Physical activity has health benefits for smokers, regardless of air pollution levels

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Regular physical activity is associated with better lung function among current smokers in European cities, regardless of air pollution levels. This is the main conclusion of a new study comprising over 4,500 people

from nine European countries, led by the Barcelona Institute of Global Health (ISGlobal).

A previous study from the same project concluded that regular physical activity was associated with better lung function among smokers, but exposure to air pollution was not analysed. The new study, published in the journal *Environment International*, aimed to assess whether residential exposure to air pollution—estimated as the annual average concentration of nitrogen dioxide (NO_2) and particulate matter PM2.5 and PM10—modifies the effect of physical activity on lung function, both in current smokers and in people who have never smoked.

Researchers analysed data from 2,801 non-smokers and 1,719 smokers from nine European countries (Belgium, France, Germany, Italy, Norway, Spain, Sweden, Switzerland and the United Kingdom), participating in the European Community Respiratory Health Survey (ECRHS). The participants, between 27 and 57 years old at the beginning of the study, were followed-up for ten years. During this time, they were classified as being active if they exercised twice or more times a week and for at least one hour. Pulmonary function was assessed using spirometry .

The conclusions indicate that regular physical activity was associated with higher levels of lung function among current smokers, regardless of air pollution levels. Regarding never-smokers, physical activity appeared to have benefits for lung function in areas with low or medium levels of air pollution, but the results were less clear in more polluted urban areas.

Elaine Fuertes, first author of the publication, says, "The results reinforce the message that physical activity is beneficial for health, including respiratory health. However, our data suggest that the benefits of physical activity may be reduced among non-smokers living in cities with high air pollution levels. If confirmed, this means that policies

aimed at controlling air quality levels would maximise the benefit of physical activity promotion policies."

"Many forms of physical activity occur outdoors, such as cycling, walking or running, and active transport is promoted as a method to reduce both air pollution levels and sedentary lifestyle. Thus, understanding the relationship between air pollution, physical activity and lung function is essential for decision making in the fields of public health and urban planning," says Judith Garcia-Aymerich, senior author and head of the Non-Communicable Diseases and Environment Programme at ISGlobal.

More information: Elaine Fuertes et al, Residential air pollution does not modify the positive association between physical activity and lung function in current smokers in the ECRHS study, *Environment International* (2018). DOI: 10.1016/j.envint.2018.07.032

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