### Supplementary material

**Table 4 – Predictors of TMT A scores in the LC group**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Predictor** | **p-Value** | **Effect Size (η²)** | **Beta Coefficient (β)** | **Standard Error (SE)** | **t-Value** |
| Age | 0.52 | 0.02 | 0.13 | 0.12 | -0.65 |
| Sex | 0.3 | 0.02 | -0.15 | 3.26 | 1.05 |
| Depression Severity | 0.96 | 0.14 | 0.35 | 0.25 | -0.05 |
| Education in years | 0.18 | 0.03 | 2.05 | 1.63 | 1.37 |
| Severity of Acute Covid-19 Infection | 0.22 | 0.02 | 1.38 | 1.70 | 1.25 |
| Duration of long-COVID Symptoms | 0.42 | 0 | -0.05 | 0.35 | 0.81 |
| Fatigue Severity | 0.9 | 0.04 | 0.30 | 0.23 | -0.13 |

**Abbreviations:**

TMT A, Trail Making Test A; LC, Long Covid Group

**Table 5 – Predictors of TMT B scores in the LC group**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Predictor** | **p-Value** | **Effect Size (η²)** | **Beta Coefficient (β)** | **Standard Error (SE)** | **t-Value** |
| Age | 0.01 | 0.15 | 0.64 | 0.23 | 2.80 |
| Sex | 0.98 | 0.01 | 0.13 | 6.19 | 0.02 |
| Depression Severity | 0.44 | 0.07 | 0.37 | 0.48 | 0.78 |
| Education in years | 0.10 | 0.10 | 5.18 | 3.10 | 1.67 |
| Severity of Acute Covid-19 Infection | 0.51 | 0.01 | 2.11 | 3.22 | 0.66 |
| Duration of long-COVID Symptoms | 0.22 | 0.03 | 0.84 | 0.67 | 1.25 |
| Fatigue Severity | 0.19 | 0.04 | 0.58 | 0.43 | 1.32 |

**Abbreviations:**

TMT B, Trail Making Test B; LC, Long Covid Group

Supplementary analysis of FC in long-COVID patients with covariates age, sex and Montgomery-Åsberg Depression Rating Scale (MADRS)

**MNI coordinates (mm) of the significant brain regions**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Seed region** |  | **MNI coordinates (mm)** | | | **k** | **p (FWE- corr)** |
| **x** | **y** | **z** |
| anterior globus pallidus (right hemisphere) | posterior cingulate cortex | -4 | -58 | 18 | 712 | 0,001 |
| posterior caudate (right hemisphere) | right precentral gyrus  left precentral gyrus | 54  -58 | -2  0 | 36  30 | 988  877 | <0,001  <0,001 |

In addition to our primary analysis, we conducted a separate analysis with covariates age, sex and MADRS to investigate the resting-state functional connectivity differences between long-COVID patients and healthy controls. The inclusion of covariates aimed to control for potential confounding variables such as depression. Notably, both analyses yielded nearly identical MNI coordinates, indicating that the same brain regions were consistently identified across analyses. However, the temporal pole no longer showed significant results in the second analysis after controlling for the covariates.