Researchers at the University of South Florida have developed a home-based upper-limb rehabilitation device that helps rehabilitation in patients with varying degrees of impairment.

The goal of upper-limb rehabilitation following a stroke is to enable a person to use both hands in activities of daily living. Of the new rehabilitation methods proposed and tested in recent years, many show positive results; however, there is a need for a more effective method that clearly shows better results than traditional methods. Several methods have been developed to allow patients to rehabilitate at home. These methods are able to provide some benefit, although its effect is limited to individuals already having relatively high motor function. Bimanual rehabilitation allows individuals with hemiparesis to use their sound arm to help rehabilitate their impaired arm through simultaneous bimanual motions. Bimanual rehabilitation shows promise as a means of low cost home use.

Our researchers have developed a compliant bimanual rehabilitation device (CBRD) that improves the bimanual task performance of an individual by coupling their hand motions. This method allows for upper-limb rehabilitation devices that are significantly lower in cost than robotic systems. Much of the required force could be provided by the patient’s healthy limb instead of the larger motors included on many current upper-limb rehabilitation robots. Unlike other bimanual devices that use either no coupling or a rigid coupling, the CBRD allows for a scalable coupling stiffness dependent on the needs of the user. This novel technology offers a safe rehabilitation method that can be used at home to increase rehabilitation access to those that need it most.

**ADVANTAGES:**
- Lower in cost than robotic systems
- Safer rehabilitation method that could be used at home
- Allows scalable coupling depending on the needs of the user

**Inexpensive Home-Based Bimanual Rehabilitation Device**

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