



A STUDY ON THE EFFECT OF PRANAYAMA ON CARDIO-RESPIRATORY PARAMETERS OF ATHLETES IN ANDHRA UNIVERSITY

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Abstract

The purpose of the study was to determine the Pranayama on different cardio-respiratory parameters of Athletes Players. 45 male Athletes age ranging between 19-25 years were randomly selected as subjects from university players in Andhra University and were grouped into three experimental groups (A, B & C) i.e. Left nostril dominance group, right nostril dominance group and uni-nostril dominance group respectively and each group consisted of 15 subjects which were measured on peak flow rate, vital capacity, cardio respiratory, heart rate and respiratory rate. The three experimental groups participated in a 3 week, 4 days a week for 50 minutes of duration in their respective yogic training program. Paired T test was used to analyze the collected data on selected parameters at 0.05 level of significance. The obtained t- value of left nostril dominance experimental group, right nostril experimental group and uni-nostril dominance experimental group on Peak flow rate, vital capacity, cardio-respiratory endurance, heart rate and respiratory rate are respectively which are greater than tab value of 1.94 required to be significant. After comparing mean difference it was evident that uninostril dominance has effected significantly better than right nostril dominance and left nostril dominance yogic training on all cardio-respiratory parameters. Hence on the basis of these findings, the hypothesis made earlier that there will be significant effect of nostril dominance yogic training on selected cardio respiratory variables of Athletes accepted for the variables.

Key Words:

Athletes, Nostril Dominance, Yogic Practices, Cardio- Respiratory Parameters.

INTRODUCTION:

Yoga aims to lead a person towards wholesome personality development by integrating the mind and body. As the child crosses the threshold of puberty, he suddenly finds himself caught in a biological upheaval, psychological chaos and emotional disequilibrium. He faces many problems such as physical problem, mental problem, behavioral problem, emotional problem, social problem etc.

Psychological variables may be influenced by yogic practice. The objective of the study was to study the effect of Pranayama on cardio Respiratory parameters of Andhra university athletes. The study will be delimited to 50 male Athletes inter university players in Andhra University, Visakhapatnam. Following selected Asanas were included in the yogic training program: Life absolutely depends upon the act of breathing. Breathing may be considered as the most important of all the functions of the body, for indeed, all the other functions depend upon it. We breathe day and night even during sleep. Breathing changes after every hour (approx.) from right nostril to left nostril and vice versa. When the flow of breathing is more through the right nostril, we call it right nostril dominated, whereas if the flow of breathing is more through the left nostril we call it left nostril dominated. In recent years there has been a growing interest among scientists regarding the significance of two nostrils. They have also recognized the importance of uni-nostril breathing patters for physiological function. This nostril dominance is due to contraction and relaxation of mucus structure of the nasal pharynx junction. The left and right nostril dominant cause is not yet established



but it result due to nervous excitation. Nostril dominance is kind of breathing exercise that resembles Anlom Vilom Pranayama and Surya & Chandra Bhedna Pranayama. Considering this fact and reading various literature and articles I felt that nostril dominance yogic practices can have an effect on different cardio-respiratory parameters of players.

Also continue to doing asanas following : Surya Namaskar, Shavasana, Halasana, Sarvangasana, Matsyaasna, Chakrasana, Shalabhasana, Bhujangasana, Ardha-matsyendrasan, Vajrasna, Yogamudra, Standing Kati-chakrasana and Tadasana, selected Pranayamas: Anulom Vilom, Bhramari Pranayama, Bhastrika Pranayam and ‘Om chanting’. Any bias exist due to negative response from subjects was considered as a limitation of the study. Questionnaire study has its own limitations, which was considered as one of the limitation for the study. Student’s health, habits, and physical aspects, economical status, coaching and training background can affect the response of the students and therefore was considered as limitation. It was hypothesized that there will be significant effect of yogic practices can have an effect on different cardio-respiratory parameters of players.

STATEMENT OF THE PROBLEM:

To the purpose of study “Effect of Pranayama on Cardio-Respiratory Parameters of Athletes in Andhra University”

SIGNIFICANCE OF STUDY:

1. The study would help the teachers of physical education, coaches and yoga experts by way of pointing out the effectiveness of nostril dominance on cardio-respiratory parameters.
2. The study would provide scientific base to improve ancient Indian culture and discipline of yoga which our ancestors advised for general well being and healthy living.
3. Teachers of Physical Education and coaches of various sports disciplines can adopt the most appropriate program of yogic training.

RESEARCH HYPOTHESIS:

- Based on all the understanding it was hypothesized that- All the three forms of nostril dominant experimental program would significantly effect all the cardio respiratory parameters.
- The effect on respiratory parameters would be significantly different according to the types of nostril dominance program.

LIMITATION & DELIMITATION:

1. The study was limited to the following cardio-respiratory parameters-
2. Peak flow rate.
3. Vital capacity
4. Cardio respiratory endurance
5. Heart rate
6. Respiration rate
7. The study was further delimited to investigate the effect of nostril dominance on the following group of subjects- Left nostril dominance
8. Right nostril dominance
9. Both nostril dominance

RESEARCH PROCESS AND METHODOLOGY:

For the present experimental study 45 male Athletes age ranging between 18 -27 years were randomly selected as subjects from Inter University Athletes in Andhra University Visakhapatnam and



grouped into three experimental groups (A, B & C) i.e. Left nostril dominance group, right nostril dominance group and uni-nostril dominance group respectively and each group consisted of 15 subjects. The variables selected were peak flow rate, vital capacity, cardio respiratory endurance, heart rate and respiratory rate. The three experimental groups participated in a 3week training program with session of 50 minutes duration on 4 days a week. The quantitative measurement of each subject was taken with the help of standard equipment, before and after the three weeks of training. Paired T test was used to analyze the collected data on selected cardio-respiratory variables at 0.05 level of significance.

DATA ANALYSIS & RESULTS:

Table 1 Comparison of Pre and Post Test Mean Values on Cardio-Respiratory Variables of Left Nostril Dominance Experimental Group

SNO	Variable	Mean		M.D	S.D	T value
		Pre	Post			
1	Peak Flow Rate	530	542	4.35	2.88	4.06*-
2	Vital Capacity	2.86	3.06	0.32	0.51	2.34*
3	Cardio-Respiratory Endurance	44.25	46.32	1.68	1.96	2.36*
4	Heart Rate	52.64	50.35	1.02	0.68	3.85*
5	Respiratory Rate	14.56	13.02	0.65	0.71	4.45*

Significance t 0.05 (6) = 1.94*

Table 1 clearly reveals that Left Nostril Dominance yogic breathing training has significantly affected cardio respiratory parameters namely peak flow rate, vital capacity, cardio-respiratory endurance, heart rate and respiratory rate. Since the T ratio value obtained were 4.06, respectively, which are greater than tab value of 1.94 required to be significant. This implies that Left Nostril Dominance Training had brought significant difference on the cardio respiratory variables.

Table 2 Comparison of Pre and Post Test Mean Values on Cardio-Respiratory Variables of Right Nostril Dominance Experimental Group

SNO	Variable	Mean		M.D	S.D	T value
		Pre	Post			
1	Peak Flow Rate	529	525	4.68	3.21	3.45*
2	Vital Capacity	2.56	2.93	0.55	0.21	6.8*
3	Cardio-Respiratory Endurance	43.56	45.98	1.72	1.92	2.45*
4	Heart Rate	50.62	49.86	1.21	0.56	6.42*
5	Respiratory Rate	13.98	13.02	0.73	0.29	6.9

Significance t 0.05 (6) = 1.94*

Table 2 reveals that Right Nostril Dominance yogic breathing training has significantly effected cardio-respiratory parameters namely peak flow rate, vital capacity, cardio-respiratory endurance, heart rate and respiratory rate. Since the T ratio value obtained were 3.45, 6.8, 2.45, 6.42 & 6.9 respectively, which are greater than tab value of 1.94 required to be significant. This implies that Right Nostril Dominance Training had brought significant difference on the cardiorespiratory variables.

Table 3 Comparison of Pre and Post Test Mean Values on Cardio-Respiratory Variables of Uni- Nostril Dominance Experimental Group

SNO	Variable	Mean	M.D	S.D	T value
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		Pre	Post			
1	Peak Flow Rate	521	524.9	4.56	3.65	3.84*
2	Vital Capacity	1.98	2.56	0.86	0.45	2.9*
3	Cardio-Respiratory Endurance	43.56	44.02	1.93	0.89	5.77*
4	Heart Rate	51.65	46.32	5.62	0.89	4.03*
5	Respiratory Rate	12.95	12.03	0.98	0.51	3.6*

Significance t 0.05 (6) = 1.94*

Table 3 clearly reveals that Uni-Nostril Dominance yogic breathing training has significantly effected cardiorespiratory parameters namely peak flow rate, vital capacity, cardio-respiratory endurance, heart rate and respiratory rate. Since the T ratio value obtained were 3.84,2.9,5.77,4.03 & 3.6 respectively, which are greater than tab value of 1.94* required to be significant. This implies that Both Nostril Dominance Training had brought significant difference on the cardio respiratory variables.

Table 4 Descriptive statistics on Cardio- Respiratory Parameters of Left Nostril Dominance, Right Nostril Dominance and Uni- Nostril Dominance

Sno	Variable	Group	Pre Mean	Post Mean	MD
1	Peak Flow Rate	BND	530	542	4.35
		RND	529	525	4.28
		LND	521	524.9	4.16
2	Vital Capacity	BND	2.86	3.06	0.32
		RND	2.56	2.93	0.55
		LND	1.98	2.56	0.86
3	Cardio-Respiratory Endurance	BND	44.25	46.32	1.96
		RND	43.56	45.98	1.72
		LND	43.56	44.02	1.63
4	Heart Rate	BND	52.64	50.35	0.68
		RND	50.62	49.86	1.21
		LND	51.65	46.32	5.62
5	Respiratory Rate	BND	14.56	13.02	0.71
		RND	13.98	13.02	0.73
		LND	12.95	12.03	0.98

An observation of Table 4, from mean difference comparison it was evident that, on all the cardiorespiratory parameters that are peak flow rate, vital capacity, heart rate, cardio-respiratory endurance and respiratory rate; uninostril dominance has effected significantly better than right nostril dominance and left nostril dominance yogic training respectively. In terms of effect as expressed by mean difference shows order or pattern as Uni-Nostril Dominance > Right Nostril Dominance > Left Nostril Dominance

DISCUSSION AND FINDINGS:

Nostril dominance breathing pattern is a natural phenomenon and changes in dominance pattern are because of hemispheric activity of central nervous system and the various parts involved



throughout a day. The finding of the study shows that the three forms of nostril dominance breathing on yogic training significantly improved cardio-respiratory variables and it showed that uni-nostril dominance effect is most. In the case of left nostril dominance and right nostril dominance, the air passage through nasal cavity through either right or left nostril by nasal mucus and nasal pharynx congestion reduces the effect. This happens due to activation of opposite sensory nerves through selected yogic asana. As a result the air passage through nasal flow is restricted.

In comparison to this during uni-nostril dominance exercise the nasal passage completely widens off which helps in the air flow through nasal cavity. As a result every organ that is involved in the cardio-respiratory system is exercised to the maximum level. Thus, this might be the reason that both nostril yogic training effected most.

DISCUSSION AND HYPOTHESIS:

On the basis of finding of the study the hypothesis made earlier that there will be significant effect of nostril dominance yogic training on selected cardio-respiratory variables is accepted for the variables peak flow rate, vital capacity, cardio-respiratory endurance, heart rate and respiratory rate.

CONCLUSIONS:

On the basis of findings of this research experiment and thereby understanding it is concluded that: Every form of nostril dominance yogic exercise is highly effective for improving all the cardio respiratory parameters. Uni-Nostril Dominance yogic exercises is the most effective and best form of yogic training to improve various cardio-respiratory parameters. Combination of nostril dominance training program should include breathing exercises as well as yogic asana. It is possible to bring in effect in cardio-respiratory variables through nostril dominance yogic training in minimum of three weeks training athletes are better performance show in athletics events.

REFERENCES:

1. Kamalesh ML. Principles and History of Physical Education. Ludhiana: Prakash Brothers Educational Publishers; 1998.
2. Pramanik TN. Yoga Education. New Delhi: Sports Publication
3. Norton K, Olds T. Morphological evolution of athletes over the 20th century: Causes and consequences. Sports Med 2001; 31:763-83.
4. Wilmore JH, Costill DL. Physiology of Sports and Exercise. 2nd ed. Champaign, IL: Human Kinetics; 1999.
5. Heyward VH. Advanced Fitness Assessment and Exercise Prescription. 5th ed. Champaign, IL: Human Kinetics; 2006
6. Duarte R, Araújo D, Correia V, Davids K. Sports teams as superorganisms: Implications of sociobiological models of behaviour for research and practice in team sports performance analysis. Sports Med 2012; 42:633-42.
7. American Alliance for Health, Physical Education and Recreation. Skills Test Manual Volleyball for Boys and Girls. Washington, DC: American Alliance for Health, Physical Education and Recreation Publication; 1960.
8. Howarth E. Headache, personality and the stress. Br J Psychiatry 1965; 111:1193-7.
9. Dragnea A, Mate-Teodorescu S. Sports Theory. Bucharest: Fest Press; 2002.
10. Bompa T. The Theory and Methodology of Training. 2nd ed. Bucharest: CNFPA Press; 2001.
11. Yoga games for children: Fun and fitness with postures, movements and breaths. California: Hunter House Finger, A. (2000).



12. Hagen I, Nayar US. Yoga for children and young people's mental health and well-being: Research review and reflections on the mental health potentials of yoga. *Front Psychiatry* 2014; 5:35.
13. Sarang SP, Telles S. Immediate effect of two yoga-based relaxation techniques on performance in a letter cancellation task. *Percept Mot Skills*. 2007; 105:379–85. [[PubMed](#)] [[Google Scholar](#)].
14. Arenaza, Diego Ernersto Marcelo. Research Report. The Yoga in school. Florianópolis: Department of Teaching Methodology. Science Center of Education, Federal University of Santa Catarina (UFSC); May 08, 2002.
15. Singh V, Wisniewski A, Briton J, Tattersfield A. Effects of yoga breathing exercises on airway reactivity in subjects with asthma. *Lancet*. 1990; 335:1381–3. [[PubMed](#)] [[Google Scholar](#)].
16. Innes KE, Bourguignon C, Taylor AG. Risk indices associated with the insulin resistance syndrome, cardio vascular disease and possible protection with yoga: A systematic review. *Jam Board Ram Prct* 2005; 18:491-519.
17. Giambrone CA. *Let Them See You Sweat: Integrating Yoga and Well-being*. United Kingdom: Intech Open Limited; 2019.