# Materials and Methods – additional information

## Data processing and statistical analysis

### Concordance and correlation of dependent variables

Kendall's coefficient of concordance showed high conformity between the tree evaluators for both AQV (W = 0.75 [0.749, 0.780], p < 0.001) and E-score (W = 0.79 [0.761, 0.984], p < 0.001) above our predefined threshold of W = 0.70. Based on these results we therefore assumed sufficient concordance between all three evaluators and for subsequent analyses, we calculated mean values of E-score and mode values of AQV for each participant.

### Exploratory data analysis

Normality of the continuous variables (i.e., UQYBT Right, UYBT Left, UQYBT Total, CKCUEST and E-score) is highlighted in Table 1. All variables are normally distributed except for E-score.

|  |  |
| --- | --- |
|  | **All participants (N = 111)** |
| **variable** | **W** | **p** | **normality** |
| UQYBT Right | 0.99 | 0.94 | Yes |
| UQYBT Left | 0.99 | 0.39 | Yes |
| UQYBT Total | 0.99 | 0.90 | Yes |
| CKCUEST | 0.99 | 0.46 | Yes |

Table 1 - Assumptions of normality of continuous variables included in data analysis.

The assumptions of variance equality of continuous variables was met between UQYBT Total & E-score and between CKCUEST & E-score. We highlight detailed results in Table 2.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **variables** | **Test** | **Result** | **p**  | **variance equality** |
| UQYBTT ~ E-score | Fligner-Killeen's test | chi-squared = 23.09 | 0.28 | Yes |
| CKCUEST ~ E-score | Fligner-Killeen's test | chi-squared = 27.78 | 0.11 | Yes |

Table 2 - Assumptions of variance equality between all continuous variables

Within association between variables, UQYBT Right and UQYBT Left were highly and positively correlated (r111 = 0.78 [0.70, 0.84], p < 0.001), and both were highly and positively correlated with UQYBT Total score (r111 = 0.94 [0.92, 0.96], p < 0.001 and r111 = 0.94 [0.92, 0.96], p < 0.001 for left and right arm, respectively). The association between UQYBT Total and CKCUEST was negligible negative (r111 = -0.05 [-0.24, 0.14], p = 0.583). Results of Kendall’s rank correlation showed statistically non-significant weak negative association between SPT and UQYBT Total (τ111 = -0.15 [-0.27, -0.03], p = 0.053), and negligible statistically non-significant positive association between SPT and CKCUEST (τ111 = 0.06 [-0.06, 0.17], p = 0.46). Results of correlation between The AQV and E-score were statistically significantly negatively associated (τ111 = -0.68[-0.772, -0.581], p < 0.001), see on Figure 1.

 

Figure 1 – Relationship between AQV and E-score within all participants.

### Relationship between quality of handstand and stability and flexibility tests

The VIF values for all three predictors were below the threshold, with UQYBT Total = 1.08, CKCUEST = 1.01 and SPT = 1.08 thus we can reject multicollinearity between predictors and entre them into the considered model (Figure 2).



Figure 2 - Assumptions for ordinal logistic model – VIF values of the independent variables.