

When it comes to the good cholesterol, fitness trumps weight

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There's no question that high levels of good cholesterol—also known as high-density lipoprotein (HDL)—seem to be protective against heart disease. Rather than depositing fat into the blood vessels the way the "bad" cholesterol (low-density lipoprotein (LDL)) does, HDL appears to carry cholesterol away from blood vessels to the liver. From there, the liver processes it for removal from the body.

However, adequate levels of HDL might not be enough. Several recent studies have suggested that many cases of [heart disease](#) occur in people with normal levels of HDL [cholesterol](#). Consequently, some researchers believe that even if people have adequate amounts of HDL cholesterol, it might not work well. Such HDL may not fulfill this molecule's other important duties in the body, such as reducing inflammation and acting as an antioxidant.

Because exercise has the potential to protect against heart disease in a variety of ways, Christian K. Roberts and his colleagues at UCLA tested whether HDL in men who weight trained regularly behaved in a healthier way than HDL in sedentary men. They found that the men who didn't exercise were more likely than those who weight trained to have dysfunctional HDL. Having faulty HDL was associated with numerous other risk factors for heart disease, including high triglycerides and a higher trunk fat mass. This finding held true regardless of the men's weight, which suggests that maintaining a "healthy" weight isn't as important for healthy cholesterol function as being active by regularly performing strength training.

The article is entitled "Untrained Young Men Have Dysfunctional HDL Compared to Strength Trained Men Irrespective of Body Weight Status." It appears in the Articles in Press section of *Journal of Applied Physiology*, published by the American Physiological Society.

Methodology

The researchers worked with 90 men between the ages of 18 and 30 who already had established exercise habits. They separated these participants into three groups: lean men who weight trained at least four times each week, overweight men who also weight trained at least four times each week, and overweight men who had no structured exercise regimen. The researchers took some basic physical measurements from the volunteers, including height and weight, waist circumference, blood pressure, and body composition. They tested the volunteers' muscle strength and their carotid artery thickness (a sign of heart disease), and they took a blood sample. The researchers analyzed that sample for a variety of different molecules present, including cholesterol, insulin, various markers for heart disease including triglycerides and C-reactive protein, and sex hormones. They also checked the volunteers' HDL to see how well it functioned as an antioxidant, a sign of how well their HDL works in general.

Results

The study authors found that HDL functioned better in the participants who had a regular weight-lifting program, regardless of their weight—overweight exercisers' HDL has similar effectiveness as an antioxidant as the lean exercisers' HDL cholesterol. Both groups' HDL performed significantly better than those who didn't exercise. Such dysfunctional HDL was associated with numerous other factors associated with heart disease, such as elevated triglycerides and trunk fat

mass.

Importance of the Findings

These findings suggest that regular weight training might improve HDL function and protect against heart disease, even in those who remain overweight. Although indices of weight were associated with HDL cholesterol function, differences in fitness, the authors say, may be a better measure of who has healthier functioning HDL cholesterol, and therefore, who is at risk of heart disease.

"The role of obesity in the risk of coronary heart disease may indeed be largely accounted for by differences in fitness," the authors say.

More information: jap.physiology.org/content/ear...9.2013.full.pdf+html

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