Introduction: Determination of the right ventricular outflow tract velocity time integral (RVOT VTI) is an important part of the non-invasive investigation of pulmonary blood flow in adults, however, pediatric reference data are lacking. We examined growth related changes of RVOT VTI values in healthy children and the predictive value of RVOT VTI values in identifying enhanced pulmonary blood flow in children with secundum type atrial septal defect (ASD).

Methods: A prospective study was conducted in a group of 570 healthy children and 52 children with a moderate-sized to large ASD. The effects of age, body length (BL), body weight (BW), and body surface area (BSA) on RVOT VTI values were determined. The predictive value of normal values stratified for age, BW, BL, and BSA was tested in our 52 ASD children.

Results: RVOT VTI normal values showed a positive correlation with age, BL, BSA, and BW. In our population RVOT VTI z-scores demonstrated a high specificity for detecting ASD patients (> 97%) with sensitivity up to 71%.

Conclusions: We calculated z-scores of pediatric RVOT VTI values. We found elevated RVOT VTI values of our pediatric patients with moderate-sized to large ASDs when compared to age-related normal values. Therefore determination of the RVOT VTI might be an additional predictor in identifying significantly increased pulmonary blood flow in ASD patients.