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Kamalesh Pratap Singh

Ph. D. Scholar, Department of Physical Education, Mahatma Gandhi Kashi Vidyapith University, Varanasi, Uttar Pradesh, India

Dr. Santosh Kumar

Associate Professor, Head & Ph. D. Supervisor, Department of Physical Education, Mahatma Gandhi Kashi Vidyapith University, Varanasi, Uttar Pradesh, India

Effect of six week yoga training practice on cardiovascular endurance of old age man

Kamalesh Pratap Singh and Dr. Santosh Kumar

Abstract

The purpose of the study was to find out the effect of 6 week yoga training program on cardiovascular endurance of old age man. The subjects for present study were 60 old age man between the age of 60 – 65 year of age from Varanasi (U.P.). All the subjects were randomly assigned into experimental group I (N=20) experimental group II (N=20) and control group (N=20). For experimental group I and II, Yoga training and walking exercise were imparted thrice in a week and control group participated in regular physical activity for five days in a week. Based on review of available literature, the cardiovascular endurance was selected for the purpose of study. The pre and post tests were administered to the subjects at the play grounds of Banaras Hindu University, Varanasi (U.P) at the end of experiment. The data collected from the three groups were statistically analysed for significance, the ANACOVA was used. In all the cases to test the significance, 0.05 level of significance was fixed. The data were analysed by computer using statistical packages. The results of the study revealed that Six weeks of planned and systematic training modalities did not have any significant effect on cardiovascular endurance of male aged persons. Improvement in cardiovascular endurance was observed in walking training group and control group of male aged persons. Statistically significant difference was not found in adjusted post test mean scores of different groups of male aged person in the cardiovascular endurance.

Keywords: Yogic exercise, walking exercise group, control group, cardiovascular endurance

1. Introduction

YOGA is a way of life, a specific mode of thinking and natural living. Yoga is not a system of physical exercises or asanas, but a perfect synthesis of body, mind and spirit. It is the most significant scientific technique for development of an integrated personality. It consists of not only Hatha yoga, but Yama, Niyama and Pratyahara which emphasise the basic truth, "unrighteous means lead to ruin (Kaul, 1984) [7].

The truthful stand for the word yoga is 'to yoke'. This deals that uniting of self spirit with the universal spirit, or God. The origin of word yoga is from the roots of Sanskrit word 'Yuj' which means to unite, to attach, to yoke, and to focus on thoughts within self. According to Patanjali, yoga is way of yoking of all the powers of body, the mind, the emotion which enables one to look at life in all its aspect evenly.

Yoga is an ancient discipline designed to bring balance and health to the physical, mental, emotional, and spiritual dimensions of the individual. Yoga is often depicted metaphorically as a tree and comprises eight aspects, or "limbs:" yama (universal ethics), niyama (individual ethics), asana (physical postures), pranayama (breath control), pratyahara (control of the senses), dharana (concentration), dyana (meditation), and samadhi (bliss). Long a popular practice in India, yoga has become increasingly more common in Western society (Iyengar, 1976) [5].

The ancient science of Yoga is find wide acceptance the world over as means of maintaining and improving physical and mental health and as a means of self realization. Yoga has, now been included and taught at the secondary school level to the students in our country as a part of Physical Education.

An attempt to find out the degree of obesity, several workers have shown that body density is a good index of obesity (Brozek *et al*, 1951; Fidanza *et. al.*, 1953) [1, 3]. Body density indicates either loss in total body fat or an increase in weight of lean body mass

Correspondence

Kamalesh Pratap Singh

Ph. D. Scholar, Department of Physical Education, Mahatma Gandhi Kashi Vidyapith University, Varanasi, Uttar Pradesh, India

(Forbes & Reina 1970; Sidney et. al, 1977) [4, 9] or maintaining the muscle mass by reducing excessive fat (Johnson *et al.*, 1982) [6]. Body density is the ratio of body weight to volume or body weight per volume (McArdle et. al., 1981) [8].

Cardiovascular endurance (also known as cardio-respiratory endurance or aerobic fitness) refers to your body's ability to efficiently and effectively intake oxygen and deliver it to your body's tissues by way of the heart, lungs, arteries, vessels, and veins. By engaging in regular exercise that challenges your heart and lungs, you can maintain or even improve the efficient delivery and uptake of oxygen to your body's systems, enhancing cellular metabolism and easing the physical challenges of everyday life.

Cardio-respiratory endurance is to describe character of moderate contractions of big muscle teams for referring long period of your time, throughout that top changes of the circulatory-respiratory system to the activity are necessary.

2. Methodology

2.1 Selection of Subjects

The subjects for present study were 40 old age male between the age of 60 – 65 year of age from Varanasi (U.P.). All the subjects were randomly assigned into experimental group (N=20) and control group (N=20). For experimental group, training was imparted thrice in a week and control group participated in regular physical activity for five days in a week.

2.2 Selection of Variables

Based on review of available literature, the trunk flexibility was selected for the purpose of the present study.

2.3 Criterion Measure

Cardiovascular Endurance: Cardiovascular endurance was determined by total distance covered in 12 minute run/walk as fast as possible. Unit of measurement is in meter/Km.

2.4 Research Design

Random group design was used to evaluate the effect of different training modalities. The selected old age male subjects (N=40) were randomly divided into two groups with equal subjects in each group out of which experimental group underwent the yoga training thrice in a week (Monday, Wednesday and Friday). Group-II (control group) participated in their regular physical activity for 6 weeks. Each

experimental session of 45 minutes to 90 minutes duration was devoted towards warming up and yoga training exercises. The pre and post tests were administered to the subjects at the play grounds of Banaras Hindu University, Varanasi (U.P) at the end of experiment.

2.5 Description and Administration of Test

12 Minute Runs/Walk

Purpose: The purpose of the distance runs is to measure maximal functional capacity and endurance of the cardio-respiratory system. **Test Description:** Standardized procedures and norms are provided for two optional distance run tests: the 12 minute run/walk for distance. The decision as to which of the two tests to administer should be based on facilities, equipment, time limitations, administrative considerations, and personal preference of the teacher. **12 Minute Run/Walk:** Subjects are instruct

ted to run one mile in the fastest possible time. The students begin on the signal, "Ready, start." As they cross the finish line, elapsed time should be called to the participants (or to their partners). Walking is permitted, but the objective is to cover the distance in the shortest possible time. **Twelve Minute Run:** Subjects are instructed to run as far as possible in 12 minutes. The students begin on the signal, "Ready, start." Participants continue to run until a whistle is blown at 12 minutes. Walking is permitted, but the objective is to cover as much distance as possible during the 12 minutes. **Equipment and Facilities:** Either of the two distance run tests can be administered on a 400-meter track or any other flat, measured area. **Scoring:** The 12 minute/walk runs are scored to the total distance run in meters.

2.6 Selection of Yogic Exercises

1. Tadasana 2. Ardha Chakrasana, 3. Vriksh Asana, 4. Padmasana, 5. Vajrasana. 6. Paschimottanasn, 7. Bhujangasana, 8. Makrasana, & 9. Shavasana.

2.7 Training Program

Based on the results of the pilot study the training programs were scheduled. During the training period, the experimental groups underwent their respective training programs for six weeks. The assistance of three senior research fellows specially trained in the field was sought on administration of various tests. The scientifically structured general training programs are presented in Table 1.

Table 1: Basic structure of two different training programmes

S. No.	Groups & Training Particulars	Treatment
1	Experimental Group I	Yoga Practice Training
2	Control Group	Self Exercise
3	Training Duration	90 Minutes
4	Training session/week	03 Days/Week
5.	Total Length of Training	06 Week
6.	Training Load Progression	Every Week

2.8 Yoga Training Programme

The yogic practices training programme was given to group I for 6 weeks of one session in the morning between 6.00 A.M.

to 7.30 AM. for three days on Tuesday, Thursday, and Saturday as shown in below Table 2.

Table 2: Yogic Practices Training Programme

Week	Position	Intensity	Repetition	Set	Frequency/Week	Each Asana	Recovery
1	Standing, Sitting, Lying	50 %	10	6	3 Days	1 Minute	30 Seconds
2	Standing, Sitting, Lying	55 %	12	6	3 Days	1 Minute	30 Seconds
3	Standing, Sitting, Lying	60 %	15	6	3 Days	1 Minute	30 Seconds
4	Standing, Sitting, Lying	65 %	10	6	3 Days	1 Minute	30 Seconds
5	Standing, Sitting, Lying	70 %	12	6	3 Days	1 Minute	30 Seconds
6	Standing, Sitting, Lying	80 %	15	6	3 Days	1 Minute	30 Seconds

3. Statistical Analysis

The study was based on the groups’ pre-test and post-test design. The subjects chosen for the study were divided into experimental group and control group, each group consisting of 20 subjects. Experimental group was assigned yogic practices. The subjects of the control group were not allowed to participate in any of the training programme except in their routine activities. The data was collected on cardiovascular endurance first at the beginning (pre-test) and finally at the end of the experimental period of 6 weeks (post –test).

4. Results and Discussion

The data obtained on pre-test and post-test on cardiovascular

endurance of old age men was analyzed using Analysis of Co-Variance. The analysis of covariance on data obtained on cardiovascular endurance for two experimental and one control group been presented on table 1. The level of significance to test the significance of obtained F-ratio was set at 0.05 level.

4.1 Cardiovascular Endurance

The analysis of covariance on data obtained on cardiovascular endurance for two experimental and one control group been presented on table 1.

Table 1: Analysis of co-variance for experimental groups and control group on cardiovascular endurance

Means	Yoga Practice Group	Walking Training Group	Control Group	Source of Variance	Sum of Squares	Mean Square	df	F-ratio
Pre-test Means	1995.00	1740.00	1865.00	Between Groups	65333.333	325116.667	257	2.913
				Within Groups	6363000.00	111631.579		
Post-test Means	1995.00	1805.00	1935.00	Between Groups	377333.3333	188666.667	257	1.898
				Within Groups	5664500.00	99377.4193		
Adjusted Post Test Means	1916.00	1883.00	1936.00	Between Groups	27188.687	13594.343	256	0.236
				Within Groups	3224833.176	57586.307		

Non-significant at.05 level $F_{.05}(2,57;2,56)=3.15$

The Finding concerning the pre mean score on cardiovascular endurance in table 4 indicated that the two experimental groups and control group did not differ significantly as the obtained F-ratio (2.913) was much less then the tabulated F-ratio of 3.15 with (2,57) df at 0.05 level of significance, indicating that different groups were more or less equal on hand grip strength. An insignificant F-ratio (1.898) for the post mean scores on cardiovascular endurance among the two experimental groups and control group indicated insignificant difference from the pre to post test means among the groups

In case of adjusted post means, the obtained F value (0.236) was less than the required F value of 3.15 for (2,56) df at 0.05 level. This indicated that there was insignificant differences from pre and post mean score after adjusting pre test score on cardiovascular endurance. This means the different training modalities did not influence the cardiovascular endurance of male aged persons.

The graphic presentation of pre-post test means and adjusted final means on experimental and control group has been depicted in figure 1 and 2.

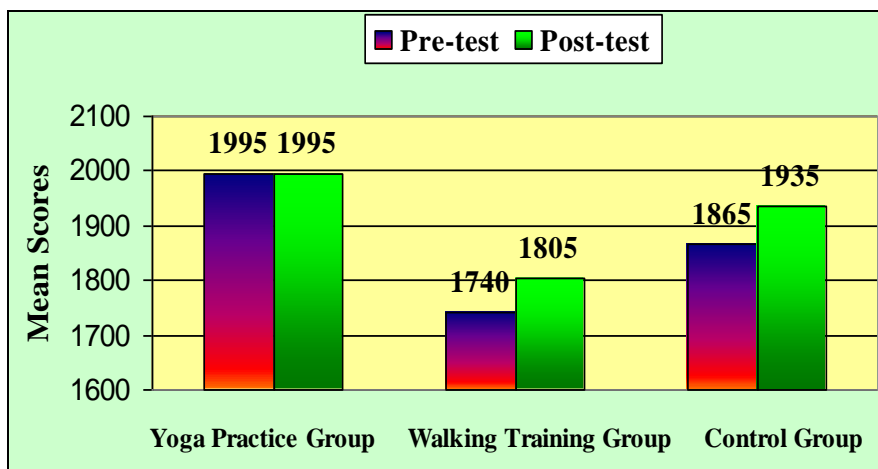


Fig 1: Pre-test and post-test mean scores of experimental groups and control group on cardiovascular endurance of male aged person

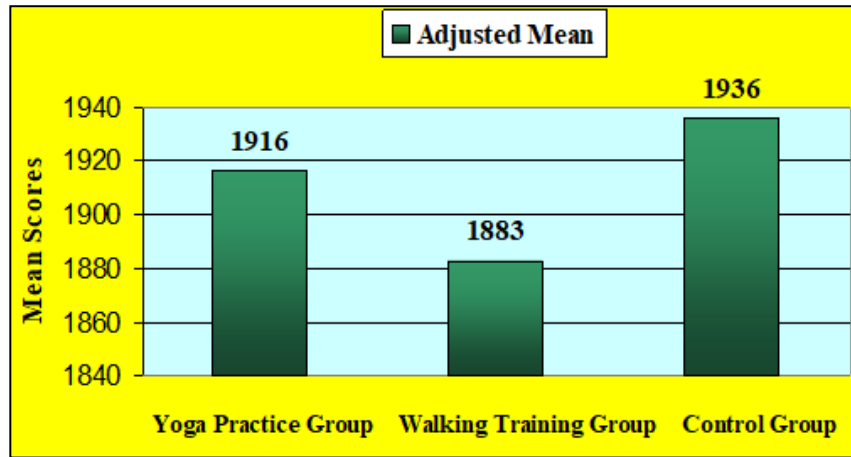


Fig 2: Adjusted mean scores of experimental groups and control group on cardiovascular endurance of male aged person

5. Conclusions

1. Six weeks of planned and systematic training modalities did not have any significant effect on cardiovascular endurance of male aged persons.
2. Improvement in cardiovascular endurance was observed in walking training group and control group of male aged persons.
3. Statistically significant difference was not found in adjusted post test mean scores of different groups of male aged person in the cardiovascular endurance.

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