Improving outcome through improving cognition in Severe Mental Illness: Cognitive Remediation Training combined with transcranial Direct Current Stimulation, a randomized, sham-controlled, multi-center trial.

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A possible treatment approach is cognitive remediation training (CR), a training developed to target cognitive deficits with the ultimate aim to improve daily functioning. Participants engage in cognitive exercises, learn more about their own...

Ethical review	Approved WMO
Status	Recruiting
Health condition type	Psychiatric disorders NEC
Study type	Interventional

Summary

ID

NL-OMON56558

Source
ToetsingOnline

Brief title
Improving outcome through improving cognition in Severe Mental Illness

Condition

- Psychiatric disorders NEC

Synonym
serious mental illnesses; psychiatric disorders

Research involving

Human

Sponsors and support

Primary sponsor: Lentis (Groningen)
Source(s) of monetary or material Support: Hersenstichting

Intervention

Keyword: brain stimulation, cognitive functioning, daily functioning, severe mental illness

Outcome measures

Primary outcome

Daily functioning, measured by:

(a) Goal Attainment Scale (Turner-Stokes et al., 2009; evaluation of attainment

of individual goals);

(b) the Independent Living Skills Survey (Wallace et al., 2000; daily

functioning questionnaire & observation list)

(c) Behapp application (www.behapp.com; Eskes et al., 2016a, b; app to measure

social behaviour in an objective and passive manner)

Secondary outcome

Cognitive functioning measured with

(a) a neuropsychological test battery (Stroop test (Stroop, 1935), 15-Word Test

(Saan & Deelman, 1986), Verbal Fluency (Schmand et al., 2008), Digit Span

Forward and Backward (Wechsler, 1944), Trail Making Test (Reitan, 1956), BADS

Key Search Taak (Wilson et al., 1997), Wechsler Memory Scale IV Visual

Reproduction (Wechsler, 2009)

(b) Cognitive Failures Questionnaire (subjective cognitive functioning,

Broadbent et al., 1982);

(c) Nurses' Observation Scale of Cognitive Abilities (perceived cognitive

functioning, Persoon et al., 2012).

(d) DEX questionnaire (Wilson et al., 1997; meet metacognitief functioneren)

Overige secundaire onderzoeksvariabelen

(e) Self Evaluation of Negative Symptoms (Dollfus, Mach & Morello, 2016;

measures negative symptoms experienced by the participant)

(f) General Self-Efficacy Scale (Chen, Gully, & Eden, 2001; measures

self-efficacy)

(g) Service user expectation (measures expectations of the participant prior to

the start of the trial)

(h) In-depth interview to measure subjective metacognitive functioning

Study description

Background summary

People with a serious mental illness (SMI) such as schizophrenia, bipolar disorder or major depression often experience major problems in daily life, such as in the area of household skills (grocery shopping, cleaning) and organization of daily life (keeping a calendar, financial organization). Sometimes such problems are so great that people can no longer live independently and fall back on forms of sheltered housing. Often these problems in daily life are caused by disorders in thinking ability (cognitive disorders). Moreover, research shows that cognitive impairments are associated with reduced brain ability to change and adapt to the environment (also called neural plasticity) in people with EPA.

Study objective

A possible treatment approach is cognitive remediation training (CR), a training developed to target cognitive deficits with the ultimate aim to improve daily functioning. Participants engage in cognitive exercises, learn

more about their own cognition and the use of (cognitive) strategies to compensate for deficits. However, in people with SMI, neural plasticity is reduced, which might hinder newly learned cognitive skills to sustain and limit the benefits from CR. For this reason, people with SMI may benefit from the combination of CR with a method that may promote neural plasticity: transcranial direct current stimulation (tDCS).

Study design

In a pragmatic, triple-blinded, randomized, sham-controlled, multi-center trial with a multiple baseline design, we will investigate the effectiveness of combining CR and tDCS in helping participants reach personal goals, minimizing problems in daily functioning and improving cognitive functioning. 126 service users with SMI will receive 16-20 weeks of twice-weekly CR combined with active (N=63) or sham tDCS (N=63). We will perform functional, cognitive, and clinical outcome assessments at baseline, after a 16-week waiting period, post-treatment and 6-months post-treatment and compare the effects within-participants (waiting period vs. treatment period) and between-participants (CR+active tDCS vs. CR+sham tDCS).

Intervention

CIRCuiTS. Computerized Interactive Remediation of Cognition and Thinking Skills (CIRCuiTS) is a computer training composed of tasks that improve cognitive skills in the domains of attention, memory, working memory and planning. The training is adaptive, so if a participant does the tasks well, the training becomes more difficult. CIRCuiTS encourages generalization of learned cognitive skills to everyday life in several ways. Participants 1) learn more about their own thinking skills by indicating how difficult they find tasks; 2) evaluate their goals, strengths and difficulties at pre-planned times; 3) learn to make a plan of action by choosing cognitive strategies prior to a task and evaluating how useful they were afterwards. Furthermore, tasks are programmed to take place in a virtual village with e.g. a library, train station and supermarket, which encourages generalization.

tDCS. We use an Eldith DC stimulator (NeuroConn, Germany) to stimulate the target brain region, the left dorsolateral prefrontal cortex (DLPFC). We place the anode at C3 and the cathode at Fp1, in accordance with the international 10-20 system. To check whether the brain stimulation stimulates the DLPFC, we simulated the effects when placing the electrodes at these locations with computational modeling using the software SimNIBS. We fix conductive rubber electrodes (5cm x 5cm) with conductive paste (Ten20, Neurodiagnostic Paste). For active tDCS, we use a current of 2 mA, for 20 min with a fade in/out of 30s. Longer stimulation appears to have no additional effect, moreover, stimulation acts 2-4 h after (Monte Silva et al., 2013). For sham tDCS, we apply an identical fade-in, which will then disappear in 30s.

Study burden and risks

In a previous pilot study, we showed that a combined CR+tDCS intervention was feasible and acceptable in the target population. Participants reported enjoying the CR training and that the intervention helped them achieve their goals. In addition, they indicated that they were not burdened by the tDCS. Participants also indicated that they expect that other people with EPA could also benefit from the intervention. The pilot study found that participants could handle the four-month, twice-weekly duration well and that it was not too intensive. In fact, most participants were surprised that they were already four months into the training and just didn't want to miss any training. If we can show in a larger-scale study that CIRuiTS is effective and that possibly tDCS has an additive effect, this intervention could meet a large patient need.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)

Inclusion criteria

Service users can be included if they meet the criteria for SMI (Delespaul et al., 2013):
- A psychiatric disorder that requires care/treatment (no remission of positive, negative and cognitive symptoms);
- Severe disabilities in social and/or societal functioning (no functional remission);
- Disabilities are the result of a psychiatric disorder
- Disabilities are structural (at least several years);
- Coordinated professional care is necessary to realize a treatment plan.

Each participant in the study should sign informed consent, and only those who are fully capable of making their own decision regarding participation in the study will be included. Additional criteria for inclusion are an age of between 18 and 65 years and sufficient written and oral mastery of the Dutch language.

Exclusion criteria

Service users will be excluded from tDCS if they have:
• Metal implants inside the skull or eye;
• Severe scalp skin lesions;
• A history of previous seizures.
• Alcohol or drug abuse;

Study design

Design

Study type:	Interventional
Intervention model:	Other
Allocation:	Randomized controlled trial
Masking:	Open (masking not used)
Control:	Placebo
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	06-05-2024
Enrollment:	126
Type:	Actual

Ethics review

Approved WMO Date:	06-02-2024
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)
Approved WMO Date:	17-07-2024
Application type:	Amendment
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)
Approved WMO Date:	26-09-2024
Application type:	Amendment
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
ClinicalTrials.gov	NCT06378463
CCMO	NL85018.042.23