A WEB-BASED TEACHING MODULE ON THE ADMINISTRATION OF EEG-BASED NEUROFEEDBACK FOR THE TREATMENT OF ADHD

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ABSTRACT

Background:
Neurofeedback (NF) is a physiological method that enables a subject to learn how to regulate his or her own brain activity. NF can be used as an alternative treatment for symptoms of attention deficit hyperactivity disorder (ADHD) via improved cortical self-regulation of brain potentials known to be related to ADHD symptoms such as changed attentional control, impulsive behaviours, and hyperactivity. However, no detailed teaching resources or tutorials are available to date, which allow a thorough teaching approach covering the technical aspects of electroencephalography (EEG)-based NF administration.

Methods:
To allow a flexible and easily accessible online resource for teaching the administration of NF, an online teaching module was developed (NF-eTutorial). Specifically, this online tutorial module was developed for one of the most commonly used NF systems (TheraPrax EEG-neurofeedback device, NeuroConn, Ilmenau, Germany) currently available. The NF-eTutorial was implemented and made available to medical students who were interested in NF administration via the eMedia Skills lab of RWTH Aachen University (www.emedizin.rwth-aachen.de/). Furthermore, this tutorial was also used as a resource to educate clinicians, patients, and carers about NF. This short article aims to present the development and specific features of the newly developed NF-eTutorial resource in a brief and descriptive manner.

Results:
The NF-eTutorial comprises the following components: 1) Basic introduction (overview and information on using NF in patients with ADHD, outline of the training schedule, and basic scientific information on NF); 2) Correct handling of the electrodes (electrode and skin preparation, positioning of the electrodes, linking the system to the amplifier of the NF system, disconnecting the electrodes, and cleaning and storing of the electrodes); 3) Using the NF device (detailed guide to specific technical settings); 4) Explanation of specific tasks of the patient when engaging in NF training; 5) Aspects of NF training (checklists and training protocols that can assist the use of NF as a therapeutic application); and 6) Aspects of signal quality (step-by-step guide to troubleshooting and artefact correction).

Summary:
The NF-eTutorial is the first web-based platform that allows access to detailed and practical information on the administration of EEG-based NF. Future research and development should focus on the practical use of such NF-related web-based tutorials with regard to the administration of NF by different groups of trainers, such as professionals, allied health staff and also lay people. This in turn will facilitate high-quality NF training for young patients with ADHD in non-clinical environments such as home and school.