

# The Impact of LSVT BIG on Instrumental Activities of Daily Living in Persons with Parkinson's Disease: A Retrospective Study

Eirish Doyogan OTS, Ariane Mallon OTS, Laura Park OTS, Kalena Patton OTS

Nancy Kline, PhD, OTR, BCG

SUNY Downstate Health Sciences University, Brooklyn, NY



## Abstract

### Objective

To observe changes in instrumental activities of daily living (IADL) performance in patients with Parkinson's disease (PD) after receiving Lee Silverman Voice Treatment BIG (LSVT-BIG) training, as measured by the Lawton IADL Scale.

### Methods

The study reviewed already existing documentation from the LSVT BIG certified therapists. The quantitative results obtained from pre and post assessment data of the Lawton IADL scale was analyzed using descriptive data.

## Background

- **Parkinson's disease (PD):** a progressive, degenerative, neurological disease that primarily affects motor functions due to loss of dopaminergic neurons in the brain.
  - Common signs and symptoms:
    - Resting tremors, muscle rigidity, bradykinesia, hypokinesia, loss of balance, impaired gait, loss of coordination and difficulty with speech production
    - Difficulties with activities of daily living (ADLs), instrumental activities of daily living (IADLs), and decreased quality of life
  - Unknown cause & presently no cure
- **LSVT-BIG, a standardized evidence-based protocol:** a promising non pharmacological treatment for the motor symptoms of PD.
  - 4-week protocol consisting of 16 one-hour, one-to-one treatment sessions
  - Intensive exercise of large amplitude movements + independent home exercise
  - Activity-based program to improve gross motor function
- **Evidence supports the positive effect of LSVT-BIG on improvements in gait speed, balance, trunk, mobility, decreased fall risk, and cognitive performance**

## Methodology

### Procedures

- **Recruitment of Participants:**
  - Contacted via email 145 certified LSVT-BIG providers listed on the LSVT Global website and located within 10 miles of New York City
  - Two participants were recruited for this study
- **Role of Participants**
  - Screen closed clients' charts to identify community dwelling adults diagnosed with early to mid-stage PD and have completed LSVT training in 2019
  - Use information from patients' charts to complete pre and post Lawton IADL Scale

| Demographic Information | Patient A                               | Patient B  |
|-------------------------|---|--|
| Age                     | 92 years                                | 74 years   |
| Gender                  | Male                                    | Female   |
| Hoehn & Yahr Stage      | 3                                       | 2.5  |
| Comorbidities           | Congestive Heart Failure                | History of Right Cerebrovascular Accident        |
| Medications             | 25-100 4x daily                         | 10-100 3x daily                                  |
| Race & Ethnicity        | Caucasian                               | Caucasian  |
| Work Status             | Not working                             | Not working                                      |
| Marital Status          | Single                                  | Divorced   |
| Living Situation        | Lives with two friends in the community | Living in an assisted living or nursing facility |

### Data Management and Analysis

- No identifiable information of the therapists or their chart was maintained
- Descriptive statistics used to analyze significance between pre & post Lawton IADL Scale
- Changes in scores from the pre and post Lawton IADL Scale were used to determine if LSVT-BIG contributed to clients' IADL function improvement



Scan to see scale

## Findings

| Lawton IADL Scale  | Point | Patient A |      | Patient B |      |
|--|-------|-----------|------|-----------|------|
|  |       | Pre       | Post | Pre       | Post |
| <b>A. Ability to Use Telephone</b>   |       |           |      |           |      |
| 1. Operates telephone on own initiative; looks up and dials numbers                | 1     |           |      |           | X    |
| 2. Dials a few well-known numbers  | 1     |           | X    | X         |      |
| 3. Answers telephone but does not dial.  | 1     | X         |      |           |      |
| 4. Does not use telephone at all   | 0     |           |      |           |      |
| <b>B. Shopping</b>   |       |           |      |           |      |
| 1. Takes care of all shopping needs independently                                  | 1     |           |      |           | X    |
| 2. Shops independently for small purchases   | 0     |           |      | X         |      |
| 3. Needs to be accompanied on any shopping trip                                    | 0     |           | X    |           |      |
| 4. Completely unable to shop   | 0     | X         |      |           |      |
| <b>C. Food Preparation</b>   |       |           |      |           |      |
| 1. Plans, prepares, and serves adequate meals independently                        | 1     |           |      |           |      |
| 2. Prepares adequate meals if supplied with ingredients                            | 0     |           |      |           |      |
| 3. Serves prepared meals/prepares meals but does not maintain adequate diet        | 0     |           |      |           | X    |
| 4. Needs to have meals prepared and served.  | 0     | X         | X    | X         |      |
| <b>D. Housekeeping</b>   |       |           |      |           |      |
| 1. Maintains house alone with occasion assistance (heavy work)                     | 1     |           |      |           |      |
| 2. Performs light daily tasks such as dishwashing, bed making                      | 1     |           |      |           | X    |
| 3. Performs light daily tasks, but cannot maintain acceptable level of cleanliness | 1     |           |      |           |      |
| 4. Needs help with all home maintenance tasks                                      | 1     |           |      |           |      |
| 5. Does not participate in any housekeeping tasks                                  | 0     | X         | X    | X         |      |
| <b>E. Laundry</b>  |       |           |      |           |      |
| 1. Does personal laundry completely  | 1     |           |      |           |      |
| 2. Launders small items, rinses socks, stockings, etc                              | 1     |           | X    |           | X    |
| 3. All laundry must be done by others.   | 0     | X         |      | X         |      |
| <b>F. Mode of Transportation</b>   |       |           |      |           |      |
| 1. Travels independently on public transportation or drives own car                | 1     |           |      |           | X    |
| 2. Arranges own travel via taxi, but does not otherwise use public transportation  | 1     |           |      |           |      |
| 3. Travels on public transportation when assisted or accompanied by another        | 1     |           | X    |           |      |
| 4. Travel limited to taxi or automobile with assistance of another                 | 0     | X         |      | X         |      |
| 5. Does not travel at all  | 0     |           |      |           |      |
| <b>G. Responsibility for Own Medications</b>                                       |       |           |      |           |      |
| 1. Is responsible for taking medication in correct dosages at correct time         | 1     |           |      |           | X    |
| 2. Takes responsibility if medication is prepared in advance in separate dosages   | 0     |           | X    | X         |      |
| 3. Is not capable of dispensing own medication                                     | 0     | X         |      |           |      |
| <b>H. Ability to Handle Finances</b>   |       |           |      |           |      |
| 1. Manages financial matters independently; collects and keeps track of income     | 1     |           |      |           |      |
| 2. Manages day-to-day purchases but needs help with banking/major purchases,       | 1     |           | X    | X         | X    |
| 3. Incapable of handling money   | 0     | X         |      |           |      |

## Discussion

Descriptive statistical analysis suggests improvement in IADL performance after LSVT-BIG training, as measured by the Lawton IADL scale.

### Patient A:

- Improved from a score of 2 to 7
- Improved in the ability to use the phone, shopping, laundry, modes of transportation, responsibility for own medications, and ability to handle finances
- Improved from being completely unable to shop, to needing to be accompanied on any shopping trips
- No changes in the areas of food preparation and housekeeping

### Patient B:

- Improved from a score of 1 to 4
- Improved in the ability to use the telephone, shopping, food preparation, housekeeping, laundry, mode of transportation, and responsibility for own medications
- Significantly improved in the performance of modes of transportation, going from having travel that was limited to taxi or automobile with assistance of another, to traveling independently on public transportation or driving his/her own car
- Improved from not participating in any housekeeping tasks to performing light daily tasks such as dishwashing and bed making

### Both Patients:

- Improved in the ability to use the phone, shopping, laundry, modes of transportation, and responsibility for their own medications

## Assumptions and Limitations

### Assumptions:

1. Participants were accurate and truthful reporters of their patient's functional status
2. The report of IADL performance was an accurate measure of patient IADL performance

### Limitations:

1. Data obtained may not be representative of the target population since participants may have provided data only on select patients that have displayed improvement in functioning
2. Only two participants were recruited for the study which was not enough to make generalization of study results to the targeted population.

## Conclusion & Implications for Future Research

- Therapists' reports of patients' improvements in IADL may suggest that LSVT-BIG is an effective program for improving functional performance in patients with PD. Further research needs to be conducted with a larger sample size to understand the impact of LSVT-BIG on IADL performance.
- This research is significant in occupational therapy practice because it supports that LSVT BIG can have potential positive impact on PD patients' functional performance, This research promotes the need for future prospective studies on LSVT BIG and its effectiveness in improving IADL performance specifically.