

Speech, Swallowing, and Communication in Parkinson's



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Disclosures:

Dr. Fox is an employee of LSVT Global, receives lecture honorarium and has ownership interest in the company. She receives a lecture honorarium for this presentation from the DPF.

What you will learn!

- Motor and non-motor impact on speech, swallowing, and cognitive aspects of communication in Parkinson's
- Role of the speech-language pathologist
- Behavioral treatments and strategies
- Device-based aides
- Community-based activities
- Action steps for YOU!

- Over 89% of individuals with Parkinson worldwide suffer from voice and speech disorders
- Occur early in Parkinson's

Logemann et al., 1978; Ruiz et al., 2011; Sapir et al., 2001; Skodda, et al, 2009; Stewart et al, 1995

- Up to 80% of people with Parkinson's will have swallowing disorders (dysphagia) during early-stage Parkinson's
- Advanced stage Parkinson's up to 95%

Lopez-Liria et al., 2020

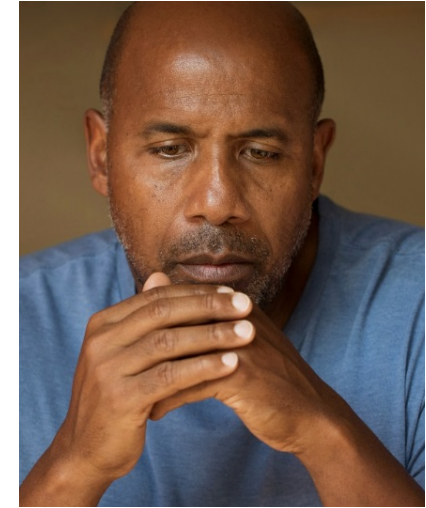
- 20-43% of people with Parkinson's have some degree of cognitive impairment at diagnosis
- Prevalence rate of Parkinson's dementia is 28-41%

Spencer et al., 2020



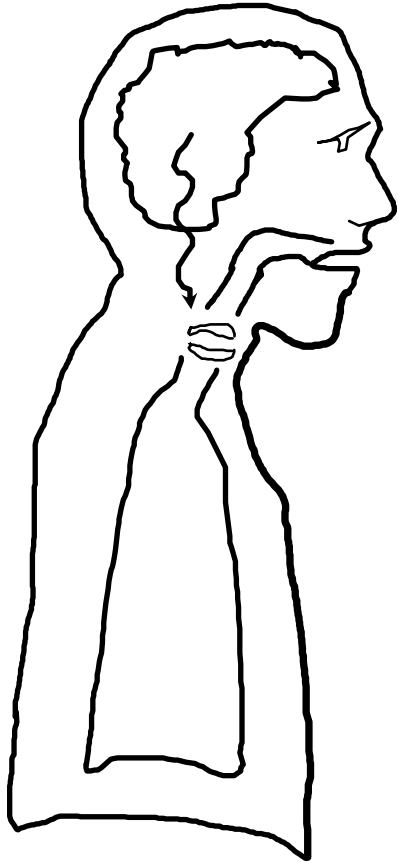
Does this matter? YES!

- Even people who are clinically asymptomatic for speech deficits report feelings of embarrassment, social stigma, and social isolation due to speech concerns. (Miller et al., 2006a,b)
- People with Parkinson's may have decreased joy from eating and drinking (including socialization) resulting in undereating or malnutrition. Can have increased risk of lung infections when food or liquid enter the airway and it is not coughed out.
- Consequences include being excluded from conversations, a loss of dignity, and feelings of misery for many. (Miller et al., 2006a,b)



Loss of motor energy

Movements underscaled



Hypokinesia/Bradykinesia

Motor Impact on Speech:

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

Motor Impact on Swallowing:

- Incomplete airway closure to protect lungs
- Difficulty keeping food/liquid in your mouth
- Reduced coordination
- Slower chewing and bolus formation
- Slowed laryngeal movement to close airway
- Slowed swallow to squeeze food/drinks into the esophagus

Sensory processing deficits also contribute to speech and swallowing difficulties

Small/slow movements may be **perpetuated** by abnormal sensory feedback.

Results in:

- Reduced awareness of vocal loudness deficits or swallowing difficulties
- Lack of self-correction
- Feel like they are loud enough when too soft; feel too loud when they are normal
- Respond positively to external cue, difficulty with internal cue of self-correction
- Do not spontaneously maintain or adapt treatment techniques *without intensive treatment with a sensory focus*

“I feel like I’m shouting.”



Fox & Ramig, 1997; Klockgether et al., 1995; Rickards & Cody, 1997 Ho et al., 2000; Sapir, 2014

Changes in Higher Cognitive Function can Affect Communication

- **Slower thinking may result in slower response time to questions**
 - People with Parkinson's often are frustrated when people do not wait for them to respond
- **Language challenges**
 - Delayed word retrieval
 - Difficulty shifting communication topics
 - Difficulty initiating and expanding upon language
 - Difficulties with language processing (e.g., to understand non-literal or implied meanings)

Slower processing, combined with increased levels of distractibility, can lead to loss of train of thought, making longer conversations more difficult, and frustrating for both the person with Parkinson's and the listener



Auclair-Ouellet, et al., 2017;
McNamara & Durso; 2018

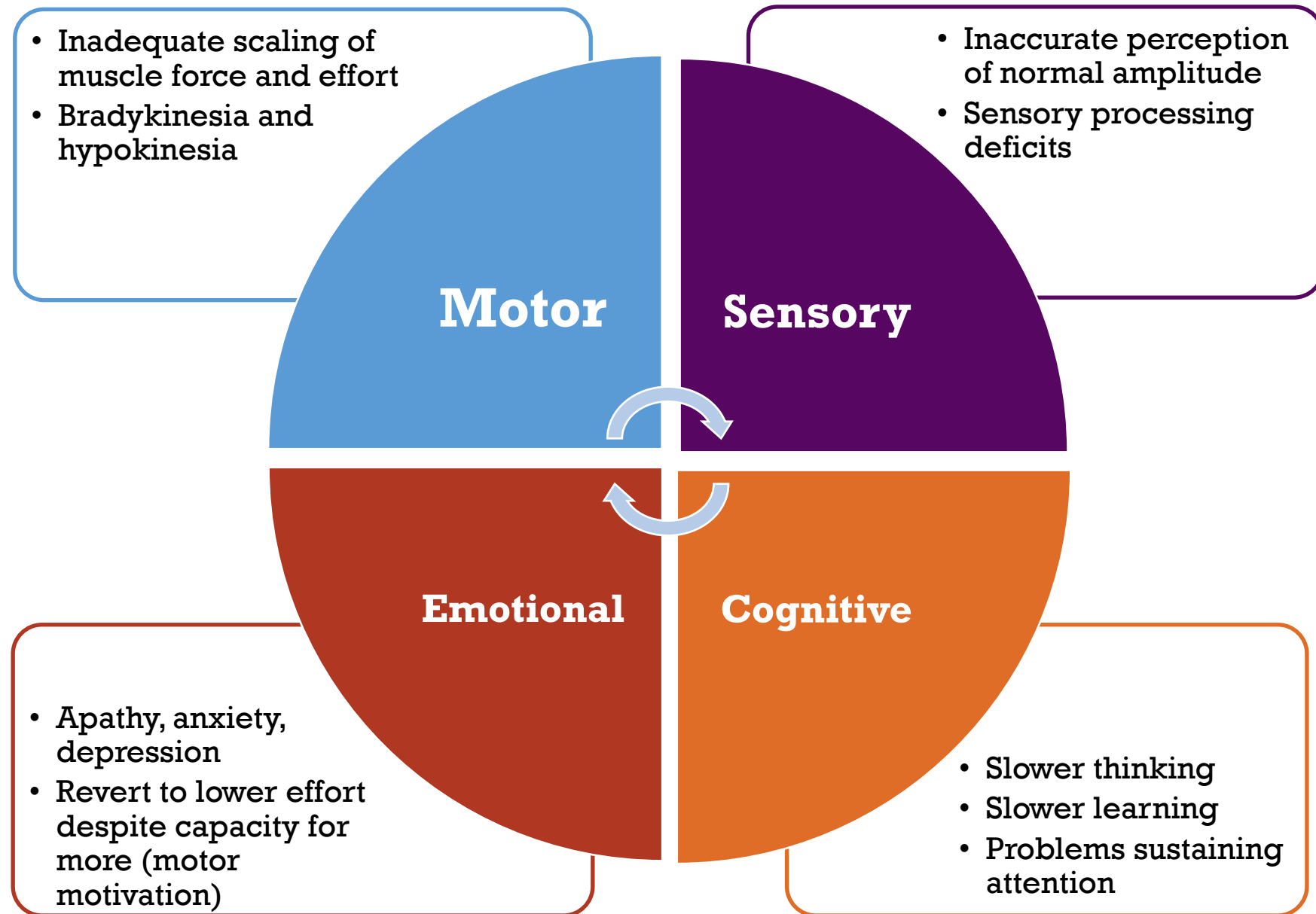
Changes in Higher Cognitive Function can Impact Feeding and Swallowing:

- Lack of attention to meal/food selection, mealtime will be prolonged
- Oral phase swallowing impairments including bolus prep, bolus transport, and initiation of pharyngeal swallow, pocketing of food or
- Social interaction during mealtime is impaired (QOL)
- Nutrition



Kim, et al., 2015

Complex Parkinson's – How can we successfully and efficiently treat?



Classic Medical Treatments Alone do not Consistently or Significantly Improve Speech, Swallowing, Communication in Parkinson's



Pharmacological Treatment

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

Pinto et al., 2004



Surgical Treatment

Neurosurgical interventions do not consistently or effectively improve speech in Parkinson's

Freed et al., 1992; Goberman, 2005; Pinto et al., 2004; Rousseaux et al., 2000; Tripoliti et al., 2008; Astromet et al., 2010

Historically: Speech Disorders in Parkinson's Unresponsive to Speech Treatment

1987 no effective voice and speech treatments for Parkinson's

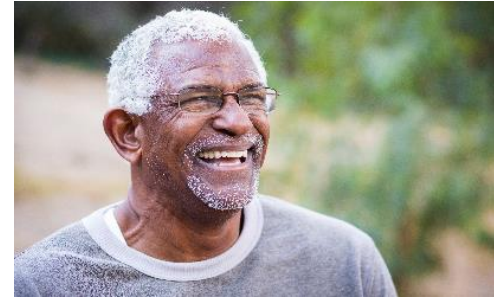
- “...voice treatment for disorders that are degenerative is **controversial** since there is no expectation for recovery of function or that any improvement secondary to speech language pathology intervention will be maintained in the long term” (Hillman, Gress, Haugraf, Walsh, and Bunting ,1990, p. 308).
- Until recently, behavioral treatment for Parkinson's resulted in **minimal and short-term** gains (Mollaei et al., 2013).

Speech-Language Pathology Today in the World of Parkinson's – we CAN make a difference!

Our role is to assess and treat speech, swallowing, and cognitive communication disorders

Parkinson specific!

- Voice and speech evaluation and treatment
- Swallowing evaluation and treatment
- Cognitive-linguistic strategies
- **Implementing evidence-based practice**
- Not just late-stage referrals, we have a role in early stage, too, beyond just establishing a baseline



ASHA Evidence Maps

Motor Speech

Language

Cognition

Swallowing

Parkinson's Disease

Refine By:

Practice Area

- ☐ Assessment
- ☐ Screening
- ☐ Service Delivery
- ☐ Treatment

Domain

- ☐ Augmentative and Alternative Communication (AAC)
- ☐ Cognitive-Communication
- ☐ Hearing
- ☐ Quality of Life
- ☒ Speech/Voice
- ☐ Swallowing (Including Sialorrhea)

Publication Date Range

2018 All

All Articles (24) External Scientific Evidence (23) Clinical Expertise (4) Client Perspectives (0)

Speech/Voice ✕

International Parkinson and Movement Disorder Society Evidence-Based Medicine Review: Update on Treatments for the Motor Symptoms of Parkinson's Disease SYSTEMATIC REVIEW

Fox, S. H., Katzenschlager, R., et al. (2018). Movement Disorders, Epub ahead of print retrieved June 25, 2018 from <https://doi.org/10.1002/mds.27372>.

Description

This review of randomized controlled trials (RCTs) updates a previous 2011 systematic review; it investigates the effect of various pharmacological and nonpharmacological treatments for individuals with Parkinson's disease. Although much of the review is out of the scope of speech-language pathology, some conclusions are provided [See More](#)

Conclusions from This Review

External Scientific Evidence

In this review, regarding speech/voice in Parkinson's disease, no new studies were found since the previous review. The previous review, which included Lee Silverman Voice Treatment, concluded speech treatment is "possibly' useful" (p. 12), and that conclusion remains.

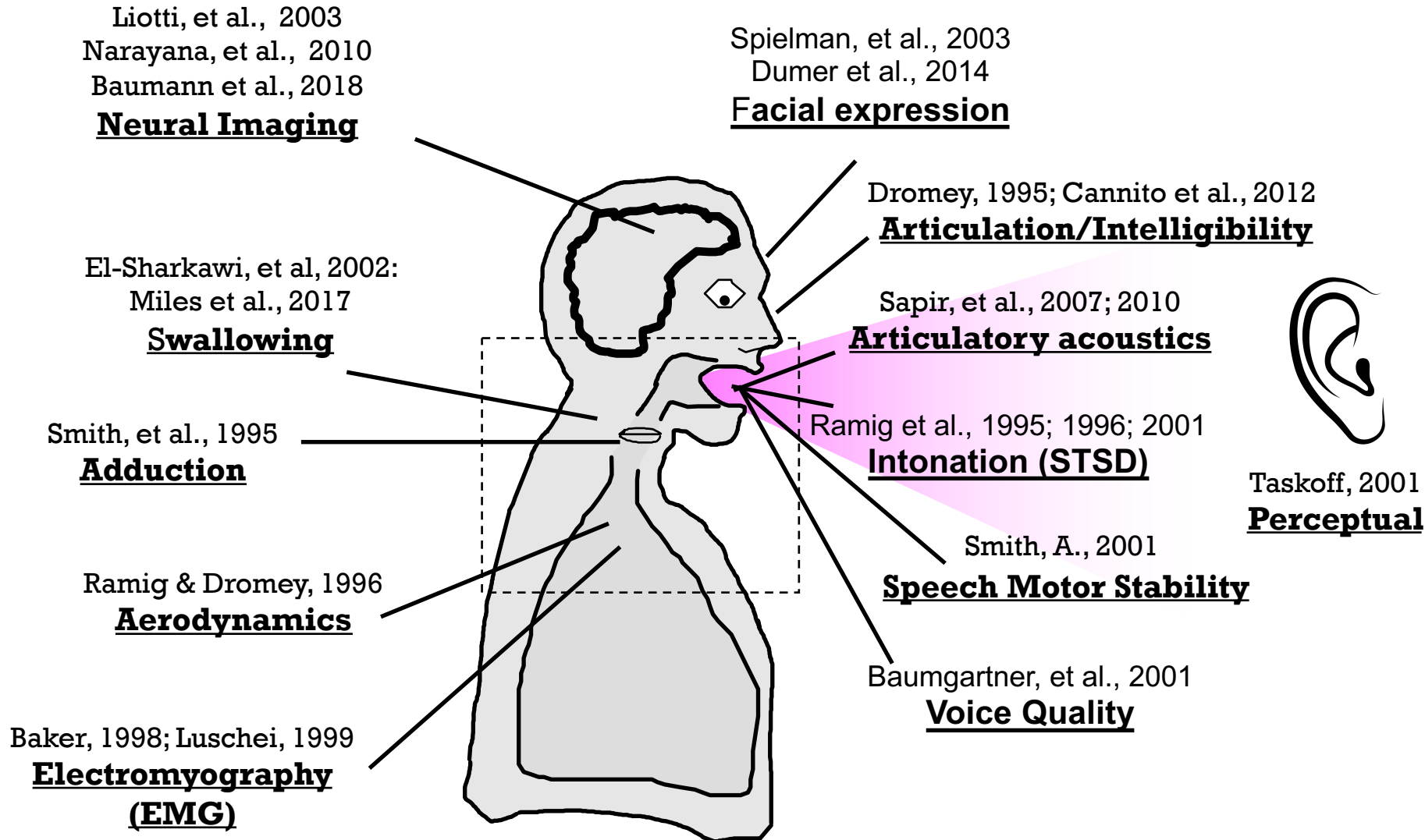
<https://www2.asha.org/evidence-maps/>

LSVT LOUD is the Gold Standard Behavioral Speech Treatment

Established Efficacy (3 RCTs) and numerous studies examining distributed effects, neural correlates, mechanism of change



every victory counts®



30+ years of research

Goal of speech treatment: Regain Self-efficacy

Before therapy



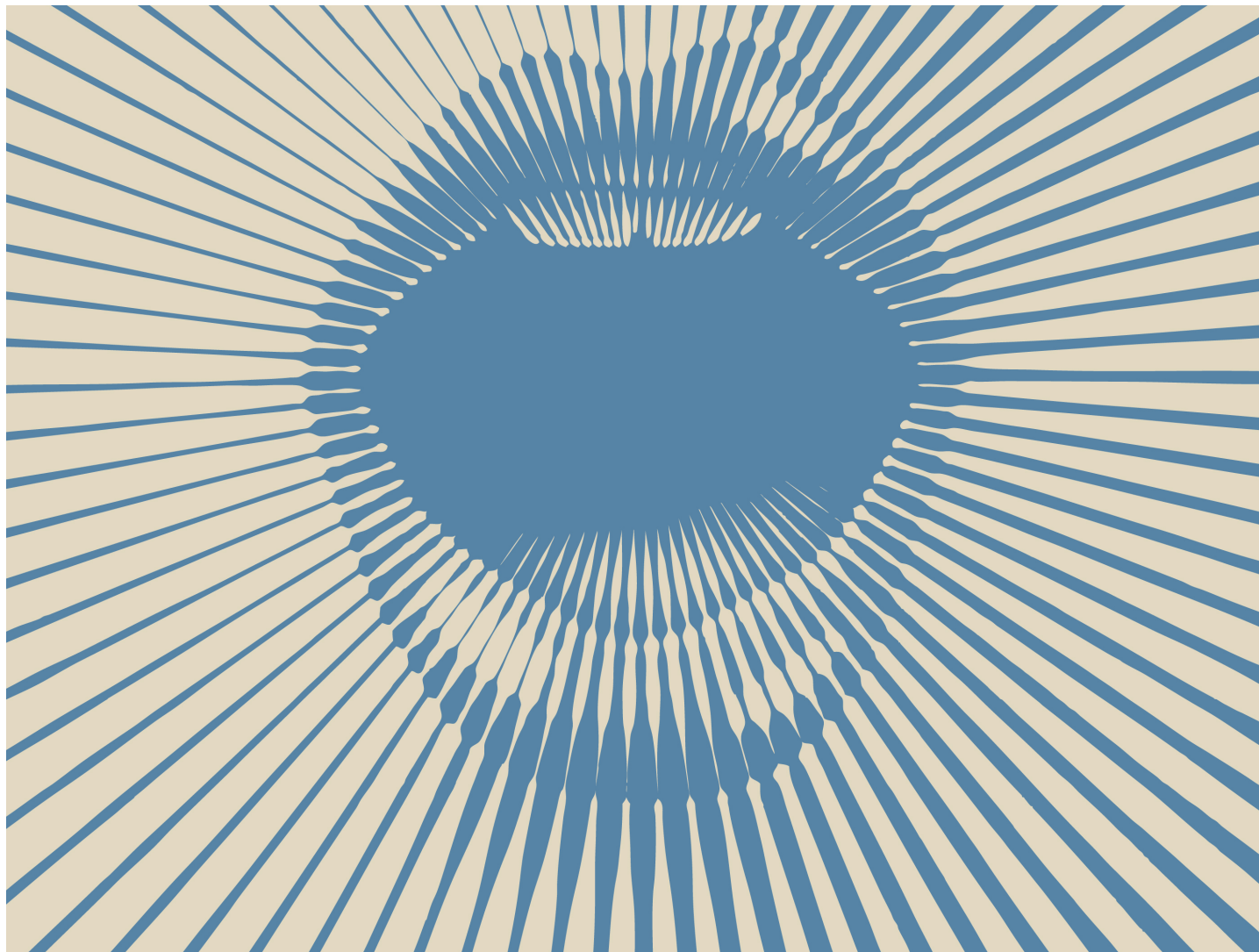
After therapy



Elements of successful speech treatments:

- Focus on voice and/or vocal loudness
- Intensive
- Sufficient repetitions
- Saliency
- Complexity
- Sensory re-training

Zemankova et al., 2016



Voice Exercise Demonstration

Let's practice!

Swallowing Treatments

- **Request swallowing evaluation**
 - May include visualization of swallow (Modified Barium Swallow Study, Fiberoptic Endoscopic Evaluation of Swallowing)
 - Performed with a speech-language pathologist
 - Recommendations can be tailored to YOU
- **Recommendations may include swallowing therapy with a speech-language pathologist**
 - Exercises to strengthen your swallowing
 - Exercises to improve coordination of your swallow
 - Exercises to improve breathing strength, more efficient cough (EMST, Troche et al., 2010)
 - Compensatory strategies (e.g. chin tuck)
 - Sometimes modifications to your diet are needed
 - All consistencies move at different speeds
 - All consistencies provide different sensory input

Oral Hygiene

- Muscle rigidity, tremor, and hypokinesia can all negatively impact the ability of people with Parkinson's to perform adequate oral care and hygiene, and
- Oral care is key for reducing the risk of infection following aspiration
- People with Parkinson's have increased incidence of periodontal disease



Friedlander, Mahler, Norman, & Ettinger, 2009; Kieser, Jones, Borlase, & MacFadyen, 1999; Schwarz, Heimhilger, & Storch, 2006

Tips for Safe Swallowing

- Limit distractions
- Chew thoroughly
- Don't take another bite before swallowing your first bite
- Take one drink at a time
- Sit straight and keep your head neutral
- Very cold or flavorful food/drink increases sensory input
- Swallow twice for each bite or sip
- Be careful with straws
- Stay well-hydrated
- Monitor coughing or throat clearing when swallowing

Treatment Cognitive Function

- Person-centered assessment for treatment planning
 - Identify personalized interests, habits, goals
 - Interview family
- Environmental evaluations
 - Determine best locations for communication
- Direct cognitive rehabilitation
 - Compensatory strategies/external aids
 - Exercises to stimulate attention, memory, processing speed
 - Computer-based cognitive training
- Direct treatment of language/linguistic goals

Hopper, 2019; Spencer et al., 2020

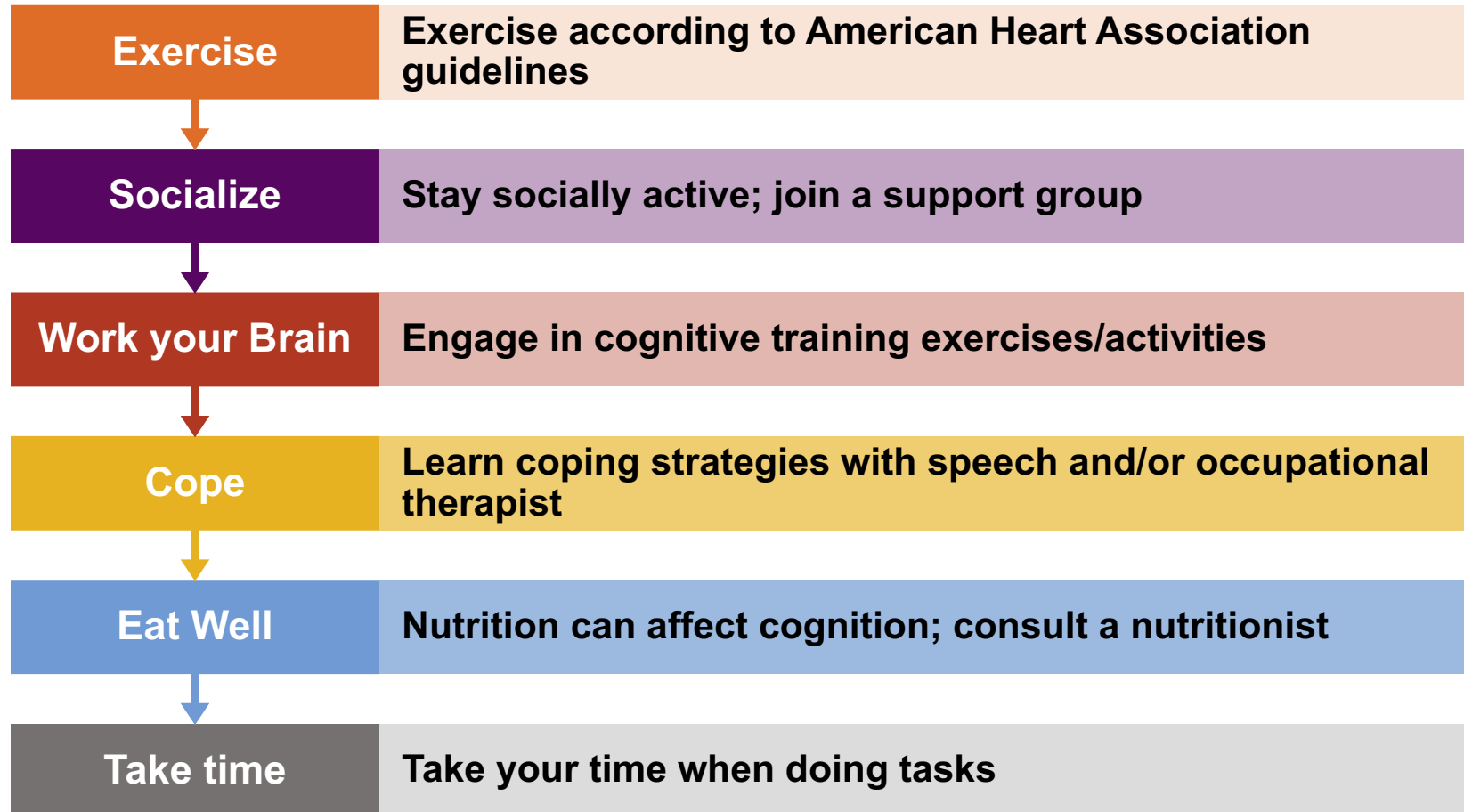


Tips for Improving Communication

- Speech treatment may need increased dosage, more repetitions, training of family for carryover cues
- Reduce distractibility & background noise
- Be patient – allow time for delayed auditory processing
- Define the topic of discussion
- Ask yes/no clarifying questions as needed
- Keep it simple!



General Tips for Early to Mid-Stage Cognitive Health



Device-based aides are most effective when used in conjunction with SLP assessment and treatment



Personal Amplification (e.g., BoomVox)

Portable microphone/speaker system to amplify speech

Evaluation of Speech Amplification Devices in Parkinson's Disease. Andreetta MD, Adams SG, Dykstra AD, Jog M. Am J Speech Lang Pathol. 2016 Feb;25(1):29-45. doi: 10.1044/2015_AJSLP-15-0008. PMID: 26847491



LSVT Companion, Client Edition

At-home LSVT LOUD training software with calibrated microphone

Halpern, A., Ramig, L., Matos, C., Petska-Cable, J., Spielman, J., Pogoda, J., Gilley, P., Sapir, S., Bennett, J., & McFarland, D. (2012). Innovative technology for the assisted delivery of intensive voice treatment (LSVT® LOUD) for Parkinson disease. American Journal of Speech-Language Pathology, 21(4), 354-367. [https://doi.org/10.1044/1058-0360\(2012/11-0125\)](https://doi.org/10.1044/1058-0360(2012/11-0125))



SpeechEasy

Device for delayed auditory feedback (DAF, FAF) to reduce hyper-fluent speech

Wang, E. Q., Metman, L. A., & Bernard, B. A. (2008). Treating festinating speech with altered auditory feedback in Parkinson's disease: A preliminary report. *Journal of Medical Speech-Language Pathology*, 16(4), 275-282. janusdevelopment.com



SpeechVive

Device to increase vocal loudness using the Lombard effect

Stathopoulos, E. T., Huber, J. E., Richardson, K., Kamphaus, J., DeCicco, D., Darling, M., ... & Sussman, J. E. (2014). Increased vocal intensity due to the Lombard effect in speakers with Parkinson's disease: Simultaneous laryngeal and respiratory strategies. *Journal of communication disorders*, 48, 1-17. speechvive.com



Other augmentative devices

Devices to augment oral communication: Synthesized speech devices, alphabet board, picture board

Community Activities: Singing

Tamplin, J., & Baker, F. A. (2017). Therapeutic singing protocols for addressing acquired and degenerative speech disorders in adults. *Music Therapy Perspectives*, 35, 113-123.

- A recent paper summarized 26 publications that describe singing protocols to address speech and voice goals
- Singing does not replace speech therapy (limited evidence it improves speech), but it can be complementary
- Social and therapeutic benefits of music and singing (e.g. Tamplin & Baker, 2017; Freeman, 2000)
- Parkinson specific singing groups (e.g., www.trembleclefs.com)

Action Steps for YOU!



- Recognize your speech and swallowing may be changing and you may not notice (e.g., people ask you to repeat even though you feel loud enough). **Don't WAIT** for treatment!
- Find an SLP Professional who will **partner with you**: www.asha.org www.Parkinson.org/expert-care, www.lsvtglobal.com; SLP can personalize your treatment strategy across lifetime
- **Learn more!** Every Parkinson's organization has FREE resources on speech, swallowing, and cognition.
- Engage in intensive treatment now! Keep practicing when treatment is over - **"Use it or lose it"**
- Utilize device-based aides and cognitive communication strategies as needed to **augment behavioral speech treatment**
- Engage in community-based **activities that you enjoy**: singing, toastmasters, volunteer work, exercise classes, book clubs (in-person or virtual), talking with family and friends



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

-Daniel Webster