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To cite this version:
Elise Grevet, F. Amadieu, Jacques Py, D. Gasq, Camille Jeunet. Improving the acceptability to enhance the efficiency of stroke rehabilitation procedures based on brain-computer interfaces: General public results. CORTICO 2022 - COlectif pour la Recherche Transdisciplinaire sur les Interfaces Cerveau-Ordinateur "Invasive and non invasive Brain-Computer Interfaces - A handshake over the cliff", Mar 2022, Autrans-Méaudre en Vercors, France. hal-03614065v2

HAL Id: hal-03614065
https://hal.science/hal-03614065v2
Submitted on 23 Mar 2022

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Improving the acceptability to enhance the efficiency of stroke rehabilitation procedures based on brain-computer interfaces

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INTRODUCTION – Why to focus on BCI acceptability?

Stoke leaves around 40% of surviving patients dependent in their activities of daily living, notably due to severe motor disabilities [1].

BCIs are efficient for improving motor recovery after stroke [2].

METHODS – Design, implementation and evaluation of a BCI acceptability model for stroke rehabilitation

We created a questionnaire in order to evaluate the validity of our model and to quantify the influence that the different factors had on our target factors:

- Perceived usefulness (PU)
- Perceived ease of use (PEoU)
- Behavioural intention (BI)

Each factor was assessed by 3 items minimum. Participants rated each item on a visual analog scale ranking from “Strongly disagree” (score=0) to “Totally agree” (score=10).

We also included explanatory videos in order to inform people about BCIs.

RESULTS – Important impact of PU on the intention to use & providing people with comprehensive information

We collected data of 753 persons (general population – sample representative of the French population). Below, we show descriptive analyses and mediation analyses, the aim of which is to estimate and quantify the causal relationships between factors.

FUTURE WORK – Modeling the acceptability of post-stroke patients and clinicians

• Continue the inclusions: questionnaires and interviews with post-stroke patients (N=33 so far) and clinicians.
• Design and implement personalised rehabilitation procedures based on our results (e.g., in terms of tasks, feedback and support provided by the caregivers).
• Design and implement multimedia content to better inform clinicians and the general population about BCIs, as well as fight false representations.