

Supplementary Material

Table S1. Pre-defined regions and the respective electrodes in the HD-EEG.

Brain area	colour	Electrode Numbers	
		right	left
Primary motor cortex	Pink	195, 196, 197, 198, 207, 206, 205	24, 17, 50, 51, 42, 43, 58
Primary somatosensory cortex	green	182, 183, 184, 185, 186	9, 44, 52, 59, 65
Premotor cortex	yellow	212, 213, 214, 215, 223, 224	30, 36, 40, 41, 49, 56
Supplementary motor area	blue	5, 6, 7, 14	16, 22, 23, 29
Posterior parietal cortex	purple	128, 129, 130, 141, 142, 152, 153, 161, 162	86, 87, 88, 89, 97, 98, 99, 100, 110

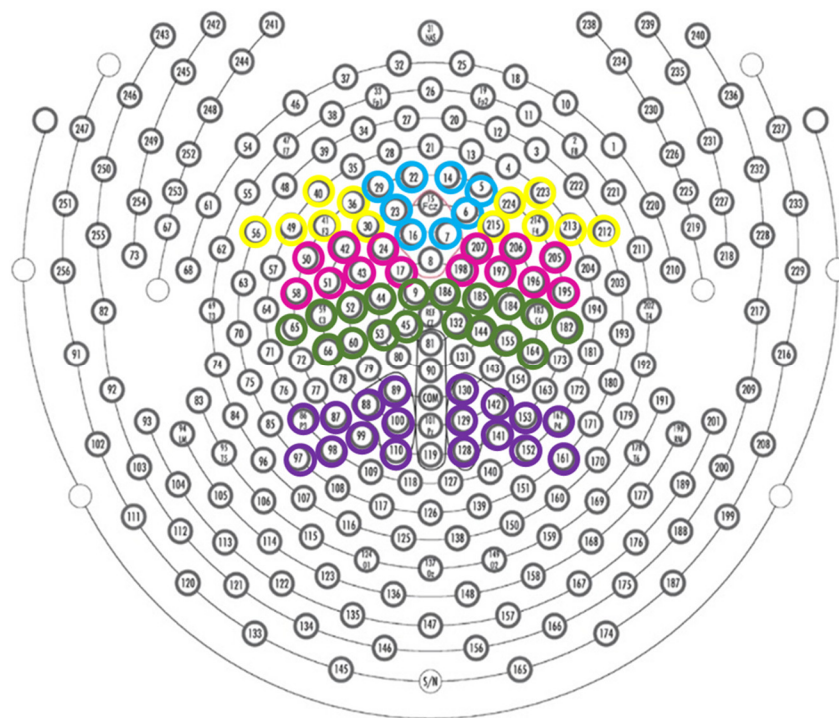


Figure S1. Pre-defined regions and the respective electrodes in the HD-EEG.

Table S2. Individual averaged model order of healthy participants and patients with SCI.

healthy participant	mean model order	patient with SCI	mean model order
HP1	43	P1	22
HP2	66	P2	64
HP3	27	P3	67
HP4	29	P4	37
HP5	30	P5	26
HP6	47	P6	29
HP7	15	P7	47
HP8	38	P8	41
HP9	49	P9	45
HP10	33	P10	70
HP11	40	P11	34
HP12	47	P12	41
HP13	27	P13	32
HP14	22	P14	49
HP15	55	P15	37
HP16	27	P16	44
HP17	85	P17	39
HP18	39	P18	36
HP19	43	P19	50
HP20	66	P20	42
HP21	28	P21	60
HP22	21	P22	17
HP23	54	P23	72
HP24	24		
HP25	44		
HP26	32		
HP27	29		
HP28	26		
HP29	37		
HP30	49		

Table S3. EEG-studies on the effects of sports/ exercise /physical activity on brain activity in patients with SCI.

Author	Year	n Patients	Activity	EEG analysis	Focus
De Mello et al. [41]	1996	11	Leg movement with hand cycloergometer (increments of 12.5 w every 2 minutes until exhaustion)	polysomnography, REM phase identification	Sleep study on restless leg syndrome and periodic leg movement
De Mello et al. [42]	1997	28	Leg movement with hand cycloergometer (increments of 12.5 w every 2 minutes until exhaustion)	K-complex	Sleep study on periodic leg movement and myoclonus
De Mello et al. [43]	2002	13	Leg movement with hand cycloergometer (increments of 12.5 w every 2 minutes until exhaustion)	polysomnography, REM phase identification	Sleep study on periodic leg movement
Cremoux et al. [44]	2017	8	isometric muscle contraction: (right elbow joint) 21 repetitions each lasting 6s at 20%, 50% and 70% of rMVC	Net Torque Signal Coherence	Corticomuscular Coherence
Sato et al. [45]	2017	11	Wheelchair propulsion: on bicycle training rollers, maximum speed for 15 minutes	Peak Alpha Frequency	Difference Pre- and Post exercise

REM= Rapid Eye Movement, rMVC= relative Maximum Voluntary Contractions.