

Effect of *Bhramari Pranayama* on Vital Capacity among the Cricket Players with Special Reference to Psycho-Somatic Constitution (*Prakriti*)

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Abstract

Become a good Cricketer not only required better skill and technique but also required optimum level of physical fitness. Yogic practice specially pranayama helps to improve pulmonary system as well as better internal functions. The purpose of the study was to find out the effect of *Bhramari Pranayama* on Vital Capacity among the Cricket Players with Special Reference to *Prakriti* (Psycho-somatic Constitution). Total 90 males (clinically healthy) cricket players aged between 18 to 24 years from Varanasi district were selected as subjects. Further they divided in two groups as experimental (N=45) and control (45) group. The experimental group practiced *Bhramari Pranayama* training programme for twelve weeks. Subjects in control group were not do any yogic or pranayama activities during the time of training of *Bhramari Pranayama*. Vital Capacity was selected as dependent parameter for the study. The collected data was statistically analysed, by using paired t-test. Statistically Significant results was found in; Vital Capacity by the practiced *Bhramari Pranayama*. Level of significant sate at $P < 0.05$.

Keywords: *Bhramari Pranayama*, Cricket, *Prakriti*, Vital Capacity.

INTRODUCTION

The game of cricket has changed drastically as far as physical exertion is concerned, because of the introduction of one day and T-20 cricket formats. In the present scenario physical health has become one of the prime factor for better performance. Hence, more and more efforts are being made to develop cricket specific physical fitness that is three main departments; batting, bowling and fielding. Different types of yogic practice have been found beneficial specially *Pranayama* for cricketers all together. One of them *Bhramari* is a type of *Pranayama* which improves respiratory function and also improves mental as well as overall body function. *Bhramari Pranayama* is very easy-going practice for instantly calming our mind down. It is the best breathing exercise to relax the mind from anxiety, frustration, anger and hesitation etc., which affected the output/performance of our body and mind.

MATERIALS AND METHODS

Selection of Subjects: After the assessment of health check-up, total 90 (clinically Healthy) male Cricket Players aged between 18 to 24 years were included in the study those are participated in district level cricket from Varanasi district, Uttar Pradesh, India. Farther they divided randomly in two groups; one experimental (n=45) and another is control (n=45) group. Ethics Committee of Institute of Medical Sciences (IMS), BHU, Varanasi approved the study. Subject were not using any medication, non-smokers and not addicted to any bad habits. Written consent was taken to the subject before initiating the study.

Selection of Parameters: Vital Capacity (CV) selected as a dependent parameter. *Vata*, *Pitta* and *Kapha* Selected as *Prakriti* of cricketers.

Assessment : Vital Capacity was assessed with computerized spirometer software (Spiro soft). In this test, The subjects were asked to exhale fully through the mouth piece of the Spiro meter after a deep inhalation. *Prakriti* of each Player was determined by the prescribe Performa in the Department of Kriya Sharir, Ayurveda, IMS, BHU, Varanasi, which was designed as per characters mentions in different Ayurvedic classics viz; *Charaka*, *Sushruta*, *Vagbhata*. The *Prakriti* Assessment identifying in percentage Score. Players having percentage more than 60% of either of three *Prakriti*.

Study Design: Pre-test and post-test was used for both groups for the duration of twelve weeks. The Experimental group undergone for twelve weeks of *Bhramari Pranayama* intervention and there is no any kind of pranayama or yogic intervention given to control group.

Training Programme/Intervention: During the training period the subjects of experimental group were undergo weekly six classes for the twelve weeks. The training of *Bhramari Pranayama* was given before the practice session of cricket players at 6:00 am every day, except Sundays. In this Pranayama, first of all make *Shanmukhi Mudra*, then after deep inhalation through both nostrils, there is slow and prolonged exhalation with the typical humming sound of black Indian bee. (This is one round of *Bhramari Pranayama*). The training program is as follows:

Table (1) Training Program

Groups	Duration (Weeks)	<i>Bhramari Pranayama</i>	Time Duration (Approximately)
Experimental Group	01-04	10 rounds	3 min.
	05-08	15 rounds	4 min.
	09-12	20 rounds	5 min.
Control Group	No Intervention		

Statistical Analysis

The data were analysed statistically by using SPSS (Statistical Package for Social Sciences), Version 16.0. Paired *t* test was applied for analysis data. Level of significant considered at $P \leq 0.05$.

Observations and Results

Table (2): Demographical Distribution of the Subjects

Variables	Experimental Group (N=45) Mean \pm SD	Control Group (N=45) Mean \pm SD
Age (in year)	21.200 \pm 1.778	22.066 \pm 1.629
Weight (in kg)	63.333 \pm 9.317	65.200 \pm 9.880
Height (in cm)	170.035 \pm 4.955	169.70 \pm 6.775

Table No. (2) shows that mean of Age of the subjects in experimental and control group were 21.200 \pm 1.778 and 22.066 \pm 1.629 respectively. The mean of Weight of the subjects in experimental and control group were 63.333 \pm 9.317 and 65.200 \pm 9.880 respectively. The mean of Height of the subjects in experimental and control group were 170.035 \pm 4.955 and 169.70 \pm 6.775 respectively.

Table (3) Prakriti Wise Distribution of Subjects

Groups	Prakriti	Frequency	Percent
Total Subjects (N=90)	Vata	16	17.8
	Pitta	55	61.1
	Kapha	19	21.1
Experimental Group (N=45)	Vata	8	17.8
	Pitta	29	64.4
	Kapha	8	17.8
Control Group (N=45)	Vata	8	17.8
	Pitta	26	57.8
	Kapha	11	24.4

Table no. (3) shows the *prakriti* wise distribution of the subjects. Total 90 subjects were selected & categorised randomly into experimental and control groups with 45 subjects in each group. Out of 90 subjects, having *vata prakriti* were 16 (17.8%), *pitta prakriti* 55 (61.1%), and *kapka prakriti* were 19 (21.1%). In experimental group the subject of *vata prakriti* were 8 (17.8%), *pitta prakriti* 29 (64.4%), and *kapka prakriti* were 8 (17.8%). Whereas in control group *vata prakriti* 8 (17.8%), *pitta prakriti* 26 (57.8%), and *kapka prakriti* were 11 (24.4%).

Table (4) Groups wise Comparison of the Subjects Showing Effect of Bhramari Pranayama on Vital Capacity

Groups	Vital Capacity (lt.) Mean \pm SD		Within the Group Comparison Paired <i>t</i> Test (Pre –Post)
	Pre-Test	Post-Test	
Experimental Group (N=45)	4.474 \pm 0.465	4.982 \pm 0.586	0.508 \pm 0.526 t = 6.472 p = 0.000*
Control Group (N=45)	3.660 \pm 1.301	3.394 \pm 0.713	0.266 \pm 1.370 t = 1.304 p = 0.199

* Significance Level at 0.05.

Table no. (4) indicates that mean and standard deviation of vital capacity of experimental group in pre and post tests were 4.474 \pm 0.465 and 4.982 \pm 0.586 respectively. This change in value of vital capacity for between pre and post tests were found -0.508 \pm 0.526 having 't' value 6.472 and 'p' value 0.000, which was found statistically significant.

In control group the mean and standard deviation of vital capacity during pre and post tests were seen 3.660 \pm 1.301 and 3.394 \pm 0.713 respectively. The change in vital capacity between pre and post tests was found 0.266 \pm 1.370 and 't' value was 1.304 and 'p' value was 0.199, which was statistically not significant.

Table (5) Prakriti wise Comparison of Subjects Showing Effect of Bhramari Pranayama on Vital Capacity

Groups	Prakriti	Vital Capacity (Lt.) Mean \pm SD		Within the Prakriti Comparison (Paired <i>t</i> Test)
		Pre-Test	Post-Test	

Experimental Group (N=45)	<i>Vata</i> (N=8)	4.460 ± 0.211	5.072 ± 0.362	t = 7.020 p = 0.000*
	<i>Pitta</i> (N=26)	4.484 ± 0.549	4.979 ± 0.664	t = 4.235 p = 0.000*
	<i>Kapha</i> (N=8)	4.451 ± 0.331	4.903 ± 0.175	t = 4.446 p = 0.003*
Control Group (N=45)	<i>Vata</i> (N=8)	3.610 ± 1.785	3.875 ± 0.891	t = 0.354 p = 0.733
	<i>Pitta</i> (N=29)	3.489 ± 0.902	3.274 ± 0.657	t = 1.265 p = 0.218
	<i>Kapha</i> (N=11)	4.102 ± 1.701	3.329 ± 0.610	t = 1.552 p = 0.152

* Significance Level at 0.05.

Table no. (5) shows that results of vital capacity according to *Prakriti*. The mean and standard deviation value in pre and post-tests of experimental group, the *Vata prakriti* mean and SD is 4.460 ± 0.211 and 5.072 ± 0.362 respectively, and 't' value is 7.020 and 'p' value is 0.000 which was found statistically significant. Whereas, in *Pitta prakriti* mean and SD was 4.484 ± 0.549 and 4.979 ± 0.664 respectively, having 't' value is 4.235 and 'p' value is 0.000 which was also found statistically significant. In *Kapha prakriti* mean and SD is 4.451 ± 0.331 and 4.903 ± 0.175 respectively, and 't' value was 4.446 and 'p' value was 0.003, it was also indicates statistically significant results.

Where as in, control group during pre and post-tests mean and SD of vital capacity according to *Prakriti* was observed as, *Vata prakriti* mean and SD was 3.610 ± 1.785 and 3.875 ± 0.891 respectively, and 't' value is 0.354 and 'p' value was 0.733 which was found statistically not significant. In *Pitta prakriti* mean and SD is 3.489 ± 0.902 and 3.274 ± 0.657 respectively, and the 't' value was 0.354 and 'p' value was 0.218 which was found statistically not significant. In, *Kapha Prakriti* mean and SD is 4.102 ± 1.701 and 3.329 ± 0.610 respectively, and 't' value is 1.552 and 'p' value is 0.152 which was also found statistically not significant results.

Discussion

The result of the study shows that performing *Bhramari Pranayama* has a positive effect on Vital Capacity (4.474 ± 0.465 and 4.982 ± 0.586) of the experimental group which can be due to the type of activity performed as it is evident that *Bhramari Pranayama* directly affects the cardiovascular system. Hence, improving the Vital Capacity. As similar result was also seen in the three *prakritis* (*Vata* (4.460 ± 0.211 and 5.072 ± 0.362), *Pitta* (4.484 ± 0.549 and 4.979 ± 0.664) and *Kapha Prakriti* (4.451 ± 0.331 and 4.903 ± 0.175) which is quite evident with above discussion. The present result also supported by, Khatri A. and Khatri S. S. (2013), their result revealed that regular practice of specific (*Bhramari*) *Pranayama* helps to improve the Vital Capacity (Pulmonary Function) of the adolescent. another study by Moventhen A. and Khode V. (2013), according to their study *Bhramari Pranayama* are effective to improves pulmonary function in healthy individuals.

Conclusion

On the basis of result, it can be concluded that, practicing *Bhramari Pranayama* is helpful for improving Vital Capacity of cricket players. *Vata, Pitta* and *Kapha Prakriti* Players were also found maximum improvement through practicing *Bhramari Pranayama*.

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