Management of Individuals with Parkinson’s Disease Using Principles of LSVT® Big Therapy

Iowa Physical Therapy Association Student Conclave – Saturday April 20, 2013
Presented by Michael Puthoff, PT, PhD, GCS
puthoffmichaell@sau.edu
563-333-6009

Objectives:
1. Describe the principles of LSVT Big Therapy.
2. Describe the exercises typically used in the a session of LSVT Big Therapy.
3. Select outcome measures that are reliable, valid and responsive for individuals with PD.
4. Identify individuals who may be appropriate for LSVT Big Therapy.
5. List other interventions beyond LSVT Big Therapy that have demonstrated effectiveness for individuals with PD.

Interactive Questions Platform
Instructions: Go to the website www.PollEv.com/puthoff and be prepared to respond to some questions during the presentation. You will also be able to respond to the questions through text messaging.

LSVT Global
- Corporation with a vision for serving the growing global population who require innovative speech therapy processes to communicate successfully
- Pioneer the Lee Silverman Voice Treatment (LSVT). Technique to improve voice and speech in individuals with Parkinson’s disease.
- Have evolved to training PT and OT to work on movement disorders in individuals with PD
- Application of techniques to other populations.

Loud Therapy
- Addresses soft monotone voice and inaccurate self-perception of voice volume
- Five concepts of LOUD
  - Focus on voice – Increase amplitude of movement/increase vocal loudness
  - Improve sensory perception of effort – calibration of effort
  - Administer treatment in a high effort style
  - High Intensity – 4 times a week for 16 sessions
  - Quantify treatment related changes
- Through self-monitoring, facilitate acceptance and comfort with increased loudness
- Use of homework and carryover tasks to further push generalization of gains
BIG Therapy

- Based on principles of exercise induced neuroplasticity
- Intensive **amplitude** based exercise program for the limb motor system.
- Focus on carry over to daily activities
- Build upon principles of LSVT Loud.
- Use of a standardized exercise protocol
  - 4 days a week, 1 hour sessions, 4 weeks
  - Big movements throughout
  - High effort

Principles of BIG Therapy

Amplitude First

- Focus on big movements. If patient focuses on big movements, will produce fast movements.
- Don’t dwell on mechanics, single of big
- Largest range of motion that can be performed with the highest effort with the most maximally efficient biomechanics every trial, every day.

Sensory Retraining/Calibration

- Give feedback throughout session that will carry over into everyday life.
- Calibration is at heart of BIG Therapy
  - “How did that feel”
  - “Did that feel BIG”
- When patients talk/walk small, they think they are speaking/walking with a normal voice. When they are forced to talk/walk big, they think they are shouting/running.
- Retrain sensory perception, establish new association between effort and normal movement
- Assure patient that they are not moving “too big”
- By end of BIG, patients should be able to self-regulate their movements and move big without cues.

High Intensity Exercise Program

- Focused on large whole body movements with active stretching
- Want exercises to carry into bigger/faster movements in everyday life.
- Relation to Principles of neuroplasticity
  - Forced use
  - Intensive practice
  - Repetition
  - Complexity/Challenging
  - Feedback/motivation
- Effort should be at a 7-8/10 during exercises
Empowering
- Encourage the patient to think about what they are feeling.
- Encourage others to provide patient with feedback
- Look for changes in daily activities and movements
- Self calibration – Patient should feel like they are moving too big. If they don’t feel like they are moving too big, not moving big enough.

Overview of BIG Therapy

Maximal Daily Exercises
- Targeted big efforts designed for retraining sensory system and to learn movements
- Work to shape optimize alignment, but not focuses on perfection
- Over learn familiar, commonly used, salient everyday movement
- Encourage compliance and carryover
- Benefits for balance, strength and endurance

Functional Tasks
- Chose three to five functional activities in which the person wants to make improvements in
- Apply principles of BIG Therapy to functional tasks
  - Rolling
  - Supine to sit
  - Sit to stand
  - Sit and reach
  - Stand and reach
  - Using cell phone
  - Pulling keys out of pocket
  - Turning quickly

Walking BIG
- Working on gait and sustaining BIG walking
- Distance, time, and complexity will vary, but should be progressive
- Apply principles of BIG during the walking

Hierarchy Tasks
- Bring big movements into function
- Based on personal and real life design
  - Out of bed and walk to the bathroom
  - Golf
  - Going to Church
  - Gardening

Homework
- Do program on a daily basis
- Never finish BIG Therapy, have to continue with exercises
Recalibration Session
- Return to therapy every 6-9 months to ensure big movements continue and progression of functional tasks and hierarchy activities.

Application of LSVT Treatments
- Techniques, logos and names are trademarked. Need training to provide the intervention.
- LSVT BIG is LSVT BIG
- Use LSVT website to find trained therapists.
- Combination of LOUD and BIG interventions
- However, concepts presented are not unique to LSVT, can apply concepts to patients
- Treatment philosophies can be extended to other populations with small movements.
- BIG is just another tool in the toolbox, not right for everyone

Research Findings
*Farley BG, Koshland GF. Training BIG to move faster: the application of speed-amplitude relation as a rehabilitation strategy for people with Parkinson’s disease. Ex Brain Res. 2005.*

- 18 participants
  - Hoehn and Yahr Stage I = 6
  - Hoehn and Yahr Stage II = 7
  - Hoehn and Yahr Stage III = 5
- All the subjects received 16 individual 1 hour sessions (4 times a week, 4 weeks).
- Participants showed significant improvements in the following areas.
  - Improvements in reaching speed
  - Improvements in comfortable walking velocity and stride length.
  - Biggest improvements in participants in early stages of PD.


- 60 participants, Hoehn & Yahr stages I-III
- Randomly allocated to LSVT BIG, Nordic walking, or home exercise program
- Results
  - BIG Therapy group made greater improvements in UPDRS and TUG than other two groups.
  - Trend towards greater improvements in gait speed for BIG Therapy group, but not significant.
Additional Resources
LSVT Global Website - http://www.lsvtglobal.com/
- Descriptions
- Find a Clinician
- LSVT Loud
- Patient Videos

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3316992/