Supplementary Information

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

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Supplemental Table S1. Raw data

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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 |  |  |
| 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.