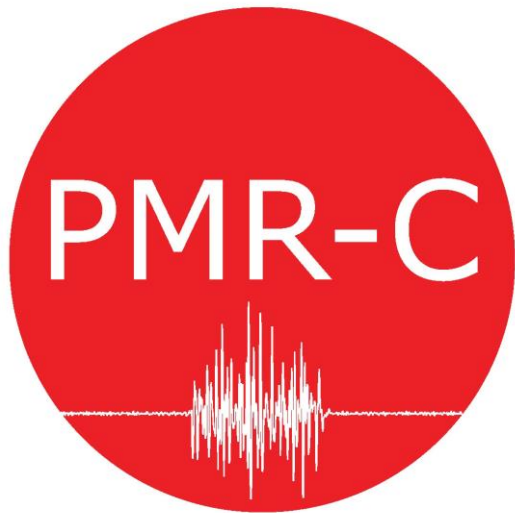




Physical Medicine & Rehabilitation Research – Copenhagen

Department of Physical- and Occupational Therapy
Department of Clinical Research
Department of Orthopedic Surgery

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Sarcopenic dysphagia in acutely admitted older patients

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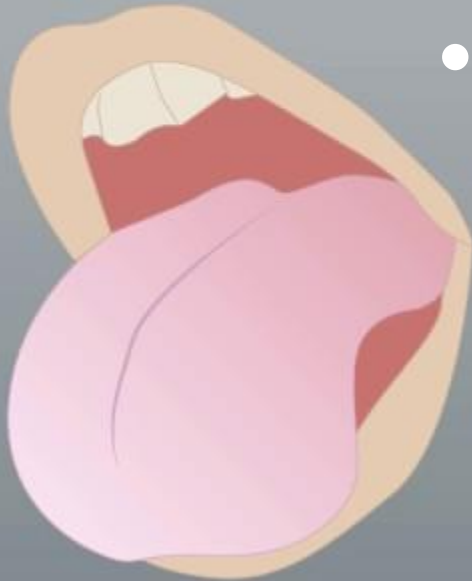
Guest researcher at unit of Occupation-Centred Occupational
Therapy, the Parker Institute, Copenhagen University Hospital,
Bispebjerg and Frederiksberg, Denmark.



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Content

- Dysphagia & sarcopenia
- Sarcopenic dysphagia
- Rehabilitation nutrition
- Few results from current research

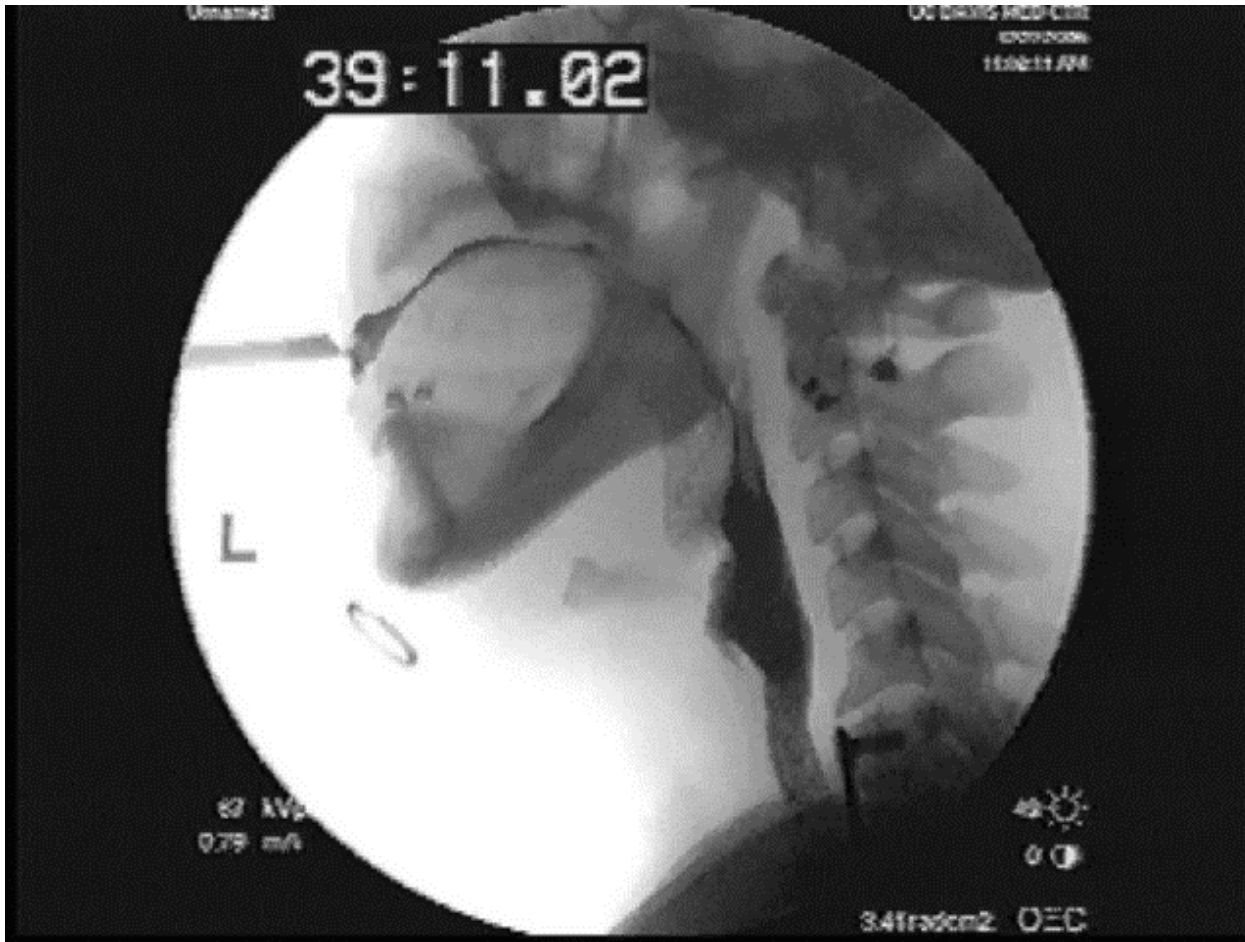


I have no financial conflicts of interest
to disclose concerning this
presentation



Eating & drinking

Basic activities of daily living



Automatic, timed & coordinated
Efficient & safe swallow

Nutrition & hydration

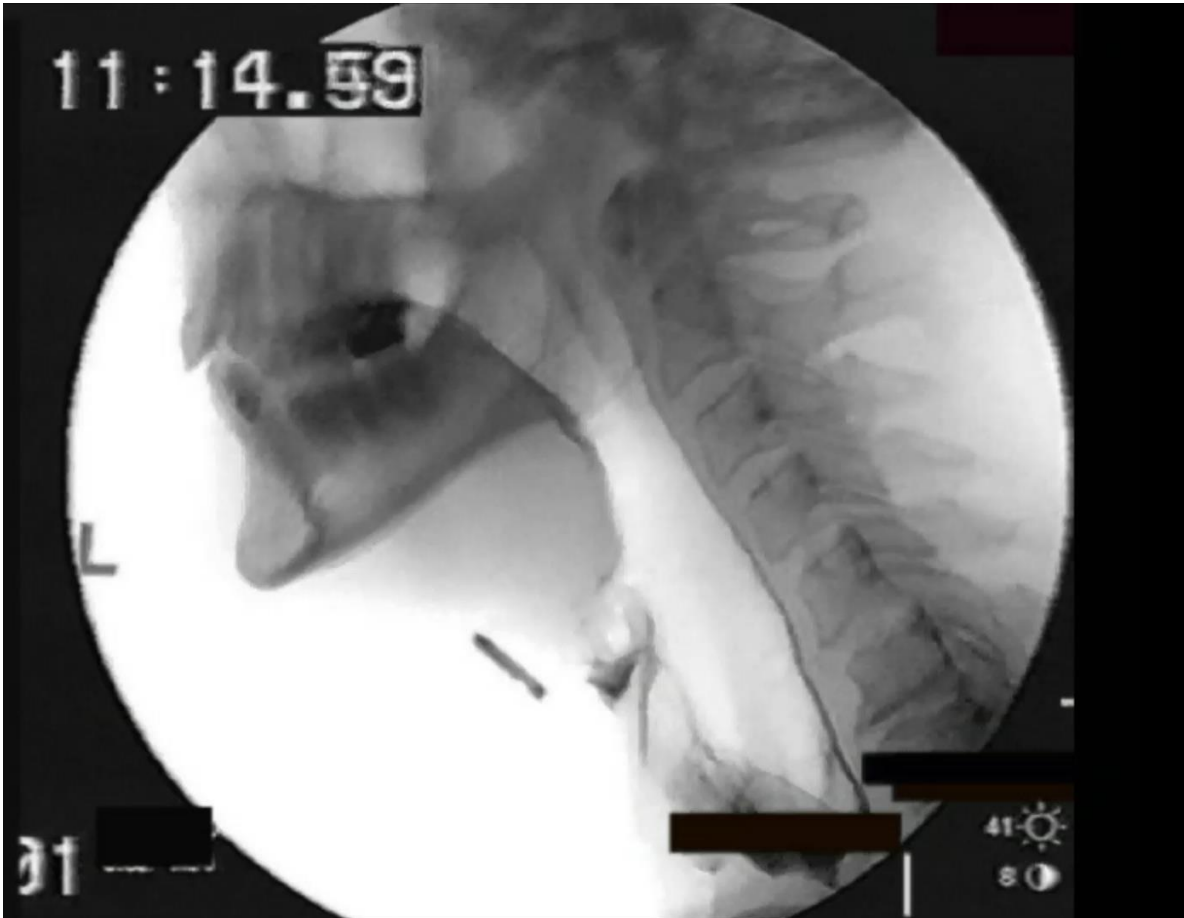
Social & cultural
activities



Pleasure & satisfaction
Structure to the day
Identity

Dysphagia

‘A functional impairment that either prevents or limits the intake of food and fluids, and which makes swallowing unsafe, inefficient, uncomfortable or affects quality of life’.



Impaired swallowing efficiency & safety

Problems with:

- Bolus intake
- Mastication & bolus formation
- Bolus control (drooling)
- Propulsion of bolus backwards in the mouth
- Activation of the swallowing reflex
- Timing & coordination of the swallowing sequence
- Breathing–swallowing coordination
- Protection of the airway (aspiration).

Causes of dysphagia

Neurological disorders

- Stroke
- Traumatic brain injury (TBI)
- Dementia
- Amyotrophic lateral sclerosis (ALS)
- Parkinson's disease (PD)
- Multiple sclerosis (MS)

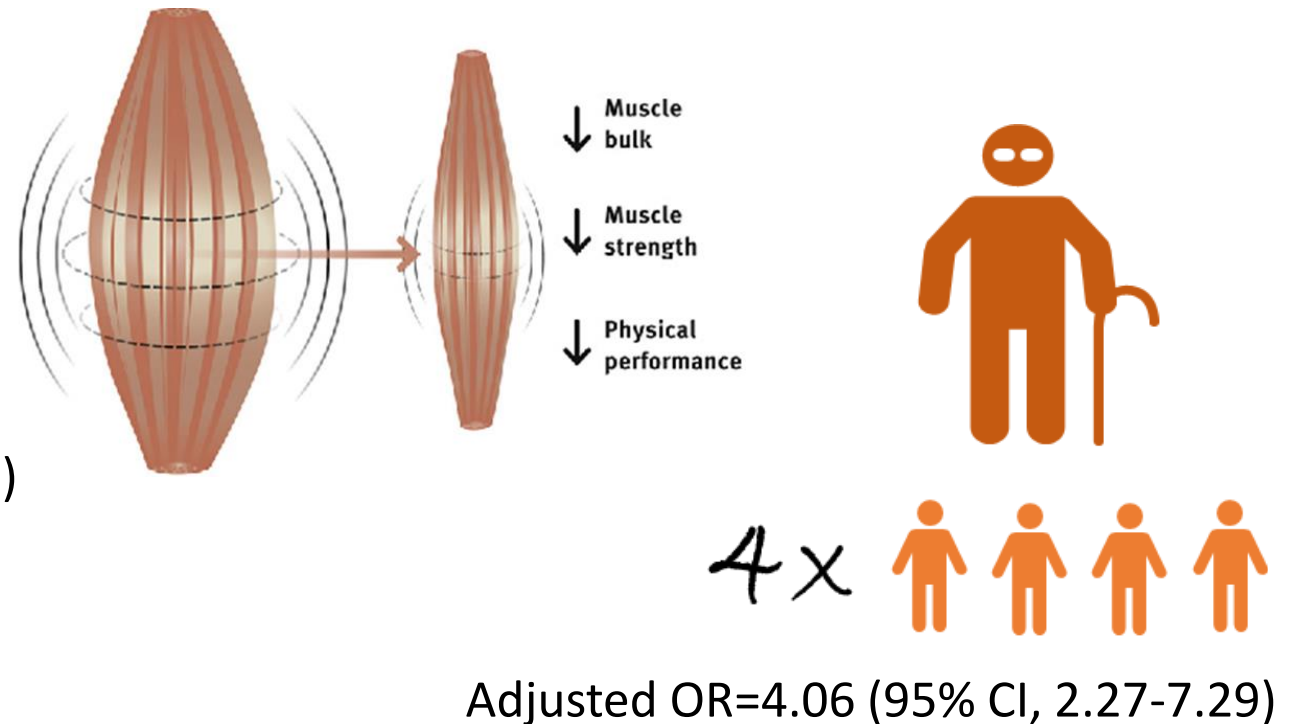
Respiratory disorders

- Chronic obstructive pulmonary disease (COPD)

Structural changes

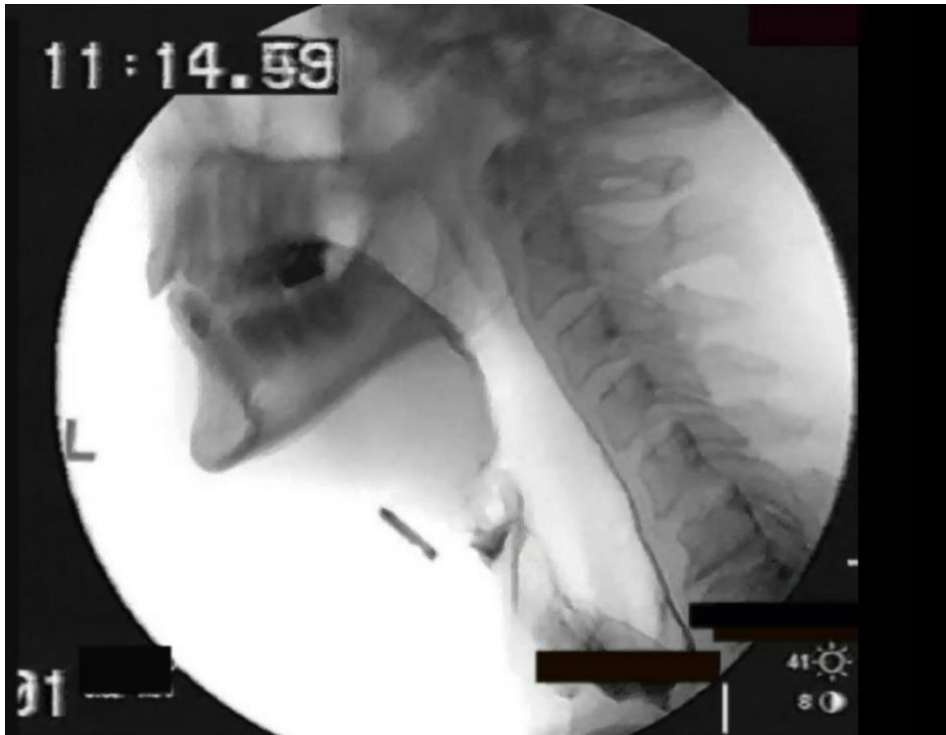
- Head and neck cancer
- Spinal cord injury

Sarcopenia

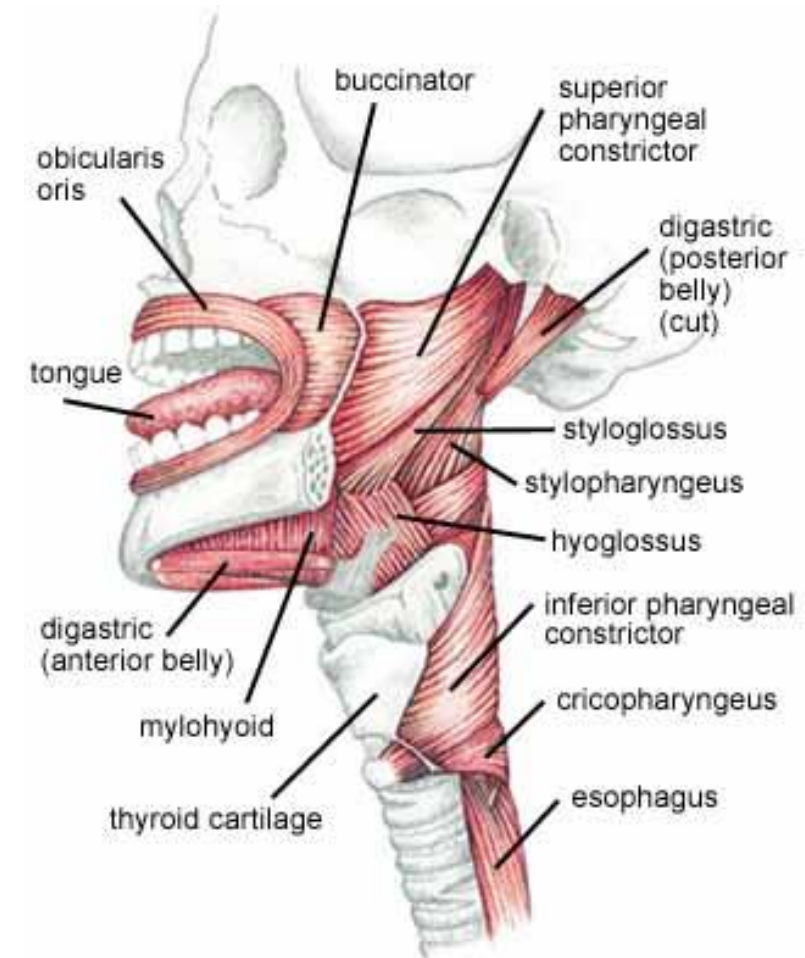


Sarcopenic dysphagia

Dysphagia caused by sarcopenia of the whole body and swallowing-related muscles.



Fujishima et al. Sarcopenia and dysphagia: Position paper by four professional organizations. *Geriatr Gerontol Int*. 2019;19(2):91-97.



Umay et al. Association between swallowing muscle mass and dysphagia in older adults: A case-control study. *J Oral Rehabil*. 2023;50(6):429-439

Yamaguchi et al. Ultrasonography Shows Age-related Changes and Related Factors in the Tongue and Suprahyoid Muscles. *J Am Med Dir Assoc*. 2021;22(4):766-772.

Sakai et al. Relationship between tongue strength, lip strength, and nutrition-related sarcopenia in older rehabilitation inpatients: a cross-sectional study. *Clin Interv Aging*. 2017;12:1207-1214.

New concept & new research area

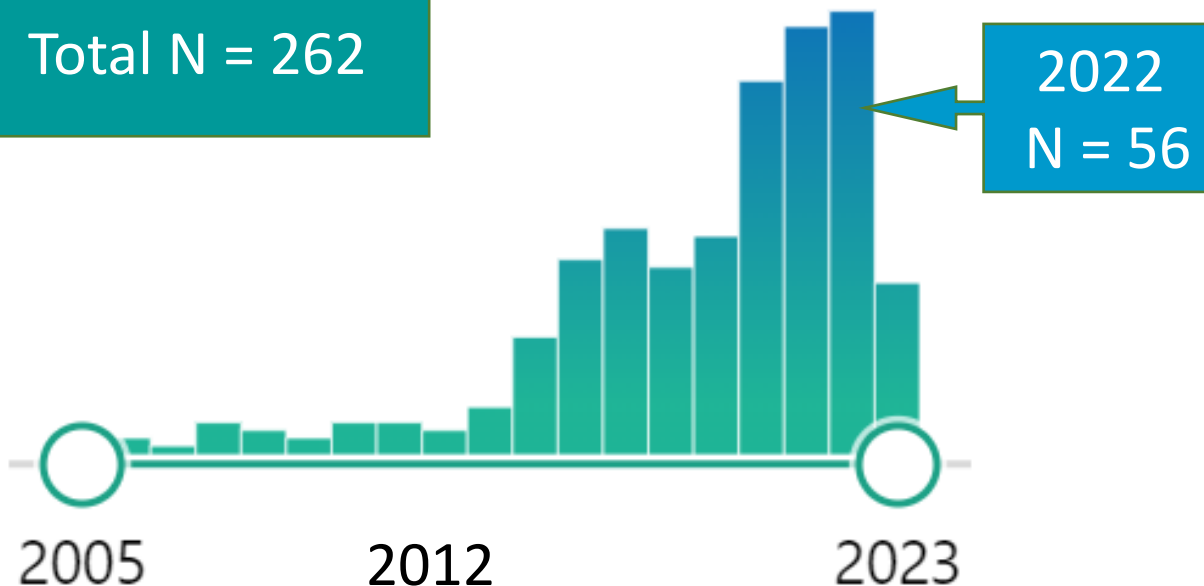


(Dysphagia): 78.296 hits

AND

((Sarcopenia) OR (sarcopenic)): 18.199 hits

Total N = 262



2012: 'Sarcopenic dysphagia' used as a term

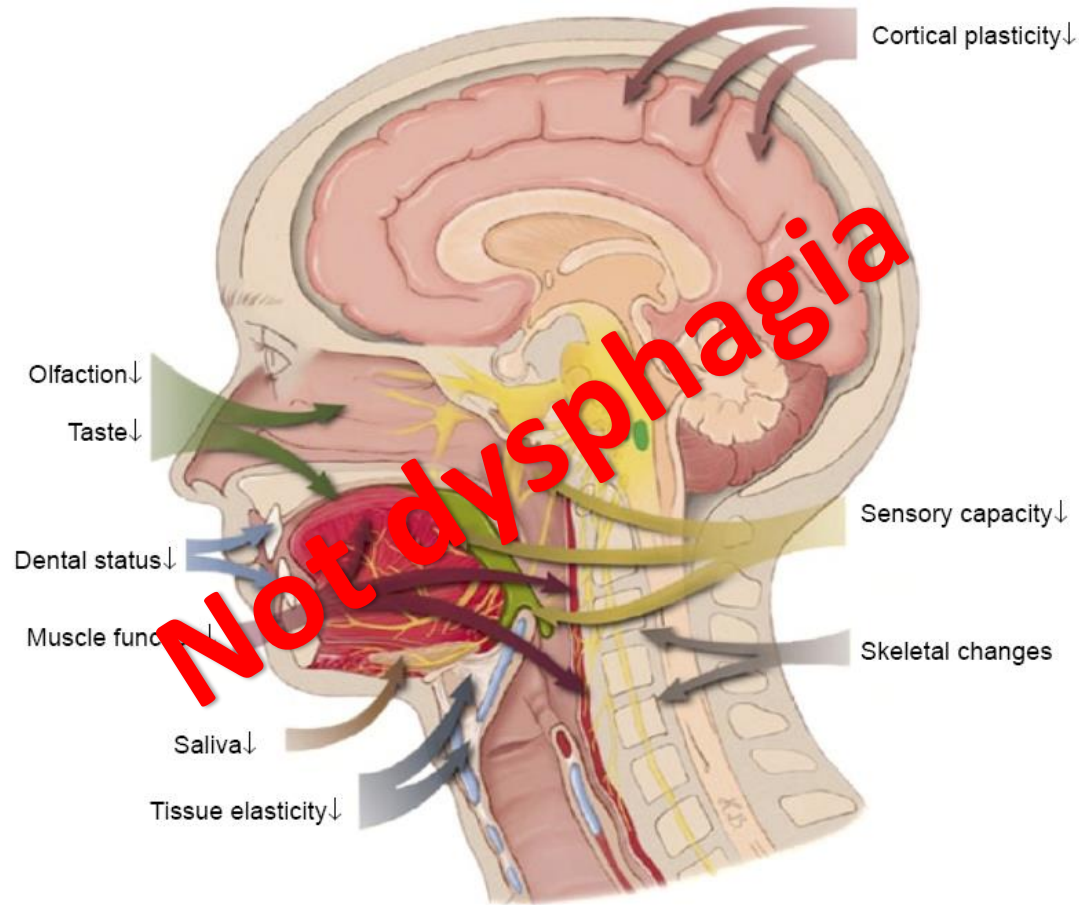
2013: Consensus diagnostic criteria

2017: A diagnostic algorithm

2019: Japanese Sarcopenic Dysphagia Database

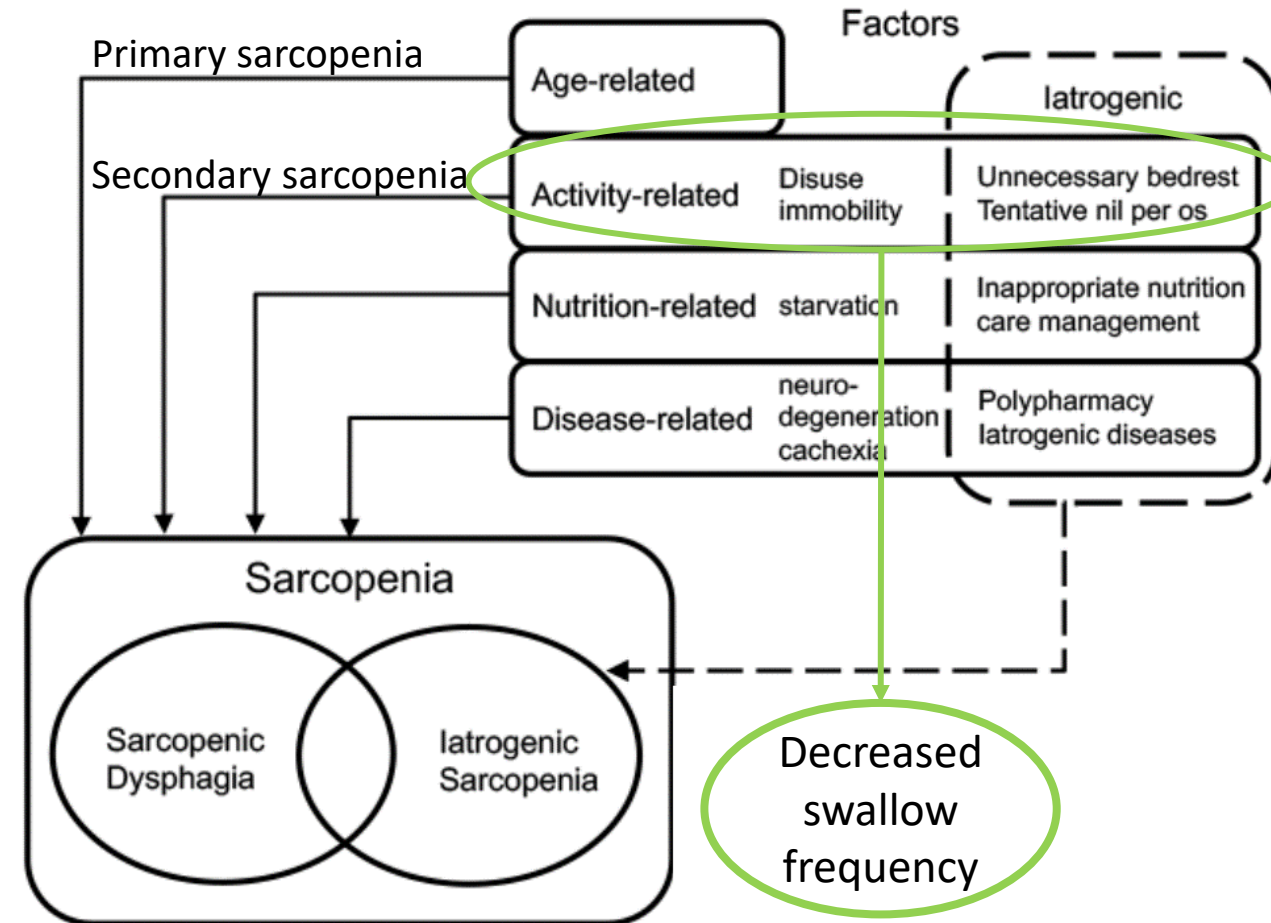
- Kuroda et al. Relationship between thinness and swallowing function in Japanese older adults: implications for sarcopenic dysphagia. J Am Geriatr Soc 2012; 60: 1785–1786.
- Fujishima et al. Sarcopenia and dysphagia: Position paper by four professional organizations. Geriatr Gerontol Int. 2019;19(2):91-97.
- Mizuno et al. Construction and Quality Evaluation of the Japanese Sarcopenic Dysphagia Database. J Nutr Health Aging. 2021;25(7):926-932.

Presbyphagia → Sarcopenic dysphagia



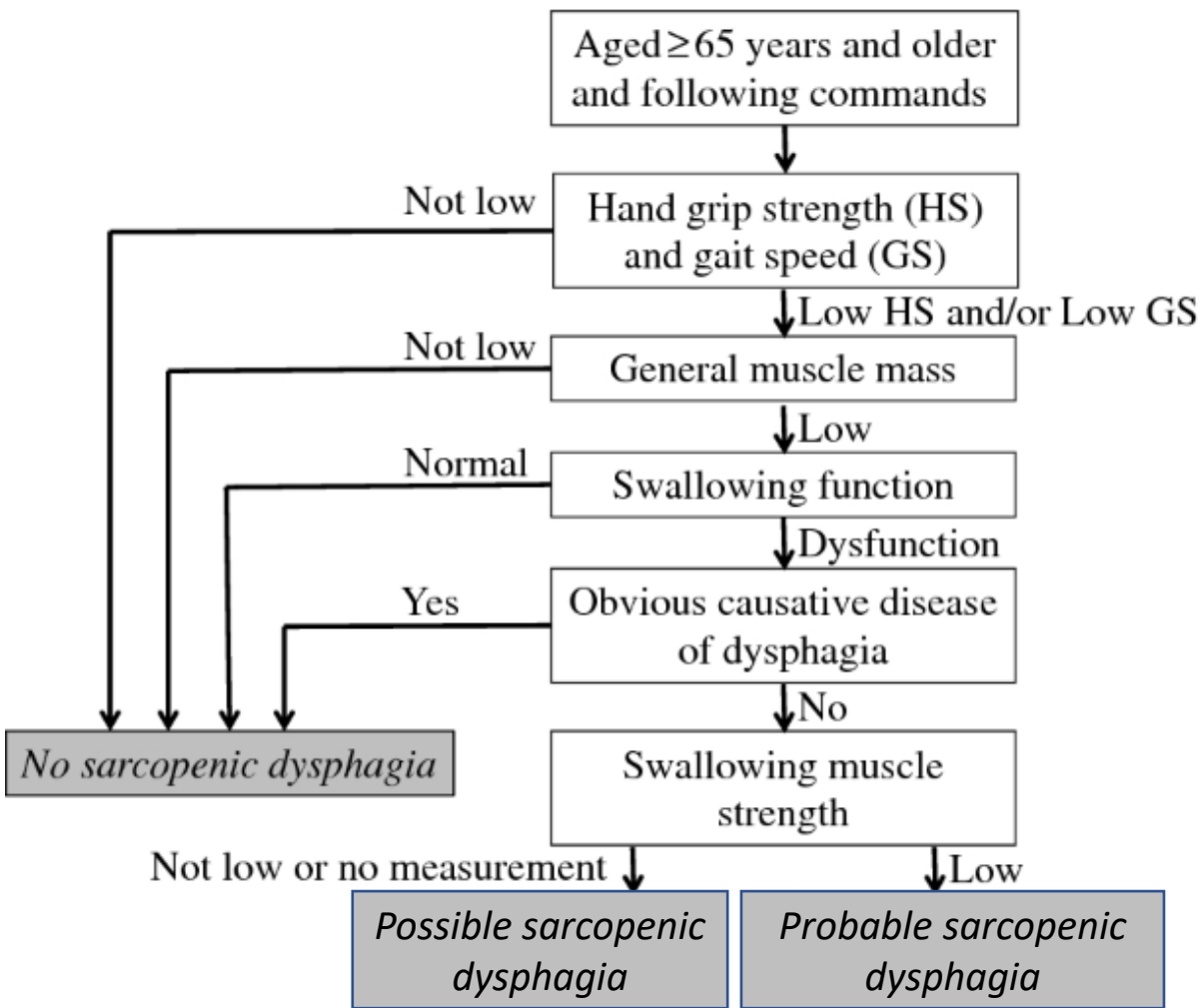
Wirth et al. Oropharyngeal dysphagia in older persons - from pathophysiology to adequate intervention: a review and summary of an international expert meeting. Clin Interv Aging. 2016;11:189-208.

Alvar et al. The Role of White Matter in the Neural Control of Swallowing: A Systematic Review. Front Hum Neurosci. 2021;15:628424.

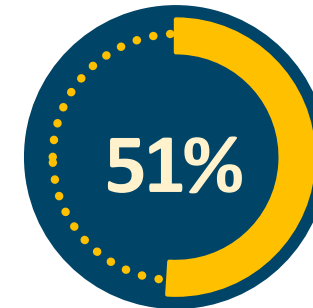


- Nagano et al. Rehabilitation Nutrition for Iatrogenic Sarcopenia and Sarcopenic Dysphagia. J Nutr Health Aging. 2019;23(3):256-265.
- Ishii et al. Time Spent Away from Bed to Maintain Swallowing Function in Older Adults. Gerontology. 2023;69(1):37-46.
- Bulmer et al. Evaluation of Spontaneous Swallow Frequency in Healthy People and Those With, or at Risk of Developing, Dysphagia: A Review. Gerontol Geriatr Med. 2021;7:23337214211041801.

Diagnosis & prevalence

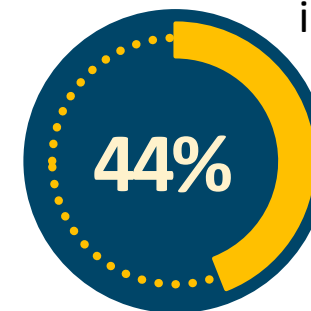


Dysphagia

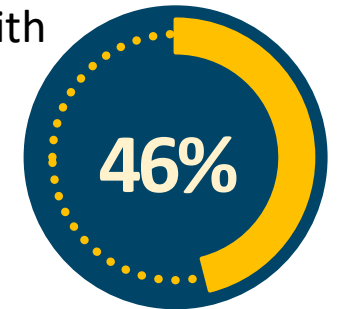


Geriatric wards

Sarcopenic dysphagia
in patients with
dysphagia



Acute hospital



Rehabilitation hospital

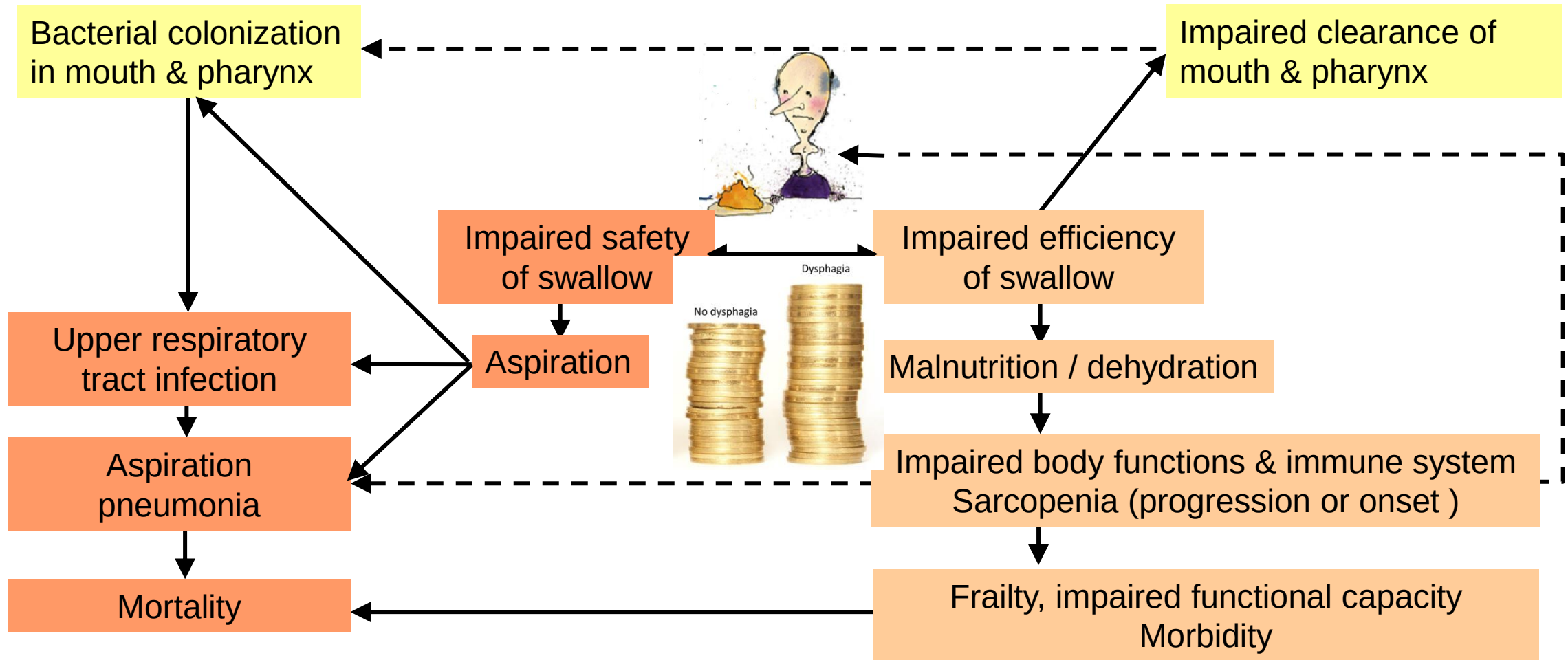
- Mori et al. Development, reliability, and validity of a diagnostic algorithm for sarcopenic dysphagia. JCSM Clin Rep. 2017;2:10.

- Abu-Ghanem et al. Diagnosis of Sarcopenic Dysphagia in the Elderly: Critical Review and Future Perspectives. Dysphagia. 2022;37(5):1093-1102.

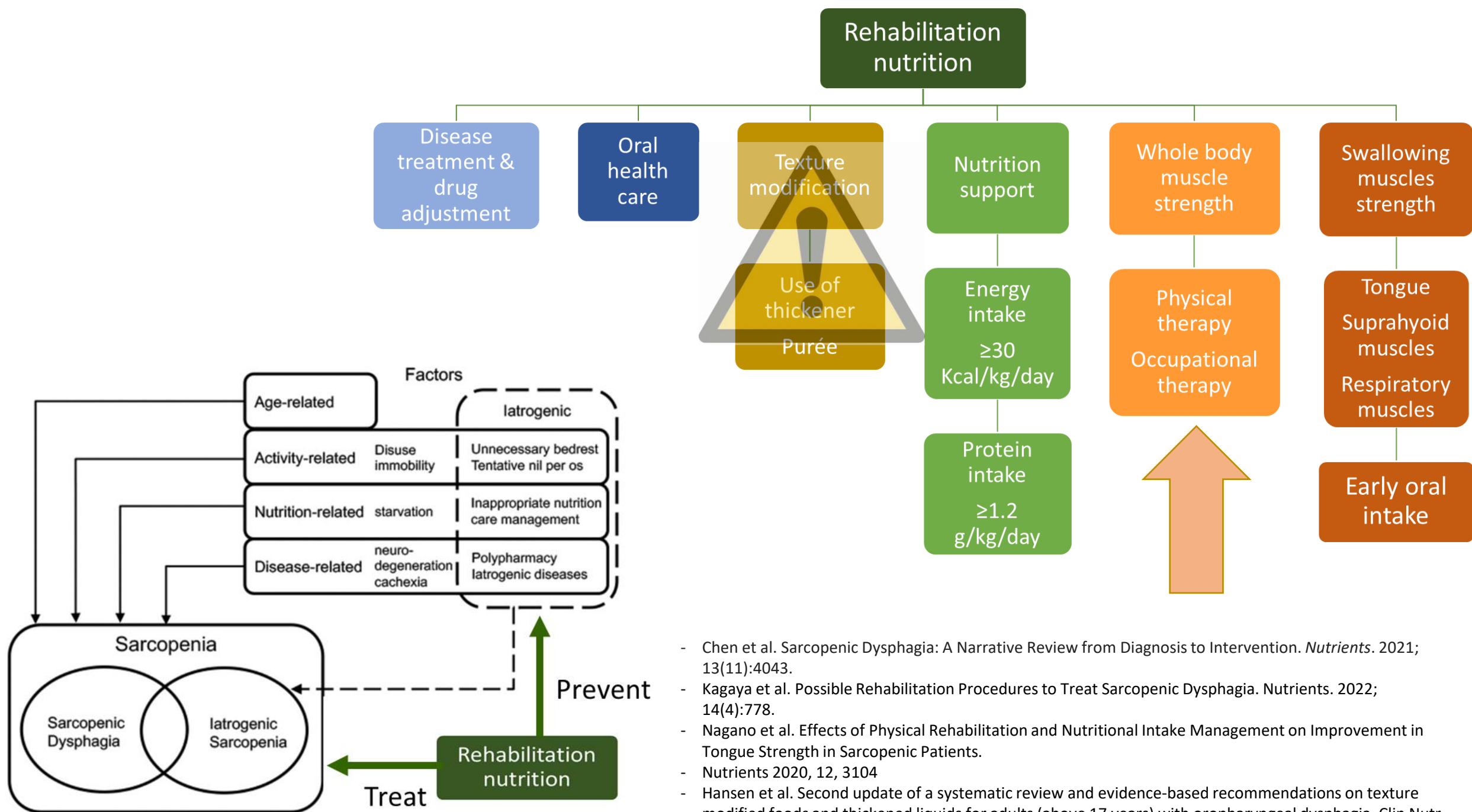
- Rivelsrud et al. Prevalence of Oropharyngeal Dysphagia in Adults in Different Healthcare Settings: A Systematic Review and Meta-analyses. Dysphagia. 2023;38(1):76-121.

- Togashi et al. Sensitivity and Specificity of Body Mass Index for Sarcopenic Dysphagia Diagnosis among Patients with Dysphagia: A Multi-Center Cross-Sectional Study. Nutrients. 2022;14(21):4494.

Consequences of dysphagia & sarcopenic dysphagia



- Rofes et al. Diagnosis and management of oropharyngeal Dysphagia and its nutritional and respiratory complications in the elderly. *Gastroenterol Res Pract.* 2011;818979.
- Banda et al. Prevalence of Oropharyngeal Dysphagia and Risk of Pneumonia, Malnutrition, and Mortality in Adults Aged 60 Years and Older: A Meta-Analysis. *Gerontology.* 2022;68(8):841-853.
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- Westmark et al. The cost of dysphagia in geriatric patients. *Clinico-Econ. Outcomes Res.* 2018, 10, 321–326.



- Chen et al. Sarcopenic Dysphagia: A Narrative Review from Diagnosis to Intervention. *Nutrients*. 2021; 13(11):4043.
- Kagaya et al. Possible Rehabilitation Procedures to Treat Sarcopenic Dysphagia. *Nutrients*. 2022; 14(4):778.
- Nagano et al. Effects of Physical Rehabilitation and Nutritional Intake Management on Improvement in Tongue Strength in Sarcopenic Patients. *Nutrients* 2020, 12, 3104
- Hansen et al. Second update of a systematic review and evidence-based recommendations on texture modified foods and thickened liquids for adults (above 17 years) with oropharyngeal dysphagia. *Clin Nutr ESPEN*. 2022;49:551-555.



The effectiveness of tongue strengthening exercise in increasing tongue strength among older people with dysphagia: A systematic review

St. Nurfatul Jannah^{a,b}, Syahrul Syahrul^{c,*}, Kusrini Kadar^c



Dysphagia (2020) 35:745–761
<https://doi.org/10.1007/s00455-019-10066-1>

REVIEW



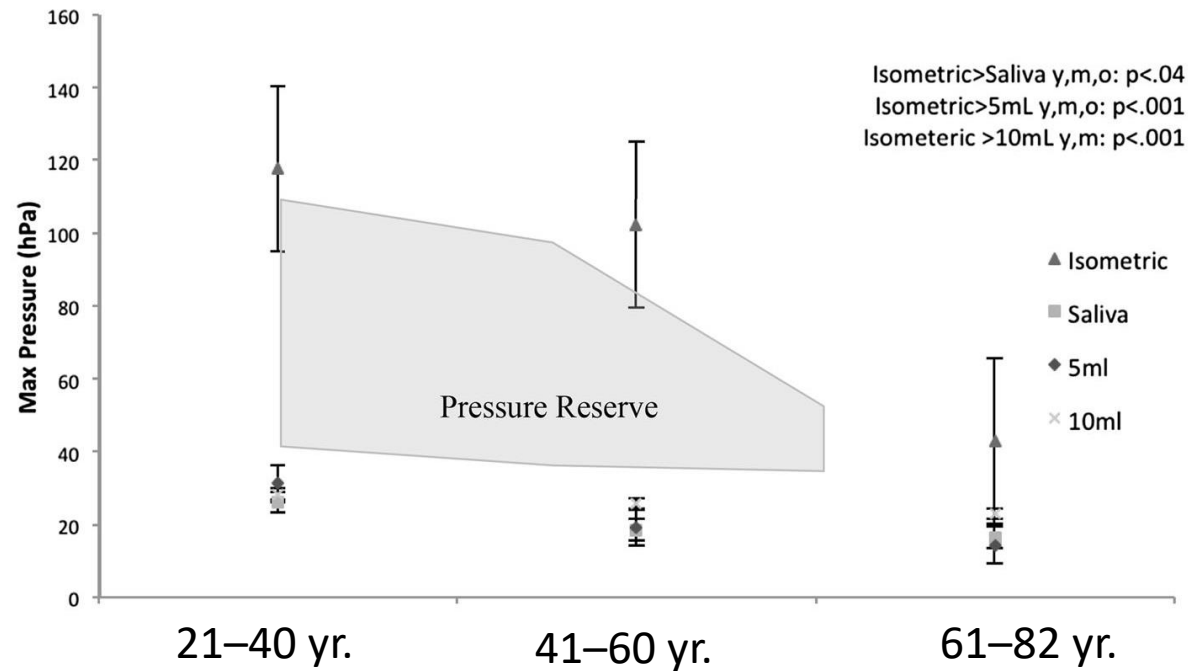
The Effect of Lingual Resistance Training Interventions on Adult Swallow Function: A Systematic Review

Sana Smaoui^{1,2} · Amy Langridge¹ · Catriona M. Steele^{1,2}

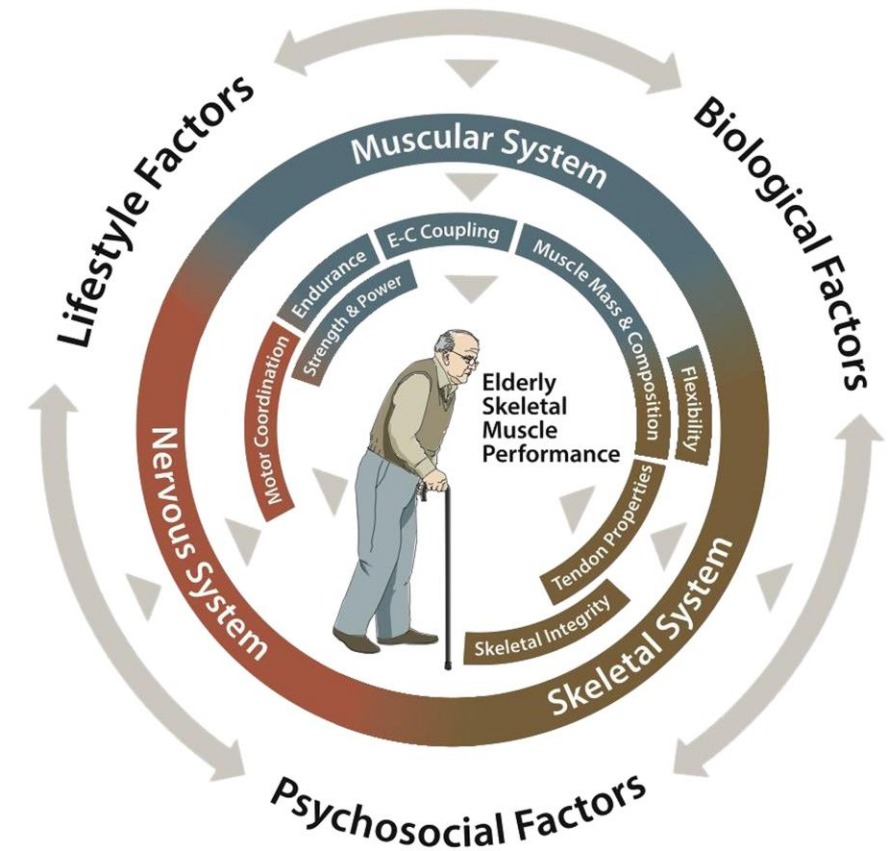
	End of intervention (4-12 weeks)	Detraining period (4 weeks)
Tongue strength	↑	↓
Tongue thickness	↑	↓
Swallowing efficiency	↔	NR
Swallowing safety	↔	NR

Strength training alone might not be the whole solution

Swallowing is a submaximal strength task

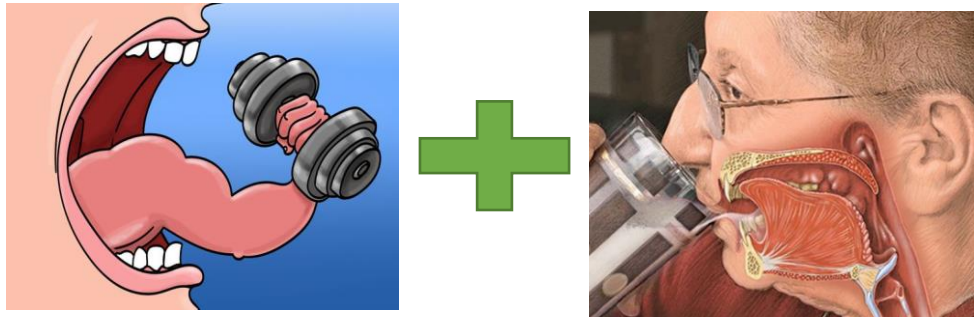


Alterations in nervous system form & function contribute to sarcopenia



Combined strength- and skill-based focus

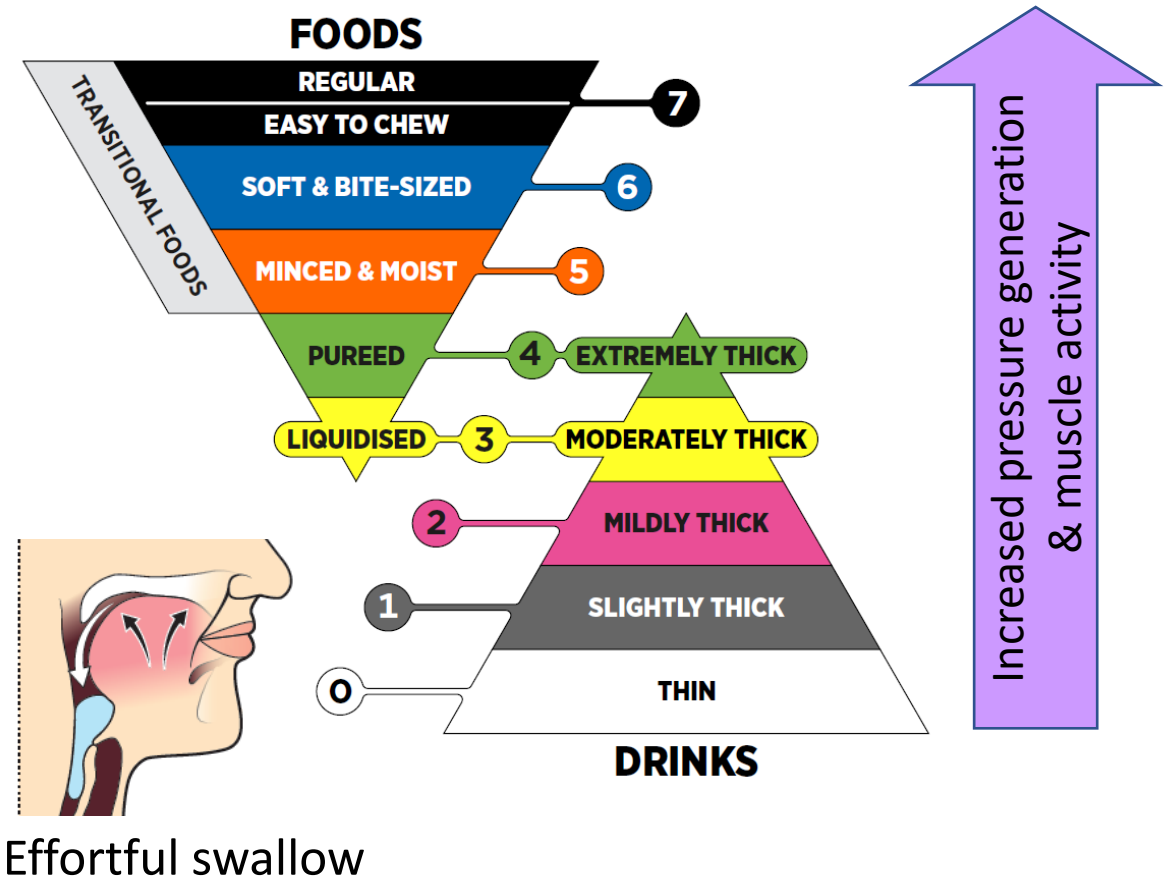
Integrate motor learning principles into the strength training.



Overload & systematic progression

Goal directed & task oriented

Zimmerman et al. "Motor learning, neuroplasticity, and strength and skill training: moving from compensation to retraining in behavioral management of dysphagia." *AJSLP*. 2020;29:1065-1077.



He et al. Current Perspectives on Food Oral Processing. *Annu Rev Food Sci Technol*. 2022;13:167-192.
Peña-Chávez et al. Effects of Food and Liquid Properties on Swallowing Physiology and Function in Adults." *Dysphagia*. 2022; 1-33.
Bahi. Et al. A Systematic Review of the Physiological Effects of the Effortful Swallow Maneuver in Adults with Normal and Disordered Swallowing. *Am. J. Speech. Lang. Pathol*. 2020, 29, 1655–1673

Development of an Intervention for Improving Ingestion in Elders with Oropharyngeal Dysphagia

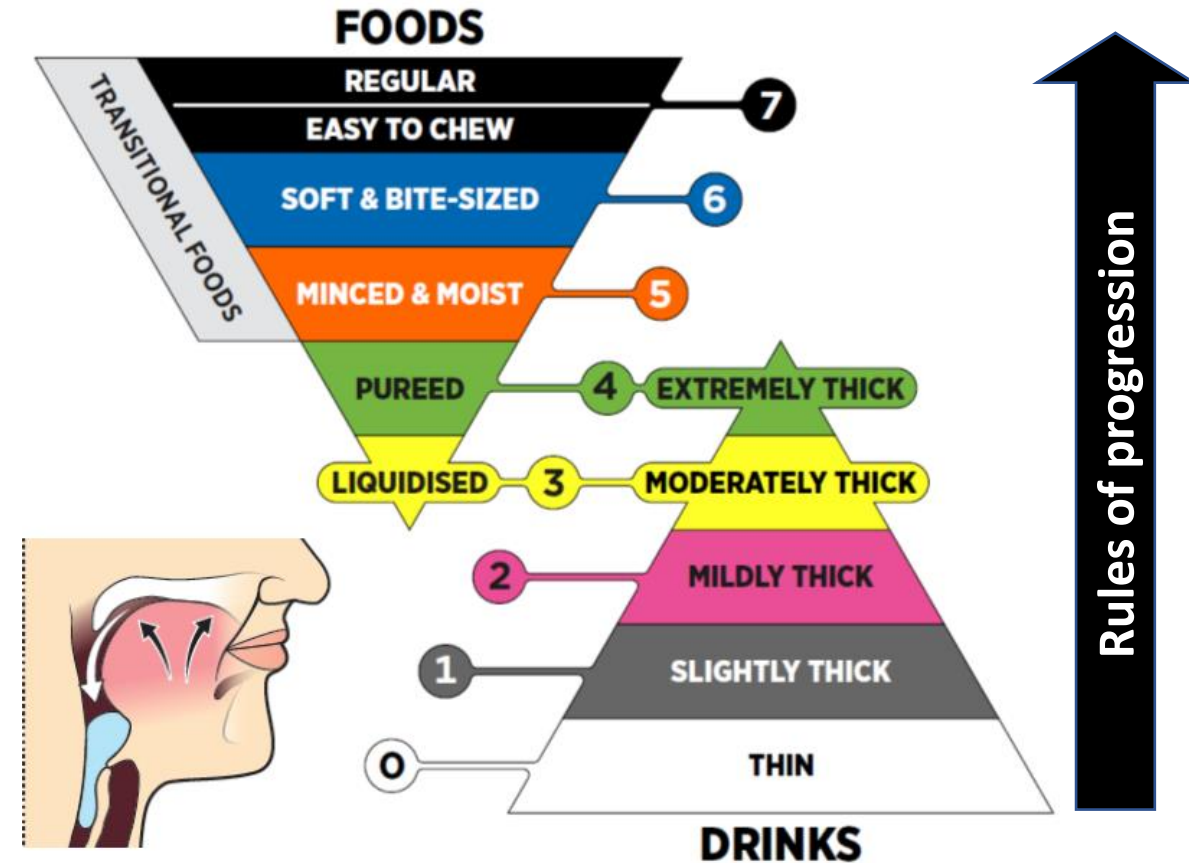
Tina Hansen^{a,b}, Julie Damm Thomassen^a, Lea Elm Jensen^a,
Maja Rosenkrands Irgens^a, and Annette Kjaersgaard^c

ACT-ING program

ACTvity-based skill- and strength training for
improving **ING**estion



Improve ingestive skills during meals and enhance /
prevent further decline of swallowing muscle strength
in older adults at risk of or with sarcopenic dysphagia.



literature & systematic reviews
Surveys
Expert judgements
Input from target group

Article

Early Feasibility of an Activity-Based Intervention for Improving Ingestive Functions in Older Adults with Oropharyngeal Dysphagia

Tina Hansen ^{1,*} , Louise Bolvig Laursen ¹ and Maria Swennergren Hansen ^{1,2}

ACT-ING program

In-therapy

Individual, face-to-face 2–3 / week in up to 12 weeks.



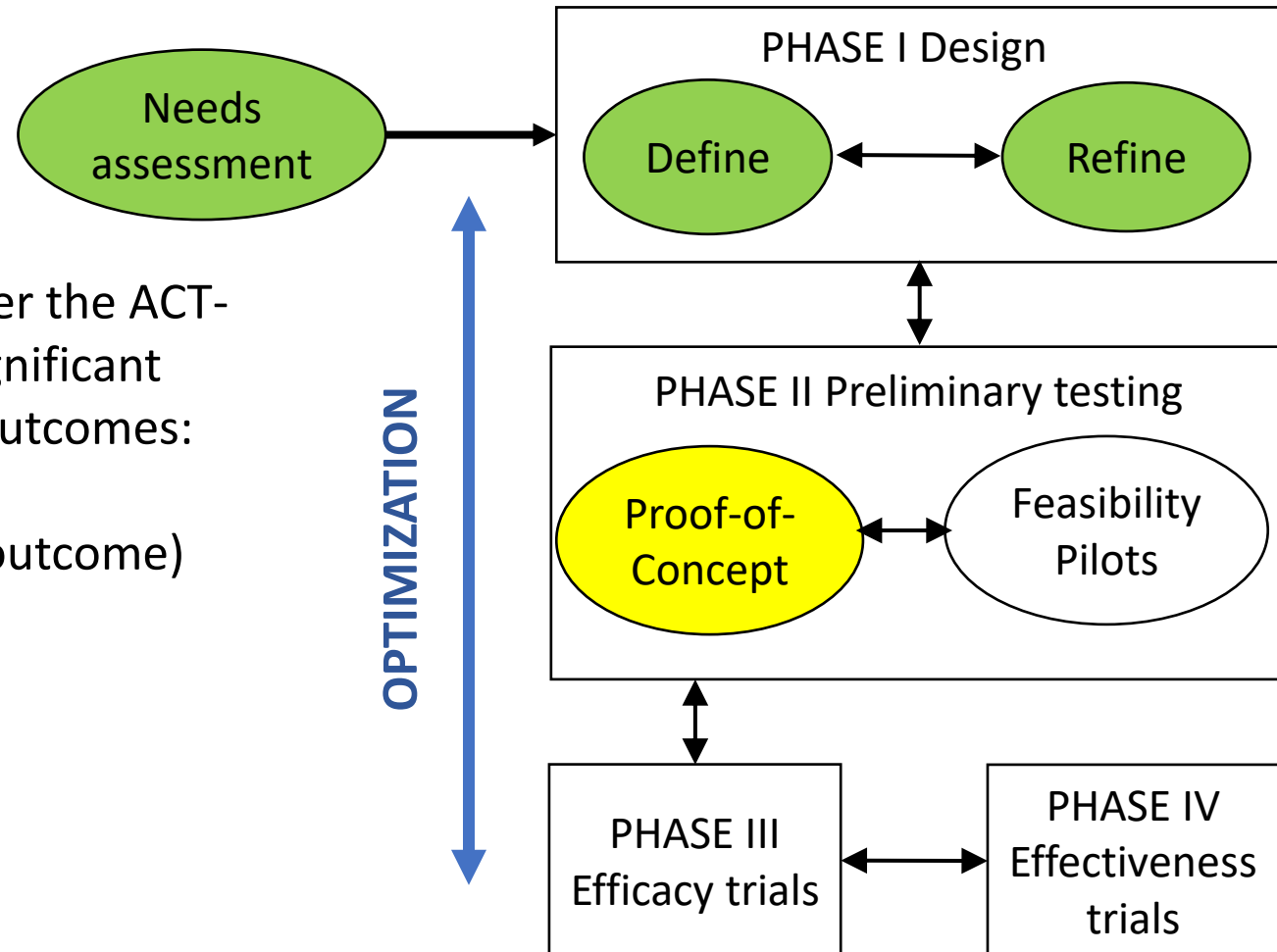
Self-training

Integrates achieved level into daily meals.

Feasibility marks

- ✓ Demand: $\geq 70\%$ invited agreed to participate.
- ✓ Safety: less than 20% aspiration across sessions.
- ✓ Tolerance: non-substantial aspiration concerns.
- ✓ Adverse events: no episodes of food allergy symptoms, severe pain, choking, and apnea.
- ✓ Usability: positive responses on the "Value/usefulness" subscale from the Intrinsic Motivation Inventory.
- ✓ Intervention acceptability and perceived improvement in ingestive skills.

Developing & evaluating the ACT-ING program



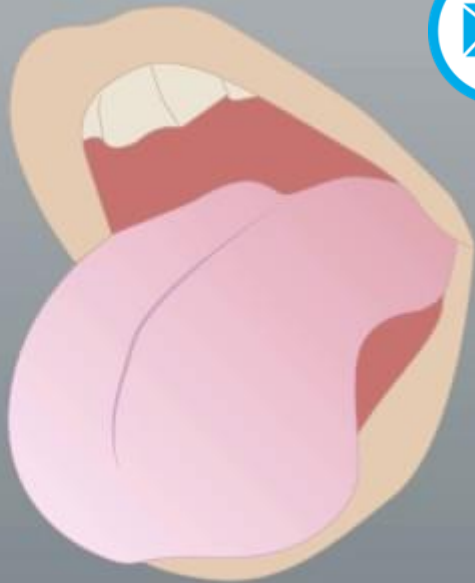
It is now time for determining whether the ACT-
ING program can achieve clinically significant
improvement in swallowing related outcomes:

- Mealtime performance (primary outcome)
- Functional oral intake
- Orofacial function
- Tongue strength
- Nutritional status
- Quality of life

Thank you for your attention



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Funding for current research
Lizzi & Mogens Staal Fonden, Axel Muusfeldts Fond,
Aase & Ejnar Danielsens fond, Helsefonden,
Tværspuljen, and AHH's Forskningspulje.

