GESTURE RECOGNITION BIOFEEDBACK

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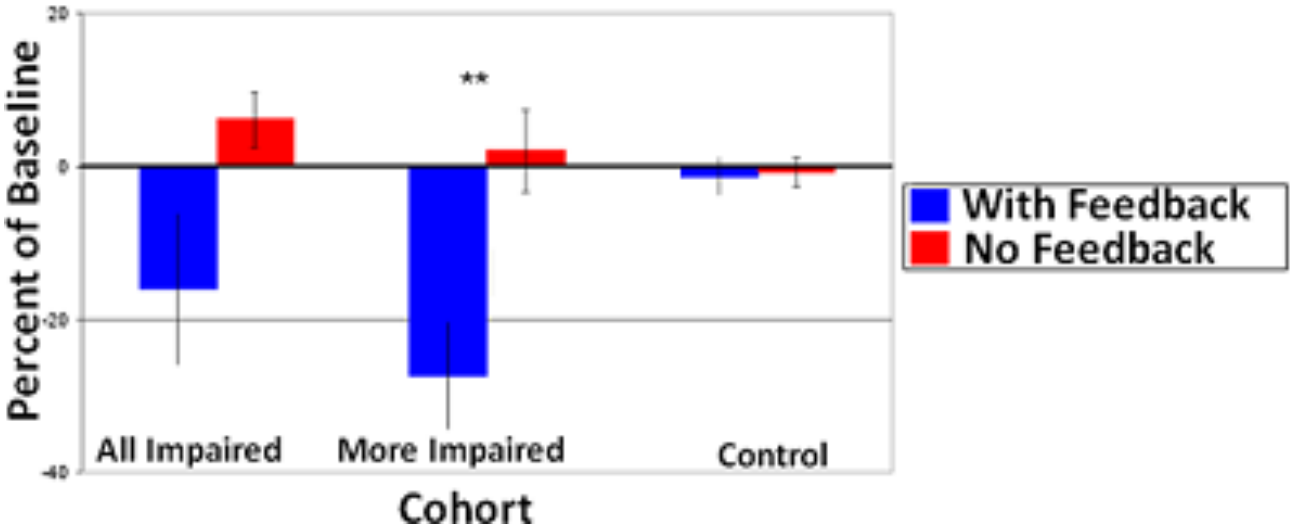
Technology description



Invention Summary

Grasping an object is one of the most fundamental activities of daily living. Unfortunately hand dexterity is usually impaired following stroke or traumatic brain injury. As anyone who has suffered a broken bone will attest, the lack of usage of the appendage leads to muscular atrophy. The lack of usage also tends to impede recovery; therefore, grasp training and usage of the muscle groups is a high priority for rehabilitation of the upper limbs.Researchers at Rutgers University have developed a rehabilitation device for improving fine motor function in persons with brain injury. The Gesture Recognition Biofeedback (GRB) system reads and uses surface muscle pressures of the forearm to provide real-time visual biofeedback. Although some reports question the results of using Electromyography (EMG) biofeedback, many other studies have documented the efficacy of EMG biofeedback. Biofeedback from the EMGs of various muscles in the wrist and hand were shown to improve the wrist and finger extension of stroke subjects. This novel GRB biofeedback modality provides visual feedback that relays the accuracy of specific gestures rather than specific muscular activation amplitudes, and uses a simpler interface than the traditional systems. GRB was shown to be effective for short-term improvement of fine motor function of 12 impaired participants, reducing their average time to complete the Human Performance Technology by 16.1% ± 6.98%.

Application area

Device for improving fine motor function in persons with brain injury
Device for retraining fine motor function of the hand without the supervision of a clinician

Advantages

Apparatus is easy to don by moderately impaired users
Does not require precise placement of sensors
Design advantages in utility over EMG biofeed-back
Visual feedback relays the accuracy of specific gestures
Uses a simpler interface
Real-time visual feedback during repetitive grasping tasks that yields acute improvement in a single session of training

Institution

Rutgers University

Inventors

William Craelius
Professor
Biomedical Engineering
Don Yungher

联系我们

叶先生

电 话：021-65679356

手 机：13414935137

邮 箱：yeyingsheng@zf-ym.com