

improve function. One such method is non-invasive magnetic stimulation (MS) which can modulate the nervous system and may have a role in restoring brain-gut function. The aim of this study is to ascertain whether MS applied to the lumbosacrum can alter human brain gut function, using cortico-anal excitability as our model.

Methods Healthy volunteers (n= 13, 7 female, age range 20–56 years) were studied. Anal sphincter EMG responses (Anal MEP) were recorded from an anal plug following single pulse transcranial magnetic stimulation over the motor cortex (TMS) and lumbosacrum (LSMS), at baseline and then at 30 min following each intervention. These comprised 3 different repetitive magnetic neurostimulation regimens delivered to the lumbosacral region (rLSMS) in random order over separate days at frequencies of 1 Hz and 10 Hz, compared to a sham procedure. MEP data (mean±SEM) were analysed by 2-way ANOVA.

Results Compared to baseline, 1 Hz rLSMS produced a significant ($p<0.05$) change in lumbosacral motor excitability of the anal sphincter. Full data reported in table 1.

Conclusion Short-term neurostimulation to the lumbosacral area appears to modulate the human corticoanal pathway, with evidence for effects occurring at the spinal root level, and with frequency specificity. Our data suggest that any potential therapeutic effects of LSMS in patients with functional GI and defecation disorders may be operating through spinally based mechanisms.

Competing interests None.

Keywords Anal sphincter MEP, Brain gut axis, LSMS, Non-invasive magnetic stimulation, TMS.

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MODULATION OF THE HUMAN CORTICO-ANAL BRAIN GUT AXIS WITH LUMBOSACRAL NON-INVASIVE MAGNETIC STIMULATION

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Introduction Functional gut and defecation disorders are common yet difficult to manage and brain-gut axis dysfunction has been implicated in both. A better mechanistic understanding is of importance in designing new treatments to

Table 1 PWE-055 Anal sphincter MEP in microvolts following 1 Hz, 10 Hz and sham rLSMS, for baseline and 30 min post stimulation

Site	rLSMS intervention					
	1 Hz		10 Hz		Sham	
	Baseline	30 min	Baseline	30 min	Baseline	30 min
Cortical MEP (μ V)	46±10	34±5	39±8	33±5	38±9	30±5
Lumbosacral MEP (μ V)	37±7	60±15*	50±10	59±11	46±10	42±7

Values reported are the mean±SEM of 13 subjects.

* $p<0.05$.