Objective: In obese patients, we hypothesized physical exercise (PE) to affect lipids rather through its intrahepatic fat accumulation-lowering effect, associated with a decrease of total body fat (Fat%) and even weight (Mass), than through muscle work and an improvement of physical fitness.

Design and setting: Thirty seven sedentary, non-diabetic women (BMI median 34.8 kg/m2) from our outpatient department were tested. Elimination criteria: recent weight reduction, lipid-influencing or heart rate-modifying medication.

Interventions: PE protocol: 60 min supervised trainings, intensity at 65% of VO2max, modified by the Clamped Heart Rate test. Median (M) of total training hours was 34 during 115 days.

Main Outcome Measurements: an effect of PE on total cholesterol (CH), triacylglycerols, HDL-cholesterol (HDL-C), LDL-cholesterol (LDL-C), index of atherogenity (IA), atherogenic index of plasma (AIP), maximum peak oxygen consumption (VO2max), Mass, body mass index (BMI), waist circumference (Waist) and Fat%.

Results: Statistically significant differences at start (s) and at the end (e) of PE (p<0.05): AIP –0.049, Mass –3.6 (kg), BMI –1.7 (kg/m2), Waist –2.5 (cm), Fat% –2.5, VO2max 2.92 (l.min-1.kg-1), W 16.4 (Watt).

Correlation coefficients, Pearson’s between Gaussian distributed (Gd-v) variables and Spearman’s (non Gd-v) statistically significant (p < 0.05): AIP and Mass (both at start _s and at the end _e; s_e), AIP and BMI (s_e), AIP and Fat% (s_e), AIP and Waist (s_e), LDL and BMI (s_e), LDL and Fat% (s_e), LDL and Waist (s_e), CH and VO2max (s_e), LDL-C and VO2max (s_e), AIP_e and VO2max_e, IA_e and VO2max_e, apoB_e and VO2max_e, AIP and LDL-C (s_e), AIP and apoB (s_e), apoB and CH (s_e), apoB and LDL-C (s_e).

Conclusions: PE improves lipid profile towards production of antiatherogenic particles more likely due to changes in anthropometric parameters than in improvement of physical fitness.