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Isolated and Combined Effect of Yogic and Aerobic Training on Systolic B/P Variation in Adolescent Boys

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Abstract: *The present study was to explore about the isolated and combined effect of yogic and aerobic training on systolic B/P variation during lying to stand in Adolescent Boys. Total 60 participants completed this potential randomized study, which were divided in four groups of 15 participants in each namely yoga, aerobic, combined training and control group. Systolic B/P variations were determined at the start and end of twelve weeks training. The participants were undergone through twelve weeks of yoga, aerobic and collective training of yoga & aerobic. Statistical mean difference of systolic B/P variations of every group was tested for the significance of difference by ANCOVA test. The systolic B/P variations variable in the all three investigational groups was clearly improved compared with control group (P>0.05) after 12 weeks training intervention. The outcome revealed that training groups have significant decrease in systolic B/P variations during lying to stand, since calculated F (=02.94*) ≥ tab F .05 (2, 42) (= 2.77). But adjusted F ratio value (10.68*) was notably greater than the table number. The verdict of study explores that the twelve weeks of isolated and combined yogic practice and combined training decreases systolic B/P variations during lying to stand in adolescent boys. In all cases 0.05 levels has been fixed to test the significance which is considered to be an appropriate.*

Keywords: Yoga, Aerobics, systolic B/P, adolescent

I. INTRODUCTION

The scientific study in physical education and sports fieldis always precious for the entire society as well as athletes, trainers and coaches. Physiological variables such as blood pressure, vital capacity, pulse rate etc play a major role in shaping the adolescence personality and physical development along with the development of the skills. Exercise can be considered as any form of physical activity involving movement, maintenance of posture or muscles force appearance.

Indian origin word yoga is derive from the roots of Sanskrit word 'Yuj' which denotes to unite, to yoke, and to focus on belief within self. According to Patanjali, "The way of yoking of all the powers of body, the mind, the emotion is known as yoga which capable individual to look at all its aspect of life consistently". The individual who practices Asanas, not only stretches body organs but also practice bringing the body in certain pose by better association with self soul. Practicing movement along with oxygen to cells is considered as aerobic activity. Body's metabolic or energy-generating procedure needs oxygen to perform the work by muscles also referred as aerobics activity. This can be seen as different types of activity performed at reasonable levels of intensity for certain periods of time.

Blood pressure is an important physiological factor to know and understand the health and fitness aspect of individual. Now a day's people are facing different cardo-vascular health problem due to different pollution challenges like soil, water, air, noice etc. Systolic and diastolic blood pressure changes due to body position changes such as supine to stand, sitting to walk, etc is a very effective aspect to know about heart health and cardiovascular fitness.

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II. MATERIALSANDMETHODS

Selection of the Subjects

The motive to conduct the study was to expose about the isolated and combined effect of yogic and aerobic training on systolic B/P variations of adolescence boys during lying to stand. Sixty adolescence school boys were selected from New Mordern Higher Secondary School, Muthialpet, Puducherry. The subject's chronological age was kept between fourteen to seventeen years. The subjects were selected from homogeneous in their academic activities and diverse family setting.

Experimental Design and Testing the Variable

Conduct of this experimental study was as a true random group design which have pre and post test. Random distribution of participating subjects (N=60) was done in four equal groups with fifteen in each. Experimental group one was underwent through yoga practice, group two with aerobic exercises, group three with combination of yoga practice & aerobic exercises and control group did not followed any training programme. Baseline test counts of variables were taken for all the 60 adolescent boys on systolic blood pressure changes variable, before starting the training. Post test was measured and the scores were recorded after the experimental training period of twelve weeks of respective training. Training duration was five days per week from Monday to Friday with 45 minutes in the evening session. Exercises were introduced in progressive manner from simple to complex. Control group did not participated in any specific physical training program ahead of their daily routine work.

The systolic blood pressure changes variable data received from the four groups was used for the statistical treatment to find out whether or not there was any significant improvement among the experimental groups by applying analysis of covariance (ANCOVA) method. When F-ratio value was significant, Scheffe's Post Hoc test was used to make clear the variations among adjusted pair wise means. The level of confidence was fixed at 0.05 level of confidence. All data was computed and treated using Statistical Package for Social Sciences.

Table – I: ANALYSIS OF COVARIANCE FOR PRE TEST AND POST TEST DATA ON LYING/STAND SYSTOLIC B/P VARIATIONS

	Yoga	Aerobic	Combine	Control	Source of variance	Sum of square	df	Mean Square	'F' ratio
Pre-test Mean	6.47	6.60	6.53	6.00	B:	3.33	3	1.11	0.41
S.D.	1.51	1.50	1.64	1.89	W:	151.07	56	2.70	
Post-test Mean	5.27	5.40	4.93	6.13	B:	11.53	3	3.84	2.94*
S.D.	1.16	0.99	1.03	1.36	W:	73.20	56	1.31	
Adjusted Post-test Mean	5.23	5.29	4.86	6.35	B:	17.93	3	5.98	10.68*
					W:	30.76	55	0.60	

* Significant at 0.05 level.

Required table value at 0.05 and 0.01 level of significance for 3 & 56 d.f. are 2.77 and 4.14 respectively.

The finding of pre test value indicates that means value of systolic blood pressure variations on posture changes of the three treatment groups and control group are 6.47, 6.60, 6.53 and 6.00 in that order. The measure of 'F' ratio value 0.41 for the baseline mean values is lesser than the required table value 2.77 for 3 & 56 degrees of freedom at 0.05 level of confidence. This finding reveals that there is no significant disparity among the four groups on variations of systolic blood pressure during posture changes before starting the experimental training. This F ratio value allows the investigator to go through experimental training with participant groups and subject selection and experimental design is successful.

The finding of post test value indicates that post means value of systolic blood pressure variations due to posture changes of the three treatment groups and control group are 5.27, 5.40, 4.93 and 6.13 respectively. The statistical 'F' ratio value 2.94* for the post test data is higher than the required table value 2.77 at 3 & 56 degrees of freedom of 0.05

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confidence level. These finding make the researcher that there is significant effect of respective training to decrease the systolic blood pressure variations at posture changes.

The adjusted post test means on systolic blood pressure variation during body position changes of the three experimental and control group are 5.23, 5.29, 4.86 and 6.35 in that order. The statistical 'F' ratio value of 10.68* for the adjusted post test data is higher than the table value 2.77 for 3 & 56 degrees of freedom at 0.05 level of confidence. It confirms that experimental training make significant change on systolic blood pressure variations on posture changes therefore the research hypothesis has been acknowledged.

Table II: SCHEFFE'S POST HOC TEST ON ADJUSTED MEAN VARIATIONS ONSYSTOLIC BLOOD PRESSURE VARIATIONSDUE TO POSTURE CHANGE

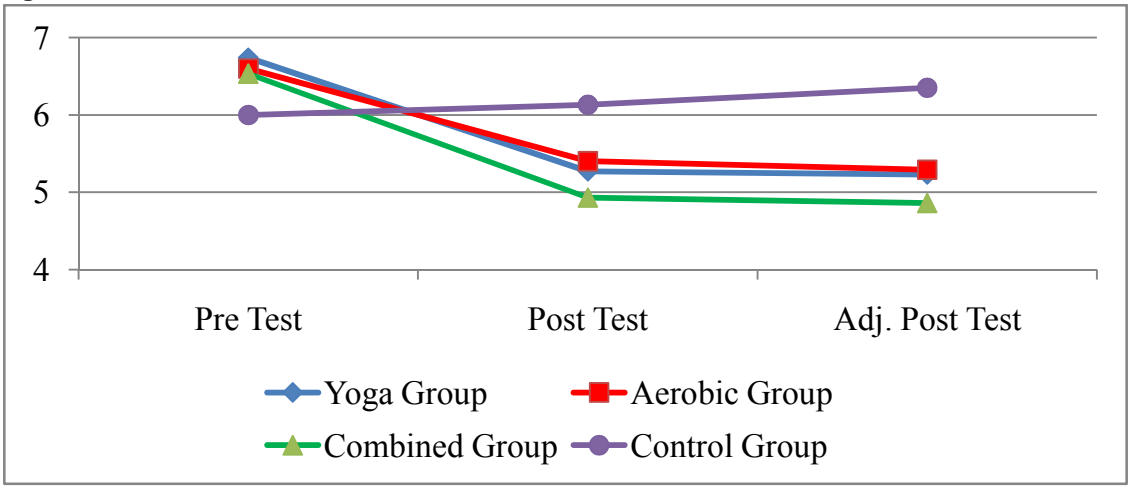
Yoga	Aerobic	Combined	Control	Mean variations	Required C.I.
5.23	5.29	-	-	**0.06**	**0.81**
5.23	-	4.86	-	**0.37**	
5.23	-	-	6.35	**1.12***	
-	5.29	4.86	-	**0.43**	
-	5.29	-	6.35	**1.06***	
-	-	4.86	6.35	**1.49***	

The confidence interval value required for significance at 0.05 level is 0.81

The researcher test the pair means difference of blood pressure variation due to posture changes with the help of Scheffe's post-hoc. The post-hoc mean difference among yoga practice and control group is1.12*, aerobic training and control group 1.06*, combined group and control group 1.49*, are significantly higher than table value at 0.05 level of confidence. The experimental groups did not show any significant difference among the groups for post-hoc mean variations whereas combined group have better effect to decrease BP variation compare to yoga and aerobic group.

The mean variations on blood pressure variation due to posture changes for yogic practice group, aerobic group, combined group and control group are presented through line diagram for better understanding of the results of this study in figure.

Line Diagram of Results



III. CONCLUSION

This experimental study concludes that the adolescent boys participating yoga practice, aerobic exercise and combined training have better improvement in their cardiovascular health by positive change in systolic blood pressure variation during positional change of body whereas combined training of yoga practice and aerobic exercise would be better than the other experimental group but that improvement is not significantly remarkable. The following researchers have also seen the remarkable improvement in their studies. M. Mourya, et al., (2009) and . K. Pal, S. et al, (2004)also elaborated about the improvement in systolic blood pressure variation due to 12 weeks aerobic training and yoga practice intervention.

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