

## Master thesis opportunity

### **Congruency of different devices to detect motor imagery activity: a validation and test-retest reliability study**

#### **Background:**

Motor imagery is a powerful technique that originated in sports psychology and is used in rehabilitation, in particular in neurorehabilitation. Objective measurements of motor imagery-related brain activity is important but expensive, time-consuming, and limited to stationary recordings, e.g. fMRI. Therefore, other measurement options are needed to determine brain activity during motor imagery in patients in clinical setting. J!NSE MEME smart eyeglasses promise an easy and comprehensive measurement solution using electrooculography (EOG) and electromyography (EMG). However, J!NSE MEME recordings have to be assessed for validity and reliability.

**Aim:** The aim of the project is to undertake a validation and reliability study to compare EEG, EMG data with recording from the J!NSE MEME smart eyeglasses.

#### **Tasks:**

The successful candidate will have the opportunity to learn neurophysiologic recordings and data analysis (under supervision). A study protocol will have to be proposed to the research group and an application submitted to the local ethical committee. Patient recruitment, assessment and outcome analysis will be organised by the candidate.

#### **Requirements:**

- Interests and fun in neurophysiological measurements, e.g. EMG, EOG.
- Interests to learn and evaluate the technique of motor imagery
- Proficiency in use of MS Office
- Basic knowledge of statistical analysis with appropriate software
- Highly motivated and team-oriented working morale

#### **Offer:**

- Introduction and supervision throughout the entire project
- Exciting opportunities in an interdisciplinary environment of clinical research and rehabilitation
- Possibility to visit various departments involved in rehabilitation of neurologic and orthopaedic patients.

#### **Time period:**

Begin is negotiable. Duration: minimum 9 months.

For further questions, please contact Dr. C. Schuster-Amft, Head, Research Department, Reha Rheinfelden ([c.schuster@reha-rhf.ch](mailto:c.schuster@reha-rhf.ch)) or Dr. M. McCaskey, Deputy Head, Research Department, Reha Rheinfelden ([m.mccaskey@reha-rhf.ch](mailto:m.mccaskey@reha-rhf.ch))

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