



## EFFECTS OF 6-WEEKS YOGASANA PRACTICE ON PHYSIOLOGICAL FITNESS STATUS OF UNIVERSITY LEVEL GIRLS

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**ABSTRACT:** Thus the aim of this study was to determine the effect of 6-week yogic practices on physiological fitness status of university level girls. The research population included, sixty (N=60) female between the age group of 18-25 years were selected as subjects from department of physical education (T). The subjects were purposively assigned into two groups: Group-A: Experiential (N<sub>1</sub>=30) and Group-B: Control (N<sub>2</sub>=30). All the subjects were informed about the objective and protocol of the study. The subjects from Group A were subjected to 6-week of yogic practices. The training consisted of a variety of yogic asanas: (i.e., Standing Postures, Balancing Postures and Backward/Forward Bending Postures). The 6-week yogic practices brought about significant improvement in cardiovascular endurance (t = 8.92), body composition (t = 16.64), muscular strength & endurance (t = 8.52) and flexibility (t = 15.31) in Group (A) as compared with the control one. The 6-week yogic practices had significant effect on cardiovascular endurance, body composition, muscular strength & endurance and flexibility.

**KEYWORDS:** Yogic Practices, Physiological Fitness Status, University Level girls.

### INTRODUCTION

There is a growing popularity of different types of recreational activity today. Decisions concerning the choice of a particular form of activity are usually made intuitively, without consideration of actual results for the body. The decision is often driven by current fashion. One of the most fashionable forms of physical activity today is Ashtanga Vinyasa (Yoga).

The literature abounds in studies that have discussed the effects of practicing different yoga styles. Practicing yoga systems has been shown to improve muscle and joint elasticity, to strengthen muscle strength (with particular focus on static strength) to cause body mass reduction and to change body composition. Yoga training has also been shown to increase aerobic power and to decrease anaerobic power.

Yoga for Physical Education allows children to express energy in a positive way. Share a professionally guided yoga class designed to specifically for your students, one that every child can follow at their own pace, on their own journey to building self-esteem and self-confidence. Use Yoga for Physical Education again and again for fitness, fun, and feeling great!



Yoga is widely practiced for its benefits to body and mind. Yoga therapeutics is an increasingly appreciated discipline, particularly in India where it is overseen by the Ministry of Health and Family Welfare's Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy (AYUSH). Not many studies have assessed the influence of integral yoga practices on psychological and health variables, establishing many possible benefits. This study apart from establishing the benefits of internal yoga investigates the relationships between the variables themselves. Up till now, this correlation aspect has not been much investigated, since this requires simultaneous measuring of many variables for a large group, and then to correlate. The aim of the present study is to begin to remedy this deficiency. It measured many variables on a group of volunteers large enough to identify significant correlations between variables. Specifically it evaluated correlations between measures of sustained attention, emotional intelligence, general health and guna. Yoga is a psycho-somatic-spiritual discipline for achieving union & harmony between our mind, body and soul and the ultimate union of our individual consciousness with the Universal consciousness [1].

In yoga physiology, the emphasis is on prana, or energy. The classic model describes chakras, or energy centers, each of which has a major relationship to emotion and physiology. Energy flows between chakras and other parts of the body through nadis, or channels. Dis-ease, physical and mental, is explained as deficiency, excess or reversal in the flow of energy through these energy paths. Postures and breath are utilized to alter the flow of prana, or energy, through various parts of our physical and nonphysical body. A full yoga practice includes all eight limbs, including yamas and niyamas (personal and social precepts), and the “internal” practices of pratyahara (turning off of external senses), dharana (concentration) and dhyana (meditation).

### **SELECTION OF SUBJECTS**

For the purpose of the present study, sixty (N=60) female between the age group of 18-25 years were selected as subjects from department of physical education (T).The subjects were purposively assigned into two groups: Group-A: Experiential (N<sub>1</sub>=30) and Group-B: Control (N<sub>2</sub>=30). All the subjects were informed about the objective and protocol of the study.

### **SELECTION OF VARIABLES**

A feasibility analysis as to which of the variables could be taken up for the investigation, keeping in view the availability of tools, adequacy to the subjects and the legitimate time that could be devoted for tests and to keep the entire study unitary and integrated was made in consultation with experts. With the above criteria's in mind, the following variables were selected for the present study:

#### **Physiological fitness Status**

- ❖ Cardiovascular Endurance
- ❖ Body Composition
- ❖ Muscular Strength & Endurance
- ❖ Flexibility



The subjects from Group A were subjected to 6-week of yogic practices. The training consisted of a variety of yogic asanas:

| Sr. No. | Yogasana                          |                        |
|---------|-----------------------------------|------------------------|
| 1.      | Standing Postures                 | Utthita Parsvakonasana |
|         |                                   | Alanasana              |
|         |                                   | Viravhadrasana         |
|         |                                   | Parivrta Trikonasana   |
| 2.      | Balancing Postures                | Navasana               |
|         |                                   | Vrksasana              |
|         |                                   | Vasisthasana           |
|         |                                   | Natarajasana           |
| 3.      | Backward/Forward Bending Postures | Bhujangasana           |
|         |                                   | Ustrasana              |
|         |                                   | Paschimottanasana      |
|         |                                   | Hanumanasana           |

### METHODOLOGY

The subjects from Group A were subjected to 6-week of yogic practices. The training consisted of a variety of yogic asanas:

Cardiovascular Endurance was administered to assess aerobic fitness. The score is recorded to 1 min. recovery heart rate is the score for the test. Body Composition test was administered to estimate a person’s percent body fat. The score is to convert the skin fold measures to percent body fat using the equations and compare the values to the recommended percent body fat level and the evaluative norms provided. Muscular Strength & Endurance was administered to measures abdominal strength and endurance. The score is the number of curl-ups performed. Sit and teach test was administered to monitor the development of the athlete’s lower back and hamstring flexibility. The score is recorded to the nearest centimeter or half inch as the distance reached by the hand.

### STATISTICAL ANALYSIS

SPSS statistical software (version 16.0) was used to analyze. Student’s t-test for independent data was used to assess the between-group differences and for dependent data to assess the Post-Pre differences. To test the hypothesis, the level of significance was set at 0.05.

### Results



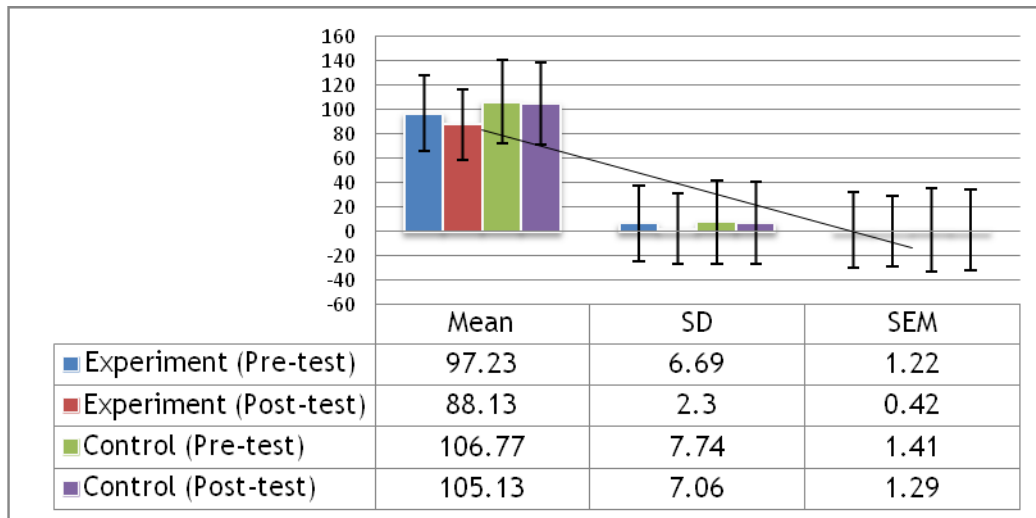
**Table 1.** Significance of Differences between Pre-Test and Post-Test Means of Experimental Group and the Control Group with regard to Cardiovascular Endurance.

| Group                    | Number | Mean   | S.D. | SEM  | ‘t’ Value | P-value |
|--------------------------|--------|--------|------|------|-----------|---------|
| Experiment (Pre-test)    | 30     | 97.23  | 6.69 | 1.22 | 8.92*     | 0.0001  |
| Experimental (Post-test) | 30     | 88.13  | 2.30 | 0.42 |           |         |
| Control (Pre-test)       | 30     | 106.77 | 7.74 | 1.41 | 1.34      | 0.1900  |
| Control (Post-test)      | 30     | 105.13 | 7.06 | 1.29 |           |         |

\*Significant at 0.05 level

Degree of freedom= 29

Table-1 presents the results of experimental group and the control group with regard to the variable cardiovascular endurance. The descriptive statistics shows the Mean and SD values of cardiovascular endurance of pre- test and post-test of experimental group was  $97.23 \pm 6.69$  and  $88.13 \pm 2.30$  respectively, whereas the Mean and SD values of cardiovascular endurance of pre-test and post-test of control group was  $106.77 \pm 7.74$  and  $105.13 \pm 7.06$ . The “t” value in case of experimental group was 8.92\* and for control group it was 1.34. The „t”-value in case of experimental group 8.92\* as shown in the table above was found statistically significant ( $P < .05$ ) Ho (null hypothesis) is rejected at .05 level of significance. As per the study the above remark can be given at 95% confidence. The graphical representation of responses has been exhibited in figure-1.



**Figure 1.** Mean, Standard Deviation (SD), Standard Error of Mean (SEM) of Cardiovascular Endurance of Experimental and Control Group.



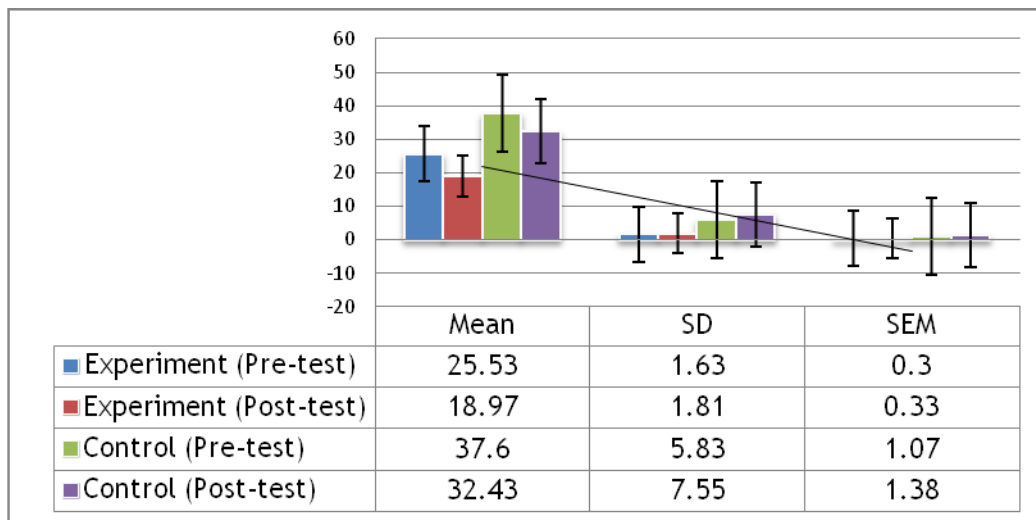
**Table 2.** Significance of Differences between Pre-Test and Post-Test Means of Experimental Group and the Control Group with regard to Body Composition.

| Group                    | Number | Mean  | S.D. | SEM  | 't' Value | P-value |
|--------------------------|--------|-------|------|------|-----------|---------|
| Experiment (Pre-test)    | 30     | 25.53 | 1.63 | 0.30 | 16.64*    | 0.0001  |
| Experimental (Post-test) | 30     | 18.97 | 1.81 | 0.33 |           |         |
| Control (Pre-test)       | 30     | 37.60 | 5.83 | 1.07 | 7.26      | 0.0001  |
| Control (Post-test)      | 30     | 32.43 | 7.55 | 1.38 |           |         |

\*Significant at 0.05 level

Degree of freedom= 29

Table-2 presents the results of experimental group and the control group with regard to the variable body composition. The descriptive statistics shows the Mean and SD values of body composition of pre-test and post-test of experimental group was  $25.53 \pm 1.63$  and  $18.97 \pm 1.81$  respectively, whereas the Mean and SD values of body composition of pre-test and post-test of control group was  $37.60 \pm 5.83$  and  $32.43 \pm 7.55$ . The “t” value in case of experimental group was 16.64\* and for control group it was 7.26. The „t”-value in case of experimental group 16.64\* as shown in the table above was found statistically significant ( $P < .05$ ).  $H_0$  (null hypothesis) is rejected at .05 level of significance. As per the study the above remark can be given at 95% confidence. The graphical representation of responses has been exhibited in figure-2.



**Figure 2.** Mean, Standard Deviation (SD), Standard Error of Mean (SEM) of Body Composition of Experimental and Control Group.

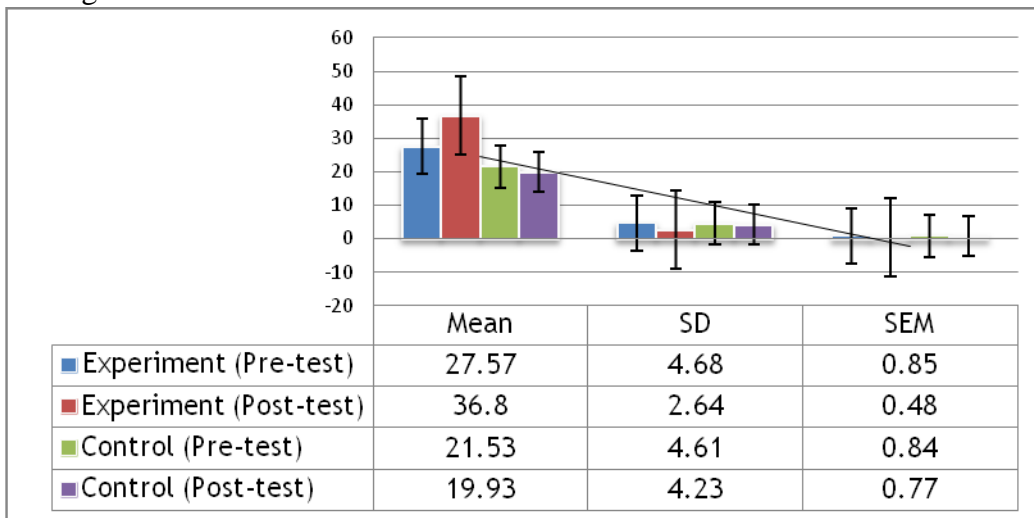
**Table 3.** Significance of Differences between Pre-Test and Post-Test Means of Experimental Group and the Control Group with regard to Muscular Strength & Muscular Endurance.

| Group                    | Number | Mean  | S.D. | SEM  | ‘t’ Value | P-value |
|--------------------------|--------|-------|------|------|-----------|---------|
| Experiment (Pre-test)    | 30     | 27.57 | 4.68 | 0.85 | 8.52*     | 0.0001  |
| Experimental (Post-test) | 30     | 36.80 | 2.64 | 0.48 |           |         |
| Control (Pre-test)       | 30     | 21.53 | 4.61 | 0.84 | 3.20      | 0.0033  |
| Control (Post-test)      | 30     | 19.93 | 4.23 | 0.77 |           |         |

\*Significant at 0.05 level

Degree of freedom= 29

Table-3 presents the results of experimental group and the control group with regard to the variable muscular strength & endurance. The descriptive statistics shows the Mean and SD values of muscular strength & endurance of pre-test and post-test of experimental group was  $27.57 \pm 4.68$  and  $36.80 \pm 2.64$  respectively, whereas the Mean and SD values of muscular strength & endurance of pre-test and post-test of control group was  $21.53 \pm 4.61$  and  $19.93 \pm 4.23$ . The “t” value in case of experimental group was 8.52\* and for control group it was 3.20. The „t“-value in case of experimental group 8.52\* as shown in the table above was found statistically significant ( $P < .05$ )  $H_0$  (null hypothesis) is rejected at .05 level of significance. As per the study the above remark can be given at 95% confidence. The graphical representation of responses has been exhibited in figure-3.



**Figure 3.** Mean, Standard Deviation (SD), Standard Error of Mean (SEM) of Muscular Strength & Endurance of Experimental and Control Group.

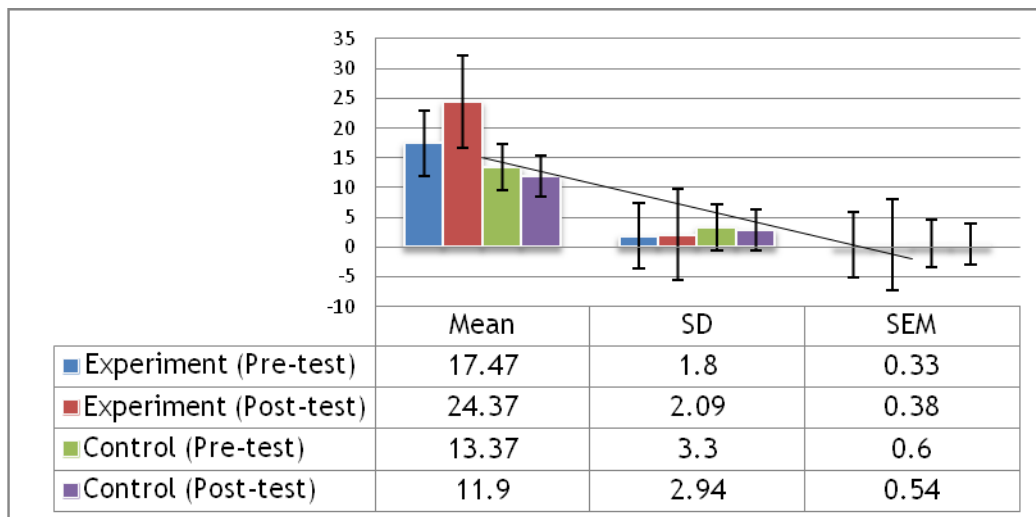
**Table 4.** Significance of Differences between Pre-Test and Post-Test Means of Experimental Group and the Control Group with regard to Flexibility.

| Group                    | Number | Mean  | S.D. | SEM  | ‘t’ Value | P-value |
|--------------------------|--------|-------|------|------|-----------|---------|
| Experiment (Pre-test)    | 30     | 17.47 | 1.80 | 0.33 | 15.31*    | 0.0001  |
| Experimental (Post-test) | 30     | 24.37 | 2.09 | 0.38 |           |         |
| Control (Pre-test)       | 30     | 13.37 | 3.30 | 0.60 | 1.71      | 0.968   |
| Control (Post-test)      | 30     | 11.90 | 2.94 | 0.54 |           |         |

\*Significant at 0.05 level

Degree of freedom= 29

Table-4 presents the results of experimental group and the control group with regard to the variable flexibility. The descriptive statistics shows the Mean and SD values of flexibility of pre-test and post-test of experimental group was  $17.47 \pm 1.80$  and  $24.37 \pm 2.09$  respectively, whereas the Mean and SD values of flexibility of pre-test and post-test of control group was  $13.37 \pm 3.30$  and  $11.90 \pm 2.94$ . The “t” value in case of experimental group was 15.31\* and for control group it was 1.71. The „t“-value in case of experimental group 15.31\* as shown in the table above was found statistically significant ( $P < .05$ )  $H_0$  (null hypothesis) is rejected at .05 level of significance. As per the study the above remark can be given at 95% confidence. The graphical representation of responses has been exhibited in figure-4.



**Figure 4.** Mean, Standard Deviation (SD), Standard Error of Mean (SEM) of Flexibility of Experimental and Control Group.

## DISCUSSION

It is evident from the findings of table-1 with regard to experimental group and the control group on the variable cardiovascular endurance. While comparing the mean values of both the groups, it has been observed that experimental group has performed significantly better on cardiovascular endurance. The „t“-value in case of experimental group 8.92\* as shown in the



table above was found statistically significant ( $P < .05$ )  $H_0$  (null hypothesis) is rejected at .05 level of significance. The above results might be the outcome of regular yoga practices performed by the experimental group. These findings substantiate the assertion of Herur et al. (2010) proposed that yogic practice can be used as an intervention in ageing persons to reduce the morbidity and mortality from cardiovascular diseases [2]. Saha, (2012) concluded that twelve weeks of Yoga training programme through Asanas and Pranayama was found to be effective in bringing about significant improvement in respect to cardiovascular endurance of school going children [3]. Pranayama, an important part of Yoga, if practiced regularly under the guidance of a trained practitioner, can help control breathing and is an effective cardiovascular yoga exercise. Breathing, in turn, can help regulate the flow of blood and relax a perturbed mind (Raphaelhager 2009). This study is in strong consonance with the findings of “Bharshankar”, “Murugesan” [5-6].

It has also been observed from the above findings of tables-2 with regard to experimental group and the control group with regard to the variable body composition. While comparing the mean values of both the groups, it has been observed that experimental group has performed significantly better on body composition. The “t” value in case of experimental group was 16.64\* and for control group it was 7.26. The, t-value in case of experimental group 16.64\* as shown in the table above was found statistically significant ( $P < .05$ )  $H_0$  (null hypothesis) is rejected at 0.05 level of significance. Similar trends have been reported by Saha, (2012) a long term effect of yoga proved useful and significant differences was observed in Body Composition of school going children [3]. A perusal at findings of table-3 with regard to experimental group and the control group on the variable muscular strength & endurance. While comparing the mean values of both the groups, it has been observed that experimental group has performed significantly better on muscular strength & endurance. The “t” value in case of experimental group was 8.52\* and for control group it was 3.20. The, t-value in case of experimental group 8.52\* as shown in the table above was found statistically significant ( $P < .05$ )  $H_0$  (null hypothesis) is rejected at .05 level of significance. It has also been observed from the above findings of tables-4 with regard to experimental group and the control group on the variable flexibility. While comparing the mean values of both the groups, it has been observed that experimental group has performed significantly better on flexibility. The “t” value in case of experimental group was 15.31\* and for control group it was 1.71. The, t-value in case of experimental group 15.31\* as shown in the table above was found statistically significant ( $P < .05$ )  $H_0$  (null hypothesis) is rejected at .05 level of significance.

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