

Participant Information Sheet



Study title: Brain stimulation for chronic low back pain.

Locality: Dunedin School of Medicine,
University of Otago, New Zealand.

Ethics committee ref.: 20/NTB/67

Lead investigator(s): Dr. Divya Adhia &
Prof. Dirk De Ridder

Contact phone number: 03 470 9337

You are invited to take part in a study evaluating the safety and exploring the effect of a brain stimulation technique for improving pain and function in individuals with chronic low back pain. Whether or not you take part is your choice. If you don't want to take part, you don't have to give a reason, and it won't affect the care you receive. If you do want to take part now, but change your mind later, you can pull out of the study at any time.

This Participant Information Sheet will help you decide if you would like to take part. It sets out why we are doing the study, what your participation would involve, what the benefits and risks to you might be, and what would happen after the study ends. We will go through this information with you and answer any questions you may have. You do not have to decide today whether or not you will participate in this study. Before you decide, you may want to talk about the study with other people, such as family, whānau, friends, or healthcare providers. Feel free to do this.

If you agree to take part in this study, you will be asked to sign the Consent Form on the last page of this document. You will be given a copy of both the Participant Information Sheet and the Consent Form to keep.

This document is 9 pages long, including the Consent Form. Please make sure you have read and understood all the pages.

WHAT IS THE PURPOSE OF THE STUDY?

The purpose of this study is to evaluate the safety and to explore the effect of a brain stimulation technique on pain and function in individuals with a diagnosis of chronic low back pain. This study will involve stimulating the activity in the brain regions that have been demonstrated to be altered in individuals with chronic low back pain. The results obtained from this study will help us to develop new treatments for improving pain and function in individuals with chronic low back pain.

WHO ARE WE SEEKING TO PARTICIPATE IN THE PROJECT?

We are seeking approximately 40 adults (aged 18-75 years) with a clinical diagnosis of chronic low back pain, and with significant pain (present daily) and functional difficulties for a minimum duration of three months.

You are not eligible to participate if you have any of the following:

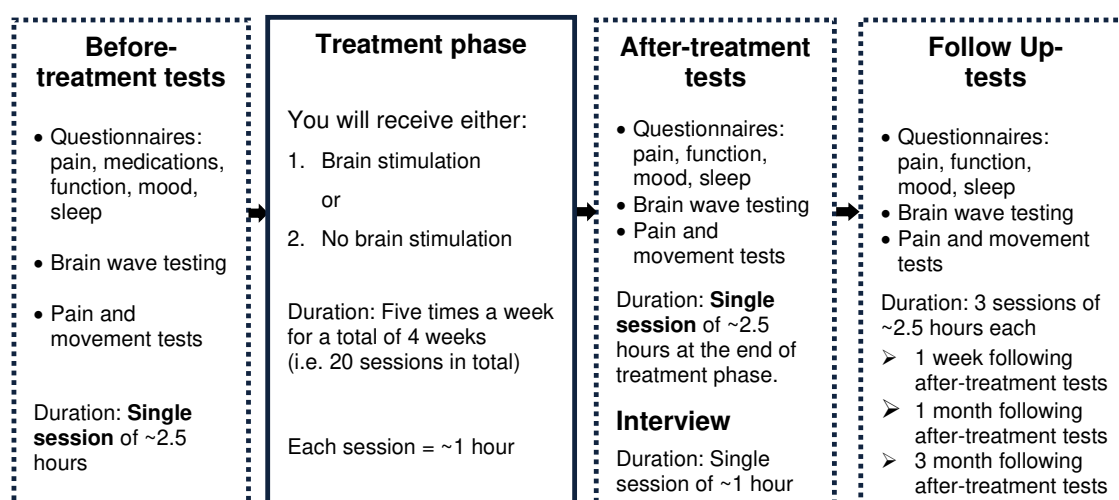
- Inflammatory arthritis (e.g. Rheumatoid arthritis, Fibromyalgia, Gout)
- Undergoing any therapy from a health professional (e.g. physiotherapist or chiropractor)
- Recent soft tissue injuries (e.g. muscle sprain) of the back in the last 3 months
- Recent steroid injections to your low back (in the past 6 months)
- History of surgery to the back region, radicular pain or radiculopathy (e.g. Sciatica, pain going down the leg with numbness and weakness of the leg, nerve compression)
- Waiting/scheduled for any procedures (e.g. surgery or steroid injection) within the next six months
- Currently taking steroid medications, antidepressants, anti-epileptics, or neuropathic pain drugs (e.g. Amitriptyline, Gabapentin, or Duloxetine)
- History of neurological conditions (e.g. Stroke, Multiple sclerosis, Spinal cord or peripheral nerve injuries or neuropathy) or vascular (i.e. blood vessel) problems
- Cognitive impairments (dementia, Alzheimer's disease)
- Unstable medical or psychiatric conditions, dyslipidaemia, uncontrolled/untreated hypertension, history of epilepsy or seizures, or alcohol or substance abuse
- Presence of electronic implants or metal implant in the body (particularly head and neck)
- Recent or current pregnancy (i.e. in the last 6 months)

You will be screened by the study investigator for your eligibility to participate in this study. You will be allowed to continue your pain medications for the duration of the trial, but the type and dosage and any change in the medications will be recorded throughout the duration of the trial.

You will also be asked to provide contact details of your GP or other current provider. We will contact your GP, or other current provider, to determine your eligibility for participation in the study, to notify them of your participation in the study, and to inform them if any incidental findings are recorded during assessments.

WHAT WILL MY PARTICIPATION IN THE STUDY INVOLVE?

As shown in Picture 1, you will be required to attend the following four study phases: Before-treatment tests, Treatment phase, After-treatment tests and Interview, Follow-up tests



Picture 1. Study phases and time-commitment for each phase

Before-treatment tests: will take ~2.5 hours at the Dunedin hospital. The following tests will be conducted after obtaining written informed consent.

- **Questionnaires:** You will be asked to complete questionnaires about yourself (age, gender, education, ethnicity, well-being), and your pain (location, nature, intensity, type) and how much pain affects your functional activities, quality of life and well-being, psychological states (e.g., mood, mindfulness, emotional regulation), current medication history (including pain relief), the presence of other health issues if any (e.g. diabetes), and sleep. You will also be asked about your thoughts associated with pain.

- **Brain wave testing:** After completing the questionnaires, you will be asked to wear a cap with electrodes attached to it (see Picture 2). According to Māori culture, the head is considered sacred "*he tapu te upoko*" and the brain is regarded as the *wairua* (soul). The researcher will obtain permission from you before touching your head. You will rest in a comfortable chair with your eyes closed for 10 minutes and your brain activity will be recorded. Following this, your brain will also be recorded for additional 2 minutes, while a researcher applies repeated light touches to your back region using a thin and blunted nylon filament. An electrode will also be placed on your chest to record your heart activity.



Picture 2. Brain wave testing cap with electrodes

- **Movement testing:** You will be asked to perform forward and backward bending movements repeatedly for 20 times. For the forward bending test, you will be asked to pick up a pencil placed on the floor and then place it back to the floor again repetitively. For the backward bending test, you will be asked to see a mark placed on the ceiling behind you repetitively. You can stop performing the repetitions of movements if your pain gets worse. You will also be asked to rate your intensity of pain on a 0-100 point scale, where 0 = No pain and 100 = Worst imaginable pain, at the start of the test and following every 5 repetitions.
- **Pain sensation testing:** Following brain wave testing, simple test procedures recording your perception of pain sensation will be tested over your low back regions and the wrist region (i.e. a non-painful body part for comparison purposes). The following test procedures will be administered.
 - **Repeated light touches** with a thin and blunted nylon filament - You will be asked to tell us whether you are feeling a sensation of touch or of pain. If you feel pain on repeated contacts, you will be asked to rate your intensity of pain on a 0-100 point scale, where 0 = No pain and 100 = Worst imaginable pain.
 - **Pressure to pain sensation testing** - Pressure will be gradually applied using a rubber-tipped pressure device. You will be asked to indicate immediately when the pressure sensation changes to discomfort or when you first feel pain. This procedure will be carried out when you are resting, as well as immediately following 2 minutes of hand immersion in a cold-water bath maintained at ~5°C.

Treatment phase:

- **Randomisation:** Following the before-treatment tests, you will be randomly assigned to receive one of the two treatment conditions as below:
 - Brain stimulation, or
 - No brain stimulation

You will have equal chances of being assigned to one of the two treatment groups, and you cannot change group.

- **Treatment sessions:** You will be required to attend a total of **twenty** treatment sessions (1-hour each, five sessions per week, for four consecutive weeks), at the Dunedin School of Medicine laboratory (Room 626, 6th floor Dunedin Hospital, 201 Great King Street). At each session, your scalp will be cleaned with alcohol wipes and you will have to wear a cap with electrodes attached to it on your head (see Picture 3). The researcher will ask permission before touching your head at each session. The researcher will apply electrode gel to your scalp to capture better signal quality. During this time, you will be asked to fill in some questionnaires about any side effects that you might have perceived from the previous sessions. Following the setup, you will receive treatment for 30min at each session, while you rest (see Picture 3). You will be asked to close your eyes and relax for 30min without falling asleep. You will be asked to report any sensations (e.g. itching, tingling) that you feel during treatment and rate the intensity of the sensation on a 0-10 point scale, where 0=None & 10=Worst imaginable, at intervals of 5min.



Picture 3. Brain stimulation device and the treatment position

- **Blinding:** You and the researchers conducting the before-treatment tests will not know if you are receiving neurofeedback treatment or not, i.e., you will be blinded to the treatment you receive. This blinding will help us to find out whether any changes in the pain and function tests are due to the brain stimulation treatment itself.

After-treatment tests: will take ~2.5 hours at the Dunedin hospital and will be done after the final treatment session is completed. The same tests that were done before the treatment sessions will be repeated.

Interview: After completion of the after-treatment tests, you will be invited to take part in an interview about your experiences with the brain stimulation treatment. The interview will use open-ended questions. You will be able to talk freely. You can refuse to answer any particular question(s) if you wish. The interview will be recorded with audio-recorders. The recording will be written out word for word. You can comment on your written-out interview if you wish. After completion of the written-out interview, the audio recording will be deleted.

Follow-up tests: You will be required to attend three test sessions of ~2.5 hours at the Dunedin hospital, 1 week, 1 month and 3 months following the after-treatment tests. The same tests that were done before the treatment sessions will be repeated.

WHAT I CAN AND CANNOT DO DURING THE STUDY PHASES?

As electrical activity of the brain can be affected by various factors, we request that you **avoid**:

- Eating large meals for 2 hours before the session (Light snacking is OK)
- Drinking alcohol for 24 hours before the session
- Smoking for 4 hours before the session
- Consuming caffeinated drinks for 1 hour before the session
- Applying any hair products (oil, gel) before the session

You will be provided with some refreshments (e.g. crackers, tea, or juice) after each session.

WHAT ARE THE POSSIBLE BENEFITS AND RISKS OF THIS STUDY?

Previous studies show that this type of brain stimulation is a safe procedure. The common side-effects reported by previous studies include headache, fatigue, nausea, mild tingling sensation, or itching under the stimulation electrodes. Most side effects are mild and disappear soon after the stimulation.

Other minimal risks include the onset of seizures. In the unlikely event that this occurs, the treatment will be stopped immediately. We have previously tested the same stimulation design in healthy people and it was safe, with **no** reported case of seizures.

For pain sensation testing, we do not anticipate any form of discomfort that would last following the test procedures. You may feel mild pain, tingling, or pins and needles sensation in your hand during or immediately following immersion in a cold-water bath. These ranges of sensations should usually disappear quickly following the testing. A slight reddening of the skin may stay following the pressure to pain sensation testing, and it should go within hours of testing.

Some of the psychological questionnaires might cause distress, in which case your GP or current health provider will be notified and you will be referred to a psychologist if needed.

Other risks include that there may be no benefits and the brain stimulation treatment may not improve your pain or functional levels, or any initial improvements may wear off.

You will be closely monitored for your responses during all the testing procedures, and sufficient rest will be provided between each testing procedure. Any side effects of the treatment will be formally recorded and addressed if medical attention is required.

WHO PAYS FOR THE STUDY?

This study is partly funded by the Healthcare Otago Charitable trust, Health Research Council, and the Neurological Foundation of New Zealand.

There will be no costs to you for participating in the study. You will receive in total \$350 petrol vouchers as a reimbursement for your travel and parking expenses. We will give you \$250 petrol vouchers after completion of your after-treatment tests and the rest \$100 at the last follow-up test (i.e. 3 months following after-treatment tests). In addition a \$50 grocery voucher will be provided as a koha at the last follow-up test.

WHAT IF SOMETHING GOES WRONG?

If you were injured in this study, you would be eligible **to apply** for compensation from ACC just as you would be if you were injured in an accident at work or at home. This does not mean that your claim will automatically be accepted. You will have to lodge a claim with ACC, which may take some time to assess. If your claim is accepted, you will receive funding to assist in your recovery.

If you have private health or life insurance, you may wish to check with your insurer that taking part in this study won't affect your cover.

WHAT ARE MY RIGHTS?

- Your participation in this study is voluntary.
- You may withdraw from this project at any time and without any disadvantage to you of any kind. Besides, the study staff may decide to withdraw you from the study if there are any side effects from the treatment or if they have any other concerns.
- You have the right to access the information collected about you as part of the study.
- You will have full rights to correct or withdraw the information until the research is completed or until we begin to analyse the data.
- We will inform you if any new information becomes available during the study that may impact your health.

WHAT HAPPENS AFTER THE STUDY OR IF I CHANGE MY MIND?

As outlined above, we will collect various measures (e.g., pain, function, mood, response to pain testing, brain activity) by way of questionnaires, assessments, and interview. The study data will be securely stored in a locked filing cabinet or electronically with password protection, such that only those involved in the research program will have access to it. Personal information such as contact details and names will be destroyed at the end of the project. However, as required by the University's research policy, any raw data on which the results of the project depend will be kept in secure storage for ten years, after which it will be destroyed.

The study results will be published in an international scientific journal. Only a summary of the data will be mentioned in the research publication. The data included in the publication will in no way be linked to any specific person, and your identity will not be recorded with the data. Only study personnel will have access to any personal information. At the testing session, you will be given a unique identification code, and your data will be linked to that code only. You are most welcome to request a copy of the study results. These will be available once all the data is analysed, approximately 2 years following the commencement of the study, nominally in the first quarter of 2022.

The data collected from this study may be useful for future research. Any new study would have to get ethical approval.

WHO DO I CONTACT FOR MORE INFORMATION OR IF I HAVE CONCERNS?

If you have any questions, concerns, or complaints about the study at any stage, you can contact:

Name: Dr. Divya Adhia Position: Research Fellow Department: Department of Surgical Sciences, University of Otago, Dunedin.	Phone number: 03 470 9337 Email: divya.adhia@otago.ac.nz
Name: Professor Dirk De Ridder Position: Chair, Neurosurgery Department: Department of Surgical Sciences, University of Otago, Dunedin.	Phone number: 03 470 9337 Email: dirk.deridder@otago.ac.nz
Name: Dr Ramakrishnan Mani Position: Senior Lecturer Department: Centre for Health, Activity and Rehabilitation Research, School of Physiotherapy, University of Otago, Dunedin	Phone number: 03 479 3485 Email: ramakrishnan.mani@otago.ac.nz
Name: Professor John Reynolds Position: Associate Director, Brain Research NZ Centre of Research Excellence. Department: Department of Anatomy, University of Otago, Dunedin.	Phone number: 03 479 5781 Email: john.reynolds@otago.ac.nz
Name: Professor Paul Glue Position: Study Psychologist Department: Department of Psychological Medicine, University of Otago, Dunedin.	Phone number: 03 470 9430 Email: paul.glue@otago.ac.nz

If you want to talk to someone who isn't involved with the study, you can contact an independent health and disability advocate on:

Phone: 0800 555 050
 Fax: 0800 2 SUPPORT (0800 2787 7678).
 Email: advocacy@advocacy.org.nz
 Website: <https://www.advocacy.org.nz/>

For Māori health support, please contact :

Name, position: Mark Brunton, Kaitakawaenga Rangahau Māori
 (Facilitator Research Māori)
 Telephone number: 03 479 8738
 Email: mark.brunton@otago.ac.nz

You can also contact the health and disability ethics committee (HDEC) that approved this study on:

Phone: 0800 4 ETHICS
 Email: hdecs@moh.govt.nz

This project has been reviewed and approved by the Health and Disability Ethics Committee (Ref: 20/NTB/67).

Consent Form



By signing this form, you indicate your consent to the following:

I have read, or have had read to me, and I understand the Participant Information Sheet.

I have had enough time to think about whether or not to participate in this study.

I have had a chance to use a legal representative, whanau/ family support, or a friend to help me ask questions and understand the study.

I am satisfied with the answers I have been given regarding the study, and I have a copy of this consent form and information sheet.

I understand that taking part in this study is voluntary (my choice) and that I may pull out from the study at any time without this affecting my medical care.

I consent to the research staff collecting and processing my information, including information about my health.

I understand the risks associated with the testing and treatment procedures, which are explained in the Participant Information Sheet.

I understand that my participation in this study is confidential and that no material, which could identify me personally, will be used in any reports on this study.

I know that I will be given petrol vouchers (*a total value of \$350*, in parts) to cover travel expenses associated with study participation.

I understand the compensation provisions in case of injury during the study.

I know whom to contact if I have any questions about the study in general.

I understand my responsibilities as a study participant.

I agree with my GP or other current provider being informed of my participation in this study.

I agree for the researchers to contact my GP or other current provider if needed to determine my eligibility for participation in the study, and to be notified if any incidental findings is recorded.

I understand data collected from me in this study may be used for future research.

If I decide to withdraw from the study, I agree that the information collected about me up to the point when I withdraw may continue to be processed. Yes No

I wish to receive a summary of the results of the study. Yes No

Declaration by participant:

I hereby consent to take part in this study.

Participant's name:

Signature:

Date:

Emergency contact / Support person:

Please specify a contact person (a friend or a relative), in case of an emergency during the study participation. The contact details will be deleted from the file following completion of the study phases.

Name of a friend or relative:

Contact number:

Declaration by a member of the research team:

I have given a verbal explanation of the research project to the participant, and have answered the participant's questions about it.

I believe that the participant understands the study and has given informed consent to participate.

Researcher's name:

Signature:

Date:
