 Re	6 min	30 sec
		Ardha Matsyendrasana	3 Re	6 min	30 sec
		Paschimottanasana	3 Re	6 min	30 sec
		Padahastana	3 Re	6 min	30 sec
		Vajrasana	3 Re	6 min	30 sec
		Shavasana & Prayer		4 min	
Friday	Group-I (Asanas Training)	Prayer & meditation		4 min	
		Halasana	3 Re	6 min	30 sec
		Dhanurasana	3 Re	6 min	30 sec
		Bhujangasana	3 Re	6 min	30 sec
		Matsyasana	3 Re	6 min	30 sec
		Padahastana	3 Re	6 min	30 sec
		Trikonasana	3 Re	6 min	30 sec
		Salabhasana	3 Re	6 min	30 sec
		Vajrasana	3 Re	6 min	30 sec
		Shavasana & Prayer		4 min	
Sunday	Group-I (Asanas Training)	Prayer & meditation		4 min	
		Vajrasana	3 Re	6 min	30 sec
		Janu Sirsasana	3 Re	6 min	30 sec
		Mayurasana	3 Re	6 min	30 sec
		Sarvangasana	3 Re	6 min	30 sec
		Paschimottanasana	3 Re	6 min	30 sec
		Halasana	3 Re	6 min	30 sec
		Trikonasana	3 Re	6 min	30 sec
		Dhanurasana	3 Re	6 min	30 sec
		Shavasana & Prayer		5 min	

Model Weekly Training Schedule for Asanas training (Eight to sixteen weeks)

Duration: 60 min (6.30.a.m to 7.30.a.m)

Table-II

Day	Treatment group	Means of training	Rep	Time (min)	Density In seconds
Monday	Group-I (Asanas Training)	Prayer & meditation		4 min	
		Halasana	4 Re	6 min	30 sec
		Dhanurasana	4 Re	6 min	30 sec
		Bhujangasana	4 Re	6 min	30 sec
		Matsyasana	4 Re	6 min	30 sec
		Padahastasana	4 Re	6 min	30 sec
		Salabhasana	4 Re	6 min	30 sec
		Trikonasana	4 Re	6 min	30 sec
		Ardha Matsyendrasana Shavasana & Prayer	4 Re	6 min 4 min	30 sec
Wednesday	Group-I (Asanas Training)	Prayer & meditation		4 min	
		Mayurasana	4 Re	6 min	30 sec
		Janu Sirsasana	4 Re	6 min	30 sec
		Dhanurasana	4 Re	6 min	30 sec
		Sarvangasana	4 Re	6 min	30 sec
		Ardha Matsyendrasana	4 Re	6 min	30 sec
		Paschimottanasana	4 Re	6 min	30 sec
		Padahastasana	4 Re	6 min	30 sec
		Vajrasana Shavasana & Prayer	4 Re	6 min 4 min	30 sec
Friday	Group-I (Asanas Training)	Prayer & meditation		4 min	
		Halasana	4 Re	6 min	30 sec
		Dhanurasana	4 Re	6 min	30 sec
		Bhujangasana	4 Re	6 min	30 sec
		Matsyasana	4 Re	6 min	30 sec
		Padahastasana	4 Re	6 min	30 sec
		Trikonasana	4 Re	6 min	30 sec
		Salabhasana		4 min	
		Vajrasana Shavasana & Prayer			
Sunday	Group-I (Asanas Training)	Prayer & meditation		4 min	
		Vajrasana	4 Re	6 min	30 sec
		Janu Sirsasana	4 Re	6 min	30 sec
		Mayurasana	4 Re	6 min	30 sec
		Sarvangasana	4 Re	6 min	30 sec
		Paschimottanasana	4 Re	6 min	30 sec
		Halasana	4 Re	6 min	30 sec
		Trikonasana		4 min	
		Dhanurasana Shavasana & Prayer			

Model Weekly Training Schedule for Asanas with pranayama training (one to Eight weeks)

Duration: 60 min (6.30.a.m to 7.30.a.m)

Table-III

Day	Treatment group	Means of training	Rep	Time (min)	Density In seconds
Monday	Group-I (Asanas with pranayama training)	Prayer & meditation		4 min	
		Dhanurasana	3 Re	6 min	30 sec
		Bhujangasana	3 Re	6 min	30 sec
		Salabhasana	3 Re	6 min	30 sec
		Padahastasana	3 Re	6 min	30 sec
		Sitkari	3 Re	6 min	30 sec
		Anuloma Viloma	3 Re	6 min	30 sec
		Nadishodhana	3 Re	6 min	30 sec
		Sitali	3 Re	6 min	30 sec
		Shavasana & Prayer		4 min	
Wednesday	Group-I (Asanas with pranayama training)	Prayer & meditation		4 min	
		Mayurasana	3 Re	6 min	30 sec
		Sarvangasana	3 Re	6 min	30 sec
		Ardha Matsyendrasana	3 Re	6 min	30 sec
		Matsyasana	3 Re	6 min	30 sec
		Suryabhedhana	3 Re	6 min	30 sec
		Chandrabhedhana	3 Re	6 min	30 sec
		Ujjayi	3 Re	6 min	30 sec
		Bhramarri	3 Re	6 min	30 sec
		Shavasana & Prayer		4 min	
Friday	Group-I (Asanas with pranayama training)	Prayer & meditation		4 min	
		Trikonasana	3 Re	6 min	30 sec
		Matsyasana	3 Re	6 min	30 sec
		Padahastasana	3 Re	6 min	30 sec
		Dhanurasana	3 Re	6 min	30 sec
		Bhramari	3 Re	6 min	30 sec
		Ujjayi	3 Re	6 min	30 sec
		Sitkari	3 Re	6 min	30 sec
		Anuloma Viloma		4 min	
		Shavasana & Prayer			
Sunday	Group-I (Asanas with pranayama training)	Prayer & meditation		4 min	
		Paschimottanasana	3 Re	6 min	30 sec
		Janu Sirsasana	3 Re	6 min	30 sec
		Mayurasana	3 Re	6 min	30 sec
		Bhujangasana	3 Re	6 min	30 sec
		Anuloma Viloma	3 Re	6 min	30 sec
		Nadishodhana	3 Re	6 min	30 sec
		Suryabhedhana		4 min	
		Chandrabhedhana			
		Shavasana & Prayer			

Model Weekly Training Schedule for Asanas with pranayama training (Eight to sixteen weeks)

Duration: 60 min (6.30.a.m to 7.30.a.m)

Table-IV

Day	Treatment group	Means of training	Rep	Time (min)	Density In seconds
Monday	Group-I (Asanas with pranayama training)	Prayer & meditation		4 min	
		Dhanurasana	4 Re	6 min	30 sec
		Bhujangasana	4 Re	6 min	30 sec
		Salabhasana	4 Re	6 min	30 sec
		Padahastasana	4 Re	6 min	30 sec
		Sitkari	4 Re	6 min	30 sec
		Anuloma Viloma	4 Re	6 min	30 sec
		Nadishodhana	4 Re	6 min	30 sec
		Sitali	4 Re	6 min	30 sec
	Shavasana & Prayer		4 min		
Wednesday	Group-I (Asanas with pranayama training)	Prayer & meditation		4 min	
		Mayurasana	4 Re	6 min	30 sec
		Sarvangasana	4 Re	6 min	30 sec
		Ardha Matsyendrasana	4 Re	6 min	30 sec
		Matsyasana	4 Re	6 min	30 sec
		Suryabhedhana	4 Re	6 min	30 sec
		Chandrabhedhana	4 Re	6 min	30 sec
		Ujjayi	4 Re	6 min	30 sec
		Bhramari	4 Re	6 min	30 sec
	Shavasana & Prayer		4 min		
Friday	Group-I (Asanas with pranayama training)	Prayer & meditation		4 min	
		Trikonasana	4 Re	6 min	30 sec
		Matsyasana	4 Re	6 min	30 sec
		Padahastasana	4 Re	6 min	30 sec
		Dhanurasana	4 Re	6 min	30 sec
		Bhramari	4 Re	6 min	30 sec
		Ujjayi	4 Re	6 min	30 sec
		Sitkari		4 min	
			Anuloma Viloma		
	Shavasana & Prayer				
Sunday	Group-I (Asanas with pranayama training)	Prayer & meditation		4 min	
		Paschimottanasana	4 Re	6 min	30 sec
		Janu Sirsasana	4 Re	6 min	30 sec
		Mayurasana	4 Re	6 min	30 sec
		Bhujangasana	4 Re	6 min	30 sec
		Anuloma Viloma	4 Re	6 min	30 sec
		Nadishodhana	4 Re	6 min	30 sec
		Suryabhedhana		4 min	
			Chandrabhedhana		
	Shavasana & Prayer				

Asanas training (Experimental group-1)

Dhanurasana (The Bow)



Figure-I

Bhujangasana (The cobra pose)



Figure-II

Trikonasana (The Triangle pose)



Figure-III

Paschimottasana (The Forward bend pose)



Figure-IV

Asanas with pranayama training (Experimental group-2)

Padahastasana



Figure-V

Mayurasana (The Peacock pose)



Figure-VI

Suryabhedhana Pranayama



Figure-VII

Chandrabhedhana Pranayama



Figure-VIII

Analysis and interpretation of the data

In order to find out whether the obtained difference between the means of the selected variables in the pre test, mid test and post test are statistically significant, Repeated measures ANOVA was applied. When the F ratio was found to be significant Newman-Keuls post hoc test was applied to test which of the possible comparison among the means are significant. Analysis of Covariance was applied to determine the significant difference among the three groups namely Asanas training group, Asanas with Pranayama training group and the control grouping the development of selected variables after 16 weeks of training. If the mean difference was significant, the pairs of adjusted final group means was tested for significance by applying Scheffe's post-hoc test.

Table- V

Summary of the Repeated Measures ANOVA of Asanas Training Group, Asanas with Pranayama Training Group and Control group in Respiratory Rate

S.no	Groups	Variables	Source of Variation	Sum of Squares	DF	Mean Squares	F ratio
1	Asanas	Respiratory Rate	Treatment	28.900	2	14.450	33.414
			Residual	16.433	38	.432	
2	Asanas With Pranayma	Respiratory Rate	Treatment	42.033	2	21.017	46.164*
			Residual	17.300	38	.455	
3	Control	Respiratory Rate	Treatment	.633	2	.317	1.199
			Residual	10.033	38	.264	

Table value for df 2 and 38 is 3.245

An examination of Table I indicates that the obtained F ratios of Asanas training group were greater than the required table value 3,245 at 0.05 level of confidence in Respiratory rate. It is inferred that the treatment means of these variables differ significantly. It is clear from the results that the mean gains in these variables among the pre test, mid test and post test were statistically significant. The obtained F ratio of Asanas with Pranayama training group was lesser than the required F ratio of 3.245 at 0.05 levels in Respiratory rate. It is inferred that the mean gains is statistically significant in Respiratory rate. The obtained F ratio of control group was lesser than the required F ratio of 3.245 at 0.05 levels in Respiratory rate. It is inferred that the mean gains is statistically significant in Respiratory rate.

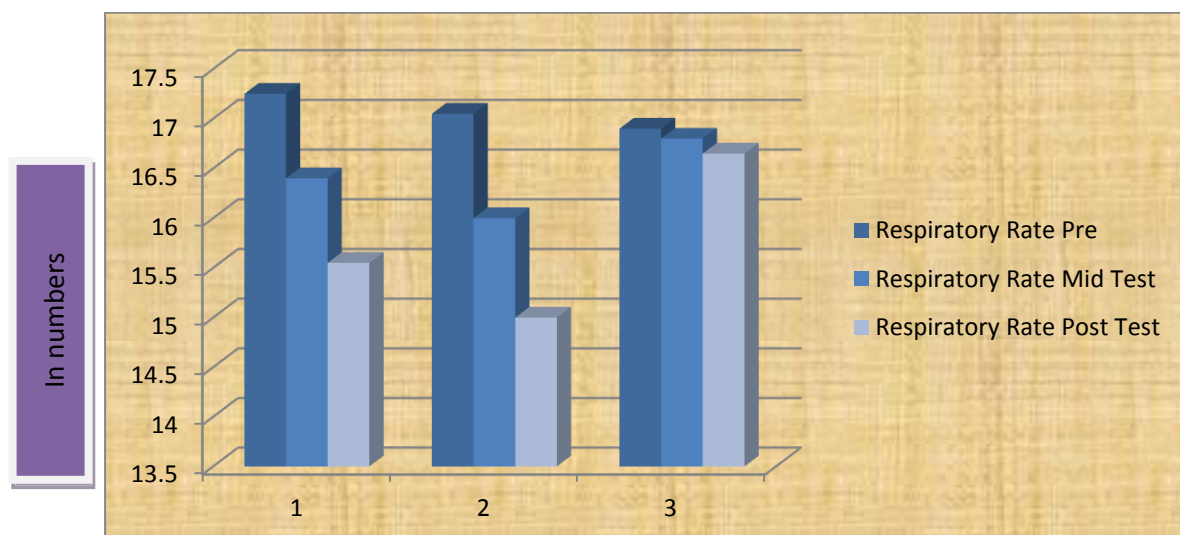


Figure - IX

Bar Diagram showing mean values of pretest, mid test and post test of Respiratory Rate of Asanas Training Group, Asanas and Pranayama Training Group and Control group

- 1 – Asana Training Group
- 2 - Asanas with Pranayama Training Group
- 3 - Control Group

Table - VI

Analysis of Covariance on Pre, Post and Adjusted Post test means on Respiratory Rate among Asanas Training Group, Asanas with Pranayama Training Group and Control Group

Test	Asanas Training Group	Asanas With Pranayama Training Group	Control Group	Source Of variance	Sum of Squares	df	Mean Squares	F-ratio
Pre-test Mean	17.25	17.05	16.90	Between Groups	1.233	2	.617	.269
				Within groups	130.500	57	2.289	
Post-test Mean	15.55	15.00	16.65	Between Groups	28.233	2	14.117	8.426*
				Within groups	95.500	57	1.675	
Adjusted Post-test Mean	15.426	15.011	16.763	Between Groups	33.387	2	16.693	26.396*
				Within groups	35.415	56	.632	

* Table value for all ANACOVA tables 3.16 at 5% level of significance

Table II reveals the computation of the obtained ‘F’ ratio for the adjusted post test means of **Respiratory Rate** of Experimental Group I , Experimental Group II and control group is 26.396. Since the ‘F’ value was higher than the required table value of 3.16 for the degrees of freedom 2 and 57, it was found to be statistically significant at 0.05 level of confidence.

Table - VII

SCHEFFE’S TEST FOR THE DIFFERENCES BETWEEN THE ADJUSTED POST TEST PAIRED MEANS OF RESPIRATORY RATE

Adjusted Post Test Mean			Mean differences	Confidence Interval value
Asanas training group	Asanas with pranayama training group	Control group		
15.426	15.011		0.415	0.632
15.426		16.763	1.337*	
	15.011	16.763	1.752*	

*Significant.

Table III shows that the adjusted post test mean differences on selected variables between the asanas training group and asanas with pranayama training group; asanas training group and control group; asanas with pranayama training group and control group.

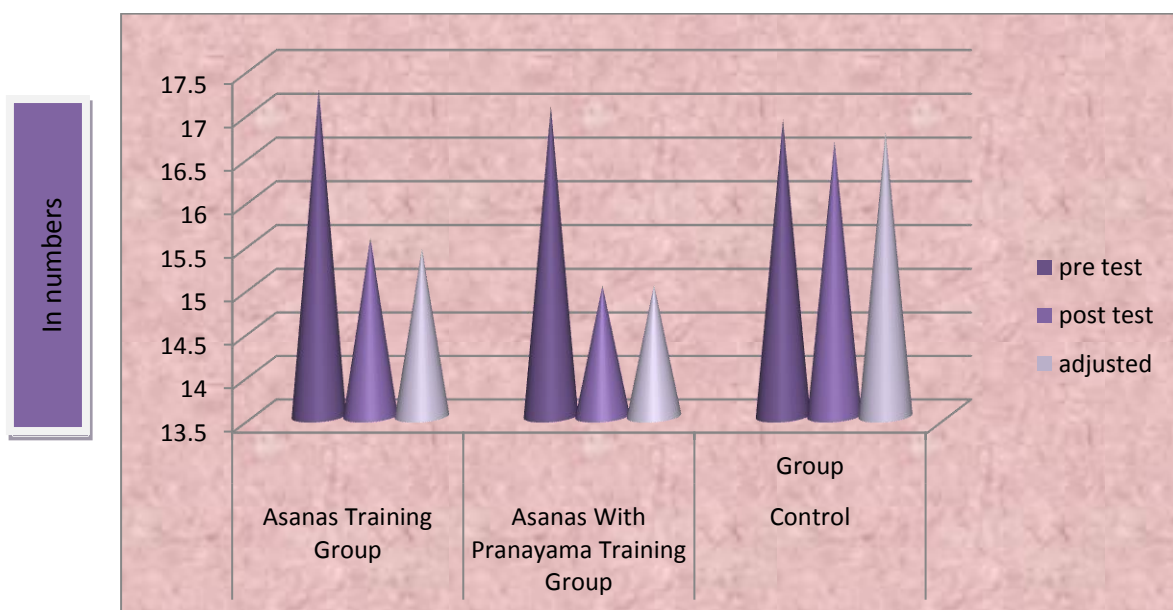
It is inferred that there is significant mean difference between the adjusted post mean of asanas training group and control group in respiratory rate.

It is inferred that there is significant mean difference between the adjusted post test means of asanas with pranayama training group and control group in respiratory rate.

From these results it was inferred that Asanas training and Asanas with Pranayama training produced better improvement on **Respiratory Rate** than the control group

Figure - X

Bar Diagram showing mean values of pretest, post test and adjusted post test of Respiratory Rate of Asanas Training Group, Asanas and Pranayama Training Group and Control group



CONCLUSION

The results of the analysis reveal that the asanas training, asanas with pranayama training and control group had differed significantly in respiratory rate. The asana training group and asanas with pranayama training group had significantly decreased the respiratory rate than the control group, and the asanas with pranayama training group had significant decrease in respiratory rate than the asanas training group. In the context of the present trend, the rational use of asanas training and asanas training with pranayama training is essential to decrease the respiratory rate.

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