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Introduction Repetitive transcranial magnetic stimulation (rTMS) is a neurostimulation technique used in many indications, especially in psychiatry in the treatment of mood disorders. Although its efficacy in this treatment has been demonstrated, the study of predictive response factors currently remains a major challenge.
Method We conducted a retrospective study from the cohort of treatment-resistant depressed patients that received rTMS treatment in Esquirol Hospital in Limoges in order to identify response predictors at three months. Of the 416 patients treated between January 2007 and November 2015, 107 subjects have been included. The clinical characteristics of responders and non-responders at three months after treatment, but also at the end of treatment and after one month were compared. Predictors of clinical improvement objectified by the Hamilton Depression Rating Scale (HDRS) were identified using a logistic regression model.
Results In our cohort, the response rates were 52% at the end of treatment, 61% at 1 month and 57% at 3 months. Psychiatric family history and the recurrence of thymic episodes were found to be negative predictors of response to rTMS treatment. Similarly, high subscore of depression core symptoms in HDRS could also predict a poorer response.
Conclusion Our data from a naturalistic cohort tended to prove that a number of clinical features should be taken into account in determining the profile of the treatment-resistant depressed patients that could respond to rTMS treatment.
Disclosure of interest The authors have not supplied their declaration of competing interest.

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Prolonged theta burst stimulation: A novel rTMS paradigm in neuropsychiatry

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Introduction Repetitive transcranial magnetic stimulation (rTMS) has important role in treatment of neuropsychiatric disorders. Theta burst stimulation (TBS), a modification of rTMS, seems to produce greater changes in cortical excitability (CE) than those observed in conventional rTMS protocols. TBS is used in different protocols: intermittent TBS (iTBS) and continuous TBS (cTBS). While iTBS facilitates CE, cTBS leads to CE inhibition. However, a prolonged cTBS produces facilitatory effect similar to that of iTBS. Prolonged TBS (pTBS), a novel rTMS paradigm, is of great clinical interest for its short duration, but also because it may induce stronger effect.
Aim To prove the effect of pTBS of motor cortex on changes of motor threshold (MT), CE and pain threshold (PT) in healthy volunteers (HV). To compare the effects of two different forms of active pTBS (pcTBS, piTBS) with placebo.
Methods A double-blind, placebo-controlled, cross-over study compared the effects of different pTBS of contralateral M1 area on MT, CE and PT. We enrolled 24 HV to the study, who underwent all types of pTBS in randomized order and were assessed before and after each pTBS application. We used MagPro R30 (with coil focused to contralateral M1 area, 1200 pulses/session, 90% MT).
Results A significant changes in CE and MT were found after application of continuous pTBS. Intermittent and placebo pTBS did not confirm the effect. There were no significant changes on PT after pTBS. Continuous pTBS was better tolerated than intermittent pTBS.
Conclusion pTBS should be considered as an effective and safe treatment option for neuropsychiatric disorders.
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Transcranial direct current stimulation: Adverse effects and the efficacy of a commonly utilised sham protocol

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Introduction Transcranial direct current stimulation (tDCS) is a promising neuromodulation method that has, for example, been used to treat depression. Nevertheless, the adverse effects of tDCS and the validity of the current standard tDCS sham protocols have received limited attention.
Objectives To evaluate the extent and types of tDCS adverse effects and to assess the reliability of sham stimulation as a control procedure for tDCS in a double-blind setting.
Aims To compare adverse effects between tDCS and sham stimulation groups, and to determine how well the participants and the experimenter are able to distinguish tDCS from sham stimulation.
Methods A sample of healthy volunteers received a 20-minute session of either tDCS ($n = 41$; 2 mA) or sham stimulation ($n = 41$; ramp up 15 s, ramp down 15 s; no current in between). The anode was placed over F3 and cathode over F4. Both the participants and the experimenter reported immediate adverse effects and the perceived likelihood for the participant to receive tDCS. Analyses were conducted using the Mann–Whitney U-test.
Results The tDCS group reported more erythema compared with the sham group ($P = 0.016$, Cohen's D = 0.444). No other significant differences in adverse effects were observed. In the tDCS group, both the participants ($P = 0.034$, Cohen's D = 0.612) and the experimenter ($P = 0.006$, Cohen's D = 0.674) reported a higher perceived likelihood of the participant receiving tDCS than in the sham group.
Conclusions tDCS has only modest adverse effects. Nevertheless, the current standard sham protocol appears insufficient.
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From theory to practice: The contribution of John Farquhar Fulton (1899–1960) to psychosurgery

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