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Cold Therapy Dynamic Hand Splint

Muscle spasticity, which affects over 12 million people world-wide, is a chronic condition in which some muscles are constantly activated, leaving joints immobile. Prolonged contraction can lead to the development of contractures, permanent shortening of muscles and tendons, which often requires surgical treatments. Furthermore, muscle spasticity greatly inhibits the effectiveness of physical therapy for neurodegenerative diseases, and while treatments exist, they are time-consuming, require in-person professional care, or carry adverse effects. Current treatment options for spasticity provide low levels of relief, thus user compliance is low.

Researchers at Arizona State University have developed a wearable hand splint that can both stretch and cool a patient's hand to greatly reduce spasticity in under fifteen minutes of use. Their device, aptly named CryoRelease, provides a novel approach to relieving spasticity by utilizing both cryotherapy and kinesiotherapy in a single automated device. The automated device simultaneously cools the hand, forearm, and lower bicep while extending (stretching) the hand out of its spastic grip. This simple product can be used on a daily basis to not only decrease the rate of contractures in patients but also to increase the effectiveness of in-person therapy when used before sessions.

This device offers a novel therapeutic strategy to provide greater relief and independence to patients suffering from spasticity and increased efficacy of physical therapy with daily use.

Potential Applications

- Relief of muscle spasticity from:
 - o Cerebral palsy, stroke, multiple sclerosis and other neurodegenerative diseases
- Pre-physical therapy aid

Benefits and Advantages

- Safe

- Easy to operate
- Non-invasive
- At-home use
- Can be used on a daily basis to decrease the rate of contractures
- Increases the effectiveness of in-person therapy when used prior to a session
- Shows effectiveness in under 15 minutes of use

For more information about the inventor(s) and their research, please see [Dr. Kleim's departmental webpage](#)