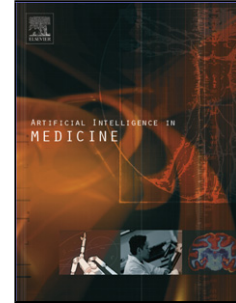


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Transferring brain-computer interfaces beyond the laboratory: Successful application control for motor-disabled users

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Abstract

Objectives: Brain-computer interfaces (BCIs) are no longer only used by healthy participants under controlled conditions in laboratory environments, but also by patients and end-users, controlling applications in their homes or clinics, without the BCI experts around. But are the technology and the field mature enough for this? Especially the successful operation of applications –like text entry systems or assistive mobility devices such as tele-presence robots– requires a good level of BCI control. How much training is needed to achieve such a level? Is it possible to train naïve end-users in 10 days to successfully control such applications?

Materials and methods: In this work, we report our experiences of training 24 motor-disabled participants at rehabilitation clinics or at the end-users' homes, without BCI experts present. We also share the lessons that we have learned through transferring BCI technologies from the lab to the user's home or clinics.

Results: The most important outcome is that fifty percent of the participants achieved good BCI performance and could successfully control the applications (tele-presence robot and text-entry system). In the case of the

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