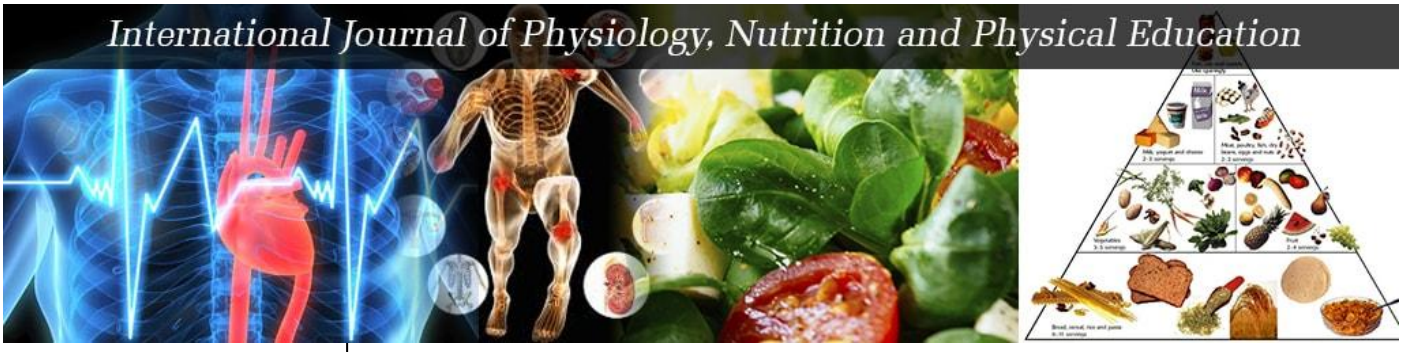

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Ajayaghosh MV
Ph. D Scholar, Department of Physical Education and Sports, University of Madras, Chennai, Tamil Nadu, India

Dr. V Mahadevan
Director & Head, Department of Physical Education and Sports, University of Madras, Chennai, Tamil Nadu, India

Correspondence
Ajayaghosh MV
Ph. D Scholar, Department of Physical Education and Sports, University of Madras, Chennai, Tamil Nadu, India

Effect of an hour physical activity and Koga on vital capacity and VO2 Max among adolescents

Ajayaghosh MV and Dr. V Mahadevan

Abstract
Physical activity does rejuvenation process in human body. It causes people to become healthy individuals, and it also enhances mental health. Therefore, it is an essential or important thing of childhood, because they are the future of a nation. The aim of this research is to assess whether is there any effect of 12 weeks physical training and Koga on selected physiological variables among children. To accomplish the purpose of the current study forty-five adolescent boys who were active in sports age ranged from 14 to 17 years old randomly selected from Chennai (Housing Board Communities around Marina). They are randomly divided and employed into three equal groups, consist of 15 members each. Group-I had Given an hour of selected physical exercise training, Group-II had given Koga Training, and Group-III was control which had not received any special pieces of exercise apart from the regular activities. The physical training and Koga training has selected as independent variables. Vital Capacity and VO2 Max have chosen as dependent variables, and all dependent variables measured by standardized test item as Spirometer test and Cooper's 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. Scheffe's post hoc test used to find out the mean difference on selected dependent variable among the groups. The results of the study exposed that the experimental groups had finished a significant difference in all the selected variables such as Vital Capacity and VO2 Max to compare the control group. Hence it was concluded that an hour Physical activity and Koga Enhanced Vital Capacity and VO2 Max among children.

Keywords: Physical Activity, Koga, Vital Capacity, VO2 Max

1. Introduction
"Physical activity is the movement that is carried out by the skeletal muscles that require energy. In other words, any movement one does is physical activity. Exercise, however, is planned, a structured, repetitive and intentional movement intended to improve or maintain physical fitness. Exercise is a subcategory of physical activity" (ACE).
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.

2. Definition of the Terms
2.1 Vital Capacity
"The maximum volume of air a person can breathe in after a forceful expiration is called vital capacity. And also defined as the maximum amount of air a person can breathe out after an intense inspiration" (NCERT).

2.2 VO2 Max
"It is the highest oxygen uptake achieved when a person is working at maximal capacity" (Corey, 2009). Amount of the maximum volume of the oxygen an individual can use during physical activity.

3. Methodology
3.1 Subjects
For the current study, the investigator selected a total number of forty-five (N=45) adolescent

boys had been chosen randomly from Chennai Housing Board Communities around Marina. The subjects' age ranged from 14 to 17 years. The subjects were voluntarily participated to conduct the study.

3.2 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
Vital Capacity	Spirometer Test
VO2 Max	Cooper's Test

3.3 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 15 each. Group-I had Given an hour of selected physical exercise training, Group-II had given Koga Training, and, and Group-III was control which had not received any special pieces of exercise apart from the regular activities. The groups tested on selected criterion variables Vital Capacity and VO2 Max before and after the training programme.

3.4 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. Control group-III were instructed not to participate in any strenuous physical exercise and specific training throughout the training programme.

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 0.05 level of confidence fixed. Since three groups were involved, Scheffe's post hoc test used to determine the mean difference.

Table 1: Analysis of Covariance on Vital Capacity of Physical Activity Koga and Control Group

	Physical Training Group	Koga Training Group	Control Group	Source of Variance	Sum of Square	df	Mean Square	'F' ratio
Pre-test Mean S.D.	2.56 0.313	2.30 0.303	2.51 0.306	Between Within	0.545 3.983	2 42	0.273 0.095	2.87
Post-test Mean S.D.	3.04 0.461	2.72 0.329	2.50 0.308	Between Within	2.219 5.831	2 42	1.110 0.139	7.99*
Adjusted Post-test Mean	2.96	2.83	2.46	Between Within	2.049 3.442	2 41	1.025 0.084	12.20*

* Significant 0.05 level of confidence

(The table values required for significance at .05 level of confidence with df 2 and 42 and 2 and 41 were 3.22 and 3.33 respectively).

Table-I showed that the pre-test means values of Vital Capacity for combined physical training, Koga training group, and the control group was 2.56 ± 0.31, 2.30 ± 0.30 and 2.51 ± 0.30 respectively. The obtained 'F' ratio value of 2.87 for pre-test scores of physical training, Koga training group, and the control group on Vital Capacity less than the required table value of 3.22 for significance with df 2 and 42 at 0.05 level of confidence.

The post-test means values for Vital Capacity for combined physical training, Koga training group, and the control group was 3.04 ± 0.46, 2.72 ± 0.32 and 2.50 ± 0.30 respectively. The obtained 'F' ratio value of 7.99 for post-test scores of combined physical training, Koga training group, and the control group was greater than the required table value of 3.22 for the significance with df 2 and 42 at 0.05 level confidence.

The adjusted post-test means values of Vital Capacity for combined physical training, Koga training group, and the control group was 2.96, 2.83 and 2.46 respectively. The obtained 'F' ratio value of 12.20 for adjusted post-test scores of combined physical training, Koga training group, and the control group were greater than the required table value of 3.33 for the significance with df 2 and 41 at 0.05 level of confidence. Hence, it was significant, and scheffe's post-hoc test used.

Table-II shows that the adjusted post-test mean difference in Vital Capacity between physical training and control groups and Koga group were 0.51, 0.37, respectively which are higher than the confidence interval value of 0.27 at 0.05 level of confidence. The adjusted post-test mean difference between physical training and Koga groups was 0.14 which was less than the confidence interval value of 0.27 at 0.05 level of confidence. It showed that there was no significant difference between physical training and Koga groups at 0.05 level of confidence.

The outcomes of the study indicate that, both the experimental groups significantly changed when compared to control group. But the experimental groups were compared with each other and there been no significant difference. It has revealed that the experimental group namely, Physical training group-I improved Vital Capacity when compared to control group and Koga training group-II.

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

Table 2: Scheffe's Post Hoc Test for the Differences between the Adjusted Post Paired Mean of Vital Capacity

Physical Training Group	Koga Training	Control Group	Mean Deviation	Confidential Interval
2.97	2.83	-	0.14	0.27
2.97	_	2.46	0.51	
-	2.83	2.46	0.37	

Adjusted post - test mean
* Significant at 0.05 level

Fig 1: Bar Diagram Showing the Mean Values of Physical Activity Koga and Control Group on Vital Capacity

Table 3: Analysis of Covariance on Vo2 Max of Physical Activity Koga and Control Group

	Physical Training Group	Koga Training Group	Control Group	Source of Variance	Sum of Square	df	Mean Square	'F' ratio
Pre-test Mean	36.56	35.62	35.81	Between	7.317	2	3.659	0.22
S.D.	4.26	2.92	4.69	Within	683.183	42	16.266	
Post-test Mean	40.03	39.28	35.81	Between	151.968	2	75.984	4.47*
S.D.	4.45	3.01	4.69	Within	713.275	42	16.983	
Adjusted Post-test Mean	39.56	39.59	35.97	Between	130.044	2	65.022	11.55*
				Within	230.781	41	5.629	

* Significant 0.05 level of confidence
(The table values required for significance at .05 level of confidence with df 2 and 42 and 2 and 41 were 3.22 and 3.33 respectively).

Table-III showed that the pre-test means values of VO2 Max for combined physical training, Koga training group, and the control group was 36.56 ± 4.26, 35.62 ± 2.92 and 35.81 ± 4.69 respectively. The obtained 'F' ratio value of 0.22 for pre-test scores of combined physical training, Koga training group, and the control group on VO2 Max less than the required table value of 3.22 for significance with df 2 and 42 at 0.05 level of confidence.

The post-test means values for VO2 Max for combined physical training, Koga training group, and the control group was 40.03 ± 4.45, 39.28 ± 3.01 and 35.81 ± 4.69 respectively. The obtained 'F' ratio value of 4.47 for post-test scores of combined physical training, Koga training group, and the control group was greater than the required table value of 3.22 for the significance with df 2 and 42 at 0.05 level confidence.

The adjusted post-test means values of VO2 Max for combined physical training, Koga training group, and the control group was 39.56, 39.59 and 35.97 respectively. The obtained 'F' ratio value of 11.55 for adjusted post-test scores of combined physical training, Koga training group, and the control group were greater than the required table value of 3.33 for the significance with df 2 and 41 at 0.05 level of confidence. Hence, it was significant, and scheffe's post-hoc test used.

Table-IV shows that the adjusted post-test mean difference in VO2 Max between combined physical training and control groups and Koga group were 3.59, 3.62, respectively which are higher than the confidence interval value of 2.20 at 0.05 level of confidence. The adjusted post-test mean difference between physical training and Koga groups was 0.03 which was less than the confidence interval value of 2.20 at 0.05 level of confidence. It showed that there was no significant difference between physical training and Koga groups at 0.05 level of confidence.

The outcomes of the study indicate that, both the experimental groups significantly changed when compared to control group. But the experimental groups were compared with each other and there been no significant difference. It has revealed that the experimental group namely, Physical training group-I improved VO2 Max when compared to control group and Koga training group-II.

The mean values of combined physical training, Koga training group, and the control group on VO2 Max were graphically represented in Figure-II.

Table 4: scheffe's post hoc test for the differences between the adjusted posts paired mean of vo2 max

Physical Training Group	Koga Training	Control Group	Mean Deviation	Confidential Interval
39.56	39.59	-	0.03	2.20
39.56	_	35.97	3.59	
-	39.59	35.97	3.62	

Adjusted post - test mean
* Significant at 0.05 level

Fig 2: Bar Diagram Showing the Mean Values of Physical Activity Koga and Control Group on Vo2 Max

5. Conclusion

By results and findings, it has concluded that twelve weeks Physical activity, and Koga training improved Vital Capacity and VO2 Max among students. The results of the study concluded that the Koga training had significant improvement when compared to physical training and control groups.

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