Peak weight velocity in infancy is negatively associated with lung function in adolescence.

Abstract:
Rapid weight gain during infancy increases childhood asthma risk, which might be related to impaired lung function. This study investigated associations between peak weight velocity (PWV) during the first two years of life and spirometric lung function indices at 15 years of age. Data from 1842 children participating in the GINIplus German birth cohort who underwent spirometry at age 15 were analysed. PWV was calculated from weight measurements obtained between birth and two years of age. Generalised additive models were fitted after adjustment for potential confounding factors (birth weight, height, and age at lung function testing). Results are presented per interquartile range increase (3.5 kg/year) in PWV. PWV was negatively associated with pre-bronchodilation flow rates after extensive adjustment for potential confounders including asthma: forced expiratory flow at 50% of forced vital capacity (FEF50) decreased by 141 ml/s (95%CI = [-225; -57]), FEF75 by 84 ml/s [-144; -24] and FEF25-75 by 118 ml/s [-192; -44]. FEV1/FVC was also negatively associated with PWV (-0.750% [-1.273; -0.226]) whereas forced expiratory volume in 1s (FEV1) and forced vital capacity (FVC) were not. Similar results were found for measurements post-bronchodilation. Early life weight gain was negatively associated with
flow indices in adolescence, suggesting structural changes in peripheral lungs.