Supplementary Information

**Hypo-perfusion and hyper-resistance affect different cognitive functions**

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Supplemental Table S1. Raw data

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ID | Age | Sex | MMSE | FAB |  |  |  | Left | CCA |  |  |  |  |  | Right | CCA |  |  |
|  |  |  |  |  |  | DA | PSV | EDV | MV | PI | RI |  | DA | PSV | EDV | MV | PI | RI |
|  | y.o. |  |  |  |  | mm | cm/s | cm/s | cm/s |  |  |  | mm | cm/s | cm/s | cm/s |  |  |
| 1 | 43 | M | 30 | 17 |  | 7.4  | 87.1  | 27.0  | 40.2  | 1.50  | 0.69  |  | 6.8  | 81.9  | 19.7  | 33.4  | 1.86  | 0.76  |
| 2 | 43 | F | 29 | 17 |  | 6.7  | 104.7  | 33.2  | 49.5  | 1.44  | 0.68  |  | 7.1  | 96.4  | 24.9  | 42.1  | 1.70  | 0.74  |
| 3 | 53 | M | 29 | 16 |  | 6.1  | 72.6  | 17.0  | 29.7  | 1.87  | 0.77  |  | 6.9  | 89.6  | 20.2  | 32.4  | 2.14  | 0.77  |
| 4 | 62 | F | 30 | 17 |  | 6.4  | 94.3  | 30.1  | 48.1  | 1.33  | 0.68  |  | 6.9  | 94.3  | 32.1  | 52.6  | 1.18  | 0.66  |
| 5 | 64 | F | 29 | 15 |  | 5.9  | 77.7  | 8.3  | 28.8  | 2.41  | 0.89  |  | 6.6  | 90.2  | 13.2  | 32.8  | 2.35  | 0.85  |
| 6 | 65 | M | 30 | 15 |  | 7.2  | 74.6  | 21.8  | 38.2  | 1.38  | 0.71  |  | 7.7  | 79.8  | 29.0  | 45.6  | 1.11  | 0.64  |
| 7 | 65 | M | 30 | 17 |  | 8.1  | 87.1  | 28.0  | 42.9  | 1.38  | 0.68  |  | 8.6  | 75.7  | 25.9  | 37.4  | 1.33  | 0.66  |
| 8 | 68 | F | 27 | 17 |  | 7.0  | 85.0  | 31.1  | 50.1  | 1.08  | 0.63  |  | 7.3  | 71.5  | 21.8  | 39.9  | 1.25  | 0.70  |
| 9 | 69 | M | 30 | 17 |  | 7.3  | 84.0  | 29.0  | 41.2  | 1.33  | 0.65  |  | 7.5  | 77.8  | 22.8  | 34.4  | 1.60  | 0.71  |
| 10 | 69 | F | 29 | 13 |  | 7.5  | 100.6  | 27.0  | 49.2  | 1.50  | 0.73  |  | 7.7  | 123.4  | 28.0  | 52.3  | 1.82  | 0.77  |
| 11 | 70 | F | 28 | 15 |  | 6.9  | 97.8  | 19.6  | 43.6  | 1.79  | 0.80  |  | 6.9  | 86.4  | 15.8  | 42.9  | 1.65  | 0.82  |
| 12 | 71 | M | 29 | 16 |  | 7.2  | 114.0  | 40.4  | 62.4  | 1.18  | 0.65  |  | 6.4  | 100.6  | 25.9  | 50.0  | 1.49  | 0.74  |
| 13 | 71 | F | 29 | 16 |  | 7.3  | 77.0  | 18.3  | 35.5  | 1.65  | 0.76  |  | 6.8  | 84.6  | 24.0  | 40.7  | 1.49  | 0.72  |
| 14 | 74 | F | 27 | 12 |  | 7.3  | 72.6  | 15.1  | 30.5  | 1.89  | 0.79  |  | 7.9  | 59.9  | 10.7  | 25.9  | 1.90  | 0.82  |
| 15 | 75 | F | 29 | 11 |  | 6.8  | 92.3  | 22.8  | 39.4  | 1.76  | 0.75  |  | 6.8  | 96.4  | 21.8  | 42.8  | 1.74  | 0.77  |
| 16 | 76 | F | 30 | 13 |  | 7.3  | 113.0  | 29.0  | 51.9  | 1.62  | 0.74  |  | 6.7  | 70.5  | 17.6  | 35.6  | 1.49  | 0.75  |
| 17 | 76 | F | 23 | 10 |  | 7.3  | 71.3  | 17.7  | 37.2  | 1.44  | 0.75  |  | 8.3  | 67.5  | 12.6  | 32.4  | 1.69  | 0.81  |
| 18 | 76 | M | 30 | 15 |  | 7.1  | 94.3  | 20.7  | 39.8  | 1.85  | 0.78  |  | 7.7  | 112.0  | 25.9  | 46.3  | 1.86  | 0.77  |
| 19 | 76 | M | 28 | 9 |  | 8.9  | 96.4  | 13.5  | 33.6  | 2.47  | 0.86  |  | 8.7  | 79.8  | 11.4  | 31.5  | 2.17  | 0.86  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ID | Age | Sex | MMSE | FAB |  |  |  | Left | CCA |  |  |  |  |  | Right | CCA |  |  |
|  |  |  |  |  |  | DA | PSV | EDV | MV | PI | RI |  | DA | PSV | EDV | MV | PI | RI |
|  | y.o. |  |  |  |  | mm | cm/s | cm/s | cm/s |  |  |  | mm | cm/s | cm/s | cm/s |  |  |
| 20 | 76 | F | 25 | 13 |  | 7.2  | 73.8  | 23.3  | 39.0  | 1.29  | 0.68  |  | 7.7  | 61.2  | 19.6  | 33.0  | 1.26  | 0.68  |
| 21 | 77 | F | 24 | 13 |  | 8.2  | 55.5  | 12.8  | 27.4  | 1.56  | 0.77  |  | 8.7  | 41.2  | 6.9  | 18.5  | 1.85  | 0.73  |
| 22 | 77 | F | 30 | 13 |  | 7.3  | 75.7  | 25.9  | 39.8  | 1.25  | 0.66  |  | 8.2  | 65.3  | 18.7  | 32.4  | 1.44  | 0.71  |
| 23 | 77 | M | 25 | 10 |  | 7.5  | 118.2  | 23.8  | 43.9  | 2.15  | 0.80  |  | 8.4  | 105.7  | 16.6  | 39.1  | 2.28  | 0.84  |
| 24 | 77 | F | 28 | 16 |  | 6.8  | 67.4  | 23.8  | 37.2  | 1.17  | 0.65  |  | 7.0  | 65.3  | 22.8  | 37.8  | 1.12  | 0.65  |
| 24 | 78 | M | 26 | 9 |  | 6.7  | 67.7  | 7.7  | 18.6  | 3.23  | 0.89  |  | 7.6  | 76.4  | 8.2  | 22.1  | 3.09  | 0.89  |
| 26 | 78 | M | 30 | 14 |  | 6.4  | 71.3  | 13.9  | 27.5  | 2.09  | 0.81  |  | 6.5  | 74.5  | 20.2  | 41.2  | 1.32  | 0.73  |
| 27 | 79 | F | 29 | 14 |  | 6.6  | 75.7  | 22.8  | 37.6  | 1.41  | 0.70  |  | 7.2  | 86.0  | 28.0  | 47.4  | 1.22  | 0.67  |
| 28 | 78 | M | 27 | 14 |  | 7.7  | 65.6  | 10.7  | 26.7  | 2.06  | 0.84  |  | 7.5  | 83.3  | 12.0  | 32.8  | 2.17  | 0.86  |
| 29 | 78 | F | 29 | 16 |  | 8.1  | 62.5  | 23.3  | 35.0  | 1.12  | 0.63  |  | 7.8  | 56.2  | 16.4  | 27.3  | 1.46  | 0.71  |
| 30 | 79 | F | 29 | 14 |  | 6.4  | 68.8  | 14.5  | 30.5  | 1.78  | 0.79  |  | 6.9  | 67.5  | 17.0  | 29.6  | 1.71  | 0.75  |
| 31 | 80 | F | 29 | 13 |  | 7.7  | 78.7  | 8.5  | 24.7  | 2.84  | 0.89  |  | 8.0  | 79.3  | 10.9  | 28.1  | 2.43  | 0.86  |
| 32 | 80 | M | 29 | 14 |  | 8.1  | 76.6  | 13.5  | 31.7  | 1.99  | 0.82  |  | 8.9  | 62.5  | 18.9  | 34.6  | 1.26  | 0.70  |
| 33 | 81 | F | 27 | 13 |  | 8.7  | 36.5  | 10.2  | 19.4  | 1.36  | 0.72  |  | 8.9  | 34.7  | 8.8  | 18.2  | 1.42  | 0.75  |
| 34 | 83 | M | 30 | 10 |  | 6.8  | 80.6  | 20.2  | 33.7  | 1.79  | 0.75  |  | 8.0  | 103.7  | 18.7  | 36.1  | 2.35  | 0.82  |
| 35 | 83 | F | 30 | 15 |  | 6.9  | 78.2  | 16.4  | 38.2  | 1.62  | 0.79  |  | 6.6  | 77.0  | 17.0  | 38.8  | 1.55  | 0.78  |
| 36 | 85 | F | 29 | 15 |  | 8.5  | 79.8  | 21.8  | 39.4  | 1.47  | 0.73  |  | 8.3  | 56.0  | 12.4  | 26.1  | 1.67  | 0.78  |
| 37 | 87 | M | 28 | 12 |  | 7.2  | 77.8  | 15.6  | 32.6  | 1.91  | 0.80  |  | 8.1  | 62.2  | 12.4  | 26.0  | 1.92  | 0.80  |
| 38 | 87 | F | 28 | 13 |  | 7.5  | 90.9  | 15.1  | 32.3  | 2.35  | 0.83  |  | 8.4  | 83.3  | 18.3  | 37.0  | 1.76  | 0.78  |
| 39 | 89 | M | 23 | 10 |  | 8.6  | 46.5  | 8.5  | 17.4  | 2.18  | 0.82  |  | 8.0  | 52.4  | 8.8  | 22.3  | 1.96  | 0.83  |

y.o., years old; MMSE, Mini-Mental State Examination; FAB, Frontal Assessment Battery; DA, diameter of the artery; PSV, peak systolic velocity; EDV, end diastolic velocity; MV, mean velocity; PI, pulsatility index; RI, resistance index.

Supplemental Table S2. Promax-rotated principal component

coefficients and scores

|  |  |  |  |
| --- | --- | --- | --- |
| Parameters |  | Resistance component | Perfusion component |
| DA | Lt | -0.120 | -0.332 |
|  | Rt | -0.051 | -0.316 |
| PSV | Lt | 0.091 | 0.419 |
|  | Rt | 0.213 | 0.489 |
| EDV | Lt | -0.278 | 0.209 |
|  | Rt | -0.203 | 0.285 |
| MV | Lt | -0.189 | 0.289 |
|  | Rt | -0.056 | 0.040 |
| PI | Lt | 0.457 | 0.087 |
|  | Rt | 0.446 | 0.112 |
| RI | Lt | 0.440 | 0.049 |
|  | Rt | 0.442 | 0.087 |

DA, diameter of the artery; PSV, peak systolic velocity;

EDV, end diastolic velocity; MV, mean velocity;

PI, pulsatility index; RI, resistance index.