

High-intensity exercise improves HDL and fasting glucose levels in metabolic syndrome

June 26, 2006 | [Michael O'Riordan](#)



Rome, Italy - Results from a small Norwegian study presented last week at the **International Symposium on Atherosclerosis** suggest that high-intensity exercise consisting of interval training, rather than aerobic exercise, is better at reversing components of the metabolic syndrome.

Investigators, led by **Dr Arnt Tjonna** (Norwegian University of Science and Technology, Trondheim, Norway), showed that among patients with the metabolic syndrome, those randomized to a high-intensity exercise program had significantly improved HDL-cholesterol levels, whereas those performing aerobic exercise did not, and there was a greater improvement in fasting glucose levels when compared with those undergoing a moderate-exercise training program.

Patients in the interval-training arm underwent a program that involved 4x4 minute intervals at 90% to 95% maximal heart rate, separated by three minutes of active recovery, three times per week for 16 weeks. Those in the moderate-training treatment arm worked continuously for 40 minutes at 70% maximal heart rate three times per week for 16 weeks. A control arm simply followed recommendations from their doctor. There were 29 patients in the study in total.

In both active-treatment arms, systolic and diastolic blood pressure was significantly decreased, but only interval training significantly increased HDL cholesterol and reduced fasting plasma glucose. Weight decreased in both treatment arms, although there were greater reductions among those undergoing moderate training. There was a trend toward reducing body-mass index among those performing interval training.

"Moreover, when we retested the patients at the end of the 16-week study, of those who underwent the interval-training program, nearly half had trained themselves out of the metabolic syndrome, whereas just 37% of patients in the moderately trained group did so," Tjonna told **heartwire**. "Also, more patients doing interval training stayed enrolled, which I guess is because they consider moderate training boring or aren't seeing results."

Tjonna noted that patients were in poor shape, with a VO_2 max of approximately 35 mL/kg per minute. While metabolic-syndrome patients could perform more intense exercise, he said, clinicians are reluctant to prescribe it. Tjonna added that most clinicians need to determine the overall risk of the patient before recommending such an aggressive training program.

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