



Critically Appraised Topic (CAT)



1. CLINICAL BOTTOM LINE:

Expiratory Muscle Strength Training may be an effective treatment to maintain or improve swallow function in patients with Parkinson's disease when compared to no treatment.

There are a limited number of studies which investigate the benefits of EMST rehabilitation in patients with dysphagia. Any benefits of EMST in improving airway protection in swallowing are suggestive and based on findings on healthy participants or in patients with Parkinson's disease.

Findings from the literature, including articles on healthy participants suggest that EMST improves, expiratory muscle function, cough function, UES opening, hyolaryngeal elevation and penetration/aspiration scale. These improvements may increase airway protection during swallowing in a variety of dysphagia cohorts and prevent aspiration-related pulmonary complications.

2. Clinical [PICO] Question *[patient/problem, intervention, (comparison), outcome]*:

In patients with dysphagia, does EMST (Expiratory muscle strength training) improve airway protection during swallowing.

3. SearchTerms/Systems: "Expiratory muscle strength training" or "EMST" and "dysphagia" or "swallowing" or "deglutition"

Cochrane, PEDro, SpeechBite, CINAHL, Pubmed, Amed, google scholar

Criteria for including an article:

EMST regime performed on patients with dysphagia.

Pre and post instrumental swallow measure of food/fluid.

4. Quantity of the evidence based:

Number of papers identified: 37 Number of suitable papers actually capped: 3

5. Overall level of the evidence base: (number of studies according to each NHMRC level)

I II 1 III-1 III-2 III-3 IV 2

6. Nature the evidence base: (number of feasibility, efficacy and effectiveness studies)

Feasibility Efficacy 3 Effectiveness

7. Overall findings from the evidence-base are:

☐ compelling

☒ suggestive

☐ equivocal

Comments...



8. Results:

- Capped studies showed significantly reduced penetration/aspiration scores improved UES opening and improved Maximum expiratory pressure in patients with Parkinson's disease who underwent EMST treatment.
- Higher number of participants maintained their swallow ability in Parkinson's disease compared to control group who deteriorated.
- Limited number of studies on small number of participants.
- All studies suitable for capping included author who holds patent for EMST device – potential conflict of interest.
- 1 well-designed randomised controlled trial with blinding and interrater reliability.
- Articles do not compare to any other form of swallow rehab – it is unclear if there is any benefit to EMST compared to other swallow rehabilitation.
- All capped studies were performed on patients with Parkinson's disease. No other population with dysphagia was identified.
- All studies included for CAP have same treatment procedure of 4 week treatment. 5 sets of 5 repetitions 5 times per day. All studies included same resistance setting on EMST device (75% of MEP).
- One study (Troche et al 2011) included data on number needed to treat to gain improvement or to show benefit. Troche et al (2010) reports Number needed to treat to gain one additional improvement is 5.3. Number needed to treat to gain benefit (i.e. to not deteriorate) is 1.8.
- Troche et al (2014) found maintenance of swallow benefits were maintained in a small group of patients 3 months after EMST regime. This study was conducted on 10 out of the 30 participants who underwent treatment in an earlier study (Troche et al 2010).

9. Recommendations:

Is evidence from current clinical practice the same as clinical bottomline?

☐ Yes (the CAT is now complete) ☐ No ☒ Undecided

Undecided because:

☒ more research evidence needed.

☒ more evidence on clinical practice is needed

If clinical practice is not the same as the bottomline, and the research evidence is **compelling** (or suggestive, if the issue is important and/or addressing an issue with limited if any research)

☐ change is not needed to current clinical practice, because evidence from clinical practice shows that current practice is more effective /efficient than evidence-based recommendations. (CAT now complete)

☐ Change is needed to current clinical practice (then, complete box # 10).

10. Application to practice (when change has been indicated):

In light of the summary comments from individual CAPS about relevance of the research to practice, check which of the following applies:

☐ **Change is needed, and it is possible** – briefly state what needs to change, and, how change could be implemented and evaluated.

☐ **Change is needed, but it is not possible** – dot point ideas to address barriers, or, state why change is not possible, and, when the issue will be re-considered.

Appraised By: Adult swallow EBP group
Clinical Group:

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