



---

## EFFECT OF YOGA ASANA PRACTICE ON SELECTED JOINT RANGE OF MOTION OF UNIVERSITY FEMALE STUDENTS

**Pramod K.G**

Ph.D. Scholar

Department of Physical Education

Pondicherry University

**Aruna Raj A**

Ph.D. Scholar

Department of Physical Education

Pondicherry University

### INTRODUCTION

Modern thinkers in education emphasize that the best individual is one who is physically fit, mentally sound, emotionally balanced and socially well adjusted. Yoga is an ancient Indian practice, first described in Vedic scriptures around 2500 B.C., which utilizes mental and physical exercises to attain *samadhi*, or the union of the individual self with the infinite<sup>1</sup>.

Today, asanas are acknowledged to be techniques which place the physical body in positions that cultivate awareness, relaxation, concentration and meditation. Scientific research has proved that asanas prevent disease, promote health and have curative abilities; therefore many professionals use them to manage psycho-somatic stresses and diseases<sup>2</sup>. Hatha Yoga has become increasingly popular in western countries as a method for coping with stress and as a means of exercise and fitness training.<sup>3</sup>

As an ancient Indian discipline of the body, mind, and spirit, dating back to at least 2000 BC, yoga is gaining increasing popularity in Western industrialized countries as a means of alleviating stress and improving balance, flexibility, and muscle strength<sup>4</sup>. Yogasana practices are one of the important tools in developing body fitness and overcome over weight and obesity. An attempt is made in this study to have a searching inquiry on the effects of Yogasana practices on selected body composition variables of University female students.

According to Zachezewski, flexibility of muscle is “the ability of a muscle to lengthen allowing one joint (or more than one joint in a series) to move through a range of motion.” Good muscle flexibility will allow muscle tissue to accommodate to imposed stress more easily and allow efficient and effective movement. More efficiency and effectiveness in movement as a result of enhanced muscle flexibility will assist in



preventing or minimizing injuries and may enhance performance

Flexibility is a joint's ability to move through a full range of motion. Flexibility training helps to balancing the use or overuse muscle groups during exercise and other activities, also keep the good posture. Flexibility is an important component of health-related fitness, because lack of flexibility can cause functional problems and disorders<sup>8</sup>

## **METHODOLOGY**

For the purpose of this study 36 female hostel students were selected randomly from Pondicherry University. Their age ranged from 19 to 25 years. The subjects were divided into experimental and control group. Experimental group (18) underwent yoga asana practice and control group (18) who did not participated any training program except their daily routine.

The training program schedule was one session in the morning between 6.00 am to 7.00 am for five days per week for a period of twelve weeks. The yoga program includes prayer, stretching, loosening exercises, various asanas, and relaxation.

Joint flexibility such as shoulder flexion, shoulder extension, hip flexion, and hip extension were measured by using 360 degJree Goniometer before and after the training program for both experimental and control groups. Analysis of covariance (ANCOVA) was applied to determine the significance difference between the groups by using spss 16 version. For all analyses, the criterion for significance was set at an alpha level of  $p < 0.05$ .



**RESULTS OF THE STUDY**

**TABLE I: ANALYSIS OF COVARIANCE FOR YOGA ASANA PRACTICE AND CONTROL GROUP**

| Variables          | Groups                  | Yoga asana Group | Control Group  | Source of Variance | Sum of Square    | Mean square     | 'F' Ratio | Sig.  |
|--------------------|-------------------------|------------------|----------------|--------------------|------------------|-----------------|-----------|-------|
| Shoulder Flexion   | Pre-test Mean & S.D.    | 163.06<br>2.51   | 163.33<br>2.43 | B<br>W             | 0.69<br>206.94   | 0.69<br>6.09    | 0.11      | 0.74  |
|                    | Post-test Mean & S.D.   | 165.56<br>2.36   | 163.89<br>2.14 | B<br>W             | 25.00<br>172.22  | 25.00<br>5.07   | 4.94*     | 0.03  |
|                    | Adjusted Post-test Mean | 165.6            | 163.8          | B<br>W             | 29.56<br>112.57  | 29.56<br>3.41   | 8.67*     | 0.006 |
| Shoulder Extension | Pre-test Mean & S.D.    | 43.89<br>2.74    | 45.00<br>2.43  | B<br>W             | 11.11<br>227.78  | 11.11<br>6.70   | 1.66      | 0.21  |
|                    | Post-test Mean & S.D.   | 46.67<br>2.43    | 45.00<br>2.43  | B<br>W             | 25.00<br>200.00  | 25.00<br>5.88   | 4.25*     | 0.047 |
|                    | Adjusted Post-test Mean | 47.05            | 44.61          | B<br>W             | 51.05<br>89.94   | 51.05<br>2.73   | 18.73*    | 0.00  |
| Hip Flexion        | Pre-test Mean & S.D.    | 116.67<br>2.43   | 118.06<br>3.03 | B<br>W             | 17.36<br>256.94  | 17.36<br>7.56   | 2.3       | 0.14  |
|                    | Post-test Mean & S.D.   | 120.56<br>2.36   | 118.61<br>2.87 | B<br>W             | 34.03<br>234.72  | 34.03<br>6.90   | 4.93*     | 0.03  |
|                    | Adjusted Post-test Mean | 121.1            | 118.1          | B<br>W             | 73.02<br>101.92  | 73.01<br>3.09   | 23.64*    | 0.00  |
| Hip Extension      | Pre-test Mean & S.D.    | 14.44<br>3.79    | 14.17<br>3.93  | B<br>W             | 0.69<br>506.94   | 0.69<br>14.91   | 0.05      | 0.83  |
|                    | Post-test Mean & S.D.   | 18.61<br>4.13    | 15.00<br>4.20  | B<br>W             | 117.36<br>590.28 | 117.36<br>17.36 | 6.76*     | 0.01  |
|                    | Adjusted Post-test Mean | 18.48            | 15.13          | B<br>W             | 100.55<br>124.14 | 100.55<br>3.76  | 26.73*    | 0.00  |

It is observed from table I the pre test means on Shoulder Flexion of the Yogasana practice and control groups were 163.06, 163.33 respectively. The obtained 'F' value 0.11 was not significant at 0.05 levels. The post test means of the experimental



groups and the control groups were 165.56, 163.89 respectively. The obtained 'F' value 4.94 was significant at 0.05 levels. The adjusted post test means of the experimental group and the control group was 165.6, 163.8 respectively. The obtained 'F' value 8.67 was significant at 0.05 levels. It reveals that there was significant change on Shoulder Flexion as the result of twelve weeks yogasana practice.

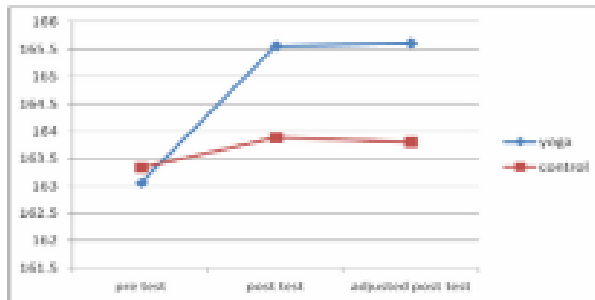
It is observed from table I the pre test means on Shoulder extension of the Yogasana practice and control groups were 43.89 and 45.00 respectively. The obtained 'F' value 1.66 was not significant at 0.05 levels. The post test means of the experimental group and the control group were 46.67 and 45.00 respectively. The obtained 'F' value 4.25 was significant at 0.05 levels. The adjusted post test means of the experimental group and the control group was 47.05 and 44.61 respectively. The obtained 'F' value 18.73 was significant at 0.05 levels. It reveals that there was significant change on Shoulder extension as the result of twelve weeks yogasana practice.

It is observed from table I the pre test means on hip flexion of the Yogasana practice and control groups were 116.67 and 118.06 respectively. The obtained 'F' value 2.3 was not significant at 0.05 levels. The post test means of the experimental group and the control group were 120.56 and 118.61 respectively. The obtained 'F' value 4.93 was significant at 0.05 levels. The adjusted post test means of the experimental group and the control group was 121.1 and 118.1 respectively. The obtained 'F' value 23.64 was significant at 0.05 levels. It reveals that there was significant change on hip Flexion as the result of twelve weeks yogasana practice.

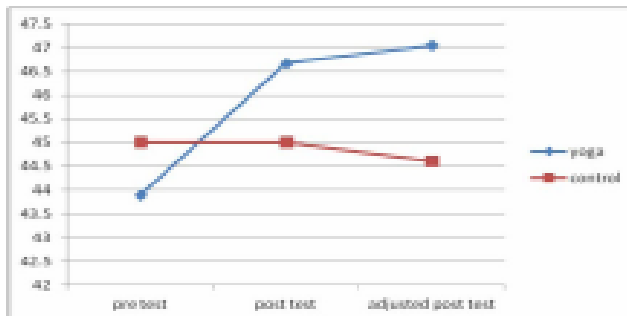
It is observed from table I the pre test means on hip flexion of the Yogasana practice and control groups were 14.44 and 14.17 respectively. The obtained 'F' value 0.05 was not significant at 0.05 levels. The post test means of the experimental group and the control group were 18.61 and 15.00 respectively. The obtained 'F' value 6.76 was significant at 0.05 levels. The adjusted post test means of the experimental group and the control group was 18.48 and 15.13 respectively. The obtained 'F' value 23.73 was significant at 0.05 levels. It reveals that there was significant change on hip extension as the result of twelve weeks yogasana practice.

Mean difference between yoga asana group and control groups are presented in the following figures.

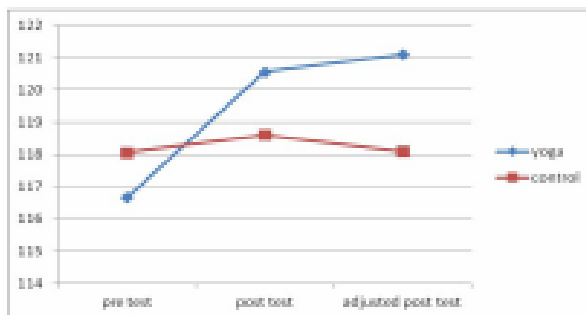
**Fig.1. Mean differences between experimental and control group on Shoulder Flexion**



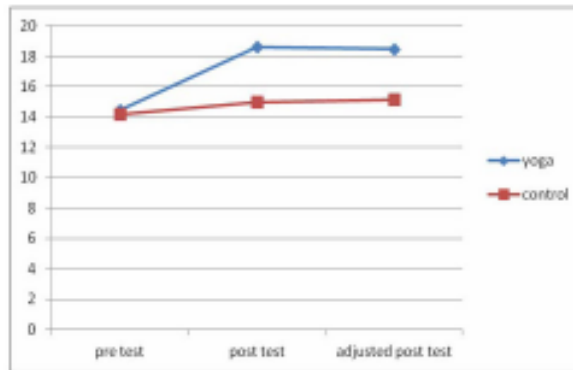
**Fig.2. Mean differences between experimental and control group on Shoulder Extension**



**Fig.3. Mean differences between experimental and control group on Hip Flexion**



**Fig.4. Mean differences between experimental and control group on Hip Extension**



## Discussions

The result of the present study showed that the joint range of motion significantly changed after twelve weeks of yogasana practices when compared with the control group. Due to training the selected joint range of motion such as shoulder flexion, shoulder extension, hip flexion and hip extension were significantly improved in training group after twelve weeks of the training program. Through practice of various types of asana increased the joint flexibility of the body and it will help to avoid injury. Yogasana practice is advisable for all age group and it is east to perform. The present results of the study was supported by following authors Mark D et al., (June 2007), Chen et al., (March 2008), Pauline and Rintaugu (2010).

## References

- <sup>1</sup> Lidell L (1983). The Sivananda Companion to Yoga. New York, NY: Simon & Schuster Inc.
- <sup>2</sup> <http://www.yogavision.net/yv/practices/asana.htm>
- <sup>3</sup> Schell FJ, Allolio B, Schonecke OW. (1994). "Physiological and psychological effects of Hatha- Yoga exercise in healthy women". *Int J Psychosom*, 41(1-4):46-52.

- 
- Mark D. Tran MS, Robert G. Holly, Jake Lashbrook BS, Ezra A. Amsterdam MD (2007) "Effects of Hatha Yoga Practice on the Health-Related Aspects of



Physical Fitness" *Preventive Cardiology*, 4 (4), p 165–170.

- Chen K M, Tseng W S. (2008) "Pilot-Testing the Effects of a Newly-Developed Silver Yoga Exercise Program for Female Seniors" *Journal of Nursing Research*, Vol 16(1): p37-46.
- Munoru Pauline and Elijah Gitonga Rintaugu (2010) "**Effects of yoga training on bilateral strength and shoulder and hip range of motion**" *International journal of current research*.