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Information Sheet for Investigating Sensorimotor Control and Behavior with Non-invasive Brain Stimulation.

Participant Information Sheet

Thank you for taking time to read this information sheet. We would like to invite you to join a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the study?

Good control of the upper limb is vital to carrying out even the most basic activities of daily living: eating, bathing, dressing etc. The subtle, but gradual decline in motor performance associated with increasing age can restrict the ability of older adults from safely carrying out these activities. Transcranial direct current stimulation (TDCS) is a form of non-invasive brain stimulation used in both clinical and experimental setting to modulate brain excitability. TDCS has been used to improve certain aspects of motor performance in young and older healthy subjects as well as a in number of movement disorders such as stroke and Parkinson's Disease. However, the mechanisms underlying these affects are relatively unknown and the extent to which TDCS can be used to ameliorate different aspects of age-related sensorimotor declines requires further investigation.
The purpose of this study is to investigate some of the mechanisms underlying TDCS and to understand what aspects - and to what limits – upper limb sensorimotor control can be improved by TDCS in both young and older adults.

Why have I been chosen?

We are asking you to think about joining this study because you can act as a healthy control participant or your condition may help us understand changes in the brain pathways following injury or during degeneration.

Do I have to take part?

No. It is entirely up to you. If you would like to take part, you will be asked to sign a consent form. Even after you have signed this consent form and agreed to join the study, you are free to withdraw from the study at any time without providing a reason.

What will happen to me if I take part?

Once you have decided to take part in this study, you will be asked to come to laboratories at University of Birmingham, where a member of our research team will discuss the study with you and answer any questions you may have. If you are still happy to take part, we will ask you to sign the consent form.

We will undertake a number of assessments while you are in the labs.

~~Neurophysiological assessments:~~

~~We may be required to use transcranial magnetic stimulation (TMS) in order to identify different areas of the brain. TMS activates the nerves in your brain which control your muscles and involves placing a plastic coil in a specific position over your head, this is connected to a machine which delivers a small magnetic stimulus to the nerves in the brain. This is not painful and does not involve any needles. We may record the electrical activity from the muscles in response to these or other stimuli using sticky self-adhesive electrodes (like those used to record ECGs) stuck to the skin overlying the muscles. We may give you stimuli when you are relaxed or when you are performing a voluntary task.~~

Intervention:

TDCS*:* You will then undergo a session of transcranial direct current stimulation (TDCS) for up to 20 minutes. This intervention involves attaching electrodes over different parts of head and possibly shoulder. You may feel a slight itching/tingling initially but this should wear off. It is also not unusual to feel no sensation during the stimulation.

You will be asked to perform different tasks during the stimulation. These tasks will require you to respond to visual stimuli by moving your hand ~~or whole arm using a robotic manipulandum or contract different upper limb muscles for a short period of time~~. This will allow us to understand the relation between the control of your nervous system and your performance. ~~You may have the same neurophysiological assessments mentioned above during/after the intervention~~. You will be also asked basic information e.g. date of birth, body height, body weight, handedness etc. The experiment will take no longer than 3 hours and includes only one visit/session.

We request that 24 hours before each session you avoid alcohol consumption or the use of any recreational drugs and avoid drinking caffeinated coffee 2 hours before the sessions. This is required for your safety as both alcohol and caffeine may interact with the brain stimulation you will be exposed to.

Compensation: University students will be compensated via research credits (1hr = 1 credit, rounded up to the nearest hour) or cash (£10/hr). If you choose to withdraw, your credits will be reduced pro rata. ~~Any other participants e.g. older adults will be reimbursed for travel expenses incurred. Travel compensation will be rounded up to the nearest £5 and if required calculated via a mileage calculator (for car travel).~~ This will be paid in full even if you choose to withdraw. Any compensation can be declined at your discretion.

What are the side effects of any treatment received when taking part?

There are no treatments given as part of this testing.

What is the drug or procedure that is being tested?

There are no drugs being tested in this study and no new treatments. This study is simply looking at how the brain controls your movement. All testing protocols have been in use for many years.

What are the possible disadvantages and risks of taking part?

The assessment techniques are safe and non-invasive and there are no known risks from having these tests performed under strict safety guidelines. All tests will be performed within your limits of tolerance.

What are the possible benefits of taking part?

There are no clear benefits of taking part. However, this research may lead to knowledge into how the brain and nervous system control human movements.

What if new information becomes available?

Any new information derived through this study will be made available to all of the participants should they request this.

Will my taking part in this study be kept confidential?

Any information you give us will be kept confidential. If the study is published in a book or scientific journal, no individual will be identified in any way.

What will happen to the results of the research study?

The results of the study will be analysed by the research team and presented at neuroscience, neurological and other health care conferences and published in scientific journals. No individual participant will be identified in any report or presentation arising from the research.

Who is organising and funding the research?

The study will be run by a research team based at University of Birmingham and funded by University of Birmingham, charity, or research councils.

Who has reviewed the study?

This study has been approved by the University of Birmingham Ethical Review Committee.

Contact for further information about this study.

If you are unsure about this study and would like to consider further before you make your decision, please take your time to do so. You may ask for further information by contacting a member of the team. Their contact details are provided on the top right corner of the first page. For any complaints about the study, please contact Dr Birgit Whitman, Head of Research Governance and Integrity (tel. 0121 415 8011, email: B.Whitman@bham.ac.uk)