

Exercise-Based Dysphagia Rehabilitation for Adults with Oesophageal Cancer: A Systematic Review

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Introduction

- Oesophageal cancer has an approximate 5-year survival of between 15-25% [1,2].
- There is an emerging focus on recovery and maintenance of health-related QOL [5,6].
- Prevalence of dysphagia is high in patients with oesophageal cancer (79-90%), however, there is limited research exploring swallowing rehabilitation in this population [10].

Objectives

- To determine the effectiveness of dysphagia rehabilitation in improving clinical and quality of life outcomes in adults with oesophageal cancer across timepoints.
- To identify key rehabilitation components such as delivery, dose, intensity, timing, and fidelity to inform future research of dysphagia rehabilitation in oesophageal cancer.

Methods

The protocol was registered on the PROSPERO database (CRD42020172029). 10 databases, 3 clinical trial registries, and relevant conference abstracts were searched up to March 2020. Two independent authors also assessed articles for eligibility, completed data extraction and quality assessment. All published and unpublished RCTs and non RCTs with no language restrictions were sought from inception until March 2020. Methodological quality of the included studies was assessed using the ROBINS-I tool (Risk of Bias in Non-randomised Studies – of Interventions) and Downs and Black Checklist.

Databases: CINAHL Complete, Medline, EMBASE, Web of Science, CENTRAL, ProQuest
Dissertations and Theses, OpenGrey, PROSPERO, RIAN and SpeechBITE

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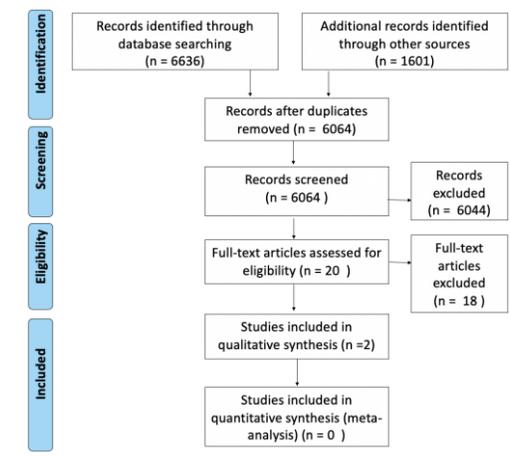


Fig 1 PRISMA Flow Chart

	Bias Due to Confounding	Bias in Selection of Participants into the Study	Bias in Classification of Interventions	Bias due to Departures from Intended Interventions	Bias due to Missing Data	Bias in Measurement of Outcomes	Bias in Selection of the Reported Result	Downs & Black Scores
ROBINS- I Risk Ratings								
Okumura et al [6]	Series	Low	Low	No Info	No Info	Low	No info	13
Tsubosa et al [7]	Critical	Low	Low	No Info	Moderate	Moderate	No Info	1

Fig 2 Methodological Assessment Results

Results

In the Case Control Study (CCS) [6], the Functional Outcome Assessment of Swallowing (FOAMS) score following surgery and prior to rehabilitation was better for the treatment group than the control group following prehabilitation (p value = 0.054) and following rehabilitation (p value = 0.049) indicating that swallow function is improved by peri-operative dysphagia rehabilitation. The remaining results are outlined in Fig 3 below. The very poor Methodological Assessment Results are portrayed in Fig 2.

Authors	Respiratory	Penetration/Aspiration on VFSS	Pharyngeal Residue	Swallow Biomechanics	LOSH after surgery
Okumura et al 2016 [6] (CCS)	Aspiration pneumonia: CG = 3pts (21.4%) TG = 3pts (25%) p=0.83	Not reported	Pyriiform sinus residue decreased significantly following prehabilitation (p value = 0.047). Laryngeal vestibule and pyriform sinus residue decreased significantly following rehabilitation (p values of 0.031 and 0.027, respectively)	Maximum superior excursion of hyoid bone increased significantly during swallowing (p value = 0.046)	CG: 32.4 ± 12.2 TG: 36.1 ± 10.7 (p=0.22)
Tsubosa et al 2005 [7] (Case Series)	N=1 (11%) developed 'severe' aspiration pneumonia	Data available for 2 participants : 1) mild aspiration improved to normal. 2) Severe penetration and aspiration did not improve, but severe silent aspiration improved to normal	Limited follow up data available. No improvement noted in the 1 participant with mild vallecular and pyriform sinus residue	Not reported	25.3 days for 8 participants. 96 days for remaining participant.

Fig 3 Main Outcomes Key: LOSH = Length of Stay in Hospital. CG = Control Group. TG = Treatment Group

Conclusions

- There is limited low-quality evidence that dysphagia rehabilitation may result in functional swallowing changes, however, no reduction in aspiration rates, time to return to oral intake or length of hospital stay durations were found.
- High quality research investigating the clinical and quality of life outcomes of swallow rehabilitation in this population is needed.

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