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LETTER TO THE EDITOR

THE EFFECTS OF REGULAR EXERCISE ON LIPID AND LIPOPROTEIN PROFILE IN MEN

Sir,

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Researches show that physical activity has positive effect on risk factors of coronary heart disease (CHD) and that it decreases the rate of death from CHD (1, 2). Hyperlipidemia and sedentary life predispose to development of CHD. CHD shows a positive correlation with LDL-C (low density lipoprotein-cholesterol) levels while it has a negative correlation with HDL-C (high density lipoprotein-cholesterol) (3, 4, 5, 6). It is reported that the duration and degree of exercise, aerobic power and body fat ratio also affect the changes in lipid profile brought about by exercise (7).

In this study, young sportsmen and old sportsmen who exercise regularly have been compared with age-matched sedentary males with respect to aerobic power and lipid-lipoprotein profile.

A total of 46 non-smoking adults comprising 12 male soccer players (mean age 22.9 ± 3.8 years), 11 veteran athletes (mean age 53.8 ± 10.7 years), two control groups composed of 12 sedentary males (mean age 23.9 ± 4.4 years) and 11 sedentary males (mean age 50.8 ± 9.8 years) volunteered to participate in this study. The sportsmen had been exercising regularly for 5 days a week, 2 hours a day.

Height and body mass were determined and body fat was evaluated by measuring skinfold thickness at four sites, namely triceps, abdomen, subscapular and suprailiac. Percentage body fat (%BF) was calculated with the use of Yuhasz method (8).

Aerobic power (VO_2max) was assessed indirectly by Astrand's method using Monark bicycle ergometer (9).

Subjects attended the laboratory in the morning, after a 12 h fast. A 10 ml fasting blood sample was obtained by venipuncture. Analyses were made from the serums. A modification of McGovan method was used to determine triglyceride (10). Total cholesterol was determined by an enzymatic method (11). Mg^{2+} and dextran sulfate method of Sclavo was used in order to measure HDL-C. CHOL-HDL of Sclavo, which is a commercial name of HDL analysis, is based on the methods described by Finley and Kostner (12, 13). The amount of LDL-C was calculated by Friedwald equation (14).

In statistical analysis the comparisons between groups were made using Mann Whitney- U test. Results were expressed as mean ± S.D.

It was found that %BF of old and young sportsmen was lower than that of corresponding control groups (respectively $P< 0.01$, $P< 0.001$). It is known that regular exercise decreases %BF (15). This study also showed similar findings.

When the effect of exercise on aerobic power was examined, it was found that VO_2max of old sportsmen was higher than that of old sedentary men (32.5 ± 7.2 $ml.kg^{-1}.min^{-1}$ vs 25.7 ± 4.8 $ml.kg^{-1}.min^{-1}$, $P<0.01$) and VO_2max of young sportsmen was higher than that of young sedentary men (46.3 ± 6.9 $ml.kg^{-1}.min^{-1}$ vs 32.5 ± 9.1 $ml.kg^{-1}\ min^{-1}$, $P< 0.001$). Regular physical activity increases aerobic power (9, 16). Findings in this study are consistent with previous literature.

When active and sedentary groups were compared with respect to lipid-lipoprotein profile, total cholesterol levels of old sportsmen were lower than those of old sedentary men 197.1 ± 26.0 mg. dl^{-1} vs 240.3 ± 50.3 mg. dl^{-1}, $P< 0.05$). There are controversal reports about the effect of exercise on total cholesterol. While some investigators have found that exercise decreases total cholesterol (17), others could not show a significant effect (16, 18). In this study, it was found that in old men exercise lowered total cholesterol while it did not have a significant effect on the total cholesterol level of young men. No significant difference was found between the serum triglyceride levels of physically active and sedentary men.

In this study, it was observed that LDL-C levels of old sportsmen were lower than those of old sedentary men (129.3 ± 23.7 mg. dl^{-1} vs 168.4 ± 42.7 mg. dl^{-1}, $P< 0.05$), and HDL-C levels of young sportsmen were higher than those of young sedentary men (49.8 ± 7.9 mg. dl^{-1} vs 43.2 ± 7.7 mg. dl^{-1}, $P< 0.05$). Many studies report that regular exercise lowers serum LDL-C level and increases HDL-C level (3, 7, 19, 20).

Overall, this study found that regular exercise has a positive effect on lipid-lipoprotein profile in old as well as young people. In the young exercise was found to increase HDL-C level which is protective for CHD, while in the old it decreased LDL-C level which is an important risk factor for CHD.

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