

An Essential Tremor Suppression Device

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Abstract

Essential Tremor, or ET, affects an estimated 10 million Americans and is the most common movement disorder nationally. At its simplest definition, ET is characterized as involuntary shaking. It can affect almost any part of the body, but is most common in areas such as the hands and wrists. Because of this, ET makes completing simple daily tasks like eating, getting dressed, and writing extremely difficult for patients. Currently, there are no medications specifically targeted for ET patients, and up to 50% of all ET patients do not benefit from current medicinal treatments. Surgical options, while effective, are costly and carry sizable risks. Thus, there is still a clear need for a non-invasive, easy to use, and ergonomic design solution to help improve patient quality of life. The solution proposed is a portable, easy-to-use, device that utilizes a mechanism to cool the prospective limb. Preliminary studies have shown that cooling of a limb to under 15°C for up to five minutes will reduce tremor amplitude locally by up to 45%, with the effects of such cooling lasting at least 20 minutes. Following the design of this functional prototype, we expect to create a unit that can be hidden beneath the sleeve with our eventual goal being to help all patients with tremors.