|  |  |  |
| --- | --- | --- |
|  | **- Mask** | **+ Mask** |
| **Switch Task** | **n = 62** | **n = 62** |
| Switch costs (s) | 1.00-92.7 | 1.78-78.2 |
| Visual search letters (s)# | 19.9-67.9 | 19.7-108 |
| Visual search numbers (s) | 35.2-98.1 | 30.6-106 |
| **2-back task** | **n = 68** | **n = 65** |
| RT (ms) | 111-720 | 357-789 |
| Ratio of missings (%) | 0-9 | 0-10 |
| Ratio of false alarms (%) | 0-73 | 0-67 |
| **Corsi block tapping task** | **n = 68** | **n = 64** |
| Immediate block span (n) | 4-6 | 4-6 |
| Correct sequences (n) | 3-12 | 1-12 |
| Score | 4-30 | 2-30 |
| **Flanker task** | **n = 60** | **n = 49** |
| RT slowing (ms) | 4-195 | 0-208 |
| Difference error rate (%) | 0-308 | 0-391 |
| Count of false alarms (n) | 0-24 | 0-32 |

**Table S1.** Ranges (min-max) of cognitive performance without (- Mask) and with a mask (+ Mask).

# first twelve reactions, n number, ms milliseconds, RT reaction time, s second

|  |  |  |
| --- | --- | --- |
|  | **MV ± SD** | **Median**  **(25th-75th Percentile)** |
| **Switch Task1** | **n = 849** |  |
| Switch costs (s) | 30.9 ± 19.9 | 27.4 (16.5-41.4) |
| Visual search letters (s)# | 37.7 ± 13.2 | 34.6 (28.9-42.5) |
| Visual search numbers (s) | 54.0 ± 13.8 | 51.4 (44.4-60.7) |
| **2-back task1** | **n = 946** |  |
| RT (ms) | 481 ± 124 | 476 (391-561) |
| Ratio of missings (%) | 33.3 ± 18.1 | 33.3 (19.1-42.9) |
| Ratio of false alarms (%) | 18.8 ± 21.0 | 9.41 (4.71-23.5) |
| **Corsi block tapping task2** | **n = 563** |  |
| Immediate block span (n) | 5.17 ± 0.83 | 5.00 (5.00-6.00) |
| Correct sequences (n) | 6.75 ± 2.48 | 7.00 (5.00-8.00) |
| Score | 12.3 ± 6.14 | 12.0 (9.00-17.0) |
| **Flanker task2** | **n = 417** |  |
| RT slowing (ms) | 76.3 ± 38.8 | 73.4 (53.2-97.3) |
| Difference error rate (%) | 37.7 ± 56.4 | 22.1 (10.0-41.6) |
| Count of false alarms (n) | 9.19 ± 7.26 | 7.00 (3.00-15.0) |

**Table S2.** Reference Values of cognitive performance - Mean Value (MV) and Median including 25th-75th Percentile. # first twelve reactions, n number, ms milliseconds, RT reaction time, s second, SD standard deviation

1 Merged cognition data from the following studies: Jansen et al. 2020 [9], Drozdowska et al. 2020 [10,11], Drozdowska et al. 2021 [18], Sinningen et al. (ongoing study of the University children´s hospital, Ruhr-University Bochum, unpublished data); 2 Merged cognition data from the following studies: Drozdowska et al. 2020 [10,11], Drozdowska et al. 2021 [18]. Only 5th and 6th grade students were included.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **N-SC** | |  |  | **SC** | |  |  |
|  | **- Mask** | **+ Mask** | **p** | **p\*** | **- Mask** | **+ Mask** | **p** | **p\*** |
| **Switch Task** | **n = 33** | **n = 30** |  |  | **n = 29** | **n = 32** |  |  |
| Switch costs (s) | 27.2 ± 18.9 | 30.2 ± 19.9 | 0.54 | > 0.99 | 24.1 (18.0-30.6) | 22.2 (15.4-40.2) | 0.91 | > 0.99 |
| Visual search letters (s) | 37.2 (30.6-42.7) | 37.6 (31.3-44.0) | 0.39 | > 0.99 | 33.0 (29.7-41.6) | 36.2 (31.7-44.0) | 0.24 | > 0.99 |
| Visual search numbers (s) | 53.8 ± 11.7 | 51.3 ± 10.9 | 0.52 | > 0.99 | 49.6 (40.2-56.2) | 46.7 (43.1-57.7) | 0.91 | > 0.99 |
| **2-back task** | **n = 35** | **n = 31** |  |  | **n = 33** | **n = 34** |  |  |
| RT (ms) | 532 ± 86.2 | 531 ± 97.6 | 0.97 | > 0.99 | 490 ± 125 | 538 ± 81.1 | 0.07 | 0.84 |
| Ratio of missings (%) | 3.29 ± 1.89 | 4.01 ± 2.13 | 0.15 | > 0.99 | 2.86 (2.38-4.29) | 3.81 (2.74-4.76) | 0.09 | > 0.99 |
| Ratio of false alarms (%) | 8.24 (4.71-10.6) | 10.6 (4.71-24.7) | **0.08** | 0.96 | 9.41 (5.88-20.0) | 9.41 (5.88-19.1) | 0.81 | > 0.99 |
| **Corsi block tapping task** | **n = 35** | **n = 31** |  |  | **n = 33** | **n = 33** |  |  |
| Correct immediate block span (n) | 5.00 (5.00-6.00) | 5.00 (5.00-6.00) | 0.72 | > 0.99 | 5.00 (4.00-6.00) | 5.00 (5.00-6.00) | 0.58 | > 0.99 |
| Correct sequences (n) | 7.00 (5.00-8.00) | 6.00 (5.00-8.00) | 0.93 | > 0.99 | 7.00 (6.00-8.00) | 7.00 (5.00-8.00) | 0.75 | > 0.99 |
| Score | 12.0 (9.00-18.0) | 12.0 (9.00-18.0) | 1.00 | > 0.99 | 13.5 ± 6.03 | 12.9 ± 5.80 | 0.52 | > 0.99 |
| **Flanker task** | **n = 30** | **n = 22** |  |  | **n = 30** | **n = 27** |  |  |
| RT slowing (ms) | 77.4 ± 24.2 | 71.7 ± 50.5 | 0.63 | > 0.99 | 73.1 ± 41.7 | 76.8 ± 38.2 | 0.73 | > 0.99 |
| Difference error rate (%) | 16.2 (7.06-43.6) | 29.8 (7.72-58.7) | 0.15 | > 0.99 | 30.9 (13.7-76.6) | 39.9 (14.6-80.2) | 0.59 | > 0.99 |
| Count of false alarms (n) | 2.50 (1.00-5.25) | 6.50 (3.00-15.5) | **0.005** | 0.06 | 5.00 (1.75-21.3) | 8.00 (4.00-19.0) | 0.34 | > 0.99 |

**Table S3.** Cognitive performance of children from non-sport focused classes (N-SC) and sport-focused classes (SC) without (- Mask) and with a mask (+ Mask).

Normally distributed data are presented as mean ± standard deviation, non-normally distributed are displayed as median (25th-75th percentile), n number, ms milliseconds, RT reaction time, s second, \*Bonferroni-corrected, significant p < 0,05