

Effect of Yogic Practices and Physical Exercise on Selected Physiological Variables

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Abstract

The purpose of the present study was to find the effect of yogic practice and physical exercise on breath holding time, resting pulse rate and blood pressure (both systolic and diastolic). For this purpose, thirty women those who were working in various schools and colleges and aged between 35 and 40 years from various places around Kumbakonam town, were selected. They were divided into three equal groups, each group consisted of ten subjects, in which group – I underwent yoga practice, group – II underwent physical exercise and group – III acted as control group who did not participate in any special training. The training period for this study was five days in a week for twelve weeks. Prior to and after the training period the subjects were tested for resting pulse rate, breath holding time and blood pressure (systolic and diastolic). The selected criterion variables were tested with arterial pressure, holding the breath for maximum duration in seconds and sphygmomanometer. The collected were analyzed by applying analysis of covariance (ANCOVA). Whenever the F ratio found to be significant, Scheffé S test was applied to find out which of the paired mean to be significant. It was concluded from the result of the study, after the yoga practice and physical exercise periods, both the training groups altered reduced resting pulse rate and blood pressure and improves the breath holding time.

KEYWORDS: Yogic Practices, physical exercises, breath holding time, resting pulse rate and blood pressure.

INTRODUCTION

Yoga is the science of right living and, as such, is intended to be incorporated in daily life. It works on all aspects of the person: the physical, vital, mental, emotional, psychic, and spiritual. Yoga aims at bringing the different bodily functions into perfect coordination so that they work for the good of the whole body.

Yoga focuses on harmony between mind and body. Yoga derives its philosophy from Indian metaphysical beliefs. The word yoga comes from Sanskrit language and means union or merger. The ultimate aim of this philosophy is to strike a balance between mind and body and attain self-enlightenment. To achieve this, yoga uses movement, breath, posture, relaxation and meditation in order to establish a healthy, lively and balanced approach to life.

According to Swami Satyaand Saraswathi “Yoga is not an ancient myth buried in oblivion. It is the most valuable inheritance of the present. It is the essential need of today and the culture of tomorrow”.

Yoga is one of the size orthodox systems of Indian philosophy. It was collated, coordinated and systematized by patanjali in his classical work, the yoga sutras, which consists of 185 terse aphorisms. In Indian thought, everything is permeated by the supreme universal spirit (paramatma or God) of which the individual human spirit (jivatma) is a part. The system of yoga is called because it teaches the means by which the jivatma can be united to, or be in communion with the paramatma, and so secure liberation (moksa).

Regular practice of asana maintains the physical body in an optimum condition and promotes health even in an unhealthy body. Through asana practice, the dormant energy potential is released and experienced as increased confidence in all areas of life. Yogsanas have a deeper significant value in the development of the physical, mental and spiritual personality, whereas pure exercises only have a physical effect on the muscles and bones.

Physical exercises are performed quickly and with a lot of heavy breathing. Yogasanas are performed slowly with relaxation and concentration. The benefits of various yoga techniques have been professed to improve body flexibility, performance, stress reduction, attainment of inner peace and self-realization.

METHODS

This study under investigation involves the experimentation of yoga practice and physical exercise on breath holding time, resting pulse rate and blood pressure (systolic and diastolic). For this purpose, thirty women subjects those who were working in schools and colleges, and aged between 35 and 40 years from various places around Kumbakonam town, Tamilnadu were selected. The selected thirty subjects were randomly divided into three equal groups of ten each, out of which group - I (n = 10) underwent yogic practice, group - II (n = 10) underwent physical exercise training and group - III (n = 10) remained as control. The training programme was carried out for five days per week during morning session only (6 am to 8 am) for twelve weeks. Breath holding time was measured by holding the breath for maximum duration in seconds, resting pulse rate was measured by measuring the arterial pressure (pulse) per minute at resting condition and blood pressure was measured by using sphygmomanometer.

ANALYSIS OF DATA

The data collected prior to and after the experimental periods on breath holding time, resting pulse rate and blood pressure (systolic and diastolic) on yoga practice group, physical exercise group and control group were analysed and presented in the following table -I.

Table – I

Analysis of Covariance and ‘F’ ratio for Breath Holding Time, Resting Pulse Rate and Blood Pressure (systolic and diastolic) for Yoga Practice Group, Physical Exercise Group and Control Groups

Variable Name	Group Name	Yoga Practice Group	Physical Exercise Group	Control Group	‘F’ Ratio
Resting Pulse Rate (in numbers)	Pre-test Mean \pm S.D	82.60 \pm 2.675	83.70 \pm 3.466	83.60 \pm 2.221	0.461
	Post-test Mean \pm S.D.	81.10 \pm 2.331	82.10 \pm 3.281	84.10 \pm 3.143	2.684
	Adj. Post-test Mean \pm S.D.	81.772	81.716	83.912	10.527*
Breath Holding Time (in seconds)	Pre-test Mean \pm S.D	31.20 \pm 1.549	30.50 \pm 1.354	31.30 \pm 2.83	0.466
	Post-test Mean \pm S.D.	32.80 \pm 1.398	32.40 \pm 1.506	31.20 \pm 2.486	2.00
	Adj. Post-test Mean \pm S.D.	42.644	42.789	40.966	9.819*
Systolic Blood Pressure	Pre-test Mean \pm S.D	132.90 \pm 5.17	135.30 \pm 7.21	134.20 \pm 5.77	0.386
	Post-test Mean \pm S.D.	131.30 \pm 4.62	134.10 \pm 6.94	134.80 \pm 6.51	0.920
	Adj. Post-test Mean \pm S.D.	132.507	132.958	134.735	9.011*
Diastolic Blood Pressure	Pre-test Mean \pm S.D	88.90 \pm 4.202	90.50 \pm 4.743	88.70 \pm 4.084	0.514
	Post-test Mean \pm S.D.	86.70 \pm 4.473	88.80 \pm 4.709	89.10 \pm 4.332	0.842
	Adj. Post-test Mean \pm S.D.	87.168	87.663	89.769	14.442*

* Significant at .05 level of confidence.

(The table value required for significance at .05 level of confidence with df 2 and 27 and 2 and 26 were 3.35 and 3.37 respectively).

Further to determine which of the paired means has a significant improvement, Scheffé S test was applied as post-hoc test. The result of the follow-up test is presented in Table - II.

Table - II
Scheffé S Test for the Difference Between the Adjusted Post-Test Mean of Breath Holding Time, Resting Pulse Rate and Blood Pressure (systolic and diastolic)

Adjusted Post-test Mean of Breath Holding Time				
Yoga Practice Group	Physical Exercise Group	Control Group	Mean Difference	Confidence interval at .05 level
81.772		83.912	2.14*	1.35
81.772	81.716		0.058	1.35
	81.716	83.912	2.196*	1.35
Resting Pulse Rate				
42.644		40.966	1.678*	1.18
42.644	42.789		0.145	1.18
	42.789	40.966	1.823*	1.18
Systolic Blood Pressure				
132.507		134.735	2.228*	1.439
132.507	132.958		0.451	1.439
	132.958	134.735	1.777*	1.439
Diastolic Blood Pressure				
87.168		89.769	2.601*	1.331
87.168	87.663		0.495	1.331
	87.663	89.769	2.106*	1.189

* Significant at 0.05 level of confidence.

Results

The training intensity for yogic practice and physical exercise was shown in appendices. Before applying the experiment all the subjects of the yoga practice, physical exercise and control groups were attended the pre-test, which was conducted a day prior to the commencement of the training and the data were collected on breath holding time, resting pulse rate and blood pressure (systolic and diastolic). After twelve weeks of training the post-test was conducted one day after the training period to find out any changes in the criterion variables.

The analysis of covariance (ANCOVA) was used to find out the significant difference if any, among the experimental groups and control group on selected criterion variables separately. In all the cases, .05 level of confidence was fixed to

test the significance, which was considered as an appropriate. Since there was three groups were involved in this study, the Scheffé S test was used as pos-hoc test and it was shown in Table - II.

After applying the analysis of covariance, the result of this study showed that there was a significant difference among yoga practice, physical exercise and control groups on the changes in breath holding time, resting pulse rate and blood pressure after twelve weeks of training. The criterion variables such as, breath holding time was improved for both the yoga practice group and physical exercise group and resting pulse rate, systolic and diastolic blood pressure has significantly decreased after the yoga practice, physical exercise period. Further, comparing the adjusted post-test means of all the criterion variables, such as, breath holding time, resting pulse rate and systolic and diastolic blood pressure, both the training groups were significantly increased the performance after twelve week training period, when compared with the control group. Basically the yoga practice and physical exercise has tremendously improves the physiological parameters.

Conclusions

Breath holding time has improved for both the experimental groups, such as yogic practice group and physical exercise group, when compared with the control group. The results of this study also shown that there was a significant decrease in resting pulse rate for yogic practice group and physical exercise group. The blood pressure has also decreased in yogic practice group and physical exercise group when compared with the control group.

Appendices

Selection of Asanas

The experimental factor selected is the yogasanas and it's been innumerable. So, the scholar consulted with experts in the field of yogasana, than selected the following yogasanas:

Yogasanas: Suryanamaskar, Vrksasana, Trikonasana, Padmasana, Vakrasana, Bhujangasana, Salabhasana, Paschimottasana, Matiyasana, Halasana, Sasankasana, savasana

Pranayama: Ujjaiyi, Bhastrika, Nadisudhi

Omkar

Physical Exercises

- 1. Warming up**
- 2. Physical Exercises:** Neck rotation, Arms forward and back ward rotations, Flexed arm forward and back ward rotations, Trunk Twists, Squat Thrusts, Sideward lunges, Opposite toe touches, Slide leg raising, Sit-ups, Push-ups, Burpees, Heels Raise.
- 3. Cool Down**

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