

Effect of Kapalbharti and Omkar Pranayama on the Vital capacity

Prof. K. B. Patel¹

¹College of Agriculture, NAU, Waghai, Gujarat, India.

Abstract - To determine the effects of kapalbharti and omkar pranayam on vital capacity, thirty randomly selected male aged 18-25 years volunteered to participate in the study. This study was conducted at college of agriculture, Navsari agricultural university, waghai. They were randomly assigned into two group (experimental group and control group). The subjects were subjected to the eight week pranayam training programme that includes "Kapalbharti Pranayam" and "Omkar Pranayam". Between two groups differences were assessed using the t-test. The level of $p \leq 0.05$ was considered significant. The vital capacity significantly improved in group A compared with the control group. Pranayama training programme may be recommended to improve vital capacity.

Key Words: Pranayam, Kapalbharti, Omkara, vital capacity.

1.INTRODUCTION

Yogic techniques are known to improve one's overall performance and work capacity (Bhattacharyya and Krishna, 1960). Yoga appears to provide a comparable improvement in stress, anxiety and health status (Caroline et al., 2007). Yogic practices can be used as psychophysiological stimuli to increase endogenous secretion of melatonin, which in turn, might be responsible for improved sense of well-being (Harinath et al., 2004). Training to yoga respiration selectively increases the respiratory sensation, perhaps through its persistent conditioning of the breathing pattern (Florence et al., 2005). Perhaps one of the most powerful tools in yogic practices is the use of the breath to bring our consciousness back in tune with the Divine Cosmic Breath. This cosmic breath is the rhythm of life itself. Yoga breathing, or pranayama, is the science of breath control. Pranayama (breathing exercise), one of the yogic techniques can produce different physiological responses in healthy individuals (Upadhyay et al., 2008). The science of pranayama is based on the retention of prana called 'kumbhaka'. Among the many kinds of pranayama, kapalbharti and omkara are considered as one of the significant types of the core structuration of pranayama. There have been many studies on yoga and its effects on physical function (Hadi, 2007) but with the phenomenal and ever increasing popularity of pranayama in the past few years, there is a lack of study on this particular discipline and as a result the present study has been undertaken to examine the effects of kapalbharti and omkara pranayama on the vital capacity.

2. METHODOLOGY

Thirty randomly selected male aged 18-25 years volunteered to participate in the study from college of agriculture, Navsari Agriculture university, Waghai, Gujarat. They were randomly assigned into two groups (i.e. Controlled group and experimental group). The subject were subjected to the eight week pranayam training programme. This lasted 8 weeks and consisted of daily sessions of 1 hr, which included "kapalbharti pranayam" and "omkara pranayam".

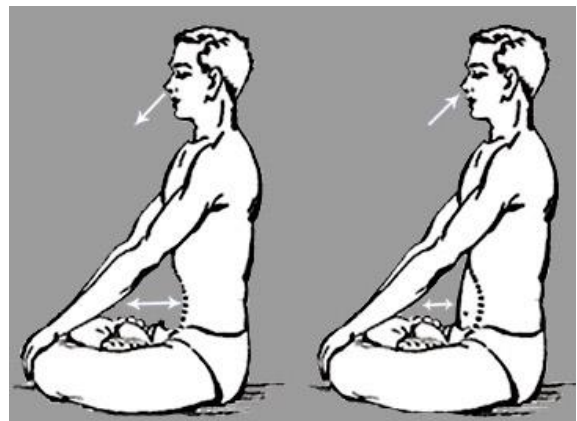


Figure:1 Kapalbharti Pranayam

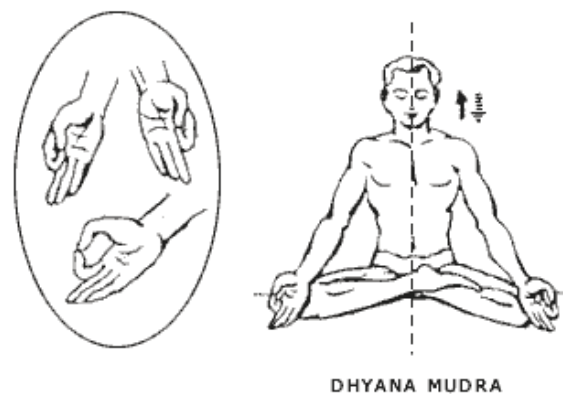


Figure : 2 Omkara Pranayam

Spirometer was used to measure vital capacity. The subject was made to sit and breathe normally through the mouthpiece of spirometer. Subjects filled their lung as much as possible. As soon as they had their lungs fully inflated, they blew all the air out as fast as they could. The procedure was repeated thrice. Maximal Ventilatory Volume was measured by a spirometer. The subject was made to sit and breathe through the mouthpiece. The bell was no more than

half filled. The subject was instructed to take a series of deep breathes in and out for 10 - 20 s.

They breathe out and hold it for about 3 - 5 s. The procedure was repeated thrice. Correct the highest volume from 10 - 20 seconds to one minute. The between-group differences were assessed using the Student's t-test for dependent data. The level of $p \leq 0.05$ was considered significant.

3. RESULTS

The study was conducted to determine the effects of kapalbharti and omkara pranayama on vital capacity. The statistical analysis of data collected on thirty (N = 30) subjects. For each of the chosen variable, the results pertaining to significant difference, if any, between experimental and control groups were assessed by "t" test (Florence et al., 2005) and are presented in the Tables. Table 1 shows that the mean of vital capacity of pretest of experimental group and posttest of experimental group was 2.590 and 3.218, respectively, whereas the mean of vital capacity of pre-test of control and post test of control group (Table 2) was 2.767 and 2.785. The "t" value in case of experimental group was 13.132 and for control group it was 1.586. Since $\text{cal. } t (= 13.132) > \text{tab } t_{0.05} (14) (= 2.145)$, H_0 (null hypothesis) is rejected at .05 level of significance. Thus it may be concluded that eight week pranayama training programme showed significant improvement in vital capacity. As per the study the above remark can be given at 95% confidence.

4. DISCUSSION

Yoga asanas are psychophysical practices to culture body and mind. Yoga practices are known to significantly improve health status, and reduce stress and anxiety. From the results it is evident that the eight week of pranayama training programme showed significant improvement in vital capacity (Table 1).

	Group	Number	Mean	S.D.	SEM
Pre-Test	Experimental	15	2.590	0.555	0.143
	Control	15	2.767	0.644	0.166
Post-Test	Experimental	15	3.218	0.524	0.135
	Control	15	2.785	0.648	0.167

Table : 1 Mean, Standard deviation (S.D.) and Standard error of mean (SEM) of vital capacity of experimental and control group

Experimental group	Pre-Test	13.132
	Post-Test	
Control group	Pre-Test	1.586
	Pst-Test	

Table : 2 't' - value of vital capacity of pre-test and post-test of both group

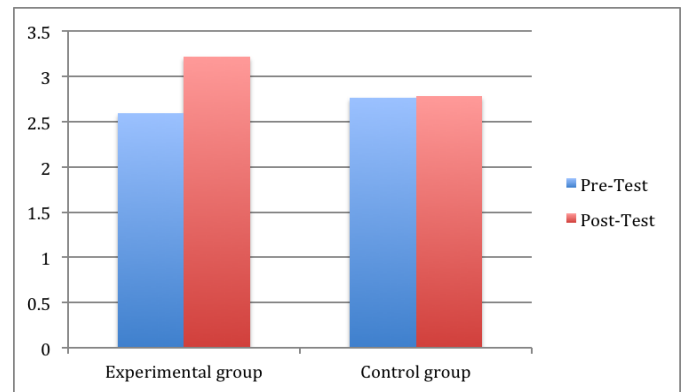


Figure : 3 Mean of vital capacity of experimental and control group.

The findings are supported by the study conducted by Upadhyay et al. (2008), showed a significant increment in Peak expiratory flow rate (PEFR L/min) and Pulse pressure (PP). Although systolic blood pressure (SBP) was decreased insignificantly, the decrease in pulse rate (PR), respiratory rate (RR), diastolic blood pressure (DBP) was significant (Upadhyay et al., 2008). In the present study the kapalbharti pranayama showed significant improvement in vital capacity which is supported by the study conducted by Pramanik et al. (2009). Pranayama increases frequency and duration of inhibitory neural impulses by activating pulmonary stretch receptors during above tidal volume inhalation as in Hering Bruer reflex, which bring about withdrawal of sympathetic tone in the skeletal muscle blood vessels, leading to widespread vasodilatation, thus causing decrease in peripheral resistance and thus decreasing the diastolic blood pressure (Pramanik et al., 2009). Omkara pranayama also showed significant improvement in vital capacity and the result is supported by the study conducted by Joshi et al. (1992).

5. CONCLUSION

Summing up, the 8-week pranayama training programme had significant effect on vital capacity. Thus, such training may be recommended to improve physical fitness-based performance.

REFERENCES

- [1] Caroline SHH, Jane B-M, Kerena E (2007) A randomised comparative trial of yoga and relaxation to reduce stress and anxiety, *Complementary Ther. Med.* 15(2): 77-83
- [2] Harinath K, Malhotra AS, Pal K, Prasad R, Kumar R, Kain TC, Rail L, Sawhney RC (2004). Effects of Hatha yoga and Omkar meditation on cardiorespiratory performance, psychologic profile, and melatonin secretion, *J. Altern. Complement Med.* 10(2): 261-268
- [3] Florence Villien, Melody Yu, Pierre Barthélémey, Yves J (2005). Training to yoga respiration selectively increases respiratory sensation in healthy man, *Respir. Physiol. Neurobiol.* 146(1): 85-96.

[4] Upadhyay Dhunqel K, Malhotra V, Sarkar D, Prajapati R (2008). Effect of alternate nostril breathing exercise on cardio respiratory functions: Nepal Med. Coll. J. 10(1): 25-27.

[5] Gennaro MT(1980) Pulmonary Physiology In Clinical Medicine, Williams and Wilkins (Baltimore). Verma JP (2000). A Text Book on Sports Statistics: Venus Publication, Gwalior, India pp. 202-216.

[6] Pramanik T, Sharma HO, Mishra S, Mishra A, Prajapati R, Singh S(2009). Immediate effect of slow pace bhastrika pranayama on blood pressure and heart rate, J. Altern. Complement Med. 15(3): 293-295.

[7] Joshi LN, Joshi VD, Gokhale LV (1992). Effect of short term 'Pranayam' practice on breathing rate and Ventilatory functions of lung, Indian J. Physiol. Pharmacol. 36(2): 105-108.