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A STUDY OF EXERCISES AND CERTAIN YOGIC PRACTICES ON HEALTH RELATED PHYSICAL FITNESS

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ABSTRACT

The purpose of this study was to investigate the response "a study of exercises and certain yogic practices on health related physical fitness (Body composition.), The average ages of subjects were 18-23 years. The subjects were divided into four groups. Experimental groups A, B and C and a control group D, each group of 20 subjects. The subjects were equated before collecting the data. The experiment was conducted for a period of 12 weeks, excluding the period required for measurement in the criterion measures. It was begin and end within the experimental period. The experiment groups A done 12 yogic practices and pranayams. The experimental group B performed exercise program whereas „C“ grouped done combined activities. The control group "D" was consists of daily routine. The performance of all the subjects of AAPHERD health related physical fitness test was recorded prior and after the experimental period. To establish the comparative effect of the yogic practices, exercises and health related physical fitness, the data were examined by applying analysis of co-variance. The level of significance was .05 percent.

Key Words: - *Yogic practices, health related physical fitness. (Body composition.)*

INTRODUCTION

In the contemporary living style, physical fitness, health and nutrition seem to have gained a place of priority. One of the most important goals of physical education program is to develop physical fitness. Physical fitness is considered as a pre-requisite to healthful and recreational living and is not an end into itself. Physical

fitness can be health related in as much as it preserves healthful function of the body over extended periods of time in adults' life. Health related physical fitness components are those developments which are related to certain diseases. Physical education acts as an intermediary between health and fitness, while the degree of physical fitness depends on the individual's state of health, constitution, present and previous activities.

YOGA

In Patanjali's Yoga-darsan an asana is defined as Sthirasukhamasanam (any posture that can be maintained with comfort is an 'asana'. Prayatnasaithil yanantsamapattibhyam (lack of effort and contemplation as if it is never going to end characterize it). Apart from contraction and relaxation, there is third state of muscle which is known as the 'Catch' state. It is the ligament like contracted state of muscle which has been well studied biologically in the bivalve mollusks. It is characterized by maintenance of high tension without consumption of energy. A catch state could be very useful for a yogi which in to stay in a single posture for prolonged period for other advanced practices.

Patanjali mentions asanas only as a pre-requisite to other advanced practices of Pranayama, Pratyahara, Dharana, Dhyana and Samadhi. Later, by other sages more stress must have been laid on different asanas for improvement of bodily health. Scriptures says there are as many asanas as there are species of animals. Eighty four lakhs of them have been mentioned by Lord Siva.

Asanas: Asanas are defined as the "postural pattern" one has to achieve this pattern slowly and steadily and to release it again in slow and smooth manner.

Traditionally, asana mean's "sitting condition" or position of the body, which contributes to steadiness of the body and mind and a sense of well being. Sometimes asana is also translated as "pose" but the term pose is not an appropriate translation to explain what asana is pose is not a natural position of the body.

Exercise: Exercise is physical exertion of the body. The aim of exercise is to achieve a beneficial level of fitness and health, both physically and mentally.

It is exertion which is done for the sake of exercising, practicing training, or promoting skill, health, mental, improvement moral discipline, etc. that which is assigned or prescribed for such ends; hence, a disquisition, a lesson a task as military or naval exercise, musical exercise, an exercise in composition.

Health related Physical Fitness

Health related physical fitness is defined as fitness related to some aspect of health. This type of physical fitness is primarily influenced by an individual's exercise habits, thus, it is a dynamic state and may change, and physical characteristics that constitute health related physical fitness include body composition.

Health related fitness is the ability of the heart, lungs, muscles and joints to perform well. Regularly physical activity promotes physical fitness; physical fitness is the condition of the body that results from regular physical activity.

Component of Health related Physical Fitness

Body composition is the percentage of body weight that is fat compared to other body tissues such as bone and muscle. People who have a high percentage of fat are more likely to be ill and have a higher death rate than lean people. Exercise and eating the right foods in the proper amounts can improve body composition.

OBJECTIVE OF THE STUDY

1. To find the yogic and exercise programs would significantly improve the health related physical fitness. (**Body composition.**),
2. To find the yogic program would be more effective than exercise program in the health related physical fitness.
3. To find the combined exercise yogic program would be more effective in health related physical fitness than the individual programs of yoga and exercise.

STATEMENT OF THE PROBLEM

The purpose of this study was to investigate the response "A STUDY OF EXERCISES AND CERTAIN YOGIC PRACTICES ON HEALTH RELATED PHYSICAL FITNESS". (**BODY COMPOSITION.**),

DELIMITATIONS

1. The study was delimited to male subject of age group 18 to 23 years.
2. The studies was also delimited by certain yogic practices, which included specific asanas, pranayama and yognidra.
3. The study was further delimited to certain exercise.

4. It was delimited to certain health related physical fitness.

LIMITATIONS

- i Variation in the ability of the individual to perform yogic practices and exercise.
- ii Variation in age group.
- iii Variation in somato type.

HYPOTHESIS

Keeping in view the objectives of the study following hypotheses were formulated –

1. It is hypothesized that yogic and exercise programs would significantly improve the health related physical fitness.
2. It is hypothesized that yogic program would be more effective than exercise program in the health related physical fitness.
3. It is further hypothesized that a combined exercise yogic program would be more effective in health related physical fitness than the individual programs of yoga and exercise.

METHODOLOGY

Selection of Subjects

Eighty subjects of Arts and Engineering class students of Andhra University, Visakhapatnam, Andhra Pradesh were selected for the study. The average age of subjects were 18-23 years. He subjects were divided into four groups. Experimental groups A, B and C and a control group D, each group of 20 subjects. The subjects were equated before collecting the data. The experiment was conducted for a period of 12 weeks, excluding the period required for measurement in the criterion measures. It was begin and end within the experimental period. The experiment groups A done 12 yogic practices and pranayams. The experimental group B performed exercise program whereas „C“ grouped done combined activities. The control group "D" was consists of daily routine. The performance of all the subjects of AAPHERD health related physical fitness test was recorded prior and after the experimental period. **Body composition (leanness/fatness)**

Body composition (Leanness/Fatness):

The leanness and fatness study helps to diagnose obesity which is defined as excessive accumulation of body fat. Obesity is said to be associated with health hazards. Body fat is tested with the help of triceps and subscapular skin folds in AAPHERD 1980 Health Related P.F. Testing

(a) Triceps Skin fold

The triceps skin fold is measured more commonly than any other part, because it is so accessible. It is closely correlated with percentage of body fat with total body fat.

Procedure: It was measured in the midline of the posterior aspect of the right arm, over the triceps muscles, at a point mid way between the lateral projection of the acromion process of the scapula and the inferior margin of the olecranon process of the ulna. The level of the measurement is determined by measuring the distance between the lateral projection of the acromion process and the inferior border of the olecranon process of the ulna using a tape measure, with the elbow flexed at 90 degrees. The tape was placed with its zero mark on the acromion and stretched along the upper arm extending below the elbow. The midpoint was marked on the lateral side of the arm. The subject was measured standing and skin fold was measured with the arm, hanging loosely and comfortably on the subject's side. The triceps skin fold is picked up with the left thumb and index finger, approximately one centimeter proximal to the marked level, and the tips of the calipers are applied to the skin fold at the marked level.

(b) Subcapular Skinfold

Procedure: Sub scapular skin fold thickness is a measure of subcutaneous adipose tissue and skin thickness on the posterior aspect of the torso. The sub scapular skin fold was picked up on the diagonal, inclined inferio-laterally, approximately 45 degrees to the horizontal plane in the natural cleavage line of the skin. The site was just inferior to the inferior angle of the scapula. The caliper jaws were applied one-centimeter inferio-lateral to the thumb and finger raising the fold.

Scoring: Each measurement was taken three consecutive times and the median score was recorded to the nearest 0.5 millimeters.

PROCEDURE OF EXPERIMENT

The experiment was conducted for a period of twelve weeks excluding the period required for the measurement, in the criterion measure at the beginning and the end of the experimental period.

The experimental group "A" did 12 yogic practices program as given below:

1. Srishasana
2. Sarvangasana
3. Matsyasana
4. Halasana
5. Bhujangasana
6. Salbhasana
7. Dhanurasana
8. Aradhamatsyandrasana
9. Pachimotana
10. Mayrasana/shavasana
11. Kapal Bhati
12. Anlom vilom

The experimental group "B" did 10 exercises program as given below:

- 1 Spinal rock
5. Back over
6. Side stretcher
7. Alternative prone lift
8. One leg jumping
9. Line walking after front roll
10. 5 meters dash
11. Raising the hands with folded hands
12. Walking on hands with partner
13. Stride stretcher

The experimental group "C" did exercise and yogic practices program combined. The experimental groups practiced 6 days in a week.

TRAINING PROGRAM

The whole training program for the experimental group "A", "B" and "C" was carefully and systematically planned. The experimental groups "A", "B" and "C" underwent the training program on yogic practices, exercises and the combined respectively under the guidance of three assistance at same place and time under careful supervision of the research scholar for a period of twelve weeks in the 6 day week. The objective reflected exactly what was expected of the subjects after going through the training program.

The control group "D" was not allowed to undergo the training program.

EXPERIMENTAL DESIGN

The subjects were assigned to four groups by random sampling procedure as suggested by Robert and James (1969). Training program for experimental groups 'A', „B" and „C" consisted of yogic practices, exercises and combined program. The controlled group „D" consisted of daily routine. The performance of subjects in AAPHERD health related physical fitness test was recorded prior and after the experimental period.

STATISTICAL PROCEDURES

To establish the comparative effect of the yogic practices, exercises and health related physical fitness, the data were examined by applying analysis of co-variance. The level of significance was .05 percent.

TABLE-1
ANALYSIS OF COVARIANCE OF THE MEANS OF THREE EXPERIMENTAL GROUPS AND THE CONTROL GROUP IN TRICEPS SKIN FOLD

	GROUP				Source of Variance	Sum of Squares	Df	Mean Squares	Obtained F
	Asanas	Exercise	Combined	Control					
Pre-Test Mean	10.08	9.746	10.906	9.23	Between	29.930	3	9.9764	0.48
					Within	1582.46	76	20.8218	
Post-Test Mean	8.6	8.376	8.226	0.84	Between	32.8786	3	10.9596	0.72
					Within	1165.92	76	15.3411	
Adjusted Post -Test Mean	8.3946	8.49479	8.368326	9.89229	Between	91.1683	3	30.3895	17.70*
					Within	128.866	76	1.7183	

*Significant at 0.05 level N=20

B: Between group variance, W: Within group variance, F ratio needed for significance at 0.05 level of confidence 2.74.

The Analysis of co-variance for triceps skin fold indicated that resultant F ratio of .48 was not significant in case of pre-test .Means indicating that initial means differences among the group were not significant. The post test means of all the four group yielded of F ratio 0.72 which was also not significant. The difference between the adjusted final means for four groups were found significant as the obtained F ratio was 17.70, tabulated F ratio being 2.74.

Since the difference between the adjusted final means for four groups were found significant, the critical difference for adjusted mean was applied to find out which of the differences between the paired adjusted final means were most significant.

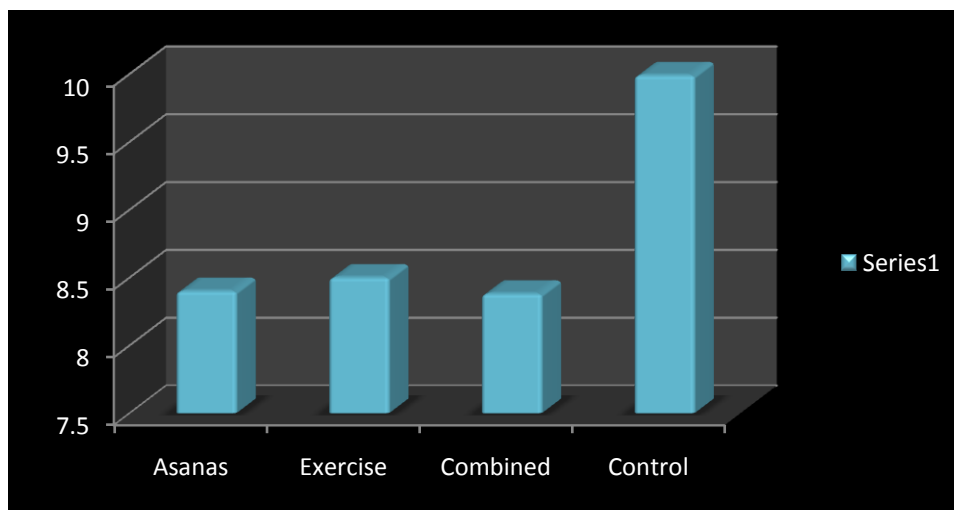
Differences between the paired adjusted final means are shown in the table-2 triceps skin fold.

TABLE-2
PAIRED ADJUSTED FINAL MEANS AND DIFFERENCES BETWEEN MEANS FOR THE THREE EXPERIMENTAL GROUPS AND THE CONTROL GROUP IN TRICEPS SKIN FOLD

Mean				Difference between means	Critical difference for adjusted mean
Asanas	Exercise	Combined	Control		
8.40	8.50			-0.10	0.09
8.40		8.38		0.04	0.90
8.40			9.99	-1.51*	0.90
	8.50	8.38		0.13	0.90
	8.50		9.99	1.41*	0.80
		8.38	9.99	-1.53*	0.90

*Significant at 0.05 level

It is evident from the table that all the three program were significantly effective in reducing triceps skin fold of the subjects. However no significant difference in the triceps skin fold thickness of the three experimental groups was seen.

Figure - 1**PAIRED ADJUSTED FINAL MEANS AND DIFFERENCES BETWEEN MEANS FOR THE THREE EXPERIMENTAL GROUPS AND THE CONTROL GROUP TRICEP SKIN FOLD****DISCUSSION OF FINDINGS**

The analysis of data revealed that the three experimental groups trained by exercises, yogic practices, and combined exercises and yogic practices, showed significant gain in performance of health related physical fitness body composition. The mean gain achieved by. Combined exercise yogic program was also more effective that asanas program in reduction of triceps and subscapular skin fold thickness. The control group did not show any significant increase in the performance of health related physical fitness.

The result of the study confirm the notion that exercise and yogic practices improves health related physical fitness, when administered according to the set principles of training in a progressive manner and perform in proper way.

Our findings tend to support the findings of Hular E. (1995), Robin (1986). This finding calls for a changed exercises and yogic practices program (combined) for better result in muscular endurance. The improvement in muscular endurance was due to the fact that physical exercise, yogic practices and combined practice optimize the active body mass greater the active body mass, greater the maximal or absolute strength. The myosin and Actins filament increase.

Exercise and yogic practices are performed to increase the size of the muscle cross-section intra and inter muscular coordination, anatomical structure, as well as the elasticity of muscles and they make the muscles' hypertrophied and they increase their strength by increasing muscle mass (therefore total body mass). Regular exercise develops muscles fiber and they can improve the muscular strength. Our findings are supported by Satti, B, Gollinick P.P. (1983), Ganguly S.K. and Gharote M.C. (1989) who all had emphasized the importance of exercise and yogic practices for improving performance in health related physical fitness.

Combined exercise yogic program was also more effective that asanas program in reduction of triceps and subscapular skin fold thickness.

The present findings suggest that exercises with the yogic practices together can be best method of decreasing the body composition. Our finding are supported by the finding of Ulter et al. (1998), American Heart Association (2006), Miller et al. (1997), Verketreddy (1990).

According to different studies, with yogic practices and pranayama one can expect an additional loss amounting to between 0.2 lbs depending on the frequency and duration on the yogic practices, pranayama performed.

Although this might not seem like a great deal, it is important to remember that moderate breathing exercise is a key factor in preventing weight regain following a restricted calorie diet. Yogic practices and exercise practices help counteract the lenient environment that, often time's influences reduced obese subjects to regain weight.

We know that any energy providing source like carbohydrates, protein and fat can provide energy only in the presence of oxygen. Doing yogic practices, pranayama enhances the oxygen level of the body which initiates greater utilization of fat as metabolic fuel.

Athlete's physical education teacher, coaches, and sports scientists always researches ways to improve performance through efficient, effective procedures. Not only does this study reinforce the effectiveness of exercises and yogic practices techniques for increasing the health related physical fitness but may also provide information on ways in which the time can be saved and at the same time the health related physical fitness can be improved effectively.

CONCLUSIONS

Based on the understanding after deliberate discussion with experts and the supervisor and also in light of the above understanding following conclusions were finally drawn:

1. There is significant difference in pre and post test mean values of body composition (subscapular skin fold) for yogic practices, combined group as the obtain t-values are -4.64,-9.31, and 11.28 respectively at .05 level of significance.
2. The post test means of the entire four group yielded F ratio 0.71 which was also not significant. The differences between the adjusted final means of body composition (sub-scapular skin fold) for four groups were found significant as the obtained F ratio was 30.28. The F ratio needed for significance at .05 level of confidence was 2.74.
3. It is concluded that yogic and exercise programs significantly improve the health related physical fitness.
4. The yogic program is more effective than exercise program in the health related physical fitness.
5. A combined exercise yogic program is more effective in health related physical fitness than the individual programs of yoga and exercise.

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