Effect of Bhastrika & Kapalbhati Pranayama on Selected Physiological Variables of Sports Men

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Abstract

The purpose of the study was to find out the effect of bhastrika & kapalbhati Pranayama on Selected physiological variables of Sports Men. To achieve the purpose of these study thirty male players were selected from Department of Physical Education, Banaras Hindu University, Varanasi, India, at random and their age ranges from 19 to 24 years and all of them healthy and normal. They were divided in to two groups and designed as Experimental and Control group fifteen male players each. The experimental groups underwent a six weeks of bhastrika & kapalbhati Pranayama training was given. The control group was not allowed to participate in any of the training programme except their routine Physical Education classes. The collected data were analyzed by using analysis of covariance (ANCOVA). The results of the study showed that bhastrika& kapalbhati Pranayama can be an effective training programme to increase the Selected physiological variables of Sports Men.

KEYWORDS: bhastrika Pranayama, kapalbhati Pranayama, Resting heart rate, Vital capacity, male players.

Introduction

Pranayama is an exact science. It is the regulation of breath or control of prana which is the stoppage of inhalation and exhalation that follows after securing that steadiness of posture or seat, Asana. As the Bible states, “Lord God formed manof the dust of the ground, and breathed into his nostrils the breath of life; and man became a living being.”

The Sanskrit word prana means ‘vital force’ or ‘cosmic energy’. It also signifies ‘life’ or ‘breath’, Ayama means the control of the prana. Hence Pranayama means control of the vital force by concentration and regulated breathing. It isphysical, mental, spiritual and cosmic energy. All forms of energy are prana. Pranais usually translated as breath; which moves in the thoracic region absorbing vitalenergy; yet, this is the only one of its many manifestations in the body. (Ayama means control). So Pranayama is the science of breath control. The movements ofthethoracic organs include vertical ascension, horizontal expansion and a circumferential movement.

Bhastrika Pranayama

Bhastrika is one of the most important Pranayama. It is a very mysterious Pranayama and not much is known about it. However, many believe that it is a combination of Kapalbhati &Anulom Vilompranyama.It is a breathing technique where breathing is forcible and through the nose, with equal time for inhalation and exhalation.Bhastrika Pranayama is aimed at keeping the inhalation cycle equal to exhalation, yet making breath deeper and longer. Deep breath inwards and long exhalation outwords with equal time intervals constitutes this Pranayama technique.

Kapalbhati Pranayama

Kapalbhati is an important part of Shatkarma (sometimes known as Shatkriya), the yogic system of body cleansing techniques. The word kapalbhati is made up of two words: kapal meaning 'skull' (her skull includes all the organs under the skull too) and bhati meaning 'shining, illuminating.' Due to the process, the organs under the skull mainly the brain and the small brain are influenced in a good manner. Hence the word is used in that way. It is intended mainly to the cleaning of the cranial sinuses but has many other effects, according to the GherandSamhita and other sources. The Technique of Kapalbhati involves short and strong forceful exhalations and inhalation happens automatically. There are three forms of Kapalbhati:

Vatakrama kapalbhati,

A practice similar to Bhastrika, a technique of Pranayama, except that exhalation is active while inhalation is passive, the opposite of normal breathing

Vyutkrama kapalbhati

A practice similar to Jalneti, it involves sniffing water through the nostrils and letting it flow down into the mouth and then spitting it out.

Sheetkrama kapalbhati

It can be considered the reverse of Vyutkrama kapalbhati, in which water is taken through the mouth and then expelled through the nose.

Physiology of Pranayama

It has been proved beyond doubt that Pranayama is a very important meansfor preventing and curing many ailments. Pranayama brings about several physiological changes in the body.

The science of Pranayama teaches us how to reduce the respiratory and heartrate, while increasing the quantum of oxygen drawn in and decreasing the outflow ofbreath. This can be as minimal as two or three cycles per minute. When therespiratory rate is thus lowered, the metabolic rate of the body also reduces. The bodyis brought to a state of temporary hibernation. All the cells are rested, and relaxationis ensued. The sympathetic overdrive is reduced, with consequent energyconservation. In Pranayama, the mind is kept attentive so that the rhythm of breathingis regulated. The frontal brain, which is the seat of intellectual activity, is made quiet.

Complete neuro – physiological relaxation occurs.

Pranayama can be used for therapy. The problem of low and high bloodpressure, allergic rhinitis, vasomotor rhinitis, sinusitis, recurrent infections of theupper respiratory tract, chronic headaches, migraine, peptic ulcers, and anxiety states is treated by the many kinds of Pranayama, without the need for asanas.

Statement of problem

The Statement of the problem is stated as “Effect of bhastrika& kapalbhati Pranayama on Selected physiological variables of Sports Men”.

Objectives of the Study

- To find out the Effect of bhastrika& kapalbhati Pranayama on Selected physiological variables
- To find out the status of Sports Men in relation to physiological variables

- Resting heart rate
- Vital capacity

Methodology

Subjects for the present study were taken from thirty male players were selected from Department of Physical Education, Banaras Hindu University Varanasi, India, at random and their age ranges from 19 to 24 years and all ofthemhealthy and normal. The study was conducted during the year 2013-2014; the selectedsubjects were divided into two groups and designed as Experimental group and Control group twentymale students each. The experimental groups underwent a six week of bhastrika& kapalbhati Pranayama training. The control group was not allowed to participate in any of the trainingprograms, except theirroutine physical education classes. A qualified physician examined thesubjects medically and declared that they were fit for the study. The duration of the training period was six weeks with five days per week. On every day the training was practiced approximately 50 min60under the instruction and supervision of the investigator. The analysis of covariance (ANCOVA) was applied to find out significant difference if any between experimental and control group. In all cases level of significance was set at0.05 utilized to test the significance.

Selection of Subjects

Subjects for the present study were taken from thirty male players were selected from Department of Physical Education, Banaras Hindu University Varanasi, India, at random and their age ranges from 19 to 24 years and all of them healthy and normal.

Collection of Data

The data was collected two times in the interval of six weeks. Total six weeks of Pranayama was conducted. Observations for tests were collected prior to the treatment in the form of pre-test then after six weeks of bhastrika& kapalbhati Pranayama training; observations for second test was collected in the form of post-test.

Statistical Procedure

The data was analyzed by applying Descriptive Statistics and Analysis of Co-Variance (ANCOVA). The level of significance was set at 0.05.

Analysis of data and findings of the study

The statistical analysis of data collected on thirty male players age ranged between 19-24 years, who were associated with different sports from Banaras Hindu University, is presented in this chapter. Data were collected two times in the interval of six weeks. Total six weeks of bhastrika& kapalbhati Pranayama trainingwas conducted. Observations for tests were collected prior to the treatment in the form of pre-test then after six weeks of bhastrika& kapalbhati Pranayama training; observations for second test was collected in the form of post-test. The data on selected criterion measures for all the groups were collected under similar conditions

Results of the study

The results pertaining to analysis of data between Dependent Variables (physiological variables) and Independent Variable (bhastrika Pranayama & kapalbhati Pranayama) Descriptive Statistics and Analysis of Co-Variance (ANCOVA) was used. The data pertaining to the results of analysis of students have been presented through the table No. I -IV.

Table I
Descriptive Statistics of Experimental Groups and Control Group of Pre-Test & Post-Test in relation to Resting Heart Rate

		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Resting Heart Rate Pre Test	Control	15	68.4667	2.695676	0.696020	62.00	72.00
	Experimental	15	67.3333	2.439750	0.629941	64.00	72.00
	Total	30	67.9000	2.591099	0.473068	62.00	72.00
Resting Heart Rate Post Test	Control	15	69.3333	2.257263	0.582823	65.00	73.00
	Experimental	15	63.5333	2.948769	0.761369	59.00	69.00
	Total	30	66.4333	3.918861	0.715483	55.00	73.00

Table -1 reveal that the mean and standard deviation of Resting Heart Rateof Pre Test (Experimental Group 67.33 ± 2.43, control Group 68.46± 2.69), Post Test (Experimental Group 63.53 ±2.94, control Group 69.33 ±2.25).

Table II
Analysis of Co-Variance of the Means of Experimental Groups and the Control Group in Relation to Resting Heart Rate

	Group			d.f.	Sum of square	Mean square	F ratio
	Control	Experimental					
Pre Test	68.46	67.33	B	1	9.633	9.633	1.457
			W	28	185.066	6.609	
Post Test	69.33	63.53	B	1	252.300	252.300	36.590*
			W	28	193.066	6.895	
Adjusted Post mean	68.82	64.03	B	1	163.536	163.536	96.077*
			W	27	45.957	1.702	

* Significant at 0.05 level of significance

F = Ratio needed for significance at 0.05 level of significance = df (1, 28) = 4.20, df (1, 27) = 4.21

Discussion on the Findings on Resting Heart Rate

The analysis of co-variance for Resting Heart Rate indicated that the resultant F-ratio of 1.457 was insignificant in case of pre-test means from which it is clear that the pre-test mean does not differ significantly and that the random assignment of subjects to the experimental groups was quite successful. The post-test means of all the two groups yielded an F-ratio of 36.590 which was significant level of significance set at 0.05. The F-ratio needed for significance with 1, 28 degree of freedom is 4.20 was level of significance set at 0.05. The difference between the adjusted posts means was found significant as the obtained F-ratio was 96.077. The F-ratio needed for level of significance set at 0.05 was 4.21. Thus, mean significant difference exits between experimental and control group in relation to Resting Heart Rate.

Figure -1
Graphical representation of the comparison of the Analysis of co-variance of the means of experimental group and the control group in relation to Resting Heart Rate

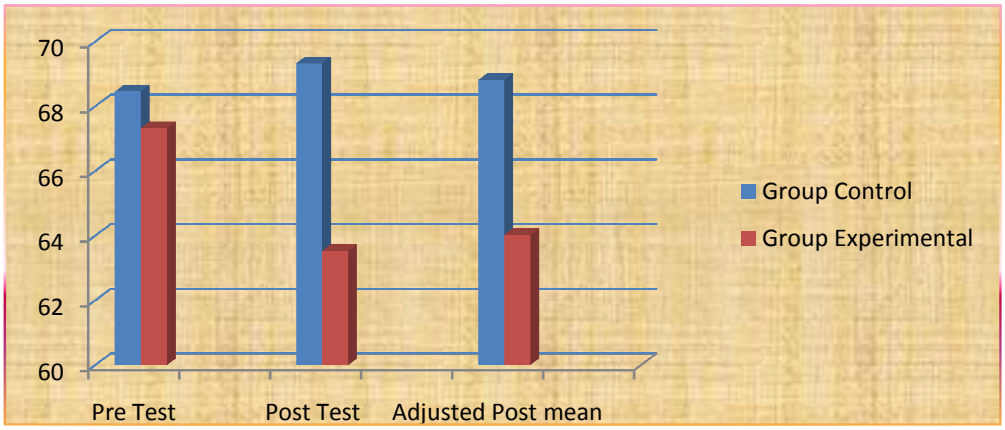


Table III
Descriptive Statistics of Experimental Groups and Control Group of Pre-Test & Post-Test in relation to Vital Capacity

		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Vital Capacity Pre Test	Control	15	3.1133	0.35830	0.09251	2.70	3.80
	Experimental	15	3.2066	0.35550	0.09179	2.60	3.80
	Total	30	3.1600	0.35389	0.06461	2.60	3.80
Vital Capacity Post Test	Control	15	2.9866	0.41208	0.10639	2.50	3.70
	Experimental	15	3.5800	0.41265	0.10654	2.70	4.10
	Total	30	3.2833	0.50520	0.09223	2.50	4.10

Table -3 reveal that the mean and standard deviation ofVital Capacityof Pre Test (Experimental Group 3.20 ± 0.35, control Group 3.11± 0.35), Post Test (Experimental Group 3.58±0.41, control Group 2.98±0.41).

Table IV
Analysis of Co-Variance of the Means of Experimental Groups and the Control Group In relation to Vital Capacity

	Group			d.f.	Sum of square	Mean square	F ratio
	Control	Experimental					
Pre Test	3.11	3.20	B	1	0.065	0.065	0.513
			W	28	3.566	0.127	
Post Test	2.98	3.58	B	1	2.640	2.640	15.527*
			W	28	4.761	0.170	

Adjusted Post mean	3.033	3.533	B	1	1.839	1.839	42.144*
			W	27	1.178	0.044	

* Significant at 0.05 level of significance

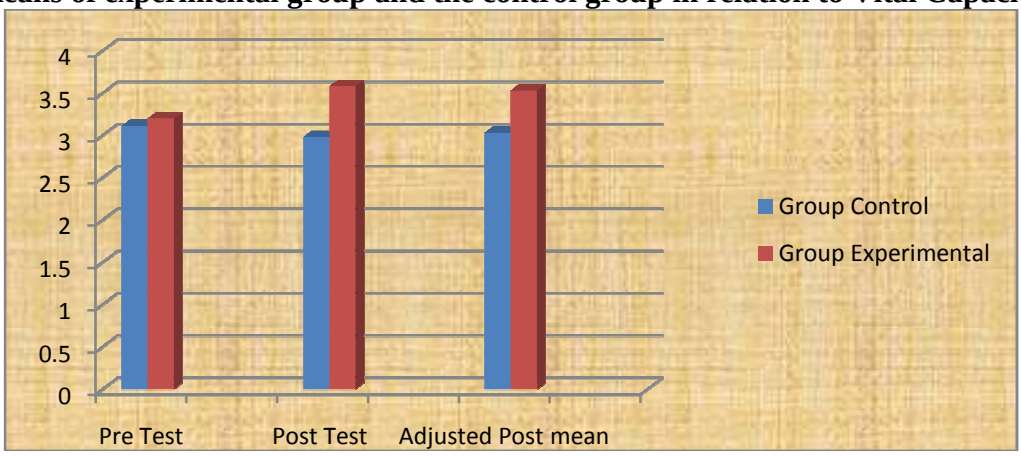
F = Ratio needed for significance at 0.05 level of significance = df (1, 28) = 4.20, df (1, 27) = 4.21

Discussion on the Findings on Vital Capacity

The analysis of co-variance for Vital Capacity indicated that the resultant F-ratio of 0.513was insignificant in case of pre-test means from which it is clear that the pre-test mean does not differ significantly and that the random assignment of subjects to the experimental groups was quite successful. The post-test means of all the two groups yielded an F-ratio of 15.527 which was significant level of significance set at 0.05. The F-ratio needed for significance with 1, 28 degree of freedom is 4.20 was level of significance set at 0.05. The difference between the adjusted posts means was found significant as the obtained F-ratio was 42.144. The F-ratio needed for level of significance set at 0.05 was 4.21. Thus, mean significant difference exits between experimental and control group in relation to Vital Capacity.

Figure -2

Graphical representation of the comparison of the Analysis of co-variance of the means of experimental group and the control group in relation to Vital Capacity



Conclusions

- In the light of the findings, it is concluded that, there is significant difference in the Resting Heart Rate of male playersdue to the six weeks of bhastrika Pranayama & kapalbhati Pranayama training.
- In the light of the findings, it is concluded that, there is significant difference in the Vital Capacity of male playersdue to the six weeks of bhastrika Pranayama & kapalbhati Pranayama training.

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