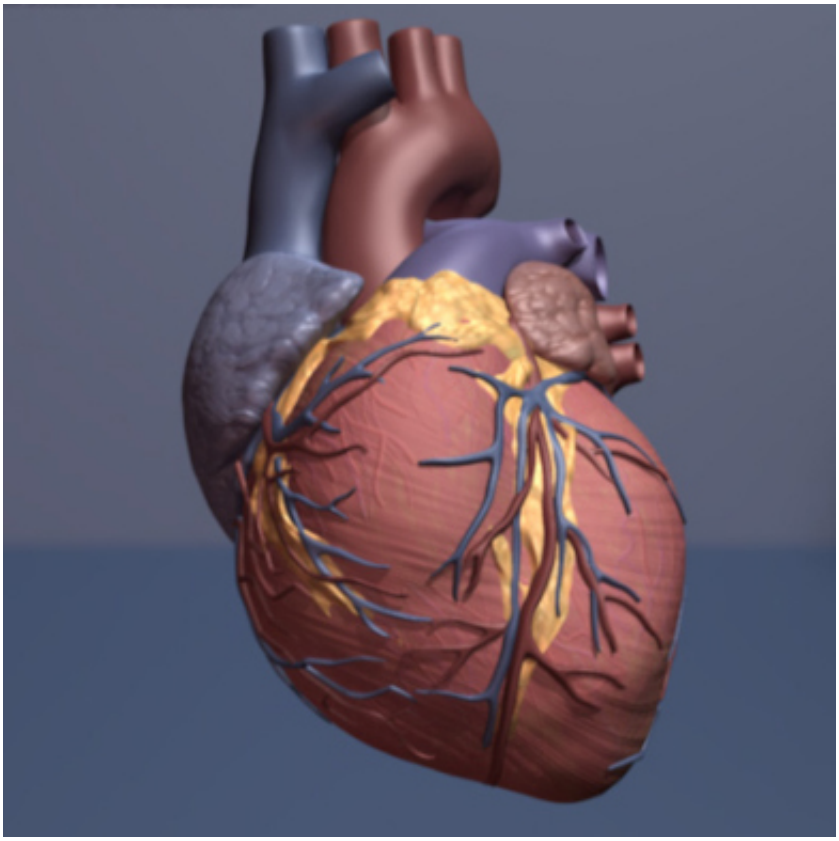
Poor air quality does not offset exercise's heart benefits

July 18 2018



Human heart. Credit: copyright American Heart Association

Even in areas with moderate-to-high levels of traffic pollution, regular physical activity reduced the risk of first and recurrent heart attack, according to new research in *Journal of the American Heart Association*, the Open Access Journal of the American Heart Association/American

Stroke Association.

"While exercise is known to reduce cardiovascular disease risk; pollution can increase the risk of cardiovascular disease, including heart attacks, asthma and chronic obstructive lung disease," said Nadine Kubesch, Ph.D., lead author and researcher at the University of Copenhagen in Denmark. "Currently there is little data on whether poor air quality cancels out the protective benefits of physical activity in preventing heart attacks."

Researchers in Denmark, Germany and Spain evaluated outdoor physical activity levels (sports, cycling, walking and gardening) and nitrogen dioxide (NO_2 pollutant generated by traffic) exposure in 51,868 adults, age 50-65, comparing self-reported activities and lifestyle factors against heart attack. Over a 17.7-year period, there were 2,936 first heart attacks and 324 recurrent heart attacks.

To estimate average NO_2 exposure, researchers used national traffic pollution monitoring data for each participants' address and found:

- Higher levels of were associated with more heart attacks, however, the risk was lower among those who were physically active.
- Moderate cycling for four or more hours per week cut risk for recurrent heart attack by 31 percent; and there was a 58 percent reduction when all four types of physical activity (together totalling four hours per week or more) were combined, regardless of air quality.
- Those who participated in sports had a 15 percent lower rate of initial heart attacks and there was a 9 percent risk reduction associated with cycling, regardless of air quality
- Compared to participants with low residential NO_2 exposure, those in higher risk areas had a 17 percent increase risk in first

heart attack and 39 percent for recurrent heart attack.

In particiants who developed a heart attack (first or recurrent), the average NO_2 exposure level was 18.9 microgramm per cubic meter air ($\mu g/m^3$) with an overall average of 18.7 $\mu g/m^3$, which is below the current NO_2 European Union exposure guideline (50 $\mu g/m^3$ over 24 hours).

"Our study shows that physical activity even during exposure to air pollution, in cities with levels similar to those in Copenhagen, can reduce the risk of heart attack," Kubesch said. "Our research supports existing evidence that even moderate levels of regular physical activity, such as active commuting, are suffienciently intense to get these health benefits.

Provided by American Heart Association