

AN ALTERNATIVE TREATMENT FOR TREMOR ASSESSMENT AND SUPPRESSION

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Tremor constitutes the most common motor disorder, and poses a functional problem to a considerable number of patients. The mechanisms underlying the different forms of tremor are yet far from understood, which often leads to misdiagnosis and subsequent treatment problems. Tremor is typically managed with drugs, and with surgery (gamma knife thalatomy) or implantation of a Deep Brain Stimulator (DBS) in those patients refractory to medication. However, the drugs used often induce side effects, may be contraindicated or do present potential side effects, and surgery is associated with a risk of hemorrhage and psychiatric manifestations. This causes that around 25 % of patients suffering from pathological tremor do not benefit from an effective reduction of their symptoms, and motivates research in alternative means of compensating for tremors. In this context, this study presents the concept design, implementation, and preliminary validation of a soft wearable robot for tremor assessment and suppression. The TREMOR neurorobot comprises a Brain Neural Computer Interface that monitors the whole neuromusculoskeletal system, aiming at characterizing both voluntary movement and tremor, and a Functional Electrical Stimulation system that compensates for tremorous movements without impeding the user perform functional tasks. Preliminary results demonstrate the performance of the TREMOR neurorobot as a novel means of assessing and attenuating pathological tremors.