

**Motor development and their Association to Health-related Quality of life in Children and Adolescents with Congenital Heart Disease**

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Objective: Reduced physical activity and health-related quality of life (HrQoL) is often reported in children and adolescents with congenital heart disease (CHD) compared to healthy counterparts. However motor development (MD) in patients with CHD is poorly explored, therefore this study investigated motor competence and its association with HrQoL.

Patients and Methods: In total 576 consecutive children and adolescents with CHD (225 girls,  $12.9 \pm 3.1$  years) participated in the FITNESSGRAM® for assessing muscular strength and flexibility by five tasks converted to a motor score and compared to a recent healthy reference cohort. Moreover they filled in the KINDL® questionnaire.

Results: MD was significant reduced (z-score:  $-0.62 \pm 0.83$ ;  $p < .001$ ) compared to controls and 175 (30.4%) children and adolescents with CHD exhibit impaired MD defined by a z-score lower than one standard deviation compared to the reference. This hold true for shoulder flexibility (z-score:  $-0.64 \pm 1.42$ ;  $p < .001$ ), lower limb flexibility (z-score:  $-0.75 \pm 1.59$ ;  $p < .001$ ), trunk flexibility (z-score:  $-1.34 \pm 1.46$ ;  $p < .001$ ) and curl-ups (z-score:  $-0.30 \pm 1.21$ ;  $p < .001$ ). Except in push-ups there was no significant reduction. In multivariable regression corrected for age and gender, a higher MD was associated with higher HrQoL ( $B=1.155$ ,  $\beta=0.096$ ,  $p=.030$ ).

Conclusion: MD in children and adolescents with CHD is reduced and the reduction in MD is also associated with worse HrQoL. It may therefore be indicated to pay more attention to MD in children and adolescents with CHD.