A Whole Body Approach To Strengthening Voice For Persons With Parkinson’s and Related Diseases

Mary Spremulli, MA,CCC-SLP

Disclosure statement:

To comply with professional boards/associations standards:
I declare that I am president of Voice Aerobics, LLC with a commercial interest in products or services discussed in my presentation.

All Planner’s involved do not have any financial relationship.

Current accreditation status does not imply endorsement of any commercial products displayed in conjunction with this activity

Parkinson’s Disease
An Overview For Speech-Language Pathologists

Part II: Swallowing, Speech and Voice symptoms and their management.

Part III: Voice Aerobics™ a whole body approach to strengthening voice.

Mary Spremulli, MA,CCC-SLP

Part I
Motor Symptoms of Parkinson’s Disease
An Overview For Speech-Language Pathologists With Emphasis On Facilitating Movement During Functional Activities Including Voice Practice

Mary Spremulli, MA,CCC-SLP

Parkinson’s Disease
One Disease...Many Faces
“Dignity and autonomy.”

“Keep these two as your aspirations in all your dealings with PD. What maximizes them elevates you.”

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Parkinson’s and Your Voice: The essence of you
voiceaerobicsdvd.blogspot.com/2011

Learning Objectives Part I:

- Review the underlying pathology that creates movement changes in Idiopathic Parkinson’s Disease (PD).
- List effects of loss of dopamine on gross and fine motor movement.
- Discuss motor fluctuations that result from Parkinson’s medications and list non-pharmacological interventions the SLP can implement with patients and care partners.
- Identify movement (cueing) strategies that can help the person with Parkinson’s (PWP) improve their movement patterns during everyday activities.

Loss Of Dopamine And Basal Ganglia Dysfunction Result In:

- Impaired performance of well-learned motor skills and movement sequences.
- Problems maintaining amplitude of movement.
- Difficulty with dual tasking.
- Difficulty shifting motor and cognitive sets.
- Perseveration in thought and action.

Lower Dopamine Levels In Parkinson’s:

- Affects the ability to maintain upright stance and prepare the body for movement.
- Impaired visual tracking.
- Impaired sensory processes.
- Sensory mismatch between how they move and how movements feel.
- Dyskinesias: side effects of dopamine replacement medications.
Major Motor Deficits In PD

Tremor
- Usually occurs during resting, but can happen during movement or in holding against gravity.
- Voicing tasks, such as “loud ah” may cause overflow of movement and increased tremor.
  Strategies
- Hold something in hand.
  - Toss a ball and catch it, twirl a pen
  - Meditation and stress reduction.
  - Tai chi, yoga, and mind body training
- DBS may be considered for severe tremor

Major Motor Deficits In PD

Rigidity
- May be influenced by medication schedule.
  - May begin in one limb and on one side of the body, eventually affecting trunk and both sides.
  - Predominant in flexor muscles of the trunk and limbs, leading to stooped “Parkinson’s posture”.
  - Affect on respiratory muscle with changes to phonation and timing of respiration and swallowing.
  - May interfere with independently performing ADL’s
  Strategies
- Incorporating upper body stretching with vocal function exercise.
  - Incorporating yoga poses for balance or Tai chi movements with phonation exercises.
  - Incorporating movements associated with activities of daily living into voice practice.
  - Respiratory muscle training and respiratory support exercise.
  - Postural reminders.

Major Motor Deficits In PD

Bradykinesia
( Slow Movements )
- May be influenced by medication schedule.
  - Failure to make preparatory movements with the trunk and proximal limbs.
Posture not adapting to changing environment.
May cause difficulty with self care activities.

Cueing Strategies
- Replace automatic processing with conscious effort.
- Avoid dual tasking.
- Break down complex movements into discrete sequences.
- Mental rehearsal
- Verbal instructions, including self-cueing.

Cueing Strategies: Approaching the Chair and Standing From The Chair In Therapy
Preparatory Sets
- Teach to break down the task into small components.
  - Look beyond the chair to a visual target. Count out loud the steps to reach the chair.
  - Align with the seat of the chair before sitting. Slide forward and position feet before standing.

Cueing Strategies
- Sit to stand: reach for the $20 bill.

Source: Parkinson’s Disease and Activities of Daily Living. John Argue assisted by Jeanne Csuy, PT

Managing Motor Deficits In PD
- Self-vocalization of a positive reinforcing word (‘yaah’), enabled people with Parkinson’s disease to perform a daily upper extremity task faster and more smoothly.

Enhancement of reaching performance via self-speech in people with Parkinson’s disease. Dept. of Occupational Therapy, College of Health Science Campus, Toledo, Ohio
- Voice Aerobics™ couples voice practice with movement for increased opportunity for repetition. Voice may serve as a self cue for the movements.

Managing Motor Deficits In PD
Inadequate Levels of Muscle Activation Yield:
- Festination: difficulty terminating a sequence or breaking a movement resulting in uncontrolled walking speed. (speech and hand writing also affected).
• **Retropulsion:** loss of balance backwards.

• **Freezing:** difficulty starting or sudden cessation of movement.

• External cueing strategies should be used by ALL staff.

• **Visual:** strips of white tape on the floor or doorways. Colored targets at eye level. Cue cards for functional tasks.

• **Auditory:** metronome, musical beats, finger tapping, clapping.

• **Proprioceptive:** Rocking side to side or back and forth.

**Cognitive Constraints**

• The inability to simultaneously carry out a cognitive task and a balance or walking task has been found to be a predictor of falls in elderly people.

• The basal ganglia is responsible for allowing automatic control of balance and gait for switching attention between tasks.

**Motor Symptoms In PD: Difficulty Walking**

**What Is Happening That Changes Posture?**

• Head forward (head normally over hips and hips over feet.)

• Hips and knees bent (hips normally extended)

• Walking on the front of the feet (normal stride 2.0-2.5 ft.)

**What Is Happening That Changes Posture and Walking?**

• Rigidity

• Stiffness and inability to relax the muscles

• Coordinated movement requires firing and non firing of muscles

• Flexed posture and forward weight shift causes firing of muscles of ankles and feet (reduces the step length)

• Hips and knees are bent (increases the amount of energy needed to move)
Tight shoulder muscles (reduces the ability for arm swing)

“Freezing”

Common Situations
- Approaching a doorway
- Approaching a sitting surface
- Walking in narrow hallways
- Being confined in a narrow space such as a bathroom stall
- Sudden obstructions
- Turning
- Over fatigue or stressful situations

Strategies
- Stop trying to complete the activity
- Change direction
- Count out loud or silently and move to the count
- Use a sound or rhythm to stimulate movement
- Visualize an object than lift your foot to step over

The “Parkinsonian Face”

Facial expression part of our human “glue”
- Facial expression signals attention, connection, and friendliness.
- PWP has reduced coordination of facial muscles, less dynamic and less spontaneous.
- Facial masking reduces the strength of the personal signal.

May result in stigma or reduced social bonding

The “Parkinsonian Face”

Hypomimia
May be interpreted as:
- Hostility
- Apathy
- Loss of interest
- Demented
- Unfriendly
- Depressed

Can we activate the face?

Medical management of depression

Can we activate the face?

Enjoyment is important to facial expression

- More activity and social connections yields more facial expression
• Gestures may emphasize expression (Tickle, PhD, OTR/L Strategies For Living Behind The Mask, 2010)

• Facial expression increases when talking about enjoyable things. (Takahashi, 2010)

Visual and Auditory Cues Increase Movement

*Parkinson’s Disease

One Disease... Many Faces

• “One must dance with PD rather than wrestle with it.”
• “This is the difference between living with and running from the disease.”

Questions:

Part II

Speech and Swallowing Symptoms in Parkinson’s Disease
An Overview For Speech-Language Pathologists

Mary Spremulli, MA, CCC-SLP

*Parkinson’s Disease

One Disease... Many Faces

• “Let no day go by without looking for some small joy.”
• “When PD takes all pleasure, it has also taken your spirit.”

Learning Objectives Part II:
• Describe voice, speech, and swallowing problems associated with Parkinson’s disease.

• Describe patient characteristics and self-perception of speech and voice changes.

• Demonstrate the use of auditory masking as a method to assess stimulability and to elicit louder voice.

• Discuss swallowing problems and treatment methods for swallowing, which include respiratory muscle strength training.

• Discuss how home based programs can provide continuity in patient’s lives by helping them maintain functional abilities and reduce dependence on others.
How Prevalent The Problem?

As many as 90% of people with Parkinson’s (PD) will develop a speech and voice disorder.

As many as 95% of people with PD have a swallowing disorder.

Numerous studies have failed to find significant improvement in voice and speech functions with levadopa or dopamine agonists.

Speech therapy, when persons with PD are optimally medicated, has proven to be the most effective therapeutic method for improving voice and speech function.

How Prevalent Are Speech Disturbances in PD?

2012 Survey Parkinson’s Alliance and DBS-STN.org  Fall 2012

- 217 persons with DBS
  - Speech disturbance (96%) led the list of top 3 most common nonmotor symptoms
  - 94% of the younger DBS group reported speech problems, and reported socializing less due to speech difficulties.

- 419 without DBS
  - Speech disturbances ranked 90% in older persons (50 years or 70 and above)
  - Speech disturbances ranked 91% and among top 4 non-motor symptoms in persons with advanced PD (i.e. > 6 years duration)

Parkinson’s is “sneaky” lurking in the background changing the way muscles
work.

- PD diagnosis occurs when 70-80% of the neurons in the substantia nigra are gone.
- As cells die, dopamine levels in the basal ganglia drop.
- As dopamine levels drop, automatic movements become more difficult.

To protect dopamine cells, exercise should start as early as possible, yet, patients receive referrals to physical or speech therapy only 12-16% of the time.

Dopamine and Movement

- When dopamine levels drop, movements become slow (bradykinesia)
  - Incomplete (hypokinesia)
  - Not terminated (festination)
  - Sensory mismatch between how they move, how loud they talk, and how the movements feel.
  - Medication (dopamine) replacement may yield dyskinesias

Speech, Voice, And Swallowing Symptoms

May Include:

- Hypokinetic dysarthria
- Hypophonia
- Pressed speech or festination of speech
Vocal tremor

- Reduced lingual movements with lingual pumping.
- Reduced breath support due to rigidity of rib cage.

Non-Motor Symptoms and PD
(Parkinson’s Alliance Survey Spring 2012)

- Non-motor symptoms, including neuropsychiatric, autonomic, sensory, sleep and speech functions, are highly prevalent in PD.
- Non-motor symptoms may precede the manifestation of motor symptoms.
  - Top three most common symptoms for younger PD group (50 - 69 yrs): fatigue (93%), sleep disturbance (89%), and speech disturbance (85%)
  - Top three most common symptoms for the older PD group 70 yrs and older: fatigue (96%), speech disturbances (90%), and memory difficulties (86%)

Speech, Voice, And Swallowing Symptoms
May Include Cognitive-Linguistic Impairment:

- May have difficulty with turn taking.
- Difficulty following multiple topics of conversation.
- Difficulty attending to language formulation and some aspect of speech production.
- Reduced non-verbal communication may yield:
  1. Spouse/care partner talking for them
  2. Social withdrawal
  3. Altered relationships;
  4. Decreased interaction with health professional
  5. Altered self-image

A Patient Says: “I was just diagnosed with Parkinson’s and my doctor already wants me to have speech therapy. Why bother, my voice is not that bad?

Some patient characteristics:

1. Reluctant:
   - Unconcerned, resentful, unaware,
   - “it bothers other people”

   Pat, 62, “I’m not really bothered by my speech, apparently you are”

2. Remind Me:
   - Forgetful, dependent on others for motivation, schedules, exercise

   Larry, 70, PD, Lewy Body Dementia. Can’t remember exercise strategy from visit to visit. Spouse frustrated.

3. Reward Me:
   - Aware of problems, likes reinforcement, goal oriented, uses feedback tools.

   John 64, consultant, “I do a lot of speaking, my voice has softened.” I do slow down when my meds wear off.”

4. Remorseful:
Regrets affect of speech/voice on work and relationships

*Raymond, 66, “It cost me my job”*

*Bill, 59, “I find myself fearful, I start to panic that I’m going to stutter”*

**Voice problems Associated With Parkinson’s Disease Include:**

- reduced loudness
- monotone
- hoarse and breathy voice
- DBS (deep brain stimulation) may also contribute to changes in speech clarity, with patients reporting slurring, or stuttering-like changes.

**Studies looking at the effect of deep brain stimulation report variable results.**

- Speech and voice disorders appear less responsive to deep brain stimulation surgeries, and some patients actually report onset of speech or swallowing difficulty following DBS.

DBS-STN.org: A Review of the Literature June 2004

- Behavioral speech treatment should be considered even for optimally medicated individuals and for those who have undergone neurosurgical procedures

Schultz and Grant 2000

- It’s not all in your head…or is it?

**Patients Are Not All Alike**

**Therapy Is Not A One Size Fits All**

The **Art and Science of Speech and Voice Therapy**

- Appropriate treatment for voice and speech disorders should address the underlying physiology that causes the disorder:
  1. Muscle weakness or stiffness
  2. Changes in shape of vocal folds
  3. Difficulty in generating loudness
  4. Ability to self-monitor voice and speech

- Successful treatment will include whatever approaches help patient reach THEIR goals.

*Be Centered: “Know Yourself”*

*James: “I want to be a tour guide”*

**Patients Are Not All Alike**

**“Managing mental/ emotional impact of disease on self”**

The Patient’s Goals:
The Art and Science of Speech and Voice Therapy
Formal Therapy and Device Interventions

The LSVT®
• Currently, the “gold standard” for treating voice problems related to Parkinson’s disease.
• Intensive, 16 visits with home practice.

Device Interventions
• Unobtrusive portable devices designed to improve speech and communication in patients with PD.
• Uses the Lombard Effect, preserved in patients with PD, to elicit louder and clearer speech spontaneously.
• Speech Vive™
  Jessica Huber, PhD, Purdue.edu

Device Interventions continued
• iParkinson’s for iphone
  Casa Futura technologies

• Voca-Log-LE
  Griffin Laboratories

Auditory Masking: A Method to Assess Stimulability and Shape Louder Voice
• White noise masking takes advantage of Lombard effect to elicit louder voice with no cue to the patient to “be loud.”
  • Average increase in loudness 10dB from baseline.
  • Video-tape of patient is reviewed for baseline information and for analysis with patient in goal setting.

Patient Uses Mini Digital Sound Level Meter to Self-Monitor Loudness
• With masking in place, patient is asked to identify level of loudness when SLM is placed at 2-3 ft (conversational) distance.
• Metaphor of “voice speedometer” is introduced.

• Transition patient from use of white noise masking to external cueing with SLM.

Sometimes you just need a little help...
Assistive Hearing Devices
• Pocket talker, Radio Shack hearing amplifier, and others.

Speech and Voice Amplifiers
• Personal voice amplification systems. Amplified phones.

The Art and Science of Speech and Voice Therapy
Worth Your Time To Explore
• Based on the teachings of Daniel R. Boone.

• Two part program:
  Speak Out® intensive voice treatment and the LOUD Crowd® maintenance program.
• Learn more:
  www.parkinsonsvoiceproject.org
The Tremble Clefs
• Therapeutic singing for people with Parkinson’s Disease.

• Developed by Karen Hesley, CCC-SLP

• Focus is on utilizing good breath support, voice volume and wider pitch range.
  http://trembleclefs.com

Swallowing Problems and Parkinson’s Disease
• “How do we live with PD?”
• “Ask the question, not out of desperation, but out of a search for inspiration.”

Swallowing Difficulties in Parkinson’s Disease
• Changes in the shape and function of the vocal folds.
  • Reduced tongue coordination and strength.
  • Reduced sensory awareness may lead to swallowing disorders.

• Reduced timing of breathing (respiration) and swallowing may cause food or liquid to enter the windpipe (aspiration).

Swallowing Difficulties May Include:
  • Dry mouth or increased saliva.
  • Gastroparesis (impaired gastric emptying can cause weight loss and delays absorption of medicine in small intestine)
  • Levadopa interactions: aspartame competes for uptake, iron decrease absorption, protein may block absorption
  • Increased risk for osteoporosis.
  • Poor mobility and motor fluctuations with difficulty handling utensils, eating may be slow, embarrassing.

Swallowing Difficulty May:
  • Cause problems with safely taking pills and other medication.
  • Cause inadequate nutritional intake of food or liquid.
  • Lead to aspiration pneumonia.
  • May occur at any time in the disease, and have been correlated with cognitive impairment and postural instability.
    Walker et al, 2010

• One study found that only 35% patients reported swallowing difficulties, however, video swallow studies (MBS) identified swallowing abnormalities in 75% patients.
How You Breathe Matters

1. Individuals with Parkinson’s may swallow on the wrong “phase” of breathing (i.e. inspiration v/s exhalation).
   Gross, 2008

   - Inspiratory events after a swallow and shorter swallowing apnea duration may be predictors of decreased swallowing safety as measured by the P-A scale in individuals with PD.
     Troche 2011

   - Disorganized swallowing may lead to increased risk of aspiration

Why Exercise Breathing Muscles?

- Accurate coordination between breathing and swallowing could be the key to safety in Parkinson’s Disease.

- Exhaling after the swallow can serve as an airway-clearance mechanism if the material entered the airway while swallowing.
  R.D.Gross 2008

- Strengthening the muscles of exhalation has been shown to increase the speed and efficiency of swallowing, and may have the potential to reduce the risk of aspiration pneumonia.
  Sapienza, et al 2007

Breathing Can Be Affected By:

- Neuromuscular Problems
- Chronic or Acute Pulmonary Illness
- Age Related Changes To the Respiratory Muscles and The Larynx

- Physical function decline associated with aging can influence respiratory muscle performance.
- Chest wall stiffness and decreased lung recoil from asthma, COPD, or other breathing problems.
- Diseases like Parkinson’s can cause stiffness of the vocal folds and the respiratory muscles.
- Arthritic changes can affect the rib cage and larynx.
A sedentary lifestyle can worsen all of these problems.

**Sit up Straight, and Let’s Practice**

1. Sit up straight. Inhale through your nose and fill your lungs. (Diaphragmatic breath) Hold your breath for one or two seconds while you swallow hard (one time, two if you can), than immediately exhale slowly through pursed (rounded lips.)

2. If your mouth is particularly dry, use a spray or sip of water prior to the swallow.

3. Repeat 5x’s three times a day or before meals. To improve this automatic sequence.

Volitionally performed pursed lip breathing (PLB) by patients with COPD promotes a slower and deeper breathing pattern both at rest and during exercise, while prolonging exhalation (Chest 2005;128;640-650)

**Daily Practice of Swallowing Exercises or Strategies is Important**

- After completion of the LSVT®, some people report improved swallowing function with less episodes of coughing or choking during meals.

- Expiratory muscle strength training (EMST) may improve cough and swallow function in Parkinson’s Disease
  
  Chest/135/5/May,2009
Video recordings of the patient performing exercises can increase independence and improve adherence.

Questions:

Part III
A Whole Body Approach To Strengthening Voice

Mary Spremulli, MA, CCC-SLP

Learning Objectives Part III:
- Present Voice Aerobics™ as an adjunct to formal therapies, and appropriate for healthy older adults with age related changes in respiration and voice.

- Describe how voice coupled with movement addresses motor symptoms associated with Parkinson's Disease and provides opportunities for repetition and practice throughout the day.

- Discuss how home based programs can provide continuity in patient's lives by helping them maintain functional abilities and reduce dependence on others.

- Demonstrate Part I: Breath Work

- Voice Aerobics™ was created in 1999 as an after therapy class to help patients retain improvements in speech and voice.

- Voice Aerobics™ combines voice exercise with whole body stretching and movement.

Can be used during or after formal therapy for emphasis:
- Posture, diaphragmatic breathing and breath support to improve vocalization and timing of swallowing.

- Vocal quality including resonant focus of voice and emphasis on oral facial postures;

- Use of abdominal muscles (core muscles) for support of breath stream on exhalation and balance for movement.

Improving Voice Production

- The integration of sound and movement can play a role in coordinating and invigorating
movement.

- Once the rhythm is established, it may be played out with any motor modality, including the hands, feet, mouth, or whole body.

Vocal warm-ups and speech exercises set in music may heighten awareness of facial movement and facial expression.

61 The Importance of Exercise In Parkinson’s Disease Is Indisputable.
- It has been shown many times that exercise both increases and maintains functionality. (Dept. of Disability and Human Development University of Illinois at Chicago)

- When patients with PD treated with drug therapy alone were compared to individuals treated with drug therapy and exercise, there was a significant lower level of disability in the exercise group. Formissano, et al (1992)

62 Voice Aerobics™ incorporates techniques from general exercise physiology and voice therapy to offer a fun and easy program that can be done individually in a patient’s home or in a group.

- The exercise is guided, there is nothing to remember and addresses the voice and motor changes associated with Parkinson’s

- Exercises can be done seated or standing, and for variety, with weights or exercise bands.

63 Voice Aerobics™ Incorporates Guidelines for Patients With Parkinson’s Disease

- Focus on extensor muscle activation and duration;

- Motor learning principles such as multiple repetitions, high effort, simple cues;

- Sensory awareness training and aerobic conditioning.
Cueing strategies to simplify movements

**Reducing Motor Symptoms**
- Rigidity in the vertebral and surrounding thoracic musculature, including the rib cage may effect respiration.
- Rigidity of the facial and cervical muscles as well as throat may also effect respiration.
- Rigidity of muscles in both axial and appendicular musculature demonstrates the importance of flexibility in an exercise program for individuals with PD.
  Stanley et al, 1999

People with PD retain the ability to increase muscle activation, so they can learn to perform larger, faster movements using more conscious effort and attentional strategies.
- They may need more practice, especially for sequential, complex movements.
- Patients can be coached while in therapy and continue independent use of the program at home.

**Why Don't Patient's Behave?**
"Managing the Impact of Disease on the Relationship with Others"
- The financial burden of Parkinson's disease is immense. Drugs commonly used to treat Parkinson's disease cost between $1,000 and $6,000 per year per patient.
- Annual medical care, is estimated at $2,000 to $7,000 for people in early stages of the disease, and is probably much higher for advanced stages.

- Comella et al (1994) found that even with documented gains in functionality, and instruction to continue exercise at home, at the completion of the rehabilitation program, every Parkinson's disease patient resumed a sedentary lifestyle.

**The Art and Science of Speech and Voice Therapy**

*Why did the patient come to therapy?*

*What was the patient's perception of the problem?*
• The nature and the quality of the relationship between the patient and healthcare provider is critical to treatment outcomes.
  • 
  • It is essential to build up a patient's sense of personal responsibility.
  • 
  • Unrealistic expectations and over stringent criteria can set a patient up for failure.
  • 

Patient Variables Affecting Patient Adherence

Why Don't Patient's “Behave?”

Treatment Variables

• Unable to get to therapy because of lack of transportation

• Can't afford treatment.

• Complexity of the treatment program

• Degree of behavioral change

• Forgetfulness and lack of social supports

Patient Variables

• Reluctant: Mismatch between what patient believes and therapists reports. Different treatment goals or hoping for a “magic cure.”

• Remind me: Patient's cognitive skills limit retention and carryover.

• Remorseful: Feel depressed and guilty for not having followed their therapist's suggestions previously, or feel morally weak for having complied and still experiencing decline.

A Home Based Program

• Home based and patient driven programs may address some of the treatment variables that have been associated with poor patient adherence

• Home based treatment may be no further than the patient's computer or remote.

Before, During, or After Therapy...

How Can Voice Aerobics™ Help?

• No need to drive anywhere.

• Opportunity for daily practice.

• Affordable
• Patients with mild dementia can complete exercises with minimal supervision, reducing caregiver burden.

• Nothing to remember just notice:
  * posture
  * breathing
  * voice.

• Therapist guided and easy to follow.

Voice and Speech Practice Set In Music

Music therapy can help improve the quality of life for people with Parkinson’s and other neurological disorders by:

• promoting a sense of well-being
• reducing stress, anxiety or pain
• improving movement
• improving breathing
• improving verbal and non-verbal communication
• promoting self-expression
• improving memory.

Source: European Parkinson’s Disease Association (EPDA)

Who Else May Benefit From

• Patients with Alzheimer’s and dementia.

• Patients with voice and speech decline from Parkinson’s plus syndromes (eg: PSP, MSA)
- Voice and respiratory muscle changes from aging or illness. Patients with presbylarynx and related voice changes.
- Patients with late effect polio effect on voice.

**Why Would It Help?**
- Guided program, requires no memorization.

- Can be done alone, with family members, or in a group.
- Patients with mild dementia can complete exercises with minimal supervision, reducing caregiver burden.
- May serve to alert and awaken residents in skilled facility prior to rehab/restorative dining.
- Coupling voice and movement may serve to provide opportunities for increased repetition and practice during activities of daily living.

**In Closing...**

**Help Patients To Be Present**

- “Parkinson’s classification as a movement disorder draws a great deal of attention to managing the physical symptoms such as tremor and stiffness.”

- But if movement is improving, and voice fading, than the essence of the individual is also beginning to fade.

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“Parkinson's and Your Voice: The essence of you voiceaerobicsdvd.blogspot.com/2011

**Voice is the essence of who we are**

**Help Patients To Be Present**

- “The man or woman who is walking next to their spouse but now with words that are inaudible, is fading from the relationship.”

- Offer all of the methods available to preserve and improve voice.
My Mission To:

*Enlist individuals in their treatment, and help them express their personality & spirit through voice.*
*To educate and empower*

Mary Spremulli, MA, CCC-SLP

Questions

Learn more:  www.voiceaerobicsdvd.com

Read more: www.voiceaerobicsdvd.blogspot.com

Voice Aerobics Among Top 49 Parkinson's Blogs


Parkinson's Disease: Effects on Speech, Voice, and Swallowing

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*Aerobic Exercise for Neuroprotection. Glaucoma Research Foundation.*

http://www.glaucoma.org/living/aerobic_exercise.php

• Barclay, Laurie, MD. Exercise May Have Neuroprotective Effect. APA 2006 Annual Convention: Session 2028 - Optimal Aging and Cognition


80 Parkinson's Disease: Effects on Speech, Voice, and Swallowing

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• Jadranka Spahija, Michel de Marchie and Alejandro Grassino. Effects of Imposed Pursed Lip Breathing on Respiratory Mechanics and Dyspnea at Rest and During Exercise in COPD. Chest 2005;128;640-650 DOI 10.1378/chest.128.2.640


• Schultz GN, Grant MK. Effect of speech therapy and pharmacologic and surgical treatments on voice and speech in Parkinson's disease: A review of the literature. Journal of Communication Disorders, 33(1), 59-88


Parkinson's Disease: Effects on Speech, Voice, and Swallowing
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Reading and Resources:

• Voice Aerobics : [http://www.voiceaerobicvds.com](http://www.voiceaerobicvds.com), [http://voiceaerobicvds.blogspot.com](http://voiceaerobicvds.blogspot.com)


• [www.pnmedical.com](http://www.pnmedical.com) info for obtaining the BREATHER®

• [www.davisphinneyfoundation.org](http://www.davisphinneyfoundation.org) Improving the Lives of People With Parkinson Disease.

• Lee Silverman Voice Treatment (LSVT®) and LSVT Global. LSVT.org

• National Parkinson's Foundation. NPF.org

• Parkinson's Research Foundation ([http://www.parkinsonresearchfoundation.org/](http://www.parkinsonresearchfoundation.org/)) Educational cruises

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1. Tremor
2. Usually occurs during resting, but can happen during movement or in holding against gravity.
3. Voicing tasks, such as “loud ah” may cause overflow of movement and increased tremor.
4. Hold something in hand.
5. Toss a ball and catch it, twirl a pen
Tai chi, yoga, and mind body training

DBS may be considered for severe tremor

**Major Motor Deficits In PD**

- Rigidity
  - May be influenced by medication schedule.
  - May begin in one limb and on one side of the body, eventually affecting trunk and both sides.
  - Predominant in flexor muscles of the trunk and limbs, leading to stooped “Parkinson’s posture”.
  - Affect on respiratory muscle with changes to phonation and timing of respiration and swallowing.
  - May interfere with independently performing ADL’s

**Strategies**

- Incorporating upper body stretching with vocal function exercise.
- Incorporating yoga poses for balance or Tai chi movements with phonation exercises.
- Incorporating movements associated with activities of daily living into voice practice.
- Respiratory muscle training and respiratory support exercise.
- Postural reminders.

**Major Motor Deficits In PD**

- Bradykinesia
  - (Slow Movements)
  - May be influenced by medication schedule.
  - Failure to make preparatory movements with the trunk and proximal limbs.
  - Posture not adapting to changing environment.
  - May cause difficulty with self care activities.

**Cueing Strategies**

- Replace automatic processing with conscious effort.
- Avoid dual tasking.
- Break down complex movements into discrete sequences.
- Mental rehearsal
Cueing Strategies: Approaching the Chair and Standing From The Chair In Therapy

Preparatory Sets

- Teach to break down the task into small components.
- Look beyond the chair to a visual target. Count out loud the steps to reach the chair.
- Align with the seat of the chair before sitting. Slide forward and position feet before standing.

Source: Parkinson’s Disease and Activities of Daily Living. John Argue assisted by Jeanne Csuy, PT

Managing Motor Deficits In PD

- Self-vocalization of a positive reinforcing word (‘yaah’), enabled people with Parkinson’s disease to perform a daily upper extremity task faster and more smoothly.

Dept. of Occupational Therapy, College of Health Science Campus, Toledo, Ohio

- Voice Aerobics™ couples voice practice with movement for increased opportunity for repetition. Voice may serve as a self cue for the movements.

Managing Motor Deficits In PD

Inadequate Levels of Muscle Activation Yield:

- Festination: difficulty terminating a sequence or breaking a movement resulting in uncontrolled walking speed. (speech and handwriting also affected).

- Retropulsion: loss of balance backwards.

- Freezing: difficulty starting or sudden cessation of movement.

- External cueing strategies should be used by ALL staff.

- Visual: strips of white tape on the floor or doorways. Colored targets at eye level. Cue cards for functional tasks.

- Auditory: metronome, musical beats, finger tapping, clapping.

- Proprioceptive: Rocking side to side or back and forth.

Cognitive Constraints
• The inability to simultaneously carry out a cognitive task and a balance or walking task has been found to be a predictor of falls in elderly people.
• The basal ganglia is responsible for allowing automatic control of balance and gait for switching attention between tasks.

• An agility program could progress task difficulty by adding cognitive or motor tasks that teach persons with PD to maintain postural stability during performance of a secondary task.

**Motor Symptoms In PD: Difficulty Walking**

**What Is Happening That Changes Posture?**
• Head forward
  (head normally over hips and hips over feet.)
• Hips and knees bent
  (hips normally extended)
• Walking on the front of the feet
  (normal stride 2.0-2.5 ft.)

**What Is Happening That Changes Posture and Walking?**
• Rigidity
• Stiffness and inability to relax the muscles
• Coordinated movement requires firing and non firing of muscles
• Flexed posture and forward weight shift causes firing of muscles of ankles and feet (reduces the step length)
  • Hips and knees are bent
    (increases the amount of energy needed to move)
  • Tight shoulder muscles
    (reduces the ability for arm swing)

**“Freezing”**

**Common Situations**
• Approaching a doorway
• Approaching a sitting surface
• Walking in narrow hallways
• Being confined in a narrow space such as a bathroom stall
• Sudden obstructions
• Turning
Over fatigue or stressful situations

Strategies

• Stop trying to complete the activity
• Change direction
• Count out loud or silently and move to the count
• Use a sound or rhythm to stimulate movement
• Visualize an object than lift your foot to step over

The “Parkinsonian Face”

Facial Expression Part Of Our Human “Glue”
• Facial expression signals attention, connection, and friendliness.

• PWP has reduced coordination of facial muscles, less dynamic and less spontaneous.

• Facial masking reduces the strength of the personal signal.

May Result In Stigma Or Reduced Social Bonding

The “Parkinsonian Face”

Hypomimia
• May Be Interpreted as:
  • Hostility
  • Apathy
  • Loss of Interest
  • Demented
  • Unfriendly
  • Depressed

Can We Activate The Face?

Medical Management of Depression

Can We Activate The Face?

Enjoyment Is Important To Facial Expression

• More activity and social connections yields more facial expression
• Gestures may emphasize expression (Tickle, PhD, OTR/L Strategies For Living Behind The Mask, 2010)
• Facial expression increases when talking about enjoyable things. (Takahashi, 2010)

Visual and Auditory Cues Increase Movement

Parkinson’s Disease

One Disease... Many Faces

• “One must dance with PD rather than wrestle with it.”
• “This is the difference between living with and running from the disease.”
Questions:

Part II
Speech and Swallowing Symptoms in Parkinson’s Disease
An Overview For Speech-Language Pathologists

Mary Spremulli, MA, CCC-SLP

Parkinson’s Disease
One Disease... Many Faces

“Let no day go by without looking for some small joy.”

“When PD takes all pleasure, it has also taken your spirit.”

Learning Objectives Part II:
• Describe voice, speech, and swallowing problems associated with Parkinson’s disease.

• Describe patient characteristics and self-perception of speech and voice changes.

• Demonstrate the use of auditory masking as a method to assess stimulability and to elicit louder voice.

• Discuss swallowing problems and treatment methods for swallowing, which include respiratory muscle strength training.

• Discuss how home based programs can provide continuity in patient’s lives by helping them maintain functional abilities and reduce dependence on others.

How Prevalent The Problem?

• As many as 90% of people with Parkinson’s (PD) will develop a speech and voice disorder.
• As many as 95% of people with PD have a swallowing disorder.

• Numerous studies have failed to find significant improvement in voice and speech functions with levodopa or dopamine agonists.

• Speech therapy, when persons with PD are optimally medicated, has proven to be the most effective therapeutic method for improving voice and speech function.

How Prevalent Are Speech Disturbances in PD?

2012 Survey Parkinson’s Alliance and DBS-STN.org  Fall 2012

1. 217 persons with DBS
2. • Speech disturbance (96%) led the list of top 3 most common nonmotor symptoms
3. • 94% of the younger DBS group reported speech problems, and reported socializing less due to speech difficulties.

3. 419 without DBS
4. • Speech disturbances ranked 90% in older persons (50 years or 70 and above)

• Speech disturbances ranked 91% and among top 4 non-motor symptoms in persons with advanced PD (i.e. > 6 years duration)

Parkinson’s is “sneaky” lurking in the background changing the way muscles work.

1. • PD diagnosis occurs when 70-80% of the neurons in the substantia nigra are gone.

• As cells die, dopamine levels in the basal ganglia drop.

• As dopamine levels drop, automatic movements become more difficult.
To protect dopamine cells, exercise should start as early as possible, yet, patients receive referrals to physical or speech therapy only 12-16% of the time.

**Dopamine and Movement**

- When dopamine levels drop, movements become slow (bradykinesia)
- Incomplete (hypokinesia)
- Not terminated (festination)
- Sensory mismatch between how they move, how loud they talk, and how the movements feel.
- Medication (dopamine) replacement may yield dyskinesias

**Speech, Voice, And Swallowing Symptoms**

May Include:

- Hypokinetic dysarthria
- Hypophonia
- Pressed speech or festination of speech
- Vocal tremor
- Reduced lingual movements with lingual pumping.
- Reduced breath support due to rigidity of rib cage.

**Non-Motor Symptoms and PD**

*Parkinson’s Alliance Survey Spring 2012*

- Non-motor symptoms, including neuropsychiatric, autonomic, sensory, sleep and speech functions, are highly prevalent in PD.
- Non-motor symptoms may precede the manifestation of motor symptoms.
- Top three most common symptoms for younger PD group (50 – 69 yrs): fatigue (93%), sleep disturbance (89%), and speech disturbance (85%)
Top three most common symptoms for the older PD group 70 yrs and older: fatigue (96%), speech disturbances (90%), and memory difficulties (86%)

Speech, Voice, And Swallowing Symptoms
May Include Cognitive-Linguistic Impairment:
• May have difficulty with turn taking.

• Difficulty following multiple topics of conversation.

• Difficulty attending to language formulation and some aspect of speech production.

• Reduced non-verbal communication may yield:

1. Spouse/care partner talking for them
2. Social withdrawal
3. Altered relationships;
4. Decreased interaction with health professional
5. Altered self-image

A Patient Says: “I was just diagnosed with Parkinson’s and my doctor already wants me to have speech therapy. Why bother, my voice is not that bad?

Some patient characteristics:

• Reluctant:
  Unconcerned, resentful, unaware,
  “it bothers other people”

  Pat, 62, “I’m not really bothered by my speech, apparently you are”

• Remind Me:
  Forgetful, dependent on others for motivation, schedules, exercise

  Larry, 70, PD, Lewy Body Dementia. Can’t remember exercise strategy from visit to visit.
  Spouse frustrated.

• Reward Me:
  Aware of problems, likes reinforcement, goal oriented, uses feedback tools.

  John 64, consultant, “I do a lot of speaking, my voice has softened.” I do slow down when my meds wear off.”

• Remorseful:
  Regrets affect of speech/voice on work and relationships

  Raymond, 66, “it cost me my job”

  Bill, 59, “I find myself fearful, I start to panic that I’m going to stutter”

Voice problems Associated With Parkinson’s Disease Include:

• reduced loudness

  • monotone

  • hoarse and breathy voice

• DBS (deep brain stimulation) may also contribute to changes in speech clarity, with patients
reporting slurring, or stuttering-like changes.

Studies looking at the effect of deep brain stimulation report variable results.

• Speech and voice disorders appear less responsive to deep brain stimulation surgeries, and some patient actually report onset of speech or swallowing difficulty following DBS.
  DBS-STN.org: A Review of the Literature June 2004

• Behavioral speech treatment should be considered even for optimally medicated individuals and for those who have undergone neurosurgical procedures
  Schultz and Grant 2000

• It's not all in your head...or is it?

Patients Are Not All Alike
Therapy Is Not A One Size Fits All
The Art and Science of Speech and Voice Therapy

• Appropriate treatment for voice and speech disorders should address the underlying physiology that causes the disorder:
  1. Muscle weakness or stiffness
  2. Changes in shape of vocal folds
  3. Difficulty in generating loudness
  4. Ability to self-monitor voice and speech

• Successful treatment will include whatever approaches help patient reach THEIR goals.

  Be Centered: “Know Yourself”
  James: “I want to be a tour guide”

Patients Are Not All Alike
“Managing mental/ emotional impact of disease on self”
The Patient’s Goals:

  •
  •
  •
  •
  •

The Art and Science of Speech and Voice Therapy
Formal Therapy and Device Interventions

The LSVT®

• Currently, the “gold standard” for treating voice problems related to Parkinson’s disease)
• Intensive, 16 visits with home practice.
  LSVT®.org

Device Interventions
• Unobtrusive portable devices designed to improve speech and communication in patients
  with PD.
• Uses the Lombard Effect, preserved in patients with PD, to elicit louder and clearer speech
  spontaneously.
  • Speech Vive™
    Jessica Huber, PhD, Purdue.edu

Device Interventions continued
• iParkinson’s for iphone
  Casa Futura technologies

  • Voca-Log-LE
    Griffin Laboratories

Auditory Masking: A Method to Assess Stimulability and Shape Louder Voice
• White noise masking takes advantage of Lombard effect to elicit louder voice with no cue to
  the patient to “be loud.”
  • Average increase in loudness 10dB from baseline.
  • Video-tape of patient is reviewed for baseline information and for analysis with patient in
    goal setting.

Patient Uses Mini Digital Sound Level Meter to Self-Monitor Loudness
• With masking in place, patient is asked to identify level of loudness when SLM is placed at
  2-3 ft (conversational) distance.
  • Metaphor of “voice speedometer” is introduced.
  • Transition patient from use of white noise masking to external cueing with SLM.
Sometimes you just need a little help...

Assistive Hearing Devices

- Pocket talker, Radio Shack hearing amplifier, and others.

Speech and Voice Amplifiers

- Personal voice amplification systems. Amplified phones.

The Art and Science of Speech and Voice Therapy
Worth Your Time To Explore

- Based on the teachings of Daniel R. Boone.
  - Two part program:
    - Speak Out® intensive voice treatment and the LOUD Crowd® maintenance program.
  - Learn more: www.parkinsonsvoiceproject.org
  - The Tremble Clefs
  - Therapeutic singing for people with Parkinson’s Disease.
    - Developed by Karen Hesley, CCC-SLP
    - Focus is on utilizing good breath support, voice volume and wider pitch range.
      http://trembleclefs.com

Swallowing Problems and Parkinson’s Disease

- “How do we live with PD?”
  - “Ask the question, not out of desperation, but out of a search for inspiration.”

Swallowing Difficulties in Parkinson’s Disease

- Changes in the shape and function of the vocal folds.
  - Reduced tongue coordination and strength.
    - Reduced sensory awareness may lead to swallowing disorders.
Reduced timing of breathing (respiration) and swallowing may cause food or liquid to enter the windpipe (aspiration).

**Swallowing Difficulties May Include:**

- Dry mouth or increased saliva.
- Gastroparesis (impaired gastric emptying can cause weight loss and delays absorption of medicine in small intestine)
- Levadopa interactions: aspartame competes for uptake, iron decrease absorption, protein may block absorption
- Increased risk for osteoporosis.
- Poor mobility and motor fluctuations with difficulty handling utensils, eating may be slow, embarrassing.

**Swallowing Difficulty May:**

- Cause problems with safely taking pills and other medication.
- Cause inadequate nutritional intake of food or liquid.
- Lead to aspiration pneumonia.
- May occur at any time in the disease, and have been correlated with cognitive impairment and postural instability.
  
  Walker et al, 2010

- One study found that only 35% patients reported swallowing difficulties, however, video swallow studies (MBS) identified swallowing abnormalities in 75% patients.

**How You Breathe Matters**

- Individuals with Parkinson's may swallow on the wrong “phase” of breathing (i.e. inspiration v/s exhalation).
  
  Gross, 2008

- Inspiratory events after a swallow and shorter swallowing apnea duration may be predictors of decreased swallowing safety as measured by the P-A scale in individuals with PD.
  
  Troche 2011
Disorganized swallowing may lead to increased risk of aspiration.

Why Exercise Breathing Muscles?
- Accurate coordination between breathing and swallowing could be the key to safety in Parkinson's Disease.
- Exhaling after the swallow can serve as an airway-clearance mechanism if the material entered the airway while swallowing.
  
  R.D. Gross 2008
- Strengthening the muscles of exhalation has been shown to increase the speed and efficiency of swallowing, and may have the potential to reduce the risk of aspiration pneumonia.
  
  Sapienza, et al 2007

Breathing Can Be Affected By:

Neuromuscular Problems * Chronic or Acute Pulmonary Illness * Age Related Changes To the Respiratory Muscles and The Larynx

- Physical function decline associated with aging can influence respiratory muscle performance.
- Chest wall stiffness and decreased lung recoil from asthma, COPD, or other breathing problems.
- Diseases like Parkinson's can cause stiffness of the vocal folds and the respiratory muscles.
- Arthritic changes can affect the rib cage and larynx.
A sedentary lifestyle can worsen all of these problems.

**Sit up Straight, and Let's Practice**

1. Sit up straight. Inhale through your nose and fill your lungs. (Diaphragmatic breath) Hold your breath for one or two seconds while you swallow hard (one time, two if you can), than immediately exhale slowly through pursed (rounded lips.)

2. If your mouth is particularly dry, use a spray or sip of water prior to the swallow.

3. Repeat 5x's three times a day or before meals. To improve this automatic sequence.

4. Volitionally performed pursed lip breathing PLB by patients with COPD promotes a slower and deeper breathing pattern both at rest and during exercise, while prolonging exhalation (*Chest 2005;128;640-650*)

**Daily Practice of Swallowing Exercises or Strategies is Important**

1. After completion of the LSVT®, some people report improved swallowing function with less episodes of coughing or choking during meals.

2. Expiratory muscle strength training (EMST) may improve cough and swallow function in Parkinson's Disease
   - *Chest/135/5/May,2009*

3. Video recordings of the patient performing exercises can increase independence and improve adherence.

**Questions:**

**Part III**

A Whole Body Approach To Strengthening Voice
Mary Spremulli, MA, CCC-SLP

Learning Objectives Part III:

- Present Voice Aerobics™ as an adjunct to formal therapies, and appropriate for healthy older adults with age related changes in respiration and voice.

- Describe how voice coupled with movement addresses motor symptoms associated with Parkinson's Disease and provides opportunities for repetition and practice throughout the day.

- Discuss how home based programs can provide continuity in patient's lives by helping them maintain functional abilities and reduce dependence on others.

- Demonstrate Part I: Breath Work

Voice Aerobics™ was created in 1999 as an after therapy class to help patients retain improvements in speech and voice.

Voice Aerobics™ combines voice exercise with whole body stretching and movement.

Can be used during or after formal therapy for emphasis:

- Posture, diaphragmatic breathing and breath support to improve vocalization and timing of swallowing.

- Vocal quality including resonant focus of voice and emphasis on oral facial postures;

- Use of abdominal muscles (core muscles) for support of breath stream on exhalation and balance for movement.

Improving Voice Production

- The integration of sound and movement can play a role in coordinating and invigorating movement.

- Once the rhythm is established, it may be played out with any motor modality, including the hands, feet, mouth, or whole body.

- Vocal warm-ups and speech exercises set in music may heighten awareness of facial movement and facial expression.
The Importance of Exercise In Parkinson's Disease Is Indisputable.

• It has been shown many times that exercise both increases and maintains functionality. (Dept. of Disability and Human Development University of Illinois at Chicago)

• When patients with PD treated with drug therapy alone were compared to individuals treated with drug therapy and exercise, there was a significant lower level of disability in the exercise group. Formissano, et al (1992)

Voice Aerobics™ incorporates techniques from general exercise physiology and voice therapy to offer a fun and easy program that can be done individually in a patient's home or in a group.

• The exercise is guided, there is nothing to remember and addresses the voice and motor changes associated with Parkinson's

• Exercises can be done seated or standing, and for variety, with weights or exercise bands.

Voice Aerobics™ Incorporates Guidelines for Patients With Parkinson's Disease

• Focus on extensor muscle activation and duration;

• Motor learning principles such as multiple repetitions, high effort, simple cues;

• Sensory awareness training and aerobic conditioning.

Reducing Motor Symptoms

• R rigidity in the vertebral and surrounding thoracic musculature, including the rib cage may effect respiration.

• Rigidity of the facial and cervical muscles as well as throat may also effect respiration.
• R rigidity of muscles in both axial and appendicular musculature demonstrates the importance of flexibility in an exercise program for individuals with PD.
  Stanley et al, 1999

Reducing Motor Symptoms

• People with PD retain the ability to increase muscle activation, so they can learn to perform larger, faster movements using more conscious effort and attentional strategies.

• They may need more practice, especially for sequential, complex movements.

• Patients can be coached while in therapy and continue independent use of the program at home.

Why Don't Patient's Behave?

“Managing the impact of disease on the relationship with others”

1. The financial burden of Parkinson's disease is immense. Drugs commonly used to treat Parkinson's disease cost between $1,000 and $6,000 per year per patient.

2. Annual medical care, is estimated at $2,000 to $7,000 for people in early stages of the disease, and is probably much higher for advanced stages.

2. Comella et al (1994) found that even with documented gains in functionality, and instruction to continue exercise at home, at the completion of the rehabilitation program, every Parkinson's disease patient resumed a sedentary life style.

The Art and Science of Speech and Voice Therapy

Why did the patient come to therapy?
What was the patient’s perception of the problem?

• The nature and the quality of the relationship between the patient and healthcare provider is critical to treatment outcomes.

• It is essential to build up a patient’s sense of personal responsibility.

• Unrealistic expectations and over stringent criteria can set a patient up for failure.

Patient Variables Affecting Patient Adherence

Why Don't Patient’s “Behave?”

1. Treatment Variables

2. Unable to get to therapy because of lack of transportation
• Can’t afford treatment.

• Complexity of the treatment program
  
• Degree of behavioral change

• Forgetfulness and lack of social supports

Patient Variables

• Reluctant: Mismatch between what patient believes and therapists reports. Different treatment goals or hoping for a “magic cure.”

• Remind me: Patient’s cognitive skills limit retention and carryover.

• Remorseful: Feel depressed and guilty for not having followed their therapist’s suggestions previously, or feel morally weak for having complied and still experiencing decline.

A Home Based Program

• Home based and patient driven programs may address some of the treatment variables that have been associated with poor patient adherence

• Home based treatment may be no further than the patient’s computer or remote.

Before, During, or After Therapy...

How Can Voice Aerobics™ Help?

• No need to drive anywhere.

• Opportunity for daily practice.

• Affordable

• Patients with mild dementia can complete exercises with minimal supervision, reducing caregiver burden.

• Nothing to remember just notice:
  * posture
  * breathing
  * voice.
Voice and Speech Practice Set In Music

Music therapy can help improve the quality of life for people with Parkinson's and other neurological disorders by:

- promoting a sense of well-being
- reducing stress, anxiety or pain
- improving movement
- improving breathing
- improving verbal and non-verbal communication
- promoting self-expression
- improving memory.

Source: European Parkinson's Disease Association (EPDA)

Who Else May Benefit From

- Patients with Alzheimer's and dementia.
- Patients with voice and speech decline from Parkinson's plus syndromes (eg: PSP, MSA)
- Voice and respiratory muscle changes from aging or illness. Patients with presbylarynx and related voice changes.
- Patients with late effect polio effect on voice.

Why Would It Help?

- Guided program, requires no memorization.
- Can be done alone, with family members, or in a group.
- Patients with mild dementia can complete exercises with minimal supervision, reducing caregiver burden
- May serve to alert and awaken residents in skilled facility prior to rehab/restorative dining.
- Coupling voice and movement may serve to provide opportunities for increased repetition
and practice during activities of daily living.

**In Closing…**

*Help Patients To Be Present*

- “Parkinson’s classification as a movement disorder draws a great deal of attention to managing the physical symptoms such as tremor and stiffness.”

- But if movement is improving, and voice fading, than the *essence* of the individual is also beginning to fade.

Parkinson’s and Your Voice: The essence of you

[voiceaerobicdvd.blogspot.com/2011](http://voiceaerobicdvd.blogspot.com/2011)

**Voice is the *essence* of who we are**

*Help Patients To Be Present*

- “The man or woman who is walking next to their spouse but now with words that are inaudible, is fading from the relationship.”

- Offer all of the methods available to preserve and improve voice.

**My Mission To:**

*Enlist individuals in their treatment, and help them express their personality & spirit through voice.*

*To educate and empower*
Questions
Learn more: www.voiceaerobicsdvd.com
Read more: www.voiceaerobicsdvd.blogspot.com
Voice Aerobics Among Top 49 Parkinson's Blogs
http://www.healthcaretechnicians.org/
removing-the-mystery-top-49-blogs-about-parkinsons-disease/

Parkinson's Disease: Effects on Speech, Voice, and Swallowing
Mary Spremulli, MA, CCC-SLP


• Barclay, Laurie, MD. Exercise May Have Neuroprotective Effect. APA 2006 Annual Convention: Session 2028 – Optimal Aging and Cognition


• Parkinson’s Disease: Effects on Speech, Voice, and Swallowing

Mary Spremulli, MA,CCC-SLP


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• Tanner CM, Ben-Shlomo Y. Epidemiology of Parkinson's disease. Adv Neurology 1999; 80:153-159..

Parkinson's Disease: Effects on Speech, Voice, and Swallowing
Mary Spremulli, MA,CCC-SLP


Reading and Resources:

• Voice Aerobics: [http://www.voiceaerobicsdvd.com](http://www.voiceaerobicsdvd.com), [http://voiceaerobicsdvd.blogspot.com](http://voiceaerobicsdvd.blogspot.com)


• [www.pnmedical.com](http://www.pnmedical.com) info for obtaining the BREATHER®


• Lee Silverman Voice Treatment (LSVT)® and LSVT Global. LSVT.org

• National Parkinson's Foundation. NPF.org

• Parkinson's Research Foundation ([http://www.parkinsonresearchfoundation.org/](http://www.parkinsonresearchfoundation.org/)) Educational cruises

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