



Somatic Yoga for Functional Neurological Disorder: A Feasibility Randomised Controlled Trial



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Introduction

- FND affects ~12 per 1,000 neurology outpatients; disabling motor, sensory and/or seizure symptoms with substantial functional impairment
- Contemporary models implicate altered interoception, autonomic regulation and affective processing — yet accessible, mechanism-informed treatments remain limited
- Somatic yoga — integrating slow movement, breathwork and body awareness — may directly target these regulatory processes
- First randomised controlled trial evaluating structured yoga in a broader FND population.**

Aim

Primary: Assess feasibility, acceptability & safety of six-week somatic yoga vs. music control in adults with FND.

Secondary (exploratory): Examine preliminary signals in:

- FND symptoms (Functional Neurological Symptom Questionnaire [FNSQ], Clinical Global Impression-Improvement [CGI-I])
- Mood: depression (Patient Health Questionnaire–8 [PHQ-8])
- Anxiety (Generalized Anxiety Disorder–7 [GAD-7])
- Dissociation (Multidimensional Dissociation Inventory [MDI])
- Alexithymia (Toronto Alexithymia Scale–20 [TAS-20])
- Quality of life (Short Form Health Survey–36 [SF-36])
- Functioning (Work and Social Adjustment Scale [WSAS])
- Interoceptive awareness (Multidimensional Assessment of Interoceptive Awareness)
- Autonomic symptoms (Body Perception Questionnaire–Short Form)

	Somatic Yoga	Music Relaxation Control
Duration	6 weeks	6 weeks
Format	60-min individual sessions	30-60 min self-guided
Frequency	Weekly + Home practice (3-5x/wk)	3-5x/wk + weekly check-ins
Components	Movement, breathwork, interoception, sensory drills	Instrumental music only
Contact	Therapist delivered (EKB)	Self-guided
Rationale	Targets interoceptive & ANS regulation directly	Active control—no interoceptive guidance

Method

Design & Participants

Single-site, two-arm feasibility RCT. Adults (≥18) with clinician-confirmed FND (motor, sensory or seizure). Randomised 1:1; computer-generated concealed allocation. Blinded analyst (LSMM) for all quantitative analyses.

Somatic Yoga Intervention

6 × 60-min individual online sessions; home practice 3–5×/week.

Sessions included:

- Slow accessible movement (neuroplastic sensorimotor remapping)
- Paced breathwork (diaphragmatic; parasympathetic activation)
- Interoceptive & sensory-motor drills (insula-mediated awareness)
- Vestibular/cranial nerve work (eye-tracking; balance tasks)
- Restorative postures
- Digital manual + audiovisual guide; 1st & last sessions in-person at KCL.

Music Relaxation Control

Sessions included:

- 30–60 min self-guided instrumental music; 3–5×/week
- Three curated playlists; matched therapist contact time & structure
- No movement, breathwork or interoceptive guidance
- Designed to isolate the embodied components of somatic yoga.

Assessments

Baseline, Week 3, Week 6, 3-month follow-up.

Analysis

Linear mixed effects models; Glass's Δ effect sizes. Reflexive thematic analysis of practice logs & end-of-study interviews.

100%

Retention in the yoga arm
“I felt calmer and more connected
with my body after practice.”
— Yoga participant

Results

PRIMARY OUTCOMES: Feasibility

Recruitment & retention targets met (30/30 consented; 27/30 randomised). **100% retention in yoga arm (n=12/12).** High adherence: yoga 79% (4.75/6 sessions); music 73% (4.36/6). **Zero intervention-related adverse events.**

SECONDARY OUTCOMES: Exploratory Signals

Large effects (Glass's Δ) favouring yoga arm — hypothesis-generating:

- Body listening (MAIA-2 BL): $\Delta=1.28$ at Week 3; $\Delta=1.06$ at Week 6
- Global improvement (CGI-I): $\Delta=1.21$ at Week 6; $\Delta=1.02$ at 3-month FU
- Interoceptive noticing (MAIA-2 N): $\Delta=0.81$ at Week 3
- Medium effects (Δ 0.5–0.8): energy/fatigue (SF-36 E/F), body awareness (BPQ-SF), depression (PHQ-8).

Other measures showed small or minimal between-group differences ($\Delta < 0.50$).

Figure 1. Glass's Δ Effect Sizes — All Secondary Outcomes Across Timepoints

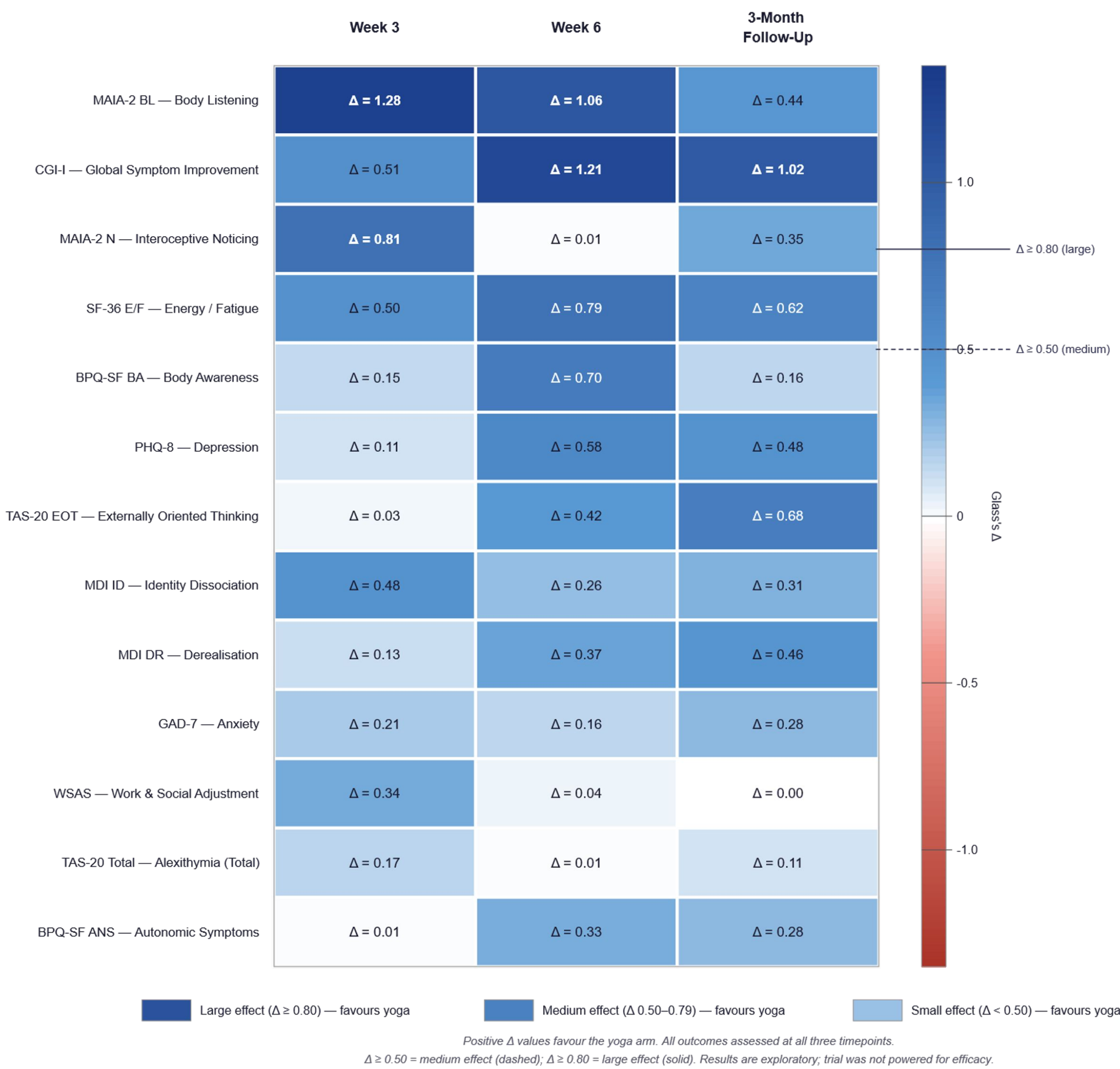


Figure 1. Glass's Δ effect sizes for all secondary outcomes across three timepoints. Positive values favour the somatic yoga arm. Results are exploratory.

STAGE	Somatic Yoga	Music Relaxation Control
ENROLMENT		
Enquiries	n=76	n=76
Assessed for eligibility (email screening)	n=49	n=49
Consented to participate	n=30	n=30
ALLOCATION		
Randomised / allocated	n=13	n=14
Attended 1st session	n=12	n=11
Online sessions completed	n=56	n=47
Did not receive intervention	n=1 (new diagnosis)	n=3 (physio n=1, withdrew n=2)
FOLLOW UP		
Discontinued intervention	n=0	n=2 (illness, disengagement)
Lost to follow-up	n=3	n=1
ANALYSIS		
Primary outcome data analysed*	n=9	n=8
	n=12	n=11

*Primary outcome analyses conducted on participants with sufficient practice log data. Some participants continued intervention participation but did not complete digital logs.

Figure 2. CONSORT Participant Flow — Yoga4FND Feasibility RCT

Conclusion

FEASIBILITY DEMONSTRATED

Somatic yoga: safe, acceptable & feasible for FND. → Findings support progression to a fully powered efficacy trial.

PRELIMINARY MECHANISTIC SIGNALS

Large exploratory effects on interoceptive body listening & global symptom improvement. Effects sustained at 3-month follow-up. Signals align with hypothesised mechanistic targets: interoception, autonomic regulation, emotional processing.

FUTURE DIRECTIONS

Fully powered multi-site mechanistic RCT. Neuroimaging, autonomic testing & PPIE-informed design.

LIMITATIONS

Small feasibility sample; single-site. Self-report outcomes; digital logging challenges. Not powered for efficacy.

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