

Effect of Physical Exercise on Lipids-A Pilot Study

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ABSTRACT

Attempts have been made to investigate the effect of physical exercise on cholesterol which is the main cause of coronary heart disease (CHD). Blood samples were collected from 15 volunteers with higher LDL. Appropriate initial test was conducted on the volunteers before the commencement of training schedule of six months. The estimation of Lipids LDL, VLDL, TG, TC and HDL was done of the blood samples. Post hoc 't' test of the systems under observation showed interesting results in the age group of 25 to 60 years. The levels of LDL, VLDL, TG & TC showed a decreasing tendency while a significant increase in HDL was observed on the completion of training schedule. The present study indicates that regular physical exercise play a significant role in controlling cholesterol level in CHD patients.

Keywords: HDL cholesterol Physical Exercise; Lipids; Coronary heart disease.

Introduction

Atherosclerosis is a multifactorial disease affected by both genetic and life style factors of individuals, Independent risk factors for coronary heart disease (CHD), as defined by the National Cholesterol Education Program (NCEP), Adult Treatment Panels, include age, gender, hypertension, smoking, diabetes, family history of premature CHD, high plasma levels of low-density lipoprotein (LDL) cholesterol density more than 160 mg/dl; and low levels of high-density lipoprotein (HDL) cholesterol (<40 mg/dl). The NCEP Adult Treatment Panel-III classified HDL cholesterol level of more than 60 mg/dl as protective from the development of CHD¹. There is evidence of premature atherosclerosis in many people with genetic HDL deficiencies, when considered in the context of the epidemiological evidence. It shows that each 1 mg/dl decrease in LDL- cholesterol level results in about 1-2% reduction in CHD risk, and each 1 mg/dl increase in HDL cholesterol level results in about a 3-4% reduction in CHD risk². However the severity and the extent of atherosclerosis in genetic HDL deficiencies is surprisingly mild³⁻⁴. In an isolated and traditional population, low serum Total Cholesterol (TC) is associated with a low prevalence of CHD. Rising levels of TC albeit below the normal level is associated with an increase in CHD, In a rapidly urbanizing population of Shanghai, China rising lipid levels

which may or may not be hyperlipidaemic, have become an emerging problem with a corresponding increase in CHD⁵. In other Asian countries like India have documented prevalence of CHD which is several-times higher than in the developed countries.

Materials and methods

15 Subjects for the study were taken from the M.P.E. students and faculty of C.C.S. University, Meerut. The blood samples from these volunteers were taken after twelve hours of fasting initially as controlled and then after one hour of regular running or jogging in the every morning after sunrise for six months. In these samples estimation of lipids was done by the methods described by Wybenga⁶. All the samples were tested in the same lab by the same pathologist at Meerut. The lipid profile of all the volunteers before and after six months of exercise were recorded.

Observation:- The Blood samples were collected from 15 volunteers with higher LDL, Appropriate initial test was conducted on the volunteers before the commencement of training schedule of six months. The estimation of lipids LDL, VLDL, TG, TC and HDL of the blood samples was done. Post hoc 't' test of the systems under observation at 0.05 level of probability (i.e. $P < 0.05$) showed interesting result in the age group of 25 to 60 years. The levels of LDL, VLDL, TG and TC showed a decreasing tendency while a significant

increase in HDL was observed on the completion of training schedule (see table-1)

Table 1 Analytical values of effect of exercise on lipid profile (n=15)

Lipids	Initial as Control Stage	After Six Months
	In mg/dl	
Cholesterol	186.80±19.08	182.20±18.65
HDL	46.80±6.21	50.03±6.54

Result & Discussion

The purpose of the present small study is to investigate the effects of vigorous physical activity of the field on serum lipids and lipoproteins. To achieve the goal TC, TG, VLDL, LDL and HDL of fifteen subjects were noted prior and after a period of six months of vigorous physical activity of the field (running with varied pace and some aerobic exercises).

The HDL-C level has been found to increase substantially, whereas TC, TG, LDL and VLDL shown a decreasing Tendency (fig.1)

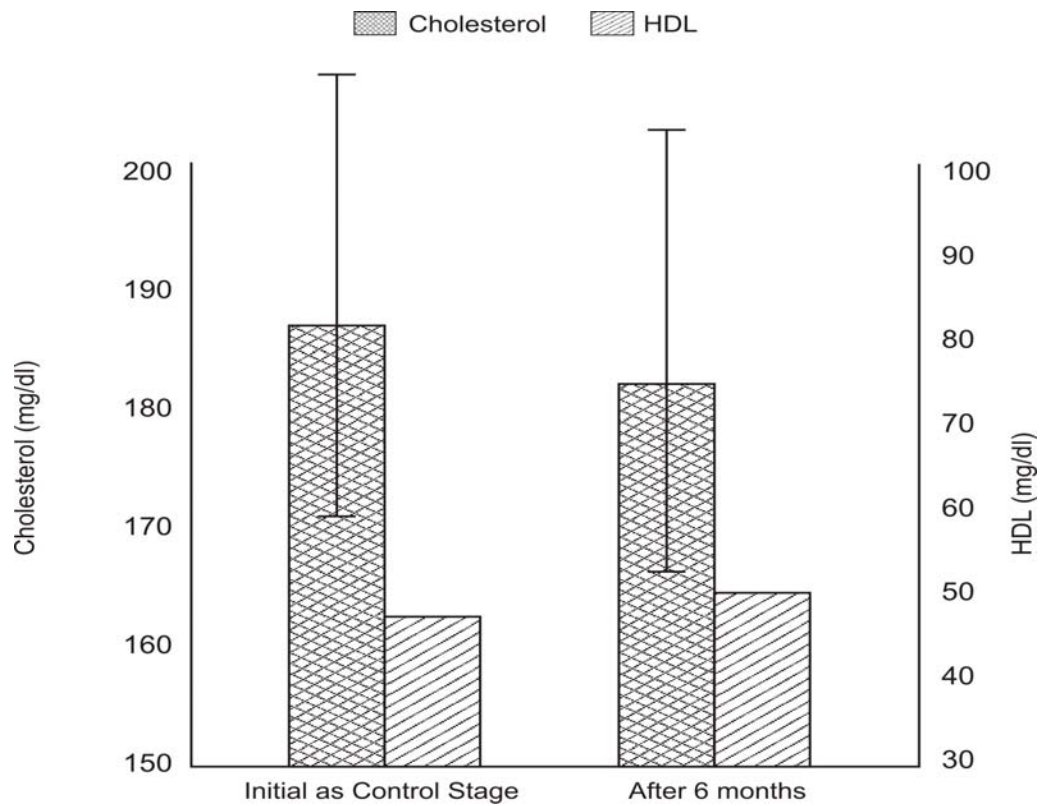


Fig.1 : Effect of Vigorous Physical Activities of the Field on Lipids (Prior and after 6 months)

The effect of vigorous physical activity of the field on the lipids and its relationship with cardiovascular Mortality is shown pictorially in (fig.-2)

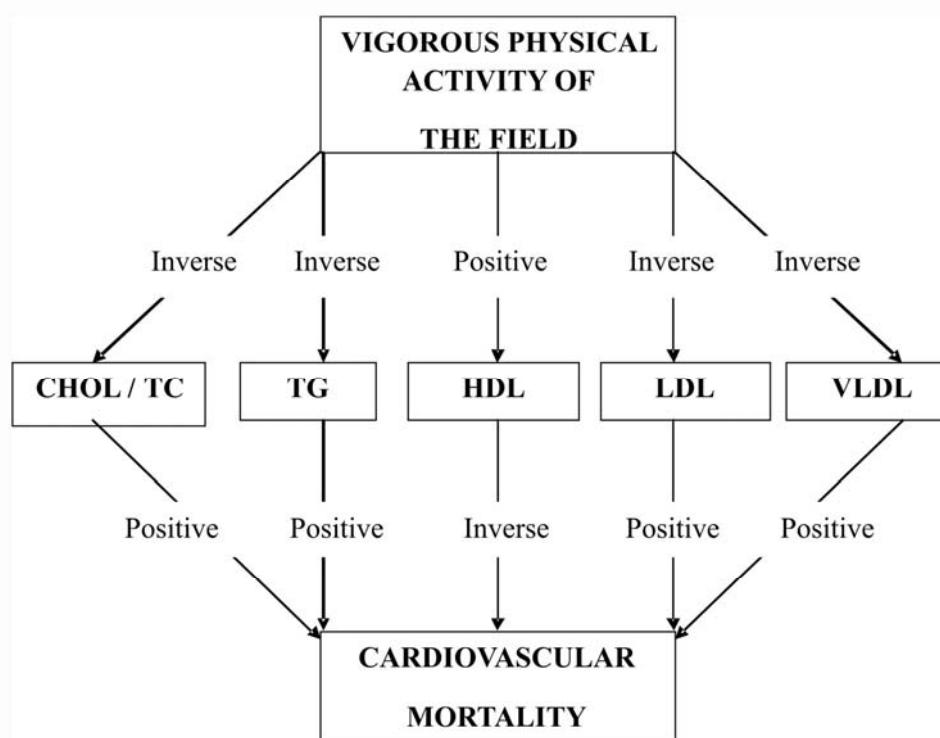


Fig.2-Correlation among Vigorous Physical Activity, Lipids & Cardiovascular Mortality

The grounds for the inverse relationship between vigorous physical activity of the field and CHD include its effects of raising HDL cholesterol, reducing body weight and controlling hypertension. Further to reducing these risk factors, physical activity of the field has an overall beneficial effect on the cardiovascular system in particular and respiratory and circulatory system in general.

Conclusion

Result of the present study supports recent reviews^{7,8} and a meta-analysis of a number of studies that vigorous physical activity is inversely related to the incidence of CHD.

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