

**Supplementary Table S1.** Mean stimulator output to evoke an MEP of 1 mV  $\pm$  SEM

	s-tACS <sub>Rest</sub>	s-tACS <sub>MSL</sub>	l-tACS <sub>Rest</sub>	l-tACS <sub>MSL</sub>
stimulator output (in %)	51.15 $\pm$ 2.66	50.85 $\pm$ 2.33	50.55 $\pm$ 2.54	51.6 $\pm$ 2.65

**Supplementary Table S2.** Descriptive data regarding AMT, mean  $\pm$  SEM

	s-tACS <sub>Rest</sub>	s-tACS <sub>MSL</sub>	l-tACS <sub>Rest</sub>	l-tACS <sub>MSL</sub>
pre (in %)	42.20 $\pm$ 1.04	44.40 $\pm$ 1.46	42.75 $\pm$ 1.37	42.95 $\pm$ 1.14
post 1 (in %)	41.70 $\pm$ 1.00	43.60 $\pm$ 1.54	42.80 $\pm$ 1.36	42.25 $\pm$ 1.15
post 2 (in %)	42.00 $\pm$ 1.00	44.00 $\pm$ 1.52	42.10 $\pm$ 1.31	41.20 $\pm$ 1.25

**Supplementary Table S3.** Descriptive data regarding RMT, mean  $\pm$  SEM

	s-tACS <sub>Rest</sub>	s-tACS <sub>MSL</sub>	l-tACS <sub>Rest</sub>	l-tACS <sub>MSL</sub>
pre (in %)	49.53 $\pm$ 2.35	48.25 $\pm$ 2.22	49.19 $\pm$ 1.92	47.59 $\pm$ 1.94
post 1 (in %)	48.82 $\pm$ 2.18	48.88 $\pm$ 2.41	49.44 $\pm$ 2.17	48.12 $\pm$ 2.00

**Supplementary Table S4.** Descriptive electric field magnitude, bias and spatial extent with respect to nine lateralized cerebellar ROIs. Means  $\pm$  standard deviations are shown for the left (L) and right (R) cerebellar hemisphere, respectively.

ROI	Hemisphere	E  <sub>target</sub> [V/m]	E  <sub>bias</sub> [mm]	E  <sub>extent</sub> [mm]
III	L	0.09 $\pm$ 0.008	27 $\pm$ 5.4	35 $\pm$ 1.5
	R	0.07 $\pm$ 0.008	25 $\pm$ 4.6	33 $\pm$ 1.4
IV/V	L	0.08 $\pm$ 0.009	33 $\pm$ 5.6	37 $\pm$ 1.4
	R	0.09 $\pm$ 0.008	26 $\pm$ 4	33 $\pm$ 1.2
VI	L	0.09 $\pm$ 0.011	33 $\pm$ 6.8	39 $\pm$ 1.4
	R	0.1 $\pm$ 0.01	24 $\pm$ 2.6	34 $\pm$ 0.6
Crus I	L	0.08 $\pm$ 0.013	38 $\pm$ 5.8	43 $\pm$ 1.5
	R	0.11 $\pm$ 0.013	24 $\pm$ 4.4	36 $\pm$ 0.8
Crus II	L	0.09 $\pm$ 0.017	33 $\pm$ 5.4	42 $\pm$ 1.5
	R	0.11 $\pm$ 0.017	20 $\pm$ 5.1	36 $\pm$ 1
VIIb	L	0.1 $\pm$ 0.018	33 $\pm$ 3.3	42 $\pm$ 1.2
	R	0.12 $\pm$ 0.016	22 $\pm$ 7.4	37 $\pm$ 1.2
VIII	L	0.11 $\pm$ 0.014	26 $\pm$ 2	40 $\pm$ 1
	R	0.12 $\pm$ 0.01	18 $\pm$ 6	36 $\pm$ 1.4
IX	L	0.12 $\pm$ 0.008	16 $\pm$ 3.3	36 $\pm$ 1
	R	0.13 $\pm$ 0.009	12 $\pm$ 4.1	35 $\pm$ 1.2
X	L	0.07 $\pm$ 0.008	27 $\pm$ 1.9	39 $\pm$ 0.8
	R	0.09 $\pm$ 0.011	21 $\pm$ 7.6	35 $\pm$ 1.4

**Supplementary Table S5.** Follow-up *t*-tests assessing electric field magnitude and bias differences across cerebellar ROIs in the right (R) hemisphere. *T*-value, *p*-value and Cohens *d* is depicted for every pairwise *t*-tests. Asterisks indicate significant results (Bonferroni-corrected).

Test conditions (R)	E  <sub>target</sub>			E  <sub>bias</sub>		
	<i>t</i> <sub>19</sub>	<i>p</i>	<i>d</i>	<i>t</i> <sub>19</sub>	<i>p</i>	<i>d</i>
Crus I VS Crus II	-2.4	> .9	0.54	3.4	.108	0.76
Crus I VS III	8.7*	< .001	2	-0.62	> .9	0.14
Crus I VS IV/V	7.6*	< .001	1.7	-1.03	> .9	0.23
Crus I VS VI	3.4	.104	0.76	0.59	> .9	0.13
Crus I VS VIIb	-4.7*	.005	1.06	1.31	> .9	0.29
Crus I VS VIII	-7.2*	< .001	1.61	4.07*	.024	0.91
Crus I VS IX	-9.3*	< .001	2.08	9.41*	< .001	2.11
Crus I VS X	8.5*	< .001	1.9	1.88	> .9	0.42
Crus II VS III	8.2*	< .001	1.82	-2.54	.725	0.57
Crus II VS IV/V	7*	< .001	1.56	-3.08	0.222	0.7
Crus II VS VI	4.4*	.012	0.98	-2.57	0.67	0.58
Crus II VS VIIb	-7.7*	< .001	1.71	-1.9	> .9	0.43
Crus II VS VIII	-4.9*	.004	1.08	2.2	> .9	0.49
Crus II VS IX	-5.6*	.001	1.26	5.29*	.002	1.18
Crus II VS X	7.3*	< .001	1.63	-0.19	> .9	0.04
III VS IV/V	-6.1*	< .001	1.36	-0.81	> .9	0.18
III VS VI	-9.8*	< .001	2.18	1.34	> .9	0.3
III VS VIIb	-10.8*	< .001	2.42	1.35	> .9	0.3
III VS VIII	-19.3*	< .001	4.33	3.97*	.03	0.89
III VS IX	-29.6*	< .001	6.62	12.04*	< .001	2.69
III VS X	-0.3	> .9	0.06	3.1	.213	0.69
IV/V VS VI	-10*	< .001	2.23	2.18	> .9	0.49
IV/V VS VIIb	-10*	< .001	2.17	1.7	> .9	0.38
IV/V VS VIII	-17.6*	< .001	4	4.55*	.008	1.02
IV/V VS IX	-27.3*	< .001	6.1	13.17*	< .001	2.94
IV/V VS X	3.4	.117	0.75	3.48	.089	0.78
VI VS VIIb	-7.4*	< .001	1.65	0.91	> .9	0.2
VI VS VIII	-13.2*	< .001	2.95	3.79*	.045	0.85
VI VS IX	-16*	< .001	3.58	11.3*	< .001	2.53
VI VS X	8.1*	< .001	1.81	1.81	> .9	0.4
VIIb VS VIII	-1.6	> .9	0.35	4.37*	.012	0.98
VIIb VS IX	-2.7	.474	0.61	5.4*	.001	1.21
VIIb VS X	9.3*	< .001	2.07	0.46	> .9	0.1
VIII VS IX	-3	.289	0.66	4.49*	.009	1
VIII VS X	15*	< .001	3.36	-1.59	> .9	0.36
IX VS X	19.2*	< .001	4.28	-6.43*	< .001	1.44

**Supplementary Table S6.** Descriptive electric field magnitudes for non-lateralized cerebellar vermis regions. Means ± standard deviations are shown, according to ROIs of the AAL atlas.

	E  <sub>target</sub> [V/m]
Vermis I/II	0.07 ± 0.013
Vermis III	0.07 ± 0.008
Vermis IV/V	0.1 ± 0.01
Vermis VI	0.11 ± 0.014
Vermis VII	0.12 ± 0.018
Vermis VIII	0.12 ± 0.017
Vermis IX	0.13 ± 0.013
Vermis X	0.11 ± 0.013