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International Journal For Research in  
Applied Science and Engineering Technology



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# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

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**Volume: 2      Issue: XI      Month of publication: November 2014**

**DOI:**

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# Influence of Calisthenics Exercises and Yogic Practices on Selected Physiological Variables among Obese Women

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**Abstract:** *Yogic exercises and Calisthenics are creative, fun and very challenging patterns of movement, that is, on and off calisthenics can challenge the legs, foot steps and arms also. The aim of this research is to find out the influence of calisthenics exercises on selected physiological variables among obese women. For this purpose, randomly selected thirty obese women from different places of Chidambaram, Tamilnadu were divided into three groups, calisthenics exercises, yogic practices and control group. Calisthenics exercise group after a warm up for 5 minutes underwent calisthenics exercises such as free hand exercises in the various serious and finished each session with cool down exercises. Yogic practices also after a warm up for 5 minutes underwent different types of yogic practices such as asanas, pranayamas, meditation and finished each session with yogic cool down practices and the sessions lasted for 40 minutes in each day, on alternate days, forming three days a week. Statistical analysis of pre and post test means through ANCOVA and Scheffe's post hoc test proved that there was significant improvement in selected physiological variables such as vital capacity and tidal volume due to calisthenics exercises and yogic practices. It was concluded that calisthenics exercises and yogic practices can be better utilized for improving physiological variables, especially among obese women.*

**Key words:** *Calisthenics exercise, Yogic practices, Physiological Variables, Vital Capacity, Tidal volume.*

## I. INTRODUCTION

“Physical Fitness provides capacity for doing all types of activities” Willgoose(1961). Currently there is wide interest to identify the most effective methods of training for strength and endurance development and this is of special significance for physical education programmes in schools and colleges. Training is usually defined as systematic process of repetitive, progressive exercise or work involving the learning process and acclimatization. (Lawrence Gray Kumar, 2002). Evidences show the difference between the trained and untrained individuals that the former is able to increase the cardiac output and transport oxygen to the working muscles at a higher rate than the latter.(Clark and Albert, 1952)

Yogic practices and calisthenics improves the condition of heart and lungs. Lejeune TM, et.al. (1996) reported that walking or running exercises, has a profound effect on the mechanics and energetics of locomotion. Meyers MC, et.al. (2002) examined the effective use of exercises as an alternative to cycling for knee rehabilitation in an actual injured sport population and confirmed the use of exercises as a viable adjunct/alternative to cycle ergometry in ACL-injured athletes. Dreher M, et.al. (2008) aimed to assess different pathophysiological changes between walking and yogic practices in COPD patients and found yogic practices resulted in more prolonged hyperinflation of the lungs, higher blood lactate production and more dyspnea than walking. Pollock M, et.al. (1993) evaluated the use of symptom-limited stair climbing as a simple method to estimate the peak oxygen uptake (VO<sub>2</sub>) and minute ventilation (VE) and found a symptom-limited maximal calisthenics helps estimate peak VO<sub>2</sub> and VE in patients with CAO. The main purpose of this research is to find out the influence of calisthenics exercises and yogic practices on selected physiological variables among obese women.

## II. METHODOLOGY

To achieve the purpose pre and post test random group research design was adapted and thirty obese women from different places of Chidambaram, Tamilnadu, were randomly selected and their age group was between 25 to 40 years. They were divided into three groups (n = 10) as Group I, Group II and Group III, in which Group I underwent calisthenics exercises and Group II underwent yogic practices for a period of eight weeks and Group III acted as control group.

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Calisthenics exercise group after a warm up for 5 minutes underwent calisthenics exercises such as free hand exercises in the various serious and finished each session with cool down exercises. Yogic practices also after a warm up for 5 minutes underwent different types of yogic practices such as asanas, pranayamas, meditation and finished each session with yogic cool down practices and the sessions lasted for 40 minutes in each day, on alternate days, forming three days a week.

The investigator selected vital capacity and tidal volume, measured through Spirometer, as physiological variables. The collected data prior to and after completion of the experimental period on selected variables were statistically examined by applying Analysis of Covariance (ANCOVA). In all the cases to test the significance, 0.05 level of confidence was fixed. Since three groups were involved, whenever significant results were found, Scheffe's post-hoc test was used to find out the significant difference between the paired means of groups.

### III. RESULTS

**Tab 1: Results on Calculation of Analysis of Covariance on Physiological Variables**

| Calculation of Analysis of Covariance on Vital Capacity |                              |                       |               |                    |                |    |              |                   |
|---|------------------------------|-----------------------|---------------|--------------------|----------------|----|--------------|-------------------|
|   | Calisthenics Exercises Group | Yogic Practices Group | Control Group | Source of Variance | Sum of Squares | df | Mean Squares | Obtained F- ratio |
| Pre Test Mean   | 3730                         | 3702                  | 3760          | Between            | 24667          | 2  | 12333        | 0.08              |
|   |                              |                       |               | Within             | 4125000        | 27 | 152778       |                   |
| Post Test Mean  | 3940                         | 3910                  | 3790          | Between            | 126000         | 2  | 63000        | 0.52              |
|   |                              |                       |               | Within             | 3242000        | 27 | 120074       |                   |
| Adjusted Post Test Mean                                 | 3969                         | 3879                  | 3793          | Between            | 154208         | 2  | 77104        | 9.35*             |
|   |                              |                       |               | Within             | 214326         | 26 | 8243         |                   |
| Mean Diff   | 210                          | 208                   | 30            |                    |                |    |              |                   |
| Calculation of Analysis of Covariance on Tidal Volume   |                              |                       |               |                    |                |    |              |                   |
| Pre Test Mean   | 500.00                       | 491.50                | 487.00        | Between            | 871.7          | 2  | 435.83       | 0.80              |
|   |                              |                       |               | Within             | 14712.5        | 27 | 544.91       |                   |
| Post Test Mean  | 537.50                       | 529.50                | 491.50        | Between            | 10160.0        | 2  | 5080.00      | 18.10*            |
|   |                              |                       |               | Within             | 7577.5         | 27 | 280.65       |                   |
| Adjusted Post Test Mean                                 | 527.26                       | 530.29                | 494.95        | Between            | 7454.8         | 2  | 3727.40      | 39.88*            |
|   |                              |                       |               | Within             | 2429.9         | 26 | 93.46        |                   |
| Mean Diff   | 37.50                        | 38.00                 | 4.50          |                    |                |    |              |                   |

Required  $F_{(0.05)(2,27)} = 3.354$ ,  $F_{(0.05), (2,26)} = 3.369$  \*Significant

**Tab 2: Scheffe's Post Hoc Analysis Results**

| Post Hoc Analysis for Vital Capacity |                       |               |                 |           |
|--------------------------------------|-----------------------|---------------|-----------------|-----------|
| Calisthenics Exercises Group         | Yogic Practices Group | Control Group | Mean Difference | Reqd. C.I |
| 3968.56                              | 3878.59               |               | 89.97           | 105.40    |
| 3968.56                              |                       | 3792.86       | 175.70*         | 105.40    |
|                                      | 3878.59               | 3792.86       | 85.73           | 105.40    |
| Post Hoc Analysis for Tidal Volume   |                       |               |                 |           |
| 527.26                               | 530.29                |               | 3.03            | 11.22     |
| 527.26                               |                       | 494.95        | 32.31*          | 11.22     |
|                                      | 530.29                | 494.95        | 35.34*          | 11.22     |

\*Significant

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## IV. DISCUSSIONS

The results presented in Table 1 proved that the adjusted mean differences of vital capacity among the groups, calisthenics exercises, yogic practices and control was significant as the obtained F value 9.35 was greater than the required table F value of 3.369. The Scheffe's post hoc analysis (Table 2) proved that vital capacity of the calisthenics exercises group was significantly better than yogic practices and control group. However, the results on tidal volume showed that though the both the experimental treatments significantly improved tidal volume comparing to control group, there was no significant difference between the treatment groups.

## V. CONCLUSIONS

- A. It was concluded that the Calisthenics exercises and Yogic practices programs has resulted in significant improvement on selected criterion variables as compared to control group.
- B. It was concluded that there is no significant improvement among yogic practices and calisthenics exercises, especially among obese women.

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