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Effects of Nadi-Shodhana Pranayama Training on Physiological Variables of Physical Education Students

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Abstract – The aim of the study is to assess the effects of a 6-week nadi - shodhana pranayama training on selected physical & physiological variables of physical education B.P.ED (Bachelor of Physical Education) and M.P.ED (Master of Physical Education) students. For this study total 40 male students were selected as subject from selvam college of physical education, namakkal, India. Their age ranged between 18-24 years. Subjects were allocated to two groups: A (experimental: N-20) and B (experimental: N-20) (control: N-20). Group A subjects (experimental: N-15) were subjected to a 6-week program of nadi shodhana pranayama training. It lasted six weeks, consisting of daily sessions lasting 30 minutes. Cardio-vascular endurance was assessed by heart rate - 12 min. run & walk, Stability - Sit & Reach exam, radial pulse counting. Vital capacity was measured by spirometer and Peak Flow Rate - Peak Flow Rate. In order to increase vital capacity and regulate heart rate and blood pressure, the 'Nadi-shodhana Pranayama training program may be recommended and may lead to improving health and well-being. The care of the chosen 'Nadi-shodhana Pranayama training program for 6 weeks was offered to students. The result shows that the daily practice of Pranayama enhanced physical variables (cardio-vascular endurance and endurance). (Pulse Rate, Vital Capacity & Peak Flow Rate) significantly.

Key Words: Nadi-shodhana Pranayama, Cardio-Vascular Endurance, Flexibility, Resting Pulse Rate, Vital Capacity, Peak Flow Rate.

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INTRODUCTION

Yogic approaches generate continuous physiological improvements and provide a strong empirical base (Chhina, 1974; Udupa and Singh, 1972). There are few studies on the impact of different pranayams on body functions, such as yoga breathing (Pathale et al., 1978; Gopal et al., 1973). Yoga relates to the union of the human self with the collective self in metaphysical words (Hadi, 2007). Asana and pranayama have been integrated as the foundation of a medical treatment method alongside Ayurvedic medicine. Yoga respiration preparation selectively improves the breathing experience, possibly by its constant conditioning of the breathing rhythm (Florence et al., 2005). For thousands of years, Yoga has been studied. It is founded on ancient ideas of the relations between mind and body, insights and concepts. In order to look into the health effects of yoga-yoga postures (asanas), yoga breathing (pranayama) and meditation, extensive study has been carried out. This yoga practices can interfere with different somatic and neuro-endocrine pathways that produce therapeutic results (Malhotra and Singh, 2002). The overall efficiency of yoga techniques is considered to be enhanced (Upadhyay et al., 2008) and their impact on physical functions have been documented (Hadi, 2007). A research by Udupa et al. (1975) suggests that a decrease in basal sympathetic tone is induced by pranayama training. Yoga exercises may also be used as psycho-physiological triggers to enhance melatonin secretion, which, in fact, could be responsible for perceived well-being (Harinath et al., 2004). The science of breath management is yoga breathing, or pranayama.

One of the yogic exercises, pranayama (breathing exercise), may produce multiple physiological responses in healthy individuals (Upadhyay et al., 2008). Raghuraj et al. (1998) stated that parasympathetic behaviour is stimulated by Nadi-shodhana pranayama. Slow and deep breathing has a soothing impact on the mind and helps to de-stress a person (Sandeep et al., 2002). Several research have shown the physiological and therapeutic effects of yoga (Selvamurthy et al., 1983; Bal and Singh, 2010; Bal, 2010). Ses findings have shown that routine yoga practice contributes to enhancements in physiological and

individual performance functions. Yoga and paranyam can be as successful as or better than exercise in enhancing a number of outcome measures linked to health (Ross and Thomas, 2010) and, as a result, this research was undertaken to evaluate the impact on cardiopulmonary parameters of 6-week nadi-shodhana pranayama preparation.

PURPOSE OF THE STUDY

The purpose of the present study was to find out the effect of Nadi-Shodhana pranayama practices on selected physical & physiological variables of physical education Students of a B.P.ED (Bachelor of Physical Education) and an M.P.ED (Master of Physical Education).

METHODOLOGY

Subjects

For this analysis, 40 male subjects were chosen in total. 25 B.P.ED (Physical Education Bachelor) and 15 MP.ED. (Master of Physical Education) students from Selvam College of physical education, namakkal taken as sample. Their age ranged between 18-24 years.

Variable Physical Measures

1. Cardio-vascular endurance.
2. Flexibility.

Physiological Measures

1. Resting Pulse Rate
2. Vital Capacity
3. Peak Flow Rate

Tests: Following tests were utilized for the present study:-

Tests used for Physiological variables

1. Cardio-vascular endurance : 12 min. run & walk
2. Flexibility : Sit & Reach test

Tests conducted for Physiological variables

1. Resting Pulse Rate : Stop Watch
2. Vital Capacity : Spiro meter
3. Peak Flow Rate : Peak Flow Rate

DATA COLLECTION

All data were collected, in the month of August and October When they join their usual classes in 2019. The researcher himself specializes in the pranayama program of Nadi-Shodhana. The subjects engaged in Nadi-Shodhana pranayama practices in the indoor hall five days a week, for a duration of just six weeks. The yoga teacher, prior to the administration of the program, provided the required guidance for the subject. Confidentiality of response was guaranteed. The required data in different components was collected from the students during first for morning classes.

Aahper youth physical fitness test; and sit & reach test for measuring physical fitness variables organized at 1st, 2nd and 3rd day while physiological measurement were taken 4th day. Subjects engaged in the Nadi-Shodhana pranayama program after the compilation of pre-test scores on all selected variables. Nadi-Shodhana pranayama post-test was done after 6 weeks of selection and all data on all health variables was collected (as pre-test was collected).

STATISTICAL PROCEDURE

Review of the knowledge obtained from students of B.P.ED (Bachelor of Physical Education) and M.P.ED (Master of Physical Education), Mean and SD was computed. To find out the effect of Nadi-Shodhana pranayama practices on selected physical & physiological variables of students, "t" test was applied. For testing the hypothesis the level of significance was set at .05 levels.

DISCUSSION AND FINDINGS

Table 1 shows the comparison of means of selected physical variables of pre test scores. 12 min. run & walk mean value of pre- test is 2578.4 And 2648.2. is the post-test. The pre-test value for versatility is 17.23 and the post-test value is 24.54.

Table 1: Compression of Means of Selected Physical Variables of Pre Test & Post Test Scores

Variables	Group	Mean	S. D	"t"
Cardio-vascular endurance	Pre - Test	2578.4	36.2	3.822*
	Post - Test	2648.2	36.52	
Flexibility	Pre - Test	17.23	4.32	6.217*
	Post - Test	24.54	6.03	

*Significant at .05 level 't' value mandatory to be significant at .05 level with 38 degree of freedom is 2.021

Table 2 shows the comparison of means of selected physical variable of pre- test & post test

scores. In pulse rate mean value of pre- test is 72.47 and post- test is 69.03.In vital capacity mean value of pre -test is 2998.56 And 3221.24 is the post-test. The mean pre-test value of the pack flow rate is 462.84 and the post-test value is 496.03.

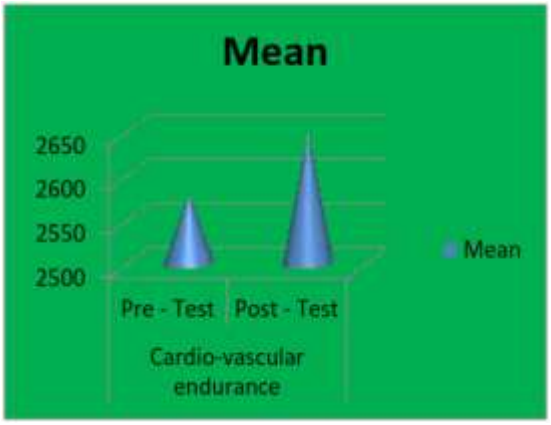

Fig 1: Bar diagram showing the Mean Value on Cardio – Vascular Endurance

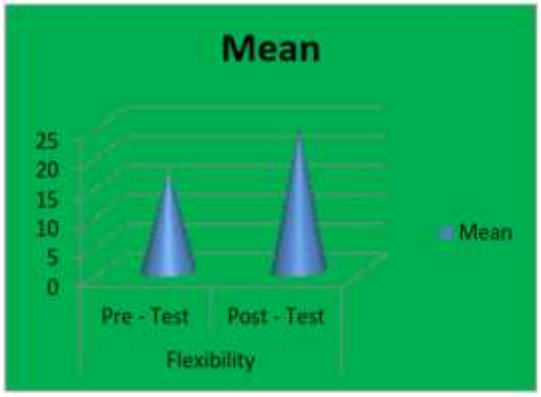

Fig 2: Bar diagram showing the Mean Value on Flexibility

Table 2: Comparison of Means of Selected Physiology Variables Of Pre Test & Post Test scores

Variables	Group	Mean	S. D	"t"
Pulse Rate	Pre - Test	72.47	5.39	2.595*
	Post - Test	69.03	6.42	
Vital Capacity	Pre - Test	2998.56	346.73	2.628*
	Post - Test	3221.24	408.56	
Peak Flow Rate	Pre - Test	462.84	69.49	2.127*
	Post - Test	496.03	70.05	

*** Significant at .05 level 't' value required to be significant at .05 level with 38 degree of freedom is 2.021**

The means of both chosen functional and physiological variables (cardio-vascular stamina, resilience, pulse rate, vital ability & peak flow rate) of students in physical education have major variations. Raub, (2002) stated that yoga will help regulate physiological factors such as blood pressure, breathing and heart rate, metabolic rate, and increase the overall ability of exercise. Harinath, (2004) also stated that 3-month yogic activities culminated in cardio-respiratory efficiency enhancement. Joshi (1992) also stated that pranayama six-week courses enhance ventilator function in the form of reduced respiratory rate and increase in forced vital power, forced expiratory length, maximum voluntary ventilation, peak expiratory flow rate, and breath keeping time prolongation. Significant improvements in forced vital power, forced expiatory volume and peak expiratory flow rate, and the end of 12 weeks of yoga training, were also recorded by Yadav and Das (2001).

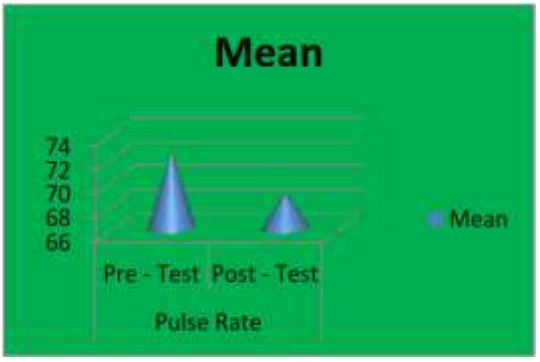

Fig 3: Bar diagram showing the Mean Value on Pulse Rate

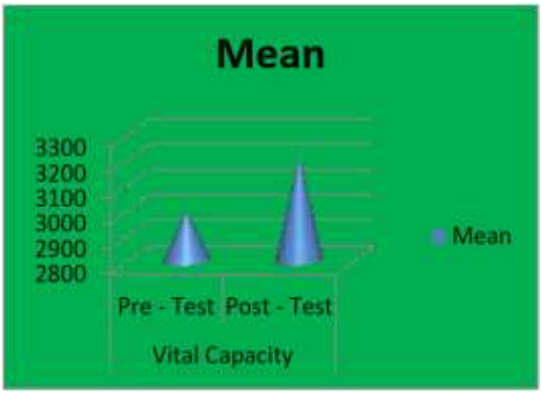

Fig 4: Bar diagram showing the Mean Value on Vital Capacity

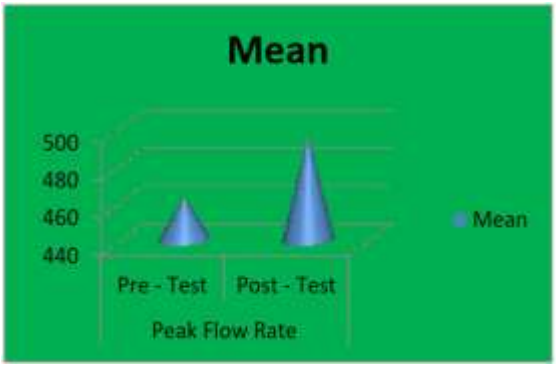

Fig 5: Bar diagram showing the Mean Value on Peak Flow Rate

CONCLUSIONS

Summing up, the 6-week pranayama training programme had significant effect on Cardio-vascular endurance, Flexibility, pulse rate, vital capacity & peak flow rate. Thus, such training may be recommended to improve physical and physiological fitness-based performance. The positive results found in the present study might apply to sports persons to improve physical and physiological efficiency. A few minutes practice daily may help in maintain healthy life. The daily practice could also be parts of physical fitness and life style modification programs in maintaining better physical and mental health.

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