

Health Technology Center, Movement Science Research Center**Multimetric study of motion and seasickness with a moving platform simulator combined with virtual reality**

Dear Reader,

You are hereby invited to participate in the above-mentioned research, which is conducted at the Movement Science Research Center at Reykjavik University. Participation is voluntary, and participants may decline or withdraw at any stage without explanation or consequences. No personally identifiable information such as name or national ID will be collected. The data collected will include gender, weight, age, and measurements, with each participant assigned a unique ID linked to this information. Therefore, the results of the study will not be available to you in terms of individual health or for health promotion.

The principal investigator is:

- Paolo Gargiulo, Biomedical Engineer and Professor at the Center for Neuroscience, Reykjavik University
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Study Goals:

The main objective is to measure the response of Parkinson's patients to motion sickness and compare it to healthy individuals.

Specific goals include:

1. Measuring and evaluating the response in physiological signals and balance control in Parkinson's patients during motion sickness, and comparing these with healthy individuals.
2. Assessing interactions among different physiological signals in both groups using artificial intelligence and machine learning.
3. Exploring therapeutic options using virtual reality and movement to counteract balance disorders in Parkinson's patients.

Who can participate?

The goal is to measure 40 individuals aged 20–65 diagnosed with Parkinson's disease, divided into two groups: 20 with balance impairment and 20 without.

What does participation involve?

Participants will complete a questionnaire about:

- a) health/ability to participate;
- b) sensitivity to motion sickness and its impact on daily life.

This takes around 10 minutes. The experiment takes place on a motion platform simulating waves, enhanced with virtual reality goggles.

During the experiment, the following will be measured:

- i) **EEG** – A cap with electrodes and conductive gel is placed on the scalp.
- ii) **Heart Rate (HR)** – Measured using a Polar H10 strap placed on the chest.
- iii) **EMG** – Muscle activity sensors are attached externally to the calves, both front and back.
- iv) **Skin Conductance (SC)** – Measured with two electrodes on fingers of the right hand.
- v) **Body posture and motion** – Participants wear a backpack with recording equipment and stand on a force plate on the moving platform.

The goal is to induce motion sickness and correlate it with the recorded data. The session takes approximately 1 hour and 20 minutes.

Participants may be asked if they consent to future follow-up.

Only the researchers will have access to the data, which is anonymized using ID numbers. The data

Heilbrigðistæknisetur, Hreyfivísindasetrið

will be stored securely and deleted after the study concludes.

Approval for the study has been submitted to the National Bioethics Committee and notified to the Data Protection Authority.

With thanks,

Paolo Gargiulo, Professor

Director, Institute for Biomedical and Neural Engineering / Biomedical Technology Centre

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If you have questions about your rights as a research participant or wish to withdraw, please contact:

The National Bioethics Committee, Borgartún 21, 105 Reykjavík

Phone: 551-7100, Fax: 551-1444