

EFFECT OF PRANAYAMA PRACTICES ON SELECTED RESPIRATORY PARAMETERS

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ABSTRACT:

The purpose of the present study was to find the effect of pranayama practice on tidal volume, inspiratory reserve volume and vital capacity. For this purpose, thirty female students studying bachelor degree in various departments, except Department of Physical Education and Faculty of Fine Arts, Annamalai University, those who were not familiar with pranayama with the age group of 19 – 21 years were selected. They were divided into two equal groups, each group consisted of fifteen subjects, in which group – I underwent pranayama practices and group – II acted as control group who did not participate in any special training. The training period for this study was five days in a week for twelve weeks. The selected criterion variables such as, tidal volume, inspiratory reserve volume and vital capacity were assessed by using the wet spirometer. Prior to and after the training period the subjects were tested for tidal volume, inspiratory reserve volume and vital capacity and analysis of covariance (ANCOVA) was applied as statistical tool. It was concluded after the pranayama practices, that training group have increased the level of tidal volume, inspiratory reserve volume and vital capacity ($p > 0.05$).

INTRODUCTION

Yoga is a complete science of life that originated in India many thousands of years ago. It is the oldest system of personal development in the world, encompassing body, mind and spirit. The ancient yoga had a profound understanding of man's essential nature and of what he needs to live in harmony with himself and his environment. They perceived the physical body as a vehicle, with the mind as the driver, the soul as man's true identity, and action, emotion and intelligence as the three forces which pull the body-vehicle. In order for there to be integrated development these three forces must be in balance. Taking into account the interrelationship between body and mind, the yogis formulated a unique method for maintaining the balance – a method that combines all the movement you need for physical health with the breathing and meditation techniques that ensure peace of mind [1-4]

The Sanskrit word comes from the root „Yug” which means to unite and it represents both a process and a state of unity. The state of yoga is the culmination of syntropy: it is a state devoid of the limitations of time and space, a state which transcends matter and energy and which cannot be qualified by any attribute. This reality of pure Consciousness has been recognized by all thinkers, spiritualists or materialists, as the fundamental axiom of life from which intelligence, volition, love and thought emanate [3].

Yoga (Sanskrit: *yóga*,) is an Indian spiritual path aimed at achieving the union with the Supreme Consciousness. Some yogas go beyond it and aim at the spiritual transformation of the entire human nature and obtaining immortality even for the physical body. A practitioner of Yoga is called a Yogi (male) or Yogini (female). Outside India, yoga is mostly associated with the practice of asanas (postures) of Hatha Yoga or as a form of exercise. Many Hindu texts discuss aspects of yoga, including the Vedas, Upanishads, the Bhagavad Gita, the Yoga Sutras of Patanjali, the Hatha Yoga Pradipika, the Shiva Samhita and various Tantras. Classified by the type of practices, the major branches of yoga include: Hatha Yoga, Karma Yoga, Jnana Yoga, Bhakti Yoga, and Raja Yoga. Raja Yoga, established by the Yoga Sutras of Patanjali, and known simply as yoga in the context of Hindu philosophy, is

one of the six orthodox (āstika) schools of thought. The Sanskrit term *yoga* has many meanings. It is derived from the Sanskrit root *yuj*, “to control”, “to yoke”, or “to unite”. Common meanings include “joining” or “uniting”, and related ideas such as “union” and “conjunction”. Another conceptual definition is that of “mode, manner, means” or “expedient, means in general” [1-2].

Breathing is life. The ancient yogis in India knew the intimate connection between breath and mind. For example, when your mind is angry, watch your breathing. It will be disturbed. And similarly, if you hold your breath for long, your mind will get agitated. The yogis were trying to get some degree of control over the mind. By controlling the breath, they were indirectly able to influence the mind. Breathing is an automatic process controlled by the autonomic nervous system. We do not have any conscious control over it. The science of bio-energy including the breathing movements is the practical yoga par excellence. In the Bhagavad Gita, Lord Krishna explains to Arjuna that one should practice Yoga to purify him [4].

The three Sanskrit words Pranava, Pran and Pranayama come from the same Sanskrit root „pran“ which represents the life force, the universal energy. These three concepts and the realities they represent form a continuum in which human beings are indissolubly linked to the divine source of cosmic energy [3].

The science of breath is called in Sanskrit *pranayama*. The word *pranayama* is a compound word which consists of *prana* and *yama*. *Prana* means life-force, or the vital energy, or that force by which we have our life. *Ayama* means control, i.e. control of the breath. That is the literal meaning. The first expression of life-force or *prana* is in the motion of the lungs. If a child does not breathe after its birth for some time, we give up the hope of that child. The first expression of life would be the breath, and motion of the lungs produces the breath. It is the primary function, and all other functions of the heart, digestive organs, and others are secondary.

Methods

In this study, the effect of pranayama practice on selected respiratory parameters such as tidal volume, inspiratory reserve volume and vital capacity have been examined. Thirty female subjects studying in various departments, except from the Department of Physical Education and Faculty of Fine Arts, Annamalai University were randomly selected and divided into two equal groups of fifteen subjects each, out of which group - I (n = 15) underwent varied types of pranayama practices and group - II (n = 15) remained as control.

For the purpose of collection of data on tidal volume, inspiratory reserve volume and vital capacity, the wetspirometer was used. Before applying the experiment all the subjects of the pranayama practice group and control group attended the pre-test, which was conducted a day prior to the commencement of the training and the data were collected on tidal volume, inspiratory reserve volume and vital capacity. After twelve weeks of training the post-test was conducted one day after the training period to find out any changes in the criterion variables.

Selection of Pranayama

The experimental factor selected the pranayama, the scholar consulted with experts in the field of yoga and pranayama, then selected the following pranayama for the experimental group:

The different types of Pranayama are the Bhastrika Pranayam, Anuloma / Viloma, Kapalbhati, Bhramri, Sitalee, Sitkari, Ujjayi and Vedhene Bandh.

Training Schedule

The subjects were divided into two groups, namely pranayama practice (experimental) group and control group. The control group was not given any specific training. The experimental group practiced pranayama weekly five days i.e. Monday to Friday, between 6.00 A.M. to 8.00 A.M., for a period of 12 weeks.

Analysis of the Data

The data collected prior to and after the experimental period on tidal volume, inspiratory reserve volume and vital capacity on pranayama practice group and control group were analysed and presented in the following table -I.

Table – I

Analysis of Covariance and „F” ratio of Selected Respiratory Parameters for Pranayama Practice Group and Control Group

Variable Name	Group Name	Pranayama Practice Group	Control Group	‘F’ Ratio
Tidal Volume	Pre-test Mean \pm S.D	0.439 \pm 0.027	0.446 \pm 0.021	0.49
	Post-test Mean \pm S.D.	0.473 \pm 0.037	0.442 \pm 0.017	8.314*
	Adj. Post-test Mean \pm S.D.	0.476	0.439	24.62*
Inspiratory Reserve Volume	Pre-test Mean \pm S.D	2.71 \pm 0.09	2.67 \pm 0.103	1.142
	Post-test Mean \pm S.D.	2.78 \pm 0.074	2.67 \pm 0.105	10.43*
	Adj. Post-test Mean \pm S.D.	2.76	2.69	55.69*
Vital Capacity	Pre-test Mean \pm S.D	3.72 \pm 0.072	3.71 \pm 0.075	0.104
	Post-test Mean \pm S.D.	3.82 \pm 0.075	3.69 \pm 0.075	22.52*
	Adj. Post-test Mean \pm S.D.	3.82	3.70	55.01*

* Significant at .05 level of confidence.

(The table value required for significance at .05 level of confidence with df 1 and 28 and 1 and 27 were 4.20 and 4.21 respectively).

Results

The analysis of covariance (ANCOVA) was used to find out the significant difference if any, among the experimental groups and control group on selected criterion variables separately. In all the cases, .05 level of confidence was fixed to test the significance, which was considered as an appropriate. After applying the analysis of covariance, the result of this study showed that there was a significant difference between pranayama practice and control groups on tidal volume, inspiratory reserve volume and vital capacity after twelve weeks of training. All the criterion variables have significantly improved after the training period for pranayama practice group when compared with the control group.

Discussion

The results of the study reveal that there was a significant changes after the pranayama training in inspiratory reserve volume [5]. The results of the study reveal that there was a significant changes after the pranayama training in vital capacity [6-8]. The inspiratory volume also increased after the pranayama practices. This result is in line with the findings of D.V. de Godov *et al*, 2006 [6]. The findings of this study showed that the respiratory parameters such as tidal volume, inspiratory reserve volume and vital capacity has increased due to the pranayama practices.

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