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Effect of an hour physical activity and koga on HDL LDL and total cholesterol among children

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Abstract
Physical activity, this is an important thing for humans. It helps them to run a healthy life. But, the current generation following a sedentary lifestyle. It leads to lifestyle diseases in our children. The aim of this study was to discover the effect of an hour Physical activity and Koga on HDL, LDL, and Total Cholesterol among students. To accomplish the aim of the study, eighty children had been chosen randomly from Chennai. The subjects' age ranged from 15 to 17 years. They divided as four equal groups consist of 20 participants each. Group-I had given an hour of selected physical exercise training, Group-II had given Koga Training, and Group-III had given combined training, and Group-IV was control which had not received any special pieces of exercise apart from the regular activities. The combined physical training and Koga training selected as independent variables. HDL, LDL, and Total Cholesterol have chosen as dependent variables, and all dependent variables measured by standardized test item as lipid profile test. Analysis of Covariance (ANCOVA) would be applied to find out the significant mean differences. In all the cases, the 0.05 level of confidence has fixed to test the hypothesis. The results of the study exposed that the experimental groups had finished a significant difference in all the selected variables such as HDL, LDL, and Total Cholesterol to compare the control group. Hence it was concluded that an hour Physical activity and Koga enhanced HDL and decreased LDL and Total Cholesterol among children.

Keywords: physical activity, koga, HDL, LDL total cholesterol

Introduction
"Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure" (WHO). All are physically active except during sleep. Children have more energy than adults, but at present conditions, no one is using it correctly. Laziness, and lack of physical activity are the cause of lifestyle illness in children. Regular physical activity helps maintain mental health and physical health. It contributes to reducing the risk of depression in children and obesity.

Koga is a blend of kickboxing and yoga. It is a combination workout with kickboxing movements, isometric movements, punches, and meditation. Koga established in 2001 by Jon Koga (A fitness expert in New York). Koga focuses on core, bodyweight strength training, and meditation. Koga generates "Koganetics" creating standing yoga postures into pulses to keep heart rate highly elevating.

2. Definition of the Terms
2.1 High Density Lipoprotein (HDL)
It is a lipoprotein that is found in blood plasma and composed with a high volume of protein with the slight amount of triglyceride and cholesterol. HDL is also branded as the good cholesterol.

2.2 Low Density Lipoprotein (LDL)
It is a lipoprotein that is found in blood plasma, and it is composed of a moderate amount of protein with little triglyceride and a high percentage of cholesterol. LDL is also branded as the bad cholesterol.

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2.3 Total Cholesterol

Total blood cholesterol is an amount of LDL, HDL, and other lipid components. Increased the level of cholesterol in the human body will damage the heart, and if it is untreated, it will lead to a heart attack.

3. Methodology
3.1 Subjects

For the current study, the investigator selected a total number of eighty (N=80) school boys had been chosen randomly from Chennai schools. The subjects' age ranged from 15 to 17 years. The subjects were voluntarily participated to conduct the study.

3.2 Orientation of the Subjects

The investigator made the meeting with the subjects and their parents. The aim of the study and the importance of the training were explained to the subjects understandably. All the participants in the experimental groups were motivated to take part regularly for training, and the procedures for each test was explained clearly and demonstrated for a clear view. All the subjects were motivated to perform better during the test. The recording of measurements of each test item was made known to the subjects to familiarize them above their performance. All the subjects performed all test up to their maximum ability. The investigator has taken written permission from the parents of the boys to conduct the training programme.

3.3 Selection of variables and Tests

Physical activity and Koga training highly influenced by physical aspects. It had found from the literature that these variables might have a significant effect on Physical activity and Koga training. Hence, the investigator seriously got interested to know whether there was any significant enhancement or not in the following variables:

Table I: Selection of Tests

Variables	Test
HDL	Lipid Profile Test, mg /dl
LDL	Lipid Profile Test, mg /dl
Total Cholesterol	Lipid Profile Test, mg /dl

3.4 Experimental design

The pre-test and post-test random group design used in the present study. The selected subjects randomly assigned to experimental and control groups of 20 each. Group-I had given an hour of selected physical exercise training, Group-II had given Koga Training, and Group-III had given combined training, and Group-IV was control which had not received any special pieces of exercise apart from the regular activities. The groups tested on selected criterion variables were HDL, LDL, and Total Cholesterol before and after the training programme.

3.5 Treatment

Throughout the training period, the experimental group-I underwent selected physical exercise training for three days per week (alternative days) for twelve weeks. The workout lasted to 60 minutes/daily including warming up and warming down periods. The experimental group-II underwent Koga for Three days per week (alternative days) for twelve weeks.

The workout lasted to 60 minutes/daily including warming up and warming down periods. The experimental group-III underwent combined training for three days per week (alternative days) for twelve weeks. The workout lasted to 60 minutes/daily including warming up and warming down periods. Control group-IV were instructed not to participate in any strenuous physical exercise and specific training throughout the training programme. However, they performed regular activities as per the curriculum.

4. Results and Discussion

The pre-test and post-test random group design used in the present study. The data collected from groups before and after completion of the training period on selected criterion variables. The selected variables were statistically examined for significant differences if any, by applying the analysis of covariance (ANCOVA). To find the significance. 05 level of confidence fixed.

Table II: analysis of covariance on HDL of physical activity koga combined and control group

	Physical Training Group	Koga Training Group	Combined Training Group	Control Group	Source of Variance	Sum of Square	df	Mean Square	'F' ratio
Pre-test Mean	57.59	58.37	57.09	57.91	Between	17.576	3	5.859	1.52
S.D.	1.44	2.10	2.09	2.11	Within	291.979	76	3.842	
Post-test Mean	59.74	60.87	60.95	57.33	Between	118.722	3	39.574	9.19*
S.D.	1.79	2.21	2.39	1.82	Within	327.142	76	4.305	
Adjusted Post-test Mean	59.86	60.37	61.46	57.80	Between	140.103	3	46.701	23.77*
					Within	147.339	75	1.965	

* Significant. 05 level of confidence
(The table values required for significance at. 05 level of confidence with df 3 and 76 and 3 and 75 were 2.74 and 2.74 respectively).

Table-I showed that the pre-test means values of HDL for physical training, Koga, combined, and the control group was 57.59 ± 1.44, 58.37 ± 2.10, 57.09 ± 2.09, and 57.91 ± 2.11 respectively. The obtained 'F' ratio value of 1.52 for pre-test scores of physical training, Koga, combined, and the control group on HDL less than the required table value of 2.74 for significance with df 3 and 76 at. 05 level of confidence.

The post-test means values for HDL for physical training, Koga, combined, and the control group was 59.74 ± 1.79, 60.87 ± 2.21, 60.95 ± 2.39, and 57.33 ± 1.82 respectively. The obtained 'F' ratio value of 9.19 for post-test scores of physical training, Koga, combined, and the control group was greater than the required table value of 2.74 for the significance with df 3 and 76 at. 05 level confidence.

The adjusted post-test means values of HDL for combined physical training, Koga training group, and the control group was 59.86, 60.37, 61.46 and 57.80 respectively. The obtained 'F' ratio value of 23.77 for adjusted post-test scores of physical training, Koga, combined, and the control group were greater than the required table value of 2.74 for the significance with df 3 and 75 at .05 level of confidence. Hence, it was significant.

The mean values of physical training, Koga training group, and the control group on HDL were graphically represented in Figure-I.
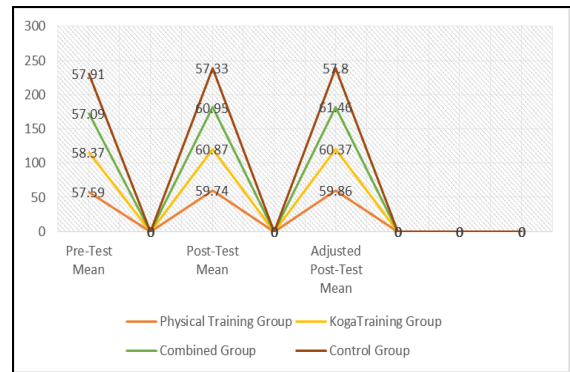

Fig I: bar diagram showing the mean values of physical activity koga combined and control group on HDL

Table-III: analysis of covariance on LDL of physical activity koga combined and control group

	Physical Training Group	Koga Training Group	Combined Training Group	Control Group	Source of Variance	Sum of Square	df	Mean Square	'F' ratio
Pre-test Mean	71.91	69.25	70.09	70.88	Between	77.523	3	25.841	0.31
S.D.	10.57	7.95	8.72	8.72	Within	6215.159	76	81.778	
Post-test Mean	69.84	66.30	65.76	71.07	Between	409.977	3	136.659	1.84*
S.D.	9.86	7.84	8.10	8.48	Within	5632.580	76	74.113	
Adjusted Post-test Mean	68.55	67.50	66.17	70.74	Between	222.806	3	74.269	26.85*
					Within	207.383	75	2.765	

* Significant .05 level of confidence
(The table values required for significance at .05 level of confidence with df 3 and 76 and 3 and 75 were 2.74 and 2.74 respectively).

Table-II showed that the pre-test means values of LDL for physical training, Koga, combined, and the control group was 71.91 ± 10.57, 69.25 ± 7.95, 70.09 ± 8.72, and 70.88 ± 8.72 respectively. The obtained 'F' ratio value of 0.31 for pre-test scores of physical training, Koga, combined, and the control group on LDL less than the required table value of 2.74 for significance with df 3 and 76 at .05 level of confidence.

The post-test means values for LDL for physical training, Koga, combined, and the control group was 69.84 ± 9.86, 66.30 ± 7.84, 65.76 ± 8.10, and 71.07 ± 8.48 respectively. The obtained 'F' ratio value of 1.84 for post-test scores of physical training, Koga, combined, and the control group was less than the required table value of 2.74 for the significance with df 3 and 76 at .05 level confidence.

The adjusted post-test means values of LDL for combined physical training, Koga training group, and the control group was 68.55, 67.50, 66.17, and 70.74 respectively. The obtained 'F' ratio value of 26.85 for adjusted post-test scores of physical training, Koga, combined, and the control group were greater than the required table value of 2.74 for the

significance with df 3 and 75 at .05 level of confidence. Hence, it was significant.

The mean values of physical training, Koga training group, and the control group on LDL were graphically represented in Figure-II.
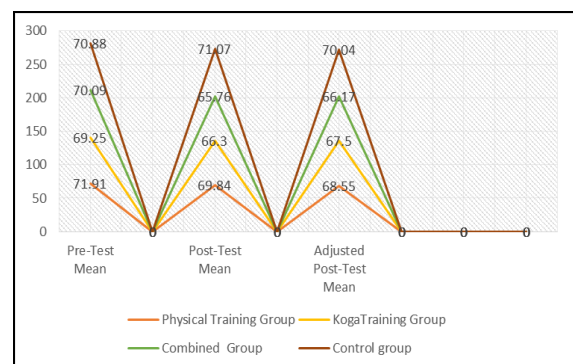

Figure – II: Bar Diagram Showing the Mean Values of Physical Activity Koga Combined and Control Group on LDL

Table-III: Analysis of covariance on total cholesterol of physical activity koga combined and control group

	Physical Training Group	Koga Training Group	Combined Training Group	Control Group	Source of Variance	Sum of Square	df	Mean Square	'F' ratio
Pre-test Mean	162.80	161.99	162.11	160.76	Between	43.233	3	14.411	0.13
S.D.	9.87	8.11	13.17	9.37	Within	8073.436	76	106.229	
Post-test Mean	159.02	158.02	157.29	160.59	Between	122.859	3	40.953	0.43*
S.D.	9.37	8.29	11.33	9.78	Within	7235.537	76	95.204	
Adjusted Post-test Mean	158.20	157.94	157.11	161.66	Between	241.333	3	80.444	17.61*
					Within	342.566	75	4.568	

* Significant .05 level of confidence
(The table values required for significance at .05 level of confidence with df 3 and 76 and 3 and 75 were 2.74 and 2.74 respectively).

Table-III showed that the pre-test means values of Total Cholesterol for physical training, Koga, combined, and the control group was 162.80 ± 9.87, 161.99 ± 8.11, 162.11 ± 13.17, and 160.76 ± 9.37 respectively. The obtained 'F' ratio

value of 0.13 for pre-test scores of physical training, Koga, combined, and the control group on Total Cholesterol less than the required table value of 2.74 for significance with df 3 and 76 at .05 level of confidence.

The post-test means values for Total Cholesterol for physical training, Koga, combined, and the control group was 159.02 ± 9.37, 158.02 ± 8.29, 157.29 ± 11.33, and 160.59 ± 9.78 respectively. The obtained 'F' ratio value of 0.43 for post-test scores of physical training, Koga, combined, and the control group was less than the required table value of 2.74 for the significance with df 3 and 76 at .05 level confidence.

The adjusted post-test means values of Total Cholesterol for combined physical training, Koga training group, and the control group was 158.20, 157.94, 157.11, and 161.66respectively. The obtained 'F' ratio value of 17.61 for adjusted post-test scores of physical training, Koga, combined, and the control group were greater than the required table value of 2.74 for the significance with df 3 and 75 at .05 level of confidence. Hence, it was significant.

The mean values of physical training, Koga training group, and the control group on Total Cholesterol were graphically represented in Figure-III.
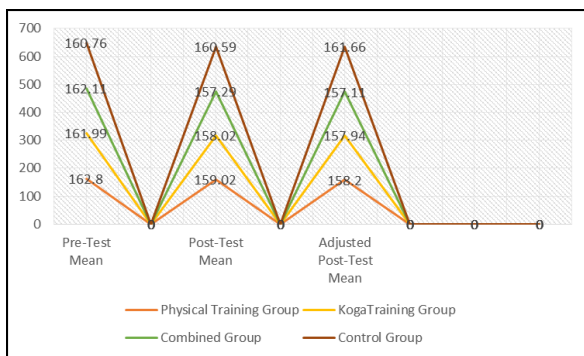

Fig III: Bar Diagram Showing the Mean Values of Physical Activity Koga Combined and Control Group on Total Cholesterol

Conclusion

By results and findings, it has concluded that eight weeks Physical activity, Koga, and combined training improved HDL and decreased LDL, and Total Cholesterol among students. The results of the study concluded that the combined training had significant improvement when compared to physical training and Koga.

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