Rehabilitation Tool for People Suffering from Ataxia

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Our project was born with the aim to give people suffering from Dysmetria a useful and effective way of improving their opportunities for rehabilitation. Dysmetria, a particular case of Ataxia, is a brain disease linked with lack of movement cognition, caused by damages to some parts of the nervous system (e.g. cerebellum and spinal cord). The project consists of two major components: • A physiotherapy device; • A smartphone app connected with the device via the Bluetooth technology. The equipment is made of three wooden frames, each one covered by a Plexiglas panel on which there are three led-lightened buttons connected with an Arduino shield. The buttons' function is to enlighten so that they capture the patient's attention, who has to press them in order to switch them off. The software component leads the experience to a complete new level. The doctor can choose among a wide range of features: •She/he can select which button to enlighten; doing so the patient trains a specific arm movement; •She/he can collect data about the patient's performances (reaction rate, number of movements and general improvements) being upgraded on the patient’s conditions; •She/he can set a specific difficulty level, according to the patient’s skills. We think many patients will be able to benefit from our project, because: •It is simple to use, in fact the patient just has to press the button when it lights up; the application will be concerned with computing data and giving him/her an overview of his/her improvements. •It is cheap and easily affordable by everyone. •It does not require particularly sophisticated and big machines, so that the patient can “train” alone, perhaps without leaving home.

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