

**Critical Review:**  
**Is neuromuscular electrical stimulation more effective than traditional swallowing therapy for treating pharyngeal dysphagia?**

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This critical review evaluates whether neuromuscular electrical stimulation (NMES) is superior to traditional rehabilitative swallowing therapy (TT) for treating pharyngeal dysphagia. Randomized, controlled, clinical trials, non-concurrent cohort studies, and a case study were included in a critical review of the literature. Overall, research results were equivocal. There is some suggestion that NMES may provide better outcomes than TT. Further evidence through methodically rigorous research studies is needed.

***Introduction***

Dysphagia is defined by Logemann (1997) as “difficulty swallowing for moving food from the mouth to the stomach” (p. 1). As per the College of Audiology and Speech-Language Pathology of Ontario’s (CASLPO) best practice gui

***Objective***

The objective of this paper is to critically evaluate existing literature to determine if pharyngeal dysphagia is better rehabilitated through neuromuscular electrical stimulation therapy than traditional rehabilitative swallowing therapy methods.

***Methods***

Search Strategy

PubMed, Medline-Ovid, CINAHL, and Cochrane Library electronic databases were used to find articles for this critical review using the following key words:  
((dysphagia) OR (swallow

further investigation is needed to determine whether it proves to be a better, worse, or equivalent option to current dysphagia management techniques.

### ***Results***

Evidence was evaluated using a scale adapted from Oxford Centre for Evidence-based Medicine and National Health and Research Council of the Australian government for the course CSD9639/9649 at Western University (Archibald, 2013). The scale progresses from the highest level of evidence (level I) to the lowest level of evidence (level V).

<b><i>Level</i></b>	<b><i>Research Design</i></b>
<b>I</b>	

be different from that of the population as a whole. The mean FOIS score of the patients enrolled in the study was 2.40 (SD 1.20), indicating severe dysphagia. Individuals with dysphagia of mild or moderate severity may not respond to treatment in the same degree. Additionally, having treatments provided by different professionals is a potential source of bias. The level of expertise between the professions differs, and patients may respond differently to treatment provided by a doctor than to one provided by an occupational therapist. This methodological limitation is further exacerbated as study outcome measures (FOIS scores, complications related to treatment, and number of sessions provided) were based on patient reports. The validity and importance of this study are equivocal due to result bias, and the minimal advantage in therapeutic effect demonstrated in the NMES group over the TT group.

Cohort Studies (Level IIc Evidence)

Kiger, Brown and Watkins (2006) and Blumfield et al. (2006) presented the results of their non-concurrent cohort studies. This study design provides level IIc

A comparison of admission and discharge swallow scores was used as an outcome measure. A multivariate linear regression analysis revealed that patients in the NMES group demonstrated significantly more improvement than those patients in the other group ( $p=0.003$ ). The NMES participants took significantly fewer treatment sessions to reach the target consistencies or plateau ( $p=0.014$ ) as determined through an independent samples t-test. The authors conclude that NMES was a superior treatment for dysphagia for individuals residing in long-term acute care facilities.

Limitations of the study include a possible selection bias where NMES was the preferred treatment option for patients with less severe profiles, and an evaluator bias related to having the same clinicians administering both the treatment intervention and the post-treatment evaluations. Overall, the evidence from this study suggests that NMES may have an advantage over TT.

#### Case Studies (Level IV Evidence)

A case study by Barikoo and Lam (2011) was also evaluated. This research design provides valuable preliminary information upon which further investigation can be based. Given the limited sample size, and lack of randomization of treatment protocols, results cannot be easily generalized to the larger population.

An individual with encephalitis was provided with two phases of treatment. Phase one consisted of TT including diet modification, thermal stimulation, positioning, and the chin-tuck maneuver. Phase two involved NMES over the submental and throat region. The patient was seen weekly in both phase one (3 months) and phase two (3 months).

