

Plan Overview

A Data Management Plan created using DMP Tool

Title: Impact of Vitamin D treatment and brain neurotrophic factor level on spatio-temporal parameters and cortical activity during gait in people with multiple sclerosis

Creator: Felipe Santinelli

Affiliation: São Paulo State University (unesp.br)

Principal Investigator: Felipe Balistieri Santinelli

Data Manager: Felipe Balistieri Santinelli

Project Administrator: Fabio Augusto Barbieri

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Project abstract:

Multiple sclerosis (MS) is a neurodegenerative disease that causes many deficits in gait and cortical activation could be related to alterations on Brain Derived Neurotrophic Factor (BDNF) concentrations and with vitamin D deficiency. The objective of the present study is to investigate the impact of BDNF and the vitamin D treatment in the brain activity and on gait spatiotemporal parameter in people with MS. Two experiments will be accomplished. For the first experiment, thirty people with MS and thirty neurologically healthy people will accomplish blood collections to measure the BDNF blood concentrations. On the second experiment, thirty and two people with MS, 16 with vitamin D intake and 16 people without vitamin D intake and sixteen neurologically healthy people will be recruited. For both experiments, the participants will accomplish twenty gait trials (10 with obstacle crossing and 10 without obstacle crossing). The Vicon Motion System® with sample frequency of 200 Hz will be used to acquisition of spatio-temporal parameters and an electroencephalogram (eegosportstm, ANT Neuro, Enschede, Netherlands) with sample frequency of 1024 Hz, will be used to acquisition of brain activity during the protocol of gait trials. To respond the question of the first experiment, Pearson correlations will be performed between BDNF

concentrations and brain activity and spatial-temporal parameters during gait performance. For the second experiment, ANOVA two-way with factor for group (MS with vitamin D intake group x MS without vitamin D intake group x control group) and gait condition (flat terrain x obstacle) will be accomplished to verify the impact of vitamin on gait parameters and brain activity.

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Impact of Vitamin D treatment and brain neurotrophic factor level on spatio-temporal parameters and cortical activity during gait in people with multiple sclerosis

Data Collection

What data will you collect or create?

Several data were obtained in the present project. Human motion (mainly related to gait parameters), cortical activity, and vitamin D and BDNF blood concentration.

How will the data be collected or created?

Gait data were obtained through a three-dimensional motion capture system (Vicon®) sampled at 100 Hz and attaching 39 reflective passive markers in the subjects.

Cortical activity data were obtained with an electroencephalogram (EEG) equipment with a sampling rate of 1024 Hz.

Vitamin D and BDNF concentration were obtained through chemiluminescent immunoassay and ELISA procedures, respectively.

Documentation and Metadata

What documentation and metadata will accompany the data?

Tables, graphics, and figures will be made to ensure that everyone with access to the data, could read and interpreted it in the future. We intended to provide the raw data.

Also, everyone could reach some missing information requesting the researcher responsible for this project.

Ethics and Legal Compliance

How will you manage any ethical issues?

All procedures were approved by the School of Science (UNESP) Ethics Committee.

The identity of the participants will be preserved using codes owned at the time of the subject's recruitment. Therefore, maintain the anonymity of the subjects.

How will you manage copyright and Intellectual Property Rights (IP/IPR) issues?

All the researchers of the laboratory will have access to the data.

Also, the Human Movement Research Laboratory (MOVI-LAB) is the owner of the data of the project.

The articles produced from the project will be copyright by the authors of the manuscripts.

Storage and Backup

How will the data be stored and backed up during the research?

All the data collected is stored in the hard drive and storage clouds of the laboratory.

How will you manage access and security?

All the laboratory researchers have access to the raw data stored in the hard drive and in the storage clouds. However, to have access to this, the researchers need to ask for the responsible for the project. Also, the data is secure by stronger passwords with only the responsible having this information.

Selection and Preservation

Which data are of long-term value and should be retained, shared, and/or preserved?

The data will be shared through the academic community in scientific papers. Also, researchers who request access to the data will need to formally request this access for the responsible researcher of the project and the identity of the subjects will be warranty.

What is the long-term preservation plan for the dataset?

All the data will be stored in safe laboratory clouds with maximum safety.

Data Sharing

How will you share the data?

The data will be available at any time upon a formal request with the responsible for the project. Also, we intended to share the raw data via a repository to facilitate.

Are any restrictions on data sharing required?

There are no restrictions on sharing the data.

Responsibilities and Resources

Who will be responsible for data management?

The data management will be performed by the responsible researchers for this project.

What resources will you require to deliver your plan?

To work with the data collected, some expertise is required to analyze this kind of data. For that, we ask for all requests to inform the ideas in work with our data.
