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Participant Information Letter

Project title: Motor Improvements in Neurological Conditions: Chronic Stroke
Short title: MINC study: Stroke MindPod
Trial identification number (ANZCTR): ACTRN12620001064998
Approval Number: 2019-00873-VANDERGROEN
Investigators: Dr. Onno van der Groen, Prof. Dylan Edwards, Jimena Garcia-Vega, Dr. Travis Cruickshank, Dr. Danielle Bartlett, Mrs. Manja Laws
Project Sponsor : This project is supported by MSWA.

An invitation to participate in research

You are invited to participate in a research project titled 'Improving arm function with a virtual dolphin'. This project is supported by MSWA. This project, which is part of the Systematic Profiling in Neurological Conditions (SPIN) Research Program, seeks to improve arm function, mood and cognition. You are being asked to take part in this project because you have upper limb deficits as a consequence of your stroke more than 6 months ago.

Please read this information carefully. Ask questions about anything that you do not understand or want to know more about. Before deciding whether or not to take part, you might want to talk about it with a relative or friend.

If you decide you want to take part in this research project, you will be asked to sign the consent section. By signing it you are telling us that you:

- Understand what you have read;
- Consent to take part in the research project;
- Consent to be involved in the research described;
- Consent to the use of your personal information as described.

What is this project about?

This project aims to use modern gaming techniques to improve arm function, mood and cognition. In this project you submerge in a virtual underwater world and control a virtual dolphin with your arm. Anti-gravity support will be provided by an exoskeleton. This is a backpack which supports your arms so you can move freely. This training has the potential to improve your arm function, cognition and mood. Therefore, in the future this intervention can be used for different neurological conditions and might be beneficial for healthy ageing. In this specific project we test the feasibility of this training in people who suffered a stroke.

What does my participation involve?

Intervention:

We will ask you to play an immersive, engaging dolphin game. During this game you will used your arms to guide a dolphin through an underwater world to catch fish and stay away from sharks.. We will ask you to train 20 times for 90 minutes with the dolphin, with breaks provided when you need it. In this study you will train either 7 weeks, for 3 times a week, or 4 weeks for 5 times a week. This allows us to compare if intense training would be as good as a longer training schedule. We will provide you with an exoskeleton to support to your arms during the training. We ask you to visit the lab twice before the training starts, to do cognitive, mood and motor tests. Some of the assessments will be repeated at your first training session. Within 3 days of your last training session you will do the same tests again. One month after the last training session we will ask you to come in once more to investigate if there are any lasting effects of the training. We will ask you to attend our lab at ECU Joondalup 24 times. After your last training we will also ask you how enjoyable and useful the training was in your experience. In this project we have specific inclusion and exclusion criteria:

To be part of this study you will need:

1. A confirmed diagnosis of stroke
2. Be >6 months post stroke
3. To be committed to attend for all sessions
4. The ability to follow simple instructions
5. To be able to raise your arm at least 20 degrees in front of your body (shoulder flexion)

If you have any of these, you can't participate:

1. Severe upper extremity pain
2. Fixed contraction
3. Neglect, that is a lack of awareness to one side of space
4. Require manual physical assistance
5. Aphasia, that is language production of comprehension issues

We will also assess your upper limb function on your first and second visit. We have specific cut-off criteria that you have to meet in order to participate in this project. If you do not meet this criteria, then you are not eligible to participate in this study.

TMS assessment: We could assess if there is communication between your brain and muscles, using a technique called single pulse transcranial magnetic stimulation (TMS, see figure one). We will use TMS if you are eligible for TMS. You are not eligible for TMS if you:

1. Have epilepsy or premorbid history of seizures within the past 2 years
2. Are Pregnant
3. Have any metal in the brain or skull
4. Have any electro sensitive device (e.g. cochlear implant or pace maker)

During TMS, a coil will be placed over your head at the region of your brain responsible for generating movement in your arm/hand. Each stimulus produces a brief magnetic field which makes your braincells fire and your muscle contract. The muscle contraction is measured via surface electrodes pasted to your hand, arm or forearm (EMG). You will feel a tap on your scalp and you may feel your arm or hand twitch. A loud click accompanies the stimulus and sounds similar to flicking a bike helmet while it is on your head, you can ask the research team for earplugs if necessary. The TMS assessment will be conducted in our laboratory at ECU

Joondalup. After the 20 training sessions we will re-conduct the TMS assessment to investigate if there is a better communication between your brain and arm.

Figure 1 TMS example. In this instance a figure-of-eight coil is used during a behavioural experiment. The TMS readout is so called electromyography (EMG), which monitors muscle activity.

Biological assessment: You may be asked to provide a saliva sample by passively drooling into a special collection tube at baseline and following the trial to collect your genetic material (DNA) for future exploratory analyses. New markers or methods for measuring the response to interventions may become available in the future. This would provide invaluable information into the genetic factors that determine whether someone will or will not respond to an intervention. Furthermore, exploratory studies are a form of unbiased research that can lead to the identification of biological markers that can greatly impact on how a disease is managed. While it cannot be determined at this stage what these methods or markers will be, we are asking that participants provide saliva samples to further this area of research. Further information about saliva sample collection and storage is provided later in this information letter.

DNA testing will only be carried out if you have given your consent in writing. We recommend that you give careful consideration to the important information set out in this information sheet. If you have any questions, we encourage you to ask the person enrolling you. Before you give your consent, we want you to be sure and clear about all aspects of the testing and storage of your genetic material.

Do I have to take part in this research project?

Participation is completely voluntary and if you do not wish to take part, you do not have to. If you decide to take part and later change your mind, you are able to withdraw at any time. If you do withdraw, then with your agreement, the research team would like to retain and use any data that has already been collected.

If you do decide to take part, you will be given this Participant Information Letter and Consent form to sign and you will be given a copy of the information letter to keep. Your decision to take part, or to take part and later withdraw, will not affect your relationship with the research team, or your participation in the SPIN Research Program.

Your privacy

By signing the consent form you consent to the research team collecting and using personal information about you or information about your health for the research project. Any information obtained in connection with this research project that can identify you will remain confidential. The information we collect will be de-identified. The informed consent, this document and a re-identification key which contains your name will be stored in a locked

cabinet. Your de-identified data can be used for future research projects and can be shared with our collaborators for further analysis. All biological samples will be de-identified (allocated a barcode) and securely stored in lockable freezers in a secured-access facility at Edith Cowan University.

It is anticipated that the results of this research project will be published and/or presented in a variety of forums. In any publication and/or presentation, information will be provided in such a way that you cannot be identified, except where requested for specific reasons, and then you will be asked to provide written consent.

In accordance with relevant Australian and/or Western Australian privacy and other relevant laws, you have the right to request access to the information about you that is collected and stored by the research team. Should you wish to receive an overview of your results, with the exception of genetic results (detailed below), please inform the project coordinator in writing.

All data collected will be kept on a password protected computer and secure server for a minimum of 25 years since new analysis methods might become available to re-analyse the data. After 25 years the de-identified data will be destroyed.

Possible Benefits

We cannot guarantee or promise that you will receive any benefits from this research, however possible benefits may include improvements in your arm function, mood and cognition. This research may not provide benefit to you personally, but may provide benefits for people with neurological conditions in the future.

Possible Risks and Risk Management Plan

In this study you will exercise on a regular basis. Therefore, you might get a muscle ache as would be the case with any exercise. This will resolve in a few days. If you experience ongoing pain, then you will be asked to rest from the study and to seek advice from a medical practitioner. We are unable to cover these costs. We are asking you to answer a range of questionnaires which look at multiple aspects of your life, such as mood, activities of daily living and quality of life. Though highly unlikely, some people might experience discomfort after answering these questionnaires. Should you experience any discomfort we encourage you to talk to a family member or your treating physician. Should this not be an option for you please find contact details for the following helplines:

Lifeline Australia: 13 11 14

Beyond Blue: 1300 22 4636

TMS is painless and our experiments included here all comply with existing international safety guidelines. There are only very few single case reports concerning seizure in single-pulse TMS (between 0.12 and 0.82 seizures per 1000 sessions). All of these reports describe individuals with neurological disorders or epileptogenic medication. No severe side effects are known except occasional discomfort at the site of stimulation or, in rare cases, transient headache or neck pain. The possible headache and neck pain are believed to be due to muscle tension and from the straight posture of the head and neck during the application of TMS. All prior cases of headaches induced by TMS have been promptly resolved with a single dose of aspirin.

What information do I need to know about DNA (Genetic) Testing and Storage?

This part of the information sheet is to give you more information about how your DNA (genetic) material will be analysed and stored at Edith Cowan University. Testing of your genes or genetic material can provide us with information on what may happen to your general health, or perhaps that of your family, either now or in the future.

What is DNA?

DNA is the abbreviation for deoxyribonucleic acid, which are chemical compounds that make up your genetic material, or genes.

Your genes are inherited from your (biological) parents. The genes you inherit from your parents may lead to a medical problem in early or late life. A gene mutation is an alteration to your DNA and may also be associated with a particular disease.

Why is DNA tested?

DNA testing is undertaken in medical research. It helps us learn more about diseases and what causes them. In doing so, it may assist in clinical management of patients with such diseases. In this study, we will be conducting an exploratory analysis of your DNA. This means that we will be looking for new (novel) genetic information, the clinical significance of which is not yet known. This means that we will not be able to provide you with the results generated from these analyses, as we don't yet know how these potential genes could influence health and disease.

DNA can be stored for an indefinite period of time. Therefore, if your sample remains in storage, it may be used in future tests and research that is currently unknown.

We give you the option of instructing us on how your saliva /DNA sample is to be used and stored. If you agree to participate in this study and when you sign the consent form, you will be asked to select one of the three options for using and storing your saliva /DNA sample:

1. Test and then store my saliva /DNA sample indefinitely for research only in the field of neurological conditions.
2. Test and then store my saliva /DNA sample indefinitely for future unspecified research.
3. Discard my saliva /DNA sample after it has been tested for the specific purpose of this study.
4. I do not consent to testing and storage of my saliva/DNA samples

As we will be using your DNA sample for exploratory (meaning novel) research rather than targeting known disease-carrying genes we will not be able to pass results of this specific component of the study on to you. The results will be published in a group format (de-identified).

There may be the rare circumstance when the Chief Investigator is placed in the position where disclosure of your genetic material may be required by law. This may be as a result of a court order, for example. Wherever possible, you will be informed if this should occur.

Sometimes saliva/DNA is sent to other research institutions within Australia and/or overseas. If this occurs, your saliva /DNA sample will be labelled with an identified code or number, which only the members of this research study team will be able to trace back to you. If collaborative research is undertaken with other research institutions, please be assured that your identity will not be disclosed to individuals working in these other research institutions. Should you not wish to have DNA sample be made available for collaborative research please advise the project coordinator in writing.

What if I change my mind?

You have the right to withdraw your consent and saliva /DNA sample at any time. If you wish to have your saliva /DNA sample withdrawn, please notify the project coordinator in writing. Be assured that we will promptly discard your saliva /DNA sample in an appropriate manner (via incineration).

You may wish that your saliva /DNA sample be discarded upon your death, in which case we ask that you make such provisions by advising the project coordinator in writing either at the commencement of or at any stage during the conduct of this study.

What happens when this research study stops?

We will advise you of the outcomes via email. We also intend to publish our results in research journals and present them at research conferences locally, nationally and internationally. Your name or any other identifying information will not be included in any of the publications or presentations.

Has this research been approved?

This research project has received the approval of Edith Cowan University's Human Research Ethics Committee, in accordance with the National Health and Medical Research Council's *National Statement on Ethical Conduct in Human Research (2007)*. The approval number is 2019-00873.

Contacts

If you would like to discuss any aspect of this project, please contact the following people.

Lead Investigator
Dr. Onno van der Groen
Research fellow
Edith Cowan University
P: 6304 3644
E: o.vandergroen@ecu.edu.au

If you have any concerns or complaints about the research project and wish to talk to an independent person, you may contact:

Independent Person
Research Ethics Support Officer

Edith Cowan University
P: 6304 2170
E: research.ethics@ecu.edu.au

If you wish to participate in this research, please *sign the Consent Form and return to* *o.vandergroen@ecu.edu.au*

Sincerely,

Dr. Onno van der Groen