

Neuroplasticity Quick Facts

The brain's ability to "re-wire" itself as a result of learning novel tasks and repetitive functional movements, with or without the presence of an injury

Principles for Neuroplasticity

- Use it or lose it/Use it and improve it
- Specificity (you must practice the tasks [or parts of them] to improve)
- Repetition (you must practice over and over again once performed correctly)
- Intensity (more repetitions in a shorter time)
- Purposeful (**Important To You!**)

Research on Neuroplasticity

"High-intensity, repetitive rehabilitation exercise can result in improved function and quality of life in severely disabled chronic stroke patients years after they have experienced their initial event... Participants in the active treatment groups underwent 3 one-hour sessions per week for 12 weeks... It is the intensity of the exercise and perhaps not the mode of delivery that is important in functional recovery in chronic stroke patients." *High-Intensity, Repetitive Rehabilitation Improves Function, Quality of Life in Chronic Stroke Patients – Medscape – Mar 1, 2010*

"Data have repeatedly shown that chronic stroke patients can exhibit substantial motor improvement after participation in novel rehabilitation protocols requiring task-specific, repeated motor practice... task-specific, repeated practice regimens have also induced lasting cortical reorganizations that appear to precede motor improvement. These data suggest that lasting neural and functional changes can occur in stroke patients who have supposedly plateaued." *Reconsidering the Motor Recovery Plateau in Stroke Rehabilitation – Arch Phys Med Rehab – Aug 2006*

"Constraint-induced therapy produced a significant and large improvement in motor functions... The number of active positions in the infarcted hemisphere had nearly doubled from before to after treatment." *Treatment-Induced Cortical Reorganization After Stroke in Humans – Stroke – Mar 2000*

Things You Can Do Now

- Constraint-induced therapy (use affected upper extremity only for functional tasks with non-affected upper extremity restrained; 2-3 times/week for 60-90 minutes; more quality sessions is better)
- Mirror therapy (can be used with mirror box or make-up mirror; perform the same task with both upper extremities with your non-affected upper extremity in the mirror and your affected upper extremity blocked; only look at your non-affected upper extremity in the mirror)
- Bilateral arm training with auditory cueing (performing symmetric/asymmetric arm movements to the sound of a metronome; music therapy)
- If you have trouble performing a task, break it down into components
- **INTEGRATE YOUR AFFECTED UPPER/LOWER EXTREMITY IN EVERYTHING YOU DO!**

