



PRESS RELEASE
EMBARGOED UNTIL OCTOBER 29, 2012 AT 12:01 AM EASTERN TIME

Montreal study: Sport makes middle-aged people smarter

Cognitive functions improve significantly after four months of high-intensity interval training program in middle-aged people with increased cardiovascular risk.

Montreal and Toronto, October 29th, 2012 – High-intensity interval training makes middle-aged people not only healthier but smarter, showed a Montreal Heart Institute (MHI) study led by Dr. Anil Nigam of the MHI and University of Montreal, in collaboration with the Montreal Geriatric University Institute. The participants all had a body-mass index (BMI) between 28 and 31 (overweight) in addition to one or more other cardiovascular risk factors.

Body-mass index is calculated as a person's weight divided by their height squared (kg/m^2) – 25 to 30 is considered overweight, over 30 is obese. High-intensity interval training involves alternating between short periods of low and high intensity aerobic exercise – for example, a series of 30 seconds of sprinting followed by 30 seconds of walking or jogging.

“We worked with six adults who all followed a four-month program of twice weekly interval training on stationary bicycles and twice weekly resistance training. Cognitive function, VO_2max and brain oxygenation during exercise testing revealed that the participants' cognitive functions had greatly improved thanks to the exercise,” Dr. Nigam said. VO_2max is the maximum capacity of an individual's body to transport and use oxygen during exercise. It impacts on the body's ability to oxygenate the brain and is related to cognitive function.

“Our participants underwent a battery of cognitive, biological and physiological tests before the program began in order to determine their cognitive functions, body composition, cardiovascular risk, brain oxygenation during exercise and maximal aerobic capacity,” Dr. Nigam explained. The cognitive tests included tasks such as remembering pairs of numbers and symbols. To see what was actually happening in the brain, the researchers used near-infra red spectroscopy (NIRS), a technique that works with light (in the near-infra red range) sent through human tissue that reacts with oxygen in the blood (light absorption). It is so sensitive that it detects the minute changes in the volume and oxygenation of blood occur in our brains when we exercise or think.

“After the program was finished, we discovered that their waist circumference and particularly their trunk fat mass had decreased. We also found that their VO_2max , insulin sensitivity had increased significantly, in tandem with their score on the cognitive tests and the oxygenation signals in the brain during exercise,” Dr Nigam said. Insulin sensitivity is the ability of sugar to enter body tissue (mainly liver and muscle.)

The scientists believe that many people could benefit by following a similar training program to the one used in their study, and they will be presenting their findings at the Canadian



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Cardiovascular Congress (CCC) in Toronto in October 27-31, 2012. The research was financed by the ÉPIC Centre and Montreal Heart Institute Foundations.

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