

Oxidative Low Density Lipoprotein and Exercise: A Historical and Meta-Analysis

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ABSTRACT

PURPOSE: The purpose of this study is to use the meta-analytic approach to determine the impact of exercise on oxidized low density lipoproteins in an adolescent population and the role of oxidized low density lipoprotein in the etiology of atherosclerosis. Oxidized low density lipoprotein (Ox- LDL), a form of low density lipoprotein cholesterol, carries its own risk factors. A lower level of oxidative low density lipoproteins reduces the risk of cardiovascular diseases. **METHODS:** The evaluation was done using a meta-analytical approach. This approach is useful when similar studies with a small sample size are studied. All the variables are compared by a standard measure called an effect size. An effect size is an effective standard for comparing variables through a single standard and determines the relationship between the variables with different measurements. A coding sheet was prepared to analyze the different variables and characteristics of the study. **RESULTS:** A sample size of 1172 was obtained for the study which included both the male and the female subjects. Overall the study included healthy subjects with normal body mass index except for the one study which had subjects suffering from coronary artery disease and diabetes. The sedentary population was found to be more atherogenic compared to the trained individuals. The rate of oxidation of low density lipoprotein was determined following acute and chronic exercises. Six studies indicated moderate effect size and three studies found a small effect size with low density lipoprotein (LDL) and high density lipoprotein (HDL) cholesterol. A large effect size was found with exercise on oxidized low density lipoprotein, which can be considered meaningful. With chronic exercise a significant decrease in the Ox- LDL was seen compared to acute exercise. **DISCUSSION:** It can be concluded that physical exercise done on an acute basis leads to oxidative damage via oxidative stress, while regular exercise improves the antioxidant defense in the body. An increase in the lag phase of the oxidized low density lipoprotein or a decrease in the oxidation of LDL occurs with chronic long duration exercise of moderate intensity. Diabetics are more prone to oxidation of LDL, and the oxidized LDL favors the process of atherosclerosis.