EFFECT OF RHYTHMIC EXERCISE ON SELECTED PHYSIOLOGICAL AND ANTHROPOMETRIC PARAMETERS AMONG ADOLESCENT OBESE BOYS.

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Abstract.

This research includes 45 obese adolescent boys aged 13-19 years only. The author analyzed the effect of rhythmic exercise on physiological and anthropometric parameters are such as cardiorespiratory endurance and Lean body mass on adolescent obese boys who were randomly selected from (UT) Jammu & Kashmir. They were assigned into three groups each group consists of forty-five subjects. The three groups are namely Group I acted as Experimental Group (Rhythmic exercise) Group II acted as Experimental Group (Suryanamasker exercise) Group III control group without exercise. The duration of the exercise period was 12 weeks. The final test score from the as post-test score was taken from the subjects. ANCOVA was applied to examine the significance of the difference between the post-test and pre-test means of three groups to study the significance of improvement in physical and physiological parameters as a result of the exercise in all cases 0.05 of significance was fixed to test the hypotheses. The result suggests that rhythmic exercise was more effective than Suryanamasker exercise in retaining rhythmic exercise participating and improving in physiological Anthropometric improvement in adolescent obese boys.

Keywords: *rhythmic exercise, Suryanamasker exercise, cardiorespiratory endurance, lean body mass*

Introduction

The worldwide increase in obesity and related chronic diseases has largely been driven by global trade liberalization, economic growth, and rapid urbanization. Overweight and obesity are growing concerns of government around the globe**.** (Abbasi et al 2000). Adolescence is the phase of growth from childhood to adulthood characterized by structural body changes with unique distribution of body fat quantity and location along with physiological changes. Adolescents constitute 1/6th of the world's population and there are more than 1.2 billion adolescents globally forming 18% of the world population while 88% of the adolescents live in developing countries. India is the largest in the group of adolescents globally while 253 million. The most concerning point regarding adolescents are that the urban population of adolescents which was 50% in 2009 will rise to 70% in 2050 and the largest

increase will be in developing countries, an alarming situation putting the additional burden to accommodate the health and well-being of this huge chunk of the population. World health organization (WHO) has expressed concern about the prevailing trends of child obesity globally. The global prevalence of overweight and obesity has risen from1980 to 2013by 47.1% for children and adolescents. The prevalence is more demonstrated in developed countries rising from16.9% to23.8% in boys, while 16.2%to22.6% in girls. The data from developing countries shows the rise in prevalence from 8.1%12.9% in boys, while 8.4% to 13.4% in girls. (Durrani, H, M.et al (2016). The knowledge about one's ideal body has a role and is the major driving force for weight management strategies. The studies have shown that adolescents who have normal BMI- for -age but perceive themselves as obese or overweight are at greater risk for developing eating disorders. This wrong perception can lead them to potentially harmful behaviors like dieting, slimming pills, diuretics, etc. Although the onset of exercise to lose weight has no effect. (Liechty, 2010). On the other hand, if a person is obese or overweight but perceives oneself to be normal this self-perception can predispose such individuals to co-morbid conditions, which can be easily avoided by giving them an awareness of the ideal BMI-for -age (Guo ss, et al.,2016). The risk of being overweight in childhood is greater with higher degrees of overweight in childhood and later adolescent years (Abraham s, et al 2016). Being overweight, in turn, is recognized as a significant risk factor for chronic diseases such as arteriosclerosis, ischemic heart disease, and diabetes; all of which are major causes of morbidity and mortality (Cora E et al., 2016). Being overweight during adolescence also has social economic and psychological consequences including the effect on academic performance and psychosocial functioning (Nikki MR et al2016). Obesity has numerous socially related consequences in later life such as lower wages, less likelihood of marriage, and less education (Gortmaker ,et al., 2016). Teachers need a learning model of rhythmic activity based on local culture to develop students' gross motor skills and self-confidence, learning rhythmic activities that are easy to memorize their movements, as well as learning rhythmic activities that can develop cognitive, affective, and psychomotor aspects of students**.** In addition, the students were still shy in doing rhythmic activity movements of regional cultural-based exercises for physical education learning in schools. Hence, the researcher produces guidebooks of rhythmic activity equipped with videos of rhythmic activity learning to students (Febri anta et al.,2021).

Method and Materials.

The purpose of the study was to find out the impact of selected rhythmic exercise on Physiological and Anthropometric parameters on adolescent obese boys. Such as cardiorespiratory endurance and Lean body mass. Adolescent obese boys were selected randomly from forty 45 obese from UT Jammu & Kashmir. The age of the subjects was between 13 to 19 years only. They were assigned into three groups. Each group consists of fifteen (15) subjects. The group is namely Group I acted as Experimental group (Rhythmic exercise), group II acted as Suryanamasker. The research design of the study was a random group design. The duration of the experimental training period was 12 weeks. After the experimental treatment, all forty-five (45) subjects were administered on the selected physiological and Anthropometric parameters. This final test score forms as post-test scores of the subjects. To find out the significant differences between the groups, Analysis of covariance (ANCOVA) was applied. When the f-ratio of adjusted post-test mean was found to be significant, Scheffe's post hoc test was employed to find out paired mean differences. Three groups to study the significance of improvement in physiological and anthropometric parameters as a result of training. In all cases, 0.05 level of significance was fixed to test the hypotheses.

Variables selected &tools used physiological parameters.

Cardiorespiratory Endurance. Cooper's 12minutes run walk test

Anthropometric parameters.

Lean body Mass**:** Skinfold caliper.

Rhythmic Exercise.

The selection of rhythmic exercises namely, aerobic exercise and Suryanamasker were made based on experts' advice. The aerobic exercise and Suryanamasker selected for the study were accepted as the rationale for the study, as per the available literature and expert guidance on theory and practice of aerobic exercise Suryanamasker. The aerobic exercise was scheduled for Group I. Group II can take Surya-namaskar practice. Group III as control group without exercise. The duration of aerobic exercise and Suryanamasker Exercise by the experimental group were as follows.

Training schedule.

Group 'I' selected aerobic exercise.

Group 'II' selected the Suryanamasker exercise.

Group 'III'without exercise.

Orientation program.

1) Rhythmic exercise.

2) Suryanamasker exercise

Exercise design.

Training schedule.

Assembly

Warming up and stretching exercise 15 minute

Aerobic exercise and Suryanamasker exercise.

1 st and 4 th weeks

16 count exercise

Total practices:6 minutes,7 repetitions=42 minutes

Total Rest:1 minute,7 between each repetition =1 minute.

4 th and 8 th weeks.

16 count exercise

Total practices:6-minute,8 repetions=48 minute

Total Rest:1 minute,7 between each repetition=7 minutes

8 th to 12th weeks

16 count exercise

Total practices:6 minutes,9 repetitions =54 minute.

Total Rest 0.30 minutes,8 between each repetition=4 minutes.

The dose of the practice for aerobic exercise and Suryanamasker was 1st and 4th weeks six minutes seven repetition 4th and 8th weeks six minutes eight repetition and 8th and12th weeks six minutes nine repetitions respectively and the total time for the daily practice by the experimental group was between 42 to 54 minutes. The time for rest was between 1.30-minute,1 minute, and 0.30 minutes as prescribed by experts. Altogether, the practices were scheduled for one hour every day in the morning.

Training in rhythmic Exercise.

Experimental groups selected rhythmic exercise and suryanamasker exercise. The exercise session was conducted for 60 minutes every Monday to Saturday for twelve weeks.

Statistical Analysis: To find out the significant differences between the groups, Analysis of covariance (ANCOVA) was applied. When the f-ratio of adjusted post-test mean was found to be significant, Scheffe's post hoc test was employed to find out paired mean differences. The level of confidence was fixed, at 0.05 level of significance.

Analysis of cardiorespiratory endurance.

Table 1.

Analysis of Covariance on cardiorespiratory endurance of Experimental and Control Groups.

Test	Rhythmic exercise Group	Suryanamasker exercise Group	Control Group	SOV	S O S	DF	M S	F-Ratio
Pre test Mean	30.37	30.48	30.27	BG	0.31	2	0.15	0.073
SD (±)	1.55	1.44	1.42	WG	91.53	42	2.17	
Post-test Mean	33.11	31.62	29.77	BG	84.05	2	42.02	23.28*
SD (±)	1.40	1.30	1.32	WG	75.79	42	1.80	
Adjusted Post-test Mean	33.11	31.56	29.82	BG	81.21	2	40.60	33.86*
				WG	49.16	41	1.19	

**Significant, Table value, 2 to 42 & 2 to 41 is 3.22 &3.23*

Table 1, shows that pre-test mean values cardiorespiratory endurance of rhythmic exercise group, Suryanamasker exercise group, and control group are 30.37, 30.48and 30.27 respectively. The obtained 'F' ratio of the 0.073 pre-test score was lesser than the required table value of 3.22 for df 2 and 42 for significance at 0.05 level of confidence on cardiorespiratory endurance. The post-test means values on cardiorespiratory endurance of the rhythmic exercise group, Suryanamasker exercise group, and control group are 33.11, 31.62 and 29.77 respectively. The obtained 'F' ratio value of 23.28 for a post-test score was greater than the

required table value of 3.22 for the df of 2 and 42 for significance at 0.05 level of confidence on cardiorespiratory endurance.

The adjusted post-test means of rhythmic exercise group, Suryanamasker exercise group, and control group are 33.11, 31.56, and 29.82 respectively. The obtained 'F' ratio value of 33.86 for the adjusted post-test score was greater than the required table value of 3.22 for df 2 and 41 for the significance at 0.05 level of confidence on cardiorespiratory endurance. It was concluded that differences subsist among the adjusted post-test means of rhythmic exercise group, Suryanamasker exercise group, and control group on cardiorespiratory endurance. The 'F' value in the adjusted post-test means was found significant, hence Scheffe's test was applied to assess the paired mean difference and the results are presented in a table. - 4.3.

Table - 2

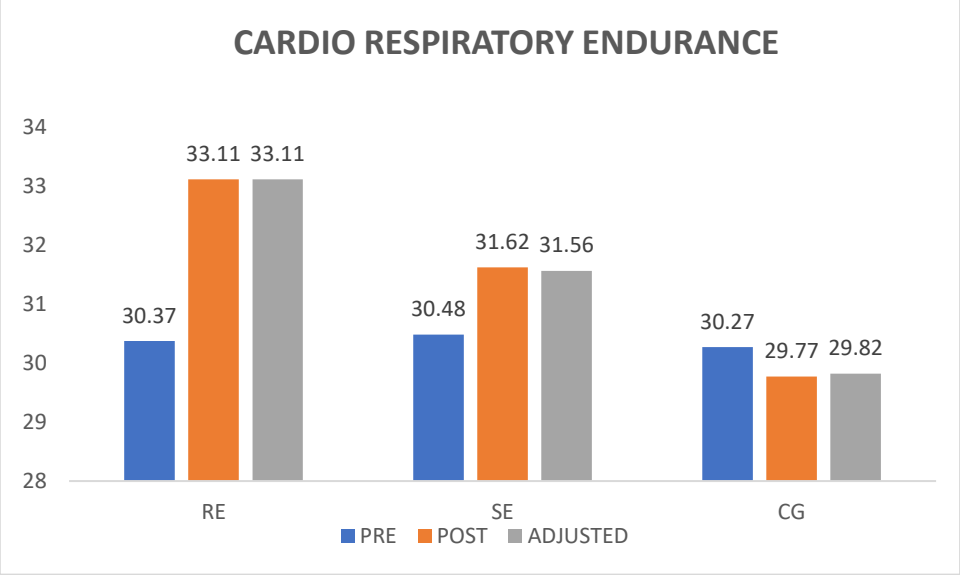
Scheffe's test for the Differences between Paired Means on

RE	SU	CG	M.D	CI
33.11	31.56		1.55	
33.11		29.82	3.29	0.40
-	31.56	29.82	1.74	

From table 2, it was imperative that both the experimental groups differed significantly from the control group on cardiorespiratory endurance. Significant differences were found between the rhythmic exercise group and the Suryanamasker group in improving cardiorespiratory endurance. Therefore, twelve weeks of rhythmic exercise showed greater improvement than Suryanamasker on adolescent obese boys. The findings of the study imply that both the groups improved but rhythmic exercise was significantly better in improving cardiorespiratory endurance than other groups confined to this study. The changes in cardiorespiratory endurance are presented in figure 1.

Figure 1.

The Pre, Post, and Adjusted Post Test Means of Experimental and Control Groups on cardiorespiratory endurance.



Analysis of Lean Body Mass.

The data collected from the three groups on lean body mass was statistically analyzed by ANCOVA and the results are presented in Table 3.

Table 3

Analysis of Covariance on the lean body mass of Experimental and Control Groups

Test	Rhythmic exercise Group	Surya namaskar exercise Group	Control Group	SOV	S O S	DF	M S	F-Ratio
Pre-Test Mean SD	54.00 1.46	54.20 1.37	54.40 1.40	BG	1.200	2	0.600	0.30
				WG	84.00	42	2.00	
Post-test Mean SD	51.00 1.46	52.53 1.68	54.33 1.34	BG	83.51	2	41.756	18.44*
				WG	95.067	42	2.263	
Adjusted post-test Mean	51.07	52.53	54.25	BG	74.90	2	37.45	18.59*
				WG	82.57	41	2.01	

**Significant, Table value, 2 to 42 & 2 to 41 is 3.22 &3.23*

Table 3, shows that pre-test mean values lean body mass of rhythmic exercise group, Suryanamasker exercise group, and control group are 54.00, 54.20, and 54.40 respectively. The obtained 'F' ratio of 0.30 pre-test score was lesser than the required table value of 3.14 for df 2 and 42 for significance at 0.05 level of confidence on lean body mass. The post-test means values on the lean body mass of the rhythmic exercise group, Suryanamasker exercise group, and control group are 51.00, 52.53, and 54.33 respectively. The obtained 'F' ratio value of 18.44 for a post-test score was greater than the required table value of 3.14 for the df of 2 and 42 for significance at 0.05 level of confidence on lean body mass.

The adjusted post-test means of rhythmic exercise group, Suryanamasker exercise group, and control group are 51.07, 52.53, and 54.25respectively. The obtained 'F' ratio value of 18.59 for an adjusted post-test score was greater than the required table value of 3.14 for df 2 and 41 for the significance at 0.05 level of confidence on lean body mass. It was concluded that differences subsist among the adjusted post-test means of rhythmic exercise group, Suryanamasker exercise group, and control group on lean body mass. The 'F' value in the adjusted post-test means was found significant, hence Scheffe's test was applied to assess the paired mean difference and the results are presented in the table.

Table – 4.

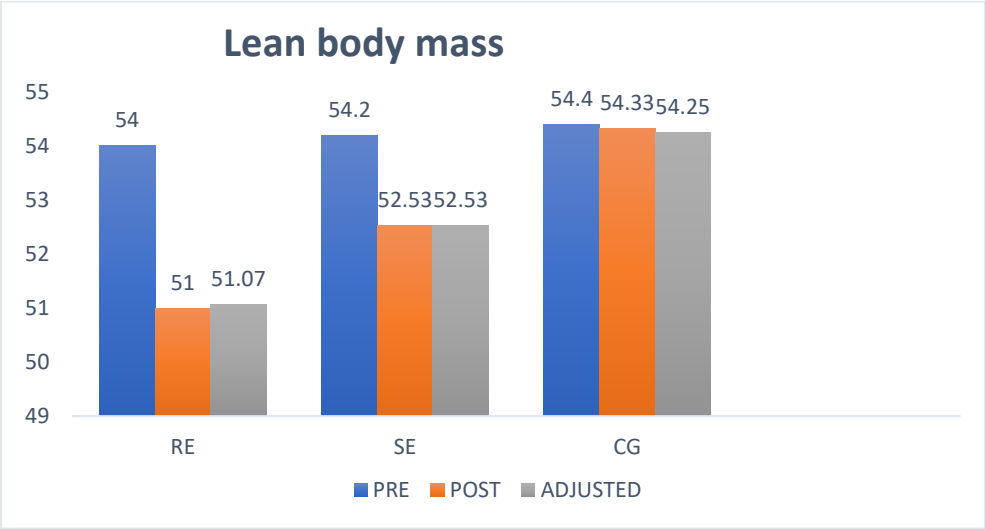
Scheffe's test for the Differences between Paired Means on

RE	SU	CG	M.D	CI
51.07	52.53		1.46	
51.07		54.25	3.18	0.67
-	52.53	54.25	1.72	

From table 4. it was imperative that both the experimental groups differed significantly from the control group on Lean body mass. Significant differences were found between the rhythmic exercise group and the Suryanamasker group in decreased lean body mass. Therefore, twelve weeks of rhythmic exercise showed greater improvement than Suryanamasker on adolescent obese boys. The findings of the study imply that both the groups improved but the rhythmic exercise was significantly better in improving lean body mass than other groups confined to this study. The changes in lean body mass are presented in figure 2.

Figure 2.

The Pre, Post, and Adjusted Post Test Means of Experimental and Control Groups on Lean body mass.



DISCUSSION: The findings of this study showed that 12 weeks of 3-sessions per week rhythmic exercise caused an increase in cardiorespiratory endurance and decease lean body mass than Suryanamasker. The nature and type of rhythmic exercise activities lungs muscles and blood circulation of various parts of the body, which helps in develops oxygen capacity in lungs and heart muscles goes strong due to daily exercise which helps to decrease the body fat which makes the lean body. Statistical findings of the study showed that 12 weeks of rhythmic exercise and Suryanamasker exercise in 3 sessions will change a significant increase in the cardiorespiratory endurance and decrease in lean body mass. When performing a rhythmic exercise, walking, hopping, and sliding to music, and marching side to side and hatha yoga a pranayama's. The cause can be noted as sufficient exercise specific to the lungs & heart for sufficient variety of exercise. These findings are similar to (Rayes, A. B et al., (2019) & (Sivaraman p., (2014). The result of 12 months of Suryanamasker exercise can increase cardiorespiratory endurance (Yadav, s.k. 2014) the result of 12 month of rhythmic exercise confirmed the positive effect on decreasing lean body mass. (Estaban-Garcia,2021). Also, find changes.

Conclusion: The purpose of this study was to demonstrate the rhythmic exercise and Suryanamasker exercise program on obese adolescent boys. There was a significant effect on rhythmic exercise than Suryanamasker exercise on cardiorespiratory endurance and lean body

mass. Therefore, physical fitness can be achieved with a training program implemented at a school level. So, twelve weeks training program was given to increase cardiorespiratory endurance and decrease the lean body mass among obese adolescent boys.\

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