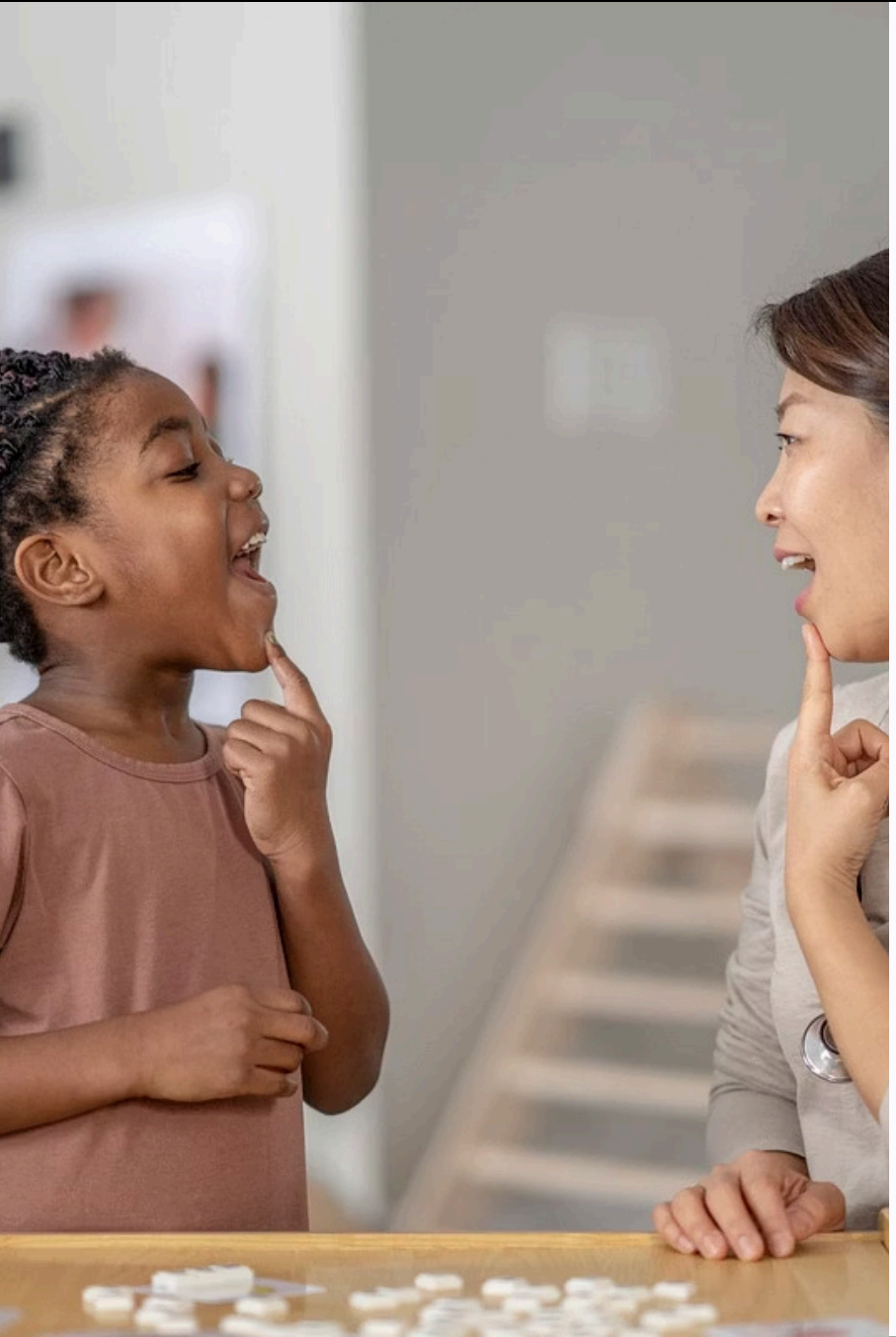

Effects of Myofunctional Therapy on Orofacial Muscle Tone and Speech Intelligibility in Children with Mouth Breathing

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SHORT INTRODUCTION

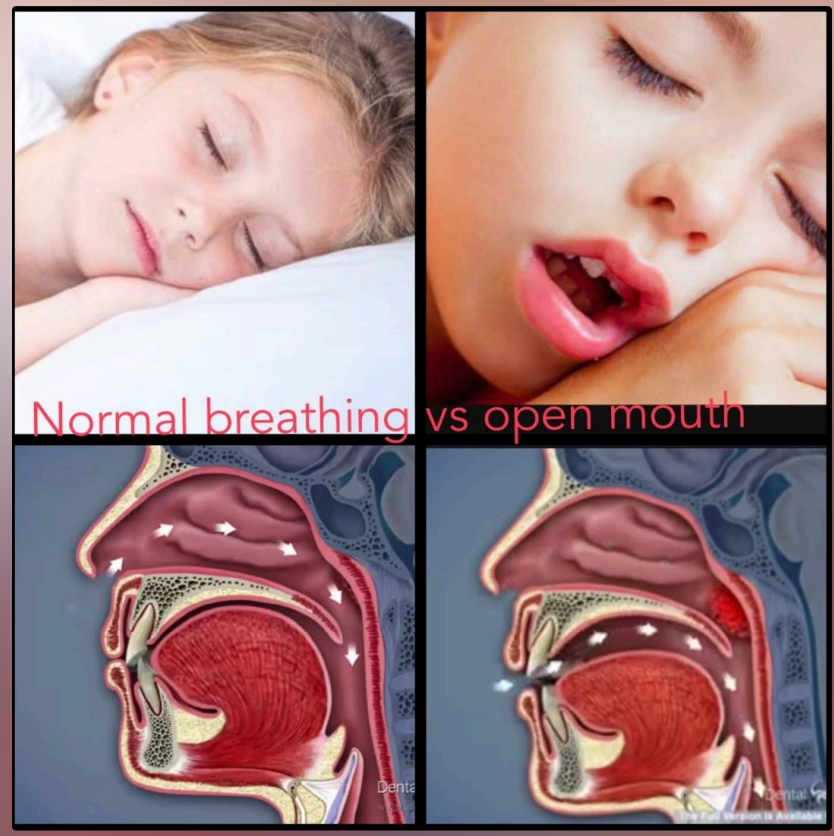
The Clinical Problem: Mouth Breathing in Childhood

Mouth breathing during early childhood is frequently associated with **altered orofacial muscle tone** and **atypical resting postures** of the lips, tongue, and jaw — structural deviations that may exert downstream effects on speech development.

However, this relationship should not be interpreted as causal. In many cases, mouth breathing reflects underlying conditions (e.g. adenoids, allergies, nasal obstruction), while orofacial differences are multifactorial in origin.

Myofunctional therapy is often associated with improvements in orofacial functions; however, its direct impact on speech intelligibility remains insufficiently studied and has not been conclusively established.

This pilot study was designed to begin filling that empirical gap with an objective, standardized assessment framework.



STUDY AIM

Objective

This pilot study presents the design of a planned investigation examining the **effects of myofunctional therapy** on orofacial muscle tone and speech intelligibility in children with habitual mouth breathing. The primary goal is to establish a replicable, objective methodological framework prior to full-scale data collection.

Population

Children aged 4–7 years with confirmed habitual mouth breathing (n = 6–10)

Focus

Orofacial muscle tone biomechanics and functional speech intelligibility

Design

Pre–post intervention pilot without direct articulation training

METHODS

Study Design & Intervention Protocol

Intervention: Myofunctional Therapy

4–6 weeks of structured therapy targeting:

- Lip closure at rest
- Habitual tongue posture (elevation to palate)
- Jaw stability and muscular coordination
- Facilitation of nasal breathing patterns

No direct articulation training was included. Protocol grounded in Villa et al. (2017a, 2017b).

Outcome Measures

Orofacial Muscle Tone — assessed with the **MyotonPRO** device, measuring elastic stiffness and viscoelastic properties of soft tissues. Target muscles:

- Orbicularis oris
- Mentalis
- Masseter

Speech Intelligibility — spontaneous speech samples rated by an **independent blinded evaluator** using standardized perceptual criteria.

INSTRUMENTATION

The MyotonPRO: Objective Muscle Assessment

The **MyotonPRO** is a handheld, non-invasive myotonometer validated for measuring the **biomechanical and viscoelastic properties** of superficial soft tissues in vivo. Its clinical utility in pediatric and rehabilitation contexts is well-supported (Nguyen et al., 2022).

Oscillation Frequency (Hz)

Reflects intrinsic muscle tone; higher frequency corresponds to increased stiffness at rest.

Elastic Stiffness (N/m)

Quantifies resistance to deformation — directly relevant to resting lip and jaw posture in mouth breathers.

Mechanical Stress Relaxation

Captures viscoelastic recovery, providing a comprehensive biomechanical profile of target orofacial muscles.

RESULTS

Results: Pending Data Collection

As this submission presents the **study design only**, results are not yet available. Data collection is planned for the upcoming phase of the investigation.

The pre–post design will allow for within-subject comparison of MyotonPRO measurements and blinded speech intelligibility ratings before and after the 4–6 week myofunctional therapy protocol. Upon completion, analyses will examine:

Changes in Orofacial Muscle Tone

Pre-to-post shifts in oscillation frequency, stiffness, and relaxation across orbicularis oris, mentalis, and masseter.

Changes in Speech Intellibility

Perceptual ratings of standardised sentence receptions by an independent evaluator.

Association Between Measures

Exploratory analysis of the relationship between biomechanical changes and intelligibility outcomes.

REFERENCES

References

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