

# Cholesterol Drug *Simvastatin* Reduces the Benefits of Exercise

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**OBJECTIVES:** Determine if simvastatin impairs exercise training adaptations.

**BACKGROUND:** Statins are commonly prescribed in combination with therapeutic lifestyle changes, including exercise, to reduce cardiovascular disease risk in patients with the metabolic syndrome (insulin resistance, weight gain, elevated blood sugar). Statin use has been linked to skeletal muscle myopathy and impaired mitochondrial function, but it is unclear whether statin use alters adaptations to exercise training.

**METHODS:** We examined the effects of simvastatin on changes in cardiorespiratory fitness and skeletal muscle mitochondrial content in response to aerobic exercise training. Sedentary overweight or obese adults with at least 2 metabolic syndrome risk factors (defined according to National Cholesterol Education Panel Adult Treatment Panel III criteria) were randomized to 12 weeks of aerobic exercise training or to exercise in combination with simvastatin (40 mg per day). The primary outcomes were cardiorespiratory fitness and thigh skeletal muscle (vastus lateralis) mitochondrial content (citrate synthase enzyme activity).

**RESULTS:** Thirty-seven participants (exercise plus statins; n=18; exercise only; n=19) completed the study. Cardiorespiratory fitness increased by 10% ( $P<0.05$ ) in response to exercise training alone, but was blunted by the addition of simvastatin resulting in only a 1.5% increase ( $P<0.005$  for group by time interaction). Similarly, skeletal muscle citrate synthase activity increased by 13% in the exercise only group ( $P<0.05$ ), but decreased by 4.5% in the simvastatin plus exercise group ( $P<0.05$  for group by time interaction).

**CONCLUSION:** Simvastatin attenuates increases in cardiorespiratory fitness and skeletal muscle mitochondrial content when combined with exercise training in overweight or obese patients at risk of the metabolic syndrome.

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**FYI, mitochondria are organelles in every cell that produce energy for the cell. It is known that statins decrease mitochondrial function by limiting the production of Co-Enzyme Q-10. Less Co-Q-10 means less energy, less function. This is just another example of the side effects of statins. Fix the problem with diet, natural, safe supplements and exercise. Get off the drugs: ask me for details. Dr. DeFabio**

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