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Exploring patient perceptions of repetitive transcranial magnetic stimulation as a treatment for chronic musculoskeletal pain: a qualitative study

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ABSTRACT

Objective Repetitive transcranial magnetic stimulation (rTMS), a form of non-invasive brain stimulation, is a novel avenue for the management of chronic musculoskeletal pain. Despite evidence for the effectiveness of rTMS in chronic pain conditions, the clinical uptake of rTMS remains limited and little is known regarding patient perceptions of this therapeutic technique.

Design Qualitative study using a phenomenological approach, reported in accordance with the Consolidated criteria for Reporting Qualitative research checklist.

Setting Sydney, Australia.

Participants Fifteen participants were recruited from the community and completed the study. All participants had a diagnosis of chronic musculoskeletal pain, a history of seeking treatment and no prior experience with rTMS.

Methods and analysis All participants completed a semistructured interview to explore overall knowledge, preconceived concerns and attitudes regarding rTMS as a treatment for chronic musculoskeletal pain. The interviews were transcribed verbatim and analysed thematically.

Results The key themes that influenced an individual's hypothetical acceptance of rTMS for chronic pain management were (1) the individual's initial impression of the equipment appearance, (2) the participant's individual history and familiarity with technology, (3) the accessibility and availability of rTMS and (4) knowledge regarding pain physiology and rTMS.

Conclusions This was the first qualitative study to explore the perception of rTMS as a treatment among people with chronic musculoskeletal pain. RTMS appears to be accepted as a treatment option among individuals with chronic musculoskeletal pain. Developing targeted strategies to address accessibility, funding support and medical endorsements may encourage use of rTMS in a clinical chronic pain setting.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This study uses a qualitative methodology to fill a critical gap in the current literature.
⇒ Exploration of the perceptions of people with chronic musculoskeletal pain with no experience of repetitive transcranial magnetic stimulation provided insights into the facilitators and barriers associated with the uptake of this novel treatment.
⇒ The exclusion of people from non-English speaking background may potentially limit the generalisability of the results.

INTRODUCTION

Chronic pain affects approximately 1.5 billion people worldwide and represents a substantial socioeconomic burden.[1] Musculoskeletal conditions, such as low back pain, neck pain and osteoarthritis, are among the most common forms of chronic pain. These conditions have been associated with reduced quality of life and elevated rates of comorbid psychological issues.[2] Despite increasing attention, few effective treatments for chronic musculoskeletal pain have been identified. Indeed, in a synthesis of 30 systematic reviews, Babatunde *et al*[3] found that non-steroidal anti-inflammatory drugs and opioid-based medications produce only modest analgesic effects in people with chronic pain. Many pharmacological interventions are also associated with adverse effects, including cardiovascular[4] and gastrointestinal[5] complications. Accordingly, recent clinical practice guidelines recommend non-pharmacological strategies, such as exercise and targeted pain education, as first-line care.[6 7] However, while such treatments are widely used in clinical practice,[8] they have been shown to produce small-to-moderate effects at best.[9] This has prompted investigation of novel treatment avenues, such as repetitive transcranial magnetic stimulation (rTMS).

rTMS is a form of non-invasive brain stimulation. During rTMS, an electromagnetic coil is used to introduce a time-varying magnetic field that passes through the skull and induces secondary electrical currents in the underlying cortical tissue.[10] By modulating cortical activity, rTMS can restore underlying abnormalities in central nervous system (CNS) activity, with several reviews demonstrating that the technique is effective in the treatment

of CNS disorders including depression,[11] schizophrenia[12] and post stroke.[13] Given the relationship between maladaptive CNS changes and pain,[14–19] increasing research has explored the effectiveness of rTMS for the treatment of chronic pain conditions. Several guidelines and systematic reviews have demonstrated that excitatory rTMS is safe and produces superior analgesic effects to sham stimulation in the treatment of neuropathic pain[20] and complex regional pain syndrome.[21] While nascent, emerging research has also demonstrated that excitatory rTMS may also have utility in the treatment of chronic musculoskeletal conditions such as low back pain[22] and fibromyalgia.[23]

While evidence supports the safety and efficacy of rTMS, it remains unclear whether patients with chronic musculoskeletal pain would engage with the novel treatment in a clinical setting. Whether the analgesic effects elicited by rTMS are clinically meaningful is also yet to be fully elucidated, and rTMS largely remains limited to research settings. In a recent systematic review of patient perceptions regarding the use of non-invasive brain stimulation, patient populations were limited to psychiatric populations, who perceived rTMS to be safe, beneficial and worth pursuing as a treatment option.[24] This is consistent with qualitative studies exploring the perceptions of rTMS researchers regarding the potential therapeutic utility of the technique.[25] However, it is not yet known whether similar findings exist among chronic pain populations, who may possess distinct perceptions from researchers or psychiatric populations.

The aim of this study was, therefore, to explore patient perceptions regarding the use of rTMS as a treatment for chronic musculoskeletal pain. This study adopted a qualitative approach to provide rich insight into potential barriers and facilitators influencing the uptake of rTMS for pain management in the clinical setting.

METHODS

This study has been reported in accordance with the Consolidated criteria for Reporting Qualitative Research checklist.[26]

Study design and participants

Through the use of semistructured interviews, this qualitative study employed a phenomenological approach to explore the perceptions of rTMS among people with chronic musculoskeletal pain who had no prior experience with the treatment.[27] The phenomenological approach allowed exploration of real-life experiences and the meanings to which people attribute them.[28] This approach provides rich insight into patient perceptions regarding therapeutic interventions.[29]

The study was conducted with people from the community residing in Sydney, Australia. A purposive sampling strategy was used to recruit people with chronic musculoskeletal pain. People were eligible for inclusion if they reported musculoskeletal pain that was present for longer than 3 months,[30] were currently undergoing treatment from a health professional and had no prior experience with rTMS. No restrictions were placed on participant sex, age or pain level. By including only people currently receiving treatment from a pain management service, we were targeting the population that would most likely be referred to rTMS in a clinical setting.[31] The intention of this study was to investigate the perceptions of people who had been provided with information likely given during an initial consultation or referral, who had not previously experienced the treatment itself. People who had a known history of cognitive deficits and who required assistance with English were excluded from this study.

Participants were recruited via social media channels (eg, Facebook, Twitter) and snowball sampling.[29 32] On expressing interest in participating in the study, potential participants were screened for eligibility over the phone by a member of the research team (GS). If eligible, GS followed up with the respective individuals to obtain written informed consent at time of recruitment.

Setting and data collection

After receiving informed consent, GS arranged a convenient time with the participants to conduct a 20 min interview either face to face or via phone. Face-to-face interviews were conducted at a location that was mutually agreed on between researcher and participants such as the community library. Prior to the interview, participants provided data regarding their age, gender, level of education, employment status and chronic pain condition (online supplemental additional file 1). The previously validated Depression, Anxiety and Stress Scale (DASS-21) was also included to provide insight into the participant's affective state.[33] The DASS was self-administered by each participant. Additionally, participants were asked to provide an indication of the duration of their pain (in months) and rated their perceived level of pain at the time of testing using an 11-point numerical rating scale (NRS) where 0 represented 'no pain at all' and 10 represented 'the worst pain imaginable'. The NRS was chosen due to its feasibility, relative simplicity and ease of administration.[34] The above baseline information enabled us to provide a comprehensive description of participant backgrounds.

Development of semistructured interview questions

Semistructured interview questions were used to promote flexibility and adaptability to participant responses.[27 29] Using the theoretical domain framework as a reference,[35] the interview included questions pertaining to patient knowledge, expectations, fear/concerns and attitudes towards rTMS (online supplemental additional file 1). The theoretical domain framework was chosen as it is a well-established framework used to explore the determinants of behaviour and has been widely used in the literature to explore implementation problems associated with evidence-based interventions.[36] The framework has also been used previously to investigate the uptake of

evidence-based interventions.[35] This approach is consistent with previous studies investigating perceptions of rTMS among people with psychological conditions.[37] The wording of questions was further developed and refined via consultation of content experts and researchers experienced with the therapeutic use of rTMS.[37] As the study only included people who have never engaged in rTMS previously, a standardised introduction to the purpose of rTMS was included (online supplemental additional file 1). This provided participants with context that facilitated the completion of the interview. The interview was also piloted for further refinement of questions in response to unforeseen barriers.

The interview was conducted by GS, who also audio taped and took field notes during the interviews to facilitate data analysis. The audio recordings were transcribed verbatim using NVIVO (QRS international V.12) transcription services. The transcripts were then sent to each participant for member checking to confirm the accuracy of the transcribed data.[38]

Data analysis

An inductive thematic analysis was used to analyse the transcripts according to the six phases described by Braun and Clarke.[39] All members of the research team read the transcripts in their entirety independently to explore their meanings and patterns for the study.[29 39] Then, two of the researchers (GS and CT) independently coded the transcripts line-by-line, using an electronic software programme, Quirkos V.2.3.1 (Quirkos Software, 2013). A code book was created and revised for consistency of application between the researchers across the transcripts. On completion of the coding process, the entire research team met to discuss the codes in the code book and analysed the connections between the codes to identify the emerging key themes and subthemes of the study.[29] These themes were then listed with a description and supported with quotes from the transcripts to ensure that they were adequately represented and grounded in the data.[29] Recruitment for this study continued until the point of data saturation when no new themes were added during the last three interviews.[39]

Several strategies were used to enhance credibility, criticality and transferability.[40] CT is an experienced researcher in qualitative methods and provided appropriate feedback for refinement of the analysis process carried out by GS. The use of a code book also increased the dependability between researchers. Considering the varying expertise and experience of the research team, completing the analysis as a group enabled the process to be as transparent as possible.[41] GS was a current physiotherapy student who had no prior experience in the area of rTMS and performed the semistructured interviews under training by CT, who is an experienced qualitative researcher. RC and SJS are experienced researchers in the field of rTMS and also have experience in data analysis and coding of transcripts for qualitative studies. None of the researchers in this project had a dependent therapist–patient relationship with the participants, nor were there any vested interest in supporting or rejecting the clinical utility of the technique. The trustworthiness of the study was further enhanced through an investigator triangulation process where individual members independently coded the transcript and analysed the themes before sharing and refining the analysis with other members of the team.[42]

Patient and public involvement

The patients were not involved in the design, conduct, reporting or dissemination plans of our research.

RESULTS

Characteristics of participants

Fifteen participants (10 women, 5 men) were recruited for the study. Participants had a mean (SD) age of 38 (15) years. Eleven participants were employed, three studying and one retired at the time of the study. Five participants had undergraduate university degrees, three had diplomas and all had completed secondary education (year 12). There were no participant dropouts. All participants chose to complete their interviews face to face and did not provide additional feedback during member checking. Twelve participants (80%) reported receiving a formal chronic musculoskeletal pain diagnosis from a health-professional, but three participants (20%) had undiagnosed chronic pain. Overall, ten participants (66.7%) reported living with their pain for greater than 2 years, with one participant (6.7%) reporting living with their pain for over 15 years. Mean pain levels at the time of the interview were 6.3 out of 10, with scores ranging from 2 to 9 (table 1). Average DASS-21[33] were relatively similar across participants (table 1). The majority of participants reported seeking healthcare services from general practitioners (66.7%, n=10), physiotherapists (60%, n=9) and chiropractors (60%, n=9) to manage their condition. As the outcome of the pilot only resulted in minor changes to the phrasing and wording of the questions, we did not carry out any repeat interviews.

Study themes

From analysis of the semistructured interviews, the key themes that influenced an individual's hypothetical acceptance of rTMS for chronic pain management were (1) the individual's initial impression of the equipment appearance, (2) the participant's individual history and familiarity with technology, (3) the accessibility and availability of rTMS and (4) knowledge regarding pain physiology and rTMS. Illustrative quotes were selected from the transcripts to support these themes. All participants were assigned with a unique code starting with 'P' followed by their participant number. A table that illustrates how codes contributed to subthemes and main themes is provided in online supplemental additional file 2.

Theme 1: initial impressions regarding equipment appearance influence the likelihood of using rTMS

Initial impressions of rTMS were consistent across several participants, with comments relating to the sophisticated

Table 1 Participant characteristics

ID	Chronic pain condition	Pain/10	Duration of pain	DASS-21 scores		
				Depression	Anxiety	Stress
1	Hip bursitis	2	5–10 years	6	2	24
2	Chronic knee pain	7	3–4 years	2	8	4
3	Peroneal tendonitis	6	5–10 years	4	4	14
4	Chronic neck pain*	7	3–4 years	6	4	22
5	Previous NOF	7	5–10 years	0	0	2
6	Chronic neck pain*	6	15+years	0	10	18
7	Golfer's elbow	6	3–6 months	2	0	4
8	Wrist tenosynovitis	5	3–6 months	6	4	2
9	Plantar fasciitis	8	5–10 years	2	0	8
10	Chronic NSLBP	6	1–2 years	8	2	18
11	Knee osteoarthritis	5	3–6 months	20	20	28
12	Chronic NSLBP	9	2–3 years	0	10	8
13	Chronic NSLBP	7	2–3 years	2	0	14
14	Patellofemoral knee pain	5	3–6 months	0	2	4
15	Chronic neck pain*	9	5–10 years	4	8	24

Depression subscale: Normal (0-9), mild (10-13), moderate (14-20), severe (21-27) & extremely severe (+28); Anxiety subscale: Normal (0-7), mild (8-9), moderate (10-14), severe (15-19) & extremely severe (+20); Stress subscale: Normal (0-14), mild (15-18), moderate (19-25), severe (26-33) & extremely severe (+34)
*No formal diagnosis.
DASS-21, Depression, Anxiety and Stress Scale; ID, participant number; NOF, neck of femur fracture; NSLBP, non-specific low-back pain.

appearance of the intervention and the perceived technological advancements in pain management. Participants often expressed that the complex appearance of rTMS created greater expectations regarding pain relief than conventional therapies.

> It looks like it's going to make a big enough impact. I don't think that people would spend time and money to develop this new product to only slightly make your pain better. I can take a Panadol and do the same thing. So, it is new and improved, it's better than what we've got so far, it should make a lot of difference. (P3)

> It looks more elaborate, like more than a physiotherapist talking to me and saying here is an elastic band and your exercises. It is high-tech and it looks like it reflects the growing advancements in pain relief, so I would expect better pain relief. (P8)

Although participants expected rTMS to provide greater analgesic effects than other therapies, many indicated a degree of fear or uncertainty regarding the treatment. The only recognisable feature, by all participants, was the 'dentist chair'. All participants commented that the chair and equipment used during rTMS reminded them of their experiences at the dentist. The lack of familiarity with rTMS often created apprehension.

> It look like something a dentist would probably use, something that reclines back and just reminds me of the hospital. (P5)

> It looks a bit confronting because there are so many things, and you don't know what they are. (P1)

> When you said copper stimulating the brain, that sort of sent a bit of warning – what does that mean? Is it radiation or harmful in any way? (P10)

Concerns were also raised regarding the 'complex' nature of rTMS and the belief that a trained health professional would need to administer the intervention. Participants most commonly acknowledged physicians as a trusted source of guidance for considering rTMS. The majority of participants also stated they would use rTMS if the treatment were recommended by a friend who had a positive experience with the treatment. Additionally, participants dismissed the notion of home-based rTMS or non-invasive brain stimulation, indicating that it would be unsafe or of a lower quality.

> I don't know … just in-case I hit the wrong part of my brain, or put it [rTMS device] on the wrong thing. I would feel more comfortable if a professional, who had been trained in this device, was using it. (P2)

> Even if you think about at-home teeth whitening or like laser hair removal and you compare that to when you go to see a professional. The at-home ones are always less strong and less effective. So, I feel like perhaps if there is a professional administering it, then it must be at a higher level and more effective. (P6)

> If my doctor recommended it I would definitely do it. I trust her and she is pretty honest and would tell me if it was a waste or not. (P15)

Theme 2: participant history and familiarity with technology influence willingness to engage with rTMS

Participants indicated that their own comfort and familiarity with technology impacted their willingness to engage with rTMS. Participants identified that younger people may be more likely to use rTMS when compared with older generations, due to a perceived greater familiarity with technology.

> Upbringing around technology, they [younger generation] have been around it more. Technology is changing. Whereas, maybe an older generation would think about it a bit more. (P14)

> I think it's harder for an older person to try new technology, especially if they don't understand it. (P15)

Potential generational differences were also highlighted across participant responses, with older interviewees typically demonstrating greater reluctance to consider rTMS as a treatment option. For example, a 51-year-old participant (P7) reported that they would have 'a 50/50 commitment about doing it', while a 21-year-old participant (P8) emphasised that they 'would be happy to give it a red-hot go'. This is supported by participant perspectives regarding the safety of rTMS. Younger participants believed rTMS had to be a safe intervention to be used clinically and may result in only minor side effects. For example, a 23-year-old participant suggested that rTMS 'could affect sleep or moods' (P3). In contrast, older participants were more sceptical of rTMS as they perceived the intervention to be associated with more complications. This is reflected in a 51-year-old participant that suggested engagement in rTMS could cause the 'development of cancer because it is transmitting something' (P10).

In terms of pain experience, participants identified that severe or debilitating pain would warrant greater consideration of rTMS as a treatment avenue. In comparison, a small number of participants were satisfied with their current pain management and so were less inclined to consider rTMS.

> If I had the pain, chronic pain that was debilitating, that was really impacting on my day-to-day, and I do have a friend that is in this position, where they just cannot function … then I would probably look at this [rTMS] as an option (P1)

> I am happy living with my pain. I reckon I could cope with it. There are other natural ways I can try and manage my pain. (P14)

Theme 3: concerns over cost and access impact willingness to use rTMS

Cost and access were two of the main factors that influenced participant willingness to use rTMS. Participants indicated that their willingness to engage with rTMS would likely depend on its convenience and cost when compared with their current management strategies. Participants reported a willingness to pay between US$20 and US$300 for the treatment, with some participants inquiring about government rebate incentives. Participants also expressed concerns over extended travel times surpassing 1 hour or repeated sessions, often stating a preference for a longer session that occurred on 1 day rather than multiple sessions over consecutive days. These perceptions were shared among participants regardless of age. There was a consistent belief that participants would be willing to spend more or travel further if pain relief was guaranteed, but the extent of pain relief required varied between participants.

> Cost. If it is not too expensive and in terms of length – if it is a whole hour you have to spend on the machine then I probably wouldn't but if it's like a quick 15-30min thing and the research shows that it has quite good benefit then I would be happy to do that. (P8)

> I have had it [chronic musculoskeletal pain] for so long I would be willing to pay more if I knew it was a guaranteed thing. If you have no idea, you would want to try it but hope it doesn't cost that much. (P4)

> It is quite a big commitment. I mean you have to travel there … assuming whoever is running this procedure is not late … things like that. So, it would take a good one to two hours out of your day … it is quite a lot I think. (P2)

Theme 4: lack of knowledge in pain science and rTMS reduces willingness to engage with the treatment

Overall, a lack of knowledge and understanding of the intervention was perceived to be the biggest barrier to using rTMS. Participants often indicated that their decisions would be informed by the physiological justification of the treatment, documentation and research regarding its effectiveness and potential side effects. One participant suggested that a factsheet with information of rTMS would be helpful in the decision-making processes.

> I'd like to know exactly what is does, what the benefits of it are and what areas it treats. All that sort of stuff, like a fact sheet of what it [rTMS] is. (P10)

Furthermore, one's understanding of pain science affected their likelihood of accepting rTMS, especially if they had pain in the extremities as compared with the head or neck. This was evident by the fact that participants identified mental health conditions, headaches and brain tumours as the primary indicators for the use of rTMS. Further, participants admitted being less willing to use rTMS if their pain was localised peripherally, perceiving the treatment to be less effective.

> I have ankle pain … I think it would be weird to treat my brain, or ineffective to treat. Like it just doesn't

seem like it would actually treat the affected area of pain because it's not specifically targeting that area. (P3)

DISCUSSION

This study was the first to explore patient perceptions of rTMS as a treatment for chronic musculoskeletal pain. Overall, participants were accepting of rTMS, demonstrating high expectation regarding the efficacy of the treatment due to the perceived sophistication of the equipment. Barriers to the uptake of rTMS included apprehension regarding the appearance of the treatment environment, the costs associated with rTMS and a lack of knowledge regarding the mechanisms underlying the effects of the treatment. These findings highlight potential barriers that should be addressed to ensure the successful uptake of rTMS in a clinical setting.

The sophisticated appearance of rTMS elicited greater expectations regarding treatment effectiveness, with many participants suggesting that the treatment was likely to be more effective than current pain management strategies. This 'complexity bias' has been observed throughout healthcare services, with patients and organisations often expecting greater effects from more complicated or sophisticated-appearing equipment.[22] Indeed, perceptions regarding the sophistication of new technology has been shown to influence its subsequent uptake and utilisation.[43 44] Patients should therefore be made aware of the likely effectiveness of the treatment based on the existing literature, with attempts made to attenuate complexity bias and generate realistic expectations.

While participants found rTMS to be sophisticated, they also reported that the equipment appeared confronting and unfamiliar. The resemblance of the chair used during rTMS to that of a dentist chair was commented on by all participants and may have created this perception.[43] Dental anxiety is a well-established phenomenon in the literature that affects as many as 50%–80% of adults.[45 46] It is highly plausible that previous dental experience may have led to an increased level of apprehension when considering the use of rTMS, especially among a naïve population who do not have prior knowledge of the treatment. The means by which rTMS is portrayed, advertised and discussed in clinical settings is therefore a pertinent consideration when discussing the treatment option with potential patients. This study provides vital information needed to facilitate the integration of the use of rTMS in clinical practice.

Consistent with other novel therapies, the costs associated with rTMS presented potential barriers to the technique's utilisation.[47 48] In addition, unique factors such as age and the location of pain were also instrumental in influencing the use of rTMS in chronic pain. Older participants were more hesitant to engage with rTMS as compared with younger participants. This aligns with the Generational Cohort Theory, which suggests that certain life stages coincide with generational beliefs and characteristics.[49] For example, this model supports the possibility that limited technological exposure, or exposure to times with less pervasive technology, among older generations may account for their sceptical perceptions towards rTMS when compared with younger individuals.[50] Thus, future interventions should consider targeting promotional awareness of rTMS in older generations to ensure the successful uptake of rTMS clinical settings.

Pain severity and location were also identified as key factors influencing an individual's motivation in accepting rTMS as a treatment option. Participants with more severe or debilitating pain were considered to be more likely to use rTMS. However, many participants could not understand how a treatment that was applied to the brain would ease pain in peripheral joints. While the reasons for this belief were not explained, it may be related to the common misconception that pain management strategies should be localised to the affected area.[51] The results highlight the importance of providing people with the necessary knowledge about pain science in improving outcomes for people with chronic pain. This is consistent with the beliefs of researchers and patients in psychiatric populations.[24] It is also likely that people will start to develop a deeper understanding of rTMS when it becomes more readily accepted in clinical practice. Indeed, since the Food and Drug Administration approval and widespread use of rTMS for psychiatric populations, patients with psychological conditions have demonstrated enhanced knowledge regarding rTMS.[25 37 52–54] Future research should investigate the role of education in influencing an individual's willingness to engage with rTMS.

Despite a rigorous approach towards data collection and analysis, this study is not without limitations. Female participants represented a larger portion of the sample, introducing a potential gender bias. While the prevalence of chronic musculoskeletal conditions is greater in women, future studies should investigate alternative approaches to increase the recruitment of male participants. Furthermore, the sample in this study presented with high pain severity (mean=6.3/10), which may have influenced the perceptions reported. Further investigation of perceptions across patients with a wider range of pain experiences is therefore warranted. Data obtained from the interviews were related to the hypothetical nature of whether participants would engage with rTMS. While valuable, understanding participant experiences following exposure to the intervention is also required to provide further insight in determining the clinical utility of this treatment. Future work should consider exposing chronic pain patients to the intervention to further understand their perceptions and experiences. Finally, a participation bias may exist where only those who felt confident to share their perspectives and experiences of their condition participated. The exclusion of people from non-English speaking backgrounds in this study also limited the generalisability of the findings to other linguistic groups.

CONCLUSION

This study was the first to explore patient perceptions of rTMS as a treatment for chronic musculoskeletal pain. From analysis of semistructured interviews, the key themes that influenced an individual's hypothetical acceptance of rTMS for chronic pain management were (1) the individual's initial impression of the equipment appearance, (2) the participant's individual history and familiarity with technology, (3) the accessibility and availability of rTMS and (4) knowledge regarding pain physiology and rTMS. These data provide rich insight into the perceptions of people with chronic pain regarding this novel therapeutic intervention and potential means by which to increase the utility of rTMS in clinical settings.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval This study involves human participants and was approved by Western Sydney University Ethics Committee (H13647). Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplemental information. The dataset supporting the conclusions of this article is included within the article and its additional files.

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