**Supplemental Table S1**

Psychometric information about the Zurich Neuromotor Assessment

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| --- | --- | --- | --- | --- |
| **ZNA Components** | **Description** | **Intrarater Reliability** | **Interrater Reliability** | **Test-retest Reliability** |
| Pure motor function | - repetitive foot: 20 taps of the forefoot while the heel remains on the floor.- repetitive hand: 20 pattings of one hand with the wrist resting on the thighs.- repetitive finger: 20 taps between thumb and index finger while arms are held up sideways. - alternating foot: 10 pairs of heel–toe alternations, with one part of the foot being always on the floor. - alternating hand: 10 pairs of alternating supination–pronation movements of one hand with the wrist resting on the thigh. - sequential finger: five sequences of finger-thumb opposition per hand | 0.94 | 0.92 | 0.91 |
| Adaptive fine motor | 14 plastic pegs are placed in holes one at a time, first with the dominant then with the non-dominant hand.  | 0.99 | 0.97 | 0.77 |
| Adaptive gross motor | The first trial consists of 10 jumps back and forth over the cord sideways while keeping the feet together and the second trial was forward jumping: to jump sideways over the cord six times while moving forward to the one pole and then returning with six jumps to the first pole.  | 1.00 | 0.90 | 0.86 |
| Static balance | Involves standing on one foot for as long as possible holding a stick over the head.  | 1.00 | 0.98 | 0.57 |
| Associated movements | Duration and degree of contralateral associated movements is scored.  | 0.82 | 0.75 | 0.66 |

Note: Apart from dynamic balance each task is performed with both the dominant and the non-dominant side. ZNA, Zurich Neuromotor Assessment

**Supplemental Table S2**

Correlations between the motor, visuomotor and behavioral outcomes in children with complex CHD

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Z-1 | Z-2 | Z-3 | Z-4 | CAMs | Beery Visuo-Motor-Integration | BeeryVisualPerception | BeeryMotor Coordination | SDQ Total Score | SDQ Internalizing Subscales | SDQ Externalizing Subscales |
| Z-1 | 1 |  |  |  |  |  |  |  |  |  |  |
| Z-2 | **0.46\*\*\*** | 1 |  |  |  |  |  |  |  |  |  |
| Z-3 | **0.32\*\*\*** | **0.41\*\*\*** | 1 |  |  |  |  |  |  |  |  |
| Z-4 | **0.33\*\*\*** | **0.53\*\*\*** | **0.38\*\*\*** | 1 |  |  |  |  |  |  |  |
| CAMs | **0.34\*** | **0.33\*\*\*** | 0.10 | 0.11 |  1 |  |  |  |  |  |  |
| Beery Visuo-Motor-Integration | **0.43\*\*\*** | **0.33\*\*\*** | **0.24\*\*** | **0.43\*\*\*** | 0.10 | 1 |  |  |  |  |  |
| Beery Visual Perception | **0.39\*\*\*** | **0.30\*\*\*** | **0.22\*** | **0.39\*\*\*** | 0.12 | **0.59\*\*\*** | 1 |  |  |  |  |
| Beery Motor Coordination | **0.47\*\*\*** | **0.46\*\*\*** | **0.33\*\*\*** | **0.45\*\*\*** | 0.11 | **0.59\*\*\*** | **0.35\*\*\*** | 1 |  |  |  |
| SDQ Total Score | **-0.21\*** | **-0.28\*\*** | **-0.23\*** | **-0.37\*\*\*** | -0.15 | **-0.39\*\*\*** | **-0.37\*\*\*** | **-0.29\*\*** | 1 |  |  |
| SDQ Internalizing Subscales | **-0.20\*** | **-0.26\*\*** | **-0.28\*\*** | **-0.29\*\*\*** | **-0.22\*** | **-0.33\*\*\*** | **-0.32\*\*\*** | **-0.24\*** | **0.84\*\*\*** | 1 |  |
| SDQ Externalizing Subscales | -0.16 | -0.23 | -0.13 | **-0.32\*\*\*** | -0.06 | **-0.33\*\*\*** | **-0.32\*\*\*** | **-0.29\*\*** | **0.89\*\*\*** | **0.52\*\*\*** | 1 |

*Note*: Figures in **bold** are statistically significant correlations, **\*** *p* ≤ 0.05, **\*\*** *p* ≤ 0.01, **\*\*\*** *p* ≤ 0.001

Z-1, pure motor; Z-2, adaptive fine motor; Z-3, adaptive gross motor; Z-4, static balance; CAMs, contralateral associated movements; SDQ, Strengths and Difficulties Questionnaire

**Supplemental Table S3**

Risk factor analysis for motor outcome in children with complex CHD

|  |  |  |  |
| --- | --- | --- | --- |
| **Dependent variable** | **Independent variable** | **β**  | ***p*-value** |
| Pure motor \* | Socioeconomic statusGestational ageBirth weight (z-score)Univentricular CHDMean preoperative saturationAge at first CPB surgeryLowest intraoperative temperatureECC time during the first surgery Length of hospitalization | 0.070.150.20-0.040.10-0.03-0.14-0.18-0.22 | 0.4280.119**0.038**0.6420.3010.7180.1950.083**0.038** |
| Adaptive fine motor \*\* | Socioeconomic statusGestational ageBirth weight (z-score)Univentricular CHDMean preoperative saturationAge at first CPB surgeryLowest intraoperative temperatureECC time during the first surgery Length of hospitalization | 0.030.190.070.040.110.00-0.08-0.23-0.10 | 0.712**0.046**0.5080.6630.2750.9780.455**0.035**0.353 |
| Adaptive gross motor \*\*\* | Socioeconomic statusGestational ageBirth weight (z-score)Univentricular CHDMean preoperative saturationAge at first CPB surgeryLowest intraoperative temperatureECC time during the first surgery Length of hospitalization | 0.020.18-0.13-0.100.10-0.05-0.020.04-0.11 | 0.8230.0770.2300.3400.3450.6600.8830.7600.353 |
| Static balance\*\*\*\* | Socioeconomic statusGestational ageBirth weight (z-score)Univentricular CHDMean preoperative saturationAge at first CPB surgeryLowest intraoperative temperatureECC time during the first surgery Length of hospitalization | 0.180.10-0.020.06-0.04-0.10-0.040.02-0.31 | 0.0550.3010.8380.5330.6720.3360.7290.881**0.004** |
| Contralateral Associated movements\*\*\*\*\* | Socioeconomic statusGestational ageBirth weight (z-score)Univentricular CHDMean preoperative saturationAge at first CPB surgeryLowest intraoperative temperatureECC time during the first surgery Length of hospitalization | 0.050.100.17-0.010.040.07-0.02-0.290.19 | 0.6750.3920.1960.9630.7350.5400.911**0.025**0.160 |

CPB, cardiopulmonary bypass surgery. \* Adjusted R2: 0.15, ANOVA sig. *p* = **0.002**, \*\* Adjusted R2: 0.08, ANOVA sig. *p* = **0.040**, \*\*\* Adjusted R2: 0.01, ANOVA sig. *p* = 0.324, \*\*\*\* Adjusted R2: 0.06, ANOVA sig. *p* = 0.079 \*\*\*\*\* Adjusted R2: 0.03, ANOVA sig. *p* = 0.265