

## **Environmental Air Pollution Exposure Affects Metabolic Equivalents Achieved During Exercise Testing**

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Background: Prior toxicological exposure research demonstrated the decremental effect of several air pollutants on the metabolic equivalents achieved during exercise testing (METs). There are no prior large scale reports about the effect of environmental air pollution exposure on those parameters.

Methods: Apparently healthy and those with atherothrombotic risk factors participants from The Tel Aviv Sourasky medical center inflammation survey held between 2003-2010, were included if residing within an eleven kilometer range from the nearest air pollution monitoring station. Linear regression models were fitted for the metabolic equivalents reached against air pollutant variables (particulate matter under 10 micron, sulfur dioxide, nitrogen dioxide and carbon monoxide) for increasing lag days of up to seven days, and adjusted for possible confounders that affect air pollution and stress testing measurements.

Results: The study population comprised 6,612 individuals (4,201 males and 2,411 females). We found a statistically significant negative correlation between air pollutants, mainly CO, SO<sub>2</sub> and NO<sub>2</sub> and between the metabolic equivalents achieved. This effect was significant from day 0 and on, up to seven days from exposure for CO and NO<sub>2</sub> with an estimated decrease in the METs of 0.2 to 0.4 for interquartile change in the air pollutant level.

Conclusions: Exposure to several air pollutants has a decremental effect on cardiorespiratory fitness as measured by exercise stress testing. This effect has been demonstrated for up to seven days prior to exposure.