

**“Arming” You with Therapies:  
Evidence Based Techniques for Upper Extremity Motor NeuroRehabilitation**

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Objectives:

- Name and briefly describe 2 tools for finding evidence for upper extremity rehabilitative therapies
- List and briefly describe 2 assessment strategies for measuring the upper extremity
- Describe neuroplasticity and its relevance to upper extremity rehabilitation
- Identify strategies for increasing affected arm use and function

What is Evidence-based practice?

- Evidence-based practice (EBP) stresses "the conscientious, explicit, and judicious use of *current best evidence* in making decisions about the care of individual patients. The practice of evidence-based medicine... means integrating individual clinical expertise with the *best available* external clinical evidence from systematic research"

Where can I find evidence *fast*??

- “*Push*” and “*Pull*” methods
  - “Pull” – access information when needed
  - “Push” - alerts us to new information

Accessing UE evidence: Open Access Journals

- [www.doaj.org](http://www.doaj.org)
- BiomedCentral
- [www.biomedcentral.com](http://www.biomedcentral.com)
- Google Scholar
- PubMed
- Physical Therapy Journal
- Journal of Rehabilitation Research & Development
- Stroke.

Stroke Edge: Recommendations for UE outcome measures in different environments

Assessment methods commonly used in UE neurorehabilitation

- Brunnström stages simplified
- CNS processes underlying staging in Brunnstrum
- Neuroimaging let's us see change that we may not see
  - Transcranial Magnetic Stimulation
  - Functional Magnetic Reasonance Imaging (fMRI)
- Reflex Scale
- UE Spasticity Testing
- The Box & Block
- The ARAT

UE Treatments

- Treatments ideally occur with K.I.S.S.

- The P.R.A.C.T.I.C.E. Principles:
  - Part whole practice
  - Repetitive, task specific, and goal focused
  - Activities should be meaningful to client
  - Client driven – goals and content of practice
  - Train in a practical way
  - Emphasize accomplishments and awareness – copious, diverse feedback, self efficacy, home programs
- Constraint-induced movement therapy (CIT)
  - Components to induce repeated practice with the affected UE include:
    - 6 hour training sessions on 10 consecutive weekdays
    - Mitt 90% of all waking hours during same 2 weeks
    - Behavioral strategies (log; shaping; behavioral contract)
- Time for a little restraint? Concerns & experiences...
- Modified constraint-induced therapy:
  - Therapy 3 times/week for ½ an hour
  - Practice with the more affected arm for 5 hours/day 5 days/week
  - Behavioral techniques (log, shaping)
  - Reimbursement (acute and OP)
  - Enough time (acute – 4 units of OT; OP – 2-3 units)
  - Conditioning/no overtraining
  - Compliance
  - More UE reps → more opportunity for operant conditioning
  - Distributed practice schedule
- Mental practice and stroke
- Multi-modal mental practice (MMMP)
- Mirror therapy
- transcranial direct current stimulation (tDCS)
- Myopro-based training
- EMG-triggered stimulation
- Neuroprosthesis
- Implants