

# Inactive lifestyle linked to ozone-related lung

December 7 2016

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An inactive lifestyle may increase the risk of environmentally induced asthma symptoms. In a new study published in the *American Journal of Physiology—Lung Cellular and Molecular Physiology*, U.S.

Environmental Protection Agency researchers found that sedentary rats exposed to varying degrees of ozone, a type of air pollution, had higher markers for chronic disease when compared to counterparts that were more active.

Young rats were divided into two groups: One group had free access to a running wheel ("active"); the other did not ("sedentary"). For seven weeks, the active rats were allowed to exercise as desired, during which time the sedentary group engaged in everyday activities such as eating and sleeping. After this observation period, both the active and sedentary groups were exposed to either filtered air or three different levels of [ozone concentrations](#) for a total of 10 hours over two consecutive days.

The research team measured the breathing frequency and volume and glucose tolerance of all animals after [ozone](#) or filtered air exposure. The researchers also analyzed cells from the bronchial fluid in the lungs.

"The two-day exposures to ozone elicited a marked pulmonary inflammatory response as evidenced by an elevation in neutrophils [[white blood cells](#) that fight infection], eosinophils [white blood cells that often indicate allergies or infection] and other biomarkers of inflammation in the BALF [fluid in which the lung cells are retrieved and examined,]" the research team wrote. The research team noted that the white blood cell count increased more sharply in the sedentary group.

Glucose levels rose in both active and sedentary groups after [ozone exposure](#), but the increase was more significant and took longer to normalize in the sedentary group following a glucose challenge.

The study also found that the breathing rate of all animals was negatively affected after ozone exposure. After the first day of the air challenge, the active group exposed to [air pollution](#) used their running wheels 71 percent less than the active group exposed to normal air.

The findings of this animal study provide clues to environmental exposure in humans, explains the research team. "Such a study could highlight the importance of a model of childhood sedentary versus active lifestyle and effects on susceptibility as an adult."

**More information:** Christopher J Gordon et al. ACTIVE VERSUS SEDENTARY LIFESTYLE FROM WEANING TO ADULTHOOD AND SUSCEPTIBILITY TO OZONE IN RATS, *American Journal of Physiology - Lung Cellular and Molecular Physiology* (2016). [DOI: 10.1152/ajplung.00415.2016](#)

Provided by American Physiological Society

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