Use of Robotics to Improve Upper Extremity Function in Adults with Neurological Conditions
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Objectives of Presentation:
1. Describe the impact of robotics on upper extremity function among various neurological populations.
2. Differentiate which patients are appropriate for robotics interventions for upper extremity rehabilitation.
3. Defend the feasibility of robotic interventions for upper extremity rehabilitation of neurological populations.

PICO: To what extent does robotic-assisted therapy improve UE function in adults with neurological conditions?

Methods:
- Databases: PubMed, Ovid, Scopus
- Population (P) keywords: Adults with: CVA, SCI, MS, PD, TBI
- Intervention (I) keywords: Robot*, robotic assisted therapy (rehab), myoelectric, biofeedback, exoskeleton
- Outcomes (O) keywords: Upper extremity function (movement) & functional reach
- Inclusion criteria: Adults 18+ with CVA, SCI, TBI, MS and PD & articles published since 2012 in English
- Exclusion criteria: Articles focusing solely on lower-extremity function, VR, functional electrical stimulation & qualitative studies, conference proceedings, systematic reviews
- 25 articles included in quantitative synthesis

Themes:
- Robotic therapy is comparable to conventional therapy regarding motor improvement
  - 16/25 studies concluded that RT is comparable to CT
  - 13/16 studies showed statistically significant improvement in UE function
  - 11/16 compared robotic therapy to conventional therapy; 9 found there were no significant differences between groups and 2 found robotic therapy was more effective
- Time Since CVA
  - Robotic therapy more effective in subacute phase of stroke
- High Intensity
  - Avg # and duration of treatment: 33.14 sessions for 50.71 min
  - Avg repetitions: 839.17 per treatment and 16.55 reps/min
- Feasibility
  - Robotic therapy is cost-effective, safe and tolerable for patients with neurological conditions
  - Patients were overall satisfied with robotic therapy and perceived it well

References:


