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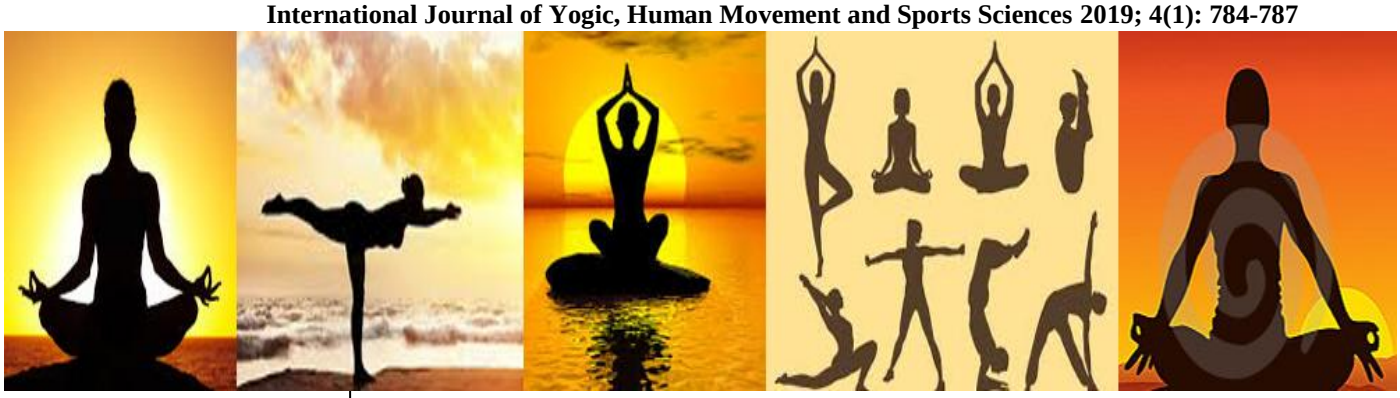

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# Effect of six week yoga training practice on flexibility of old age man

**Kamalesh Pratap Singh and Dr. Santosh Kumar**

**Abstract**
The main aim of the present investigation was to investigate the effect of 12 week yoga training program on flexibility of old age man. The subjects for present study were 40 old age man between the age of 60 – 65 year of age from Varansi (U.P.). All the subjects were randomly assigned into experimental group (N=20) and control group (N=20). For experimental group, Yoga training was imparted thrice in a week and control group participated in regular physical activity for five days in a week. Based on review of available literature, the trunk flexibility was selected for the purpose of the present study. The pre and post tests were administered to the subjects at the play grounds of Banaras Hindu University, Varansi (U.P) at the end of experiment. The data collected from the two groups were statistically analysed for significance, the t-ratio was used. In all the cases to test the significance, 0.05 level of significance was fixed. The data were analysed by computer using statistical packages. The results of the study revealed that the effect of 12 week yoga training program on flexibility of old age man was evident in experimental group of respondents. Statistically significant difference was not observed on flexibility of old age man in their pretest and posttest of both the groups.

**Keywords:** Man, old age, yoga training, control & experimental group, flexibility

## 1. Introduction
Sports are as old as the human society and it enjoys a popular status than any other form of social activities in modern times. Since, time immemorial man has made a rapid progress in all walks of life and also in the field of sports. Scientific research and an investigation have revolutionized the standard of sports and more athletes are looking for high level of performance through quality training to excel at the highest level of the competition. The sports performances have improved at a rapid pace in all sports in the last couple of decades. Many factors have contributed towards the rapid improvement of sports performance. Direct assistance from various sports sciences have improved the sports excellence beyond expectations, still sports scientists are looking for new horizons for further improvement through scientific research and investigations. Significant research studies in the realm of exercise physiology and other allied sports science fields have paved the way for more refined and realistic training methods to give new heights to the unimaginable sporting performance.
Physical inactivity is considerably more dangerous than physical activity. Individuals who are not physically active and who do not exercise their muscles show decrease bone mineral content (or) low calcium in the skeleton, which may develop into osteoporosis. This condition increases the risk of fractures. Inactivity reduces the strength in muscles, joints, tendons and ligaments. Inactive people are more likely to gain weight, become obese and develop impaired cardiac function. Moreover inactive people have a poorer tolerance of physical and mental stress and are less able to cope with illness and injury. Inactivity accelerates the process of ageing.
Powell (1972) [11] explains that fitness is not an end, it is the beginning. A person must get fit to perform and will not necessarily get fit by performing. Fitness is not a matter of physical capacity alone. To develop and maintain a person's physical fitness, vigorous effort by the individual is required. Body fitness and weight control greatly reduce cardiovascular diseases. This results from (a) maintenance of moderately lower blood pressure, (b) reduced blood cholesterol and (c) low density lipoprotein along with increased high-density lipoprotein.

As pointed out earlier, these change all a work together to reduce the number of heart attacks and brain strokes.

Yoga is an ancient discipline designed to bring balance and health to the physical, mental, emotional, and spiritual dimensions of the individual. Yoga is often depicted metaphorically as a tree and comprises eight aspects, or ‘‘limbs:’’ yama (universal ethics), niyama (individual ethics), asana (physical postures), pranayama (breath control), pratyahara (control of the senses), dharana (concentration), dyana (meditation), and samadhi (bliss). Long a popular practice in India, yoga has become increasingly more common in Western society (Iyengar, 1976).

It is well known that obesity adversely affects health and physical fitness (Angel, 1978; Angel etal., 1978; Fox etal, 1981).

An attempt to find out the degree of obesity, several workers have shown that body density is a good index of obesity (Brozek ef al, 1951; Fidanza etal., 1953; Wells etal., 1962). Body density indicates either loss in total body fat or an increase in weight of lean body mass (Forbes & Reina 1970; Sidney etal, 1977) or maintaining the muscle mass by reducing excessive fat (Johnson etal., 1982). Body density is the ratio of body weight to volume or body weight per volume (McArdle etal., 1981).

## 2. Methodology

### 2.1 Selection of Subjects

The subjects for present study were 40 old age male between the age of 60 – 65 year of age from Varanasi (U.P.). All the subjects were randomly assigned into experimental group (N=20) and control group (N=20). For experimental group, training was imparted thrice in a week and control group participated in regular physical activity for five days in a week.

### 2.2 Selection of Variables

Based on review of available literature, the trunk flexibility was selected for the purpose of the present study.

### 2.3 Criterion Measure

Flexibility was measured by Modified sit and reach test. Score was recorded in nearest centimeters.

### 2.4 Research Design

Random group design was used to evaluate the effect of different training modalities. The selected old age male subjects (N=40) were randomly divided into two groups with equal subjects in each group out of which experimental group underwent the yoga training thrice in a week (Monday, Wednesday and Friday). Group-II (control group) participated in their regular physical activity for 6 weeks. Each experimental session of 45 minutes to 90 minutes duration was devoted towards warming up and yoga training exercises

The pre and post tests were administered to the subjects at the play grounds of Banaras Hindu University, Varanasi (U.P) at the end of experiment.

### 2.5 Description and Administration of Test

**Sit and Reach Test**

**Purpose:** The purpose of the sit and reach is to evaluate the flexibility (extensibility) of the low back and posterior thighs.

**Test Description:** To assume the starting position, subjects remove their shoes and sit down at the test apparatus with their knees fully extended and the feet shoulder-width apart. The feet should be flat against the end board. The arms are extended forward with the hands placed on top of each other to perform the test. The subject reaches directly forward, palms down, along the measuring scale four times and holds the position of maximum reach on the fourth trial. The position of maximum reach must be held for one second. The test apparatus and testing position are shown in Figure 3 and 10.

**Equipment:** The test apparatus consists of a specially constructed box with a measuring scale where 23 cm is at the level of the feet. Detailed instructions for constructing the box are provided at the end of this section.

**Scoring:** The score is the most distant point reached on the fourth trial measured to the nearest centimeter. The test administrator should remain close to the scale and note the most distant line touched by the fingertips of both hands. If the hands reach unevenly, the test should be re-administered. The tester should place one hand on the subject's knees to ensure that they remain extended.

### 2.6 Selection of Yogic Exercises

1. Tadasana 2. Ardha Chakrasana, 3. Vriksh Asana, 4. Padmasana, 5. Vajrasana. 6. Paschimottanasn, 7. Bhujangasana, 8. Makrasana, & 9. Shavasana.

### 2.7 Training Program

Based on the results of the pilot study the training programs were scheduled. During the training period, the experimental groups underwent their respective training programs for six weeks. The assistance of three senior research fellows specially trained in the field was sought on administration of various tests. The scientifically structured general training programs are presented in Table 1.

**Table 1:** Basic structure of two different training programmes

| S. No. | Groups & Training Particulars | Treatment |
|---|---|---|
| 1 | Experimental Group I | Yoga Practice Training |
| 2 | Control Group | Self-Exercise |
| 3 | Training Duration | 90 Minutes |
| 4 | Training session/week | 03 Days/Week |
| 5. | Total Length of Training | 06 Week |
| 6. | Training Load Progression | Every Week |

### 2.7.2 Yoga Training Programme

The yogic practices training programme was given to group I for 6 weeks of one session in the morning between 6.00 A.M. to 7.30 A.M. for three days on Tuesday, Thursday, and Saturday as shown in below Table 2.

**Table 2:** Yogic Practices Training Programme

| Week | Position | Intensity | Repetition | Set | Frequency/ Week | Each Asana | Recovery |
|---|---|---|---|---|---|---|---|
| 1 | Standing Sitting Lying | 50% | 10 | 6 | 3 Days | 1 Minute | 30 Seconds |
| 2 | Standing Sitting Lying | 55% | 12 | 6 | 3 Days | 1 Minute | 30 Seconds |
| 3 | Standing Sitting Lying | 60% | 15 | 6 | 3 Days | 1 Minute | 30 Seconds |
| 4 | Standing Sitting Lying | 65% | 10 | 6 | 3 Days | 1 Minute | 30 Seconds |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | Standing Sitting Lying | 70% | 12 | 6 | 3 Days | 1 Minute | 30 Seconds |
| 6 | Standing Sitting Lying | 80% | 15 | 6 | 3 Days | 1 Minute | 30 Seconds |

### 3. Statistical Analysis

The study was based on the groups' pre-test and post-test design. The subjects chosen for the study were divided into experimental group and control group, each group consisting of 20 subjects. Experimental group was assigned yogic practices. The subjects of the control group were not allowed to participate in any of the training programme except in their routine activities. The data was collected on flexibility first at the beginning (pre-test) and finally at the end of the experimental period of 6 weeks (post –test).

The data collected from the two groups were statistically analysed for significance, the t-ratio was used. In all the cases to test the significance, 0.05 level of significance was fixed. The data were analysed by computer using statistical packages.

### 4. Results and Discussion

To find out the significance of difference between pretest and posttest means of flexibility of old age men on experimental and control group, mean, SD, and t-ratio were computed and data pertaining to this has been presented in Table 3 to 5 and depicted in Figure 1 & 2

**Table 3:** Descriptive statistics of pre-test and post-test data of experimental group and control group on flexibilty of old age man

| Test | Experimental Group | | Control Group | |
|---|---|---|---|---|
| | Mean | SD | Mean | SD |
| Pretest | 18.55 | 2.11 | 14.85 | 3.36 |
| Posttest | 19.40 | 2.04 | 15.10 | 3.52 |

The Mean scores of pre-test and post-test data of the experimental group and control group on flexibility has been depicted in figure 1 & 2.

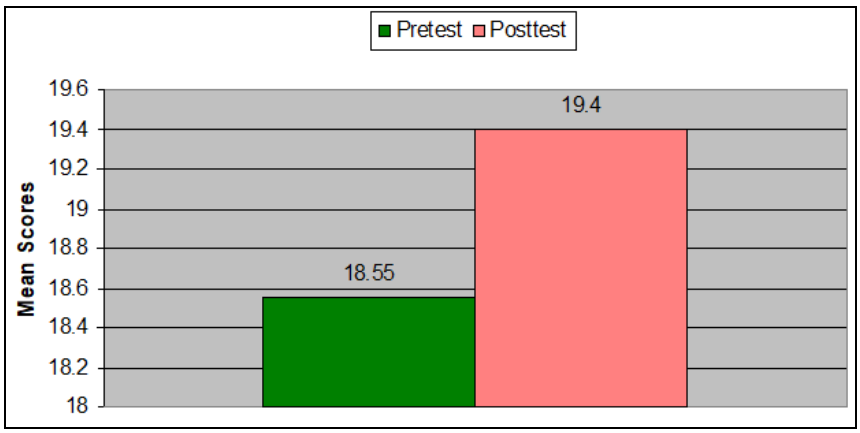


**Fig 1:** Experimental Group

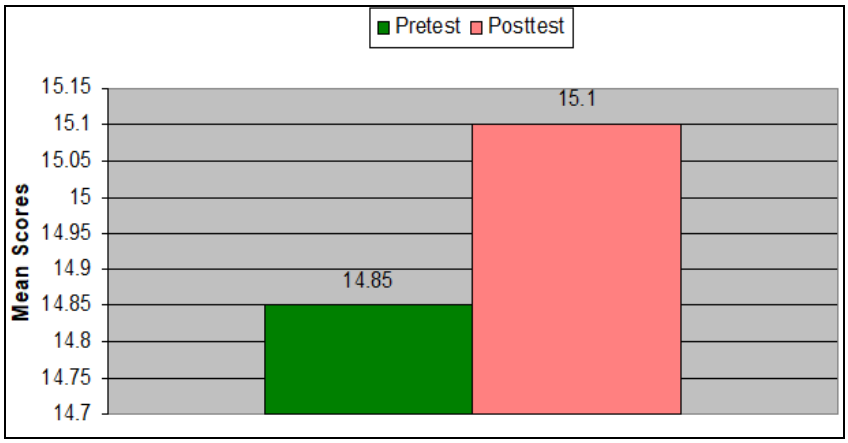


**Fig 2:** Control Group

**Table 4:** Significance of difference between pretest and of post test of experimental group on flexibility

| Test | Mean | MD | DM | t-ratio |
|---|---|---|---|---|
| Pretest<br>Posttest | 18.55<br>19.40 | 0.85 | 0.656 | 1.295 |

Insignificant at.05 level, t.05 (38) =2.02

Table 4 reveals that the statistically significance of difference was not found between pretest and posttest mean of experimental group of old age men in sit and reach test for flexibility, as the obtained t–values of 1.295 was less than the required value of t.05 (38) = 2.02. But the improvement in flexibility of old age was observed during experimental group after the 12 week training program of yoga.

**Table 5:** Significance of difference between pretest and of post test of control group on flexibility

| Test | Mean | MD | DM | t-ratio |
|---|---|---|---|---|
| Pretest<br>Posttest | 15.10<br>14.55 | 0.25 | 0.089 | 0.23 |

Insignificant at.05 level
t.05 (38) =2.02

Table 5 reveals that the statistically significance of difference was not found between pretest and posttest mean of control group of old age men in sit and reach test for flexibility, as the obtained t –values of 0.23 was less than the required value of t.05 (38) = 2.02. But the improvement in flexibility of old age was also observed during control group after the 12 week with out any fixed training program.

## 5. Conclusions

1. The effect of 12 week yoga training program on flexibility of old age men was evident in experimental group of respondents.
2. Statistically significant difference was not observed on flexibility of old age men in their pretest and posttest of both the groups.

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