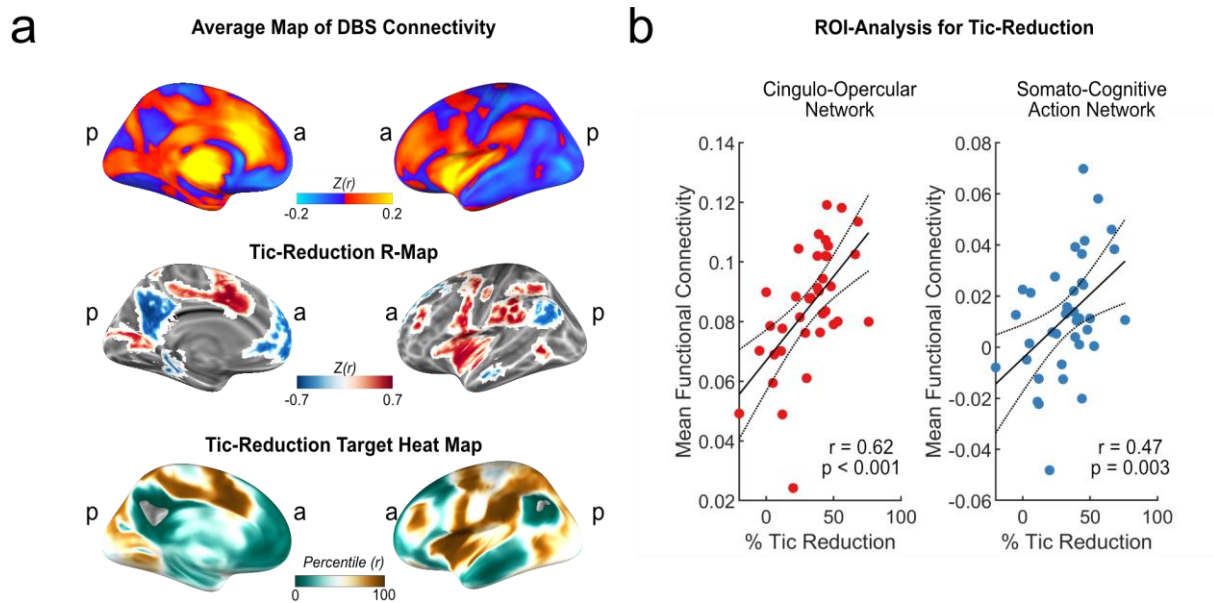
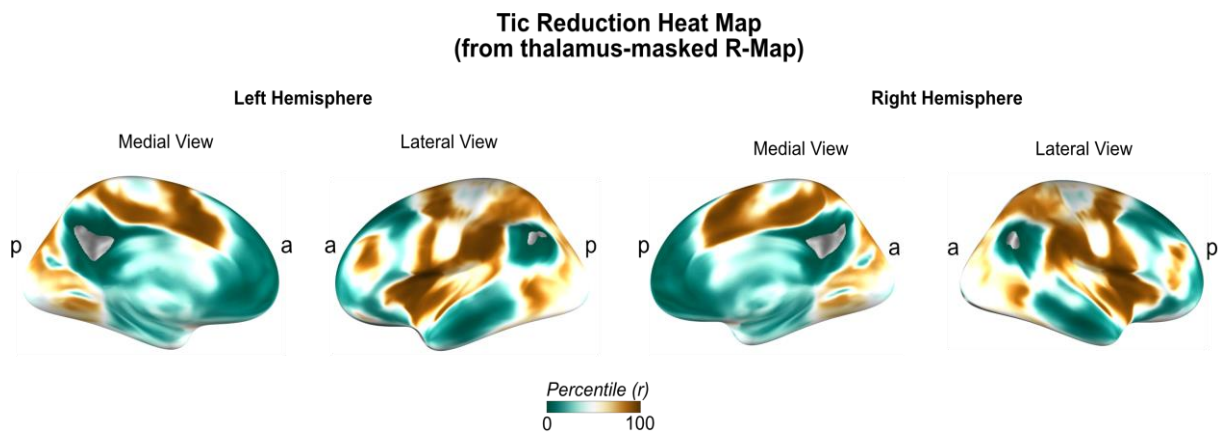


Supplement

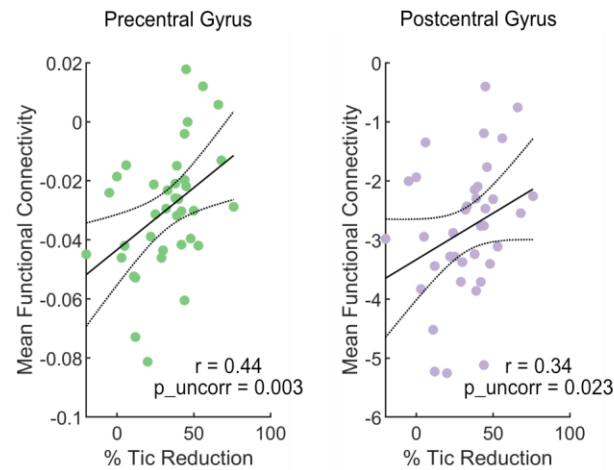


Supplemental Figure 1: Main Results Derived from Connectivity Maps of Electric Fields. Using the electric fields as a weighted seed for calculating the individual stimulation maps instead of the binarized stimulation site resulted in highly similar results both on the whole brain level (a) and regarding the Region-of-Interest (ROI)-Analysis (b). Permutation-based, two-tailed spearman rank correlations showed significant correlations between tic reduction and connectivity to both the cingulo-opercular ($r = 0.62$; $p = 0.0002$) and somato-cognitive action network ($r = 0.47$; $p = 0.003$) ($N = 37$). All brain surfaces are shown on the left hemisphere. All scatter plots include linear trend lines with 95% confidence bounds. a = anterior; p = posterior.



Supplemental Figure 2: Tic Reduction Heat Map, derived from thalamus-masked R-Map. Displayed is the Heat Map that results from the Tic-Reduction R-Map, when only the thalamus is masked instead of the whole subcortex (see Figure 4). Both maps are highly similar, since the original R-Map included rarely any voxels in the subcortex that resided outside the thalamus.

Post-Hoc Analysis of Tic Reduction and Connectivity to Subregions of the Sensorimotor Network



Supplemental Figure 3: Post-Hoc Analysis of Tic Reduction and Connectivity to Subregions of the Sensorimotor Network (SMN). Since the SMN showed a trend towards significance when correlating its connectivity to stimulation sites with tic reduction, we analyzed which anatomical regions within the SMN contributed to this effect. In the Permutation-based, two-tailed spearman rank correlations, both the precentral gyrus ($r = 0.44$, $p_{\text{uncorrected}} = 0.003$) and postcentral gyrus ($r = 0.34$, $p_{\text{uncorrected}} = 0.023$) demonstrated positive associations between connectivity and tic reduction ($N = 37$). However, in contrast to connectivity with the CON and SCAN, 92% of patients exhibited anticorrelation with the precentral gyrus, and 100% showed anticorrelation with the postcentral gyrus. This suggests a different mechanism compared to the connectivity patterns observed with the CON and SCAN. All scatter plots include linear trend lines with 95% confidence bounds. p_{uncorr} = uncorrected p-values

Supplemental Table 1: Peak Values of Target Heat Map

REGION	HEMISPHERE	MNI COORDINATE			SPEARMAN R	VOLUME
		X	Y	Z		
SUPRAMARGINAL GYRUS	R	61	-27	31	0.77	3258
INSULA/OPERCULUM	R	45	10	2	0.64	4030
SUPPLEMENTARY MOTOR AREA	R	2	7	50	0.72	1979
SUPRAMARGINAL GYRUS	L	-61	-32	27	0.65	930
INSULA/OPERCULUM	L	-57	6	3	0.64	181

L = Left; R = Right. Standard coordinates in MNI space and Spearman's rank correlation coefficient of the peak voxel are reported. Cluster volumes are reported in mm³.

Supplemental Table 2

Participant	Preoperative Modality	Preoperative Voxel Size	Postoperative Modality	Postoperative Voxel Size
1	MRI	[0.5 0.5 1]	CT	[0.6 0.6 0.8]
2	MRI	[0.5 0.5 1]	CT	[0.5 0.5 0.8]
3	MRI	[0.5 0.5 1]	CT	[0.6 0.6 0.5]
4	MRI	[0.5 0.5 1]	CT	[0.5 0.5 0.8]
5	MRI	[0.5 0.5 1]	CT	[0.5 0.5 0.8]
6	MRI	[0.6 0.6 2]	CT	[0.5 0.5 2.8]
7	MRI	[0.5 0.5 1]	CT	[0.5 0.5 0.8]
8	MRI	[0.6 0.6 2]	CT	[0.6 0.6 0.8]
9	MRI	[0.6 0.6 2]	CT	[0.5 0.5 3]
10	MRI	[0.5 0.5 1]	CT	[0.6 0.6 0.8]
11	MRI	[0.5 0.5 1]	CT	[0.6 0.6 0.8]
12	MRI	[0.5 0.5 1]	CT	[0.5 0.5 0.5]
13	MRI	[0.6 0.6 2]	CT	[0.4 0.4 0.8]
14	MRI	[0.9 0.9 1]	CT	[0.7 0.7 3]
15	MRI	[0.5 0.5 1]	CT	[0.6 0.6 0.8]
16	MRI	[0.7 0.7 0.7]	CT	[0.6 0.6 0.8]
17	MRI	[0.5 0.5 1]	CT	[0.6 0.6 0.8]
18	MRI	[0.5 0.5 1]	CT	[0.4 0.4 0.6]
19	MRI	[0.5 0.5 1]	CT	[0.6 0.6 0.8]
20	MRI	[0.6 0.6 2]	CT	[0.4 0.4 5]
21	MRI	[0.6 0.6 2]	CT	[0.4 0.4 4.8]
22	MRI	[1 1 1]	MRI	[1 1 1]
23	MRI	[1 1 1]	MRI	[1 1 1]
24	MRI	[1 1 1]	MRI	[1 1 1]
25	MRI	[1 1 1]	MRI	[1 1 1]
26	MRI	[1 1 1]	CT	[0.6 0.6 3]
27	MRI	[1 1 1]	MRI	[1 1 1]
28	MRI	[0.5 0.5 0.5]	CT	[0.5 0.5 1.3]
29	MRI	[0.7 0.7 0.7]	CT	[0.5 0.5 1.3]
30	MRI	[0.7 0.7 0.7]	CT	[0.5 0.5 1.3]
31	MRI	[1 0.5 0.5]	CT	[0.5 0.5 1.3]
32	MRI	[0.5 0.5 1]	CT	[0.5 0.5 1.3]
33	MRI	[0.5 0.5 1]	CT	[0.5 0.5 1.3]
34	MRI	[0.5 0.5 1]	CT	[0.5 0.5 1.3]
35	MRI	[1 1 1]	CT	[0.5 0.5 1.3]
36	MRI	[0.5 0.5 1]	CT	[0.6 0.6 0.8]
37	MRI	[0.5 0.5 1]	CT	[0.6 0.6 0.8]

MRI = Magnetic Resonance Imaging. CT = Computer Tomography; voxel sizes reported in mm.