

## **EFFECT OF TABATA TRAINING WITH AND WITHOUT SURYANAMASKAR ON FLEXIBILITY AMONG ENGINEERING COLLEGE MEN STUDENTS**

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### **Abstract**

The study aims to examine the coalesce effect of tabata training with and without suryanamaskar on flexibility among engineering college men students. To achieve the purpose of the study forty five(N=45) engineering college men students were selected randomly as subjects from Mohamed sathak AJ college of engineering, Chennai, Tamilnadu, India aged between 18 to 22 years. Three groups with each of fifteen subjects were divided for this investigation. Experimental Group-I as tabata training with suryanamaskar, Experimental Group-II as tabata training without suryanamaskar and control group. Each exercise with the time laps of 40 seconds for 20 seconds of recovery. The subjects were tested before and after the twelve weeks of training protocol. The test were measured as flexibility for sit and reach test. Collection of data will be analyzed by ANCOVA to find the differences. Scheffe's post hoc test was applied to examine the difference between groups and testing condition. The level of confidence was fixed at 0.05 level. Result of the research shows tabata training with and without suryanamaskar have significant improvement on flexibility when compare to the control group.

### **Introduction**

Traditional athletic training utilizes specific activities to improve the specific domains of fitness and challenge the cardiovascular system and therefore increase the cardiovascular fitness. Tabata training is generally a form of interval training alternating short periods of intense anaerobic exercise with less intense recovery periods. Tabata training takes its name from Izumi Tabata examined changes in the aerobic and anaerobic systems after high intensive interval training (Jarosław et al 2020). Tabata training has been implemented to improve both aerobic and anaerobic

capacities simultaneously by imposing intensive stimuli on both systems. Tabata training are the whole exercise session is 4-minute long alternating between 20 seconds of intense exercise and 10 seconds of rest for a total of 8 rounds.

Training on recreationally active including body fat percentage, force production, flexibility and anaerobic power. (Rebold et al 2013). High intensity in this training improves the maximum oxygen uptake in adolescents. The efficiency of the cardio-respiratory system the base for physical efficiency and muscular fitness and speed-agility the base for motor performance.

Yoga has been an effective modality for developing mindfulness. (Sephton et al 2009). Yoga is a highly structured activity that mimics critical aspects of athletic performance including balance, flexibility, muscular strength, muscle endurance, and movement efficiency (Chandler TJ 2013). Practicing yoga has been associated with many positive outcomes in various aspects of physical performance and well being (Akhtar P 2013). The premise of yoga differs from specific types of training because of its multifaceted requirements that challenge the body in varied ways.

The physical practice of yoga consists of maintaining regular and steady breathing while changing the positioning of the body through a series of Asanas during which all the targeted and supporting muscle groups are engaged. Suryanamaskar make it one of the most useful and complete methods to bring about health and vigor while at the same time. Preparing an adept for the deeper processes of yoga. Suryanamaskar is an ancient Indian method of offering prayers to the rising Sun in the morning along with a series of physical postures with regulated breathing aiming at range of physical, mental and spiritual benefits.

Suryanamaskar is a graceful combined sequence of twelve postures along with regulated breathing and relaxation. (Chutia et al 2016). Suryanamaskar as a simple physical exercise for the all-round development of an individual ( Choudhary, R et al 2010). Numerous health benefits of Surya Namaskar for different system of the body especially musculoskeletal, cardiovascular, gastrointestinal, nervous system, respiratory and endocrinal (Swati Shukla et al 2016).

## **Methodology**

The aim of the study 45 engineering college men students were randomly as subject from Mohamed Sathak AJ of Engineering Chennai, Tamil Nadu, India aged between 18 to 22 years at

random. Three groups with each of fifteen subjects were divided for this investigation. Experimental Group-I as tabata training with suryanamaskar, Experimental Group-II as tabata training without suryanamaskar and control group. The subjects were tested before and after the twelve weeks of training protocol. The test were measured as flexibility for sit and reach test.

The effect of tabata training with and without suryanamaskar was selected as training protocol. The tabata training with and without suryanamaskar was provided in morning time make the subject involve in proper warming up practice. The exercise are suryanamaskar high knees, bud kicks, good morning exercise, mountain climbs, jump rope, jump and jack, sward jump, vertical jumps, Russian twist, scissor cuts, side planks. The subject trained each exercise as a set load administration with based on intensity. Each exercise with the time laps of 40 seconds for 20 seconds of recovery.

### Statistical Analysis

The data were collected from two experimental and one control group on flexibility. The data were analyzed by Analysis of Covariance (ANCOVA). The effects of the different interventions on flexibility were analyzed by means of ANCOVA for repeated measures. After an overall F value was found to be significant P 0.05 preplanned a priori contrasts were performed to evaluate significant pre-training and post-training changes in each group and differences in between groups. In case of significance, tuskey post tests were calculated to detect differences between groups. All analyses were executed IBM- SPSS 22.0 software was used the confidence level maintained at 0.05.

### Result and finding

**Table –I**  
**Analysis of Variance of Pre and Post Test on flexibility of Tabata Training with and without suryanamaskar of Engineering College Men Students**

Test	Tabata training with Suryanamaskar group	Tabata training without Suryanamaskar group	Control Group
Pre	17.06	16.08	16.53
Post	19.33	18.60	16.46
Adjust Post	19.13	18.56	16.70

**TABLE -II**

<b>Sum of Square</b>	<b>Df</b>	<b>Mean Square</b>	<b>F Ratio</b>
<b>2.178</b>	<b>2</b>	<b>1.089</b>	<b>0.67</b>
<b>68.40</b>	<b>42</b>	<b>1.62</b>	
<b>6653</b>	<b>2</b>	<b>33.26</b>	<b>21.05</b>
<b>66.66</b>	<b>42</b>	<b>1.58</b>	
<b>46.95</b>	<b>2</b>	<b>23.47</b>	<b>46.75</b>
<b>20.60</b>	<b>41</b>	<b>0.502</b>	

**Table III**

**Scheffe's post hoc test for the difference between tabata training with suryanamaskar, tabata training without suryanamaskar and Control Group the Adjust Post Mean of flexibility**

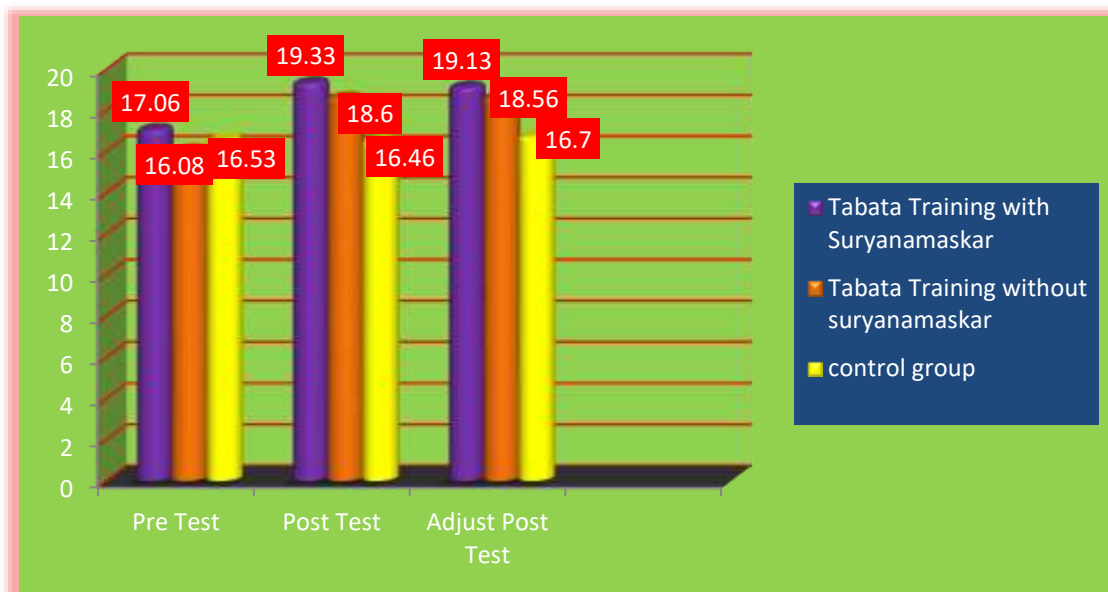
<b>Tabata Training with Suryanamaskar group</b>	<b>Tabata Training without Suryanamaskar group</b>	<b>Control Group</b>	<b>Mean Value</b>	<b>C.i Value</b>
	<b>16.08</b>	<b>16.53</b>	<b>1.86*</b>	<b>0.21</b>
<b>19.13</b>		<b>16.53</b>	<b>2.43*</b>	<b>0.21</b>
<b>19.13</b>	<b>16.08</b>		<b>0.57*</b>	<b>0.21</b>

The pre test mean on flexibility of tabata training with suryanamaskar , tabata training without suryanamaskar and control group was 17.06, 16.06 and 16.53 respectively. The obtained f-ratio for the pre test was 0.67 and the table value of 3.23. Hence the pre test f- ratio insignificant at 0.05 level of confidence for the degree of freedom 2 and 42. The post test means on flexibility of tabata training with suryanamaskar, tabata training without suryanamaskar and control group was 19.33, 18.60 and 16.46 respectively. The obtained f-ratio for the pre test was 21.05 and the table value of 3.23. Hence the pre test f- ratio significant at 0.05 level of confidence for the degree of freedom 2 and 42. The Adjust post test means on flexibility of tabata training with suryanamaskar, tabata training without suryanamaskar and control group was 19.13, 18.56 and 16.70 respectively. The obtained f-ratio for the pre test was 46.75 and the table value of 3.23.

Hence the pre test f- ratio significant at 0.05 level of confidence for the degree of freedom 2 and 42.

The mean difference among the three groups in flexibility during the adjust post test session, accordingly the difference tabata training without suryanamaskar group and control groups was 1.86 and between tabata training with suryanamaskar group and control group was 2.43 and that tabata training with suryanamaskar and tabata training without suryanamaskar group was 0.57 both having standard significance at 0.05 confidence level. The flexibility is greater than the confidence interval value 0.21 which shows significant difference at 0.05 level of confidence.

**Graphical Diagram of Flexibility**



### Discussion finding

The present studies were found statistically significant improvement on flexibility due to the effect of tabata training with and without suryanamaskar for engineering college men students. The findings of the study were also agreed with the findings Tabata interval-training program would lead to improvements in body fat percentage, force production, flexibility, and anaerobic power (Rebold et al 2013). Significant differences were found in the flexibility body weight and anaerobic power values after the high intensity interval training (Mehmet Altun et al 2018). Yoga based lifestyle program reduced pain related disability and improved spinal flexibility (Padmini,

et al 2008). Yoga therapy is better than therapeutic exercises in improving walking pain, range of knee flexion, walking time, tenderness, swelling, and knee disability (John, et al 2012). Yoga may reduce expressive suppression by increasing psychological flexibility.( Alexandra M., et al 2014). Suryanamaskar asana may be recommended to improve muscular endurance and flexibility (Baljinder Singh Bal et al 2010).

## Conclusion

- ❖ Conclusion was drawn based by the result. The result of the study that there was a significant improvement in the experimental groups on compared to the control group after the completion the effect of tabata training with and without suryanamaskar on flexibility.
- ❖ The tabata training with suryanamaskar shows better improvement on flexibility compare than the tabata training without suryanamaskar and control group.
- ❖ The research shows tabata training with and without suryanamaskar have significant improvement on flexibility when compare to the control group.

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