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Effect of Pranayama and Meditation on Peak Flow Rate and Resting Heart Rate of Deaf and Dumb Students

Mr. Arjun Singh Solanki [1], Dr. M.K. Singh[2]

[1]Research Scholar, Department of Physical Education, Guru Ghasidas University, Bilaspur (C.G.), India.
[2]Assistant Professor, Department of Physical Education, Guru Ghasidas University, Bilaspur (C.G.), India.

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Abstract

The purpose of the study was to find out the effect of pranayama and meditation on peak flow rate and resting heart rate of deaf and dumb students. Fifty deaf and dumb male students (25 each in Experimental and Control group) were selected to act as subjects for this study of age ranging from 13-18 years from Deaf and Dumb school, Meerut (Uttar Pradesh). All the subjects were selected through simple random sampling technique. Twelve weeks of pranayama and meditation training were given to the experimental group. The control group was not allowed to participate in any of the pranayama and meditation training programmes, except their routine schedule. In the present study Pranayama (Anuloma-Viloma and Bhramari) and Meditation (Mindfulness) acted as independent variables and Peak Flow Rate and Resting Heart Rate acted as dependent variables. Peak Flow Rate was measured by standard Peak Flow Meter and Resting Heart Rate was measured by stop watch. The analysis of covariance (ANCOVA) was used with pre data as covariate to find out the significant difference, if any, between the groups on both selected criterion variables separately. The statistical analysis revealed that there was significant difference in Peak Flow Rate and Resting Heart Rate at 0.05 level of confidence between the control and experimental group of deaf and dumb students. The study concluded that Pranayama and Meditation may be beneficial in improving Peak Flow Rate and regulating Resting Heart Rate of Deaf and Dumb students.

Key words: Deaf, Dumb, Pranayama, Meditation, Peak Flow Rate and Resting Heart Rate.

1. Introduction:

The mechanical arrangements of respiration manifest through (1) the elastic movements of the lungs, and (2) the activities of the sides and bottom of the thoracic cavity in which the lungs are contained. The thorax is that portion of the trunk between the neck and the abdomen, the cavity of which (known as the thoracic cavity) is occupied mainly by the lungs and heart. It is confined by the spinal column, the ribs with their cartilages, the breastbone, and below by the diaphragm. It is generally spoken of as "the chest." It has been compared to a completely shut, conical box, the small end of which is turned upward, the back of the box being formed by the spinal column, the front by the breastbone and the sides by the ribs.

In the act of inhalation the muscles expand the lungs so that a vacuum is created and the air rushes in accordance with the well-known law of physics. Everything depends upon the muscles concerned in the process of respiration, which we may, for convenience, term the "respiratory muscles." Without the aid of these muscles the lungs cannot expand, and upon the proper use and control of these muscles the Science of Breath largely depends. The proper control of these muscles will result in the ability to attain the maximum degree of lung expansion, and the greatest amount of the life giving properties of the air into the system.

Meditation is an age-old practice described in ancient texts of various cultures across the world, some more than 2000 years ago. Meditation is variously referred to, as 'Dhyana' in Sanskrit, 'Ch'an' in Chinese, 'Zen' in Japanese, and 'Sgom' in Tibetan. Meditation is as relevant today as it was thousands of years ago. We live in an age where it is increasingly difficult to keep up with pace of change, where we are overloaded with images, sounds and ideas from multiple sources. So, it's essential we find sufficient peace of mind in order to live such a lifestyle – meditation fulfils this need.

The main differences amongst many meditation philosophies and techniques around us is the object of concentration. The object could be observing the breath, a candle, or chanting a mantra according to our personal

beliefs. What they all have in common is awareness. Awareness is being in the present moment, mindful of all thought, speech and action. By observing the present moment we can tune into our higher consciousness and make a positive decision to create harmony and balance, to think, speak and act with love, wisdom and compassion.

Hearing impairment is the inability to hear as well as someone with normal hearing. Hearing impaired people can be hard of hearing (HOH) or deaf. If a person cannot hear at all, then they have deafness. Hearing impairment may be inherited, caused by maternal rubella or complications at birth, certain infectious diseases such as meningitis, use of ototoxic drugs, exposure to excessive noise and ageing.

A speech impairment is a condition in which the ability to produce speech sounds that are necessary to communicate with others is impaired. Speech impairments can be mild, such as occasionally mispronouncing a couple of words, to severe, such as not being able to produce speech sounds at all.

Pranayama and Meditation has enough potential to alter various physiological parameters. In the present study an experiment has been done by providing pranayama and meditation training to study its effects on peak flow rate and resting heart rate of deaf and dumb children. This will help us in knowing further requirement of yogic interventions needed in the existing or running academic curriculums of various educational boards for such children and increasing the effectiveness of the steps taken by the government and non-government bodies to improve the quality of life of deaf and dumb students**.**

1.1 Objective of the Study: The purpose of the study was to find out the effect of pranayama and meditation on peak flow rate and resting heart rate of deaf and dumb students.

1.2 Hypothesis: On the basis of available literature, research findings and scholar's own understanding it was hypothesized that there may be significant effect of pranayama and meditation on peak flow rate and resting heart rate of deaf and dumb students.

2. Methodology:

2.1 Selection of Subjects:

Fifty deaf and dumb male students (25 each in Experimental and Control group) were selected to act as subjects for this study of age ranging from 13-18 years from Deaf and Dumb school, Meerut (Uttar Pradesh). All the subjects were selected through simple random sampling technique.

2.2 Selection of Subjects

The following variables have been selected for purpose of this study

Independent Variables: 1) Pranayama (Anuloma-Viloma and Bhramari)
2) Meditation (Mindfulness)

Dependent variables- 1) Peak Flow Rate
2) Resting Heart Rate

2.3 Collection of Data:

Peak flow meter and stop watch was employed to collect the relevant data of peak flow rate and resting heart rate of deaf and dumb students respectively. The responses were tabulated and recorded as the raw scores for the analysis.

2.4 Experimental Design and Procedure:

The subjects selected for the present study were divided randomly into two equal groups called control and experimental consisting of 25 male students in each group. Twelve weeks of pranayama and meditation training were given to the experimental group. The control group was not allowed to participate in any of the pranayama and meditation training programmes, except their routine schedule. Measurements for the physiological variables were recorded at the beginning of the training programme (pre - test) and after twelve weeks at the end of the experimental period (post - test). The data were collected for all the variables from both control and experimental groups.

2.5. Administration of Test:

All equipments were purchased from standard companies and they were maintained in good condition. The subject was asked to sit comfortably on the chair and to take a maximum inspiration away from the peak flow meter. Then he was asked to hold the peak flow meter between the lips to create a good seal and expire as fast and as hard as possible for as long as possible until no breath was left. The reading displayed in peak flow meter was recorded.

For measuring resting heart rate the subjects were seated on the chair in calm and relaxed position and pulse rate of the subjects was measured through the radial artery by using the index and middle fingers of the right palm for 15 seconds and was multiplied with four to obtain the number of beats per minute. The readings were recorded in the sheet against their names.

2.6. Statistical Analysis:

The pre and post-test data were collected from the two groups on the selected variables and used for the statistical treatment to find out whether or not there was any significant difference between the two groups by the analysis of covariance (ANCOVA) method. The level of significance was tested at 0.05 level of confidence. All the statistical calculations were carried out using SPSS, 11.05 packages.

3. Result and Observation:

PEAK FLOW RATE

TABLE-1

Analysis of Covariance for Pre Test and Post Test Data on Peak Flow Rate of Control Group and Experimental Group

Test	Groups		ANCOVA					
	Control	Experimental	Source of Variance	SS	df	MSS	F	Sig.
Pre -Mean	359.80	353.72	B	462.080	1	462.080	.068	.795
			W	325195.040	48	6774.897		
Post - Mean	361.40	414.52	B	35271.680	1	35271.680	5.324*	.025
			W	317990.240	48	6624.797		
Adjusted Post- Mean	358.9	417.0	B	42171.850	1	42171.850	20.307*	.000
			W	97604.187	47	2076.685		

*Significant at 0.05 level, B = Between Group Variance, W = Within Group Variance

From the Table 1 analysis of variance indicated that the resultant F-ratio of peak flow rate (0.068) was insignificant in case of pre-test means of control and experimental groups from which it is clear that the pre-test means of control and experimental groups do not differ significantly and that the random assignment of subjects to the control group and experimental group was quite successful. The post-test means of the control and experimental groups yielded an F-ratio 5.324 which was significant at .05 level of significance.

Table 1 also revealed that the analysis of co-variance (ANCOVA) between the adjusted post-test means of control and experimental groups in relation to peak flow rate (F= 20.307) was found significant as the p-value was lesser than .05 ($p<0.05$).

RESTING HEART RATE

TABLE-2

Analysis of Covariance for Pre Test and Post Test Data on Resting Heart Rate of Control Group and Experimental Group

Test	Groups		ANCOVA					
	Control	Experimental	Source of variance	SS	df	MSS	F	Sig.
Pre -Mean	78.640	76.480	B	58.320	1	58.320	.416	.522
			W	6736.000	48	140.333		
Post - Mean	78.160	69.840	B	865.280	1	865.280	8.124*	.006
			W	5112.720	48	106.515		
Adjusted Post- Mean	77.279	70.721	B	533.054	1	533.054	39.594*	.000
			W	632.761	47	13.463		

*Significant at 0.05 level, B = Between Group Variance, W = Within Group Variance

From the Table 2 analysis of variance indicated that the resultant F-ratio of resting heart rate (0.416) was insignificant in case of pre-test means of control and experimental groups from which it is clear that the pre-test means of control and experimental groups do not differ significantly and that the random assignment of subjects to the control group and experimental group was quite successful. The post-test means of the control and experimental groups yielded an F-ratio 8.124 which was significant at .05 level of significance.

Table 2 also revealed that the analysis of co-variance (ANCOVA) between the adjusted post-test means of control and experimental groups in relation to resting heart rate (F= 39.594) was also found significant as the p-value was lesser than .05 ($p<0.05$).

4. Discussion on Findings:

The statistical findings implied that the practice of Pranayama and Meditation had significant effect on peak flow rate. This may be attributed to the positive effects of Pranayama as it increases the strength of respiratory muscles and forceful inhalation and exhalation. On the basis of above findings the null hypothesis is rejected and alternate hypothesis is accepted which concluded that these yogic practices are beneficial to improve the peak flow rate of the deaf and dumb students. The findings also support the study of Ankad Roopa B. et. al. (2011)

The statistical findings also suggested that the practice of Pranayama and Meditation had significant effect on resting heart rate. This may be attributed to these yogic exercises as they decrease the energy requirement in the resting condition. On the basis of above findings the null hypothesis is rejected and alternate hypothesis is accepted which concluded that these yogic practices are beneficial to decrease the resting heart rate of the deaf and dumb students. The findings also support the study of James A. (2009).

5. Conclusions:

On the basis of the results obtained and within the limitations of the present study the following conclusions may be drawn:

- It was reported from the results that peak flow rate of deaf and dumb students in experimental group had shown significant differences in comparison to control group after twelve weeks of Pranayama and Meditation training. Thus it may be concluded that pranayama and meditation are beneficial for improving peak flow rate of deaf and dumb students.
- It was reported from the results that resting heart rate of deaf and dumb students in experimental group had shown significant differences in comparison to control group after twelve weeks of pranayama and meditation training. Thus it may be concluded that Pranayama and Meditation are effective for regulating resting heart rate in deaf and dumb students.

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Corresponding Author:
Mr. Arjun Singh Solanki
Research Scholar,
Department of Physical Education,
Guru Ghasidas University,
Bilaspur (C.G.), India.