

Supplementary Table 1

Correlation of diffusion tensor imaging (DTI) indices of the cerebellar peduncles with SPPB sub-scores.

| Peduncle DTI-index | Walk Time score | Chair Rise score | Balance score |
|---------------------------|------------------------|-------------------------|----------------------|
| ICP-FA | 0.319 (0.003) | 0.364 (0.001) | 0.245 (0.024) |
| ICP-MD | 0.014 (0.902) | 0.08 (0.467) | 0.086 (0.434) |
| ICP-AD | 0.251 (0.021) | 0.350 (0.001) | 0.264 (0.015) |
| ICP-RD | -0.14 (0.200) | -0.102 (0.352) | -0.043 (0.695) |
| MCP-FA | 0.208 (0.056) | 0.158 (0.148) | 0.102 (0.355) |
| MCP-MD | -0.047 (0.668) | -0.048 (0.664) | -0.003 (0.978) |
| MCP-AD | 0.097 (0.377) | 0.055 (0.616) | 0.034 (0.761) |
| MCP-RD | -0.164 (0.134) | -0.132 (0.228) | -0.078 (0.479) |
| SCP-FA | 0.214 (0.049) | 0.235 (0.031) | 0.254 (0.019) |
| SCP-MD | 0.118 (0.283) | 0.029 (0.789) | -0.036 (0.747) |
| SCP-AD | 0.303 (0.005) | 0.201 (0.065) | 0.201 (0.066) |
| SCP-RD | -0.089 (0.420) | -0.149 (0.174) | -0.193 (0.077) |

Associations are expressed as Spearman's rho (ρ). Statistical significance is indicated in bold ($p \leq 0.05$). Abbreviations: Short physical performance battery (SPPB); inferior cerebellar peduncles (ICP); middle cerebellar peduncles (MCP); superior cerebellar peduncles (SCP); fractional anisotropy (FA); mean diffusivity (MD); axial diffusivity (AD); radial diffusivity (RD).

Supplementary Table 2

Correlation between diffusion tensor imaging (DTI) indices in selected brain stem tracts (cerebral peduncles, corticospinal tracts) and SPPB total score and sub-scores.

| Peduncle DTI-index | SPPB total score | Walk Time score | Chair Rise score | Balance score | Walk time |
|-------------------------------|-----------------------------|----------------------------|-----------------------------|--------------------------|-----------------------|
| CP-FA | 0.265 (0.014) | 0.254 (0.019) | 0.200 (0.066) | 0.150 (0.171) | -0.324 (0.002) |
| CP-MD | 0.093 (0.395) | 0.074 (0.502) | 0.079 (0.474) | 0.073 (0.509) | -0.037 (0.736) |
| CP-AD | 0.336 (0.002) | 0.312 (0.004) | 0.260 (0.016) | 0.207 (0.058) | -0.281 (0.009) |
| CP-RD | -0.142 (0.194) | -0.149 (0.175) | -0.112 (0.306) | -0.058 (0.598) | 0.212 (0.052) |
| CST-FA | 0.290 (0.007) | 0.230 (0.034) | 0.219 (0.044) | 0.215 (0.048) | -0.242 (0.025) |
| CST-MD | -0.049 (0.656) | 0.006 (0.958) | -0.100 (0.361) | 0.083 (0.449) | 0.046 (0.673) |
| CST-AD | 0.139 (0.203) | 0.136 (0.215) | 0.036 (0.743) | 0.255 (0.018) | -0.077 (0.482) |
| CST-RD | -0.155 (0.157) | -0.072 (0.512) | -0.157 (0.153) | -0.050 (0.652) | 0.116 (0.290) |

Associations are expressed as Spearman's rho (ρ). Statistical significance is indicated in bold ($p \leq 0.05$). Abbreviations: short physical performance battery (SPPB); cerebral peduncles (CP); corticospinal tracts (CST); fractional anisotropy (FA); mean diffusivity (MD); axial diffusivity (AD); radial diffusivity (RD).

Supplementary Table 3

Correlation between mobility performance measures and diffusion tensor imaging (DTI) indices in brain stem selected tracts (cerebral peduncles, corticospinal tracts).

| Peduncle DTI-index | SPMV | Velocity | Tinetti Gait | Tinetti Balance |
|-------------------------------|----------------------|----------------------|----------------------|------------------------|
| CP-FA | 0.303 (0.02) | 0.305 (0.019) | 0.058 (0.658) | 0.084 (0.517) |
| CP-MD | 0.143 (0.28) | 0.117 (0.377) | 0.207 (0.109) | 0.24 (0.06) |
| CP-AD | 0.323 (0.013) | 0.304 (0.019) | 0.239 (0.063) | 0.286 (0.024) |
| CP-RD | -0.130 (0.327) | -0.136 (0.303) | 0.034 (0.796) | 0.039 (0.765) |
| CST-FA | 0.327 (0.011) | 0.329 (0.011) | 0.122 (0.348) | 0.208 (0.105) |
| CST-MD | -0.043 (0.749) | -0.006 (0.963) | 0.137 (0.292) | 0.124 (0.336) |
| CST-AD | 0.131 (0.322) | 0.193 (0.143) | 0.292 (0.022) | 0.244 (0.056) |
| CST-RD | -0.148 (0.263) | -0.126 (0.341) | 0.036 (0.785) | 0.019 (0.883) |

Associations are expressed as Spearman's rho (ρ). Statistical significance is indicated in bold ($p \leq 0.05$). Abbreviations: self-paced maximum velocity (SPMV); cerebral peduncles (CP); corticospinal tracts (CST); fractional anisotropy (FA); mean diffusivity (MD); axial diffusivity (AD); radial diffusivity (RD).