



A COMPARATIVE EFFECT OF EXERCISE AND YOGIC ASANAS ON BODY MASS DENSITY OF ADULTS

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Abstract:- The purpose of the study was to comparative effect of exercise and yogic asanas on body mass density of adults. For the purpose of the study, two experimental groups underwent training programmes of exercise training (Group-A), and yogic asanas training (Group-B) training programmes for an experimental period of 8 weeks. The control group (Group-C) continued with regular programme only. The groups were consisted of 15 subjects each. The pre and post test data were collected before and after the experimental training programmes. The subjects were selected from Lovely Professional University Phagwara (Punjab). The age level of the subjects ranged from 18 to 25 years. Keeping the feasibility criterion in mind, the asanas and physical exercise: Padmasna, Vajrasana, Siddhasna, Bhujangasana, Hal asana, Running, Skipping, Free squat, Press up, Sit-ups and Chin-ups variable was selected for the present study. Descriptive Statistics i.e. mean, standard deviation, t test, analysis of variance (ANOVA) was used. The level of significance was set as 0.05 level. Significant difference between experimental and control related to their, muscle mass and fat percentage. On the basis of the findings of this study, the following conclusions are drawn: 8 weeks of exercise training and yogic asanas training are useful program to the body fat percentage is increases in control group but the exercise and yogic asanas group decreases body fat percentage it so that exercise and yogic asanas increases body fat percentage but the exercise in more effective rather than yogic asanas training.

Keywords:Exercise, Yogic Asanas, Body Mass Density.

INTRODUCTION

PROLOGUE

In the present time, more and more people, especially the Westerners, are resorting to Yoga to find cure for chronic health problems and attain a peace of mind.

They are also curious about knowing what exactly is Yoga and what are included in it. Although many of us are well aware of the health benefits of the physical activity, not everyone knows about the origin and exact definition of Yoga.

Exercise Aerobically active individuals have been shown to have a better interplay between their activating, stress response, sympathetic nervous system and their relaxing, restorative, parasympathetic nervous system. Body density is a measurement that expresses your total body mass or weight relative to your body volume or the amount of space or area that your body occupies. Mathematically, it is body mass divided by body volume. The measurement of body density is commonly used to estimate percentage of body fat, which determines how much fat you are carrying around.

OBJECTIVE OF THE STUDY

1. Objective of the study was to assess the effect of yogic asanas on body mass density of adults.
2. Another objective was to assess the effect of exercise on body mass density of adults.
3. Further, comparing the effect of yogic asanas with exercises was also be one of the objectives of the study.

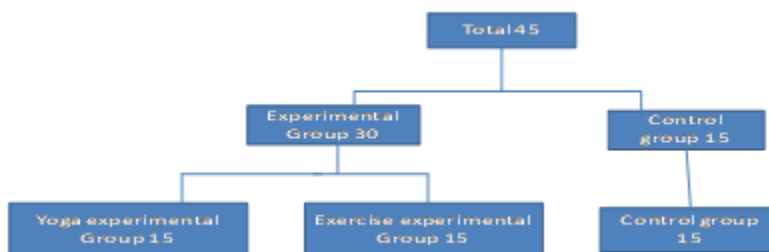
Hypothesis

It is hypothesized that there will be a significant difference between the effect of yogic asanas & exercise on the body mass density of adults.

Procedure and Methodology

Selection of subjects

The sampling of 45 students between the age group of 18-28 was taken from Lovely Professional University Phagwara (Punjab). The sample was taken randomly and was divided into three equal groups i.e. experimental and control groups. The systematic representation of the design is represented below. Pre and post-test was used to see the effect of yogic and exercise treatment on the subject. The training was induced on subjects for 8 weeks



Selection of Variables

Keeping the feasibility criterion in mind, the asanas and physical exercise: Padmasna, Vajrasana, Siddhasna, Bhujangasana, Hal asana, Running, Skipping, Free squat, Press up, Sit-ups and Chin-ups was selected for the present study.

Criterion Measures

Criterion measure are-

- ❖ Triceps Skin fold (mm)
- ❖ Bicep Skin fold (mm)
- ❖ Forearm Skin Folds (mm)
- ❖ Body Fat Percentage
- ❖ Body Mass Density

Statistical technique

Descriptive Statistics i.e. mean, standard deviation, t test, analysis of variance (ANOVA) was used. The level of significance was set as 0.05 level.

RESULT OF THE STUDY

Table- 1
Co-variance of Triceps skin fold between experimental groups and control group

Test	Group Means (sec)			Source of variation	Sum of squares	df	Mean Sum of squares	F-ratio
	A	B	C					
Pre-test Mean	7.546	7.573	7.546	Among	0.07	2	.004	.001
				Within	226.344	42	5.389	
Post-test Mean	7.306	7.49	8.44	Among	11.216	2	5.608	.663
				Within	355.46	42	8.463	
Adjusted Post-test Mean	7.317	7.472	8.457	Among	11.466	2	5.733	5.362*
				Within	43.839	41	1.069	

*Significant at 0.05 level of significance

N= 45

A= Among Means Variance

W= Within Group Variance

Tabulated value of F at 0.05 level of significance with degree of freedom (2, 42) = 1.64.

As shown in table-1 that significant value of F-ratio's were obtained for the comparison of pre test means (.001), post test means (.663) and adjusted post test means (5.362). The obtained values were higher than the required value for the selected degree of freedom and the significant level. The data were further subjected to LSD post hoc test. The results of the Post hoc analysis and the difference between the means among the three groups are shown in table-2.

Table- 2
Paired adjusted final means and differences between means among the experimental groups and control Group of Triceps skin fold

Groups			Mean Difference
A (Exercise Group Mean)	B (yoga Group Mean)	C (Control Group Mean)	
7.317	7.472		.155
	7.472	8.457	.985*
7.317		8.457	1.140*

Required value of critical difference at 0.05 level is 0.077 A – Exercise, B –yogic asanas training, C –Control group The results in table-8 have shown that the mean differences of experimental groups when compared with the control group have exhibited the significant values of critical difference at the selected level of 0.05.

The mean difference of the A and C which are given yoga training are shown greater value as compared with the groups A of exercise training (Group-A), and yogic asanas training (Group-B), and C (Control group). Therefore the Exercise training group shows a significant value of critical difference when compared with Yogic asanas training group and control group respectively.

The comparison of means of pre and post-test of triceps skin fold for the two experimental groups and the

control group are presented in Figure- 1

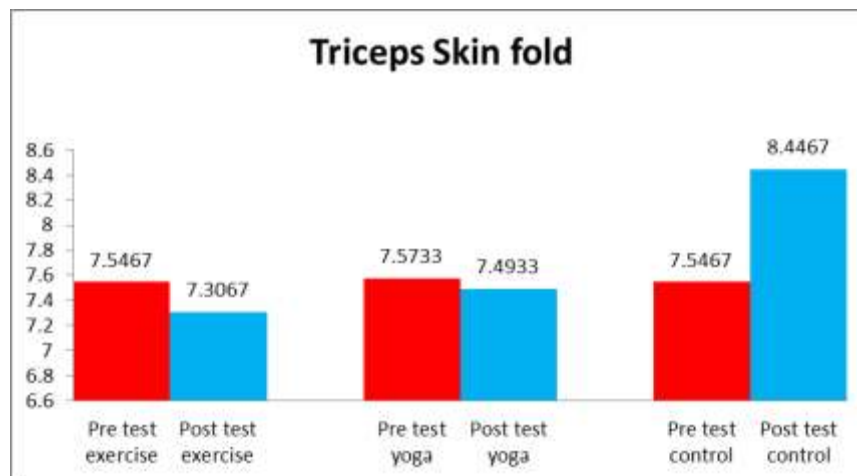


Table- 3
Co-variance of Biceps skin fold between experimental groups and control group

Test	Group Means (sec)			Source of variation	Sum of squares	df	Mean Sum of squares	F-ratio
	A	B	C					
Pre-test Mean	3.500	3.406	3.300	Among	.300	2	.150	.226
				Within	27.889	42	.664	
Post-test Mean	3.3867	3.3267	3.433	Among	.086	2	.043	0.62
				Within	29.000	42	.690	
Adjusted Post-test Mean	3.289	3.322	3.536	Among	.532	2	.266	9.789
				Within	1.115	41	.027	

*Significant at 0.05 level of significance

N= 45

A= Among Means Variance

W= Within Group Variance

Tabulated value of F at 0.05 level of significance with degree of freedom (2, 42) =1.64

As shown in table-3 that significant value of F-ratio's were obtained for the comparison of pre test means (.226), post test means (.62) and adjusted post test means (9.789). The obtained values were higher than the required value for the selected degree of freedom and the significant level. The data were further subjected to LSD post hoc test. The results of the Post hoc analysis and the difference between the means among the three groups are shown in table-3

Table- 4
Paired adjusted final means and differences between means among the experimental groups and control Group of Biceps skin fold

Groups			Mean Difference
A (Exercise Group Mean)	B (yoga Group Mean)	C (Control Group Mean)	
3.289	3.322		.033
	3.322	3.536	-.213*
3.289		3.536	.247*

Required value of critical difference at 0.05 level is 0.077 A – Exercise, B –yogic asanas training, C –Control group The results in table-8 have shown that the mean differences of experimental groups when compared with the control group have exhibited the significant values of critical difference at the selected level of 0.05.

The mean difference of the A and C which are given yoga training are shown greater value as compared with the groups A of exercise training (Group-A), and yogic asanas training (Group-B), and C (Control group). Therefore the Exercise training group shows a significant value of critical difference when compared with Yogic asanas training group and control group respectively.

The comparison of means of pre and post-test of triceps skin fold for the two experimental groups and the control group are presented in Figure- 2

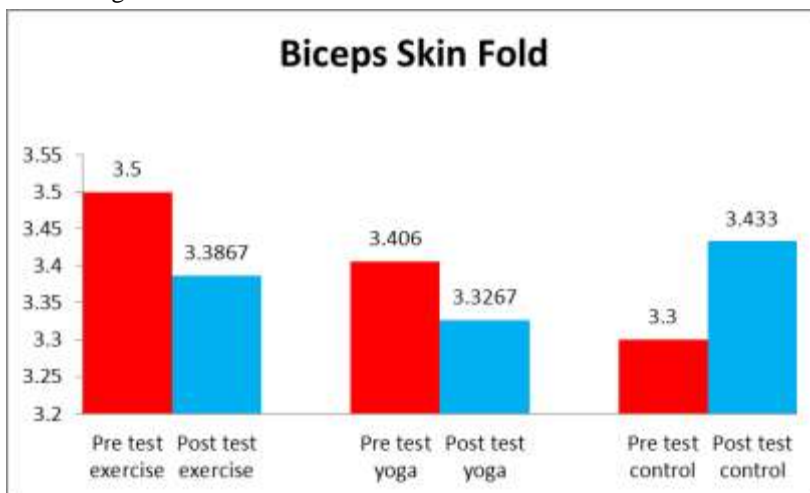


Table- 5
Co-variance of Forearm skin fold between experimental groups and control group

Test	Group Means (sec)			Source of variation	Sum of squares	df	Mean Sum of squares	F-ratio
	A	B	C					
Pre-test Mean	3.493	3.906	3.553	Among	1.496	2	.748	1.357
				Within	23.156	42	.551	
Post-test Mean	3.353	3.793	3.780	Among	1.879	2	.940	1.718
				Within	22.971	42	.547	
Adjusted Post-test Mean	3.508	3.543	3.876	Among	1.231	2	.615	36.352
				Within	.694	41	.017	

*Significant at 0.05 level of significance

N= 45

A= Among Means Variance

W= Within Group Variance

Tabulated value of F at 0.05 level of significance with degree of freedom (2, 42)

=1.64

As shown in table-5 that significant value of F-ratios were obtained for the comparison of pre test means (1.357), post test means (1.718) and adjusted post test means (36.352). The obtained values were higher than the required value for the selected degree of freedom and the significant level. The data were further subjected to LSD post hoc test. The results of the Post hoc analysis and the difference between the means among the three groups are shown in table-6.

Table- 6
Paired adjusted final means and differences between means among the experimental groups and control
Group of Forearm skin fold

Groups			Mean Difference
A (Exercise Group Mean)	B (yoga Group Mean)	C (Control Group Mean)	
3.508	3.543		.035
	3.543	3.876	-.333*
3.508		3.876	.368*

Required value of critical difference at 0.05 level is 0.077 A – Exercise, B –yogic asanas training, C –Control group The results in table-8 have shown that the mean differences of experimental groups when compared with the control group have exhibited the significant values of critical difference at the selected level of 0.05.

The mean difference of the A and C which are given yoga training are shown greater value as compared with the groups A of exercise training (Group-A), and yogic asanas training (Group-B), and C (Control group). Therefore the Exercise training group shows a significant value of critical difference when compared with Yogic asanas training group and control group respectively.

The comparison of means of pre and post-test of triceps skin fold for the two experimental groups and the control group are presented in Figure- 3

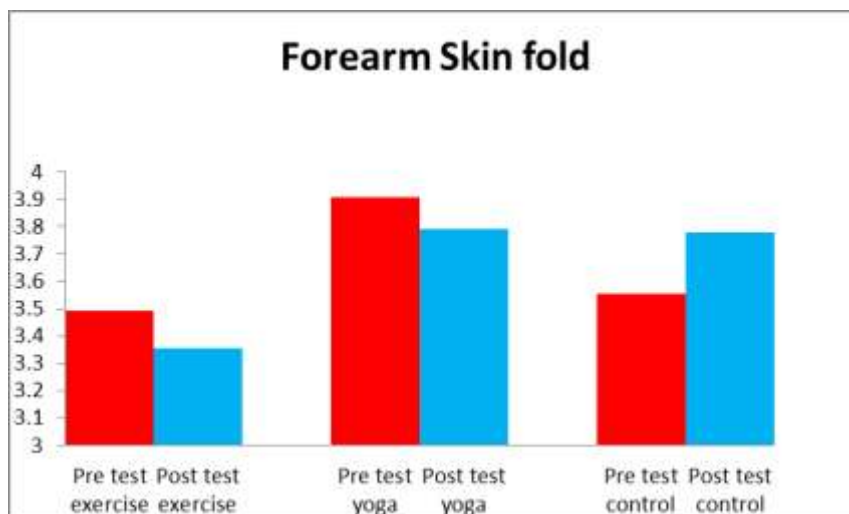


Table- 7
Analysis of co-variance for the experimental groups
and control group of body fat percentage

Test	Group Means (sec)			Source of variation	Sum of squares	Df	Mean Sum of squares	F-ratio
	A	B	C					
Pre-test Mean	19.65	19.12	19.049	Among	3.612	2	1.806	.268
				Within	283.15	42	6.742	
Post-test Mean	19.52	19.04	19.92	Among	2.886	2	1.443	.194
				Within	312.04	42	7.430	
Adjusted Post-test Mean	19.45	19.62	19.07	Among	.276	2	1.38	0.40
				Within	140.642	41	3.430	

Table – 7 show the comparison of body fat percentage between experimental groups and control group. The mean values of body fat percentage of exercise group yoga group and control group were found to be (.268), (.194) and (0.40) respectively. The statistically result was found to be significant at .05 level (f=1.64). The result indicated that exercise have possessed greater body fat percentage as compared to experimental and control group.

Comparison of body fat percentage between experimental groups and control group in Figure- 4.

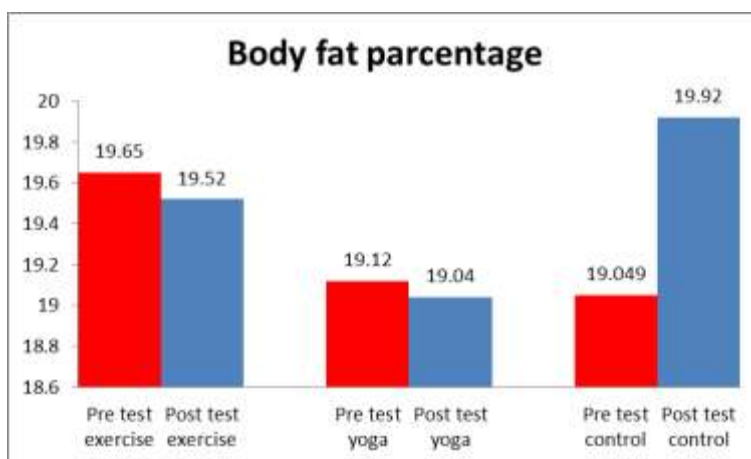
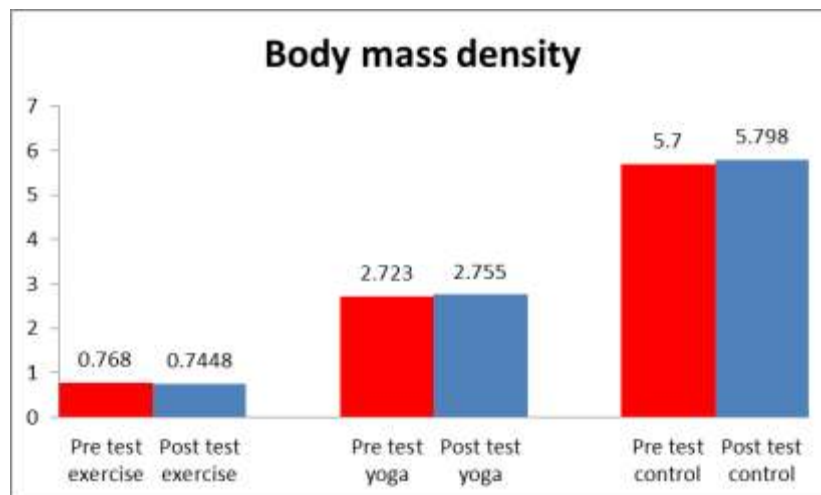


Table- 8
Analysis of co-variance for the experimental groups and control group of mussels mass density

Test	Group Means (sec)			Source of variation	Sum of squares	Df	Mean Sum of squares	F-ratio
	A	B	C					
Pre-test Mean	.7680	2.723	5.76	Among	190.411	2	95.260	22.57
				Within	177.165	42	4.218	
Post-test Mean	.7448	2.7551	5.798	Among	194.19	2	97.097	25.13
				Within	176.25	42	4.197	
Adjusted Post-test Mean	3.055	3.116	3.126	Among	.027	2	.014	1.831
				Within	.305	41	.007	

Table- 8 show the comparison of Muscle mass between experimental groups and control group. The mean values of Muscle mass of exercise group yoga group and control group were found to be (22.57), (25.13) and (1.831) respectively. The statistically result was found to be significant at .05 level ($f=1.64$). The result indicated that exercise have possessed greater Muscle mass as compared to experimental and control group.

Comparison of Muscle mass between experimental groups and control group in Figure- 5.



DISCUSSION OF HYPOTHESIS

The proposed hypotheses, that there would be significant difference between experimental and control related to their, muscle mass and fat percentage. The findings of the present study indicate significant difference between experimental and control as related to muscle mass and fat percentage. So hypotheses number one, two and three were rejected in all cases. The proposed number one and two, three hypotheses are having insignificant difference between experimental and control group as related to muscle mass and fat percentage.

CONCLUSIONS

On the basis of the findings of this study, the following conclusions are drawn: 8 weeks of exercise training and yogic asanas training are useful program to the body fat percentage is increases in control group but the exercise and yogic asanas group decreases body fat percentage it so that exercise and yogic asanas increases body fat percentage but the exercise in more effective rather than yogic asanas training.

RECOMMENDATIONS

On the basis of the findings of the study and conclusions drawn, the following recommendations are made:

- ❖ Exercise training and yogic asanas training programmes may be effectively used for decreasing the body fat percentage. .
- ❖ The trainings may be planned for longer duration for better results.
- ❖ The study may be done for athletes of different level and with larger sample.
- ❖ Physical Education Teachers, Coaches and athletes may use the exercise training and yogic asanas training while formulating their training programmes.

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