

Abstract form

Title: Physical Activity through Sustainable Transport Approaches: designing a study to quantify the health benefits and risks of active mobility

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Text

Background and aims:

We designed a study to collect objective and quantitative data on the knowledge gaps concerning the health effects of being physically active in a polluted environment. Various non-communicable diseases such as cancer, cardiovascular diseases and asthma show correlation with air quality. However, the fourth leading risk factor of mortality is lack of physical activity and promotion of active mobility is an innovative measure to increase physical activity levels.

Methods:

This study is part of the European PASTA project, which aims to recruit 14 000 subjects for the collection of self-reported data on commuting behavior and level of physical activity.

We made a literature study on physiological effects of (active) commuting and the uptake of air pollution in the lungs. An experiment is designed with user-friendly devices and physiological end-points that are measured non-invasively.

Results:

Quantitative data is obtained by personal measurements using mobile devices and smart phone applications. Physiological endpoints include heart rate variability and exhaled nitric oxide. In addition, the focus is on the underlying biological mechanisms causing these effects.

Groups are defined according to their fitness level. We postulate that individuals who start to move, experience the greatest benefit of physical activity. Fit people have greater lung volume which means they can take up a larger part of air pollution. Therefore, the dose must be accurately defined as it causes the physiological effects.

Conclusions:

The results will allow to inform us on the relevance of exposure to brief peaks of high air pollution concentrations in developing long term health effects.

Keywords:

Air pollution, traffic, active mobility, physiological effects, dose, biological mechanisms

Preference for presentation: Poster