

# Overweight or obese people breathe more air pollutants

February 5 2014, by William Raillant-Clark

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(Medical Xpress)—Overweight or obese adults can breathe 7-50% more air per day than an adult with healthy weight does, which makes them more vulnerable to air contaminants causing asthma and other pulmonary diseases, according to a study by Dr. Pierre Brochu, a professor at Université de Montréal's School of Public Health. For overweight or obese children, daily inhalation rates are 10-24% higher than for normal weight children. The findings were recently published in the international journal *Risk Analysis*.

Obese class 2 people have the highest average air inhalation, or 24.6 m<sup>3</sup> per day. "That's 8.2 m<sup>3</sup> more than the 16.4 m<sup>3</sup> an average adult with normal weight breathes daily, or 50% more air and pollutants," Dr. Brochu explained. Obese Class 2 people are adults whose weight is between 35 and 40 kilos for each square metre of their body. The classification of overweight/obese children is different than that for adults. Air contaminants – including ammonia, sulphur dioxide, ozone, and nitrogen dioxide, to name a few – are respiratory irritants.

## More oxygen needed than for some athletes

If overweight or obese people inhale more air compared to those with normal weight, does this mean that elite athletes may also be more vulnerable to contaminants in the air? In 2006, Dr. Brochu published a study in which he established that a person who climbs Mount Everest needs an average of 19.8 m<sup>3</sup> of air per day. A cross-country skier in a

competition can breathe up to 41.2 m<sup>3</sup> per day, while a cyclist participating in the Tour de France breathes an average of 45.9 m<sup>3</sup> per day over the 21-day race.

But this is peak inhalation, which cannot be maintained daily over an entire year.

"We observed that half of the type 2 obese cohort breathed 24.6-55 m<sup>3</sup> of air every day, year after year, so it is clear that the amount of air they inhale every day exposes them to more contaminants than some top athletes," Dr. Brochu said.

## **Study based on more than 1,900 participants**

Brochu's study is based on an analysis of data from 1,069 participants aged 5-96 years, compared with data collected from 902 normal weight people (in a study conducted by Dr. Brochu in 2011). Data were analyzed, among other things, according to participant age and gender. Adults were also classified according to their body mass index, determined as follows:

- [normal weight](#): 18.5-

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