Effects of Different Frequencies of Walking Training on Selected Coronary Heart Disease Risk Factors of Middle Aged Men

K. Natarajan, Director of Physical Education, Government College of Engineering, Salem,

R. Venkatachalapathy, Associate Professor, Department of Physical Education and Sports Sciences, Annamalai University, and

K. Angamuthu, Director of Physical Education, Periyar University, Salem.

Abstract

The purpose of the study was to find out the effects of different frequencies of walking training on selected coronary heart disease risk factors of middle aged men such as High Density Lipoprotein Cholesterol Levels (HDL-C). The study was conducted on seventy five middle aged men members in the Rasipuram Walking Association, Rasipuram, Namakkal District Tamilnadu were selected as subjects. The age of the subjects were ranged from 35 to 45 years. The subjects were assigned at random into five groups of fifteen each (n=15). Group-I underwent Brisk Walking Training two days per week (BWT 2 days), Group-II underwent Brisk Walking Training three days per week (BWT 3 days), Group-III underwent Brisk Walking Training four days per week (BWT 4 days), Group-IV underwent Brisk Walking Training five days per week (BWT 5 days) and Group-V acted as Control. All the four Experimental groups under went their respective training for 12 weeks. Among the Coronary Heart Risk Factors only High Density Lipoprotein Cholesterol Level (HDL-C) was selected as dependent variables and it was assessed by blood samples tests at Sri Kannan Medical Laboratory at Rasipuram, Tamilnadu. All the subjects were tested prior to and after the training for all the selected variables. The data collected from the five groups prior to and post experimentation was statistically analyzed by using Analysis of Covariance (ANCOVA). Scheffe's post hoc test was applied to determine the significant difference between the paired means. In all the cases .05 level of significance was fixed. The results of the study showed that there was a significant difference was found among all the experimental groups. Brisk Walking Training five days per week group (BWT 5 days) was found to be better than other Experimental groups.

Keywords: High Density Lipoprotein (HDL-C), Low Density Lipoprotein (LDL-C)

Introduction

Today we live in a world that is largely technological. We are surrounded by machines and structures that are the product of human labor, the product of the reshaping of the world to meet human desires. Moreover, while some of these technologies are the result of thousands of years of craft work, many are the result of scientific breakthroughs. For example, electric lighting, computers, genetically engineered food, many household chemicals and plastics are the result of scientific knowledge in physics, chemistry and biology applied to transform nature.

Powell et.al, (1987) examined the physical activity and coronary heart disease. This study showed an inverse association between physical activity and coronary heart disease risk. The inverse association was more pronounced in the better designed studies.

The relative risk of myocardial infarction ranged from 107 in sedentary individuals who engaged in physical exertion less than once per week to only 24 among patients who engaged in physical exertion morethan five times per week *(Mittleman et. al, 1993).*

Physical activity has been postulated to reduce the risk of developing coronary heart disease through various mechanisms. Physical activity increases the diameter and dilatory capacity of coronary arteries, increases collateral artery formation and reduces rates of progression of coronary Artery Atherosclerosis *(Niebaur et.al, (1993).*

Methodology

Seventy middle aged men members in the Rasipuram Walking Association, Rasipuram, Namakkal District Tamilnadu were selected as subjects. The age of the subjects were ranged from 35 to 45 years. The subjects were assigned at random into five groups of fifteen each (n=15). Group-I underwent Brisk Walking Training two days per week (BWT 2 days), Group-II underwent Brisk Walking Training three days per week (BWT 3 days), Group-III underwent Brisk Walking Training four days per week (BWT 4 days), Group-IV underwent Brisk Walking Training five days per week (BWT 5 days) and Group-V acted as Control. All the four Experimental groups under went their respective training for 12 weeks. Among the Coronary Heart Diseases Risk Factors, High Density Lipoprotein Cholesterol Levels (HDL-C) only selected as dependent variables and it was assessed by blood samples tests at Sri Kannan Medical Laboratory at Rasipuram, Tamilnadu.

Analysis of the Data

The data collected from the experimental groups and control group on prior and after experimentation on selected variable was statistically examined by analysis of covariance (ANCOVA) was used to determine differences, if any among the adjusted post test means on selected criterion variables separately. Whenever they obtained f-ratio value in the simple effect was significant the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases .05 level of significance was fixed.

The Analysis of covariance (ANCOVA) on High Density Lipoprotein Cholesterol Levels (HDL-C) of Experimental Groups and Control group, have been analyzed and presented in Table -I.

Table–I
Values of Analysis of Covariance for Experimental Groups and Control Group on High Density Lipoprotein Cholesterol Levels (HDL-C)

Adjusted Post test Means					Source of Variance	Sum of Squares	df	Mean Squares	F Ratio
Group (I)	BWT 3 days Group (II)	BWT 4 days Group (III)	BWT 5 days Group (IV)	Control Group-(V)					
48.85	51.40	51.63	52.45	43.08	Between With in	862.40 580.53	4 69	215.60 8.414	25.63*

Significant at .05 level of confidence

(The table value required for Significance at .05 level with df 4 and 69 is 2.50)
BWT= Brisk Walking Training

Table I shows that the adjusted post test mean value of High Density Lipo-protein Cholesterol Levels (HDL-C) for Brisk Walking Training 2 days per week (BWT 2 days), 3 days per week (BWT 3 days), 4 days per week (BWT 4 days), 5 days per week (BWT 5 days) the Control Group, are 48.85, 51.40, 51.63, 52.45 and 43.08 respectively. The obtained F-ratio of 25.63 for the adjusted post test mean was more than the table value of 2.50 for df 4 and 69 required for significance at .05 level of confidence.

The results of the study indicate that there are significant differences among the adjusted post test means of Experimental Groups and Control Group on the increase of High Density Lipoprotein Cholesterol Levels (HDL-C).

To determine which of the paired means had a significant difference, Scheffe's test was applied as Post hoc test and the results are presented in Table II.

Table-II
The Scheffe's Test for the Differences between the Adjusted Post Tests Paired Means on High Density Lipoprotein Cholesterol Levels (HDL-C)

Adjusted Post test Means					Mean Difference	Confidence Interval
BWT 2 days Group – (I)	BWT 3 days Group –	BWT 4 days Group –	BWT 5 days Group –	Control Group-(V)		
48.85	51.40	--	--	--	2.55	3.17
48.85	--	51.63	--	--	2.78	3.17
48.85	--	--	52.45	--	3.60*	3.17
48.85	--	--	--	43.08	5.77*	3.17
--	51.40	51.63	--	--	0.23	3.17
--	51.40	--	52.45	--	1.05	3.17
--	51.40	--	--	43.08	8.32*	3.17
--	--	51.63	52.45	--	0.82	3.17
--	--	51.63	--	43.08	8.55*	3.17
--	--	--	52.45	43.08	9.37*	3.17

Significant at.05 level of confidence

Table II shows that the adjusted post test mean difference on Brisk Walking Training 2 days group and BWT 3 days group, BWT 2 days group and BWT 4 days group, BWT 2 days group and BWT 5 days group, BWT 2 days group and Control group, BWT 3 days group and BWT 4 days group, BWT 3 days group and BWT 5 days group, BWT 3 days group and Control group, BWT 4 days group and BWT 5 days group, BWT 4 days group and Control group, BWT 5 days group and Control Group, are 2.55, 2.78, 3.60, 5.77, 0.23, 1.05, 8.32, 0.82, 8.55 and 9.37 respectively.

The adjusted post test mean values of BWT 2 days group and BWT 5 days group, BWT 2 days group and Control group, BWT 3 days group and Control group, BWT 4 days group and Control group and BWT 5 days group and Control Group values are 3.60, 5.77, 8.32, 8.55 and 9.37 and they greater than the confidence interval value 3.17, which shows significant differences at .05 level of confidence.

It may be concluded from the results of the study that there was a significant difference in High Density Lipoprotein (HDL-C) between the adjusted post test means of BWT 2 days group and BWT 5 days group, BWT 2 days group and

K. Natarjan, R. Venkatachalapathy & K. Angamuthu

Control group, BWT 3 days group and Control group, BWT 4 days group and Control group and BWT 5 days group and Control Group. However, the improvement in High Density Lipoprotein Cholesterol Levels (HDL-C) was significantly higher for BWT 5 day's group than other Experimental Groups and Control Group.

It may be concluded that the Brisk Walking Training with 5 days per week (BWT 5 days) group was better than the other Experimental Groups and Control Group in improving High Density Lipoprotein Cholesterol Levels (HDL-C).

The adjusted post test mean values of Experimental Groups and Control Group on High Density Lipoprotein Cholesterol Levels (HDL-C) are graphically represented in the Figure -I.

Figure–1
The Adjusted Post Tests Mean Values of Experimental Groups and Control Group on High Density Lipoprotein Cholesterol Levels (HDL-C)
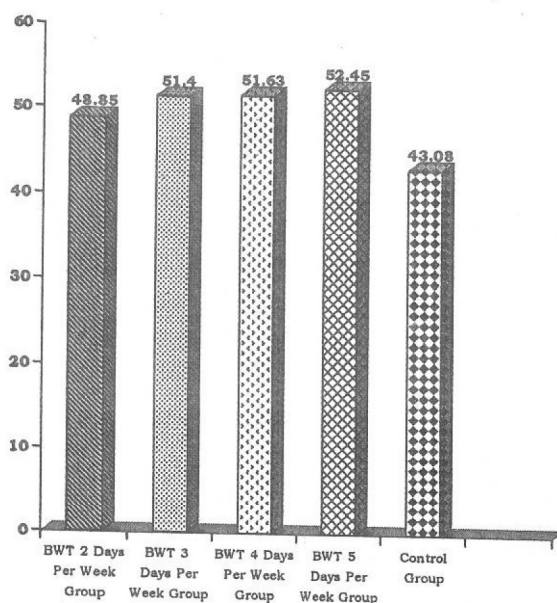
Results and Discussion

The results of the study indicate that all the experimental groups namely Brisk Walking Training two days per week group (BWT 2 days), Brisk Walking Training three days per week group (BWT 3 days), Brisk Walking Training four days per week group (BWT 4 days) and Brisk Walking Training five days per week group (BWT 5 days) had significantly improved in the selected dependent Coronary Heart Diseases Risk Factors namely High Density Lipoprotein Cholesterol Levels (HDL-C). It was also found that the improvement achieved by the Brisk Walking Training five days per week group (BWT 5 days) was greater when compared to those of the Experimental groups and control group.

Peltonen P. Marniemi and other (1981) have examined and suggested that LDL may be related to HDL metabolism, a causal relation between exercises that involved changes in LDL activity and HDL cholesterol level.

Magnitude of HDL cholesterol change over the course of a training program is highly correlated with the amount of exercise performed (Stefanick and Wood (1994).

It is inferred from the literature and from the results of the present study that systematically designed Brisk Walking Training five days per week group (BWT 5 days) increased the High Density Lipoprotein Cholesterol Level (HDL-C) is very important quality for Coronary Heart Diseases. Hence, it is concluded from the results of the study that systematically and scientifically designed Brisk Walking Training five days per week group (BWT 5 days) may be given due recognition and implemented properly in the training programmes to control Coronary Heart Diseases.

Conclusion

From the analysis of the data, the following conclusions were drawn.

1. The Experimental groups namely, Brisk Walking Training two days per week group (BWT 2 days), three days per week group (BWT 3 days), four days per week group (BWT 4 days) and five days per week group (BWT 5 days) had significantly improved in Coronary Risk Factor the High Density Lipoprotein Cholesterol Level (HDL-C).

2. The Brisk Walking Training five days per week group (BWT 5 days) was found to be better than the Brisk Walking Training two days per week group (BWT 2 days), three days per week group (BWT 3 days), four days per week group (BWT 4 days) in increasing High Density Lipoprotein Cholesterol Levels (HDL-C).

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