

What is biofeedback for the upper extremity?

A stroke can damage the central nervous system and disrupt normal regulation of muscle tone. This can prevent your muscles from functioning adequately. With the help of electromyographic biofeedback (EMG-BFB), you can receive feedback to know when your muscles are tense or relaxed. Electromyography (EMG) is when a set of electrodes is placed on the skin over the chosen muscle (or muscle group) to detect the electrical signals that occur when a muscle is tense (or contracted). This electrical signal will provide you with a visual or auditory feedback to know whether or not your muscle is contracting and indicate the amount of contraction. This biofeedback can help you re-educate your muscles to contract or relax at your own will in order to increase voluntary muscle control.

Does it work for stroke?

Research has shown that the main reason for functional impairment following a stroke is upper extremity hemiparesis which can affect important activities of daily living (e.g. feeding and dressing). Biofeedback (BFB) is commonly used as a treatment intervention for stroke rehabilitation. Following a stroke, the main central motor pathways that regulate normal muscle tone and functioning can be disrupted or even damaged. However, some motor pathways that are often unused remain relatively unaffected by the stroke. Individuals may learn how to activate these unused pathways with the help of electromyographic biofeedback (EMG-BFB) and this may lead to improvements in their muscle tone and functioning. Specifically, studies have examined the use of biofeedback to improve hand function as well as upper extremity range of motion and function. There is **conflicting evidence that biofeedback interventions are effective for improving upper extremity function post-stroke. But, they are not effective for improving manual dexterity and for improving range of motion in the upper extremity post-stroke. At the follow-up**

evaluation, biofeedback interventions were not effective for improving upper extremity function.

Who provides the treatment?

Biofeedback for the upper extremity is typically performed by a physiotherapist. Most rehabilitation centers and private clinics are equipped with EMG equipment.

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