



Public Webinar Series

Title: Newly Diagnosed with Parkinson Disease: “I’m doing well; why do I need therapy?”

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Heather Cianci, PT, MS, GCS
Jessica Galgano, PhD, CCC-SLP

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**LSVT LOUD® and
LSVT BIG® Webinar:**
Newly Diagnosed with Parkinson Disease:
“I’m doing well; why do I need therapy?”



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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 a treatment technique.
- Financial Relationships include:

All of the LSVT Faculty receive consulting fees, lecture honorarium and travel reimbursement from LSVT Global, Inc.

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Plan for Webinar

Logistics

Brief Introduction

Review and discuss use of LSVT LOUD and LSVT BIG with people who are newly diagnosed with Parkinson’s disease

Learning Outcomes

After finishing this webinar, participants will be able to:

1. Summarize common mobility and voice/speech swallowing issues facing individuals with Early PD.
2. List how early therapy intervention helps with brain change in positive ways.
3. List how early therapy leads to better mobility, speech, and quality of life.
4. Describe how LSVT LOUD and LSVT BIG can help individuals with Early PD.

Instructor Biographies

Heather Cianci, PT, MS, GCS

Ms. Cianci is the founding therapist of the Dan Aaron Parkinson’s Rehab Center (a Good Shepherd Penn Partners facility) at Pennsylvania Hospital in Philadelphia, PA. She received her bachelor’s in PT from the University of Scranton in Scranton, PA and her master’s in gerontology from Saint Joseph’s University in Philadelphia. Heather received her GCS in 1999. She is certified in LSVT BIG and is a graduate of the NPF’s Allied Team Training for PD. She has written and lectured for both the NPF and PDF. Heather is also a board member for CurePSP, and the coordinator of their Medical Professionals Advisory Committee.

Jessica Galgano, Ph.D., CCC-SLP

Dr. Galgano received her doctoral degree in Biobehavioral Sciences from Columbia University in NYC. Dr. Galgano is the author of several research publications in the area of neurologic communication disorders and the neurophysiologic underpinnings of normal, aging, and pathologic voice production using neuroimaging techniques such as EEG and fMRI. She is a faculty instructor at NYU Langone School of Medicine and is the Executive Director of Open Lines Speech and Communication in NYC, where she provides LSVT LOUD and other types of therapy to adults and children with a wide variety of speech and language diagnosis. Dr. Galgano is an adjunct professor with NYU and Columbia University and is a faculty member and workshop leader for LSVT Global.

Rating Parkinson Disease Severity

Modified Hoehn and Yahr Scale

- STAGE 0 = No signs of disease.
STAGE 1 = Unilateral disease.
STAGE 1.5 = Unilateral plus axial involvement.
STAGE 2 = Bilateral disease, without impairment of balance.
STAGE 2.5 = Mild bilateral disease, with recovery on pull test.
STAGE 3 = Mild to moderate bilateral disease; some postural instability; physically independent.
STAGE 4 = Severe disability; still able to walk or stand unassisted.
STAGE 5 = Wheelchair bound or bedridden unless aided.

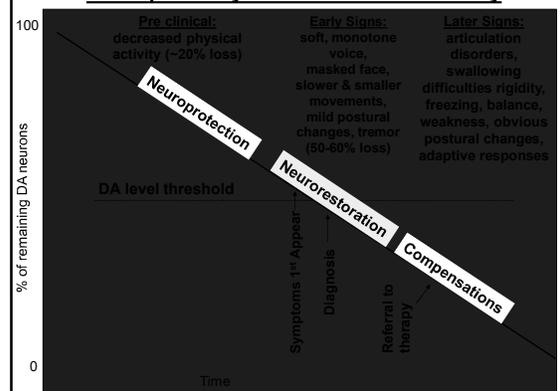
Goetz CG, Poewe W, Rascol O, et al. Movement Disorder Society Task Force report on the Hoehn and Yahr staging scale: status and recommendations. *Mov Disord.* 2004;19(9):1020-28.

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

- ❑ *Basic science evidence for the value of exercise in PD (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 disease progression*
- ❑ **Exercise is Medicine!**

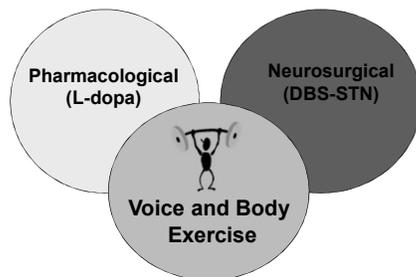
Kliem & Jones, 2008; Ludlow et al, 2008

Neuroplasticity Across Disease Severity



Legitimate Therapeutic Options

To provide symptomatic relief; improve function



Zigmond et al, 2009

Aerobic exercise leads to an enhanced brain-derived neurotrophic factor (BDNF) response & release

- BDNF is a protein that:
 - maintains the growth, health, and survival of nerve cells
 - promotes the growth and development of new nerve cells and connections
 - helps with memory formation, learning and behavior, and brain change
- This may lead to functional, cognitive, and mood improvements in humans

Zoladz JA and Pilic A. J Physiol Pharmacol. 2010 Oct;61(5):533-41.

What is Neuroplasticity?

- Initial Considerations: In the initial phase of neurodegeneration the most neurons are rapidly lost, but this is the time when treatment can make the most impact by preventing further degeneration & symptoms ***Get LSVT LOUD and LSVT BIG as early in your diagnosis as possible!
- Neuroplasticity = Changes in brain pathways and synapses due to changes in behavior (e.g., exercise), environment, neural processes, thinking, and emotions
- If “exercise plays a powerful enough mitigating/palliative role, it should be performed very early and aggressively, and ideally prophylactic years before the onset of this process.” (Foster PP, et al. *Front Neurol.* 2011; 2: 28)

Speech Characteristics in PD

*Reduced loudness
Hoarse voice quality
Monotone
Imprecise articulation
Vocal tremor*

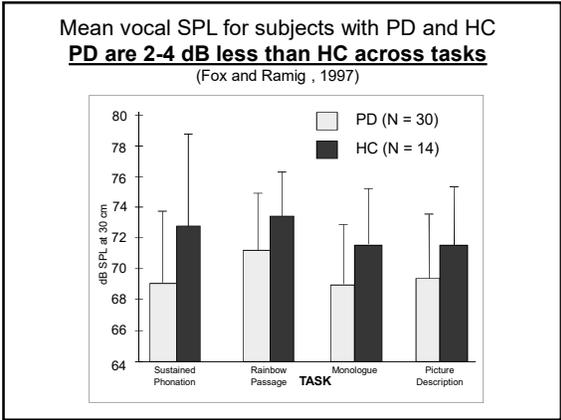
(Darley et al, 1969a; 1969b; 1975; Logemann et al, 1978)

Some patients report volume, hoarse voice or monotone as the first PD symptom

(Aronson, 1990)

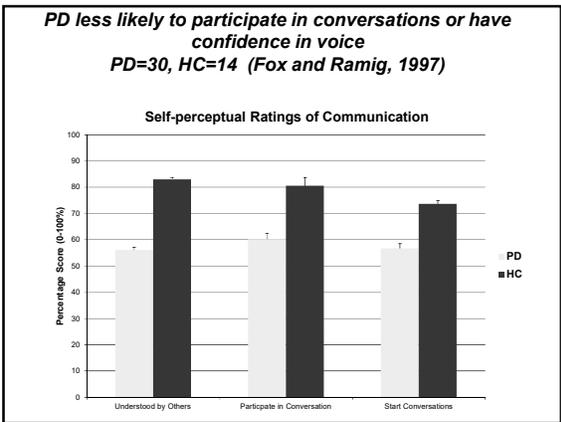
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(perceived as bored, disinterested, apathetic)



25+ year journey from invention to scale-up
Over 8 million dollars in NIH funding; Ramig-PI

- Phase I, II
 - 1987-89: Initial invention; Pilot data (Scottsdale)
 - 1989-91: Office of Education OE-NIDRR
- Phase III
 - 1991-94: OE-NIDRR
 - 1990-95: NIH funded RCT Efficacy
 - 1995-00: NIH funded EMG, Kinematics
 - 2002-07: NIH funded RCT Spread of effects
 - 2007-12: NIH funded RCT, imaging
- Phase IV, V
 - 2001-02: Coleman Institute (PDA; LSVTC)
 - 2002-04: NIH and M J FOX Foundation PDA (R21)
 - 2002-04: Coleman Institute (VT; LSVTVT)
 - 2004-06: NIH LSVTVT (R21)
 - 2004 : Coleman Institute (LSVT Down Syndrome)
 - 2004-07: LSVT –Dissemination
 - 2006: Technology-enhanced Clinician Training (SBIR)
 - 2009: ONLINE LSVT LOUD Workshop (Phinney grant)
 - 2010: Technology-enhanced LSVT LOUD delivery (SBIR)



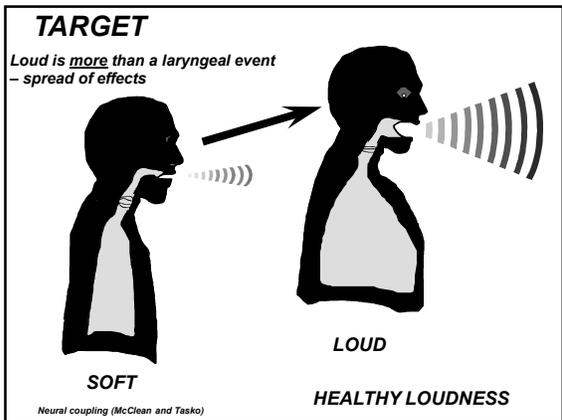
LSVT LOUD

Does this speech problem matter?

“if I have no voice, I have no life”
 -Natalie

“No one listens to me anymore”
 -Shirley

“... people with PD live for years frustrated by communication impairment, withdrawal, social isolation and embarrassment “
 (Miller et al., 2006)



MODE
Intensive High effort
Intensive dosage and within sessions

High effort
 Repetitions
 Force/resistance
 Accuracy
 Fatigue



What do data say?
 Intensive practice is important for maximal plasticity
 (Kliem & Jones, 2008)

What are the LSVT LOUD exercises?

Daily tasks
 First half of treatment session
 Rescale amplitude of motor output through CORE Loud

- ❑ Sustained “ah” (minimum 15 reps)
- ❑ High/Low “ah” (minimum 15 reps)
- ❑ Functional phrases (minimum 50 reps)

Hierarchical speech tasks
 Second half of session
 Train amplitude from CORE exercises into in context specific and variable speaking activities

- ❑ Week 1 – words, phrases
- ❑ Week 2 – sentences
- ❑ Week 3 – reading
- ❑ Week 4 - conversation

↑ Shorter, simple
 ↓ Longer, more complex

CALIBRATION

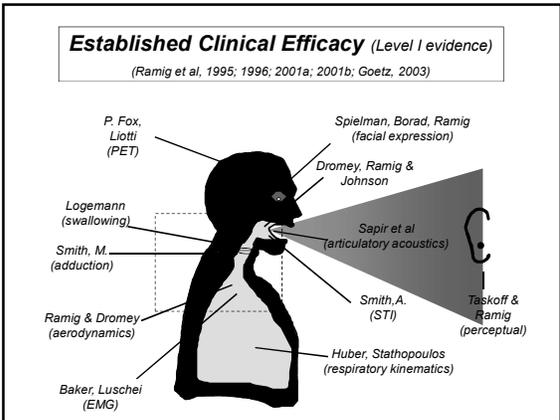
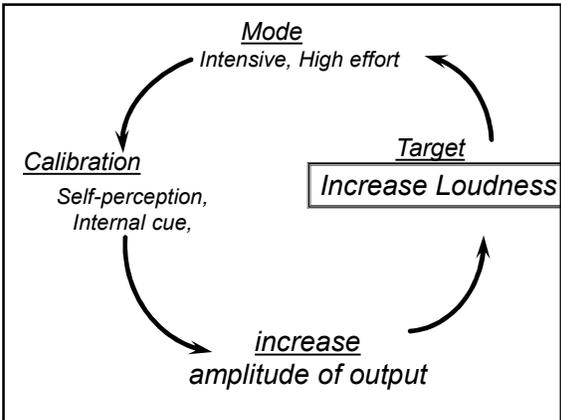
- ❑ *MISMATCH* between on-line perception of output and how others perceive it

*“I’m not too soft”
 “I can’t speak like this,
 I am shouting!!”*

Fox et al, 2002; Sapir et al, 2011

LSVT LOUD Outcomes

Efficacy data



Early, Intensive Exercise in PD

"Functional ability remained stable in the exercise group, but decreased in the control group..."

Participation in an aerobic exercise program can result in gains in cardiorespiratory fitness and habitual activity levels, improving mood while maintaining functional ability...

Such relationships highlight the importance of minimizing the signs of the disease and maintaining functional activity as a preliminary step to minimizing the cardiorespiratory complications common to PD" (Bridgewater, K. J., & Sharpe, M. H., 1998)

"The findings suggest the dose-dependent benefits of exercise and that high-intensity exercise can normalize corticomotor excitability in early PD" (Fisher, B. E., Wu, A. D., Salem, G. J., Song, J., Lin, C. H. J., Yp, J., ... & Petzinger, G. 2008)

"People with PD can engage in very high levels of exercise intensity and show improvement in both measures of brain and behavior as the result of high-intensity exercise" (Fisher, B. E., Wu, A. D., Salem, G. J., Song, J., Lin, C. H. J., Yp, J., ... & Petzinger, G., 2008)

World Parkinson Congress Scientific Update

Exercise: What do we know about how it impacts Parkinson's?

Originally presented on October 7, 2015, Session IV
Richard Smeyne, Giselle Petzinger, Gammon Earhart

- Optimize on medications 1st and then exercise: treatment should be 50/50 split of medications/exercise
- Exercise should be aerobic:
 - ✓ This increases blood flow – this changes the environment of the brain and allows for change to occur
- Exercise should be skill-based
- Variety of exercise is important

Early, Intensive Exercise in PWP

40 newly dx PWP followed for 2 years:

- Group 1 – Rasagiline (Azilect) & intensive exercise
 - two 28-day multidisciplinary intensive rehabilitation treatments (at 1 year intervals)
- Group 2 – rasagiline

Assessed at baseline, 6 mths., 1 yr., 18 mths., & 2 yrs.

- UPDRS II & III, 6 Minute Walk Test, Timed Up & Go, PD Disability Scale, & the need for more meds

Results:

- ✓ Medication group only – made no changes... & they needed more meds
- ✓ Medication & Exercise group - improved in all measures and needed less medication

Frazzitta G, et al. *Neurorehabil Neural Repair*. 2014 Jul 18.

Provides **HOPE** for the person with PD that intensive continuous exercise with optimal medications may slow motor deterioration and extend quality of life.

...and POSSIBLY slow disease progression

Exercise-induced neuroplasticity in human PD: What is the evidence telling us?

- High-intensity TM = increased corticomotor excitability (low excitability is a marker for PD severity)
- Increases in dopamine D2 receptor density
- Volumetric changes in brain grey matter (grey matter contains most of the brain's nerve cell bodies – it includes regions of the brain involved in muscle control and sensory perception, among others)
- BDNF and GDNF (Glia cell line-derived neurotrophic factor) increases

Hirsch MA, et al. *Parkinsonism Relat Disord*. 2015 Sep 15.

LSVT BIG Treatment Session

Maximal Daily Exercises

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

Functional Component Tasks

5 EVERYDAY TASKS– 5 reps each

For example:

- Sit-to-Stand
- Pulling keys out of pocket
- Typing

Walking BIG

Distance/time may vary

Hierarchy Tasks

Patient identified tasks:

- Getting on/off bus
- Hiking
- Setting up work station

Carryover Task Assigned

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)



Progressing Intensity – Keep it Challenging!

- Increase repetitions & hold time
- LOUD counting
- Add resistance
 - Weights on ankles and/or wrists
- Increase speed requirements – less set time or time between reps
- Add flicks
- Combine motor & cognitive dual tasks...multi-task
- With distraction – busy gym, music,

But...KEEPING IT BIG ALWAYS!

Advancing
Rock & Reach



LSVT BIG Treatment Sessions
should never be EASY or BORING!

They should always BE BIG!

Your therapist should Be
CREATIVE

to maximally challenge you in order
to DRIVE neuroplasticity.

Advancing
Sideways
Rock & Reach



Mental Sticky Notes- Think BIG!!!



Functional Component Tasks

5 EVERYDAY TASKS - 5 reps each

1 is ALWAYS Sit-to-Stand

- Personalized to each person
- **SIMPLE** movement
- **Over-learn** familiar, commonly used, and important **everyday** movements and bring amplitude rescaling into everyday living

Example for 44 y/o woman:

1. Pulling item out of purse
2. Writing signature
3. Reaching for seatbelt
4. Turning bra around

Example for 65 y/o man:

1. Pulling wallet out of pocket
2. Removing backpack
3. Using swipe card on bus
4. Pulling chair out from desk

Hierarchy Tasks

- Complex multi-step functional activities
- Identified through discussion on patient specific goals
- Can select from 1-3 tasks

Example for 65 y/o male:

1. Take backpack down from locker, place laptop inside, put on backpack and walk out of his office.
2. Walk in to conference room, get in and out of chair at table, and be able to write on board with marker.

Example for 40 y/o woman:

1. Opening trunk, taking out grocery bags, opening door, getting in to the house and placing bags in to the kitchen.
2. Walking on dock and getting in to and out of boat.

Advancing
FCM -
Handwriting



Summary Slide

- LSVT LOUD and LSVT BIG are applicable to all stages of PD and can be customized to each patient's needs and treatment settings
- LSVT LOUD and LSVT BIG increase independence, quality of life, and safety with ADLs
- Restore Function! Improve Function! Maintain Function!
- Young onset PD carries unique challenges requiring creative solutions

Walking BIG

- It isn't just up and down the hall
- It's turns, stops, starts, backing up, climbing stairs, stepping over things, turning your head, crossing the street...



Further Information and Resources

- Webinars-Clinician and PD Community
- FAQs
- "Ask the Expert"- info@lsvtglobal.com
- LSVT LOUD and LSVT BIG Homework Helper DVDs
 - Available Now! Translated into German!
- LSVT LOUD Companion System
 - Great for ongoing home practice!

Current and Future Developments

- LOUD for LIFE™
- BIG for LIFE™

- Research grants for treatment research (two \$1500 grants)

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 (as per video demonstration)
- DVDs available to introduce you to voice exercises used in LSVT LOUD and movement exercises used in LSVT BIG: www.lsvtglobal.com/products or www.amazon.com/shops/LSVTGlobal

QUESTIONS??



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