

Influence Of Asana And Simplified Kundalini Yoga On Flexibility On College Woman Students

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Abstract

Women face numerous barriers to being physically active including caring responsibilities, body image and perceptions of safety. Change needs to occur at the societal levels to address current gender roles and how they can limit women's abilities to be physically active maintain health (World Health Organization 2009). Yoga asana are psycho-physical practices to culture body and mind (Rose and Thomas 2010). Yoga has been practiced in India for over two millennia and spread throughout the globe. It increases flexibility, physical fitness and general health. It lubricates the joints, ligaments, and tendon. Maintains correct posture, strengthens the weak parts of the body and control the body weight. Kundalini yoga derives its name through a focus on awakening Kundalini energy through regular practices of meditation, pranayama, chanting mantra and yoga asana. The practices of kriyas and meditations in Kundalini yoga are designed to raise complete body awareness to prepare the body, nervous system and mind to handle energy of Kundalini rising. Simplified Kundalini yoga or SKY is a physical, mental and spiritual discipline packaged by Vethathiri Maharishi for developing strength, awareness, character and consciousness. It includes physical exercises, kundalini meditation, kayakalpa exercises and introspection. Both asanas and practices of simplified Kundalini yoga increases flexibility significantly after sixteen week of training on college women students. Flexibility was measured using sit and reach box and unit of measurement was in inches. Analysis of co variance (Ancova) was applied to find out significant difference among the groups. If F ratio was found to be significance Scheff's post hoc test was applied to find out the significant difference between the adjusted paired mean.

Key words: flexibility, yoga, kundalini yoga, meditation and asana.

INTRODUCTION:

The most important aim of our lives should be to maintain good health. Many people take their health for granted and abuse their bodies with a sedentary life style, bad diets, medications and high stress factors. Every person, due to genetic weaknesses, is susceptible to certain ailments that if not prevented can lead to serious illnesses. When energy is depleted in the body the organs become weak and they cannot function properly. The natural equilibrium will be disturbed and a disorder can develop. Yoga acts as preventive measures to disease by reducing stress level, keeping the internal organs toned and healthy and maintaining a

balanced equilibrium between the physical, mental and spiritual level. The emphasis is to unite the system with a combination of breathing techniques, gentle exercise and mind control. This produces a tranquility that penetrates deep into the mind and soul. It improves the health of the person on all levels. (Vimala Lalvani, 2003). Women tend to be care givers and out of the sense of duty, they have a hard time justifying behaviour that are "just for themselves" such as exercise, recreation and relaxation (Fogoros, 2009).

Physical fitness is generally considered to be "the ability to perform daily tasks without fatigue". Physical fitness is divided into four health and six skill-related components.

Physical fitness includes several components: cardio-respiratory fitness, muscular endurance, muscular strength, flexibility, coordination, and speed. Flexibility was taken in this study.

PHYSICAL BENEFITS OF YOGA: Yoga increases Flexibility, Physical fitness and General health. Yoga lubricates the joints, ligaments and tendon. Maintain correct posture, strengthen the weak parts of the body and Control the body weight. (Dr. Phor Rajesh Kumar 2014 p 42)

FLEXIBILITY: Flexibility is needed to perform everyday activities with relative ease. To get out of bed, lift children, or sweep the floor, we need flexibility. Flexibility tends to deteriorate with age, often due to a sedentary lifestyle. Without adequate flexibility, daily activities become more difficult to perform. Over time, we create body movements and posture habits that can lead to reduced mobility of joints and compromised body positions. Staying active and stretching help prevent this loss of mobility, which ensures independence as we age. Being flexible significantly reduces the chance of experiencing occasional and chronic back pain.

In general, flexibility means the range of movements around the skeletal joints of the body **Cowen and Adams (2005)**. Flexibility is not a general body character but it is specific to each body region. If a person is highly flexible shoulder, it does not necessarily mean that he/she will have good knee flexibility or hip flexibility. Even it is possible that one shoulder joint is more flexible than the other. For a good physical fitness, it is essential that a person has quite flexible joints and is able to maintain his or her body flexibility. The flexibility component of physical fitness enables the person to have free body movements, better coordinated movements requiring lesser work and to handle greater stress with lesser changes of injury.

IMPORTANCE OF FLEXIBILITY:

Flexibility is the ability to execute a wide range of movement in the joints while for repetition of work done in natural speed. Flexibility is most important. It helps to move bodily parts easily, takes less time, energy to perform a task. Elasticity in muscle reduces tension and provides maximum length.

REVIEW OF LITERATURE: Tran et al.

(2001) conducted a study to find out the effects of Hatha Yoga practice on the health-related aspects of physical fitness. Ten healthy, untrained volunteers (nine females and one male), ranging in age from 18-27 years, were studied to determine the effects of hatha yoga practice on the health-related aspects of physical fitness, including muscular strength and endurance, flexibility, cardio respiratory fitness, body composition, and pulmonary function. Subjects were required to attend a minimum of two yoga classes per week for a total of 8 weeks. Each yoga session consisted of 10 minutes of pranayama (breath-control exercises), 15 minutes of dynamic warm-up exercises, 50 minutes of Asanas (yoga postures), and 10 minutes of supine relaxation in savasana (corpse pose). The subjects were evaluated before and after the 8-week training program. Isokinetic muscular strength for elbow extension, elbow flexion, and knee extension increased by 31%, 19%, and 28% ($p < 0.05$), respectively, whereas isometric muscular endurance for knee flexion increased 57% ($p < 0.01$). Ankle flexibility, shoulder elevation, trunk extension, and trunk flexion increased by 13% ($p < 0.01$), 155% ($p < 0.001$), 188% ($p < 0.001$), and 14% ($p < 0.05$), respectively. Absolute and relative maximal oxygen uptake increased by 7% and 6%, respectively ($p < 0.01$). These findings indicate that hatha yoga practice can elicit improvements in the health-related aspects of physical fitness.

Cowen and Adams (2005) conducted a study in which twenty-six healthy adults age 20–58 (Mean 31.8) participated in six weeks of either astanga yoga or hatha yoga class. Significant improvements at follow-up were noted for all participants in diastolic blood

pressure, upper body and trunk dynamic muscular strength and endurance, flexibility, perceived stress, and health perception. The improvements differed for each group when compared to baseline assessments. The astanga yoga group had decreased diastolic blood pressure and perceived stress, and increased upper body and trunk dynamic muscular strength and endurance, flexibility, and health perception. Improvements for the hatha yoga group were significant only for trunk dynamic muscular strength and endurance, and flexibility. The findings suggest that the fitness benefits of yoga practice differ by style.

Bal and Kaur (2009) examined the effects of selected asanas in hatha **yoga** on agility and **flexibility** level. The subjects for the study were selected on the basis of random group design. Thirty (N=30) male students were selected as subject for the present study from D.A.V. Institute of Engineering and Technology, Jalandhar (Punjab), INDIA. All the subjects ranged between the chronological age of 18-25 years. The selected subjects were further divided into two groups. Experimental treatment was then assigned to group “A” while group “B” acts as control. “Hexagonal Obstacle Test” was used to measure Agility whereas “Sit and Reach Test” was used to measure Flexibility. The subjects were subjected to the six week yogasanas training programme that includes Swastikasana, Mayurasana, Matsyendrasana, Paschimottanasana and Gomukhasana. The difference in the mean of each group for selected variable was tested for the significance of difference by “t” test. The level of significance was set at 0.05. The results have shown the significant improvement in flexibility, since $cal. t (= 8.122) > tab t .05 (14) (= 2.145)$. The treatment of six week yogasanas training programme also shown significant improvement in case of agility, since $cal. t (= 7.376) > tab t .05 (14) (= 2.145)$.

Based on the above studies the researchers want to conduct a study on the influence of asanas and simplified kundalini yoga on flexibility.

SELECTION OF SUBJECTS: The purpose of the study was to find out the effect of Simplified Kundalini Yoga and Yoga on flexibility of college women students. To resolve the purpose of the study 60 college women were randomly selected from Kumaraguru College 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. No attempt was made to equate the groups. 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 program other than their 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 variable flexibility was chosen for the study because these were the most common fitness determinants of women and is highly health influential (Chaudhary, Sarika 2010 et al.).

INDEPENDENT VARIABLES: The investigators were interested to know whether yoga training or simplified Kundalini yoga training were effective to bring out positive changes in flexibility among college women students. In this study there were two independent variables and were.

1. SIMPLIFIED KUNDALINI YOGA TRAINING (SKYT)
2. YOGA TRAINING (YT)

ORIENTATION OF SUBJECTS: Before collection of data, the subjects were oriented about the purpose of the study. The investigators explained the procedure of assessing physical variables such as modified sit-ups for muscular strength endurance, sit and reach for flexibility.

RELIABILITY OF DATA: The reliability of data was ensured by establishing the

instrument reliability, tester's reliability and subject reliability.

INSTRUMENT RELIABILITY:

Instruments such as sit and reach box was used to measure the selected variables. The instruments were in good working condition. Their calibrations were tested and found to be accurate enough to serve the purpose of the study. Certificates of accuracy of the above instruments were obtained from appropriate instrument testing agencies, and also by recalibrating the scale by using amounts of variables wherever required. To determine the reliability of instruments, measurement on each of the tests of the variables were recorded five times under similar conditions using the same instrument. Hence, their calibrations were accepted as accurate enough for the purpose of the study.

TESTER'S RELIABILITY: To ensure the uniformity and reliability of testing technique, the investigators had a number of practice sessions in the testing procedure with the guidance of the respective experts. The investigators took all the measurements for the study with the assistance of professional experts.

Tester's reliability was established by test-retest process. To determine the reliability of the measurement involved in the study, the tester correlated the data from ten subjects. Care was taken to ensure the fitness of each subject before the administration of each test, so that the consistency of the result could be ensured. The intra class correlation co-efficient obtained for test- re test data are presented in the Table below.

Table – 1
Intra class correlation co-efficient obtained for test- re test scores

Sl.No.	Tests	Correlation Co-efficient
1.	Physical Fitness Variables Flexibility	0.92*

SUBJECT RELIABILITY: The intra class correlation values of the above tests and retest also indicated subject, tester and instrument reliability as the same subject and instruments were used under similar conditions by the same tester. However in the case of Hemoglobin and leucocytes only five subjects were retested. The coefficient of reliability were significant at the $P < 0.05$ level for the above tests under investigation.

ADMINISTRATION OF THE TESTS: The investigators held a meeting with the subjects prior to the administration of the tests. The purpose, the significance of the study and the

requirements of the testing procedure were clearly explained to them in detail so that there was no ambiguity in their minds, regarding the efforts which they had to put for the successful completion of the tests. To assess physical fitness, flexibility the investigators explained the subjects about the purpose of investigation and gave clear instructions regarding the method of performing each test. The scores obtained in the test were tabulated and statistically treated to arrive at meaningful conclusions. The subjects were very enthusiastic and co-operative throughout the training period and test administration period.

Test



Purpose:

The purpose of the test was to determine muscular **Flexibility**.

Equipments : Sit and reach box with calibrated scale



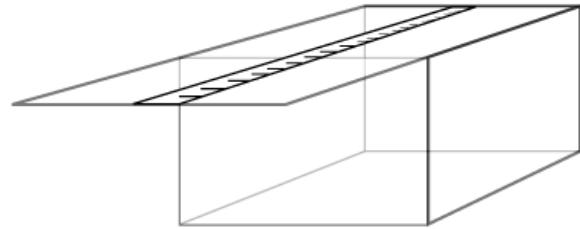
Procedure : The subject was asked to sit on the floor with hips backs and head against a

Scoring : The final numbers of inches reached were recorded. (Nelson, Jack K., and Jeff J. Dorociak, 1982)

TRAINING PROGRAMME: In this study the training program circles around Simplified Kundalini yoga and selected Yogic asanas.

60 college women were randomly selected from Kumaraguru College of Technology, Coimbatore. Their age ranged between 18 and 22 years. The selected

wall, legs fully extended and the bottom of his



feet against the sit and reach box, placed his hand as far as possible without lifting his hips back or head come off the wall. To perform a test, the subject extends the arms forwards with hands placed on top of each other. The subject’s head and back can come off the wall and done gradually, reach forward as far as possible on the yard stick.

subjects were randomly divided into three equal groups consisting of twenty each. No attempt was made to equate the groups. Experimental Group I underwent simplified Kundalini yoga training (SKY), Experimental Group II underwent Yogic practices training (RY) for a period of 16 weeks. Group III acted as control group (CG) and were not engaged in any training program other than their work. After the training period the post test was conducted.

Experimental Group I	:	Experimental Group I underwent Simplified Kundalini yoga (SKY)
Experimental Group II	:	Experimental Group II was treated with Yoga practices (RY)
Control Group	:	Control Group was not engaged in any training program.(CG)

In each training session, the training was imparted for a period of 60 minutes for six days per week totally for a period of 16 weeks. The training sessions were held between 5.00pm to 6.00pm, Monday to Saturday at the Yoga Hall of Kumaraguru College of Technology, Coimbatore. The length of the training intervention for this study was based on the fact that sixteen weeks has been shown to be of sufficient to provide significant changes.

The experimental groups underwent their respective training program under the

supervision of the investigators. The subjects were carefully monitored and questioned about their health status throughout the training period. None of them have reported any complication. The control group was not given any treatment apart from their routine. Further, all the participants were instructed neither to change their life style nor to change their dietary intake for the entire duration of the training.

The training schedules for the Experimental groups were designed based on the guidelines given by **Pathanjali yoga** for

yogic practices and **Vethathri maharishi** for simplified Kundalini yoga training.

RESULTS AND DISCUSSIONS: The physical fitness variable flexibility was chosen in this study. The data were collected prior to training and after 16 weeks and t ratio was analyzed to find out significant improvement in each group. Analysis of covariance (ANCOVA) was applied to find out the significant difference among the groups. If F ratio was found to be significant Scheffe’s post hoc test was applied to find out the

significant difference between the adjusted paired means.

ANALYSIS OF DATA: The influence of Simplified Kundalini Yoga Training and Yoga Training on flexibility was analyzed and presented.

Results of t-test: Paired t test was applied to find out significant improvement due to Simplified Kundalini Yoga Training and Yoga Training on flexibility.

Table – 2
 Showing t ratio for pretest and post test of selected Variables of control group

Variable	Test	Mean	SD	t ratio	Sign
Flexibility	Pre test	14.35	2.87	1.21	NS
	Post test	13.95	3.01		

Table value for .05 level 2.145

Table – 3
 Showing t ratio for pretest and post test of selected variables of yoga group

Variable	Test	Mean	SD	t ratio	Sign
Flexibility	Pre test	14.20	3.09	9.29	*

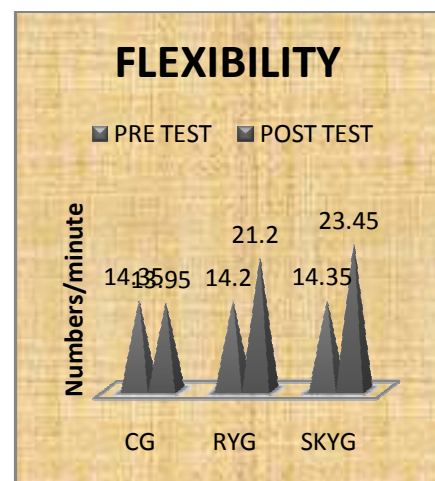
Table - 4
 Showing t ratio for pretest and post test of selected variables of SKY training group

Variable	Test	Mean	SD	t ratio	Sign
Flexibility	Pre test	14.35	3.09	14.44	*
	Post test	23.45	4.21		

Table value for .05 level 2.145

As per the table 4 the obtained t ratio 14.44, flexibility, are greater than the required table value. Hence it is interpreted that there is significant improvement in all the selected variables.

Bar diagram showing the pre and post test mean value of flexibility of Control group, yoga training group and simplified yoga Training group



Results of Analysis of Covariance

Analysis of covariance was applied to find out the significant difference among

simplified Kundalini yoga group, yoga group and control group the results were presented below.

Table - 5
Analysis of covariance on Pre, Post and Adjusted Post test means of the selected variables of Simplified Kundalini Yoga Training (PYTG), Yogic Training Group (YTG) and Control Group (CG)

Variable	Groups	Test			F – value		
		SKYG	RYG	CG	Pre-	Post-test	Adjusted post-test
Flexibility (Scores in)	Pre-test	14.35	14.20	14.35	0.19	34.13	36.21
	Post-test	23.45	21.20	13.95			
	Adjusted post-test	23.43	21.23	13.93			

Table - 5 indicates that the pre test mean value of SKYG, RYG and CG were - 14.35, 14.20, 14.35 respectively on **Flexibility**. The obtained F ratio of 0.19 was found to be insignificant at 0.05 levels. It is inferred that statistically there was no significant variation among SKYG, RYG and CG on Flexibility before commencement of the training. The post test mean values of

SKYG, RYG and CG 23.45, 21.20 and 13.95 respectively on Flexibility. The obtained F ratio of 34.13 was difference among SKYG, RYG and CG. It is concluded that Flexibility had a significant improvement after 16 weeks of training. The obtained adjusted post test F ratio of 36.21 was also found to be statistically significant.

Table - 6
Scheffe’s F test - Post –Hoc Analysis

Since the F-ratio was found to be significant, Scheffe’s F test was done as post –hoc test to identify significant differences among mean values and presented in table 7.

Variable	SKY	RYG	CG	MD	CI
Flexibility	23.43	21.23	13.93	2.2	2.91
	23.43		13.93	9.5	
		21.23	13.93	7.3	

Table – 6, shows the Scheffe’s F test analysis obtained by adjusted post test means of all the selected variables.

The adjusted mean difference for the variable flexibility of the Simplified yogic training group yogic training group and control group are 2.2, 9.5 and 7.3 respectively. The mean difference between Simplified Kundalini yoga group and yoga group is lesser than the confidence interval. But the mean difference between yoga group and simplified Kundalini yoga group with that of control group are greater than the confidence interval,

hence there is significant difference between the flexibility of these groups. It is inferred that Simplified yoga training group and yogic training group are significantly better than control group in the improvement of flexibility. But the simplified Kundalini yoga group has similar improvement of flexibility comparing the yogic training group.

DISCUSSION ON FINDINGS:

The results of the study had revealed that the control group had not significantly improved in any of the selected variables, but it indicated that the yogic training had significantly improved in Flexibility. The results of the study are in conformity of the results of Hongasandra Ramarao Nagendra et al (2008) who found that the yogic training group had significant improvement.

The results of the study had revealed that Simplified Kundalini yoga training had significantly improved in Flexibility.

The results of the study had revealed that there is significant difference among the

control group, yogic training group and simplified Kundalini yoga training group.

The Simplified Kundalini Yoga training group had shown significant improvement than the yogic training group and control group in Flexibility. Since the simplified yoga training is specially designed it had improved better than the other two groups.

The yogic training group and adapted yogic training group are similar in the improvement of flexibility. But there is a trend in favor of the simplified yog training group.

REFERENCES:

1. Bal, B. S., and P. J. Kaur. "Effects of selected asanas in hatha yoga on agility and flexibility level." *Journal of Sport and Health Research* 1, no. 2, 2009, P. 75 - 87.
2. Chaudhary, Sarika, Manpreet Kaur Kang, and Jaspal Singh Sandhu. "The Effect of Aerobic Versus Resistance Training on Improving Cardiovascular Fitness in Obese Sedentary Females." *Asian journal of sports medicine* 1, no. 4, 2010, P. 177 - 184.
3. Cowen, Virginia S., and Troy B. Adams. "Physical and perceptual benefits of yoga asana practice: results of a pilot study." *Journal of Bodywork and Movement Therapies* 9, no. 3, 2005, P. 211-219.
4. Fogoros, Richard N. "Key Symptoms of Heart Disease.", 2009.
5. Hongasandra Ramarao Nagendra, Tekur, Padmini, Chametcha Singphow, and Nagarathna Raghuram. "Effect of short-term intensive yoga program on pain, functional disability and spinal flexibility in chronic low back pain: a randomized control study." *The journal of alternative and complementary medicine* 14, no. 6, 2008, P. 637-644.
6. Lalwani, Vimla, "Classic Yoga", Hamlyn Publishing, London, 1999.
7. Nelson, Jack K., and Jeff J. Dorociak. "Reducing administration time while improving reliability and validity of fitness tests." *Journal of Physical Education, Recreation & Dance* 53, no. 1, 1982, P. 63 - 66.
8. Ross, A., & Thomas, S. "The Health Benefits of Yoga and Exercise: A Review of Comparison Studies." *Journal of Alternative and Complementary Medicine*, 16 (1), 2010, P. 3 -12.
9. Thathuva Gnani Vethathiri Maharishi, "Manavalakkalai Part I", Vethathiri Publications, Erode, India, 1983.
10. Thathuva Gnani Vethathiri Maharishi, "Manavalakkalai Part II", Vethathiri Publications, Erode, India, 1990.
11. Thathuvagnani Vethathiri Maharishi, "Simplified Physical Exercises", Vethathiri Publications, Erode, India, 1977.
12. Tran, Mark D., Robert G. Holly, Jake Lashbrook, and Ezra A. Amsterdam. "Effects of Hatha yoga practice on the health-related aspects of physical fitness." *Preventive cardiology* 4, no. 4, 2001, P. 165-170.

13. Vethathiri Maharishi Institute for Spiritual and Intuitional Education, “**Physical Health**”, Vethathiri Publications, Erode, India, 2009.
14. World Health Organization. “**Women and health: today's evidence tomorrow's agenda.**” World Health Organization, 2009.
15. Yogiraj Vethathiri Maharishi, “**Mind**”, Vethathiri Publications, Erode, India, 2000.
16. Yogiraj Vethathiri Maharishi, “**Yoga for Modern Age**”, Vethathiri Publications, Erode, India, 1994.

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