Soft robotic glove for neural rehabilitation

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Abstract

Stroke, spinal cord injury and some neurological diseases may affect the patients' hand motor ability, which greatly inhibit activities of daily living. Clinical studies have shown that the hand motor function of stoke patients, who had robotic assistance in rehabilitation exercises, was significantly improved. However, existing robotic rehabilitation systems are typically expensive and are designed for in-clinic use as they are not portable. Moreover, the majority of these robotic devices require experienced oversight for patient safety. The new soft robotic glove drives fingers to flex or extend by a push-and-pull actuator. The wrapper on the actuator can greatly enhances the push applied to fingertips, thereby increasing the range of motion of robotic glove. This rehabilitation tool is safe and easy to use, and can be adjusted to the appropriate pattern to help the patient restore hand motor function.