



## EFFECT OF YOGASANA PRACTICES AND SWISS BALL TRAINING ON SELECTED BODY COMPOSITION OF UNIVERSITY FEMALE STUDENTS

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### INTRODUCTION

The modern world people are moving fast for surviving life so that they are not spending time for doing physical activity or any recreation. This daily routine lead many diseases like obesity, heart problem etc. To overcome this situation people have to keep time for some co curricular activities.

Modern thinkers in education emphasis that best individual is one who is physically fit, mentally sound, emotionally balanced and socially well adjusted. Modern technology is trying hard to make our life easier. Now throughout the world man appears to be living a more and physically inactive life. So that most of the people are in the range of overweight and obesity. To avoid this condition definite physical activity pattern is needed. (Santosh 2009).

All the wonders of modern science will not bring happiness, peace of mind, health or long life (Yokesh 2011). 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. According to the first comprehensive textual description of yoga, the *Yoga Sutras*, written in the third century B.C., yoga is the cessation of thought waves in the mind. Hatha yoga is one of the many forms or paths of yoga, focuses on overall fitness through pranayamas (breath-control exercises), asanas (yoga postures), and chanda (meditation). (Mark D 2007).

The swiss is widely used in the recreational training environment as a supplement to conventional resistance training (Paul 2006). In recent years, fitness practitioners have increasingly recommended core stability exercises in sports conditioning programs (Jeffrey 2007). Proponents of Swiss ball training argue that such training enhances neuromuscular pathways, leading to greater strength, proprioception, and balance (Check 1999). Hence, Swiss balls are commonly used in both athletic therapy and conditioning settings (Bartonietz 1998).



## METHODOLOGY

For the purpose of this study 135 female hostel students were tested body composition by using Tanita body composition Analyzer from Pondicherry University; from that group 54 students were selected on the basis of fat free mass. Their age ranged from 19 to 25 years. The selected 54 subjects were divided into three equal groups, two experimental groups and one control group each group consisting of 18 subjects. Experimental group I underwent yogasana practice, group II underwent swissball training and group III act as control group who did not participated any training program except their daily routine.

The training program schedule was one session in the evening between 6.00 pm to 7.00 pm for five days per week for the period of twelve weeks. The yoga program includes prayer, loosening exercises, various asanas, and relaxation and swissball training includes 15 minutes warm up, 30 minutes swiss ball work outs and 15 minutes cooling down.

FFM and fat mass were tested by using Tanita body composition analyzer 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. Whenever the F ratio for adjusted post test mean was found to be significant, the Scheffe's test was applied as post hoc test to determine the paired mean differences. For all analysis the level of confidence was fixed at 0.05.



**RESULTS OF THE STUDY**

V A R I A B L E S	Group s	Swissball Group	Yogasana Group	Control Group	Source of Variance	Sum of Squares	Mean square	'F' Ratio	P	
	FAT MASS	Pre-test Mean S.D.	15.87 0.92	15.90 1.13	15.89 0.80	B W	0.006 38.59	0.003 0.919	0.00 3	0.99
		Post-test Mean S.D.	14.45 0.85	14.79 1.15	15.99 0.94	B W	19.64 40.93	9.82 0.98	10.0 7	0.00 *
		Adjusted Post-test Mean	14.46	14.78	15.98	B W	19.37 14.23	9.69 0.35	27.8 6	0.00 *
	FAT FREE MASS	Pre-test Mean S.D.	39.49 1.26	38.40 1.71	38.85 1.519	B W	8.94 95.44	4.47 2.27	1.97	0.15
		Post-test Mean S.D.	41.06 1.45	40.33 2.03	38.79 1.48	B W	40.39 117.70	20.19 2.80	7.21	0.02 *
		Adjusted Post-test Mean	40.76	40.57	38.84	B W	33.77 49.24	16.88 1.20	14.0 6	0.00 *

**TABLE I: ANALYSIS OF COVARIANCE FOR FAT MASS AND FAT FREE MASS OF SWISSBALL TRAINING, YOGASANA PRACTICE AND CONTROL GROUP**

It is observed from table I the pre test means on Fat mass of the Swissball exercise, Yoga practice and control a groups are 15.87, 15.90 and 15.89 respectively. The obtained 'P' value 0.99 is not significant at 0.05 level. The post test means on Fat mass of the experimental groups and the control groups are 14.45, 14.79 and 15.99 respectively. The obtained 'P' value 0.00 is significant at 0.05 level. The adjusted post test means on Fat mass of the experimental groups and the control groups are 14.46, 14.78 and 15.98 respectively. The obtained 'P' value 0.00 is not significant at 0.05 level. The pre test means on FFM of the Swissball exercise, Yoga practice and control a groups are 39.49, 38.40 and 38.85 respectively. The obtained 'P' value 0.15 is not significant at 0.05 level. The post test means on FFM of the experimental groups and the control groups are 41.06, 40.33 and 38.79 respectively. The obtained 'P' value 0.002 is significant at 0.05 level. The adjusted post test means on FFM of the experimental



groups and the control groups are 40.76, 40.57 and 38.84 respectively. The obtained ‘P’ value 0.00 is significant at 0.05 level. It revealed that there was significant change on fat mass and FFM after twelve weeks of yogasana practices and swissball training.

**TABLE II: SCHEFFE’S POST-HOC TEST TO MEASURE ADJUSTED MEANS BETWEEN EXPERIMENTAL AND CONTROL GROUPS**

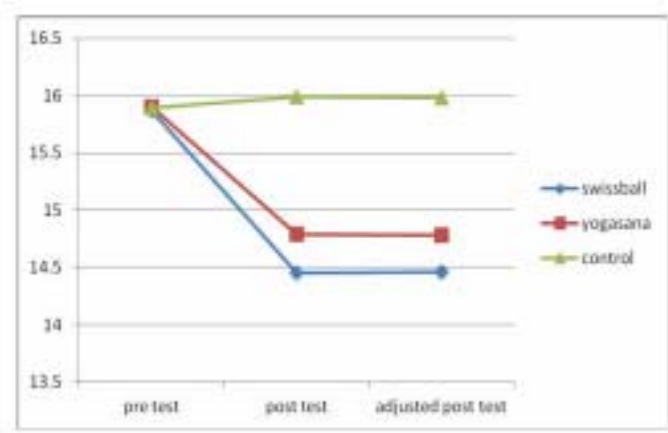
Variables	Control group	yogasana group	Swissball group	Mean Differences	Sig.
FAT MASS	15.98	14.78	-	1.20*	0.007
	15.98	-	14.46	1.52*	0.001
	-	14.78	14.46	0.32	0.644
FAT FREE MASS	38.84	40.57	-	1.73*	0.05
	38.84	-	40.76	1.92*	0.003
	-	40.57	40.76	0.19	0.49

Table II shows that Scheffe’s post-hoc method of testing the significance for the differences between the paired means following a significant analysis of co-variance for swissball group, yoga group and control group. The mean differences between the swissball group and yoga group on fat mass was 0.32 not significant at 0.05 level of confidence interval. In the comparison between yoga group and control group the mean difference is 1.20 which is significant at 0.05 level of confidence interval. The mean differences between the swissball group and control group is 1.52 which is significant at 0.05 level of confidence interval. This indicates that the Fat mass was decreased in both experimental groups than the control group. But there is no significant difference between yoga and swissball training group on Fat mass.

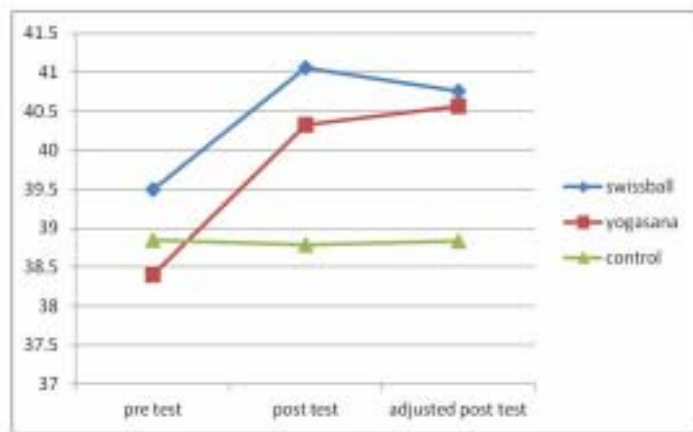
The mean differences between the swissball group and yoga group on fat free mass was 0.19 which was insignificant at 0.05 level of confidence interval. In the comparison between yoga group and control group the mean difference was 1.73 which is significant at 0.05 level of confidence interval. The mean differences between the swissball group and control group is 1.92 which was significant at 0.05 level of confidence interval. This indicates that the Fat free mass was increased in both experimental groups than the control group. But there is no significant difference between yogasana and swissball training group on Fat free mass.



**FIG.I: BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG SWISSBALL EXERCISE, YOGIC PRACTICE, AND CONTROL GROUP ON FAT MASS**



**FIG.II: BAR DIAGRAM SHOWING THE MEAN DIFFERENCE AMONG SWISSBALL EXERCISE, YOGIC PRACTICE, AND CONTROL GROUP ON FAT FREE MASS**



### Discussion

The result of the present study showed that the fat free mass and fat mass was significantly changed after twelve weeks of swissball exercises and yogasana practices when compared with the control group. Due to training the selected body composition such as fat free mass is increased in both training group where as fat mass is reduced after the training program.

Due to swissball training more fat is utilized in the hip and abdominal region



than the yogasana practice group. The present study result was supported by following authors Telles et al., (Jan 2010), Pal et al., (June 2011). Chen and Tseng (2008). In swissball training muscles are worked more when compared with yoga practices. In yoga is a slow and steady process, it will take more time than swissball training in body composition. Both training is advisable for reducing fat content in the body.

## Conclusion

1. There was a significant difference among swissball exercises and yogic practices on fat mass than the control group after twelve weeks of yogasana practice and swissball training.
2. There was a significant difference among swissball exercises and yogic practices on fat free mass than the control group after twelve weeks of yogasana practice and swissball training.
3. There was no significant difference between swissball exercises and yogic practices group on body composition after the twelve weeks of training period.

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