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Title: Asthma control in children: Comparison of different lung function parameters

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Body: Background: Recently Green et al. reported a lack of agreement among common measures of asthma control in children (FE_{NO}, spirometry, asthma control test; Chest 2013; 143: 117-122). In Germany bodyplethysmography is additionally widely used for asthma monitoring. However, its value is still not clear. Objectives: This study was undertaken to examine agreement between FE_{NO}, spirometric and bodyplethysmographic measures and asthma control in children. Methods: As part of two preceding studies on fractionated breath condensate sampling in asthmatic children we measured exhaled nitric oxide (FE_{NO}), FEV_1, FEV_1/VC, FEF_{25-75}, sR_{tot}, RV/TLC and assessed asthma control in 85 asthmatic children (age 5-17 years). Z-scores for FEV_1 and FEF_{25-75} were calculated with the desktop software by the Global Lung Initiative. Z-scores below -1.645, FEV_1/VC < 80%, sR_{tot} > 1,0 kPa*s, FE_{NO}> 35 ppb, RV/TLC > 0,33 were considered without normal limits, an asthma control test (ACT) score < 20 was considered as uncontrolled asthma. Agreement was analysed between ACT scores and each lung function parameter by kappa statistics. Results: 22/85 children were classified as uncontrolled asthmatics. Kappa quotients showed slight agreement for asthma control with FEF_{75-25} (k: 0,105) and no agreement with RV/TLC (0,063), FEV_1 (0,051), FEV_1/VC (0,015), FE_{NO} (0,004), sR_{tot} (-0,08). Conclusions: Bodyplethysmographic indices were not superior to spirometric parameters in terms of agreement with asthma control.