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Respiratory-Swallowing Coordination in Motor Neuron Disease: A Scoping Review

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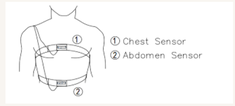
Background:

- Respiratory-swallowing coordination (RSC) is essential for providing efficient breathing and optimal swallowing function (Mcfarland et al. (2016).
- Most commonly used methods of measuring RSC include nasal thermistry and respiratory inductance plethysmography (RIP) to determine direction and durations of airflow.

Ex: nasal thermistry



Ex: RIP

- Outcome measures include swallow apnea duration (SAD) and respiratory phase pattern (RPP), i.e., direction of airflow pre- and post-SAD.

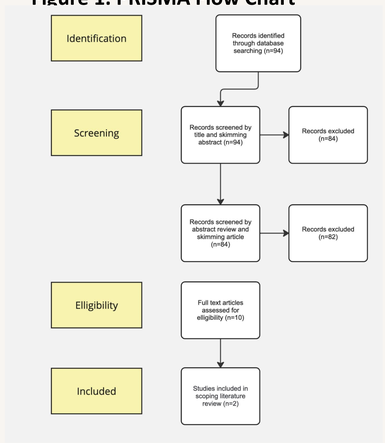
OBJECTIVE:

The goal of the current project was to conduct a scoping literature review of RSC, focusing on the motor neuron disease (MND) population, including people with amyotrophic lateral sclerosis (ALS).

METHODS:

- **Search strategy:** A multi-engine electronic search was conducted during 2023-24.
  - Databases searched: Pubmed, Google Scholar
- **Inclusion criteria:** Articles on RSC, focusing on the MND population, including people with ALS. No limitations were placed on publication date.
- **Exclusion criteria:** Excluded articles that did not meet inclusion criteria, as well as pediatric-related and non-English articles.

Figure 1. PRISMA Flow Chart



RESULTS:

- **Garand et al. (2022):**
  - Measurement methods included nasal thermistry and RIP.
  - Utilized RPP as an outcome measure. The *ALS population demonstrated fewer expiratory-expiratory phase patterns* (59%), as compared to healthy adults (80%).
- **Hadjikoutis et al. (2000)**
  - Utilized SAD and RPP as outcome measures.
  - SAD for MND population:

Bolus size	5ml	10ml	20ml
Mean (SD)	1.8 (1.1)	2.0 (2.5)	4 (2.9)

Note: does not report on the number of swallows per SAD.

  - RPP:
    - The neurological population, including people with ALS, demonstrated fewer E-E phase patterns.
      - **Healthy:** 91% with swallow apnea followed by expiration
      - **Neurological disorders (including ALS):** 91% with swallow apnea followed by inspiration

CONCLUSION:

- There is a paucity of literature examining RSC in people with MND. Preliminary research suggests that the MND population differ in RSC as compared to healthy individuals.
- Future studies should control for number of swallows per SAD to eliminate concern for artifact.

Abstract and references available by request.