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EFFECT OF YOGASANAS AND AEROBIC EXERCISES ON HEART RATE OF SCHOOL GIRLS

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Abstract: The present research is to identify the effect of yogasanas and aerobic exercises on Heart Rate of school girls as cognitive factor. One hundred and fifty subjects (N=150) were randomly assigned to three equal groups. Each group contains 50 subjects and they were students studying in St. Antony's Public School, Hubli, Dharwad District, Karnataka, India. The said subjects were assigned into three groups namely EG-1 (YG) treated as Yogasanas; EG-2 (AG) treated as Aerobic exercises; and CG acted as control group. Heart Rate was elected as a criterion variable for the investigation. The Pre test scores was collected for all the subjects on said groups on Heart Rate by administering Digital Heart Rate Monitor in mm/hg. EG-I group practiced yogasanas with pranayama and meditation; EG-2 group practiced moderate aerobic exercises. The subjects of the control group were not allowed to participate in any training program, with the exception of routine activities. During the training period, experimental groups had undergone their training programme 3 days a week on alternate days for 12 weeks in addition to normal daily work. The post test mean scores on Heart Rate was collected after the said treatments. The difference between pre and post test mean scores on Heart Rate was considered as the effect of experimental treatments. The Analysis of Variance (ANOVA) was used to determine the significant mean differences for Heart Rate among secondary school girls. Post hoc analysis was made by using LSD test, when obtained F value was significant. The SPSS Package was applied to get the results with the help of MS Excel program. The level of significant level was fixed at 0.05 level. The ANOVA results found that yogasanas and aerobic exercises had significant impact on improving the Heart Rate among secondary school girls. Yogasanas shows better in improving Heart Rate when compared with aerobic exercises.

Index Terms- Yogasanas, Aerobic Exercises, Heart Rate, Training, school girls.

I. INTRODUCTION

Exercise is the key to sound health. The activity of exerting as muscles in various ways to keep fit. Exercise provides adequate quantity of oxygen and enables different organs of human body to function properly. It promotes the circulation of blood to all parts of the body. It develops muscular systems in body. Yoga is very beneficial exercise because one can control his or her body through meditation. Yoga is rich source of releasing stress and anxiety and it teaches discipline and unity. One who practice yoga become start uniting soul with others and experience self discipline and it unites people in brotherhood, harmony and peace. People of all age can perform this exercise. Yoga is quite useful exercise because it provides relief and keeps mind and body away from ailments. It strengthens our soul and gives us sweet feelings of healthiness. It sharpens our wit and improves our intelligence. It enhances social well being and helps connect us with nature and its beauty. Regularity of yoga creates self-awareness and makes one disciplined. It helps shun negative thoughts and finish element of negativity. It develops higher level of patience. It is a best form of exercise to maintain good health. It gives sound mental clarity and boosts the intelligence. It is a most effective breathing exercise, those who perform yoga their respiratory system works well and they never get any respiratory disorder. It saves us from many diseases of body and soul. It creates state of tranquility and peace. The peace and tranquility descends through meditation, one who enjoys peace of soul also shares peace with others. The intervention of yoga, encompassing asanas, pranayama, prathyhara, dharana and dhyana, appears effective in helping children overcome stress and anxiety. The restorative postures, shavasana (corpse pose), and pranayama (expansion of life force) lull one into a state of prathyhara (withdrawal of senses), which enables downtime for the nervous system. The practice of yoga, if done consistently, may enable children to connect with their inner world through the coordination of mind, body and breathe to achieve greater heights of mindfulness. Higher states of tranquility are achieved, paving the way to a healthier physical, mental and emotional life. Aerobic Exercises involves moderate intensity workout. Aerobic Activities performed for longer duration and involves only

simple exercise and activities need more endurance. Activities performed for more than two minutes to an hour. Oxygen is used to breakdown glucose. It concentrates on strengthening and the muscles involved in respiration. It improves the circulation of blood and transportation of oxygen in the body, reduces blood pressure and burns fat. Energy is provided by carbohydrates and fats. Aerobic exercise is any physical activity that makes us sweat, causes us to breathe harder, and gets our heart beating faster than at rest. It strengthens your heart and lungs and trains our cardiovascular system to manage and deliver oxygen more quickly and efficiently throughout the body. Aerobic exercise uses large muscle groups, is rhythmic in nature, and can be maintained continuously for at least 10 minutes. Cardiovascular system is made up of our heart and blood vessels e.g., arteries, veins, and capillaries that transports blood throughout the body. Aerobic refers to how our body uses oxygen to sufficiently meet energy demands during exercise. Sahu (2016) studies to know the effectiveness of Asana and Pranayama on resting heart rate of Secondary School Students in Purba Medinipur district. The experimental group B trained by Asana and Pranayama showed no significant differences in resting heart rate. Malipatil and Patil (2017) intended to assess the effect of yogic and physical exercises on resting Pulse rate and concluded that after the training of yoga and physical exercise physical group training has decreased resting pulse rate when comparing their counterpart yoga group. Very few studies conducted on school girls with regard to effect of yogasanas and aerobic exercises on heart rate at school level. Hence the present study is investigated to know the effect of yogasanas and aerobic exercises on heart rate of school girls studying in Dharwad District, Karnataka, India.

II. STATEMENT OF THE PROBLEM

The purpose of this research is to know the effect of yogasanas and aerobic exercises on heart rate of school girls.

The topic selected for the study is "**EFFECT OF YOGASANAS AND AEROBIC EXERCISES ON HEART RATE OF SCHOOL GIRLS."**

III. STATEMENT OF HYPOTHESIS

It was hypothesized that there would be a significant difference in the Heart Rate of experimental groups due to 12 weeks practice of yogasanas and aerobic exercises.

IV. METHODOLOGY

The present research is to identify the effect of yogasanas and aerobic exercises on Heart Rate of school girls as cognitive factor. One hundred and fifty subjects (N=150) were randomly assigned to three equal groups. Each group contains 50 subjects and they were students studying in St. Antony's Public School, Hubli, Dharwad District, Karnataka, India. The said subjects were assigned into three groups namely EG-1 (YG) treated as Yogasanas; EG-2 (AG) treated as Aerobic exercises; and CG acted as control group. Heart Rate was elected as a criterion variable for the investigation. The Pre test scores was collected for all the subjects on said groups on Heart Rate by administering Digital Heart Rate Monitor in mm/hg. EG-I group practiced yogasanas with pranayama and meditation; EG-2 group practiced moderate aerobic exercises. The subjects of the control group were not allowed to participate in any training program, with the exception of routine activities.

Experimental groups: EG-1 practiced yogasanas with pranayama and meditation; EG-2 practiced aerobic exercises. The yogasanas practiced by yoga prayer with general warming up exercises, suryanamaskara and asanas like sitting asanas, standing asanas and supine asanas and proline asanas along with pranayama, meditation and shavasana. The aerobic exercises includes V step movement L step right and left side movement, zig-zag forward movement, v-shape forward toe touch right & left side, V-shape forward knee up right and left side movement, grape wine movement, single leg side ward movement, a-step movement, dymand step movement, v-step rotation right side movement and v-step rotation left side movement. The subjects of the control group were not allowed to participate in any training program, with the exception of routine activities.

During the training period, experimental groups had undergone their training programme 3 days a week on alternate days for 12 weeks in addition to normal daily work. The post test mean scores on Heart Rate were collected after the said treatments. The difference between pre and post test mean scores on Heart Rate was considered as the effect of experimental treatments. The Analysis of Variance (ANOVA) was used to determine the significant mean differences for Heart Rate among secondary school girls. Post hoc analysis was made by using LSD test, when obtained F value was significant. The SPSS Package was applied to

get the results with the help of MS Excel program. The level of significant level was fixed at 0.05 level. The ANOVA results found that yogasanas and aerobic exercises had significant impact on improving the Heart Rate among secondary school girls. Yogasanas shows better in improving Heart Rate when compared with aerobic exercises.

V. ANALYSIS OF THE DATA

ANOVA results on Heart Rate of school girls due to variations in the experimental treatments of yogasanas & aerobic exercises training among control and experimental groups namely Control Group (CG); Yogasanas Group (YG); and Aerobic Exercises Group (AG) and the results are presented in the following tables

Table-1: ANOVA Results on Heart Rate of school children of CG, YG and AG groups.

test		CG	YG	AG	Sources of Variance	Sum of Squares	df	Mean Square	F Value and Sig. level
Pre-test	Mean	81.600	79.460	80.340	Between	115.693	2	57.847	1.23^{NS}
	S.D.	5.602	7.065	7.692	Within	6883.640	147	46.827	
Post-test	Mean	80.780	71.120	65.260	Between	6142.093	2	3071.047	59.33*
	S.D.	6.852	7.490	7.227	Within	7609.480	147	51.765	

Table value @ 0.05=3.06; ^{NS}Not Significant (df-2, 147)

Table-1 reveals the results related to pre and post test mean scores of heart rate of school children among CG, YG and AG groups by applying in ANOVA statistical technique. The above table opines that pre test mean scores of heart rate of school children among CG, YG and AG groups which are 81.600, 79.460 and 80.340 and standard deviations are 5.602, 7.065 and 7.692 respectively. The sum of square and mean square related to pre test scores of heart rate for df 2 are 115.693 & 57.847 for between groups and for df 147 are 6883.640 and 46.827 for within the groups. The calculated 'F' value of 1.23 is less than the table value 3.06 for df of 2 and 147 as the required value for significance at 0.05 level. Hence, it is not found significant. All the groups are found to be equal in the pre test mean scores of heart rate of school children among CG, YG and AG groups before treatment of varied training programmes. The table also illustrates the post test mean scores of heart rate of school children among CG, YG and AG groups which are 80.780, 71.120 and 65.260 & standard deviations are 6.852, 7.490 and 7.227respectively. The sum of square and mean square related to post test scores of heart rate for df 2 are 6142.093 & 3071.047 for between groups and for df 147 are 7609.480 and 51.765 for within the groups. The obtained 'F' value of 59.33 is greater than the table value 3.06 for df 2 and 147 as the required value for the significance at 0.05 level. Hence it is found significant. It was found that there exists significant difference in the adjusted post-test mean scores of heart rate among CG, YG and AG groups. To determine paired mean scores had a significant difference in heart rate of school children, LSD post-hoc test was applied and the results are presented on the Table-4.18a.

Table-2: LSD Post Hoc Test Results on Heart Rate of school children among CG, YG and AG groups.

Groups			Mean Difference	Critical Difference
CG	YG	AG		
80.780	71.120	×	9.660*	2.907
×	71.120	65.260	5.860*	
80.780	×	65.260	15.520*	

* Significant at 0.05 level.

The table-2 explicates the paired post test mean differences in heart rate between CG & YG; YG & AG and CG & AG groups which are 9.660, 5.860 and 15.520 respectively and which are greater than the critical difference of 2.907 at 0.05 confidence level. Hence it was found significant mean differences in the heart rate of school children between CG & YG; YG & AG and CG & AG groups after the treatment of training programmes. It concludes from the results that there are significant mean differences in the heart rate between CG & YG; YG & AG and CG & AG groups. Both YG and AG experimental groups had decreased heart rate than CG group. The intervention of yogasanas and aerobic exercises is proved by decreasing heart rate of school children. The comparison of pre and post test mean scores on heart rate of school children of CG, YG and AG groups are graphically represented in Fig.1.

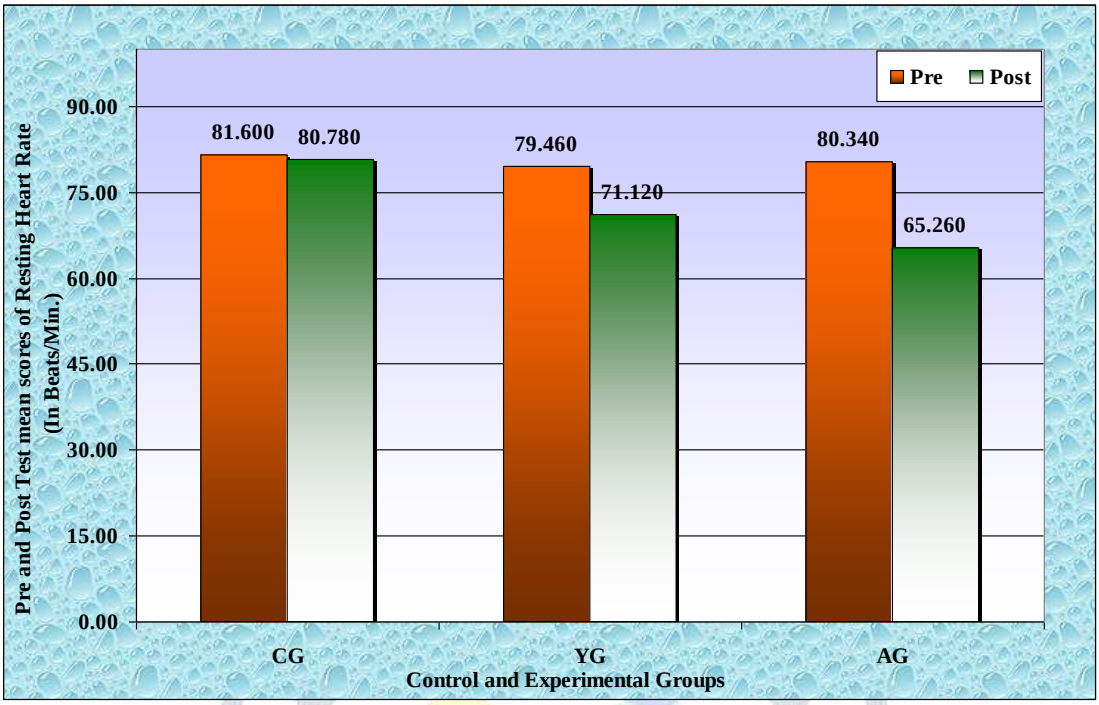

Fig.1: Comparison of pre and post tests mean scores of Resting Heart Rate of school children of CG, YG and AG Groups.

VI. DISCUSSION OF RESULTS

The present study evaluated the values of the experimental and control groups namely Yogasanas Group (YG), Aerobic Exercises Group (AG) and Control Group (CG). The YG and AG groups were significantly improved the Heart Rate from pre test to post test scores. The heart rate was improved in YG group from pre test (79.460±7.065) to post test scores (71.120±7.490), AG group from pre test (80.340±7.692) to post test scores (65.260±7.227); and heart rate was significantly decreased from pre test to post test in all the two experimental groups with no change in control group. The present study demonstrated that decreasing in heart rate owing to the treatment through the groups of YG was 10.50% and the improvement of AG was 18.77% estimated with Beats/Min (Heart Rate). In case of Control, no significant improvement (1.00%) was observed. The supportive results found by Mallipatil Patil (2017) study shows that after the training yoga resting heart rate had decreased. The contrary by Sahu (2016) in his study Asana and Pranayama showed no significant differences in systolic and diastolic blood pressure, cardiovascular endurance.

VII. CONCLUSION

As per the results it was concluded that yogasanas and aerobic exercises had a significant impact on development of Heart Rate among school girls. Yogasanas proved to be better in increasing Heart Rate when compared with aerobic exercises individually.

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