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Isolated and Combined Effect of Asanas And Pranayama Practice on Stroke Volume of Middle Aged Men

KEYWORDS: Isolated, Combined, Asana, Pranayama, Storke volume.

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ABSTRACT

Everybody desires a long and healthy life and exercise has a greater part to play in this. 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 opening through science of yoga. The study aim to found out the isolated and combined effect of asana and pranayama on stroke volume of middle aged men. To achieve these purpose sixty (N = 60) middle aged men were selected randomly from 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 pranayama and Group III underwent combined (Asanas and Pranayama) alternate sessions practices – 40 to 60 min/session/4days/week for 12 weeks. M – Mode Doppler echocardio graphic technique was used for data collection [10]. The data were recorded before and after the experimental period. The data were analyzed by ANCOVA (SPSS-16.0) and means were compared with Scheffe's post hoc test. Further correlated 't' was employed to found out the training effect among the groups ($p < 0.05$). The result of present study demonstrated that twelve week of asanas, pranayama and combined practices were not significantly increase stroke volume of the middle aged man. However, from the baseline data the improvement of stroke volume was observed.

Introduction

Health, which is considered as the most precious asset of human being, is highly determined by the physical fitness status of the individual. Fitness is optimized in the present day societies with a focus on two goals; health and performance. Lifestyle affects people health, with eating habits and regular physical activity being the two influenced factor [1] irrespective of sex, age or country of residence [2].

An appropriate way to assess health in apparently healthy people is measure their health related fitness, defined as the dynamic state of energy and vitality that allows people to perform daily tasks, enjoy active leisure and cope with unexpected emergencies with out fatigue. At the same time, health-related fitness helps in the prevention of hypokinetic diseases, in maximum development of intellectual capacity, and in full enjoyment of life [3]. Although regular physical exercise has a positive influence on health, a high level of fitness related health has a greater influence [4,5].

Low physical fitness is associated with a higher mortality rate, a higher risk of certain forms of concern, obesity, decreased mental helath,diabetes, hypertension and a lower quality of life [6,7]. Everybody desires a long and healthy life and exercise has a greater part to play in this. In one aspect, the body can be said to commence ageing from the moment it is born, although it is usual to say it really begins in about the mid-thirties.

Cardiorespiratory mechanisms function collectively to support the increased metabolic demands on active muscles. The increases in cardiac output is accomplished through increases in both heart rate and stroke volume [8]. Training cause biological adaptation to improve performance in a specific task. Neural regulations of the cardiovascular system regulates haemodynamic responses by increasing heart rate, stroke volume and oxygen extraction at the tissue level [9].

Yoga is a system of attaining perfect physical and mental health. Yoga controls one's senses resulting in an integrated personality. Positive changes in the life style of the people can be brought through by yoga. It is highly therapeutic. Some of the ailment proven to be relieved, reversed and even healed through the practice of yoga. Asanas tones up the nervous system, function of all vital internal organs, stimulation glands and regulation of the blood flow. The muscles in our body are thus formed and strengthened, 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 found out the isolated and combined effect of asana and pranayama on stroke volume of middle aged men.

Methodology

To achieve these purpose sixty (N = 60) middle aged men were selected randomly from 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. M – Mode Doppler echo-cardio graphic technique (Kontroom sigma HVD 44) was used for data collection [10]. The data were recorded before and after the experimental period. The data were analyzed by ANCOVA (SPSS-16.0) and means were compared with Scheffe's post hoc test. Further correlated 't' was employed to found out the training effect among the

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groups ($p < 0.05$).

Results

Table I. ANCOVA of Experimental Groups on Stroke Volume (ml/beat)

Test	Asana	Pranay-ama	Com-bined	SOV	S.S	df	MS	F
Adjusted post test means	0.85	0.86	0.85	B	.001	2	.001	0.297
				W	.055	56	.001	

$p > 0.05$

Table II. Correlated 't' between pre and post test on stroke volume (ml/beat)

Group	Pre test		Post test		r	t value	Magnitude of improvement %
	$\overline{X}$	σ	$\overline{X}$	σ			
Asana	0.67	0.021	0.85	0.039	0.344	21.46*	26.86
Pranay-ama	0.66	0.619	0.86	0.034	0.610	29.66*	28.35
Com-bined	0.67	0.016	0.85	0.033	0.638	30.01*	26.86

*p>0.05 (p value @ 0.05 = 2.09)

From table I it is clear that there is no significant difference among adjusted post-test means of asana, pranayama and combined groups on stroke volume of middle aged men. From table II it is inferred that all the three groups were significantly improved stroke volume from their baseline data. The magnitude of improvement (%) was higher for pranayama group and no much difference between asana and combined practice group on stroke volume of middle aged men.

Discussion

The classic example of neural stimulation is sympathetic activation of the adrenal medula to release the catecholamines, epinephrine and non-epinephrine, during the periods of stress. In certain cases the nerous system overrides normal endocrine control in an effort to maintain homeostasis. However, different system of the body age at different rates, no doubt depending upon how they are used or not used. Many people continue a very active life, both physically and mentally, well in to their old age. The barrier of these activities often seems to be physiological rather than physical, and when a person thinks he is too old to do something physically, many well be completely wrong, although too much of exercise could do harm. The only way to findout is one can do something to try.

Hather yoga and conventional physical training exercise may have therapeutic preventive and protective effects on humans by decreasing oxidative stress and improving antioxidant stress [11]. Six month asana and pranayama practice may reduce cardiac stress and basal metabolic rate than sedentary [12]. The observations suggest that the performance of asanas led to increased sensitivity of the cardiopulmonary responses, but pranayama practice improve pulmonary efficiency [13]. Aquatic training program may reduce resting heart rate. Endurance training and interval training increase cardiac output [14]. Physical training improves stroke volume and cardiac enlargement [15]. Intensive cycling increased HRV and cardiac vegal modulation during rest and absolute exercise work rate [16]. Hatha yoga improve lipoprotein functions positively and has no influences on cardiac functions of middle aged and older groups [17].

Yogasana and pranayama practice would not made any changes and modification on cardiac system [18]. Bhastrika pranayama did not reduces the systolic and diastolic blood pressure but slight fall in heart rate [19]. Pranayama reduces SBP, pulse rate and RR [20]. The findings of this study proved that, there was no significant influence on stroke volume of the subjects due to 12 weeks of asana and pranayama. However, ten weeks asanas and programmes has positive changes in pulse rate and other physiological variables [21]. Six weeks asana and pranayama improve the breath holding time [22].

The result of present study demonstrated that twelve week of asanas, pranayama and combined practices were not significantly increase stroke volume of the middle aged man. However, from the baseline data the improvement of stroke volume was observed.

Conclusion

From the results and limitation of this study it was concluded that, 12 weeks of asanas, pranayama and combined practice are not sufficient to influence and improve stroke volume of the middle aged men. But a positive trend was observed in the post data stroke volume for all the three groups and inperticular to pranayama group.

Implication

Pranayama with asana practice may be suggested as a therapy or physical exercise for middle aged men to have better cardiac pulmonary function. However an extension period of study is required to understand the specific changes in cardiac function.

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