



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2016; 2(9): 619-622
www.allresearchjournal.com
Received: 04-07-2016
Accepted: 05-08-2016

Dr. Divya K

Assistant Professor, Alagappa
University College of Physical
Education, Karaikudi,
Sivagangai District, Tamil
Nadu, India

Effects of pranayama, suriya namaskar and combined practices on health related fitness of college students

Dr. Divya K

Abstract

The purpose of the study was to find out the “Effects of pranayama, suriya namaskar and combined practices on health related fitness of college students”. To achieve this purpose of the study sixty students studying in Alagappa Arts College, Karaikudi, and Tamil Nadu were randomly selected as subjects. The age of the subjects were ranged between 18 to 22 years. The selected subjects were divided in to four equal groups of fifteen subjects each. Group I underwent pranayama practices and Group II underwent Suriya namaskar practice, group III underwent combined training for five days per week for eight weeks. Group IV acted as control that did not participate in any special training programme apart from their regular activities as per their curriculum. The following health related fitness was selected as dependent variables. The cardio respiratory endurance was measured by 9 minutes run and walk test and unit of measurement was meters. The Body mass Index was measured by (height was measured by stadiometer and weight was measured by weighing machine) unit of measurement was centimeters and Kilograms. The muscular strength was measured by modified pushups test and the unit of measurement was in numbers per minute. The muscular endurance was measured by modified Bent knee sit ups and the unit of measurement was in numbers per minute. All the subjects of four groups were tested on selected dependent variables at prior to and immediately after the training programme. The analysis of covariance was used to analyze the significant difference. If any among the group since, four group were compared whenever they obtained “F” ratio for adjusted post test was found to be significant, the scheffe’s test to find out the paired mean differences if any. The 0.5 level of confidence was fixed as the level of significance to test the “F” ratio obtained by the analysis of covariance which was considered as an appropriate.

Keywords: Pranayama, suriya namaskar, cardio respiratory endurance, muscular strength, body mass index, muscular endurance

Introduction

Pranayama is an art and has techniques to make the respiratory organs to move and expand intentionally, rhythmically and intensively. It consists of long sustained suitable flow inhalation (puraka), exhalation (recaka) and retention of breath (Kumbhaka). Puraka stimulates system: recaka throws out vitiated air and toxins; kumbhaka distributes the energy throughout the body.

Joshi says, that the breaths of every one of us are numbered and our life span is dependent on how many times we shall breathe in a given life and thus as a consequence of this fact. We must reduce the number of breaths so as to live longer. This idea was responsible for the origin of Pranayama.

The Sun Salutation series includes 10 – 12 basic poses put together into a flowing vinyasa. These basic poses form a complete full body warm-up, stretching the major muscles of the back, arms and legs while encouraging full range of motion in the joints. The series should be broken down and practiced one pose at a time for beginners to understand the important alignment details of each pose and how to best protect the neck and lumbar spine from “over-arching”. Once the fundamentals of each pose are comfortable and familiar, then proceed to the full sun salutation series bring awareness to the breath in each. In this way, this practice may become cardiovascular. The benefits are many: increased blood circulation to all muscles, nerves, and joints, weight-bearing strength in the arms and legs and stimulation of the endocrine, lymphatic and parasympathetic nervous systems.

Correspondence

Dr. Divya K

Assistant Professor, Alagappa
University College of Physical
Education, Karaikudi,
Sivagangai District, Tamil
Nadu, India

Cardio respiratory Endurance Ability of body to take and distributes adequate amounts of oxygen to working muscles during physical activities, Shaver (1981). Strength is ability to overcome resistance or to act against resistance. (Hardayal Singh 1991) [1] Endurance as the ability to resist fatigue. Body Mass Index Is a heuristic measure of body weight based on a person’s weight and height. Is the individual’s body weight divided by the square of his or her. The formulae universally used in medicine produce a unit of measure of Kg/m².

Statement of the Problem

The purpose of the study was to find out the “Effects of pranayama, suriya namaskar and combined practices on health related fitness of college students”.

Methodology

Selection of the subjects To achieve this purpose of the study sixty students studying in Alagappa Arts College, Karaikudi, Tamil Nadu, India were randomly selected as subjects. The age of the subjects were ranged between 18 to 22 years. Experimental design the selected subjects were divided in to four equal groups of fifteen subjects each. Group I underwent pranayama practices and Group II underwent Suriya namaskar practice, group III underwent combined training for five days per week for eight weeks. Group IV acted as control that did not participate in any special training programme apart from their regular activities as per their curriculum. Selection of variables the

following health related fitness was selected as dependent variables. All the subjects of four groups were tested on selected dependent variables at prior to and immediately after the training programme.

Dependent Variables

Health related fitness

- Cardio Respiratory Endurance(Cooper’s 9 min Run/Walk test)
- Muscular Strength (Modified Push-ups)
- Muscular endurance (Modified Sit-ups)
- Body Mass Index (Stadiometer and Weighing Machine)

Independent Variables

- Pranayama practice
- Suriya namaskar practice
- Combined training of Pranayama and Suriya namaskar

Statistical techniques

The analysis of covariance (Harrison Clarke) was used to analyse the significant difference. If any among the group since, four group were compared whenever they obtained “F” ratio for adjusted post test was found to be significant, the scheffe’s test to find out the paired mean differences if any. The 0.5 level of confidence was fixed as the level of significance to test the “F” ratio obtained by the analysis of covariance which was considered as an appropriate.

Table 1: Analysis of Covariance

Adjusted post test means	Pranayama	Suriya Namaskar	Combined	Control	Source of Variance	Sum of Square	df	Mean Square	Obtained F value	Table F ratio
Cardio Respiratory Endurance	1794.65	1798.06	1941.88	1720.00	B: W:	433539.69 108000.84	3 55	144513.23 1963.65	73.59*	2.776
Muscular Strength	32.91	32.13	31.41	28.13	B: W:	110.45 537.31	3 55	136.82 9.77	3.77*	
muscular endurance	4572	49.19	50.73	43.91	B: W:	480.08 106.63	3 55	160.03 1.94	82.48*	
Body mass index	21.76	21.59	20.82	22.17	B: W:	10.31 3.89	3 55	3.44 0.07	49.14*	

* Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 3 and 56 and 3 and 55 are 1.761 and 2.776 respectively).

Table 2: Scheffe’s post hoc test

	Pranayama	Suriya Namaskar	Combined	Control	Mean difference I & II, I & III, I & IV, II & III II & IV, III & IV	CI value
Cardio Respiratory Endurance	1794.65	1798.06	1941.88	1720.00	3.41, 147.23*, 74.65*, 143.82*, 78.06*, 221.88*	46.67
Muscular Strength	32.91	32.13	31.41	28.13	0.78, 1.50, 4.78*, 0.72, 4.00*, 3.28*	3.29
muscular endurance	45.72	49.19	50.73	43.91	3.47*, 5.01*, 1.81*, 1.54*, 5.28*, 6.82*	0.279
Body mass index	21.26	21.59	22.17	20.82	0.33*, 0.44*, 0.91*, 0.77*, 0.58*, 1.35*	0.279

*Significant at 0.05 level of confidence

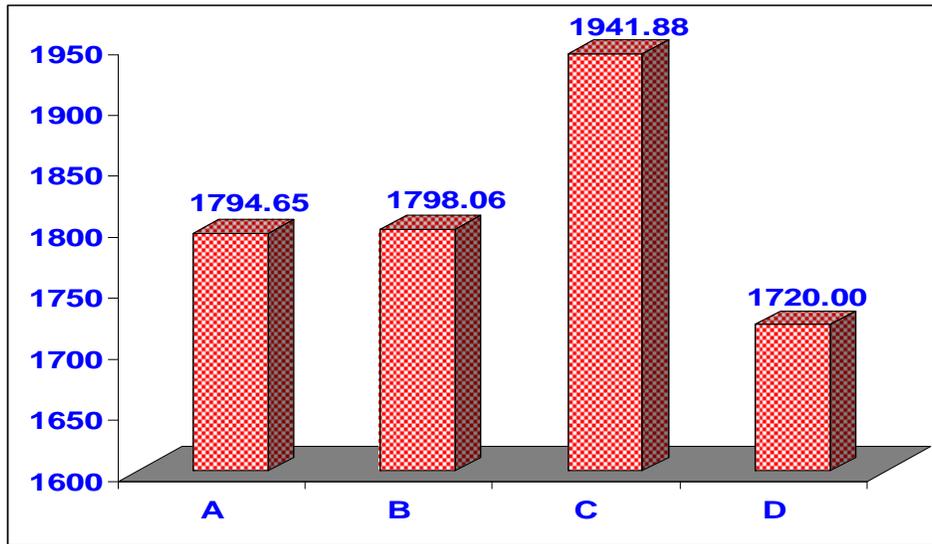


Fig 1: The adjusted Post-test mean values of GROUP A, b, c and d on Cardio Respiratory Endurance.

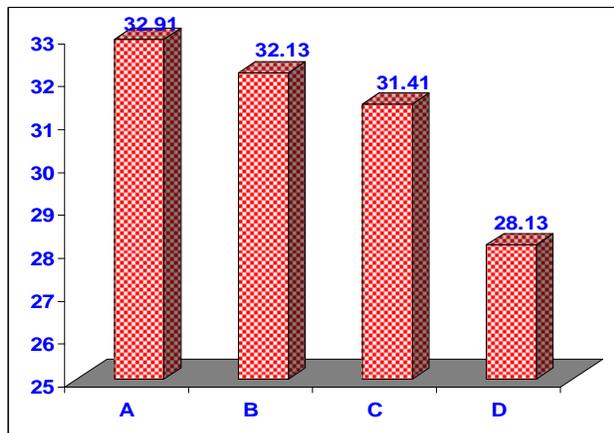


Fig 2: muscular strength

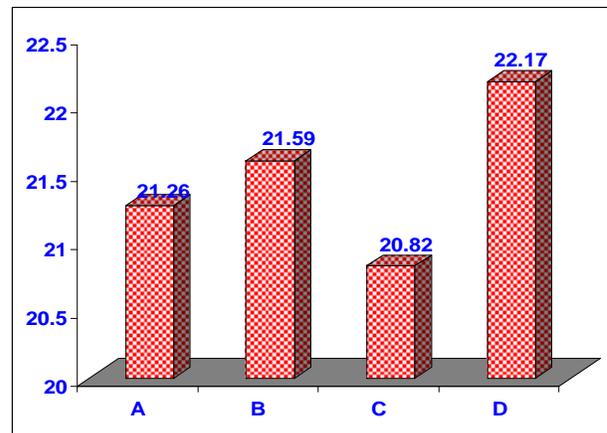


Fig 4: The adjusted Post-test mean values of Group A, b, c and d on body mass index

A -Pranayama Practice Group
 B -Suryanamaskar Practice Group
 C -Combined (A and B) Effect Group
 D -Control Group

A -Pranayama Practice Group
 B -Suryanamaskar Practice Group
 C -Combined (A and B) Effect Group
 D -Control Group

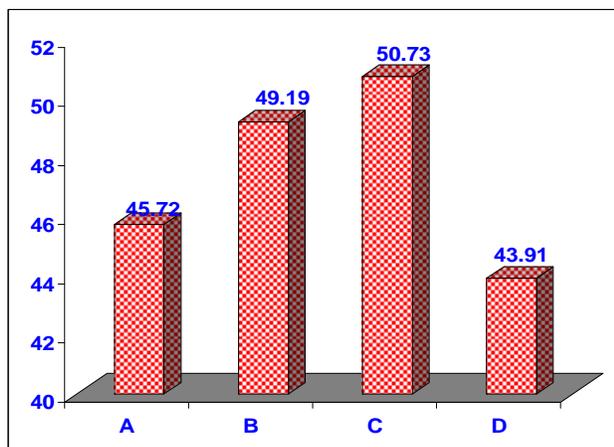


Fig 3: The adjusted Post-test mean values of Group A, b, c and d on muscular endurance

Result

Cardio respiratory endurance of Group A, B, C and D are 1278.00, 1280.00, 1293.33 and 1290.67 respectively. the obtained “F” ratio of 0.06 for pre-test scores is less than the table value of 2.776 for df 3 and 56 required for significance at .05 level of confidence on cardio respiratory endurance. The post-test mean values on cardio respiratory endurance of, Group A, B, C and D are 1374.67, 1380.00, 1536.67 and 1296.67 respectively. the obtained “F” ratio of 10.45 for post test scores is more than the table value of 2.776 for df 3 and 56 required for significance at .05 level of confidence on cardio respiratory Endurance. The adjusted post-test means of cardio respiratory endurance Group A, B, C and D are 1794.65, 1798.06, 1941.88 and 1720.00 respectively on cardio respiratory endurance. the obtained “F” ratio of 73.59 for adjusted post-test means is more than the table value of 2.78 for df 3 and 55 required for significance at .05 level of confidence on cardio respiratory Endurance. The results of the study indicated that there was a significant difference

between the adjusted post-test means of Group A, B, C and D on cardio respiratory endurance.

The pre-test mean values on Muscular Strength of Group A, B, C and D are 22.53, 20.60, 21.67 and 19.20 respectively. The obtained "F" ratio of 1.52 for pre-test scores is less than the table value of 2.776 for df 3 and 56 required for significance at .05 level of confidence on Muscular Strength. The post-test mean values on Muscular Strength of, Group A, B, C and D are 26.80, 23.87, 24.33 and 19.33 respectively. The obtained "F" ratio of 4.15 for post test scores is more than the table value of 2.776 for df 3 and 56 required for significance at .05 level of confidence on Muscular Strength. The adjusted post-test means of Muscular Strength Group A, B, C and D are 32.91, 32.13, 31.41 and 28.13 respectively on Muscular Strength. The obtained "F" ratio of 3.77 for adjusted post-test means is more than the table value of 2.78 for df 3 and 55 required for significance at .05 level of confidence on Muscular Strength. The results of the study indicated that there was a significant difference between the adjusted post-test means of Group A, B, C and D on Muscular Strength.

The pre-test mean values on Muscular Endurance of Group A, B, C and D are 34.27, 32.20, 32.4 and 32.27 respectively. The obtained "F" ratio of 0.39 for pre-test scores is less than the table value of 2.776 for df 3 and 56 required for significance at .05 level of confidence on Muscular Endurance. The post-test mean values on Muscular Endurance of, Group A, B, C and D are 36.00, 38.07, 39.80 and 32.47 respectively. The obtained "F" ratio of 3.93 for post test scores is more than the table value of 2.776 for df 3 and 56 required for significance at .05 level of confidence on Muscular Endurance. The adjusted post-test means of Muscular Endurance Group A, B, C and D are 45.72, 49.19, 50.73 and 43.91 respectively on Muscular Endurance. The obtained "F" ratio of 3.77 for adjusted post-test means is more than the table value of 2.78 for df 3 and 55 required for significance at .05 level of confidence on Muscular Endurance. The results of the study indicated that there was a significant difference between the adjusted post-test means of Group A, B, C and D on Muscular Endurance.

The pre-test mean values on Body Mass Index of Group A, B, C and D are 16.61, 16.65, 16.38 and 16.93 respectively. The obtained "F" ratio of 0.38 for pre-test scores is less than the table value of 2.776 for df 3 and 56 required for significance at .05 level of confidence on Body Mass Index. The post-test mean values on Body Mass Index of, Group A, B, C and D are 16.47, 16.34, 15.31 and 16.91 respectively. The obtained "F" ratio of 3.67 for post test scores is more than the table value of 2.776 for df 3 and 56 required for significance at .05 level of confidence on Body Mass Index. The adjusted post-test means of Body Mass Index Group A, B, C and D are 21.76, 21.59, 20.82 and 22.17 respectively on Body Mass Index. The obtained "F" ratio of 48.60 for adjusted post-test means is more than the table value of 2.78 for df 3 and 55 required for significance at .05 level of confidence on Body Mass Index. The results of the study indicated that there was a significant difference between the adjusted post-test means of Group A, B, C and D on Body Mass Index.

Discussion on findings

The results of the study showed that there was a significant difference among pranayama group, suriya namaskar group, combined effect group on selected criterion variables

namely cardio-respiratory endurance, muscular strength, muscular endurance and body mass index among college students. The combined (Suryanamaskar and Pranayama) training improved cardio respiratory endurance, muscular endurance greater than that of Pranayama and Suryanamaskar among college students. The pranayama practice improved cardio respiratory endurance and muscular endurance greater than that of Suryanamaskar practice. The Suryanamaskar practice improved muscular strength and body mass index greater than that of pranayama practice among college students. Training drove more blood to the muscles, and also drove more lymph away from the blood loaded with waste materials. It increased the tone of muscles and led to an increase of their efficiency. Likewise, the size of the muscle fibers was increased. The improvement of muscular performance depended upon the pranayama group, suriya namaskar group, combined effect which gradually increased health related fitness of college students.

Conclusion

1. Cardio respiratory endurance, Body mass index, muscular strength and muscular endurance were significantly improved due to the influence of Pranayama, Suryanamaskar and combined training among college students.
2. The combined (Suryanamaskar and Pranayama) training improved cardio respiratory endurance, muscular endurance greater than that of Pranayama, Suryanamaskar and combined training among college students.
3. The pranayama practice improved cardio respiratory endurance and muscular endurance greater than that of Suryanamaskar practice among college students.
4. The Suryanamaskar practice improved muscular strength and body mass index greater than that of pranayama practice among college students.

Reference

1. Hardayal Singh. Silence of sports Training, New Delhi, PVS Publication, 1991, 191.
2. Shaver, Larry G. Essentials of Exercise Physiology, Delhi Surject Publication. 1982, 6-10.
3. Swami Kuvalayanancja and S.L. Vinekar, Yogic Therapy Faridabad: Government of India Press, 1971, 31.
4. Charles A Hudson. Physical Fitness' Herald of Health. 1968; 45:2-17.
5. Harrison Clarke and David H. Clarke. Advanced statistics with application to physical Education" Englewood cliffs, Newjersey. 1972, 32-38.