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Weight gain associated with accelerated lung function decline in adulthood

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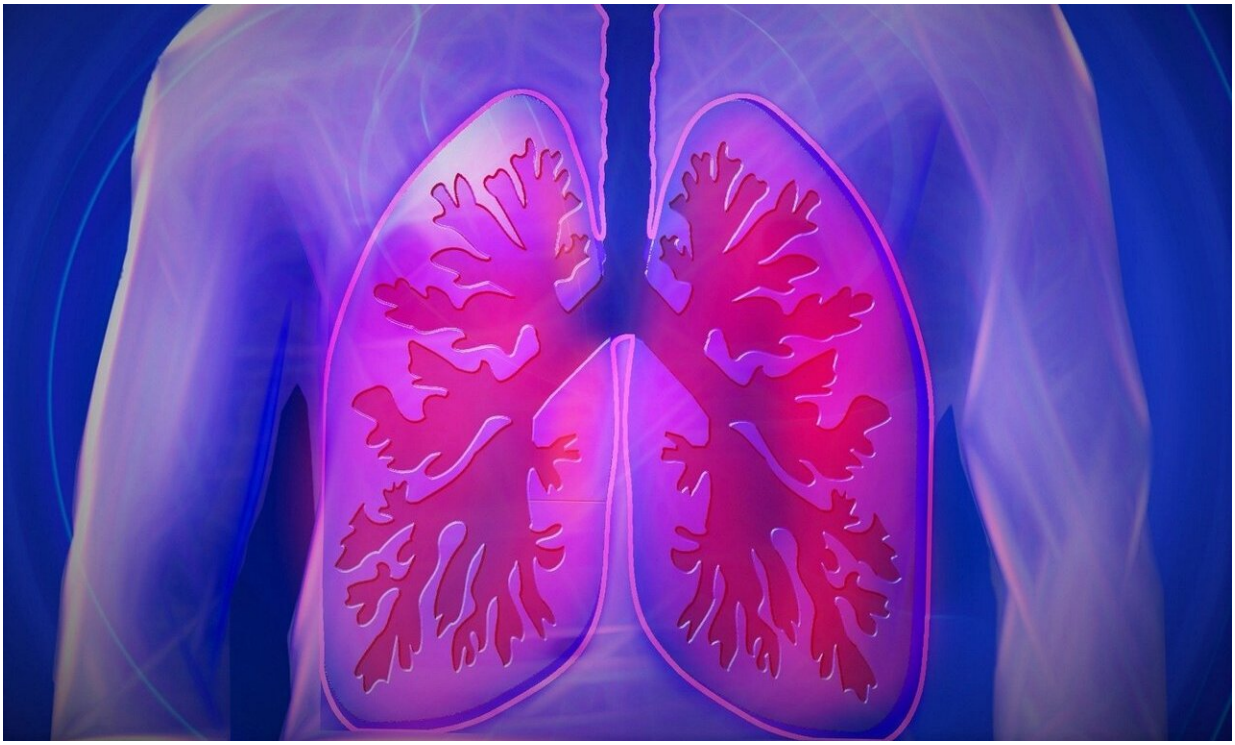

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Lung function declines naturally over the course of the human lifespan. However, this decline is steeper in individuals who experience moderate or high weight gain. This was the conclusion of a new study led by the Barcelona Institute for Global Health (ISGlobal), which analyzed the effect of weight changes on respiratory health over a 20-year period.

The study, published in the journal *Thorax*, was based on data collected from 3,700 participants living in different countries in Europe and in Australia and recruited between the ages of 20 and 44 years. Participants repeatedly underwent measurements of weight and lung function—by means of spirometry—between 1991 and 2014. "Although previous research has shown that weight gain is linked to lung function decline, ours is the first study to analyze such a varied population sample over a longer period of time," commented Judith Garcia Aymerich, leader of the study and head of the Non-communicable Diseases and Environment program at ISGlobal. Most earlier studies have had relatively short follow-up periods—ten years at the most—and focused on adults up to 50 years of age.

The study found that people with a body mass index within the recommended rates, overweight people and obese people all experienced accelerated lung function decline when they gained weight. Conversely, weight loss helped to attenuate lung function decline in obese people. Moreover, people who kept their weight low throughout adulthood exhibited a much less pronounced decline in respiratory health.

Two mechanisms could explain the association between weight gain and pulmonary health. First, weight gain can affect lung function through mechanical effects. "Abdominal and thoracic fat mass is likely to limit the room for lung expansion during inspiration," commented ISGlobal researcher Gabriela Prado Peralta, lead author of the study. Second, weight gain can impair lung function through inflammatory processes, since adipose tissue—the area where fat accumulates—is a source of inflammatory substances that can damage lung tissue and reduce airway diameter.

Maintaining good lung function during adulthood is crucial to prevent chronic respiratory diseases, which nowadays represent a serious public health problem around the world. "Given the epidemic levels of

overweight and obesity that we are currently seeing, it is fundamental to understand the effects of weight changes on lung function, which is a powerful predictor of morbidity and mortality in the general population," commented Garcia Aymerich. "The good news is that the negative pulmonary health effects of excess weight and obesity can be reversed through weight loss. Therefore, public health policies that promote healthy lifestyles can be the key to achieving good pulmonary health."

The study formed part of the Ageing Lungs in European Cohorts (ALEC) Study, coordinated by Imperial College London. It was financed by the European Union's Horizon 2020 research and innovation program.

More information: Gabriela P. Peralta, et al. Body mass index and weight change are associated with adult lung function trajectories: the prospective ECRHS study. *Thorax*. February 2020.

Provided by Barcelona Institute for Global Health