Supplementary Material

Attempting to Counteract Vigilance Decrement in Older Adults with Brain Stimulation

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# Supplementary Tables

## Reaction times analysis:

### LMM: 5 Hz Base

Supplementary Table . 5 Hz as base-group. LMM results for reaction times (n = 45, observations = 8413): β presents the regression coefficients, SE β the standard error of β. β0 represents the initial reaction time and β6 the increase in reaction time over time of the 5 Hzbase-group (bold font). Their p-values, indexed with a °, show a significant difference compared to zero. All other coefficients are tested against β0 and β6. Intercepts are given in ms, slopes in ms/min. Model parameters are: R² marginal = 0.056, R² conditional = 0.470 and AIC -9055.448

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **β** | **SE beta** | **t-value** | **p-value** |  |  | |
| **Intercepts:** |  |  |  |  |  |  | |
| **β0 5 Hzbase** | **511.7** | **28.0** | **18.29** | **0.000** |  | **< 0.001°** |
| β1 SHAMbase | 58.2 | 40.3 | 1.45 | 0.149 |  | > 0.05 |
| β2 40Hzbase | 65.4 | 38.9 | 1.68 | 0.093 |  | > 0.05 |
| β3 5 Hzinter | 39.5 | 11.6 | 3.40 | 0.001 |  | < 0.01 |
| β4 SHAMinter | 125.8 | 40.2 | 3.13 | 0.002 |  | < 0.01 |
| β5 40Hzinter | 95.8 | 38.9 | 2.46 | 0.014 |  | < 0.05 |
|  |  |  |  |  |  |  |
| **Slopes:** |  |  |  |  |  |  |
| **β6 time x 5 Hzbase** | **1.662** | **0.679** | **2.44** | **0.015** |  | **< 0.05°** |
| β7 time x SHAMbase | 1.746 | 0.974 | 1.79 | 0.073 |  | > 0.05 |
| β8 time x 40Hzbase | 0.420 | 0.941 | 0.45 | 0.654 |  | > 0.05 |
| β9 time x 5 Hzinter | -0.702 | 0.683 | -1.03 | 0.303 |  | > 0.05 |
| β10 time x SHAMinter | -0.678 | 0.968 | -0.70 | 0.483 |  | > 0.05 |
| β11 time x 40Hzinter | 0.936 | 0.937 | 1.00 | 0.317 |  | > 0.05 |

### LMM: 40 Hz Base

Supplementary Table . 40 Hz as base-group. LMM results for reaction times (n = 45, observations = 8413): β presents the regression coefficients, SE β the standard error of β. β0 represents the initial reaction time and β6 the increase in reaction time over time of the 40 Hzbase-group (bold font). Their p-values, indexed with a °, show a significant difference compared to zero. All other coefficients are tested against β0 and β6. Intercepts are given in ms, slopes in ms/min. Model parameters are: R² marginal = 0.056, R² conditional = 0.470 and AIC -9055.448

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **β** | **SE beta** | **t-value** | **p-value** |  |  | |
| **Intercepts:** |  |  |  |  |  |  | |
| **β0 40 Hzbase** | **577.1** | **27.0** | **21.34** | **0.000** |  | **< 0.001°** |
| β1 5 Hzbase | -65.4 | 38.9 | -1.68 | 0.093 |  | > 0.05 |
| β2 SHAMbase | -7.3 | 39.6 | -0.18 | 0.855 |  | > 0.05 |
| β3 40 Hzinter | 30.4 | 11.1 | 2.73 | 0.006 |  | < 0.01 |
| β4 5 Hzinter | -26.0 | 38.8 | -0.67 | 0.504 |  | > 0.05 |
| β5 SHAMinter | 60.4 | 39.5 | 1.53 | 0.127 |  | > 0.05 |
|  |  |  |  |  |  |  |
| **Slopes:** |  |  |  |  |  |  |
| **β6 time x 40 Hzbase** | **2.082** | **0.652** | **3.19** | **0.001** |  | **< 0.01°** |
| β7 time x 5 Hzbase | -0.420 | 0.941 | -0.45 | 0.654 |  | > 0.05 |
| β8 time x SHAMbase | 1.320 | 0.955 | 1.38 | 0.166 |  | > 0.05 |
| β9 time x 40 Hzinter | 0.516 | 0.655 | 0.79 | 0.432 |  | > 0.05 |
| β10 time x 5 Hzinter | -1.128 | 0.932 | -1.21 | 0.227 |  | > 0.05 |
| β11 time x SHAMinter | -1.104 | 0.949 | -1.16 | 0.246 |  | > 0.05 |

### LMM: Factor *medication*

Supplementary Table . LMM results for reaction times (n = 45, observations = 8413) with cardiovascular medication (yes/no) as the only factor: β presents the regression coefficients, SE β the standard error of β. β0 represents the initial reaction time and β2 the increase in reaction time over time for the healthy, i.e. participants without medication (bold font). Their p-values, indexed with a °, show a significant difference compared to zero. The other coefficients are tested against β0 and β2. Intercepts are given in ms, slopes in ms/min. Model parameters are: R² marginal = 0.021, R² conditional = 0.467 and AIC -9076.73

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **β** | **SE beta** | **t-value** | **p-value** |  |  | |
| **Intercepts:** |  |  |  |  |  |  | |
| **β0 healthy** | **586.4** | **24.4** | **24.04** | **0.000°** |  | **< 0.001°** |
| β1 medication | -18.4 | 32.7 | -0.56 | 0.576 |  | > 0.05 |
|  |  |  |  |  |  |  |
| **Slopes:** |  |  |  |  |  |  |
| **β2 time x healthy** | **2.796** | **0.476** | **5.87** | **0.000°** |  | **< 0.001°** |
| β3 time x medication | -1.584 | 0.638 | -2.48 | 0.013 |  | < 0.05 |

Supplementary Table . LMM results for reaction times (n = 45, observations = 8413) with cardiovascular medication (yes/no), *group*, and their interaction over time as factors: β presents the regression coefficients, SE β the standard error of β. β0 represents the initial reaction time and β6 the increase in reaction time over time of the SHAMbase-group without medication (bold font). Their p-values, indexed with a °, show a significant difference compared to zero. All other coefficients are tested against β0 and β6. Intercepts are given in ms, slopes in ms/min. Model parameters are: R² marginal = 0.152, R² conditional = 0.462 and AIC -8959.546

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **β** | **SE beta** | **t-value** | **p-value** |  |  | |
| **Intercepts:** |  |  |  |  |  |  | |
| **β0 SHAMbase** | **495.0** | **41.7** | **11.86** | **0.000** |  | **< 0.001°** |
| β1 5Hzbase | 41.6 | 55.2 | 0.75 | 0.451 |  | > 0.05 |
| β2 40Hzbase | 122.8 | 589.8 | 2.08 | 0.037 |  | < 0.05 |
| β3 SHAMinter | 103.3 | 18.1 | 5.72 | 0.000 |  | < 0.001 |
| β4 5Hzinter | 103.2 | 55.1 | 1.87 | 0.612 |  | > 0.05 |
| β5 40Hzinter | 181.4 | 58.9 | 3.08 | 0.002 |  | < 0.01 |
| β6 SHAMbase + medication | 130.2 | 55.1 | 2.36 | 0.229 |  | > 0.05 |
| β7 5Hzbase + medication | -183.5 | 76.5 | -2.40 | 0.016 |  | < 0.05 |
| β8 40Hzbase + medication | -195.4 | 76.3 | -2.56 | 0.011 |  | < 0.05 |
| β9 SHAMinter + medication | -61.7 | 23.8 | -2.59 | 0.010 |  | < 0.05 |
| β10 5Hzinter + medication | -230.9 | 76.3 | -3.03 | 0.003 |  | < 0.01 |
| β11 40Hzinter + medication | -240.5 | 76.2 | -3.16 | 0.002 |  | < 0.01 |
|  |  |  |  |  |  |  |
| **Slopes:** |  |  |  |  |  |  |
| **β12 time x SHAMbase** | **3.624** | **0.993** | **3.65** | **0.000** |  | **< 0.001°** |
| β13 time x 5Hzbase | -1.05 | 1.315 | -0.80 | 0.425 |  | > 0.05 |
| β14 time x 40Hzbase | 0.264 | 1.400 | 0.19 | 0.850 |  | > 0.05 |
| β15 time x SHAMinter | -2.376 | 1.059 | -2.24 | 0.025 |  | < 0.05 |
| β16 time x 5Hzinter | -2.28 | 1.305 | -1.75 | 0.081 |  | > 0.05 |
| β17 time x 40Hzinter | 1.404 | 1.389 | 1.01 | 0.313 |  | > 0.05 |
| β18 time x SHAMbase x medication | -0.354 | 1.308 | -0.27 | 0.788 |  | > 0.05 |
| β19 time x 5Hzbase x medication | -1.62 | 1.819 | -0.89 | 0.374 |  | > 0.05 |
| β20 time x 40Hzbase x medication | -2.538 | 1.808 | -1.40 | 0.161 |  | > 0.05 |
| β21 time x SHAMinter x medication | -0.132 | 1.399 | -0.09 | 0.926 |  | > 0.05 |
| β22 time x 5Hzinter x medication | -0.486 | 1.800 | -0.27 | 0.788 |  | > 0.05 |
| β23 time x 40Hzinter x medication | -3.552 | 1.796 | -1.98 | 0.048 |  | < 0.05 |