Exercise can outweigh harmful effects of air pollution

March 30 2015

New research from the University of Copenhagen has found that the beneficial effects of exercise are more important for our health than the negative effects of air pollution, in relation to the risk of premature mortality. In other words, benefits of exercise outweigh the harmful effects of air pollution.
The study shows that despite the adverse effects of air pollution on health, air pollution should be not perceived as a barrier to exercise in urban areas. "Even for those living in the most polluted areas of Copenhagen, it is healthier to go for a run, a walk or to cycle to work than it is to stay inactive," says Associate Professor Zorana Jovanovic Andersen from the Centre for Epidemiology and Screening at the University of Copenhagen.

The research results have been published in the journal *Environmental Health Perspectives*.

**Air pollution a barrier to exercise?**

It is well known that physical activity reduces, while air pollution increases the risk of premature mortality. Physical activity amplifies respiratory intake and accumulation of air pollutants in our lungs, which may increase the harmful effects of air pollution during exercise.

"Air pollution is often perceived as a barrier to exercise in urban areas. In the face of an increasing health burden due to rising physical inactivity and obesity in modern societies, our findings provide support for efforts in promoting exercise, even in urban areas with high pollution," says Associate Professor Zorana Jovanovic Andersen.

"However, we would still advise people to exercise and cycle in green areas, parks, woods, with low air pollution and away from busy roads, when possible," she adds.

**The study**

This is the first large population-based, prospective cohort study that has examined the joint effects of both physical activity and air pollution on mortality. It is based on high quality data on both physical activity and
air pollution exposure.

The Danish study includes 52,061 subjects, aged 50-65 years, from the two main cities Aarhus and Copenhagen, who participated in the cohort study Diet, Cancer and Health. From 1993-97, they reported on their physical leisure activities, including sports, cycling to/from work and in their leisure time, gardening and walking. The researchers then estimated air pollution levels from traffic at their residential addresses.

5,500 participants died before 2010, and the researchers observed about 20% fewer deaths among those who exercised than among those who didn't exercise, even for those who lived in the most polluted areas, in central Copenhagen and Aarhus, or close to busy roads and highways.

"It is also important to note that these results pertain to Denmark and sites with similar air pollution levels, and may not necessary be true in cities with several fold higher air pollution levels, as seen in other parts of the world," concludes Andersen.

Provided by University of Copenhagen

Citation: Exercise can outweigh harmful effects of air pollution (2015, March 30) retrieved 24 August 2023 from https://medicalxpress.com/news/2015-03-outweigh-effects-air-pollution.html

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