

## Publication

## Improved air quality and attenuated lung function decline : modification by obesity in the SAPALDIA cohort

**JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 2168759**Author(s)** Schikowski, Tamara; Schaffner, Emmanuel; Meier, Flurina; Phuleria, Harish C.; Vierkötter, Andrea; Schindler, Christian; Kriemler, Susi; Zemp, Elisabeth; Krämer, Ursula; Bridevaux, Pierre-Olivier; Rochat, Thierry; Schwartz, Joel; Künzli, Nino; Probst-Hensch, Nicole**Author(s) at UniBasel** [Schikowski, Tamara](#) ; [Schaffner, Emmanuel](#) ; [Phuleria, Harish Chandra](#) ; [Schindler, Christian](#) ; [Zemp Stutz, Elisabeth](#) ; [Künzli, Nino](#) ; [Probst Hensch, Nicole](#) ;**Year** 2013**Title** Improved air quality and attenuated lung function decline : modification by obesity in the SAPALDIA cohort**Journal** Environmental Health Perspectives**Volume** 121**Number** 9**Pages / Article-Number** 1034-9

Background: Air pollution and obesity are hypothesized to contribute to accelerated decline in lung function with age through their inflammatory properties. Objective: We investigated whether the previously reported association between improved air quality and lung health in the population-based SAPALDIA cohort is modified by obesity. Methods: We used adjusted mixed-model analyses to estimate the association of average body mass index (BMI) and changes in particulate matter with aerodynamic diameter  $\leq 10 \mu\text{m}$  (PM<sub>10</sub>;  $\Delta\text{PM}_{10}$ ) with lung function decline over a 10-year follow-up period. Results: Lung function data and complete information were available for 4,664 participants. Age-related declines in lung function among participants with high average BMI were more rapid for FVC (forced vital capacity), but slower for FEV<sub>1</sub>/FVC (forced expiratory volume in 1 sec/FVC) and FEF<sub>25–75</sub> (forced expiratory flow at 25–75%) than declines among those with low or normal average BMI. Improved air quality was associated with attenuated reductions in FEV<sub>1</sub>/FVC, FEF<sub>25–75</sub>, and FEF<sub>25–75</sub>/FVC over time among low- and normal-BMI participants, but not overweight or obese participants. The attenuation was most pronounced for  $\Delta\text{FEF}_{25–75}/\text{FVC}$  (30% and 22% attenuation in association with a 10- $\mu\text{g}/\text{m}^3$  decrease in PM<sub>10</sub> among low- and normal-weight participants, respectively.) Conclusion: Our results point to the importance of considering health effects of air pollution exposure and obesity in parallel. Further research must address the mechanisms underlying the observed interaction.

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