What you will learn!

- Impact of neuroplasticity in rehabilitation for people with PD
- Background and development of LSVT LOUD
- LSVT LOUD key concepts and foundational research
- Summary of the LSVT LOUD protocol
- Introduction to LSVT BIG and technology for LSVT LOUD
- How to get started with LSVT LOUD and LSVT BIG

Our Mission

To empower people with Parkinson’s to restore and maintain their highest levels of functional communication, mobility and independence in daily life through scientifically supported therapy programs:

- LSVT LOUD® Speech Therapy
- LSVT BIG® Physical & Occupational Therapy

Supported by

- National Institutes of Health - National Institute Deafness and Communication Disorders (NH-NIDCD)
- Office of Education National Institute for Disability and Rehabilitation Research (OE-NIDRR)
- Coleman Institute
- Hearst Foundation
- Ax-Houghton Foundation
- Family of Lee Silverman
- Davis Phinney Foundation
- Parkinson Alliance
- Supported by NIH grants: R01DC01150, R21 RFA-NS-02-006 R21DC006078, R21NS04571 R43DC010956, R43DC010498, R43DC00741

Disclosures

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It is a “Stunning Time” to be in rehabilitation today

- Basic science evidence for the value of exercise in PD has been established (classically drugs, surgery, today...)
- Identified key principles of exercise that drive activity-dependent neural plasticity
- Demonstrated that exercise can improve brain functioning (neural plasticity) and may slow symptom progression
- Exercise is Medicine!

Kliem & Jones, 2008; Ludlow et al, 2008
Rehabilitation (ST, PT, OT) is becoming a routine part of management in PD

To provide symptomatic relief, improve function

Pharmacological (L-dopa)

Neurosurgical (DBS-STN)

Speech, Physical Occupational Tx (Empower)

Kleim & Jones, 2008; Kleim et al., 2003; Zigmond et al, 2009

Video: Before and After LSVT LOUD

• 59 year-old female, 2.5 years since diagnosis

• Changes noted in her voice and speech

• She is ON medications in the before and after videos and she had no changes in medication

• Intensive one-month speech therapy program

Speech disorders in Parkinson disease

Over 89% of individuals with Parkinson disease worldwide suffer from voice and speech disorders.

- Reduced vocal loudness, monoloudness
- Hoarseness, harsh or breathy voice quality
- Monotone voice
- Imprecise articulation


Impact of speech changes in PD

- Even people who are clinically asymptomatic for speech deficits report feelings of embarrassment, social stigma and social isolation due to speech concerns (Miller et al., 2006a, b)

Does this matter?

- Consequences include being excluded from conversations, a loss of dignity and feelings of misery for many (Miller et al., 2006a, b)

“If I have no voice, I have no life.”

-Natalie, individual with PD

Voice and Speech Disorders in PD have been Historically Unresponsive to Speech Treatment

Despite efforts to improve voice and speech in PD (e.g., Sarno, 1968; Allan, 1970; Greene, 1980; Weiner and Lang, 1980; Robertson and Thompson, 1984; Johnson and Pring, 1990).

1987 no effective voice and speech treatments for PD

Classic Medical Treatments Alone do not Consistently or Significantly Improve Speech in PD

Pharmacological Treatment:

“...no evidence of systematic improvement in dysarthria owing to dopamine replacement therapy.”

e.g., Pinto et al, 2004

Surgical Treatment:

Neurosurgical interventions do not consistently or effectively improve speech in PD e.g., Freed et al., 1992; Goberman, 2005; Pinto et al., 2006; Rousseaux et al., 2000; Tripoliti et al., 2008; Astromet et al., 2010
“If only we can hear and understand her”
Family of Mrs. Lee Silverman 1987

LSVT LOUD Key Concepts
Incorporates principles of neuroplasticity
Administered in an intensive manner to
challenge the impaired system

TARGET: Amplitude - Vocal loudness
MODE: Intensive and High Effort
CALIBRATION: Generalization

Mechanism of treatment related change: addition

Intensity across sessions:
Treatment delivered 4 consecutive days a week for 4 weeks. One hour, individual treatment sessions
Daily homework practice (all 30 days of the month)
Daily carryover exercises (all 30 days of the month)
Life-long habit of continuous practice

Intensity within sessions: High effort
Amplitude, Repetitions, Force/resistance, Accuracy, Fatigue

Loss of motor energy
Movements underscaled

Drive amplitude to
override bradykinesia/hypokinesia

Healthy Vocal Loudness

Berardelli et al., 1986; Hallett, 2011
LSVT LOUD Calibration
Addresses Barriers to Generalization

People with PD have soft speech, but they think it is within normal limits (world needs a hearing aide)

Speech that is within normal limits (normal loudness) is perceived by the individual as too LOUD

Fox et al., 2002; Sapir et al., 2011
Why does this research matter?

1. Provides therapists/patients with assurance they are providing/receiving a treatment that works, based upon strong research evidence to support its efficacy

2. Gives therapists/patients confidence in providing/receiving an intensive treatment which has sufficient repetition of practice and which includes sensory calibration, resulting in lasting changes as demonstrated clinically and in published research

3. Shows through multiple Randomized Controlled Trials (RCT) (3 for LSVT LOUD; 2 for LSVT BIG) the cause and effect relationship between the treatment delivered and the outcomes measured. The RCTs controlled for factors that influence treatment outcomes, such as attention, dosage, bias, etc.

**LSVT LOUD Goal!**

- Treatment Exercise: “long ah”, “high/low ah”
- Treatment Goal: louder voice in conversation

**LSVT LOUD Treatment Session**

**Daily Exercises**

1. **Maximum Duration of Sustained Vowel Phonation** (Long Ah’s) – 15+ reps
2. **Maximum Fundamental Frequency Range** (High/Low Ahs) – 15 reps each
3. **Maximum Functional Speech Loudness** (Functional Phrases) – 5 reps of 10 phrases

**Hierarchy Exercises**

- Structured, personalized reading and spontaneous speaking – 25 min
- Build complexity across 4 weeks of treatment

**Homework**

- Includes all daily exercises and hierarchy exercises. Assigned all 30 days

**Carryover Exercises**

- Use loud voice in real life outside of the treatment room. Assigned all 30 days

**Why does this research matter?**

- To you
- To your MD
- Your family and friends
- Your speech clinician

- How does this research inform your LSVT LOUD Treatment?
If you don’t feel like you are talking “too loud” you are not talking loud enough!!

Ebersbach et al, 2010; Farley & Koshland, 2005; Fox, et al., 2012

Case Study Outcomes:

<table>
<thead>
<tr>
<th></th>
<th>PRE</th>
<th>POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falls</td>
<td>1-2/month</td>
<td>0/month</td>
</tr>
<tr>
<td>Assistive device</td>
<td>Cane</td>
<td>None</td>
</tr>
<tr>
<td>Gait Velocity</td>
<td>0.35 m/s</td>
<td>1.17 m/s</td>
</tr>
<tr>
<td>% of age matched norm</td>
<td>29.6 %</td>
<td>100%</td>
</tr>
<tr>
<td>Endurance</td>
<td>730 ft</td>
<td>1200 ft</td>
</tr>
</tbody>
</table>

- To improve his walking
- To go to the movies
- To play with his grandchildren
- To go out to dinner with friends and family

Comparing Exercise in Parkinson's Disease — The Berlin BIG Study

Ebersbach, *Ahmed Ebersbach, Daniela Eilber, Olaf Korf, Matthias Aschen, Andreas Kupch & Iorg Wissel

Video: Before and After LSVT BIG

- 71 year-old, diagnosed with Parkinson's disease in 1994
- Reason for referral: slowness and difficulty walking, history of falls, freezing
- Optimized on PD medications
- Hoehn & Yahr 3
After treatment, take your daily dose of LSVT LOUD homework exercises!

The best combination for success!

How to get started with LSVT LOUD and LSVT BIG

- Ask your doctor for a referral and a prescription for a speech or physical & occupational therapy evaluation and treatment
- Visit www.lsvtglobal.com to find an LSVT LOUD or LSVT BIG Certified Clinician in your area

LSVT Companion Outcomes
Increases in vocal loudness (dB SPL)

Changes consistent with those reported in previously published data Halpern et al., 2012

Lifton Support After LSVT

- Daily exercise practice life-long
  - LSVT Homework Helper Video-Purchase DVD or Download
- New Group Exercise Options!
  - LOUD for LIFE® and BIG for LIFE®
- Regular LSVT “Tune-ups” every 3-12 months
- Other enjoyable activities and fitness for PD

Four questions to ask any LSVT LOUD or LSVT BIG therapist

1. Do you deliver the gold standard dosage of LSVT LOUD or LSVT BIG?
   - Four days a week for 4 weeks
   - Individual 60-minute sessions
   - Daily homework and carryover assignments
2. How many LSVT LOUD/LSVT BIG clients have you treated?
3. What are your typical outcomes?
4. Do you have a follow-up or maintenance plan for your clients?
Opportunities to Learn More

- Monthly Webinars on Hot Topics!
- On Demand Webinar Library
- Patients & Family Section
- Featured Blog Articles, Testimonials, and Videos
- Live Seminars
- LSVT Global Facebook Page
- Ask our experts!

FIND IT ALL AT www.lsvtglobal.com

“If my possessions were taken from me with one exception, I would choose to keep the power of communication, for by it I would soon regain all the rest”

-Daniel Webster

QUESTIONS??

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