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## **Exercise and cholesterol\***

Your doctor may have suggested that you exercise to reduce your "cholesterol" levels and you are wondering about the effect of exercise on cholesterol. This handout may help explain that relationship.

Cholesterol is an essential nutrient necessary for many functions in the body including repairing cells, manufacturing Vitamin D, and producing hormones. Regardless of these benefits, when cholesterol levels rise in the blood (depending on the type of cholesterol) they can result in unhealthy consequences.

### **Low Density Lipoproteins (LDL) - The "Bad Cholesterol"**

The unfortunate main villain in the cholesterol story is low density lipoprotein (LDL). It has been shown that the lowest levels of heart disease occurred among people with the lowest levels of LDL. Low density lipoprotein (LDL) transports about 75 percent of the blood's cholesterol to the body's cells, and, usually, it is harmless. However, if low density lipoprotein is exposed to a process called oxidation, it can cause harmful inflammation in various places in the body. The primary goal of cholesterol drug therapy is to lower the levels of LDL.

### **High Density Lipoproteins (HDL) - The "Good Cholesterol"**

HDL appears to benefit the body in two ways. First, it removes cholesterol from the walls of the arteries (something like a scouring pad) and returns it to the liver. Second, it helps prevent oxidation of LDL that produces inflammation in the body. HDL helps to keep the arteries open and to reduce the risk of heart attack. High levels of high density lipoprotein (HDL) may be as important for the heart as low levels of LDL. It has been suggested that for each small (less than 0.10 mmol/L) decline in HDL levels, there is a corresponding 10 percent increase in the risk of coronary artery disease.

### **Effects of Exercise on Cholesterol Levels**

The majority of studies have reported that endurance athletes (those running long distances) have lower LDL levels than "average folks", and that the leaner the athlete, the lower the LDL levels. Although it appears that endurance training may decrease LDL, it is not well understood why.

In addition, endurance-trained athletes also have much higher HDL values compared to average people. The primary reason for the increase in HDL is the body's response to exercise. Burning at least 250 calories a day (the equivalent of about 45 minutes of brisk walking or 25 minutes of jogging) seems to provide the greatest protection against coronary artery disease, most likely because it raises HDL levels.

### **HDL levels and inactivity**

It is interesting to note that healthy patients whose physical activity was restricted to bed rest for three to six weeks because of some type of traumatic fracture showed a significant decrease in HDL levels.

### **Cholesterol and resistance training**

In addition to aerobic training, there are a few studies suggesting that resistance training may also improve lipid and lipoprotein profiles. Decreases in total cholesterol and LDL have been reported for both men and women who actively take part in resistance training. However, the changes in personal lifestyle habits along with changes in body fat and muscle composition from resistance training may also contribute to these favourable cholesterol changes.

*\*(Adapted from an article by Lisa Hardy. Exercise and "Bad" Cholesterol. Personal Training on the Net. Oct 24, 2006)*