



## Research Article

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# Effect of Pracchardana and Vidharna on Negative Breath Holding Capacity

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## Abstract

The purpose of the study was to study the comparative trend of pracchardana and vidharna effect on negative breath holding capacity of school going children before and after experimentation. A total of 30 subjects with age ranging from 13 to 17 years were selected. Practice of *pracchardana* and *vidharna* were considered as independent variables and negative breath holding capacity was considered as dependent variables. Time series research design was adapted for the purpose of the study in which observations were taken on eight occasions before and after activation of independent variables. Practice was given 5 days a week, 45 minutes for each day. Three sets of practice were performed in each session. Trend analysis (trial means: one standard condition) was performed. It was concluded that: (1) insignificant trend (1.418,  $p > 0.05$ ) was found before experimental treatment on negative breath holding capacity of school going children; (2) linear (2.919,  $p > 0.05$ ) and quadratic (0.113,  $p > .05$ ) trend before experimental treatment on negative breath holding capacity of school going children were found insignificant; (3) significant trend (248.066,  $p < 0.05$ ) of the effect of experimental treatment was found on negative breath holding capacity of school going children; (4) linear trend (455.431,  $p < 0.05$ ) during experimental treatment on negative breath holding capacity of school going children was found significant; (5) quadratic (0.856,  $p > 0.05$ ) trend during experimental treatment on negative breath holding capacity of school going children was found insignificant; (6) cubic (4.380,  $p < 0.05$ ) trend during experimental treatment on negative breath holding capacity of school going children was found significant; (7) significant trend (65.072,  $p < 0.05$ ) was found after experimental treatment on negative breath holding capacity of school going children; (8) linear (111.9,  $p < 0.05$ ) trend after experimental treatment on negative breath holding capacity of school going children was found significant; (9) quadratic (0.227,  $p > 0.05$ ) trend after experimental treatment on negative breath holding capacity of school going children was found significant.

**Keywords:** *Pracchardana*, *Vidharna* and negative breath holding capacity.

## Introduction

*Pracchardana* is expulsion; *vidharana* is retention. The expulsion and the retention of the breath are supposed to be one of the means of bringing about composure of mind. The mind may also be calmed by expulsion and retention of the breath.

## Objectives

- To study the trend of effect of pracchardana and vidharna on Negative breath holding capacity of school going children.
- To study the trend before experimental treatment on negative breath holding capacity of school going children.

- To study the trend in linear curve trend of effect of *pracchardana* and *vidharna* on negative breath holding capacity of school going children.
- To study the trend in quadratic curve trend of effect of *pracchardana* and *vidharna* on negative breath holding capacity of school going children.
- To study the trend in cubic curve trend of effect of *pracchardana* and *vidharna* on negative breath holding capacity of school going children.
- To study the trend after experimental treatment on negative breath holding capacity of school going children.

## Experimental

### Subjects

A total of 30 subjects with age ranging from 13 to 17 years were selected from The Aryan International School, Varanasi. All the subjects were selected randomly.

### Variables

Practice of *Pracchardana* and *Vidharna* were considered as independent variables and negative breath holding capacity was considered as dependent variables.

### Experimental Design

Time series research design<sup>1</sup> was adapted for the purpose of the study in which observations were taken on eight occasions before and after activation of independent variables.

O1 O2 O3 X O4 X O5 X O6 O7 O8

Where

O = Observation, X = Treatment

All the 30 subjects were participated in the *pracchardana* and *vidharna* for 6 weeks. Observations were taken eight times i.e. three observations before the treatment and five after treatment application. All the observations were recorded at two weeks interval time.

### Treatment

Practice was given 5 days a week, 45 minutes for each day. Three sets of practice were performed in each session. After each repetition of *pracchardana*, *vidharna* was performed for 10 seconds as shown below.

1 <sup>st</sup> set	Rest	2 <sup>nd</sup> set	Rest	3 <sup>rd</sup> set
13 min.	3 min.	13 min.	3 min.	13 min.

### Statistical Analysis

To study the trend of *pracchardana* and *vidharna* before experimental treatment, in the linear curve, quadratic curve, cubic curve and after the experiment, on negative breath holding capacity of school going children, trend analysis (trial means: one standard condition) was applied<sup>2,3</sup>. The level of significance was set at 0.05 level.

## Results and Discussion

In descriptive statistics, mean, standard deviation, skewness, standard error of skewness, kurtosis and standard error of kurtosis were calculated. In case of age, when numerical value of skewness was compared with twice the standard error of skewness and included the range from minus twice the standard error of skewness to plus twice the standard error of skewness. The value of skewness lies within this range. This shows that data or degree of skewness is not significantly skewed or skewness is considered not seriously violated. The same numerical process was used to check the normal distribution in relation to kurtosis. Again a range of normality by multiplying the standard error of kurtosis by 2 was constructed from minus value to plus that value. This distribution is also significantly normal in terms of kurtosis.

It is evident from Table -2 that insignificant trend was found before experimental treatment on negative breath holding capacity of school going children.

Linear and quadratic trend before experimental treatment on negative breath holding capacity of school going children were also found insignificant (Table 3).

On the other hand significant trend of the effect of experimental treatment was found on negative breath holding capacity of school going children (Table 4).

Linear and cubic trends during experimental treatment on negative breath holding capacity of school going children were found significant whereas quadratic trend during experimental treatment on negative breath holding capacity of school going children was found nonsignificant (Table 5).

It is evident from Table -6 that significant trend was found after experimental treatment on negative breath holding capacity of school going children. After treatments application linear trend was found significant but quadratic trend was

**Table 1.** Descriptive statistics of age and eight observations on negative breath holding capacity

	Mean	SD	Skewness	SE skewness	Kurtosis	SE kurtosis
Age	15.7	1.022	- 0.378	0.427	- 0.878	0.833
Observation 1	24.058	11.017	2.579	0.427	9.024	0.833
Observation 2	24.625	10.843	2.394	0.427	8.336	0.833
Observation 3	24.888	10.891	2.518	0.427	9.067	0.833
Observation 4	27.377	11.111	2.468	0.427	8.627	0.833
Observation 5	30.455	11.004	2.524	0.427	8.858	0.833
Observation 6	32.59	11.010	2.414	0.427	8.323	0.833
Observation 7	33.083	11.145	2.509	0.427	8.961	0.833
Observation 8	33.515	11.092	2.516	0.427	8.998	0.833

**Table 2.** Trend before experimental treatment on negative breath holding capacity

SV	DF	SS	MSS	F
Trials	2	10.777	5.388	1.418
Subjects	29	20814.284	717.734	
Subjects x trials	58	220.400	3.800	

**Table 3.** Linear and Quadratic trend before experimental treatment on negative breath holding capacity

SV	Trends	DF	SS	MSS	F
Among means	Linear	1	10.317	10.317	2.919
	Quadratic	1	0.46	0.460	0.113
Within group	Linear	29	102.506	3.535	
	Quadratic	29	117.894	4.065	

**Table 4.** Treand of effect of *pracchardanaI* and *vidharna* on negative breath holding capacity during treatment

SV	DF	SS	MSS	F
Trials	3	1033.004	344.335	248.066*
Subjects	29	28607.940	986.481	
Subjects x trials	87	120.762	1.388	

\*significant at 5%

**Table 5.** Linear, Quadratic and Cubic trends during treatment on negative breath holding capacity

SV	Trends	DF	SS	MSS	F
Among Means	Linear	1	1028.534	1028.534	455.431*
	Quadratic	1	0.942	0.942	0.856
	Cubic	1	3.528	3.528	4.380*
Within Groups	Linear	29	65.493	2.258	
	Quadratic	29	31.912	1.100	
	Cubic	29	23.358	0.805	

\*significant at 5%

**Table 6.** Trend after experimental treatment on negative breath holding capacity

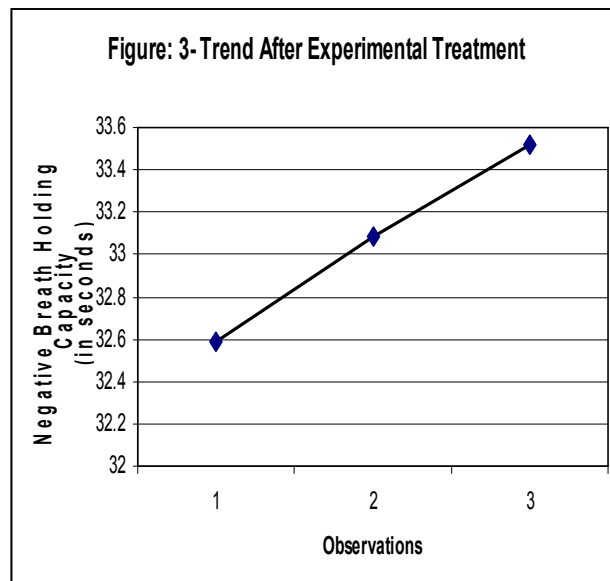
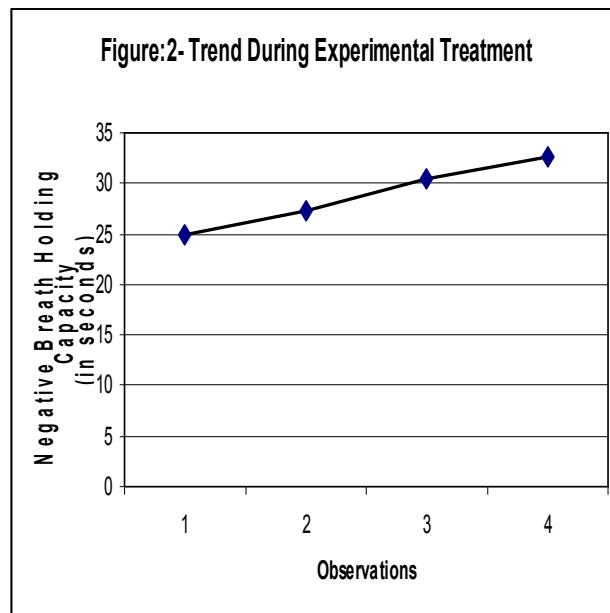
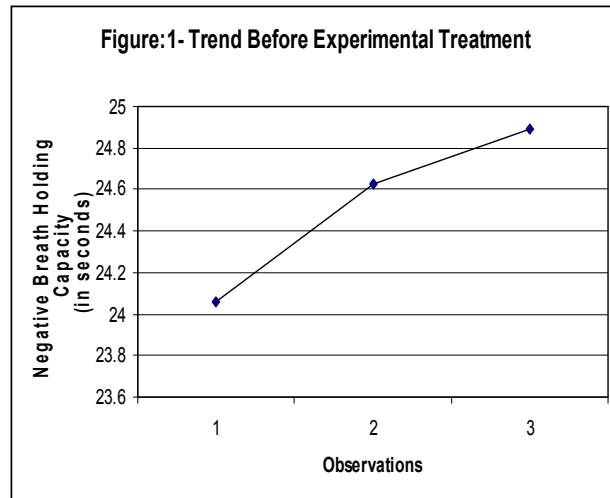
SV	DF	SS	MSS	F
Trials	2	12.844	6.422	65.072*
Subjects	29	10679.732	368.267	
Subjects x trials	58	5.724	0.099	

\*significant at 5%

**Table 7.** Linear and Quadratic trend after experimental treatment on negative breath holding capacity

SV	Trends	DF	SS	MSS	F
Among Means	Linear	1	12.825	12.825	111.9*
	Quadratic	1	0.019	0.019	0.227
Within Group	Linear	29	3.324	0.115	0
	Quadratic	29	2.400	0.083	

\*significant at 5%



nonsignificant (Table 7). Trends between breath holding capacity and observations before, during and after experimental treatments are shown in Figures 1, 2 and 3.

Physiological changes associated with yoga training caused improvements in ventilatory functions of the lungs including a prolongation of breath holding times<sup>4</sup>. Changes in cardiorespiratory and metabolic intensity by the practice of pranayamas and meditation were also reported<sup>5-7</sup>. Increase in vital capacity increase and chest circumference concludes that yoga training has a strong effect on our respiratory system and ventilatory functions. A smaller proportion of lipids was metabolized during meditation practice compared with rest<sup>8</sup>. In the present study change in negative breath holding capacity due to change in oxygen uptake ( $VO_2$ ) and the carbon dioxide output ( $VCO_2$ ).

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