

## Dietary Cholesterol Increases Muscle Mass

Contributed by Robbie Durand  
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Many of the bodybuilders of the '60s who wanted to put on mass were on the Vince Gironda diet of steak, eggs and protein powder mixed with whole cream. The diet also recommended 36 whole eggs per day and 1-2 pounds of red meat per day. It was a high-fat, high-protein, low-carb diet, with plenty of green veggies. It was also packed with a lot of cholesterol, which may have been the most important component of the diet. Based on the last several articles that I have written, it should be no surprise that cholesterol is important for building muscle. Cholesterol is a precursor for testosterone production. Unlike most cells that use cholesterol primarily for normal cell functioning, Leydig cells (testosterone-producing cells in the testis) have additional requirements for cholesterol, because it is the essential precursor for testosterone production. A new study in *Endocrinology* sheds some interesting new evidence to support how cholesterol is needed for testosterone production. Researchers reported that an increase in leutinizing hormone (a hormone that signals testosterone production) resulted in an increase in the synthesis of cholesterol synthesis and uptake in the testis.<sup>16</sup> So if you are on a low-cholesterol diet, it may have a negative impact on muscle building due to impaired androgen production. Researchers have long thought that cholesterol may be important for muscle building, but never had the science to back it up...until now.

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A recent

study put the cholesterol muscle building theory to the test. They took 25 men and 30 women who filled out food diaries of what they ate and followed them over 12 weeks in conjunction with a resistance training program. The researchers compared the relationship between dietary cholesterol and gains in muscle mass. At the end of the study, the average dietary cholesterol consumption was strongly associated with the change in lean mass. Interestingly enough, although dietary protein was correlated with dietary cholesterol, protein by itself was not significantly correlated with change in lean mass. This means the researchers found that cholesterol—but not protein—was associated with changes in lean muscle mass. This means that all those cholesterol-free Egg Beaters that bodybuilders have been eating for years aren't going to do jack shit for building muscle! The researchers noted that the study participants with higher cholesterol levels were more likely to have higher levels of inflammatory chemicals and cardiovascular disease risk factors. The scientists noted that cholesterol increases the body's inflammatory response to the muscle damage from exercise and that this inflammation response stimulates the body's muscle-building "anabolic" processes. (While chronic inflammation in arteries or other tissues is unhealthy, short-lived inflammation is an integral part of the muscle-building process.)

1. Riechman SE, Andrews RD, Maclean DA, Sheather S. Statins and dietary and serum cholesterol are associated with increased lean mass following resistance training. *J Gerontol A Biol Sci Med Sci*, 2007 Oct;62(10):1164-71.