

SUPPLEMENTARY MATERIAL

Table S1. Differences in entropy measures between swPD and HS.

Entropy measure	Direction	τ	swPD [mean (SD)]	HS [mean (SD)]	p	Cohen's d
MSE	AP	τ 1	0.35 (0.10)	0.30 (0.06)	0.00	0.66
		τ 2	0.45 (0.15)	0.38 (0.09)	0.00	0.61
		τ 3	0.52 (0.17)	0.42 (0.12)	< 0.00	0.68
		τ 4	0.56 (0.20)	0.44 (0.14)	< 0.00	0.74
		τ 5	0.59 (0.22)	0.45 (0.15)	< 0.00	0.71
		τ 6	0.60 (0.23)	0.46 (0.16)	< 0.00	0.72
	ML	τ 1	0.38 (0.14)	0.32 (0.09)	0.01	0.56
		τ 2	0.48 (0.20)	0.38 (0.12)	0.00	0.62
		τ 3	0.55 (0.25)	0.42 (0.15)	0.00	0.64
		τ 4	0.60 (0.29)	0.44 (0.17)	0.00	0.66
		τ 5	0.64 (0.33)	0.46 (0.18)	0.00	0.66
		τ 6	0.65 (0.34)	0.48 (0.20)	0.01	0.59
	V	τ 1	0.33 (0.10)	0.28 (0.09)	0.00	0.54
		τ 2	0.43 (0.15)	0.34 (0.12)	< 0.00	0.66
		τ 3	0.49 (0.19)	0.38 (0.14)	< 0.00	0.68
		τ 4	0.52 (0.22)	0.38 (0.16)	< 0.00	0.73
		τ 5	0.54 (0.24)	0.40 (0.16)	0.00	0.69
		τ 6	0.55 (0.25)	0.40 (0.17)	0.00	0.70
RCMSE	AP	τ 1	0.31 (0.09)	0.26 (0.07)	0.01	0.63
		τ 2	0.38 (0.12)	0.32 (0.09)	0.02	0.55
		τ 3	0.42 (0.14)	0.34 (0.10)	0.01	0.60
		τ 4	0.44 (0.17)	0.35 (0.11)	0.00	0.64
		τ 5	0.46 (0.18)	0.36 (0.12)	0.00	0.63
		τ 6	0.47 (0.20)	0.37 (0.12)	0.00	0.62
	ML	τ 1	0.31 (0.11)	0.27 (0.08)	0.01	0.49
		τ 2	0.38 (0.16)	0.31 (0.11)	0.01	0.53
		τ 3	0.43 (0.20)	0.33 (0.13)	0.01	0.53
		τ 4	0.45 (0.24)	0.35 (0.14)	0.01	0.54
		τ 5	0.48 (0.27)	0.37 (0.14)	0.01	0.52
		τ 6	0.50 (0.30)	0.38 (0.15)	0.02	0.50
	V	τ 1	0.28 (0.09)	0.24 (0.08)	0.00	0.52
		τ 2	0.35 (0.13)	0.28 (0.11)	0.01	0.58

	τ 3	0.38 (0.17)	0.29 (0.13)	0.00	0.62
	τ 4	0.40 (0.19)	0.30 (0.13)	0.01	0.63
	τ 5	0.41 (0.20)	0.31 (0.14)	0.01	0.61
	τ 6	0.42 (0.21)	0.31 (0.14)	0.01	0.60
CI MSE	AP	2.59 (0.89)	2.06 (0.59)	< 0.00	0.71
	ML	2.78 (1.29)	2.10 (0.75)	0.00	0.64
	V	2.42 (0.96)	1.84 (0.69)	< 0.00	0.70
CI RCMSE	AP	2.08 (0.75)	1.69 (0.49)	0.01	0.63
	ML	2.14 (1.07)	1.68 (0.62)	0.01	0.53
	V	1.90 (0.82)	1.45 (0.06)	0.01	0.61

swPD, subjects with Parkinson's disease; HS, age and gait speed – matched healthy subjects; p, significance level at 95% CI in Mann – Whitney procedure; MSE, multiscale sample entropy; RCMSE, refined composite multiscale entropy; CI, complexity index; AP, antero-posterior direction of the acceleration signal; ML, medio-lateral direction of the acceleration signal; V, vertical direction of the acceleration signal.

Table S2. Discriminative ability of the entropy measures

Entropy measure	Tau	AUC (95% CI)	OCP	F1 score	Se+SP	Youden index	DOR	LR+	LR-	PTP+	PTP- Δ PTP	PTP+ <i>adj</i>	PTP- <i>adj</i>	Δ PTP <i>adj</i>		
MSE AP	t1	0.69 (0.58 - 0.79)	≥ 0.28	0.71	1.32	0.32	4.98	1.62	0.33	61	24	37	22	6	16	*
	t2	0.68 (0.56 - 0.77)	≥ 0.34	0.69	1.27	0.27	3.70	1.48	0.40	59	27	32	21	7	14	*
			≥ 0.42	0.65	1.32	0.32	3.78	2.04	0.54	66	34	32	52	23	29	
	t3	0.70 (0.59 - 0.79)	≥ 0.49	0.68	1.42	0.42	6.58	3.16	0.48	75	32	43	63	21	42	*
	t4	0.71 (0.59 - 0.80)	≥ 0.53	0.70	1.45	0.45	8.73	3.93	0.45	79	30	49	68	20	48	*
	t5	0.70 (0.58 - 0.79)	≥ 0.45	0.68	1.27	0.27	3.25	1.53	0.47	59	31	28	45	20	25	*
			≥ 0.60	0.64	1.41	0.41	8.66	4.59	0.53	82	34	48	71	22	49	
t6	0.70 (0.59 - 0.79)	≥ 0.43	0.69	1.29	0.29	3.80	1.55	0.41	60	28	32	45	18	27	*	
			≥ 0.63	0.62	1.38	0.38	6.63	3.78	0.57	78	35	43	67	23	44	*
MSE ML	t 1	0.67 (0.55 - 0.77)	≥ 0.32	0.69	1.32	0.32	3.99	1.76	0.44	63	30	33	49	19	30	*
			≥ 0.4	0.65	1.40	0.40	6.31	3.28	0.52	76	33	43	64	22	42	
	t 2	0.69 (0.57 - 0.78)	≥ 0.35	0.69	1.27	0.27	3.51	1.49	0.43	59	29	30	45	19	26	*
			≥ 0.40	0.68	1.40	0.40	5.86	2.87	0.49	73	32	41	61	21	40	
	t3	0.69 (0.56 - 0.78)	≥ 0.35	0.68	1.23	0.23	3.49	1.98	0.57	65	35	30	52	23	29	*
			≥ 0.52	0.68	1.42	0.42	6.58	3.16	0.48	75	32	43	63	21	42	
	t 4	0.69 (0.57 - 0.79)	≥ 0.53	0.69	1.42	0.42	6.11	2.80	0.46	73	30	43	60	20	40	*
≥ 0.59			0.66	1.42	0.42	7.24	3.69	0.51	78	33	45	67	22	45		
t 5	0.69 (0.57 - 0.78)	≥ 0.43	0.69	1.30	0.30	3.93	1.63	0.42	61	28	33	47	18	29	*	
			≥ 0.63	0.63	1.38	0.38	6.25	3.44	0.55	77	35	42	65	23	42	*
MSE V	t 6	0.67 (0.55 - 0.76)	≥ 0.37	0.67	1.19	0.19	2.69	1.30	0.48	55	32	23	41	21	20	*
			≥ 0.62	0.64	1.34	0.34	4.27	2.35	0.55	69	35	34	56	23	33	
	t 1	0.70 (0.58 - 0.79)	≥ 0.29	0.70	1.34	0.34	4.43	1.81	0.41	63	29	34	49	18	31	*
			≥ 0.33	0.63	1.32	0.32	3.89	2.18	0.56	68	35	33	54	23	31	
	t 2	0.71 (0.59 - 0.79)	≥ 0.36	0.71	1.36	0.36	4.00	1.53	0.38	60	27	33	45	17	28	*
	t 3	0.70 (0.58 - 0.79)	≥ 0.39	0.72	1.38	0.38	5.37	1.94	0.36	65	26	39	51	16	35	*
t 4	0.71 (0.59 - 0.79)	≥ 0.42	0.72	1.40	0.40	5.65	2.09	0.37	67	26	41	53	17	36	*	
t 5	0.70 (0.58 - 0.79)	≥ 0.42	0.72	1.40	0.40	5.65	2.09	0.37	67	26	41	53	17	36	*	
t 6	0.69 (0.58 - 0.78)	≥ 0.41	0.70	1.36	0.36	4.71	1.93	0.41	65	28	37	51	18	33	*	
RCMSE AP	t 1	0.66 (0.54 - 0.76)	≥ 0.21	0.68	1.11	0.11	2.80	1.14	0.41	52	28	24	38	18	20	*
			≥ 0.35	0.56	1.34	0.34	3.94	2.60	0.66	71	39	32	58	26	32	
	t 2	0.65 (0.53 - 0.74)	≥ 0.16	0.68	1.06	0.06	4.17	1.06	0.26	50	19	31	36	12	24	*

RCMSE ML	t 3 0.66 (0.55 - 0.76)	≥ 0.33	0.64	1.28	0.28	3.18	1.81	0.57	63	35	28	49	23	26	*	
		≥ 0.16	0.68	1.06	0.06	3.06	1.04	0.34	50	25	25	36	15	21		
		≥ 0.39	0.61	1.26	0.26	2.98	1.85	0.62	64	37	27	50	25	25	*	
	t 4 0.67 (0.55 - 0.76)	≥ 0.30	0.68	1.23	0.23	3.16	1.38	0.44	57	29	28	43	19	24		
		≥ 0.36	0.65	1.30	0.30	3.46	1.87	0.54	65	35	30	50	23	27	*	
		≥ 0.30	0.69	1.23	0.23	3.36	1.37	0.41	57	28	29	42	18	24		
	t 5 0.68 (0.56 - 0.77)	≥ 0.38	0.64	1.28	0.28	3.16	1.77	0.56	63	35	28	49	23	26	*	
		≥ 0.27	0.71	1.23	0.23	5.22	1.33	0.26	56	19	37	42	12	30	*	
		≥ 0.38	0.63	1.26	0.26	2.92	1.72	0.59	63	37	26	48	24	24		
	RCMSE V	t 1 0.67 (0.55 - 0.77)	≥ 0.26	0.73	1.42	0.42	6.53	2.09	0.32	67	24	43	53	15	38	*
			≥ 0.33	0.70	1.42	0.42	5.93	2.55	0.43	71	30	41	58	19	39	*
			≥ 0.30	0.70	1.32	0.32	4.43	1.67	0.38	62	28	34	47	17	30	
t3 0.67 (0.55 - 0.76)		≥ 0.36	0.68	1.36	0.36	4.52	2.17	0.48	68	32	36	54	21	33	*	
		≥ 0.32	0.70	1.30	0.30	4.10	1.61	0.39	61	27	34	46	17	29		
		≥ 0.39	0.67	1.36	0.36	4.57	2.24	0.49	69	32	37	55	21	34	*	
t 5 0.66 (0.54 - 0.76)		≥ 0.36	0.69	1.32	0.32	3.99	1.76	0.44	63	30	33	49	19	30		
		≥ 0.39	0.67	1.36	0.36	4.57	2.24	0.49	69	32	37	55	21	34	*	
		≥ 0.37	0.69	1.32	0.32	3.99	1.76	0.44	63	30	33	49	19	30	*	
RCMSE V		t 6 0.65 (0.53 - 0.75)	≥ 0.42	0.64	1.32	0.32	3.84	2.11	0.55	67	35	32	53	23	30	
			≥ 0.23	0.70	1.30	0.30	4.10	1.61	0.39	61	27	34	46	17	29	
			≥ 0.27	0.66	1.34	0.34	4.12	2.10	0.51	67	33	34	53	22	31	*
	t 2 0.67 (0.56 - 0.77)	≥ 0.24	0.70	1.27	0.27	3.94	1.46	0.37	58	26	32	44	17	27		
		≥ 0.30	0.64	1.32	0.32	3.82	2.10	0.55	67	35	32	53	23	30	*	
		≥ 0.24	0.70	1.27	0.27	4.26	1.45	0.34	58	25	33	44	15	29		
	t 3 0.68 (0.56 - 0.77)	≥ 0.31	0.65	1.32	0.32	3.78	2.04	0.54	67	35	32	52	23	29	*	
		≥ 0.21	0.68	1.13	0.13	3.15	1.17	0.37	53	26	27	39	17	22		
		≥ 0.32	0.65	1.32	0.32	3.78	2.04	0.54	67	35	32	52	23	29	*	
	t 5 0.67 (0.55 - 0.76)	≥ 0.25	0.69	1.25	0.25	3.42	1.43	0.42	58	29	29	44	18	26		
		≥ 0.32	0.65	1.30	0.30	3.46	1.87	0.54	65	35	30	50	23	27	*	
		≥ 0.24	0.69	1.21	0.21	3.33	1.32	0.40	56	28	28	42	18	24		
CI RCMSE AP	0.71 (0.59 - 0.80)	≥ 0.34	0.64	1.30	0.30	3.49	1.92	0.55	65	35	30	51	23	28	*	
		≥ 0.34	0.64	1.30	0.30	3.49	1.92	0.55	65	35	30	51	23	28	*	
		≥ 0.34	0.64	1.30	0.30	3.49	1.92	0.55	65	35	30	51	23	28	*	
	CI MSE AP	0.71 (0.59 - 0.80)	≥ 0.22	0.68	1.34	0.34	4.17	1.93	0.46	65	31	34	51	20	31	*
		0.69 (0.57 - 0.78)	≥ 0.17	0.69	1.25	0.25	3.42	1.43	0.42	58	29	29	44	18	26	*
		0.71 (0.59 - 0.80)	≥ 0.19	0.72	1.40	0.40	5.65	2.09	0.37	67	26	41	53	17	36	*
	CI RCMSE AP	0.67 (0.55 - 0.76)	≥ 0.63	0.66	1.28	0.28	3.27	1.67	0.51	62	33	29	47	22	25	*
		0.67 (0.55 - 0.76)	≥ 0.17	0.70	1.38	0.38	4.99	2.10	0.42	67	29	38	53	18	35	*
		0.67 (0.56 - 0.77)	≥ 0.15	0.67	1.34	0.34	4.12	2.04	0.50	66	32	34	52	21	31	*