



LSVT Global Professional Webinar Series

**Title: Consideration of Nonmotor Symptoms in the
Successful Delivery of LSVT LOUD® and LSVT BIG®**

**Presenters: Angela Halpern, MS, CCC-SLP
Beth Marcoux, PhD, DPT**

Date Presented: December 6, 2017

Copyright:

The content of this presentation is the property of LSVT Global and is for information purposes only. This content should not be reproduced without the permission of LSVT Global.

Contact Us:

Web: www.lsvtglobal.com Email: info@lsvtglobal.com

Phone: 1-888-438-5788 (toll free), 1-520-867-8838 (direct)

**Treating the Non-Motor Symptoms of
Parkinson Disease with
LSVT BIG® and LSVT LOUD®**



Presented by *LSVT*
GLOBAL



Angela Halpern, MS, CCC-SLP
LSVT LOUD Faculty
LSVT LOUD Chief Clinical Officer
LSVT Global, Inc.



Beth Marcoux, PhD, DPT
LSVT BIG Faculty
LSVT Global, Inc.

Plan for Webinar

Logistics

Brief Introduction

Identify the non-motor symptoms of PD and learn how LSVT LOUD and LSVT BIG can help address those non-motor symptoms to improve speech and movement for people with Parkinson's Disease

We encourage your participation and questions

Instructor Biographies

Angela Halpern, MS CCC-SLP

Ms. Halpern is an ASHA certified and LSVT certified speech language clinician. She is the Chief Clinical Officer and a faculty trainer for LSVT Global. She is also a research associate on Dr. Lorraine Ramig's Parkinson voice and speech research team at the National Center for Voice and Speech in Denver, CO. She received her master's degree in the Department of Communication Disorders and Sciences at the University of Pittsburgh. Ms. Halpern has worked extensively in the area of neurogenic disorders with a specialty in Parkinson disease. She has presented at national and international conferences and authored and co-authored publications related to voice and speech in Parkinson disease.

Beth Marcoux, DPT, PhD

Dr. Marcoux holds a BS in Physical Therapy from Russell Sage College, an advanced Master's degree in Physical Therapy Education from the University of Alabama, Birmingham, a Ph.D. in Public Health (Health Behavior and Health Education) from the University of Michigan and a Doctor of Physical Therapy from the Massachusetts General Hospital Institute for Health Professions. She has served on physical therapy faculties at the University of Vermont, the University of Michigan, and University of Michigan-Flint, Henry Ford Community, Oakland University and the University of Rhode Island where she was Professor and Chair of Physical Therapy for nine years. She is certified in LSVT BIG and for the past several years her clinical experience has focused on the treatment of patients with Parkinson's disease.

Disclosures

- All of the LSVT faculty have both financial and non-financial relationships with LSVT Global.
- Non-financial relationships include a preference for the LSVT BIG and LSVT LOUD as treatment techniques.
- Financial Relationships include:
 - Ms. Halpern is an employee of LSVT Global and receives lecture honorarium and travel reimbursement.
 - Dr. Marcoux receives consulting fees, lecture honorarium and travel reimbursement from LSVT Global, Inc.

Learning Objectives

Upon conclusion of this webinar, participants will be able to:

1. Describe the typical motor and non-motor symptoms associated with PD.
2. Explain how non-motor symptoms may affect movement, speech, and communication.
3. Describe how LSVT LOUD and LSVT BIG address the cognitive, sensory, and neuropsychological deficits to promote improved speech and motor function.

Parkinson's Disease

- Affects about 1 million people in the US
- 85% have idiopathic PD – no known cause.
- Characteristics of the disease are bradykinesia and hypokinesias
- While most recognized as a motor disorder, there are many non-motor symptoms as well and these are the focus of this webinar.

What if... PD was only a motor disorder?

- Motor output, endurance and balance as well as vocal loudness, articulation and speech intelligibility would improve quite easily with therapy and maintain with less effort over time!
- No convincing to move bigger or speak louder
- No need for calibration training
- Reduced frequency of treatment and reduced repetition would be possible
- Would easily "pick up" on new exercises and concepts
- No need for dual task training

What is the Origin of Symptoms in PD?

Pathological Findings
 Loss of Pigmented, Dopaminergic Neurons in the SNpc

**50-60% cell death at DX;
 70-80 % loss of DA terminals
 Precedes DX ~5-6 years**

**3 Primary Basal Ganglia Circuits/Loops
 Clinical Implications?**

Circuits	Cortical region	BG region
Motor DA cells projecting here degenerates first	Supplementary Motor Area (SMA); oculomotor; motor; parietal	Putamen
Cognitive	Dorsolateral prefrontal; Lateral orbitofrontal	Caudate
Emotional	Anterior cingulate; Medial orbitofrontal	n. Accumbens

(Alexander, DeLong, & Strick, 1986; Middleton & Strick, 1994)

Origin of symptoms for PD

- Motor Disorder
- *NON-MOTOR DISORDER*

Several Non-Motor Symptoms Predate Motor Symptoms

Motor symptoms are the "tip of the iceberg"



Premotor phase of PD

- Loss/decrease of sense of smell
- Depression/Anxiety
- REM Behavior d/o
- GI problems symptoms

Manifest several years before the classic motor symptoms!

Why Understanding Non-Motor Symptoms Is Important

- People with PD, spouses, family and caregivers are many times not aware of these "invisible" non-motor symptoms of PD which can make it difficult to understand:
 - Why don't I have the energy I used to?
 - Why do I have a lack of motivation to participate in activities?
 - Why do my movements and speech feel normal to me when others say I am walking slower or speaking more softly?

Overview of Nonmotor Symptoms in PD

<ul style="list-style-type: none"> • Depression <ul style="list-style-type: none"> – Can precede motor symptoms – may contribute to dementia • Loss of higher cognitive functions <ul style="list-style-type: none"> – Shifting cognitive set – Slow thinking – Retrieval – Self-cueing – Sustaining attention • Dementia <ul style="list-style-type: none"> – 30% – occurs 6.6X as frequently than in elderly non-PD – shortens survival 	<ul style="list-style-type: none"> • Autonomic abnormalities <ul style="list-style-type: none"> – (hypotension, bowel/bladder, sexual, blurry vision, short of breath) • Sensory changes <ul style="list-style-type: none"> – Pain, tingling, burning – Generalized decreased kinesthetic awareness <ul style="list-style-type: none"> • Self-perception/monitoring • Sleep Disorders • Emotional Changes <ul style="list-style-type: none"> – Anxiety – Apathy • Psychosis and Hallucinations
---	---

16

Neuropsychological

Depression: 50%

- may contribute to dementia
 - Loss of joy in interacting
 - Feelings of isolation and loss of self-efficacy

Anxiety: 40%.

Dementia: 30%

- Dementia rate is increased 4–6 times as compared to those w/o PD

Apathy:

- 40% in those w/o dementia; can be predictive of developing dementia

www.parkinson.org and www.PDF.org (now the PF)
 Menza M, et al. *Neurology*. 2009 March 10; 72(10): 886–892.
 Pontone GM, et al. *Mov Disord*. 2009 July 15; 24(9): 1333-1338.
 Starkstein SE, et al. *J Neuropsychiatry* 1992;4:134–9

Consequences of Emotional - Motivational Deficits

- Exhibit reduced “vigor”
- Implicitly choose smaller/slower movements and a softer voice
- Lose of self-efficacy
- Default to low energy despite greater capacity
- Perceptual cost/reward mismatch
- Decreased desire to start or participate in conversations or activities
- Loss of joy in interacting

Cognitive Changes

- ↓ **Executive functioning**
 - *Identify problem*
 - *Planning course of action*
 - *Initiate action*
 - *Evaluate self*
- Bradyphrenia -- slower thinking
- ↓ Attention (sustaining, shifting or selecting)
- ↑ Distractibility & ↓ Concentration
- ↓ Short Term Memory Retrieval
- ↓ Multitasking ability
- ↓ Organizational ability
- ↓ Set shifting
- ↓ Internal Cueing

Loss of Higher Cognitive Function in PD

– Slower thinking may result in slower response time to questions and movement

- Patients often are frustrated when people do not wait for them to respond

DUAL tasking and Motor planning are more difficult

e.g. The steps involved in motor planning for daily tasks

Language challenges

- Delayed word retrieval
- Difficulty shifting communication topics
- Difficulty initiating and expanding upon language
- Cognitive-communication difficulties

20

Difficulties with Internally Cueing Movements

- PD results in disruption of internal cue or trigger for movement
- Patients do not self-initiate
 - impaired go/no-go signal

Jahanshahi et al., 1995; Sapir et al, in press

Pain/Parasthesia



Two types of pain:

- **Nociceptive** (40-90%)
 - musculoskeletal (abnormal posture, rigidity, dystonia)
 - visceral (from constipation)
- **Neuropathic**
 - radicular (disc damage due to kyphosis and falls) 14-34%
 - central Parkinson's pain (pain directly related to PD) – rare 4-10%, described as a burning, cramping sensation, commonly on the PD-dominant side

Pain is frequently under-recognized and often inadequately managed

Ha AD, Jankovic J. *Mov Disord.* 2012 Apr;27(4):485-91.
 Truini A, Frontoni M, Cruccu G. *J Neurol.* 2013 January; 260(1): 330-334.

Reduced Kinesthetic Awareness:

- Reduced amplitude of gross and fine motor movements
- Deny or underrecognize reduction in amplitude of movement, changes in posture or softer speech
- Stimulate to increase amplitude of movement, voice/speech or change posture

I feel like I'm moving too big or talking too loud.

Other Non-Motor Symptoms which Impact Mobility

- Urinary Frequency/Incontinence/Nocturia → difficulty with OOB & rushing to the bathroom → falls
- Orthostatic hypotension → fear of activity, falls
- Drooling → social withdraw & dec. activity
- Apathy → low motivation to be active and social
- Sleep disturbances → fatigue, low energy
- Hallucinations/delusions → fear, avoidance, arguments, behavior changes

Non-Motor Symptms significantly impact QOL

Prakash KM, et al. *Eur J Neurol.* 2016 May;23(5):854-60.

Summary of how Non-Motor Symptoms affect Movement and Voice/Speech

SENSORY MOTOR DEFICITS

Reduced activation for internally generated movements
Sensory proprioceptive processing problems
Perceptual sensory-motor mismatch

COGNITIVE – EXECUTIVE FUNCTION AND ATTENTIONAL DEFICITS

Inadequate preparation for movement
Difficulty changing strategies quickly/divided attention; adapting to environmental conditions

EMOTIONAL – MOTIVATIONAL DEFICITS

Reduced “vigor”, implicitly choose small/slow movements, loss of self-efficacy; default to low energy despite greater capacity, Perceptual cost/reward mismatch

Why does it matter?

- They are all barriers to better function!
- They are part of the reason a high intensity, high frequency of visits and repetition are needed in treatment programs to improve function.
- By NOT properly integrating “treatment” of the non-motor symptoms, treatment of the motor disorder will fail or results will be short lived

How do LSVT Programs address these non-motor symptoms?

LSVT Programs

Administered in an intensive manner to **challenge the impaired** system.

Techniques specific to PD-specific deficits!
bradykinesia/hypokinesia
and
kinesthetic awareness
(sensory deficit)
Subtle neuropsychological deficits

LSVT Programs

One of the distinguishing features of LSVT programs is that they intentionally and specifically address these Non-Motor Symptoms.

Many other exercise and therapy programs do not recognize the significant problem with kinesthetic awareness, which is a barrier to calibration, and thus they do not address it in treatment.

LSVT Includes Key Treatment Principles that Drive Activity-Dependent Neuroplasticity

- Intensity - across and within treatment sessions
- Repetition – increased number of repetitions of exercises and tasks
- Complexity – increasing difficulty of exercises and tasks as treatment progresses, including dual tasking
- Salience – individualize functional and long-term goals to be meaningful to each person
- Specificity – train the deficit you want to improve

LSVT Physical, Occupational and Speech Therapists Work Together to Address Non-Motor Symptoms: One Common Goal



Improve Quality of Life for People with PD

Our work – LSVT Protocols: based on 25 years of federally funded research and clinical experience

- **LSVT LOUD is a speech therapy**
 - Delivered by LSVT LOUD Certified Speech-Language Pathologists
- **LSVT BIG is a physical/occupational therapy**
 - Delivered by LSVT BIG Certified Physical or Occupational Therapists

LSVT Protocols

- Structured, evidence-based, rehabilitative treatment protocols developed specifically for PD
- Adhere to principles of motor learning and activity dependent neuroplasticity
 - Intensive and challenging EXERCISE, specific to the unique features of PD
 - Personalized and specific functional training of voice, mobility and activities of daily living

LSVT LOUD and LSVT BIG are SEPARATE protocols

Each protocol consists of:

Treatment delivered 4 consecutive days a week for 4 weeks (16 sessions in one month's time)

One hour, individual therapy sessions

Daily homework practice and daily carryover exercises (all 30 days of the month)

Develop a life-long habit of continuous practice

LSVT BIG and LSVT LOUD

Goal for People with PD

You will use your louder voice and bigger movements habitually in everyday living.

Your louder voice and bigger movements will last over time.

Emotional Changes (Apathy, Lack of Motivation):
How LSVT Programs Enable Success

- Therapists encourage energetic participation which results in increased "vigor" and motivation
- Goals are personalized for each person – you will see the impact on your daily life
- Therapists understand you may have a "bad day" – but we show you how much you can do even when you don't feel your best

Emotional Changes (Apathy, Lack of Motivation):
How LSVT Programs Enable Success

Therapies Enhance Self Efficacy:
People achieve success – results
in enhanced self-motivation and
confidence that they can succeed
and achieve!

Guiding Principle: Empower People with PD

Changes in Thinking: How LSVT
Programs Enable Success

- Single focus in treatment (LOUD or BIG)
- Repetitive training (essential)
- Use of modeling (Do what I Do) versus verbal explanations
- Alter treatment environment if necessary
- Therapies gradually increase in complexity to enable success

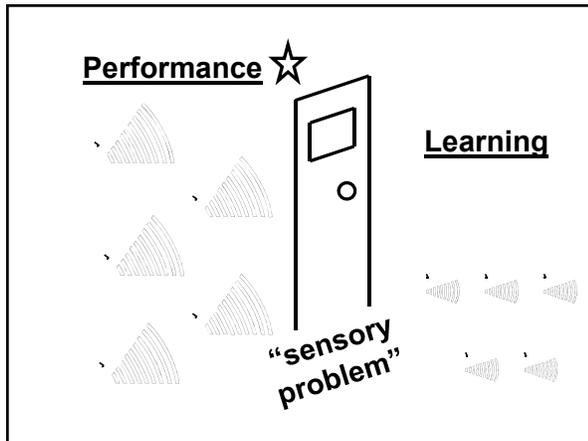
Changes in Thinking: How LSVT
Programs Enable Success

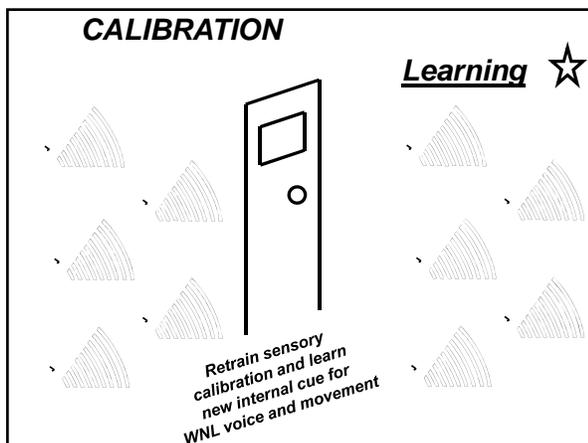
Include tasks that require more thinking or
doing two things at once to help people know
how to handle this in everyday situations

- Practice talking LOUD while pulling money out of a wallet
- Practice walking with BIG movement while talking
- Practice BIG movements to sort/shuffle cards while explaining a game
- Practice impromptu conversation in a noisy background

Sensory Kinesthetic Changes: How LSVT Programs Enable Success

- Re-education of the sensorimotor system
- Retrain internal cue for increased amplitude:
 - Individuals are able to achieve normal loudness voice and normal movement independently.





Sensory Kinesthetic Changes: How LSVT Programs Enable Success

- Provide consistent feedback to re-train the system:
 - *“Feel the effort, hear the loudness. That is the effort and loudness I want you to use when you talk to your friend at the ball game tonight”.*
 - *“That looked great! THAT is the amount of effort you will need to give to clear your foot as you get into the car every single time.”*

How Can Care Partners Help?

- Understanding and Encouragement
- Imagine if you felt like your feet were stuck in the mud or that you were yelling every time you talk – everything takes more effort
- Acknowledge the effort of your loved one, motivate with positive feedback when see them talking louder, moving bigger

How Can Care Partners Help?

- Continue to motivate and help with Home Exercise Program after treatment in an encouraging way – do exercises together!
 - Maintenance tools: Tune-ups, Homework Helper DVD, BIG for LIFE and LOUD for LIFE
- Understand that reluctance to participate is not stubbornness, but can be impacted by these non-motor symptoms – empower your loved one, show them how they can!

Further Education on Non-Motor Symptoms

- <http://www.parkinson.org/Understanding-Parkinsons/Non-Motor-Symptoms>
- <https://www.michaeljfox.org/understanding-parkinsons/living-with-pd/topic.php?non-motor-symptoms>
- <https://www.davisphinneyfoundation.org/parkinsons-101/non-motor-symptoms/>

Summary

- All PWPD have sensory deficits and these must be addressed for improved speech, movement, and quality of life.
- Patients with PD can improve and LSVT Programs can help.

Further Learning Opportunities

- Webinars for Certified Clinicians
 - “On Demand” & Live Options
 - www.lsvtglobal.com -> Clinician Account -> Webinars
- LSVT BIG Topical Office Hours
- Public Webinars
- LSVT BIG Homework Helper DVD – Adapted version
- “Ask the Expert” Questions - info@lsvtglobal.com
- NEW! BIG for LIFE®
- Stop by our booth at CSM in New Orleans – Feb 2018

How to ask questions **LIVE**:

1. Type in the question box on your control panel
2. Raise your hand (click on the hand icon in your control panel)
 - Your name will be called out
 - Your mic will be unmuted, then ask your question out loud
3. Email info@lsvtglobal.com if you think of questions later

Thank you!



info@lsvtglobal.com

Please complete the survey that will launch when you close the program.
It will take five minutes or less to complete!

LSVT LOUD Treatment Session Summary

Daily Exercises

1. Maximum Duration of Sustained Vowel Phonation (Long Ahs) – 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 reading – multiple reps, 20+ min.
Off the cuff – bridge the gap to conversation
Build complexity across 4 weeks of treatment towards your long-term communication goal

Homework

Includes all daily exercises and hierarchy exercises
Assigned all 30 days

Carryover Exercises

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

LSVT BIG Treatment Session

Maximal Daily Exercises

1. Floor to Ceiling – 8 reps
2. Side to Side – 8 each side
3. Forward step – 8 each side
4. Sideways step – 8 each side
5. Backward step – 8 each side
6. Forward Rock and Reach – 10 each side (working up to 20)
7. Sideways Rock and Reach – 10 each side (working up to 20)

Functional Component Tasks

5 EVERYDAY TASKS– 5 reps each

For example:

- Sit-to-Stand
- Pulling keys out of pocket
- Opening cell phone (flip phone)

Hierarchy Tasks

Patient identified tasks:

- Getting out of bed
- Playing golf
- In and out of a car

Build complexity across 4 weeks of treatment towards long-term goal

BIG Walking

Distance/time may vary
