



## Research article

# EFFECT OF KUNDALINI YOGA AND YOGIC PRACTICES ON SELECTED PHYSICAL FITNESS VARIABLES OF COLLEGE WOMEN STUDENTS

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## Abstract

*The purpose of the study was to find out the effect of Simplified Kundalini yoga and Yogic practices on selected physical fitness variables of college women students. To resolve the purpose of the study 60 college women were randomly selected from Kumaraguru Institute of Technology, Coimbatore. Their age ranged between 18 and 22 years. The selected subjects were randomly divided into three equal groups consisting of twenty each. Experimental Group I underwent simplified Kundalini yoga training (SKYT); Experimental Group II underwent Yogic practices (YPT) for a period of 16 weeks. Group III acted as control group (CG) and were not engaged in any training programme other than their daily work. The subjects were free to withdraw their consent in case of feeling any discomfort during the period of their participation but there was no dropout during the study. The physical fitness variables namely muscular strength endurance and Flexibility were selected and tested through modified sit ups and sit and reach test respectively. Pre and post tests were conducted in all the variables. 16 weeks of kundalini yoga training and yogic practices were given to the respective group for a period of 16 weeks. Analysis of Covariance (ANCOVA) was used to determine the significant difference between the treatment means. Whenever the 'F' ratios were found to be significant, Scheffe's post hoc test was applied to test the significant difference between the paired adjusted means. The result shows that the Kundalini yoga training group had significant improvement than the yogic practice group in muscular strength endurance but similar in flexibility.*

**Key words:** Kundalini yoga, flexibility, muscular strength endurance.

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## INTRODUCTION

Simplified Kundalini Yoga or SKY is a physical, mental and spiritual discipline packaged by Yogiraj Vethathiri Maharishi for developing strength, awareness, character, and consciousness. The practice of Pranayamam, Acupressure, Asanas and Thavam in Simplified Kundalini Yoga raises the body awareness to prepare the body, nervous system, and mind to handle the Life energy better. Thavam practice is initiated by senior SKY mentors or practitioners.

Simplified Kundalini Yoga includes Asanas, Simplified Physical Exercises, Simplified Kundalini Meditation, Kayakalpa Exercises and Introspection. A trained master initiates the student into meditation practice, intensifying the working center of his life-force at **Agha Chakra** (between the eyebrows) so as to focus there and meditate. After a few days of the initial practice, energy increase in the upper centers may be felt excessively.

Globally, humanity is experiencing a sense of helplessness and uncertainty due to personal, societal and environmental challenges that do not seem to have any long lasting solutions in sight. The modern life styles are a reflection of the imbalance that stems from the domination of science and technology. Vethathiriyam is the one stop solution for the above challenges.

Yoga asana consist of three basic movements. They are backward bends, forward bends and twisting movements. These postures are always balanced; a back bend should be followed with a forward bend and a leftward movement

should be followed by one to the right. Diaphragm breathing is important during the poses, where the breath begins at the bottom of the lungs. The stomach should move out-ward with the inhalation and relax inward during exhalation. The breath should be through the nose at all times during hatha asana. Typically, one inhales during backward bends and exhales during forward bending movements.

The mental component in yoga is as important as the physical movements. Yoga is not a competitive sport, but a means to self-awareness and self-improvement. An attitude of attention, care and non-criticism is important; limitations should be acknowledged and calmly improved. Patience is important and yoga stretches should be slow and worked up gradually. The body should be worked with never against and a person should never over exert. A yoga stretch should be done only so far as proper form and alignment of the whole body can be maintained. Some yoga stretches can be uncomfortable for beginners and part of yoga is learning to distinguish between sensations that are beneficial and those that can signal potential injury. A good rule is that positions should be stopped when there is sharp pain in the joints, muscles or tendons (Douglas Dupler).

## METHODS AND MATERIALS

The investigator used pre and post test random group design in this study. This procedure involves dividing the sample into three groups based on random selection. The investigator did not make any attempt to equate the groups in this

study. The selected sixty subjects were divided into three groups consisting of 20 each such as Experimental Group I, Experimental Group II and a Control Group. The treatment was administered to all the experimental groups for a period of sixteen weeks. At the end of 16<sup>th</sup> week the post test were administered to all the groups.

The physical fitness variables namely muscular strength endurance and Flexibility were selected and tested through modified sit ups and sit and reach test respectively. Pre and post tests were conducted in all the variables. 16 weeks of kundalini yoga training and yogic practices were given to the respective group for a period of 16 weeks.

## TRAINING SCHEDULE

### SIMPLIFIED KUNDALINI YOGA SCHEDULE

**Training schedule:** The training schedule of simplified kundalini yoga practices:

(1) The practices for the **first five** weeks in the Evening (4.45 to 5.45) were as follows;

Experimental group I					
Simplified Kundalini yoga Physical Exercise					
Sl. No.	Name of practice	Frequency	Duration of the practice	Rest time	Total duration of the practice
<b>A</b>	<b>Meditation</b>				
1	God prayer	6 days	1 minute	-	20 Minutes 30 sec
2	Guru worship	6 days	1 minute	-	
3	Nadisudhi	6 days	4 minute	-	
4	Thanduvadasudhi	6 days	4 minute	-	
5	Agna meditation or shanthi	6 days	10 minutes	30 sec	
<b>B</b>	<b>Physical exercises</b>				
1	Loosing exercise	6 days	2 minutes	30 sec	39 Minutes 30sec
2	Hand exercises	6 days	5 minutes	30 sec	
3	Leg exercises	6 days	5 minutes	30 sec	
4	Neuro muscular breathing exercises	6 days	5 minutes	30 sec	
5	Eye exercises	6 days	4 minutes	30 sec	
6	Kapalabathi	6 days	4 minutes	30 sec	
7	Makarasanam – I & II	6 days	6 minutes	30 sec	
9	Relaxation	6 days	5 minutes	-----	
				Total	60 min

2) Practices for the second five weeks in the Evening (4.45 to 5.45) were as follows;

Experimental group I					
Simplified Kundalini yoga Physical Exercise					
Sl. No.	Name of practice	Frequency	Duration of the practice	Rest time	Total duration of the practice
<b>A</b>	<b>Meditation</b>				
<b>1</b>	God prayer	6 days	1 minute	-	21Minutes 20 sec
<b>2</b>	Guru worship	6 days	1 minute	-	
<b>3</b>	Nadisudhi	6 days	3 minute	-	
<b>4</b>	Thanduvadasudhi	6 days	3 minute	-	
<b>5</b>	Agna meditation or shanthi or thuriyam	6 days	13 minutes	20 sec	
<b>B</b>	<b>Physical exercises</b>				
	Loosing exercise	6 days	2 minutes	20 sec	38 Minutes 40 sec
<b>1</b>	Hand exercises	6 days	3 minutes	20 sec	
<b>2</b>	Leg exercises	6 days	3 minutes	20 sec	
<b>3</b>	Neuro muscular exercises	6 days	3 minutes	20 sec	
<b>4</b>	Eye exercises	6 days	3 minutes	20 sec	
<b>5</b>	Kapalabathi	6 days	4 minutes	20 sec	
<b>6</b>	Makarasanam – I & II	6 days	5minutes	20 sec	
<b>7</b>	Massage	6 days	3 minutes	20 sec	
<b>8</b>	Acu pressure	6 days	7 minutes		
<b>9</b>	Relaxation	6 days	3 minutes		
				Total	60 min

3) Practices for the last six weeks in the Evening (4.45 to 5.45) were as follows;

Experimental group I					
Simplified Kundalini yoga Physical Exercise					
Sl. No.	Name of practice	Frequency	Duration of the practice	Rest time	Total duration of the practice
<b>1</b>	<b>Meditation</b>				
<b>A</b>	God prayer	6 days	1 minute	-	26 minutes
<b>B</b>	Guru worship	6 days	1 minute	-	
<b>C</b>	Nadisudhi	6 days	2 minute	-	
<b>D</b>	Thanduvadasudhi	6 days	2 minute	-	
<b>E</b>	Agna meditation or shanthi or thuriyam	6 days	20 minutes		
<b>2</b>	<b>Physical exercises</b>				
	Loosing exercise	6 days	1 minutes	10 sec	34 minutes
<b>A</b>	Hand exercises	6 days	3 minutes	10 sec	
<b>B</b>	Leg exercises	6 days	3 minutes	10 sec	
<b>C</b>	Neuro muscular exercises	6 days	3 minutes	10 sec	
<b>D</b>	Eye exercises	6 days	3 minutes	10 sec	
<b>E</b>	Kapalabathi	6 days	3 minutes 30 sec	10 sec	
<b>F</b>	Makarasanam – I & II	6 days	5 minutes	20 sec	
<b>H</b>	Massage	6 days	2 minutes	10 sec	
<b>I</b>	Acu pressure	6 days	6 minutes		
<b>J</b>	Relaxation	6 days	3 minutes		
				Total	60 minutes

**THE TRAINING SCHEDULE OF REGULAR YOGIC PRACTICES IS DIVIDED INTO THREE BLOCKS,**

(1) The practices for the **first five** weeks in the Evening (4.45 to 5.45) were as follows;

<b>Experimental group II</b>					
<b>Regular yogic Practices</b>					
<b>Sl. No.</b>	<b>Name of practice</b>	<b>Frequency</b>	<b>Duration of the practice</b>	<b>Rest time</b>	<b>Total duration of the practice</b>
<b>A</b>	<b>Meditation</b>				
<b>1</b>	God prayer	6 days	1 minute	-	20 Minutes 30 sec
<b>2</b>	Guru worship	6 days	1 minute	-	
<b>3</b>	Nadisudhi	6 days	4 minute	-	
<b>4</b>	Thanduvadasudhi	6 days	4 minute	-	
<b>5</b>	Meditation	6 days	10 minutes	30 sec	
<b>B</b>	<b>Yogasana</b>				
<b>1</b>	Loosing exercise	6 days	2 mintues	30 sec	39 Minutes 30sec
<b>2</b>	Vrksasana	6 days	4 minutes	30 sec	
<b>3</b>	Trikonasana	6 days	4 minutes	30 sec	
<b>4</b>	Pathahastasana	6 days	4 minutes	30 sec	
<b>5</b>	Ardha chakarasana	6 days	4 minutes	30 sec	
<b>6</b>	Padmasan	6 days	4 minutes	30 sec	
<b>7</b>	Sugasana	6 days	4 minutes	30 sec	
<b>8</b>	Yoga mudra	6 days	4 minutes	30 sec	
<b>9</b>	Matsyasana	6 days	4 minutes	30 sec	
<b>10</b>	Savasaana	6 days	5 minutes		
				Total	60

2) Practices for **the second** five weeks in the Evening (4.45 to 5.45) were as follows;

<b>Experimental group II</b> <b>Regular yogic practice</b>					
Sl. No.	Name of practice	Frequency	Duration of the practice	Rest time	Total duration of the practice
<b>A</b>	<b>Meditation</b>				
<b>1</b>	God prayer	6 days	1 minute	-	21Minutes 20 sec
<b>2</b>	Guru worship	6 days	1 minute	-	
<b>3</b>	Nadisudhi	6 days	3 minute	-	
<b>4</b>	Thanduvadasudhi	6 days	3 minute	-	
<b>5</b>	Transcendental meditation	6 days	13 minutes	20 sec	
<b>B</b>	<b>Physical exercises</b>				
<b>1</b>	Loosing exercise	6 days	2 minutes	20 sec	38 Minutes 40 sec
<b>2</b>	Dhanurasana	6 days	4 minutes	20 sec	
<b>3</b>	Sethupandasana	6 days	4 minutes	20 sec	
<b>4</b>	Ustrasana	6 days	4minutes	20 sec	
<b>5</b>	Chakarasana	6 days	4 minutes	20 sec	
<b>6</b>	Adhomuksha svasana	6 days	3 minutes	20 sec	
<b>7</b>	Salaphasana	6 days	3minutes	20 sec	
<b>8</b>	Bhujangasana	6 days	3minutes	20 sec	
<b>9</b>	Yogamudra	6 days	3 minutes	20 sec	
<b>10</b>	Savasana	6 days	5Minutes 40 sec		
				Total	60 min

Practices for **the last six** weeks in the Evening (4.45 to 5.45) were as follows;

Experimental group II Regular yogic practice						
Sl. No.	Name of practice	Frequency	Duration of the practice	Sets	Rest time	Total duration of the practice
<b>A</b>	<b>Meditation</b>					26 Minutes
1	God prayer	6 days	1 minute		-	
2	Guru worship	6 days	1 minute		-	
3	Nadisudhi	6 days	2 minute		-	
4	Thanduvadasudhi	6 days	2 minute		-	
5	meditation	6 days	20 minutes			
<b>B</b>	<b>Yogasana</b>					34 Minutes
	Loosing exercise	6 days	2minutes		10 sec	
1	Utkatasana	6 days	5 minutes	5 times	50 sec	
2	virukshasan	6 days	1minutes		10 sec	
3	Trikonasana	6 days	1 minutes	1 set	10 sec	
4	Pathahastasana	6 days	1minutes	1 set	10 sec	
5	Ardha chakarasana	6 days	1 minutes	1set	10 sec	
6	Padmasan	6 days	1 minutes	1set	10 sec	
7	Sukhasana	6 days	1minutes	1 set	10 sec	
8	Yoga mudra	6 days	1 minutes	1 set	10 sec	
9	Matsyasana	6 days	1minutes	1 set	10 sec	
10	Dhanurasana	6 days	1 minutes	1set	10 sec	
11	Sethupandasana	6 days	1 minutes	1 set	10 sec	
12	Ustrasana	6 days	1minutes	1 set	10 sec	
13	Chakarasana	6 days	1 minutes	1 set	10 sec	
14	Adhomuksha svasana	6 days	1minutes	1 set	10 sec	
15	Salaphasana	6 days	1 minutes	1 set	10 sec	
16	Bhujangasana	6 days	1 minutes	1 set	10 sec	
17	Uthanapathasana	6 days	1 minutes	1 set	10 sec	
18	Viparitakarani	6 days	1 minutes	1 set	10 sec	
19	Pavanamukthasana	6 days	1 minutes	1 set	10 sec	
20	Savasana	6 days	5 minutes	5 set		
					Total	60 min



Analysis of Covariance (ANCOVA) was used to determine the significant difference between the treatment means. Whenever the 'F' ratios were found to be significant, Scheffe's post hoc test was applied to test the significant difference between the paired adjusted means.

## RESULTS

The data collected were analyzed by using ANCOVA and the results were given in the following tables and figures.

**Table I**  
**COMPUTATION OF ANALYSIS OF COVARIANCE ON PRE, POST AND**  
**ADJUSTED POST-TEST MEANS OF THE SELECTED VARIABLES OF**  
**SIMPLIFIED KUNDALINI YOGA GROUP (SKYG), YOGIC TRAINING GROUP**  
**(YTG) AND CONTROL GROUP (CG)**  
**ON MUSCULAR STRENGTH ENDURANCE**

F-ratio	Means Squares	df	Sum of Squares	Source of Variance	CG	YTG	SKY G	
1.58	10.51	2	21.03	BG	13.20	12.50	13.95	Pre-Test Means
	6.65	57	379.15	WG				
62.28*	357.05	2	714.10	BG	12.30	16.60	20.75	Post-Test Means
	5.73	57	326.75	WG				
105.45*	318.27	2	636.54	BG	12.31	17.06	20.27	Adjusted Post-Test Means
	3.01	56	169.01	WG				

BG- Between Group Means

WG- Within Group Means

df- Degrees of Freedom

\* - Significant

(Table Value for 0.05 Levels for df 2 & 57= 4.98)

(Table Value for 0.05 Level for df 2 & 56 = 4.98)

An examination of table I indicated that the pretest means of simplified Kundalini yoga group, yogic practice group and control groups were 13.95, 12.50 and 13.20 respectively. The obtained F-ratio for the pre-test was 1.58. The table F-ratio was 4.98. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 57.

The post-test means of simplified

Kundalini yoga group, yogic practice group and control groups were 20.75, 16.60 and 12.30 respectively. The obtained F-ratio for the post-test was 62.28 and the table F-ratio was 4.98. Hence the post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 57.

The adjusted post-test means of the simplified Kundalini yoga group, yogic practice group and control groups were

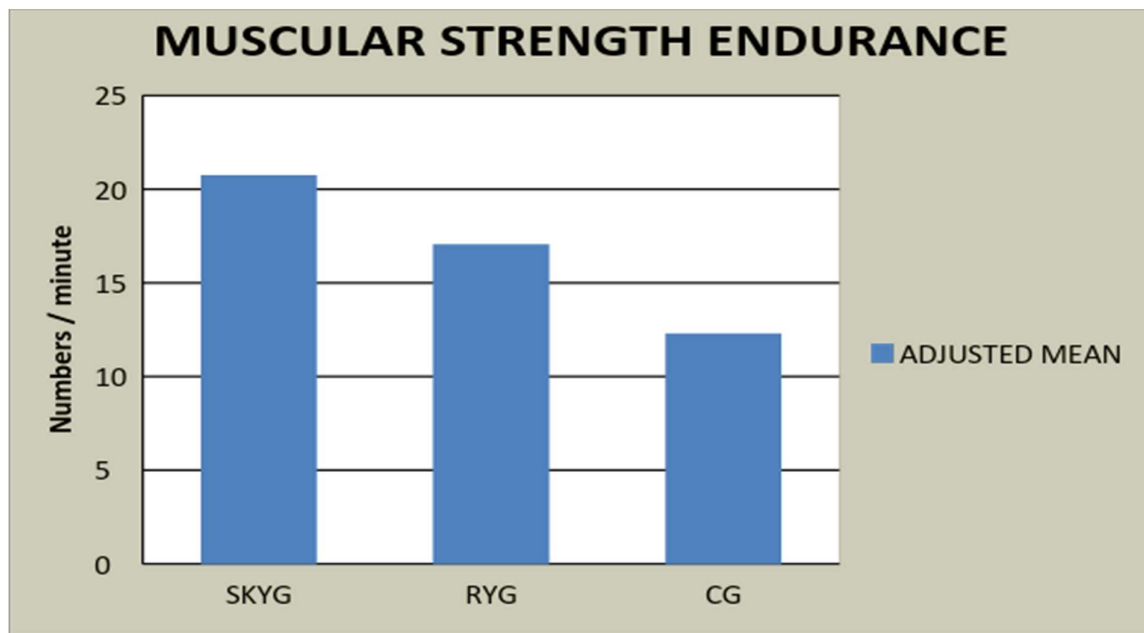
20.27, 17.06 and 12.31 respectively. The obtained F-ratio for the adjusted post-test means was 105.45 and the table F-ratio was 4.98. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2

and 56.

The pre, post and adjusted posttest mean values of simplified Kundalini yoga group, yogic practice group and control groups, on muscular strength endurance are graphically represented in the figure -1

**FIGURE - 1**

**BAR DIAGRAM SHOWING THE ADJUSTED POST TEST MEAN VALUES OF MUSCULAR STRENGTH ENDURANCE OF CONTROL GROUP, REGULAR YOGA GROUP AND SIMPLIFIED KUNDALINI YOGA GROUP**



**TABLE II**

**THE SCHEFFE'S TEST FOR THE ADJUSTED POST TEST PAIRED MEANS ON MUSCULAR STRENGTH ENDURANCE**

Confidence Interval	Mean Difference	Adjusted Post-test means		
		CG	YTG	SKYG
1.375	3.21*		17.06	20.27
	7.96*	12.31		20.27
	4.75*	12.31	17.06	

Table II shows the mean difference among simplified Kundalini yoga, yogic practices group and control group. Mean differences of Simplified Kundalini yoga group and yogic practice

group with control group were 7.96 and 4.75 respectively on Muscular Strength Endurance and are greater than the confidence interval value 1.375, which shows significant difference at 0.05 level

of confidence.

The mean difference between simplified Kundalini yoga group and yogic practices group was 3.21 on

muscular strength endurance was also greater than the confidence interval value 1.375, which shows significant difference at 0.05 level of confidence.

**TABLE III**  
**COMPUTATION OF ANALYSIS OF COVARIANCE ON PRE, POST AND ADJUSTED POST-TEST MEANS OF THE SELECTED VARIABLES OF SIMPLIFIED KUNDALINI YOGA GROUP (SKYG), YOGIC TRAINING GROUP (YTG) AND CONTROL GROUP (CG) ON FLEXIBILITY**

<b>F-ratio</b>	<b>Means Squares</b>	<b>df</b>	<b>Sum of Squares</b>	<b>Source of Variance</b>	<b>CG</b>	<b>YTG</b>	<b>SKYG</b>	
0.19	0.150	2	0.300	<b>BG</b>	14.35	14.20	14.35	<b>Pre-Test Means</b>
	7.76	57	442.30	<b>WG</b>				
34.13*	492.91	2	985.83	<b>BG</b>	13.95	21.20	23.45	<b>Post-Test Means</b>
	14.44	57	823.10	<b>WG</b>				
36.21*	494.72	2	989.44	<b>BG</b>	13.93	21.23	23.43	<b>Adjusted Post-Test Means</b>
	13.65	56	764.93	<b>WG</b>				

BG- Between Group Means

WG- Within Group Means

df- Degrees of Freedom

(Table Value for 0.05 Level for df 2 & 57= 4.98)

(Table Value for 0.05 Level for df 2 & 56 = 4.98)

\* - Significant

An examination of table - III indicated that the pretest means of simplified Kundalini yoga group, yogic practice group and control groups were 14.35, 14.20 and 14.35 respectively. The obtained F-ratio for the pre-test was 0.19 the table F-ratio was 4.98. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 57.

The post-test means of the simplified Kundalini yoga group, yogic practice group and control groups were 23.45, 21.20 and 13.95 respectively. The obtained F-ratio for the post-test was

34.13 and the table F-ratio was 4.98. Hence the post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 57.

The adjusted post-test means of the simplified Kundalini yoga group, yogic practice group and control groups were 23.43, 21.23 and 13.39 respectively. The obtained F-ratio for the adjusted post-test means was 36.21 and the table F-ratio was 4.98. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 56.

The pre, post and adjusted posttest

mean values of simplified Kundalini yoga group, yogic practice group and control

groups, on flexibility are graphically represented in the figure -2

**FIGURE 2**

**BAR DIAGRAM SHOWING THE ADJUSTED MEAN VALUES OF FLEXIBILITY OF CONTROL GROUP, REGULAR YOGA GROUP AND SIMPLIFIED KUNDALINI YOGA GROUP**



**TABLE IV**

**THE SCHEFFE'S TEST FOR THE ADJUSTED POST TEST PAIRED MEANS ON FLEXIBILITY**

Confidence Interval	Mean Difference	Adjusted Post-test means		
		CG	YTG	SKYG
2.91	2.2		21.23	23.43
	9.5*	13.93		23.43
	7.3*	13.93	21.23	

*\* Significant at 0.05 level of confidence*

Table IV shows the mean difference among simplified Kundalini yoga group and yogic practices group and control group. Mean difference of Simplified Kundalini yoga group and yogic practice group with control group were 9.5 and 7.3 respectively on Flexibility are greater than the confidence interval value 2.91, which shows significant difference at 0.05 level of confidence.

The mean difference between

simplified Kundalini yoga group and yogic practices group was 2.2 on flexibility was lesser than the confidence interval value 2.91, which shows insignificant difference at 0.05 level of confidence.

## DISCUSSION ON FINDINGS

The prime intention of the researcher was to analyse the effect of simplified Kundalini yoga and yogic practices on selected physical fitness

variables among college women.

The comparison shows that Simplified Kundalini Yoga training group had shown significant improvement than the regular yogic training group and control group in Muscular Strength endurance, in the comparison of mean value of yogic practices and control groups, the yogic practice group had shown significant improvement in muscular strength endurance and flexibility than the control group. Both the experimental groups had similar improvement in flexibility but there is a trend in favour of kundalini yoga training group. Simplified Kundalini yoga helps women to maintain their health and wellness.

The below mentioned study is a research proof. Alamelu (2013) studied the effect of Vethathiri Maharish Simplified Kundalini Yoga (erstwhile Manavalakkalai Yoga). This study supports the findings of Vissing, et al.

(2008) Andersen, et al. (1993), Aagaard, (1993), Voight and Draovitch, (1991), Arabatzi et al. (2010), Avery & Faigenbaum (2007), Bird, et al. (2005), Bissas, et al. (2011), Chen, et al. (2008), Durham, et al. (2001), Feigenbaum & Pollock (1991), Gil, et al. (2013).

## CONCLUSIONS

The Simplified Kundalini Yoga training group had shown significant improvement than the yogic training group and control group in Muscular Strength endurance

The yogic training group and simplified Kundalini yoga training group are similar in the improvement of Flexibility

It is also inferred that the simplified Kundalini yoga training for the period of sixteen weeks was found to be most appropriate training to produce significant changes in physical fitness.

## REFERENCES

- [1] Bernardi., Luciano., Peter Sleight., Gabriele Bandinelli., Simone Cencetti., Lamberto Fattorini., Johanna Wdowczyk-Szulc., & Alfonso Lagi. (2001). Effect of rosary prayer and yoga mantras on autonomic cardiovascular rhythms: comparative study. *British Medical Journal*, 323:1446-1449.
- [2] Birkel, D. A., & L. Edgren. (2000). Hatha yoga: Improved vital capacity of college students. *Alternative Therapies in Health and Medicine*, 6(6):55-56.
- [3] Chen, T. L., Mao, H. C., Lai, C. H., Li, C. Y., & Kuo, C. H. (2009). The effect of yoga exercise intervention on health related physical fitness in school-age asthmatic children.
- [4] Dulaney, N. M. (1991). Effects of flexibility training program on flexibility; test scores in elementary school children. *Completed Research*, 33, 2.
- [5] Ellie Whitney., Linda Kelly., De Bruyne., & Ka Ganong, WJ. (2005). *Nutrition for Health & Health Care*. New York: McGraw Hill.
- [6] Grund, A., Dilba, B., Forberger, K., Krause, H., Siewers, M., Rieckert, H., & Müller, M. J. (2000). Relationships between physical activity, physical fitness,

- muscle strength and nutritional state in 5- to 11-year-old children. *Eur J Appl Physiol.*, 82 (5-6), 425-438.
- [7] Herbert Benson. (1979). *Mind and Body Effect*. New York: Berkery books.
- [8] Joshi, L. N., V. D. Joshi., & L. V. Gokhale. (1992). Effect of short term Pranayama practice on breathing rate and ventilatory functions of lung. *Indian Journal of Physiology & Pharmacology*, 36(2):105-108.
- [9] Luke, A., Sutton, M., Scholler, D.A., Rozen, N.J. Nutrient Intake and Obesity in Prepubescent Children with Down syndrome. *Journal of the American Dietetic Association*. Vol.96, 1262.
- [10] Ray, U. S., Mukhopadhyaya, S., Purkayastha, S. S., Asnani, V., Tomer, O. S., Prasad, R., Thakur, L., & Selvamurthy, W. (2001). Effect of yogic exercises on physical and mental health of young fellowship course trainees. *Indian Journal of Physiology and Pharmacology*.
- [11] Swamy Sivananda. (1982). *The Complete books of yoga: Harmony of body and mind* Orient. Vision Book pvt. Ltd.,
- [12] Taylor et.al. (1985). The relation of physical activity and exercise to mental health. *Public Health Rep.* 100(2): 195–202
- [13] Vethathiri Maharishi. (1992). *Yoga for modern age*. Erode: Vethathiri publications.

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