Carnaby-Mann GD, Crary MA. Adjunctive NMES in the treatment of treatment-refractory dysphagia. Ann of Otolaryngology. 2008;117:279-87.

Summary: This was our initial publication of 'proof of concept'. Patients who had chronic dysphagia (average of >6 years – most on feeding tubes) without progress in prior therapy received 3 weeks of daily treatment. All patients increased oral intake and most NPO cases were able to return to total intake. Treatment benefit was maintained at 6 month follow up with no instances of adverse events.

LaGorio L, Carnaby-Mann GD, Crary MA. Cross system effects of dysphagia treatment on dysphonia: a case report. Cases Journal. 2008;1:67.

Summary: This case report demonstrated positive voice changes in a patient who had completed the MDTP protocol.

Carnaby-Mann GD, Crary MA. McNeill Dysphagia Therapy Program (MDTP): A case control study. Arch Phys Med Rehabil. 2010;91:743-749.

Summary: This study compared MDTP outcomes to results of prior treatment cases using the Mendelsohn maneuver taught with sEMG biofeedback. On all comparison measures (oral intake, clinical change, removal of feeding tube, continued aspiration, and more) MDTP resulted in superior results/outcomes vs the more 'traditional' approach.

Crary MA, Carnaby-Mann GD, LaGorio L, Carvajal P. Functional and physiological outcomes from an exercise-based dysphagia intervention program: MDTP. Arch Phy Med Rehabil. 2012:93:1173-1178.

Summary: This pivotal study documented physiologic and functional improvements in a series of 9 cases with chronic dysphagia (>4 years) who had not improved with prior treatment. MDTP was provided as the sole treatment for a period of 3 weeks. Positive functional outcomes were observed for all patients including removal of feeding tubes for 4/7 cases who were tube dependent at the onset of therapy. Physiologic improvements supported the position that MDTP has a strong rehabilitative impact on the impaired swallow mechanism.

Lan Y, Ohkubo M, Berretin-Felix G, Carnaby-Mann G, Crary M. Improved physiologic timing of swallow following MDTP. Ann Otolaryngology Head/Neck Surg. 2012;121:525-532.

Summary: This study evaluated swallow timing across different materials used in the MDTP program. Two primary findings (at least to my mind) included the observation that thin liquids were the 'slowest' materials swallowed before therapy (took the longest time) and that following therapy these liquids increased in speed to the point that durations were similar to a control group – hence the timing of thin liquid swallows 'normalized' following completion of MDTP. These findings support the rehabilitation effect of MDTP – positive timing changes following therapy.

Sia I, Carvajal P, Lacy A, Carnaby G Crary MA. Hyoid and laryngeal excursion kinematics: Magnitude, duration, and velocity changes following successful exercise-based dysphagia rehabilitation: MDTP. J Oral Rehabilitation. 2014;42:331-339.

Summary: AS the title implies this study documented positive change in the degree and timing of key swallow movements following MDTP application. To our knowledge, this is among the first studies to assess velocity as a timing measure. These data add more support to the 'rehabilitation' effect of MDTP. Positive change in an impaired mechanism.

Crary MA, Carnaby GD. Adoption into clinical practice of two therapies to manage swallowing disorders: exercise based swallowing rehabilitation and electrical stimulation. Curr Opin Otolaryngol Head Neck Surg. 2014;22:172- 180.

Summary: This paper is not data driven but offers a good summary of the exercise principles in MDTP compared to two other popular 'exercise based' dysphagia therapies (lingual strengthening and head raise). It provides a good back on exercise principles incorporated into MDTP and give examples from treatment data.

Carnaby G, Miller D, LaGorio L, Silliman S, Crary MA. Exercise-based intervention (MDTP) with adjunctive NMES to treat dysphagia post stroke: a double-blind placebo controlled trial. Arch Phy Med Rehab. (In Review, 2018)

Summary: This paper (under review) details a high level randomized controlled trial conducted in a stroke rehab setting. Fifty-one stroke patients were randomly assigned to one of 3 interventions: MDTP with motor level Estim, MDTP with Sham Estim, and "traditional' therapy. As expected, all patients improved in treatment but unexpectedly the MDTP with sham estim (no estim) group demonstrated the greatest degree of improvement in all measured outcomes. The results of this high level RCT offer very strong support for MDTP intervention without any adjunctive modality (specifically Estim).