

## Supplementary Information

**Table S1: Individual treatment settings and TPS parameter adjustments**

| ID  | Number of TPS sessions | Pulse repetition frequency (Hz) | Deviations from the standard pulse count | Deviations from the standard energy flux density                                | Days between UPDRS (pre) and first TPS session | Days between last TPS session and UPDRS (post) |
|-----|------------------------|---------------------------------|--|---|--|--|
| P01 | 10                     | 4                               | none                                     | none  | 6  | 6  |
| P02 | 10                     | 4                               | none                                     | 2x double stim <sup>1</sup> with 0.2 mJ/mm <sup>2</sup>                         | 0  | 0  |
| P03 | 10                     | 4                               | none                                     | none  | 0  | 0  |
| P04 | 10                     | 4                               | none                                     | none  | 14   | 61   |
| P05 | 10                     | 4                               | none                                     | none  | 5  | 25   |
| P06 | 10                     | 4                               | none                                     | 1x double stim <sup>1</sup> with 0.2 mJ/mm <sup>2</sup>                         | 21   | 18   |
| P07 | 10                     | 4                               | none                                     | none  | 49   | 3  |
| P08 | 10                     | 4                               | none                                     | 1x double stim <sup>1</sup> with 0.2 mJ/mm <sup>2</sup>                         | 7  | 6  |
| P09 | 10                     | 4                               | none                                     | none  | 0  | 10   |
| P10 | 10                     | 4                               | first TPS session with 2000 pulses       | 1x double stim <sup>1</sup> with 0.2 mJ/mm <sup>2</sup>                         | 0  | 0  |
| P11 | 10                     | 4                               | first TPS session with 2000 pulses       | none  | 26   | 12   |
| P12 | 10                     | 4                               | first TPS session with 2000 pulses       | none  | 18   | 6  |
| P13 | 10                     | 4                               | first TPS session with 2000 pulses       | none  | 10   | 4  |
| P14 | 10                     | 4                               | first TPS session with 2000 pulses       | 8 sessions with 0.2 mJ/mm <sup>2</sup> ; 2 sessions with 0.1 mJ/mm <sup>2</sup> | 17   | 21   |
| P15 | 10                     | 4                               | first TPS session with 2000 pulses       | 2x double stim <sup>1</sup> with 0.2 mJ/mm <sup>2</sup>                         | 2  | 0  |
| P16 | 10                     | 4                               | none                                     | 1x double stim <sup>1</sup> with 0.2 mJ/mm <sup>2</sup>                         | 14   | 11   |
| P17 | 10                     | 4                               | none                                     | 1x double stim <sup>1</sup> with 0.2 mJ/mm <sup>2</sup>                         | 26   | 22   |
| P18 | 10                     | 4                               | first TPS session with 2000 pulses       | 1x double stim <sup>1</sup> with 0.2 mJ/mm <sup>2</sup>                         | 34   | 18   |
| P19 | 10                     | 4                               | first TPS session with 2000 pulses       | none  | 8  | 9  |
| P20 | 10                     | 4                               | first TPS session with 2000 pulses       | 1x double stim <sup>1</sup> with 0.2 mJ/mm <sup>2</sup>                         | 24   | 21   |

<sup>1</sup> Double stim refers to the administration of two TPS sessions in a single day, as outlined in the Methods.

**Table S2: List of patient comorbidities**

| ID  | Diagnosis | Comorbidities  |
|-----|-----------|--|
| P01 | PD        | Arterial hypertension  |
| P02 | PD        | /  |
| P03 | PD        | Alzheimer's Disease  |
| P04 | PD        | /  |
| P05 | PD        | Bilateral presbycusis with hearing aids, Glaucoma  |
| P06 | PD        | /  |
| P07 | PD        | Arterial hypertension, Supraventricular extrasystoles, Multinodular Goiter, Chronic bronchitis   |
| P08 | PD        | Hypercholesterolemia, Mild organic mental disorder   |
| P09 | PD        | Frontoparietal atrophy, Migraine, Nerve root compression L3/L4, Sudeck's atrophy   |
| P10 | PD        | /  |
| P11 | PD        | Mild restless leg syndrome, Mild atherosclerotic macroangiopathy of the carotids, S1 root irritation   |
| P12 | PD        | Dementia syndrome, Anxiety disorder and moderate depressive episode, Nodular goiter, Epiphyseal cyst   |
| P13 | PD        | Hypercholesterolemia   |
| P14 | PD        | Orthostatic dysregulation, Hyperthyroidism, Chronic obstructive pulmonary disease, stage I, Depressive episodes  |
| P15 | PD        | Mild frontal lobe syndrome, Orthostatic hypertension, Lumbar spinal canal stenosis at L4/L5, Hypacusis, Mild polyneuropathy  |
| P16 | PD        | /  |
| P17 | PD        | Supra-aortic sclerosis with thickening of the intima media, Supratentorial subcortical lesions, Mild osteochondrosis C5/C6, C5/C6 Disk bulging, Retrospondylophytes, Constriction of the neuroforamina, Mild constriction of the neuroforamina C6/C7 |
| P18 | PD        | /  |
| P19 | PD        | Neurodegeneration with brain iron accumulation   |
| P20 | PD        | Arterial hypertension  |