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Research Paper

Isolated and Combined Effect of Asanas and Pranayama Practice on Vital Capacity of Middle Aged Men

Physical Education

KEYWORDS : Isolated, Combined, Asana, Pranayama, Forced vital capacity.

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ABSTRACT

Human movement is the result of complex interactions between environmental factors and the nervous, muscular and skeletal systems. Brain cell activities within the cerebral cortex are converted by supraspinal centre programming into neural outputs that stimulate the muscular system to produce the requirement. Yoga is a system of attaining perfect physical and mental health. Yoga controls one's sense resulting in an integrated personality. Positive changes in the life style of the people can be brought through by yoga. The study aim to foundout the isolated and combined effect of asanas and pranayamas on vital capacity of middle aged men. To achieve these purpose sixty (N = 60) middle aged men were selected randomly from the 138 voluntaries of Prapancha Yoga Centre, Coimbatore, Tamil Nadu as subjects. Their aged ranged from 45 to 55 (48 ⌖ 2.8) years. They were divided into three equal groups (n=20). Group I underwent asanas, Group II underwent pranayamaand Group III underwent combined (Asanas and Pranayama) alternate sessions practices – 40 to 60 min/session/4days/week for 12 weeks. Data were collected on forced vital capacity (FVC) by PC based USB spirometer before and after the intervention programme. Dependent 't' test was used to find out the difference between pre and post fest. After eliminating the influence of pre-test on post-test means of experiment groups the analysis of covariance (ANCOVA) was used to find out the mean gain differences. In addition to this Scheffe's test was employed ($p < 0.05$). From the results and limitation of this study it was concluded that, twelve week of asanas, pranayama and combined practice are effective method to improve forced vital capacity of the middle aged men. Among the experimental group combined asanas and pranayama group improved FVC much better than the other groups.

Introduction

The human body and mind are gifts of God: The capital given to us without any interest payable. For anything in life to be fulfilled, the body should be healthy and this needs constant looking after. Just as a car needs constant care, the body and mind need the same. This is the best done by regular exercise. Awareness of this certainly better now than many years ago, but exercise oriented persons still form a minority in our vast world. In today's fast world, with easy availability of different types of cuisines, both vegetarian and non-vegetarian, junk-food, alcohol and cigarettes and the constant bombarding of our consciousness with advertisement of such foods through different media, we succumb, with resultant health problems [1].

The great science of yoga is India's unequalled gift of mankind. If mankind is to evolve further and if it is to save itself from its own aggressive tendencies, the only path open is through the science of yoga. Though the ultimate goal of this science is the realization of the absolute, in day to day life it is useful and necessary to maintain mental and bodily health. Bodily exercises (asanas), breath control (pranayama) and mind control (dhyana) are all helpful to conquer bodily and mental ills.

The pulmonary and circulatory system are responsible for moving blood from the heart to the lungs and back to the heart and getting rid of waste products in the blood while helping to distribute blood rich in oxygen. Exercise can help strengthen and make this system more efficient. Pulmonary functions are generally determined by respiratory muscle strength, compliance of the lung and thoracic cavity airway resistance and elastic recoil of the lungs [2].

It is acknowledged that low physical activity and fitness level are associated with ill health [3]. Although there is evidence that exercise can be of benefit of health, it must be regular if these benefits are to be attained/maintained. It is important that regular physical activity is encouraged and that appropriate exercise sessions are promoted. However, the mode of exercise must be acceptable to the target population – that is, the participants must find the activity enjoyable and be able to participate regularly, and it may be necessary to show that the exercise prescription is effective in improving fitness levels. The concept of "a little exercise is better than nothing" has been promoted [4].

Pulmonary disease are on the rise today due to the extensive iatrogenic pollution in our world. Unless a global commitment is undertaken to control pollution, the incidence of patients suffering from such disorders are bronchial asthma, chronic bronchitis and emphysema *etc.* [5].

Asana tones up the nervous system, function of all vital internal organs, stimulation of the glands and regulation of the blood flow. The muscles in our body are thus formed and strengthened [6]. The exercise of pranayama the correct breathing technique helps to manipulate our energies. Most of us breath incorrectly, using only half of our lung capacity. Pranayama is a technique, which re-educates our breathing process, helps us to release tensions and develop a released state of mind [7].

When practiced along with yogasanas the benefits of pranayama are more pronounced. According to Patanjali's yoga sutra, pranayama enables the mind to acquire the capacity to concentrate on any given object of attention. It also says that scientific breathing helps in unveiling true knowledge from the darkness of ignorance [8].

Pranayama is an art and has techniques to make the respiratory organs to move and expand intentionally, rhythmically and intensively. It consist of long sustained suitable flow inhalation (puraka), exhalation (recaka) and retention of breath (kumbhaka). Physically, pranayama appears to be a systematic exercise of respiration, which makes the lungs stronger, improves blood circulation, makes the man healthier and bestows upon him the boon of a long life. Hence, the study aim to foundout the isolated and combined effect of asanas and pranayamas on vital capacity of middle aged men.

Methodology

To achieve these purpose sixty (N = 60) middle aged men were selected randomly from the 138 voluntaries of Prapancha Yoga Centre, Coimbatore, Tamil Nadu as subjects. Their aged ranged from 45 to 55 (48 ± 2.8) years. They were divided into three equal groups (n=20). Group I underwent asanas (Suryanamaskar, Tadasana, Trikonasana and Paschimothanasana), Group II underwent pranayama (Nodisodhana, Samavrithi, Bastrika, Ujjayi, Kapalabhati and Bharamari) and Group III underwent combined (Asanas and Pranayama) alternate sessions practices – 40 to 60 min/session/4days/week for 12 weeks. Data were collected on

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forced vital capacity (FVC) by PC based USB spirometer before and after the intervention programme. Dependent 't' test was used to find out the difference between pre and post fest. After eliminating the influence of pre-test on post-test means of experiment groups the analysis of covariance (ANCOVA) was used to find out the mean gain differences. In addition to this Scheffe's test was employed ($p < 0.05$).

Results

Table I. ANCOVA and 't' of Experimental Groups on Forced Vital Capacity

Variable	Group	Adjusted post test mean	't' value	% improvement	'F' value
Forced vital capacity (litter)	Asans	3.22	32.99*	19.93	5.06*
	Pranayama	3.17	31.89*	18.22	
	Combined	3.24	35.99*	20.75	

't' table value 2.09 and F table value 3.16 respectively; *p > 0.05

Table II. Scheffe's test for means

Variable	Asana	Pranayama	Combined	MG	CI
Yoga	3.22	3.17	–	0.15	0.05
Aerobic	3.22	–	3.24	0.02	
Combined	–	3.17	3.24	0.07	

From the result it was clean that all the experimental (asanas, pranayama and combined) groups improved FVC of the middle aged men. The improvement of FVC was much better for combined group followed by asana and pranayama groups respectively. The magnitude of improvement also reveals the same.

Discussion

Physical inactivity and low cardio-respiratory fitness are recognized as important causes of morbidity and mortality [9]. It is generally accepted that people with higher levels of physical activity tend of have higher levels of fitness and that physical activity tend to have higher levels of fitness and that physical activity can improve cardio-respiratory fitness [10]. In the present study FVC increased significant in the experiment groups after twelve weeks of asanas, pranayama and combination of asana and pranayama practices.

Yoga (asanas), quietitude in the body always stabilizes irritable response. The parasympathetic tone is in excess in asthuma; exercise always help balance the autonomic tone by raising the sympathetic. It is possible to change the very responsiveness of the body. It is a matter of training. Asanas do their part by helping to ease the congestion in the lungs. This promotes relaxation of smooth muscle and lungs. This promotes relaxation of smooth muscle and better oxygenation [11]. Exercise is the only way to help improve the mechanical efficiency of the lungs. The usual repertoire of exercises is too strenuous for the lungs. Asanas that do not raise the respiratory rate and yet help excretion of the sputum, increases oxygen levels in the blood and elastic recoil of the lungs, prevent recurrent infections, and aerate the whole lungs, invigorating the lungs function at the end of the session. Yoga stands out as the only system eminently meeting all these requirements [12].

Pranayama is of direct help in the development and improvement of pulmonary function. The sympathetic tone is raised and vogel tone lessened; in other words, a balance is obtained. The effect can be felt soon after the practice of pranayama is over. A single long inhalation has been shown to enhance airways relaxation. The slower and longer the inhalation, the better the relaxation. The exhalation in asans is never forced as it would narrow the bronchi. It is rather a slow, very deliberate process. Regular practice of pranayama improves ventilation, better control of smooth muscle as the process of breathing helps in voluntary opening of airways [13].

All standing poses improve the endurance of the practitioner in a manner similar to that of other exercise, but without the added strain. The vascularity of the lung, its mechanical components, its exchange capacity for gases, and the softness of the lung are all preserved by the practice of asanas and pranayama [14].

Pranayama improves mucociliary clearance and stamina. The practice of Kumbhaka facilitates better percolation of oxygen into the lungs. In the process of retention, the partial pressure of gases increases, which facilitates better and deeper entry as there is enough time for percolation. The improved uptake creates better absorption on to haemoglobin, thus enriching the quality of cellular food. This gives greater energy [15].

Cardiorespiratory fitness significantly improved and breathlessness decreased over a wide range of work corresponding to activities of daily living. FVC in health people; and thus provides further support for the asanas and pranayama exercise being an important component of pulmonary rehabilitation [16]. Present study also correlates with the above findings and showed that the experimental groups asana, pranayama and combined practice were able to have more powerful and more effective expiration as opposed to what they had been before.

Conclusion

From the results and limitation of this study it was concluded that, twelve week of asanas, pranayama and combined practice are effective method to improve forced vital capacity of the middle aged men. Among the experimental group combined asanas and pranayama group improved FVC much better than the other groups.

Implication

Pranayama with asana practice may be used to develop better pulmonary (FVC) function of middle aged men.

REFERENCE

1. Krishna Raman (1988), "A matter of Health: Integration of Yoga and Western Medicine for Prevention and Cure". Eastwest Book Pvt. Ltd., Chennai. | 2. Cotes, J.E., (1975), "Lung Function Assessment and Application in Medicine". 3rd ed. Oxford: Blackwell Scientific Publications. | 3. Blair, S.N., Kohl, H.W., Paffenbarger, R.S. (1989), "Physical Fitness and All-Cause Mortality. A Prospective Study of Health Mend and Women". JAMA, 262: 2395-401. | 4. Mutrie, N., Blamey, A (1993), "Class Based and Home Based Activities for Older People. Research Digest 30, Research Report 32, Edinburgh, Scottish Sports Council. | 5. Sharma, P.P. (1984), "Yogasana and Pranayama for Health", Navneet Publication, India, pp. 10-11. | 6. Danucalov, M.A., et al. (2008), "Cardiorepiratory and Metabolic Changes During Yoga Sessions: The Effects of Respiratory Exercise and Meditation Practices". Applied Psycho Physiological Bio-Feedback, June 33(2): 77-81. | 7. Harinath, K. (2004), "Effect of Hatha Yoga and Omkar Meditation and Cardiorespiratory Performance, Psychologic Profile. Journal of Alternate Complement Medicine, Apr. 10(2): 261-8. | 8. Jerath, R. et al. (2006), "Physiology of Long Pranayamic Breathing: Neural Respiratory Elements May Provide a Mechanism that Explains how slow Deep Breathing Shifts the Autonomic Nervous System". Medicinal Hypotheses, 67(3): 566-71. | 9. Twisk, J.W. and Brankman, M.N. (1998), "Tracking of Lung Function Parameters and the Longitudinal Relationship with Lifestyle". European Respiratory Journal, 12: 627-63. | 10. Burchfiel, C.M. and Sharp, D.S. (1997), "Factors Associated with Variations in Pulmonary Functions among Elderly Japanese American Man". Chest, 112: 87-97. | 11. Ramos-Jimenez, A. et al. (2009), "Cardiovascular and Metabolic Effects of Intensive Hatha Yoga Training in Middle-Aged and Older Women from Northern Mexico". International Journal of Yoga, Jul 2(2): 49-54. | 12. Usha Lohan and Dolly Rajesh (2002), "Effect of Asanas and Pranayamas on Physical and Physiological Components of Boys Between Age Group 12-16 Years". Journal of Sports and Sports Sciences, 25(1): 50-56. | 13. Kumar, A. and Balakrishna, A. (2009), "To study the Effect of Sequence of Seven Pranayama by Swami Ramadev on Gene Extension in Leukaemia Patients and Rapid Interpreation of Gene Expression". Journal Clinical Pathology, Nov. 62(11): 1052-3. | 14. Madanamohan, et al. (2008), "Effect of Six Weeks Yoga Training on Weight Loss Following, Step Test, Respiratory Pressure, Handgrip Strength and Handgrip Endurance in Young Health Subjects". Indian Journal of Physiology and Pharmacy, Apr-Jun. 52(2): 164-70. | 15. Joshi, K.S. (1992), "Yogic Pranayama-Breathing for Long Life and Good Health", (New Delhi: Orient Paper Backs), p. 14. | 16. Clark, C.J. (1998), "The Role of Physical Training in Asthma" Chest, 101: 293-98.