

Effectiveness of transcranial direct current stimulation (tDCS) for the treatment of fibromyalgia: Comparison of cortical targets effects on main fibromyalgia symptoms (tDCS for the treatment of fibromyalgia)

First published: 02/06/2018

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Study

Planned

Administrative details

EU PAS number

EUPAS24294

Study ID

24295

DARWIN EU® study

No

Study countries

 Spain

Study description

Fibromyalgia is a common cause of diffuse, chronic musculoskeletal pain in adults, with an estimated prevalence between 2 and 5% in the general population. Even though its aetiology and pathophysiology are not fully understood, current evidence suggests that, similarly to other chronic pain syndromes, this is a disorder of pain regulation characterized by altered pain and sensory processing in the central nervous system, likely due to maladaptive plasticity in pain-related neural circuits. Thus, the use of neurostimulation approaches is of particular relevance in fibromyalgia, a chronic pain disorder where pain can be characterized by a lack of inhibitory control over somatosensory processing and that is often refractory to multiple therapeutic strategies. Transcranial direct current stimulation (tDCS) is a promising technique that allows to non-invasively modulate brain activity by applying a low intensity current (1 to 2 mA) via scalp electrodes. Stimulation effects and after-effects depend on the current polarity under each electrode. Indeed, motor cortex stimulation studies have shown that with standard parameters, anodal stimulation enhances cortical excitability, while cathodal stimulation decreases cortical excitability. Some studies have explored the analgesic effects of tDCS in chronic pain, including fibromyalgia, both stimulating M1 and/or the dorso-lateral prefrontal cortex (DLPFC, F3). However, a recent meta-analysis has stressed the poor methodological quality of most previous studies, leading to non-significant results of and the need for larger, rigorously designed studies. This study aims to obtain more information on the therapeutic use of tDCS for pain relief, and to respond to two important challenges of this area of research: (a) the need of more sham-controlled studies with a sufficient number of patients and long follow-up, (b) the need to explore novel targets in pain-related brain regions, such as the operculo-insular cortex.

Study status

Planned

Research institutions and networks

Institutions

Health Research Institute of Santiago de Compostela (IDIS)

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Institution

Hospital Complex of Pontevedra Pontevedra (Spain)

Contact details

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Primary lead investigator

María Teresa Carrillo-de-la-Peña

Primary lead investigator

Study timelines

Date when funding contract was signed

Planned: 02/06/2018

Study start date

Planned: 02/06/2018

Data analysis start date

Planned: 02/06/2018

Date of interim report, if expected

Planned: 02/06/2018

Date of final study report

Planned: 03/09/2018

Sources of funding

- Other

More details on funding

Spanish National Plan

Study protocol

[PROTOCOLO-TCS_REGISTER EU.pdf](#) (190.08 KB)

Regulatory

Was the study required by a regulatory body?

No

Is the study required by a Risk Management Plan (RMP)?

Not applicable

Methodological aspects

Study type

Study type list

Study type:

Clinical trial

Scope of the study:

Effectiveness study (incl. comparative)

Other

If 'other', further details on the scope of the study

Explore novel targets in pain-related brain regions, such as the operculo-insular cortex

Main study objective:

1) to compare the analgesic effect of M1 active tDCS vs sham tDCS in a group of patients with FM, 2) to analyze long-term effects (6, 12 m) of tDCS on pain and associated symptoms, 3) to check the effect of DLPFC active tDCS vs sham tDCS on cognitive function, 4) to determine the optimum tDCS stimulation place (M1, OIC or DLPFC) for each of a group of four symptoms considered in FM patients.

Study Design

Clinical trial randomisation

Randomised clinical trial

Study drug and medical condition

Medical condition to be studied

Fibromyalgia

Pain management

Population studied

Age groups

- Adults (18 to < 46 years)
- Adults (46 to < 65 years)
- Adults (65 to < 75 years)

Estimated number of subjects

92

Study design details

Outcomes

To assess treatment effectiveness we will consider 4 groups of symptoms, each with defined outcome measures.1. Pain, fatigue (mean threshold by algometry, FIQ items 5 and 6)2. Mood state (HADS score)3. Cognitive dysfunction (MFE score)4. Sleep disorders (PSQI score)A 20% of change between the pre and post treatment in any of the groups will be consider an index of a clinical

improvement. Assessment of general quality of life, functional impact and electroencephalogram (EEG) parameters.

Data analysis plan

Patients agreeing to participate will be scheduled for a 1st evaluation session. Once informed about the characteristics of the tDCS, results of previous studies with chronic pain patients, and safety aspects, a written informed consent will be required of them. We'll use strict inclusion/ exclusion criteria. For inclusion: fulfillment of both the ACR criteria of 1990 and 2010 (Wolfe et al.), moderate to high severity of the disease (indicated by a FIQ score ≥ 70 or a VAS Pain ≥ 7), presence of cognitive dysfunction (item 2 "cognitive troubles" of the Symptom SS ≥ 2). For exclusion: no immune system pathology or comorbidities that could explain the main symptomatology of FM, risk factors for the tDCS procedure, such as existence of a history of previous convulsions (epilepsy or family history), use of anticonvulsant treatment (e.g, pregabalin, caarbamazepine, gabapentin), substance abuse, psychiatric diseases, other than depression and anxiety, brain damage, dementia, Parkinson's

Data management

ENCePP Seal

The use of the ENCePP Seal has been discontinued since February 2025. The ENCePP Seal fields are retained in the display mode for transparency but are no longer maintained.

Data sources

Data sources (types)

Other

Data sources (types), other

Fibromyalgia patients of the sanitary areas will be informed about the study in the Neurology service of the University Hospital Complex of Santiago de Compostela (CHUS) or in the Rheumatology service of the Hospital Complex of Pontevedra. Also, we have a pool of 543 patients that participated in the Genetic study of Fibromyalgia that were already informed about the tDCS project.

Use of a Common Data Model (CDM)

CDM mapping

No

Data quality specifications

Check conformance

Unknown

Check completeness

Unknown

Check stability

Unknown

Check logical consistency

Unknown

Data characterisation

Data characterisation conducted

No