



Universität  
Basel

## Research Project

# Wearable Compulsive Behaviour Detection: Clinical Study on Hand Washing

### Third-party funded project

**Project title** Wearable Compulsive Behaviour Detection: Clinical Study on Hand Washing

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**Organisation / Research unit**

Departement Psychologie / Klinische Psychologie und Epidemiologie (Lieb)

**Department**

Departement Psychologie

**Project start** 02.02.2021

**Probable end** 12.02.2022

**Status** Completed

This interdisciplinary, bi-national project of two EUCOR universities (University of Basel and University of Freiburg) and combines the expertise of computer science and clinical psychology. The goal of this study is to develop the core function of an app that recognizes compulsive hand washing using wearable technology. By applying machine learning to inertial wrist motion we aim for a detection with high recall (>80%) and maximum precision - using consumer off-the-shelf (COTS) hardware. This novelty has the potential to considerably advance the field of personalized medicine, in particular computer-aided assessment and therapy of obsessive-compulsive disorder (OCD). In an initial study, conducted in 2019 by the authors, we collected data from n=22 non-clinical participants, who enacted a compulsive hand wash, with a total of 44h worth of wrist-motion, video and ground-truth data. The methodology and results are currently under consideration for publication. We also completed an expert utility survey about the usefulness of apps in the treatment of OCD, with n=52 therapists and n = 79 individuals diagnosed with OCD. The feasibility study strongly emphasize that the implementation of the proposed study within the planned time-frame is realistic, and the survey indicates that the future app has high therapeutic relevance. The EUCOR grant will instigate an intense collaboration of the Universities of Basel and Freiburg. The project team plans to subsequently apply for a follow-up grant to examine the effectiveness of the wearable system.

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