The Effects of Robot-Assisted Gait Training and Task-Specific Training on ADL Function and Mobility for a Patient After a Stroke: a Case Report

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**Background**

- Stroke is the fourth leading cause of death and the leading cause of long-term disability in the United States.¹
- Repetitive task-specific training has been shown to be favorable in stroke rehabilitation.²
- Robot-assisted gait training (RAGT) incorporates gait training and repetitive task-specific training.
- RAGT has been shown to increase the likelihood of independent walking ability in patients who have experienced a stroke, especially when utilized in the first three months.³
- Currently, there is limited research regarding the impact of RAGT on ADL function.

**Purpose**

- To describe the impact of robot-assisted gait training in combination with task-specific training on the functional mobility and ADL function in an individual who experienced a middle cerebral artery (MCA) stroke.

**Case Description**

- 71-year-old male who experienced a right MCA stroke 6 weeks prior
- Complex medical history including:
  - Multiple heart complications
  - Diabetes mellitus
  - Hypertension
  - Dyslipidemia
  - Atrial fibrillation
- Participated in 5 weeks of therapy on a Stroke Rehabilitation Unit prior to admission

**Interventions**

- The patient participated in five 1-hour PT sessions during the week
- Treatments coordinated with occupational therapy, which focused on upper extremity function

**Examination**

<table>
<thead>
<tr>
<th>Bed Mobility</th>
<th>Admission</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolling</td>
<td>Moderate assist x1 with use of bed rails</td>
<td>Moderate assist x1 with use of bed rails</td>
</tr>
<tr>
<td>Supine to/from side</td>
<td>Moderate assist x2</td>
<td>Moderate assist x1</td>
</tr>
<tr>
<td>Sitting to supine</td>
<td>Moderate assist x2</td>
<td>Moderate assist x1</td>
</tr>
</tbody>
</table>

**Results**

- Rolling
- Seated Balance
  - Static Standing: Prior to maximum assist
  - Dynamic Standing: Prior to minimum assist

**Impairments:**
- Decreased LLE ROM
- Decreased BLE strength
- Increased tone hip and knee extensors
- Impaired motor function
- Impaired balance

**Functional Limitations:**
- Decreased independence in mobility
- Decreased independence in ADLs
- Unable to ambulate

**Disabilities:**
- Unable to work

**Outcomes**

- After 14 treatment sessions, the patient displayed improvements in ADL performance, functional mobility, balance, and strength.

**Discussion**

- The improvements in mobility and ADL function suggest that the combination of RAGT and task-specific training was a beneficial treatment option for this patient.
- Due to early discharge, it was uncertain how much more improvement in ADL function and mobility may have been gained with the intended amount of therapy.
- Future research should further investigate the impact of RAGT on ADL function.

**References**