NSW Speech Pathology Evidence Based Practice Interest Group

Critically Appraised Paper (CAP)

CLINICAL BOTTOM LINE: Tongue strengthening exercises may result in positive functional outcomes for some patients with an impaired oropharyngeal swallow.

Clinical Question [patient/problem, intervention, (comparison), outcome]:
Do tongue strengthening exercises affect the impaired oropharyngeal swallow?

Citation:
Yates, E.M., Molfenter, S.M. & Steele, C.M. (2008). Improvements in tongue strength and pressure – generation precision following a tongue – pressure training protocol in older individuals with dysphagia: Three case reports. *Clinical Interventions in Aging* 3 (4) 735 – 747.

Design/Method: Case studies.

- Tongue pressure generation exercises, conducted with biofeedback, from Iowa Oral Performance Instrument (IOPI).
- Rx protocol: execution of 10 set of 6 exercises. Tongue to palate pressure presses – mixture of anterior and posterior positions. They involved isometric strength exercises and accuracy tasks.

Participants: 3 participants all who had posterior spillage, decreased base of tongue movements and valleculae residue on thins as assessed on videofluoroscopic swallowing studies (VFSS).
Case A 72 year old male 7 months post medullary CVA. Fed via PEG, with soft textures and thickened fluids.
Case B: 63 year old male, 42 months post 4th ventricular tumour resection, resulting in damage CN XII and VC paresis. Fed via PEG, supplemented via soft texture oral snacks, H2O via teaspoon and thickened fluids.
Case C: 50 year old male, 34 months post MVA resulting in brainstem stroke. Fed via PEG only (NBM).

Experimental Group:
Case A: 24 Rx sessions – 2-3 sessions per week
Case B: 24 sessions – 3 sessions per week
Case C: 8 intensive daily face – to – face sessions, followed by home practise 3 times weekly for 90 sessions in total.
Physiological changes were measured at the pre, mid way and post therapy intervals using VFSS.

Results:
Case A: improved isometric pressure measure, no significant improvement with accuracy targets, however, there was an improvement in tongue pressure accuracy vs. strength. Functional outcomes: pt commenced oral intake for total nutrition and thin fluids.
Case B: improvements in all areas measured. Functional outcome: decreased number of cans via PEG and a steady increase in oral intake.
Case C: Slowest change with steady, but gradual increases over the course of treatment. Functional outcome: transient opening of the cricooesophageal sphincter. Functional swallowing had not returned. Total nutritional intake via PEG.

Comments – Strengths/weaknesses of paper
Weaknesses: No hypothesis was given as to why Case C did not show much improvement. ?due to chronic, severe dysphagia and/or did not receive Rx on accuracy tasks. Small sample. Limited information on inclusion/exclusion criteria. Varying Rx design and duration amongst subjects. Case C received limited supervision with Rx. Difficulty understanding the methodology in regards to Rx.

Strengths: the researcher acknowledged the need for further research with a larger variety of patients. Also acknowledged the need to measure temporal procession in tongue pressure generation. Great that functional outcomes were included.

Level of Evidence (NH&MRC): IV

Appraised By: NSW Adult Swallowing EBP Group

Date: 5/2/2010

Form based on Worrall & Bennett, Evidence based Practice: Barriers & Facilitators for Speech-Language Pathologists, *Journal of Medical Speech-Language Pathology* 2:9, xi – xvi **Updated February 2006**