



EFFECT OF INTERVAL RUNNING AND SWIMMING ACTIVITIES ON SELECTED CORONARY HEART DISEASE AMONG MIDDLE AGED MEN

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Abstract

The purpose of the study was to find out the effect of interval running activity and interval swimming activity on selected coronary heart disease risk factors. Thirty male teachers aged between 35 and 40 years who knows swimming were selected for the study. They were divided into three equal groups, each group consisted of ten subjects in which, Group - I underwent running activity (IRA) and group - II underwent swimming activity (ISA), three days per week for twelve weeks and group - III acted as control, who did not participate in any training. The subjects were tested on selected criterion variables such as total cholesterol, high-density lipoprotein, systolic and diastolic blood pressure at prior to and immediately after the training period. Total cholesterol and high-density lipoprotein were assessed by using Boehringer Mannheim Kit and systolic and diastolic blood pressure was assessed by using sphygmomanometer. The analysis of covariance (ANCOVA) was used as statistical tool to find out the significant difference if any between the experimental groups and control group on selected criterion variables separately. Since, there were three groups involved in present study, the Scheffé S test was used as post-hoc test to find out which of the paired mean significantly differ. The selected criterion variables such as high-density lipoprotein was improved significantly for both the training groups, such as IRA & ISA, when compared with the control group and the IRA group has significantly increased the high density lipoprotein level than the ISA group. The systolic blood pressure was reduced significantly for IRA and ISA groups, but both the groups were not significantly differing. The total cholesterol and diastolic blood pressure were not changed significantly reduced for IRA & ISA groups.

Key words: *interval running activity, interval swimming activity, CHD risk factors, ANCOVA, Scheffé S test.*

INTRODUCTION

Coronary Heart Disease (CHD) occurs when the arteries of the heart that normally provide blood and oxygen to the heart are narrowed or even completely blocked[1]. The incidence of heart related health disorders is, to a considerable extent, found to be a big bane to the

Indian population that still reels under the pressure of poverty and low per-capita income rates.[2] India is undergoing a rapid health transition with rising burden of coronary heart disease (CHD).[3] In a vast country like India, with a population around one thousand million, the loss of revenue may be even higher and the

magnitude of personal tragedy associated with these deaths is most likely to be immeasurable and beyond the point of recovery.[4]

Among adults over 20 yr of age, the estimated prevalence of CHD is around 3-4 per cent in rural areas and 8-10 per cent in urban areas, representing a two-fold rise in rural areas and a six-fold rise in urban areas between the years 1960 and 2000.[5] When the CHD rates had halved in the West in the past 30 years, the rates seems to have doubled in India with no signs of a downward trend.[6] The Indian population living within and without the national borders still seems to be faced with the lurking danger of becoming an easy prey to what could be generally termed as Coronary Heart Disease (CHD).[2]

In India, the available statistics do not reveal specifically about the incidence of CHD mainly because of the absence of a systematic death certification process.[7] The incidence of CHD among the urban Indians is now similar to that of overseas Indians and several times higher than that found among other Asian communities.[6] Leeder *et al.*[8] estimate total years of life lost due to total cardiovascular disease (CVD) among the Indian men and women aged 35- 64 to be higher than comparable countries such as Brazil and China.

The studies referred to indicate an alarming rate of prevalence of CVDs in India. In fact, the prevalence in India is higher than other countries of the same region. Keeping in mind the huge population of India, a prevalence rate of 11% is a disturbing figure, even though in a specific region in India, when translated into numbers.[9] An urban survey by Mohan et al from Chennai, South India reported a prevalence rate of 11% in 2001.[10]

It has been shown that regular exercise and physical training increase the diastolic volume and that this is associated with an enhanced stroke volume and a resting and exercising bradycardia.[11] Studies conducted on individual risk factors and various variables were contradictory and controversial while some studies observed decreased risk for CHD due to physical training, others did not show any variations in these risk factors due to exercise or training.[12] Exercise in heart patients leads to a better work capacity better control of angina and blood pressure.[13] Each person should engage in a regular programme of aerobic exercise of 3 to 5 sessions per week of 30-60 minutes each, such as walking, running, hiking, swimming, cycling, rowing, skating or cross-country skin.[14]

METHODOLOGY

The purpose of the study was to find out the effect of interval running activity and interval swimming activity on coronary heart disease risk factors. To achieve this purpose of the study, thirty male teachers aged between 35 and 40 years who knows swimming were contacted and randomly selected as subjects. They were divided into three equal groups, each group consisted of ten subjects in which Group I underwent interval running activity (IRA) and group II underwent interval swimming activity (ISA) three days per week for twelve weeks and group III acted as control, who did not participate in any training. The subjects were tested on selected criterion variables such as total cholesterol, high-density lipoprotein, systolic blood pressure and diastolic blood pressure at prior to and immediately after the training period. The selected criterion variables such as total cholesterol and high-density lipoprotein were measured by Boehringer Mannheim kit method and the systolic blood pressure

and diastolic blood pressure were measured by using sphygmomanometer. The analysis of covariance (ANCOVA) was used to find out the significant difference if any, between the experimental groups on selected criterion variables separately. In all the cases, 0.05 level of confidence was fixed to test the significance, which was considered as an appropriate.

Cooper test[15] was administered for both IRA and ISA groups to find out their maximum performance. For the IRA group, the initial load was fixed individually in accordance with their

maximum distance covered in 12 minutes. For ISA group, the distance covered in 12 minutes was recorded and converted into swimming distance as recommended by Fox and Mathews[16]. The training distance of ISA group was found to be one fourth of their running distance in 12 minutes. During the initial week, the warming up period and warming down period was fixed as nine and six minutes respectively for IRA and ISA groups and it has increased half a minute in each week from the second week to twelfth week for both the groups.

ANALYSIS OF THE DATA

Table - I

Analysis of Covariance and 'F' ratio on Selected CHD Factors for IRA Group, ISA Group and Control Group

Variable Name		IRA Group	ISA Group	Control Group	'F' Ratio
Total Cholesterol	Pre-test Mean ± S.D	193.30±15.30	192.30±14.01	192.20±15.40	0.328
	Post-test Mean ± S.D.	193.50±11.17	193.90±15.82	192.00±14.71	0.08
	Adj. Post-test Mean	192.29	193.286	193.82	0.40
Systolic Blood Pressure	Pre-test Mean ± S.D	135.20±7.829	133.70±7.454	130.60±11.38	0.67
	Post-test Mean ± S.D.	123.10 ± 3.51	122.6 ± 3.534	127.8 ± 3.676	6.44*
	Adj. Post-test Mean	122.63	122.48	128.39	12.33*
Diastolic Blood Pressure	Pre-test Mean ± S.D	86.70 ± 4.715	88.20 ± 4.077	86.30 ± 6.201	0.39
	Post-test Mean ± S.D.	86.70 ± 3.234	86.10 ± 2.601	87.20 ± 4.346	0.27
	Adj. Post-test Mean ± S.D.	86.90	85.48	87.62	3.18

* Significant at .05 level of confidence. (Table value required for significant at .05 level of confidence with df 2 and 27 and 2 and 26 are 3.27 and 3.28).

Table - II
Scheffé S Test for the Difference Between the Adjusted Post-Test Mean of Selected Criterion Variables

Adjusted Post-test Mean on Systolic Blood Pressure				
IRA Group	ISA Group	Control group	Mean Difference	Confidence interval at .05 level
122.63		128.39	5.76*	3.40
122.63	122.48		0.15	3.40
	122.48	128.39	5.91*	3.40

* Significant at .05 level of confidence.

RESULTS

Table – I shows that there was a significant difference among IRA group, ISA group and control group on high density lipoproteins and systolic blood pressure.

Table – II shows that the Scheffé S Test for the difference between adjusted post-test mean difference in systolic blood pressure between IRA group and control group (5.76) and ISA group and control group (5.91) were significant at .05 level of confidence. But there was no significant difference between IRA group and ISA group (0.15) on systolic blood pressure after the training programme.

CONCLUSIONS

Based on the results of the study, the following conclusions were drawn:

1. There was no significant reduction in total cholesterol[17,18,19] and in diastolic blood pressure[20,21, 22]after the IRA and ISA groups.

2. The IRA group shows significant reduction in systolic blood pressure[18, 21,23] as compared to control group. Though the swimming group also showed significant reduction in systolic blood pressure when compared with control group.

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