Measuring neural time series data in a sensory deprivation tank

Jackson Gregory  
*Chapman University*, grego145@mail.chapman.edu

Tian Lan  
*Chapman University*, tlan@chapman.edu

Uri Maoz  
*Chapman University*, maoz@chapman.edu

Amir Raz  
*Chapman University*, raz@chapman.edu

Follow this and additional works at: [https://digitalcommons.chapman.edu/cusrd_abstracts](https://digitalcommons.chapman.edu/cusrd_abstracts)

*Part of the* Behavior and Behavior Mechanisms Commons, Cognitive Psychology Commons, Mental Disorders Commons, Neurosciences Commons, Other Mental and Social Health Commons, and the Other Psychiatry and Psychology Commons

**Recommended Citation**  
Gregory, Jackson; Lan, Tian; Maoz, Uri; and Raz, Amir, "Measuring neural time series data in a sensory deprivation tank" (2019).  
*Student Scholar Symposium Abstracts and Posters*. 325.  
[https://digitalcommons.chapman.edu/cusrd_abstracts/325](https://digitalcommons.chapman.edu/cusrd_abstracts/325)

This Poster is brought to you for free and open access by the Center for Undergraduate Excellence at Chapman University Digital Commons. It has been accepted for inclusion in Student Scholar Symposium Abstracts and Posters by an authorized administrator of Chapman University Digital Commons. For more information, please contact laughtin@chapman.edu.
Measuring neural time series data in a sensory deprivation tank
Jackson Gregory, Tian Lan, Uri Maoz, and Amir Raz

Introduction

- We are interested in studying the neurological and physiological effects of the float pod, also known as REST therapy.
- Float pods rely on the concept of depriving most senses (sound, light, temperature, and proprioception) in a pool filled with buoyant salt water at body temperature.
- We plan to look at the different levels of relaxation and the brain frequencies are associated with relaxation.
- Research done in this field has shown that the float pod induced a state of relaxation and heightened introspection in participants with high levels of anxiety (Feinstein et al., 2018).
- Research has also shown that the float pod may be a promising technique for reducing suffering in individuals with anxiety and depression (Feinstein et al., 2018).

Methods

- 6 channel electroencephalography (EEG) was recorded (Fp1, Fp2, AF3, AF4, AF7, AF8).
- Sampling rate was set at 1000Hz. The ground was set at FPz and reference was set at AFz.
- A customized 6-channel LiveAmp mobile EEG amplifier from Brain Products GmbH was used to collect EEG signal from the frontal lobe.

Preliminary Attempts

- There was a strong electrocardiography (ECG) presence due to the salty environment and the moisture in the pod.
- The cap design was changed to a cap made out of wetsuit material and an elastic band to secure it to the head.
- There was also an attempt to secure the cap without a headband by using adhesives to attach the cap to the forehead.
- The reference electrode was moved to the nose tip, which did eliminate some of the ECG artifacts, but not at a level where EEG signal was considered as reliable.

Successful Attempts

- A swim cap is placed over the head band, creating a good seal around the EEG head band which resulted in an elimination of the ECG artifact.

Results

- After adjusting pre-float procedure and applying artifact removal algorithm, stable EEG with high signal-to-noise ratio (SNR) was able to be recorded for 45 minutes without the presence of ECG artifacts.

Discussion

- We intend to improve the SNR of the EEG signal.
- We intend to integrate EEG readings with other physiological measurements, like motion sensors.
- Future attempts will be made to make the cap more comfortable.
- In the future, several experimental paradigms will be introduced inside the float pod.

References