

**Name:** Angela Johnson

2021 Motor Speech Disorders Treatment Project Guidelines – 65 points

**Table with basic information in bullet format – (4)**

Client ID	Relevant Case History		
Flaccid Female 2	<ul style="list-style-type: none"> <li>• Laurie, 24-year-old female</li> <li>• TBI from getting hit by a drunk driver in a car crash 2 yrs ago</li> <li>• Flaccid dysarthria</li> <li>• No previous speech tx (that she knows of)</li> <li>• Severe cognitive deficits</li> <li>• Will need assisted living/work environment</li> </ul>		
Characteristics Most Impacting Intelligibility		Intelligibility Estimate	
<ul style="list-style-type: none"> <li>• Loudness</li> <li>• Breathy</li> <li>• Slow rate</li> </ul>		Unfamiliar Listener Intelligibility	
		70%	
		Listener Burden	Moderate
		Dysarthria Severity	Moderate
General Therapy Approach	Increased Vocal Effort		

**Functioning and Disability (6)**

- **Body Functions and Structures**— All articulators appear to be within normal limits. The client has a very soft and breathy vocal quality, as well as a slight nasal resonance. Her vocal folds are not closing fully, which is most likely what is resulting in her speech feeling effortful. The client’s slow articulatory movements are causing some imprecise articulation. Laurie has control over her volume and pitch; however, she frequently finds

herself having difficulty initiating verbal productions. The most likely site of lesion is the lower motor neurons, specifically the vagus nerve.

- **Activity and Participation**— The client has severe cognitive deficits, which will most likely have an effect on how responsible she will be about applying compensatory strategies on her own. She also reported having a hard time staying awake, resulting in all movements to be perceived as low effort. Laurie has moderate flaccid dysarthria that moderately affects her intelligibility.

## **Contextual Factors (2)**

- **Environmental Factors**— Laurie has a very supportive family who is dedicated to her recovery. Her most frequent communication partner is her mom, but she also interacts with other family members and unfamiliar listeners relatively often. The client does not have any recollection of receiving speech services over the past two years. Her primary goal is to be able to have a successful conversation with anyone she comes into contact with. Laurie is a good candidate for an assisted living and working environment.
- **Personal Factors**— Laurie is a young college graduate who was active and otherwise healthy before the accident. The client appears to be in good spirits now, though she feels like when people don't understand her it must be something wrong with them and not something to do with her voice/speech quality. She stated that she feels as though her speech is relatively normal, which may impact her willingness or consistency when using

compensatory strategies outside of therapy sessions. However, she stated that she feels “okay” about changing her voice to help other people understand her better.

**Functional outcome and factors that contributed to deciding on this outcome (2).** The client will utilize loud speech in order to be understood by both familiar and unfamiliar listeners in social situations with minimal background noise. This decision was made because of the client’s breathy and inconsistent amplitude.

**Therapy approach:** Therapy will be centered around increased vocal effort, specifically getting the client to speak louder. If needed, the client will be given the cue “be loud” as a reminder.

### **Rationale (2)**

Loud speech results in increased control over vocal fold adduction, higher intelligibility and positive changes in articulation (Dromey et al., 1995)

### **Evidence (20)**

Dysarthria is common among those who have incurred a TBI. The type of dysarthria one sustains can impact a person’s speech in a multitude of ways. In this case flaccid dysarthria results in soft, breathy speech and consequent imprecise articulation. Previous research shows treatment that utilizes increased vocal effort, specifically loud speech, has many positive effects on patient’s phonatory and articulatory systems.

In a study consisting of five participants with Parkinson’s disease (PD) ranging from 54 to 76 years of age, researchers assessed increased vocal effort in relation to habitual speech as well as amplified speech. It was found that intentionally loud speech resulted in higher perceived intelligibility and more accurate listener transcription than both habitual and amplified speech.

This indicates that the volume of speech itself does not completely account for the improved intelligibility (Neel, 2009). For this reason, it would be more beneficial for Laurie to increase her vocal effort instead of amplifying her current speech.

Ebersbach et al. (2012) provides a comprehensive discussion about LSVT LOUD and how increased vocal effort effects different aspects of speech for patients with PD. Loud speech is used as a means for improved articulation, vocal quality and intonation, as well as other properties throughout the speech production system. Improved vocal fold closure and orofacial movements have also been connected to protocols involving increased vocal effort (Ebersbach et al., 2012). In addition, a study that evaluated 14 individuals with PD along with 7 neurotypical individuals found that participants had significantly stronger voices (higher sound pressure level) following increased vocal effort treatment (Countryman et al., 2001). Loud speech is an appropriate treatment approach to improve Laurie's vocal fold adduction and combat her issues with phonatory initiation.

A study that focused on a 49-year-old male with PD resulting in a self-reported soft voice, found that increased vocal fold adduction was maintained 12-months post treatment as well as multiple positive effects on articulation and coarticulation. The participant showed an increase in differentiation between long and short vowel duration, modification in coordination of some fricative sounds, and improvement with certain diphthongs (Dromey et al., 1995). The "spreading effect" of loud speech onto other systems is also seen in patients with PD who showed improvement with moderate and high anticipatory coarticulation following treatment that utilizes loud speech (Langlois et al., 2015). These studies provide evidence to support increased vocal effort as a way to improve the diminished articulatory skills that Laurie is presenting with.

Acquisition and retention were studied in relation to loud speech for patients with dysarthria following TBI and stroke diagnosis. Participants had a mean age of 34 and a mean post-onset time of 28 months. Loud speech may be correlated to improved breath support, as well as consequent airflow through the oral cavity for phonation. In addition, participants saw articulatory improvement, which may be associated with the bigger movements related to loud speech. The retention and transfer of compensatory strategies in this study were poor due to the blocked practice aspect of treatment. Blocked practice has been shown to be less effective for retention and generalization of skills in comparison to randomized practice (Cornwell, 2008). The participants in this study are closer in age to the current client and they have been diagnosed with dysarthria due to TBI. This further supports the intended treatment approach, as well as provides evidence for randomized stimuli.

According to present research, increased vocal effort treatment with a randomized approach is appropriate for this client. This method will improve her soft and breathy voice quality, as well as potentially positively impact her articulation.

## **Intervention**

### **Pre-Practice (5)**

The pre-practice session should take place during the first session and focus on how the client feels about and what they want to accomplish through therapy. The client stated that she considers her speech to be normal so the clinician should begin by prompting her to recognize the differences between her previous speech and her current speech. This can be done by asking the client what other people say about her speech, or a speech sample can be recorded and played for Laurie in comparison to treated speech (Rosenbek, 2017). While the client may not currently

think there is anything drastically impacting her speech, she did express a willingness to make changes so that other people can understand her. This willingness to change will be beneficial in the long run of therapy (Rosenbek, 2017). The clinician should spend some time asking the client what she wants to accomplish through therapy and what her goal are.

The clinician should now teach the desired target to the client, which in this case is loud speech. The client already demonstrated her ability to speak loudly so a few stimuli, like picture cards, should be presented along with verbal cues, such as “be loud”. After each stimulus, Laurie should rate herself on a 3-point scale so that she is actively listening and evaluating her speech (Rosenbek, 2017). According to Rosenbek (2017), the best treatment for disorder speaking it to always be using therapy strategies. This can be accomplished by setting up a signal to be used at the beginning of each session to indicate that the client is ready to speak purposefully.

### **Practice (10)**

Treatment should take place 4 times a week for 4 weeks, totaling 16 sessions with each session lasting 1 hour. The stimuli should follow a randomized approach where there are 4 types of stimuli that are presented an equal amount, but randomly across trials. The 4 types of stimuli to be used are: maximum phonation time, repeating a 5–7-word sentence after the clinician, describing a picture, and functional phrases in response to a scenario card. Loud speech should be used to complete all of the stimuli. The client and clinician will each rate the production on a 3-point scale (1-not good at all, 2-could be better, 3-perfect) after each stimulus and if the rating differ, they will discuss why. The clinician will also provide feedback after each stimulus and give the cue “be loud” as needed (Rosenbek, 2017). The following is an example of stimuli to be used:

1. The clinician says “It is really nice out today” and the client repeats it back to them. (repetition)
2. The client says /a/ as loud and as long as possible. (max phonation time)
3. The “cookie theft” picture is presented and the client is asked to state one thing happening in the picture. (picture description)
4. A picture of a barista is presented to the client and they are asked “what would you say to this person” (functional phrase)
5. The client says /l/ as loud and as long as possible. (max phonation time)
6. A picture of kids playing on a playground is presented and the client is asked to state one thing happening in the picture. (picture description)
7. The clinician says “For dinner I want pasta” and the client repeats it back to them. (repetition)
8. A picture of a server is presented to the client and they are asked “what would you say to this person” (functional phrase)
9. The clinician says “I went to the park last week” and the client repeats it back to them. (repetition)
10. The client says /o/ as loud and as long as possible. (max phonation time)

### **Post Practice (10)**

Home practice should be completed each day the client does not have therapy and the assignments should be performed with a communication partner, most likely her mom. Potential homework assignments could be repetitions of maximum phonation time exercises and answering a set of questions asked by the communication partner using loud speech. The listener can keep a log of progress, as well as assignment completion. In order to assess transfer and

retention the clinician should present the client with a combination of new and old stimuli. This can be repeated at a follow-up visit to further test their retention skills.

#### References (4)

Cornwell, P., Theodoros, D., & Wenke, R. J. (2008). The short- and long-term effectiveness of the LSVT® for Dysarthria following TBI and stroke. *Brain Injury, 22*(4), 339–352.

<https://doi.org/10.1080/02699050801960987>

Countryman, S., Fox, C., Ramig, L. O., & Sapir, S. (2001). Changes in vocal loudness following intensive voice treatment (LSVT®) in individuals with Parkinson's disease: A comparison with untreated patients and normal age-matched controls. *Movement Disorders, 16*(1), 79–

83. [https://doi.org/10.1002/1531-8257\(200101\)16:1<79::aid-mds1013>3.0.co;2-h](https://doi.org/10.1002/1531-8257(200101)16:1<79::aid-mds1013>3.0.co;2-h)

Dromey, C., Johnson, A. B., & Ramig, L. O. (1995). Phonatory and articulatory changes associated with increased vocal intensity in Parkinson disease: A case study. *Journal of Speech, Language, and Hearing Research, 38*(4), 751–764.

<https://doi.org/10.1044/jshr.3804.751>

Ebersbach, G., Fox, C., Ramig, L., & Sapir, S. (2012). LSVT loud and LSVT big: Behavioral treatment programs for speech and body movement in Parkinson disease. *Parkinson's Disease, 2012*, 1–12. <https://doi.org/10.1155/2012/391946>

Langlois, M., Macoir, J., Martel Sauvageau, V., & Roy, J.-P. (2015). Impact of the LSVT on vowel articulation and coarticulation in Parkinson's disease. *Clinical Linguistics & Phonetics, 29*(6), 424–440. <https://doi.org/10.3109/02699206.2015.1012301>

Neel, A. T. (2009). Effects of loud and amplified speech on sentence and word intelligibility in Parkinson disease. *Journal of Speech, Language, and Hearing Research*, 52(4), 1021–1033. [https://doi.org/10.1044/1092-4388\(2008/08-0119\)](https://doi.org/10.1044/1092-4388(2008/08-0119))

Rosenbek, J. C. (2017). Mind over motor. *The ASHA Leader*, 22(3), 44–49. <https://doi.org/10.1044/leader.ftr1.22032017.44>