OBJECTIVES: In pediatric cardiovascular health prevention non-invasive diagnostics of subclinical atherosclerosis is essential for screenings and interventional purposes. Increased carotid artery intima-media thickness (IMT) has been reported in the presence of cardiovascular risk factors in childhood. However, little information exists regarding the age and sex distribution of IMT as stated in adults. This study investigates first, if IMT sonography is reliable and feasible; second, calculates sex- and age-specific percentiles; third, re-confirms IMT associations to cardiovascular risk parameters and analyses predictors for age-adjusted IMT.

METHODS: 267 healthy pupils (age 6-17 years) were examined prospectively. Standardized IMT sonography and offline analysis were performed. Anthropometric data, BMI, body composition, blood pressure were taken; Spearman's rank correlation coefficient and multiple stepwise linear regression analyses were calculated. RESULTS:

Intra-observer variability: CV was 2.42% (n=132; MD=0.012mm; r=0.849); inter-observer variability: CV was 1.71% (n=75; MD=0.013mm; r=0.780). Age- and sex-specific IMT percentiles for age groups 8/9 to 14/15 years were calculated. IMT values were higher in boys than in girls at the same age. Systolic blood pressure and IMT were positively related in boys (p<0.001, r=0.31) and girls (p=0.005, r=0.24). Predictors for
age-adjusted IMT: systolic blood pressure was shown to be a predictor ($r^2=0.10$, $\beta=0.31$, $p<0.001$) in boys; weight emerged as a predictor ($r^2=0.19$, $\beta=0.43$, $p<0.001$) in girls.

CONCLUSION: The main study benefit is the provision of IMT percentiles for both sexes for the age groups 8/9 to 14/15 years. The results suggest that sex-specific prevention should be given further attention in a comprehensive and multi-risk parameters approach.