

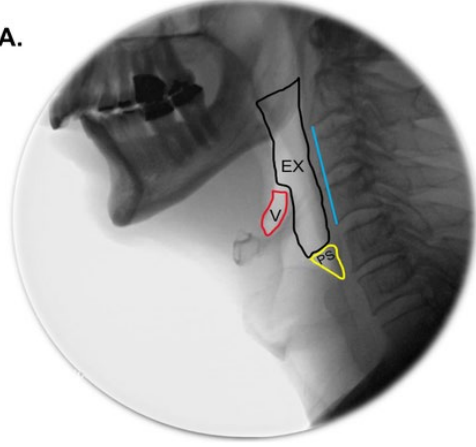
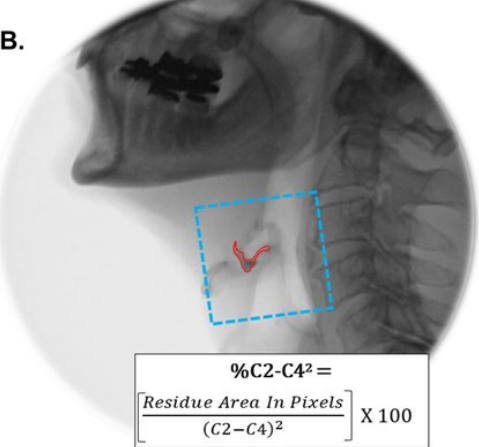
A Randomized Controlled Trial of Lingual Strengthening and Saliva Substitute Interventions for Dysphagia in Dementia

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Rehabilitative interventions for dysphagia in patients with mild-moderate ADRD are feasible and swallowing-related outcomes proximal to intervention method improved significantly following eight weeks of at-home exercises.

INTRODUCTION	METHODS	RESULTS	CONCLUSIONS	REFERENCES
BACKGROUND: Dysphagia (<i>swallowing dysfunction</i>) is highly prevalent in Alzheimer’s Disease and Related Dementias (ADRD), increasing risks of aspiration pneumonia, malnutrition, and mortality. ^{1,2,3} Dysphagia in ADRD primarily managed through compensatory approaches, which have not been shown to substantially impact clinical outcomes. ⁴ Two modifiable factors that can contribute to dysphagia in ADRD (lingual strength and oral lubrication) were selected as treatment targets for a RCT of rehabilitative dysphagia intervention. AIMS: Examine feasibility of rehabilitative swallowing interventions in persons with early stage ADRD. Determine the impact of two interventions (lingual strengthening and saliva substitute application) on swallowing-related outcomes in persons with early stage ADRD. METHODS: Persons with mild-moderate dementia and dysphagia completed a comprehensive swallowing assessment, including a videofluoroscopic swallow study (VFSS) at baseline and following the 8-week treatment plan.	TREATMENT RANDOMIZATION: Participants randomized into 1 of 4 treatment arms. Usual Care (UC, n = 13) <i>Compensatory recommendations only</i> Lingual Strengthening (LS, n = 12) <i>IOPI-facilitated tongue press exercise program, 3 days weekly for 8 weeks</i> Saliva Substitute (SS, n = 12) <i>Application of Biotene to the oral mucosa 3x daily for 8 weeks</i> Combination (LS + SS, n = 12) <i>Completing LS and S concurrently</i> Primary Outcome: Residue A.  B.  Steele et al., 2023; Image from Loy (Robison) et al., 2022 Secondary Outcomes: Proximal to Intervention - Lingual pressure generation - Salivary flow rate Swallow Safety - Penetration-Aspiration Scale (PAS) scores Swallowing Physiology - MBSImP Oral and Pharyngeal Sum Scores - MBSImP Component Scores Mixed effects linear regression models were used to examine interactions between time and intervention group	Sex 22% Male 78% Female Age AVERAGE 78 IQR: 76-85 Race/Ethnicity 1.70% Hispanic, Any race 96.60% Non-Hispanic, White 1.70% Non-Hispanic, Black CDR Stage 12% 0.5 - Very Mild 27% 1 - Mild 41% 2 - Moderated Total Pharyngeal Residue (%C2-C4) 5 ml thin ↓ with SS p<.04 10 ml thin ↑ with LS p<.02 5 ml mod ↓ with SS p<.04 5 ml semisolid ↓ with LS p<.02 Salivary Flow Stimulated ↓ with UC p<.05 Unstimulated ↑ with SS p<.05 Maximum Lingual Pressure Max Lingual Pressure Posterior ↓ with UC p<.03 Max Lingual Pressure Anterior ↑ with LS p<.0001	Rehabilitative interventions for dysphagia in patients with early stage ADRD are feasible. Proximal outcomes improved significantly: - Lingual strengthening → Lingual pressures - Saliva Substitute → Salivary Flow Changes in pharyngeal residue mixed and dependent upon bolus type Improvement relative to worsening in UC group for certain boluses Larger cohort needed to determine whether differences remain and become directionally clear FUTURE DIRECTIONS: Analysis of additional secondary outcomes, such as quality of life, care partner burden, timing and kinematic measures on VFSS Subgroup analyses to determine responsiveness to treatment Build towards more proactive models of care of persons with dementia that include behavioral rehabilitative approaches at earlier stages of the disease process <i>> Am J Speech Lang Pathol. 2020 Jul 10;29(25):1094-1109. doi: 10.1044/2020_AJSLP-19-00136. Epub 2020 Jul 10.</i> Shifting Tides Toward a Proactive Patient-Centered Approach in Dysphagia Management of Neurodegenerative Disease Nicole M Rogus-Pulia ^{1 2 3}, Emily K Plowman ^{4 5 6}	1. IA, McLaren DG, Kosmatka K, Fitzgerald M, HumbertJohnson S, Porcaro E, Kays S, Umoh EO, Robbins J. Early deficits in cortical control of swallowing in Alzheimer's disease. J Alzheimers Dis. 2010;19(4):1185-97. doi: 10.3233/JAD-2010-1316. 2. Humbert IA, McLaren DG, Malandraki G, Johnson SC, Robbins J. Swallowing intentional off-state in aging and Alzheimer's disease: preliminary study. J Alzheimers Dis. 2011;26(2):347-54. doi: 10.3233/JAPMID: 20308785; PMCID: PMC2891325. 3. Rogus-Pulia, N., Malandraki, G.A., Johnson, S. <i>et al.</i> Understanding Dysphagia in Dementia: The Present and the Future. <i>Curr Phys Med Rehabil Rep</i> 3, 86–97 (2015). 4. Robison, R.D., Broadfoot, C., Gustafson, S., Yee, J.P., Burdick, R., Butz, N., Gilmore-Bykovskyi, A.L., Kind, A.J. and Rogus-Pulia, N.M. (2023), Compensatory versus Rehabilitative Dysphagia Management Approaches are More Frequently Recommended in Hospitalized Persons with Alzheimer’s Disease and Related Dementias. <i>Alzheimer’s Dement.</i>,19:e078836.