Table 2: Dataset of all reports investigating aperiodic neural activity in clinical populations

Disorder	Reference	Mod	State	CP	Analysis	#CL	#CT	Method	FR	Result	BM	Interp.
Epilepsy												
Epilepsy	Inouye et al., 1994	EEG	rest	w/in	state	10	-	regression	0-35	↑ before seizure	no	unstated
Epilepsy	Janjarasjitt & Loparo, 2013	iEEG	events	w/in	state	5	-	regression	unclear	↑ during seizure	no	self-sim
Epilepsy	Janjarasjitt & Loparo, 2014	iEEG	events	w/in	state	5	-	regression	unclear	↓ during seizure	no	self-sim
Epilepsy	Janjarasjitt, 2015	iEEG	events	w/in	state	5	-	regression	low high	↓ during seizure [low range] ↑ during seizure [high range]	no	self-sim
Epilepsy	Janjarasjitt & Loparo, 2015	iEEG	events	w/in	state	1	-	regression	unclear	↑ during seizure	no	self-sim
Epilepsy	Yan et al., 2016	iEEG	events	w/in	state	3	-	regression	unclear	Δ btwn ictal & non-ictal	no	criticality
Epilepsy	Giuliano et al., 2019	EEG	resting	btwn	diagnostic	10	-	regression	unclear	↑ clinical vs. control	no	self-sim
Epilepsy	Meisenhelter et al., 2021	iEEG	task	w/in	state	307	-	regression	2-120	↑ after IEDs	no	unstated
Epilepsy	van Heumen et al., 2021	MEG	sleep	w/in	state	1	-	specparam	1-70	↑ in SOZ prior / during seizure	no	synchro
Epilepsy	Armstrong et al., 2022	EEG	rest	w/in	treatment	47	-	unclear	unclear	↓ on vs. off medication	yes	synchro
Epilepsy	Coa et al., 2022	EEG	rest	w/in	treatment	10	-	unclear	unclear	↓ w stimulation [VNS]	no	unstated
Epilepsy	Jiang et al., 2022	iEEG	rest	w/in	region	27	-	specparam	1-250	↑ in SOZ vs. non-SOZ	yes	E/I ratio
Epilepsy	Kaur et al., 2023	MEG	rest	btwn	symptoms	36	-	specparam	1-47.5	Δ ~increased seizure severity	no	E/I ratio
Epilepsy	Kluger et al., 2023	MEG	rest	btwn w/in	state state	1	40	specparam	1-40	Δ pattern respiration coupling ↓ during inter-ictal spikes	no	E/I ratio
Epilepsy	Kundu et al., 2023	RNS	samples	w/in	prognosis	1	-	specparam	unclear	↓ over time after surgery	yes	E/I ratio
Epilepsy	S. Liu et al., 2023	EEG	events	w/in	state	28	-	specparam	unclear	can predict ictal vs. interictal	yes	unstated
Epilepsy	Y. Yang et al., 2023	EEG	unclear	w/in	treatment	8	-	specparam	1-40	↓ w stimulation [TMS]	no	E/I ratio
Epilepsy	A. I. Yang et al., 2023	DBS	events	w/in	state	14	-	specparam	unclear	↑ during seizure	yes	E/I ratio
Epilepsy	Charlebois et al., 2024	RNS	samples	w/in	state	24	-	specparam	4-75	↑ during seizure Δ sleep / wake ~ seizures	yes	E/I ratio
Epilepsy	Cummins et al., 2024	iEEG	medit	w/in	region	8	-	specparam	2-55	Δ btwn states [epileptic regions]	no	unstated
Epilepsy	Duma et al., 2024	EEG	rest	btwn	diagnostic	67	35	specparam	1-35	↑ clinical vs. control	yes	E/I ratio
Epilepsy	Kienitz et al., 2024	EEG iEEG	resting	btwn w/in	diagnostic state	28 10	25 -	specparam	1-20 30-100	Δ clinical vs. control ↑ IED present vs. absent	yes	E/I ratio
Epilepsy	Kopf et al., 2024	MEG	resting	btwn w/in	diagnostic state	51	49	specparam	1-45	↓ clinical vs. control ↑ IED present vs. absent	yes	E/I ratio
Epilepsy	Kozma et al., 2024	iEEG MEG	rest	w/in	treatment	63 33	234 70	specparam	1-30	Ø across surgical outcomes	yes	unstated
Epilepsy	H. Li et al., 2024	EEG	events	w/in	state	25	-	specparam	unclear	↑ preictal vs. interictal	yes	unstated
Epilepsy	Liao et al., 2024	EEG	events	w/in	state	23	-	specparam	0.5-30	↑ ictal vs. interictal	no	unstated
Epilepsy	S. Liu et al., 2024	EEG	samples	w/in	state	14	-	specparam	unclear	↑ ictal vs. non-ictal	yes	unstated
Epilepsy	Y. Yang et al., 2024	EEG	sleep	w/in	treatment	18	-	specparam	0.5-40	↓ w stimulation [VNS]	yes	E/I ratio
Epilepsy	Z. Yu et al., 2025	DBS	events	w/in	state	39	-	regression	1-15 15-45	↓ during seizure [low range] ↑ during seizure [high range]	yes	unstated
Parkinson's Disease												
Parkinson's	Martin et al., 2018	DBS	rest	btwn	symptoms	13	-	regression	8-90	Ø w symptoms	yes	E/I ratio
Parkinson's	Mostile et al., 2019	EEG	rest	btwn	diagnostic	34	18	regression	unclear	↓ clinical vs. control	yes	complexity
Parkinson's	Vinding et al., 2020	MEG	rest	btwn	diagnostic	19	19	specparam	1-48	↑ clinical vs. control	no	unstated

Disorder	Reference	Mod	State	CP	Analysis	#CL	#CT	Method	FR	Result	BM	Interp.
Parkinson's	Belova et al., 2021	DBS	rest	w/in	state symptoms	22	-	specparam	unclear	⬇ w movement Δ ~motor symptoms	no	E/I ratio
Parkinson's	Z. Wang et al., 2022	EEG	rest	w/in	treatment	15	16	specparam	2-40	⬆ on vs. off medication	yes	E/I ratio
Parkinson's	Zhang et al., 2022	EEG	rest	w/in	treatment	15	-	Colombo	2-45	⬆ on vs. off medication	yes	E/I ratio
Parkinson's	Bernasconi et al., 2023	EEG	rest	btwn	symptoms	75	-	specparam	2-45	Ø w cognitive symptoms	no	unstated
Parkinson's	Clark et al., 2023	DBS	intra-op	w/in	symptoms	19	-	specparam	2-50	Ø w motor symptoms	yes	E/I ratio
Parkinson's	Darmani et al., 2023	DBS	rest	w/in	treatment prognosis	10	-	irasa	13-35	Ø on vs. off medication ⬆ over time with DBS	yes	E/I ratio
Parkinson's	Gimenez-Aparisi et al., 2023	EEG	rest	btwn	diagnostic	13	20	Colombo	2.5-45	⬆ clinical vs. control	yes	E/I ratio
Parkinson's	Helson et al., 2023	MEG	rest	btwn	diagnostic	17	20	specparam	1-45	⬆ clinical vs. control Ø on vs. off medication	no	E/I ratio
Parkinson's	Rosenblum, Shiner, et al., 2023	EEG	rest	btwn	diagnostic	22 21	28	irasa	1-26	⬆ Parkinson's vs. controls ⬆ DLB vs. Parkinson's	yes	E/I ratio
Parkinson's	Wiesman et al., 2023	MEG	rest	btwn	diagnostic	79	65	specparam	2-40	⬆ clinical vs. controls ⬆ ~worse clinical scores	no	slowing
Parkinson's	Wiest et al., 2023	DBS	rest	w/in	treatment	24	-	specparam	40-90 10-50	⬆ on vs. off medication ⬆ w stimulation [DBS]	yes	E/I ratio
Parkinson's	Wu et al., 2023	DBS	intra-op	btwn	diagnostic	61	-	specparam	2-45	⬇ early onset vs. late onset	yes	E/I ratio
Parkinson's	Bush et al., 2024	DBS	intra-op	btwn	symptoms	29	-	specparam	1-50	⬆ ~worse clinical scores	yes	unstated
Parkinson's	Da Silva Castanheira et al., 2024	MEG	rest	btwn	diagnostic	79	54	specparam	2-40	reduced differentiation clinical individuals vs. controls	yes	E/I ratio
Parkinson's	Joshi et al., 2024	DBS	rest	w/in	prognosis	7	-	specparam	4-60	Δ w exercise training	no	E/I ratio
Parkinson's	X. Liu et al., 2024	DBS	intra-op	w/in	region	146	-	specparam	3-70	Δ across STN sub-regions	yes	E/I ratio
Parkinson's	McKeown et al., 2024	EEG	rest	btwn	diagnostic treatment	26	26	specparam	2-40	⬆ clinical vs. control Ø on vs. off medication	yes	E/I ratio
Parkinson's	Monchy et al., 2024	EEG	task	btwn	diagnostic	30	30	specparam	1-40	Ø clinical vs. control	yes	E/I ratio
Parkinson's	Pardo-Valencia et al., 2024	DBS	rest	w/in	treatment	21	-	specparam	1-95	Ø on vs. off medication	no	E/I ratio
Parkinson's	Peng et al., 2024	DBS	rest	w/in	prognosis	15	-	specparam	1-38	⬇ over time / after surgery	no	E/I ratio
Parkinson's	Vinding et al., 2024	MEG	rest	btwn	diagnostic	78	60	specparam	0.5-40	⬆ clinical vs. control	yes	E/I ratio
Parkinson's	Sayfulina et al., 2025	DBS	rest	w/in	treatment	14	-	specparam	2-49	⬆ on vs. off medication	yes	E/I ratio
Parkinson's	Wiesman et al., 2025	MEG	rest	btwn	diagnostic	58	65	specparam	2-40	⬆ clinical vs. control	yes	E/I ratio
Attention Deficit Hyperactivity Disorder (ADHD)												
ADHD	Pertermann et al., 2019	EEG	task	btwn	diagnostic	29	32	regression	0.5-20	⬇ clinical vs. control ⬆ on vs. off medication	no	neural noise
ADHD	Robertson et al., 2019	EEG	rest	btwn	diagnostic	76	78	specparam	4-50	⬆ clinical vs. control ⬇ medicated vs. unmedicated	yes	E/I ratio
ADHD	Ostlund et al., 2021	EEG	rest	btwn	diagnostic	87	97	specparam	2-50	⬇ clinical vs. control	no	E/I ratio
ADHD	Arnett, Fearey, et al., 2022	EEG	video	btwn	diagnostic	88	29	specparam	1-50	⬇ clinical [condition specific]	yes	integration
ADHD	Arnett, Peisch, et al., 2022	EEG	base	btwn	diagnostic	82	28	specparam	1-50	⬇ clinical vs. control	yes	oscillations
ADHD	Arnett, Rutter, et al., 2022	EEG	video	btwn	diagnostic	29	30	specparam	1-50	⬇ clinical [non-responders]	yes	oscillations
ADHD	Karalunas et al., 2022	EEG	rest	btwn w/in	diagnostic at risk	107 69	152	specparam	2-50 1-30	⬇ ~ADHD diagnosis [teens] ⬆ ~ADHD history [infants]	yes	E/I ratio
ADHD	Tröndle et al., 2022	EEG	rest	btwn	diagnostic	1038	732	specparam	2-40	Ø clinical vs. control	no	E/I ratio

Disorder	Reference	Mod	State	CP	Analysis	#CL	#CT	Method	FR	Result	BM	Interp.
ADHD	Dakwar-Kawar et al., 2023	EEG	rest	btwn	treatment	23	-	specparam	1-40	⬇ w stimulation [tRNS]	no	E/I ratio
ADHD	Arnett et al., 2024	EEG	rest	btwn	diagnostic	178	107	specparam	1-50	⬇ clinical vs. control	no	E/I ratio
ADHD	Chen et al., 2024	EEG	rest	btwn	diagnostic	62	52	specparam	unclear	⬇ clinical vs. control	yes	unstated
ADHD	Dakwar-Kawar et al., 2024	EEG	rest	btwn	diagnostic	33	33	specparam	1-40	⬆ clinical vs. control	yes	E/I ratio
ADHD	Peisch & Arnett, 2024	EEG	rest	btwn	diagnostic	75	29	specparam	1-50	⬇ clinical vs. control	no	oscillations
ADHD	Peisch et al., 2024	EEG	rest	btwn	diagnostic	37	15	specparam	1-50	⬆ clinical vs. control	yes	oscillations
ADHD	Snipes et al., 2024	EEG	task	btwn	diagnostic	58	105	specparam	2-35	Ø clinical vs. control	no	E/I ratio
ADHD	Vojnits et al., 2024	EEG	sleep	btwn	diagnostic	19	29	Bódizs	2-48	Ø clinical vs. control	no	unstated
Autism Spectrum Disorder (ASD)												
Autism	Q. Li, Weiland, et al., 2022	EEG	rest	btwn	diagnostic	95	91	specparam	unclear	Ø clinical vs. control	yes	unstated
Autism	Manyukhina et al., 2022	MEG	rest	btwn	diagnostic	49	49	regression	35-45	⬇ clinical vs. control	yes	E/I ratio
Autism	Shuffrey et al., 2022	EEG	sleep	w/in	at risk	71	-	specparam	1-20	⬆ ~subsequent autism scores	yes	E/I ratio
Autism	Dede et al., 2023	EEG	rest	btwn	diagnostic	421	338	regression	2-24	Ø clinical vs. control	yes	unstated
Autism	Ellis et al., 2023	EEG	rest	btwn	diagnostic	15	25	specparam	3-28	Ø clinical vs. control	no	E/I ratio
Autism	Martinez & Chen, 2023	EEG	sleep	btwn	diagnostic	149	197	specparam	unclear	⬇ clinical vs. control	yes	E/I ratio
Autism	Webb et al., 2023	EEG	video	btwn	diagnostic	280	119	regression	2-50	Ø clinical vs. control	yes	E/I ratio
Autism	An et al., 2024	EEG	video	btwn	diagnostic	85	467	specparam	2-45	⬇ clinical vs. control	no	unstated
Autism	Arutiunian et al., 2024	MEG	base	btwn	diagnostic	20	20	specparam	1-35	⬇ clinical vs. control	no	E/I ratio
Autism	Carter Leno et al., 2024	EEG	video	btwn	at risk	76	26	specparam	1-20	⬆ ~hyperresponsivity symptoms	no	E/I ratio
Autism	Cazares et al., 2024	EEG	video	w/in	treatment	24	-	specparam	0.5-13	⬇ on vs. off medication [cannabidiol]	yes	E/I ratio
Autism	Chung et al., 2024	EEG	video	btwn	diagnostic symtoms	25	80	specparam	2.5-50	Ø future diagnosed vs. not ⬇ ~future repetitive behaviors	no	E/I ratio
Autism	Makale et al., 2024	EEG	rest	w/in	treatment	123	-	regression	2-20	⬇ w stimulation [rTMS]	yes	E/I ratio
Autism	McCleod et al., 2024	EEG	rest	btwn	diagnostic	19	23	irasa	unclear	⬆ clinical vs. control	no	unstated
Alzheimer's Disease												
Alzheimer's	Vyšata et al., 2014	EEG	rest	btwn	diagnostic	120	120	regression	0.5-60	⬇ clinical vs. control	yes	criticality
Alzheimer's	Springer et al., 2022	MEG	base	btwn	diagnostic	38	20	specparam	4-50	Ø clinical vs. control	no	unstated
Alzheimer's	Azami et al., 2023	EEG	rest	btwn	diagnostic	41	44	specparam	1-45	Ø clinical vs. control	no	E/I ratio
Alzheimer's	Martínez-Cañada et al., 2023	EEG MEG	rest	btwn	diagnostic	26 50	114 51	specparam	1-40	Ø AD vs. control [EEG] ⬇ MCI vs. control [MEG]	yes	E/I ratio
Alzheimer's	Van Nifterick et al., 2023	MEG	rest	btwn	diagnostic symptoms	51	45	specparam	30-48	⬇ clinical vs. control [AD] ⬇ ~worse cognitive scores	no	E/I ratio
Alzheimer's	Burelo et al., 2024	EEG	rest	btwn	diagnostic	64	21	specparam	1-45	Δ in different diagnoses	no	slowing
Alzheimer's	Dunstan et al., 2024	EEG	rest	btwn	diagnostic	10	11	specparam	unclear	Ø clinical vs. control	no	unstated
Alzheimer's	Kopčanová et al., 2024	EEG	rest	btwn	diagnostic	47	42	specparam	3-40	Ø clinical vs. control	yes	slowing
Alzheimer's	Mostile et al., 2024	EEG	rest	btwn	diagnostic	230	37	regression	unclear	Δ in different diagnoses	yes	self-sim
Alzheimer's	Pace et al., 2024	EEG	rest	btwn	at risk	98	-	specparam	1-30	⬇ ~dementia risk	yes	E/I ratio
Alzheimer's	Z. Wang et al., 2024	EEG	rest	btwn	diagnostic	36	29	specparam	2-40	⬆ clinical vs. control	yes	E/I ratio
Alzheimer's	Wiesman et al., 2024	MEG	rest	btwn	diagnostic	38	20	specparam	1-40	⬆ clinical vs. control	no	unstated
Depression												
Depression	Veerakumar et al., 2019	DBS	rest	w/in	treatment	4	-	regression	2-48	⬆ w stimulation [DBS]	yes	E/I ratio
Depression	Sonkusare et al., 2022	DBS	rest	w/in	symptoms	6	-	specparam	1-36	⬆ ~severity scores	yes	E/I ratio

Disorder	Reference	Mod	State	CP	Analysis	#CL	#CT	Method	FR	Result	BM	Interp.
Depression	Rosenblum, Bovy, et al., 2023	EEG	sleep	btwn w/in	diagnostic treatment	38	38	irasa	0.2-48	↓ clinical vs. control ↓ on vs. off medication	yes	E/I ratio
Depression	Smith, Ma, et al., 2023	EEG	rest	w/in	treatment	9	-	specparam	1-30	↑ w stimulation [ECT]	no	E/I ratio
Depression	Smith, Kosik, et al., 2023	EEG	rest	w/in	treatment	44	-	specparam	0.5-30	↑ w stimulation [ECT & MST]	yes	E/I ratio
Depression	Stolz et al., 2023	EEG	rest	btwn	diagnostic	119	36	specparam	unclear	Ø clinical vs. control	yes	E/I ratio
Depression	Tatti et al., 2024	EEG	rest	btwn	diagnostic	46	75	irasa	unclear	↓ clinical vs. control [regionally]	yes	neural noise
Depression	Zandbagleh et al., 2024	EEG	rest	btwn	diagnostic	40	74	specparam	1-45	↓ clinical vs. control	no	unstated
Depression	Hacker et al., 2025	DBS	rest	w/in	treatment	5	-	regression	20-45	↓ w reduced severity	yes	E/I ratio
Depression	J. Li et al., 2025	EEG	rest	btwn	diagnostic	72	84	specparam	2-45	Ø clinical vs. control	yes	E/I ratio
Schizophrenia												
Schizophrenia	Molina et al., 2020	EEG	task	btwn w/in	diagnostic treatment	36	31	specparam	4-50	↑ clinical vs. control ↓ on vs. off medication	yes	E/I ratio
Schizophrenia	Racz et al., 2021	EEG	rest	btwn	diagnostic	14	14	irasa	mult	Ø clinical vs. control	yes	criticality
Schizophrenia	Jacob et al., 2023	EEG	rest	btwn	diagnostic	57	46	specparam	1-50	Ø clinical vs. control	yes	E/I ratio
Schizophrenia	Peterson et al., 2023	EEG	task	btwn	diagnostic	24	36	specparam	4-50	↑ clinical vs. control	yes	E/I ratio
Schizophrenia	Spencer et al., 2023	EEG	task	btwn	diagnostic	24	24	specparam	unclear	↓ clinical vs. control	no	E/I ratio
Schizophrenia	Arazi et al., 2024	MEG	rest	btwn	diagnostic	32	45	specparam	1-65	Δ clinical vs. control [regionally]	yes	E/I ratio
Schizophrenia	Boudewyn et al., 2024	EEG	task	btwn	diagnostic	58	98	specparam	unclear	Ø clinical vs. control	yes	E/I ratio
Schizophrenia	Earl et al., 2024	EEG	rest	btwn	diagnostic	43	23	specparam	3-50	Ø clinical vs. control	no	E/I ratio
Disorders of Consciousness (DOC)												
DOC	Alnes et al., 2021	EEG	task	btwn	diagnostic prognosis	67	13	regression	mult	↓ clinical vs. control [20-40 Hz] Ø survivor vs. non-survivor	no	neural noise
DOC	Zilio et al., 2021	EEG	uncon	btwn	diagnostic	49	23	regression	mult	↑ clinical vs. control	no	timescale
DOC	Colombo et al., 2023	EEG	uncon	btwn	diagnostic	87	65	Colombo	1-40	↑ ~less conscious [non-anoxic]	no	slowing
DOC	Maschke et al., 2023	EEG	uncon	btwn	symptoms	43	-	specparam	1-45 30-45	↑ ~worse clinical scores Δ w anesthesia ~ clinical scores	no	E/I ratio
DOC	Zilio et al., 2023	EEG	uncon	btwn	diagnostic	10	6	regression	mult	↑ clinical vs. control	yes	timescale
DOC	Maschke et al., 2024	EEG	uncon	btwn w/in	symptoms prognosis	260	-	specparam	1-45	↑ ~clinical scores [non-anoxic] ↑ ~prob. of recovery [anoxic]	no	unstated
DOC	Y. Wang et al., 2024	EEG	uncon	w/in	treatment	8	-	Colombo	1-40	↓ over time / w tDCS treatment	no	E/I ratio
Stroke												
Stroke	Zappasodi et al., 2014	EEG	rest	btwn	diagnostic	36	19	regression	0.5-45	↑ clinical vs. control	no	unstated
Stroke	C. M. Wilkinson et al., 2020	EEG	rest	btwn	diagnostic	16	9	specparam	0.5-30	Ø clinical vs. control	no	unstated
Stroke	Lanzone et al., 2022	EEG	rest	btwn w/in w/in	diagnostic region prognosis	18	16	Colombo	1-40	↑ clinical vs. control ↑ affected hemisphere ↓ over time	no	slowing
Stroke	Johnston et al., 2023	MEG	rest	btwn w/in	diagnostic region	23	23	specparam	1-50	↑ clinical vs. control ↑ affected hemisphere	no	slowing
Stroke	Albertson et al., 2024	EEG	rest	btwn w/in w/in	diagnostic region symptoms	61	234	specparam	2-25	↑ clinical vs. control ↑ affected hemisphere ↑ ~improved motor symptoms	yes	E/I ratio
Stroke	Johnston et al., 2024	MEG	rest	btwn	diagnostic	18	23	specparam	1-50	↑ clinical vs. control	no	E/I ratio

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Stroke	Lanzone et al., 2024	EEG	rest	w/in	region prognosis	13	-	Colombo	1-20	⬆ affected hemisphere ⬇ over time	yes	slowing
Genetic Disorders												
22q.11.2	Donnelly et al., 2022	EEG	sleep	btwn	diagnostic	28	17	irasa	0.25-20	Ø clinical vs. control	yes	unstated
CDKL5	Saby et al., 2022	EEG	rest	btwn	diagnostic	26	18	regression	unclear	⬆ clinical vs. control	yes	unstated
Down Syndrome	Geiger et al., 2024	EEG	video	btwn	diagnostic	29	87	specparam	2-55	⬇ clinical vs. control	no	E/I ratio
Fragile X	C. L. Wilkinson & Nelson, 2021	EEG	rest	btwn	diagnostic	11	24	specparam	2-55	⬇ clinical vs. control	yes	E/I ratio
NF1	Carter Leno et al., 2022	EEG	video	btwn	diagnostic	21	24	specparam	1-10	⬆ clinical vs. control	no	E/I ratio
Rett Syndrome	Roche et al., 2019	EEG	rest	btwn	diagnostic	57	37	regression	2-24	⬆ clinical vs. control	yes	E/I ratio
Rett Syndrome	Saby et al., 2024	EEG	rest	btwn	diagnostic	60	26	regression	2-20	⬆ clinical vs. control	yes	slowing
STXBP1	Houtman et al., 2021	EEG	rest	btwn	diagnostic	14	50	specparam	1-30	⬆ clinical vs. control	no	E/I ratio
TSC	Clements et al., 2024	EEG	rest	btwn	diagnostic	49	49	specparam	2-55	Ø clinical vs. control	yes	unstated
Neurodegenerative Disorders												
ALS	Trubshaw et al., 2024	MEG	rest	btwn	diagnostic	36	51	specparam	1-70	⬇ clinical vs. control	yes	E/I ratio
Huntington's	Davis, Fitzgerald, et al., 2023	EEG	rest	w/in	treatment	22	20	eBOSC	unclear	⬇ w stimulation [tACS]	no	E/I ratio
Huntington's	Davis, Hill, et al., 2023	EEG	rest	btwn	diagnostic	22	20	eBOSC	unclear	Ø clinical vs. control	yes	unstated
MS	Akbarian et al., 2023	MEG	rest	btwn	diagnostic treatment	95	44	specparam	20-45	⬆ clinical vs. control ⬆ medicated vs. unmedicated	yes	E/I ratio
MS	Akbarian et al., 2024	MEG	task	btwn	diagnostic	79	38	specparam	3-45	⬇ clinical vs. control	yes	E/I ratio
Sleep Disorders												
Insomnia	Andrillon et al., 2020	EEG	sleep	btwn	diagnostic	347	89	specparam	unclear	⬇ clinical vs. control	no	E/I ratio
NREM parasomnia	Pani et al., 2021	EEG	sleep	btwn	diagnostic	16	-	specparam	0.5-50	⬆ NREM parasomnia vs. SHE	yes	unstated
REM-SBD	Roascio et al., 2022	EEG	rest	btwn w/in	diagnostic prognosis	18	10	specparam	1-30	Ø clinical vs. control Ø within subject timepoints	yes	unstated
REM-SBD	Hernandez et al., 2024	EEG	rest	w/in	prognosis	81	-	Bódizs	0.5-32	⬆ patients who convert	yes	E/I ratio
Brain Injuries												
Concussion	Makale, Nybo, et al., 2023	EEG	rest	w/in	treatment	185	-	regression	2-20	⬇ w stimulation [TMS]	yes	neurotrans
Concussion	K. C. Yu et al., 2024	MEG	rest	btwn btwn	diagnostic symptoms	10	81	specparam	1-40	⬆ clinical vs. control Δ ~severity cognitive symptoms	no	E/I ratio
TBI	Hussain et al., 2023	EEG	rest	btwn	treatment	19	-	specparam	0.5-55	⬆ ~TMS motor threshold	no	E/I ratio
TBI	Tewarie et al., 2023	EEG	samples	btwn	prognosis	55	49	specparam	unclear	significant prediction outcomes	no	E/I ratio
TBI	Nwakamma et al., 2024	EEG	rest	btwn	diagnostic	56	32	specparam	1-50	Ø clinical vs. control	yes	unstated
Movement Disorders												
Dystonia	Semenova et al., 2021	DBS	intra-op	w/in	region	9	-	regression	30-70	⬆ affected hemisphere	no	E/I ratio
Dystonia	Averna et al., 2023	DBS	move	w/in	state	2	-	Colombo	7-45	⬆ during walking	yes	E/I ratio
Dystonia	Wiest, Morgante, et al., 2023	DBS	rest	w/in	treatment	7	-	specparam	5-50	⬆ w stimulation [DBS]	no	E/I ratio
Dystonia	Larsh et al., 2024	DBS	rest	w/in	prognosis	10	-	irasa	0.5-100	⬇ over time [post DBS implant]	no	E/I ratio
Pain-Related Disorders												

Disorder	Reference	Mod	State	CP	Analysis	#CL	#CT	Method	FR	Result	BM	Interp.
Chronic Pain	Gil Avila et al., 2024	EEG	rest	btwn	diagnostic	149	115	specparam	2-40	Ø clinical vs. control	yes	E/I ratio
Chronic Pain	Lopez Ramos et al., 2024	DBS	events	w/in	state	1	-	specparam	0-40	⬇ during pain events	yes	E/I ratio
Chronic Pain	Han et al., 2025	EEG	rest	w/in	symptoms	75	-	specparam	1-45	Ø w pain ratings	no	E/I ratio
Fibromyalgia	González-Villar et al., 2017	EEG	task	btwn	diagnostic	18	22	regression	3-30	⬇ clinical vs. control	no	neural noise
Cancers												
Breast Cancer	Melara et al., 2025	EEG	task	btwn	diagnostic	21	34	irasa	unclear	⬇ clinical vs. control	no	neural noise
Glioma	Numan et al., 2021	MEG	rest	btwn	diagnostic	45	36	specparam	0.5-48	⬆ clinical vs. control	no	E/I ratio
Glioma	Numan et al., 2022	MEG	rest	btwn	region	413	65	specparam	0.5-48	⬆ ~tumor occurrence Δ ~tumor type subgroups	no	E/I ratio
Other Disorders												
Anxiety	Blaskovich et al., 2024	EEG	sleep	btwn	diagnostic	47	36	Bódizs	2-30	Ø clinical vs. control	yes	unstated
Delirium	Boord et al., 2024	EEG	rest	btwn	diagnostic	21	37	specparam	1-30	Ø clinical vs. control	no	E/I ratio
Delirium	Ostertag et al., 2024	EEG	intra-op	btwn	diagnostic	32	137	specparam	2-45	Ø clinical vs. control	no	unstated
Delirium	Pollak et al., 2024	EEG	intra-op	btwn	diagnostic	50	101	specparam	unclear	Ø clinical vs. control	yes	E/I ratio
Dyslexia	Turri et al., 2023	EEG	rest	btwn	diagnostic	26	31	specparam	1-40	⬇ clinical vs. control	yes	E/I ratio
Dyslexia	Glica et al., 2025	EEG	rest	btwn	diagnostic	60	60	specparam	1-43	Ø clinical vs. control	yes	neural noise
Dyslexia	Santoni et al., 2025	EEG	rest	btwn	diagnostic	26	31	specparam	1-40	⬇ clinical vs. control	no	E/I ratio
OCD	Perera et al., 2023	EEG	rest	btwn	diagnostic	25	27	eBOSC	unclear	Ø clinical vs. control	yes	unstated
PTSD	Q. Li, Coulson et al., 2022	EEG	rest	btwn	diagnostic	107	95	specparam	2-40	predicts clinical label	yes	unstated
PTSD	Makale, Abbasi, et al., 2023	EEG	rest	w/in	treatment	185	-	regression	2-20	⬆ w stim [TMS; responders] ⬇ w stim [TMS; nonresponders]	yes	synchro
PTSD	Kovacevic et al., 2025	EEG	rest	btwn	diagnostic	29	27	specparam	1-40	⬇ clinical vs. control	yes	E/I ratio
Stutter	Bowers & Hudock, 2024	EEG	rest	btwn	diagnostic	23	23	specparam	3-40	Ø clinical vs. control	no	E/I ratio
Tinnitus	To et al., 2021	EEG	rest	btwn	diagnostic	120	120	regression	1-43	⬇ clinical vs. control	no	complexity
Tourette's	Adelhöfer et al., 2021	EEG	task	btwn	diagnostic	74	74	specparam	2-40	⬇ clinical vs. control	no	neural noise

Table 2: Dataset of all reports investigating aperiodic neural activity with clinical populations. All reports identified and included in the literature dataset, organized by disorder. Each report has the following fields: *Disorder*: the clinical diagnosis under investigation in each report. *Reference*: the bibliographic reference for the report. Note that publication year listed for the reference may be different from date used to evaluate eligibility (e.g. a report may be accepted and available in a different calendar year than the reference year once included in an issue). *Mod* (Modality): the recording modality of the data. References to stimulating devices (e.g. DBS, RNS) refer to recordings from electrodes that are part of stimulating devices. *State*: the recording state of the data. *CP* (Comparison): the analysis design as within (w/in) or between (btwn) subjects. *Analysis*: the main analysis design of the report. *#CL*: the number of clinical participants. *#CT*: the number of control participants (if relevant). *Method*: the analysis method used to measure aperiodic activity. *FR* (Fit Range): the frequency fit range, in Hz, the method was applied to. *Result*: the main aperiodic exponent related result(s) of the report. Arrows refer to a finding of an increased (⬆; steepening) or decrease (⬇; flattening) of the aperiodic exponent; Ø refers to a finding of no difference in the aperiodic exponent or no relationship to the exponent; Δ refers to a change or difference in the measure; and ~ refers to an association (e.g. correlation) between the exponent and the reported measure. *BM* (Biomarker): whether the report discusses aperiodic activity as a potential biomarker. *Interp* (Interpretation): the main interpretation of aperiodic activity discussed by the report. **Abbreviations** - *Disorder column*: 22q.11.2: 22q.11.2 Deletion Syndrome; ADHD: attention deficit hyperactivity disorder; CDKL5: CDKL5

Deficiency Disorder; MS: multiple sclerosis; NF1: Neurofibromatosis type 1; OCD: obsessive-compulsive disorder; PTSD: post-traumatic stress disorder; REM-SBD: REM Sleep Behavior Disorder; TBI: traumatic brain injury; TSC: tuberous sclerosis complex. *State column*: base: baseline; intra-op: intraoperative; medit: meditation; move: movement; mult: multiple; uncon: unconscious. *Modality column*: DBS: deep brain stimulation; EEG: electroencephalography; iEEG: intracranial EEG; MEG: magnetoencephalography; RNS: responsive neurostimulation. *Result column*: AD: Alzhiemer's dementia; DLB: Dementia with Lewy Bodies; ECT: electro-convulsive therapy; IED: interictal epileptiform discharges; MCI: mild cognitive impairment; MST: magnetic seizure therapy; rTMS: repetitive TMS; SHE: sleep-related hypermotor epilepsy; SOZ: seizure onset zone; STN: subthalamic nucleus; tACS: transcranial alternating current stimulation; tDCS: transcranial direct current stimulation; TMS: transcranial magnetic stimulation; tRNS: transcranial random noise stimulation; VNS: vagus nerve stimulation. *Interpretation column*: neurotrans: neurostransmission; self-sim: self-similarity; synchro: synchronicity