

# Orofacial Myofunctional Therapy in Traditional Dental Settings

*This course is no longer offered for Continuing Education credit.*

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**Intended Audience:** Dentists, Dental Hygienists, Dental Students, Dental Hygiene Students

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**Disclaimer:** Participants must always be aware of the hazards of using limited knowledge in integrating new techniques or procedures into their practice. Only sound evidence-based dentistry should be used in patient therapy.

## Introduction

This course will introduce the reader to orofacial myofunctional disorders (OMDs) and OMT. It has been designed to educate the reader regarding common OMDs, signs and symptoms of OMDs, and to discuss the goals and potential outcomes of therapy. The course will briefly discuss training options and the dental hygienist's role in OMT.

## Conflict of Interest Disclosure Statement

- The authors report no conflicts of interest associated with this course.

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## Overview

To date, there has been little information published regarding orofacial myofunctional therapy (OMT) as utilized in the general dentistry setting. However, there are dental professionals currently practicing OMT as an adjunct to traditional dental services. This course will introduce the reader to orofacial myofunctional disorders (OMDs) and OMT. It has been designed to educate the reader regarding common OMDs, signs and symptoms of OMDs, and to discuss the goals and potential outcomes of therapy. The course will briefly discuss training options and the dental hygienist's role in OMT.

## Learning Objectives

**Upon the completion of this course, the dental professional should be able to:**

- Identify common orofacial myofunctional disorders.
- Describe signs and symptoms of an orofacial myofunctional disorder.
- Discuss potential consequences of an orofacial myofunctional disorder.
- Define orofacial myofunctional therapy.
- Discuss the goals of orofacial myofunctional therapy.
- Explain the dental hygienist's role in myofunctional therapy.

## Glossary

**ankyloglossia** – Abnormal shortness of the frenulum of the tongue, resulting in limitation of its motion; also called tongue-tie.

**attrition** – A type of tooth wear caused by tooth-to-tooth contact.

**bolus** – A small rounded mass of a substance, especially of chewed food at the moment of swallowing.

**bruxism** – The involuntary or habitual grinding of the teeth, typically during sleep.

**electromyography** – The recording of the electrical activity of muscle tissue, or its representation as a visual display or audible signal, using electrodes attached to the skin or inserted into the muscle.

**cin fluorography** – The process of making motion pictures of images of objects by means of X-rays with the aid of a fluorescent screen (as for revealing the motions of organs in the body).

**comorbidity** – The simultaneous presence of two chronic diseases or conditions in a patient.

**deglutition** – The action or process of swallowing.

**dysphagia** – Difficulty or discomfort in swallowing, as a symptom of disease.

**desensitization** – To make less sensitive; reduce sensitivity.

**extrinsic** – A muscle that originates in another part of the body than that of its insertion.

**insertion** – The part of the muscle that moves with contraction.

**intrinsic** – One whose origin and insertion are both in the same part or organ.

**non-nutritive sucking** – Sucking not relating to or providing nutrition.

**origin** – Fixed end or attachment of a muscle.

**perioral** – Of, relating to, occurring in, or being the tissues around the mouth.

**polypharmacy** – The simultaneous use of multiple drugs to treat a single ailment or condition.

## Introduction

Orofacial myofunctional disorders (OMDs) include conditions such as ankyloglossia, tongue thrust, incorrect tongue position during swallowing or speech, open mouth posture and/or insufficient lip closure, and other parafunctional habits such as thumb sucking or bruxism. Due to the nature of OMDs, several orofacial structures and processes can be affected, including proper palatal formation, dental occlusion, facial growth and development, breathing, sleeping, speech, and swallowing patterns. Treatment for many OMDs exists in the form of orofacial myofunctional therapy (OMT), which typically consists of retraining exercises for the lips, tongue, or facial muscles, as well as behavior modification or elimination. The goal of OMT is to correct improper orofacial muscle movements and postures and to restore natural functioning. Unfortunately, many OMDs develop and remain uncorrected throughout an individual's lifetime, due to a lack of patient resources as well as a shortage of health professionals properly trained to treat OMDs. The purpose of this course is to increase awareness of OMDs, discuss the role of dental professionals in recognizing and addressing OMDs, and promote the use of OMT as an adjunct to traditional dental services.

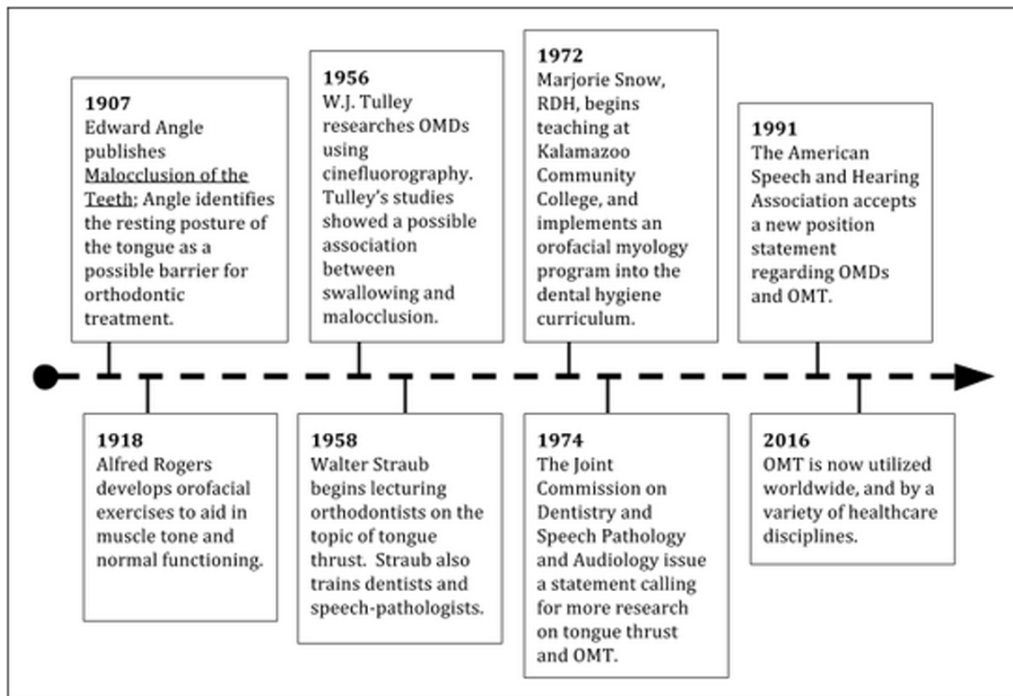
## History of Myofunctional Therapy

OMT originated within the field of orthodontics as early as the turn of the twentieth century. Early orthodontists, such as Edward Angle and Alfred Rogers, were documenting observations about parafunctional habits, muscle function, and dental occlusion.<sup>1</sup> Angle's 1907 publication, *Malocclusion of the Teeth*, emphasized that the resting position of the tongue may affect orthodontic outcomes (Figure 1). Approximately a decade later, Rogers was developing orofacial exercises in an attempt to correct muscle functioning and correct malocclusion.<sup>2</sup> Many subsequent theories were developed regarding swallowing and orofacial muscular function. Then, in the 1950's, orthodontic researcher W.J. Tulley had a notable development in the field. He used

electromyography (EMG) and cinefluorography technology to study OMDs like abnormal swallowing. This was the first time these techniques were used for this purpose. Through his research, Tulley was able to find a possible association between open mouth posture during swallowing and dental malocclusion.<sup>2</sup>

In the late 1950s, Walter Straub, an orthodontist, was continuing his research on abnormal swallowing by partnering with speech pathologists. Through these partnerships, he provided treatment to hundreds of patients, and eventually those partnerships led to Straub teaching more dentists and speech therapists about abnormal swallowing. In the early 1970s, a team of therapists, including those who had been trained under Straub, founded what is now known as the International Association of Orofacial Myology (IAOM).<sup>1,3</sup> This association still exists today, and provides patient education, as well as professional training opportunities and membership.<sup>3</sup> Also in the early 1970s, Marjorie Snow, a dental hygienist, began teaching at Kalamazoo Valley Community College in Michigan. She developed and implemented an orofacial myology program into the college's dental hygiene curriculum. The orofacial myology course continues today, and remains one of the only of its kind.

In 1975, the Joint Commission on Dentistry and Speech Pathology-Audiology published a statement calling for additional research on the tongue thrust phenomena and questioning the efficacy of current treatment modalities.<sup>4,5</sup> This statement was also accepted as an official position statement of the American Association of Orthodontists (AAO). Instead of bringing advancements to the field, this statement essentially halted new research on OMDs and OMT, and the number of new therapists decreased dramatically. In 1990, the American Speech-Language-Hearing Association (ASHA) issued a new position statement which acknowledged the clinician's need to receive additional training to provide treatments for patients with OMDs. Shortly after, ASHA also created guidelines on education, knowledge, and experience needed to provide appropriate care for patients with OMDs.

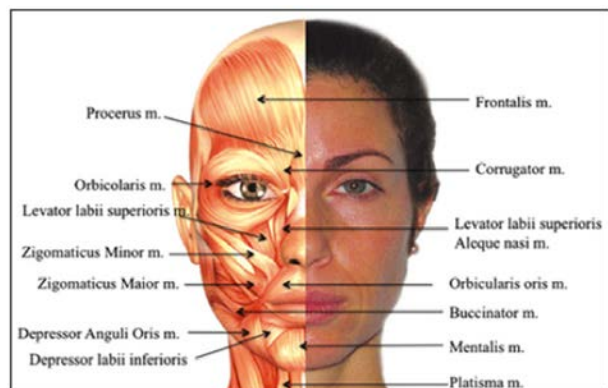


**Figure 1.** Summary of the history of OMT.<sup>2</sup>

Today, OMT is once again gaining recognition as a valid specialty area. In 2015, the Academy of Applied Myofunctional Sciences (AAMS) held its first congress in Los Angeles, California. The congress was attended by multiple professional disciplines from various countries worldwide. The AAMS, along with its partner organization, the Academy of Orofacial Myofunctional Therapy (AOMT), as well as the long-standing IAOM, are currently leading the push for education, research, and awareness of OMDs and OMT.

### Orofacial Anatomy

Health professionals practicing myofunctional therapy must possess adequate knowledge of the orofacial and cervical musculature, including associated bony attachments and innervations (Figure 2). Myofunctional therapy exercises may target any combination of the muscles of mastication, muscles of facial expression, or muscles used during normal tongue movements and swallowing. In addition, if a forward head posture has been noted, therapy may target cervical muscles. Muscles of particular interest to the myofunctional therapist are: the buccinator, which is used in chewing and facial expression; the orbicularis oris, which controls movements of the mouth and lips, and the



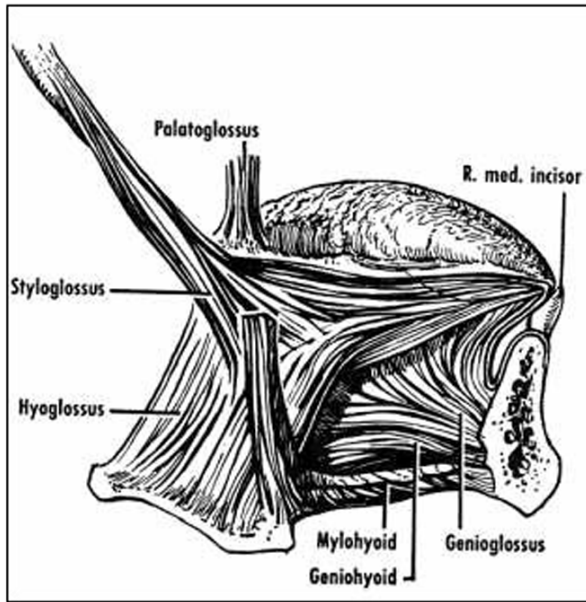
**Figure 2.** Important facial musculature.<sup>8</sup>  
Courtesy of: Gianni Bistoni.

muscles of the tongue, which are involved in taste, speech, mastication, and deglutition.<sup>6,7</sup>

The tongue is a unique and complex network of muscle fibers divided into two types: extrinsic and intrinsic. There are 4 extrinsic muscles (Figure 3) and 4 intrinsic muscles. The extrinsic muscles have fixed origins outside of the tongue, while the intrinsic muscles have origins and insertions completely within the tongue. Of the four extrinsic muscles, only the palatoglossus muscle is not innervated by the hypoglossal (XII) nerve; it is innervated by the vagus (X) nerve (Table 1).

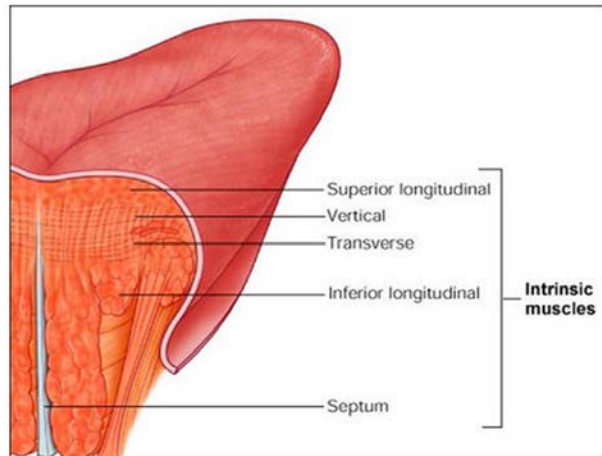
The four intrinsic muscles are named for their locations and the direction of their fibers (Figure 4).<sup>10</sup> All intrinsic tongue muscles are innervated by the Hypoglossal nerve. The four intrinsic muscles are:

- **Superior longitudinal muscle:** located closest to the dorsal surface of the tongue, and fibers travel lengthwise from base to tip.



**Figure 3.** Extrinsic muscles of the tongue.<sup>9</sup>

- **Inferior longitudinal muscle:** located at the sides of the tongue, and fibers travel lengthwise from base to tip.
- **Vertical muscle:** located in the middle of the tongue body, and fibers travel from the superior longitudinal muscle to the inferior longitudinal muscle.
- **Transverse muscle:** located in the middle of the tongue body, and fibers travel from the septum to the lateral mucous membranes of the tongue.



**Figure 4.** Intrinsic muscles of the tongue.<sup>12</sup>

**Table 1. Extrinsic muscles of the tongue: origin, insertion, innervation, and function.**<sup>10,11</sup>

Muscle	Origin	Insertion	Innervation	Function
<b>Styloglossus</b>	Styloid process	Superolateral sides of the tongue	Hypoglossal (XII)	retracts, elevates
<b>Hyoglossus</b>	Hyoid bone	Lateral sides of the tongue	Hypoglossal (XII)	depresses, retraction
<b>Genioglossus</b>	Mental symphysis	Into tongue from tip to base	Hypoglossal (XII)	protrudes, depresses
<b>Palatoglossus</b>	Palatine aponeurosis	Posterolateral sides of the tongue	Vagus (X)	elevates, retracts

## Orofacial Myofunctional Disorders (OMDs)

### Tongue Thrust/Tongue Posture

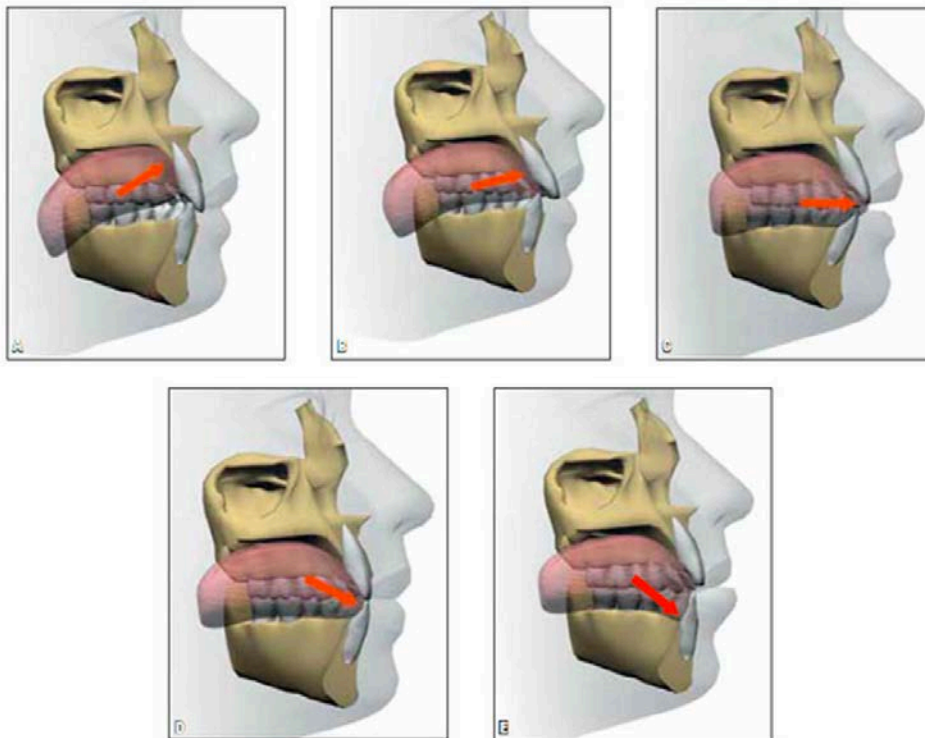
Tongue thrust is perhaps the most widely identified OMD. Historically, tongue thrust was defined simply as the tongue exerting force against the anterior teeth during deglutition. Today, it is widely accepted that tongue behavior during swallowing is not the sole contributor to anterior open bites or myofunctional problems, but the position of the tongue at rest, such as a *habitual* forward or interdental tongue position, is also usually a contributing factor in anterior open bites. <sup>2,13</sup> Therefore, tongue thrust now describes any behavior in which the anterior surface of the tongue makes repeated contact with any of the anterior teeth, or protrudes between the arches. <sup>14,15</sup> A chronic tongue thrust behavior typically puts excessive pressure on the maxillary anterior teeth, and malocclusion in the form of an anterior open bite can occur (Figure 5).

In contrast, during normal deglutition and at rest, the anterior tip of the tongue should only



**Figure 5.** Anterior open bite and interdental tongue position. <sup>16</sup>

come as far forward as to make contact at the retroincisal area of the palate, directly behind the maxillary anterior teeth. The body of the tongue should lift upwards into adequate palatal space and rest high near the palate. When the tongue rests towards the mandibular arch or the floor of the mouth, it is considered a low resting posture (Figure 6).



**Figure 6.** Resting postures of the tongue. <sup>17</sup>  
a) normal, b) high, c) horizontal, d) low, e) very low

### Open Mouth Posture and Mouth Breathing

Open mouth posture may indicate incompetent lip closure and refers to the chronic lack of a lip seal when at rest. Individuals that have a habitual open mouth posture may have to strain the muscles to keep the lips sealed.<sup>18</sup> Other clinical signs may present with the open mouth posture, including a larger lower lip, untoned oral muscles, inflammation of the anterior gingiva, and/or increased plaque buildup on the anterior teeth surfaces (Figure 7).

Some individuals with open mouth posture may have an additional habit of breathing through the mouth instead of the nose. Categories of mouth breathing include: habitual, seen when a correct nasal breathing behavior was never established; obstructive, as seen with chronic allergies or enlarged tonsils; or anatomic, seen if the individual is simply unable to take in enough air through the nose.<sup>19</sup> With a mouth breathing behavior, the individual does not receive the benefits of the nasal cavity's particulate filtering design. Orofacial consequences of open mouth posture and/or mouth breathing may include increased risk for caries, gingivitis, speech problems, and dental malocclusion.<sup>18,20</sup> If left untreated throughout puberty, a mouth breathing habit is believed to contribute to abnormal facial development (Figure 8).<sup>21,22</sup>

### Ankyloglossia

Ankyloglossia, present at birth, is most commonly referred to as "tongue-tie" and occurs when the lingual frenulum is too short

to allow for normal tongue movements (Figure 9). Tongue-ties can be classified as anterior or posterior. This condition can cause difficulty for the infant during latching and breastfeeding, and difficulty for children and adults during speech production, eating, and swallowing.<sup>23,24</sup> Ankyloglossia can have other consequences, such as limiting the ability of the tongue to perform normal oral functions, i.e., clearing the oral cavity of excess debris after eating.<sup>25</sup>

### Parafunctional Habits

The term oral parafunctional habit is used to describe any abnormal behavior or functioning of the oral structures and associated muscles. Behaviors commonly included in this category may include: bruxism, clenching, excessive gum chewing, lip or fingernail biting, or non-nutritive sucking.



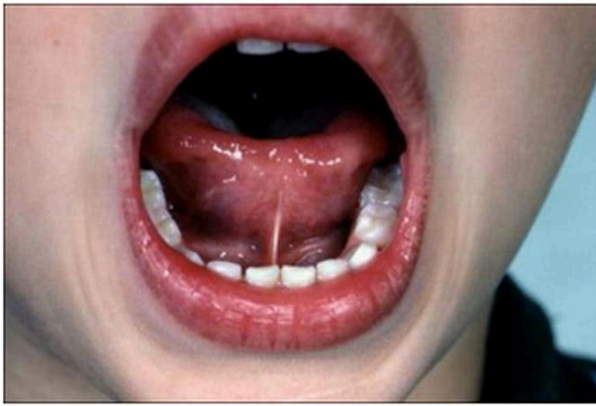
**Figure 7.** Clinical appearance of chronic open mouth posture.

Courtesy of: Dr. Péter Vályi



**Figure 8.** Change in facial development due to allergies and obstructive mouth breathing.

Courtesy of: Dr. John Mew



**Figure 9.** Ankyloglossia.<sup>26</sup>

Bruxism is defined as the grinding of the teeth, and is usually involuntary, chronic, and occurs during sleep. Often the individual may be unaware they are grinding during their sleep, and the clinician may have to provide patient education regarding clinical signs. Causes of bruxism include increased stress, anxiety, caffeine intake, or presence of sleep disorders. It may also be a side effect of certain antidepressant medications. Bruxism can cause sleep disturbances, headaches, orofacial muscle pain, mild to severe attrition, teeth fractures, and gingival recession (Figure 10).<sup>27</sup>

Thumb/digit sucking or pacifier use is classified as non-nutritive sucking (Figure 11). Cessation of these behaviors normally occurs naturally, as the infant progresses towards toddler age. However, if these behaviors continue past infancy, there are likely to be negative impacts on the developing orofacial structures. The American Academy of Pediatric Dentistry recommends intervention for non-nutritive sucking behaviors that continue past the age of three.<sup>29</sup>

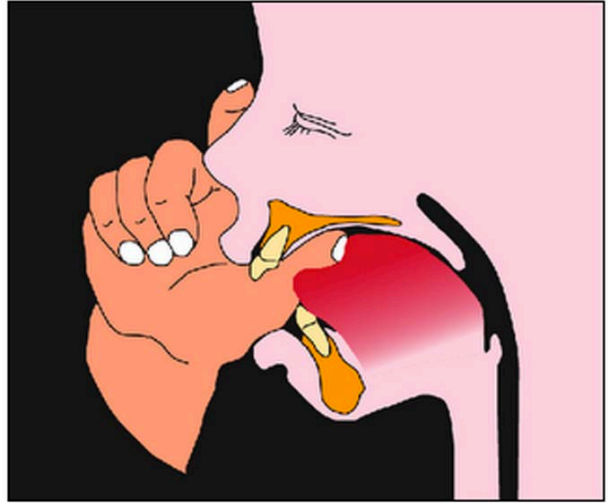
The most obvious clinical signs of a sucking habit may be an anterior open bite or posterior crossbite.<sup>31</sup> This occurs due to the excessive pressure of the digit or pacifier against the teeth. The severity of resulting malocclusion is likely determined by three factors: intensity, duration, and frequency.<sup>32</sup>

### Other Signs & Symptoms of OMDs

Although the previous disorders are among the most commonly recognized in myofunctional therapy, it is important to assess for other signs



**Figure 10.** Attrition and fracturing due to bruxism.<sup>28</sup>



**Figure 11.** Thumb sucking habit.<sup>30</sup>

and symptoms that may indicate an OMD, including, but not limited to:<sup>22,24</sup>

- Scalloped tongue
- Dysphagia
- TMJ pain or other temporomandibular disorder (TMD)
- Speech impediment
- Excessive overjet
- Obstructive Sleep Apnea (OSA)
- Oropharyngeal size and/or obstruction
- Forward head posture

### Orofacial Myofunctional Therapy (OMT)

OMT can be considered an umbrella term for the treatment of a myriad of abnormal behaviors that interfere with normal orofacial muscle functioning and/or dentofacial development.<sup>22,24,32</sup> Historically, OMT has been targeted towards the retraining of tongue habits and postures. However, modern OMT practice has expanded to include management of disorders including mouth breathing,



obstructive sleep apnea, forward head posture, tongue thrust, speech pathology, malocclusions and open bites, various parafunctional habits, and dysphagia.<sup>13,22,24,33</sup> The broad goals of OMT are to: modify behaviors, eliminate parafunctional habits, improve overall orofacial muscle tone, correct tongue posture, decrease muscular tension, and establish a lip seal and nasal breathing pattern.

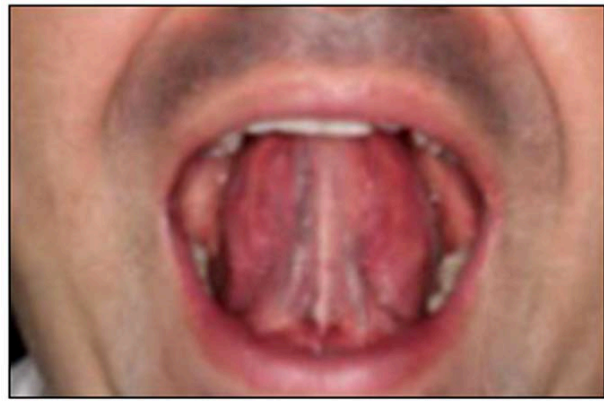
This therapy continues to be practiced in a variety of healthcare settings and is used by professionals in the fields of general dentistry, dental hygiene, orthodontics, speech-language pathology, lactation consulting, otolaryngology, osteopathy, and by various medical team members. Due to the wide variety of fields currently utilizing OMT techniques, it has been stated an interdisciplinary approach would be of the most benefit for a comprehensive diagnosis, standard of care, and knowledge sharing between clinicians.<sup>24,32,34</sup>

## Treatment Modalities

### Individualized Exercises

Myofunctional exercises are most often used to retrain and strengthen the intrinsic and extrinsic muscles of the tongue, the cheek muscles, and the muscles around the lips and mouth. Tongue retraining may include exercises to improve swallowing function, with a goal of training the individual to move the dorsal surface of the tongue upwards to contact the palate, while keeping the tip of the tongue just behind the incisive papilla. The tongue should move in a wave-like motion from the tip to the base, which during mastication, propels the bolus backwards toward the throat.

Many myofunctional therapists have used a variation of an exercise that involves placing a small item at the tip of the tongue and having the patient hold it to the retroincisal spot during swallow. This encourages the use of the body and base of the tongue during the movement, as opposed to a low, forward tongue posture that includes sucking the cheeks and mouth in to create pressure for swallowing, “pursing” the lips, and forcing the tongue against or between the anterior teeth. The retroincisal spot is simply termed “the spot” in myofunctional therapy and



**Figure 12.** Tongue strengthening exercise.<sup>35</sup>

is also the ideal place for the anterior tongue during rest.

Tongue strengthening may include exercises to improve range of motion, such as moving the tongue as far as possible out of the mouth in each direction: right and left (tongue lateralization) as well as up and down. These tongue movements and exercises aid in the formation and movement of the bolus and clearing debris within the oral cavity. In order to build strength, patients may also be encouraged to repeatedly hold the tip of the tongue firmly on the palate for a period of time or create resistance against an object (Figure 12).<sup>7</sup> Ongoing repetition is crucial to the success of any myofunctional therapy program.

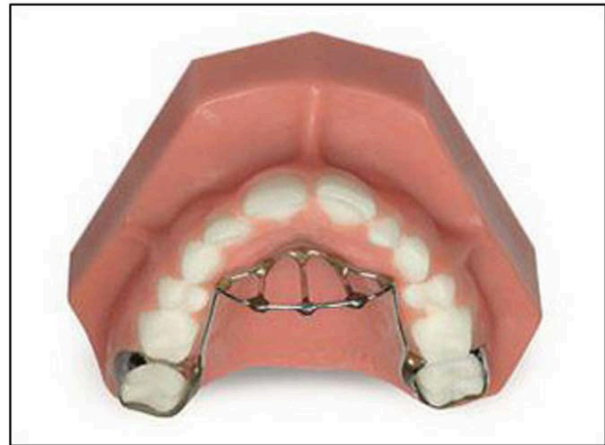
Perioral muscles may be underutilized as in the case of open mouth posture or incompetent lip closure. These are cases where the lip and oral muscles may need to be strengthened. Myofunctional therapy utilized for these muscles include patient education, breathing retraining, chewing and bite exercises, muscle massage, and resistance exercises.<sup>34,36</sup>

### Thumb Appliances or Crib Appliances

Bluegrass appliances are used to aid in the cessation of a thumb sucking habit. The wire of the appliance contains a small roller that prevents placement of the thumb against the retroincisal area of the palate (Figure 13).<sup>37</sup> Crib appliances are made of metal wire and contain a gate-like piece that is used to prevent pressure of the tongue against the anterior teeth during swallowing, while training a correct swallowing pattern (Figure 14).<sup>38</sup> A crib appliance can also



**Figure 13.** Bluegrass appliance used to stop a thumb sucking habit.<sup>39</sup>



**Figure 14.** Crib appliance used to block tongue thrust movements, train a correct swallow, or stop a thumb sucking habit.<sup>39</sup>



**Figure 15.** Oral muscles before and after desensitization.<sup>33</sup>  
Image source: Online Wiley Library

be used to prevent thumb or finger sucking. Both the bluegrass and crib appliances are non-removable wire appliances that are worn until the habit has stopped or behavior is modified. These devices are typically reserved for difficult-to-correct behaviors, particularly before initiating orthodontics. Patient willingness to change the behavior will be crucial to continued success.

### Desensitization Techniques

Some cases of OMDs may be due to excessive orofacial muscular tension. Elderly populations in particular may have increased rates of muscular tension due to history of stroke, palsies, tooth loss and denture use, polypharmacy, and various comorbidities. Desensitization techniques can be used to decrease orofacial muscular tension, including repeated light touch from the clinician to the patient's oral and facial muscles as well as intraoral tissues (Figure 15).<sup>33</sup> Head and neck cancer screenings can also be used to induce relaxation and release of muscular tension.

### OMT and Orthodontics

Due to the close history of OMT and orthodontics, myofunctional therapy is often used in conjunction with orthodontic treatment. In fact, higher rates of long-term success and lower rates of relapse have been documented when OMDs are addressed before initiating orthodontics, and myofunctional exercises are continued during treatment, until correct behaviors are established.<sup>13,24,40</sup> As with any myofunctional program, patient and family willingness and compliance are important to assess before initiation.

### Other Treatment Methods

Myofunctional therapy techniques must be flexible in order to facilitate the interdisciplinary team approach and comprehensive care model that have become the standards of care in today's healthcare delivery system. Utilizing evidence-based practices will ensure the greatest outcomes for the team and the patient. The interdisciplinary team should not be

limited to certain disciplines, but rather should integrate several specialty areas.

A potential myofunctional team may include disciplines such as orofacial myology, speech-language pathology, otolaryngology, dental hygiene and dentistry, and orthodontics. Each specialist could bring expertise to the patient case. An orofacial myologist is trained to recognize OMDs and could provide individualized therapy for nasal breathing, tongue rest position, and correct swallowing. A speech-language pathologist could assess for atypical orofacial functions, and initiate speech therapy, if necessary. An otolaryngologist could properly identify airway or allergy issues that may be contributing to an OMD and provide necessary treatment. A dental hygienist could utilize knowledge of orofacial anatomy and assess for signs and symptoms of OMDs during routine intraoral/extraoral exams. A dentist could evaluate any suspected conditions and aid in the referral process. An orthodontist could provide consults to identify OMDs that may interfere with proper occlusion, and dentofacial growth and development.

Within the dental field alone, there has been documentation of various specialties successfully utilizing myofunctional therapy in patient cases, including:

- Pediatric dentistry
- Geriatric dentistry
- Neuromuscular dentistry
- Cosmetic dentistry
- Prosthodontics
- Periodontics

### Dental Hygiene and OMT

A search of the literature will show there is in fact a lack of formal education throughout the field of myofunctional therapy in the United States, leading to an absence of official licensure or governing bodies. This lack of standardized training or licensing has been a barrier to recognition of OMT as a valid healthcare field. The majority of individuals practicing these therapy techniques are indeed licensed healthcare professionals, however, OMT typically serves only as an unofficial complement to the primary services provided.<sup>32</sup> Historically, knowledge gained in this specialty

is either self-taught, gained on-the-job, or passed down from a colleague. Current training opportunities for those interested in learning more about myofunctional therapy include: private mentoring from a current myofunctional therapist, short courses through academies or associations, or information learned within the educational curriculum.

Of the various disciplines utilizing OMT, it has been proposed that perhaps dental hygienists are in a prime position to recognize OMDs. There are many reasons for this point of view including: frequency of patient visits to a dental hygienist versus other medical provider, dental hygienists' knowledge of orofacial anatomy, and their experience motivating patients and individualizing treatment.<sup>22,24</sup> Historically, many dental hygienists have already been employing myofunctional therapy techniques in their respective practices, but simply lack a formal title or training due to limited training options available.

An argument could be made for the formal inclusion of OMD and OMT material in the dental hygiene curriculum. Structured training of dental hygienists to recognize OMDs, provide OMT referrals, or initiate patient education, could create higher levels of care for patients as well as expanded opportunities for the dental hygienist.<sup>41</sup>

### Conclusion

The primary goals of OMT are to use behavior modification techniques during habit elimination, correct improper orofacial movements and postures, and restore natural function of the orofacial structures. In order to accomplish these goals, an interdisciplinary healthcare team should be formed. Utilizing a team approach creates the best foundation for successful treatment outcomes.

OMDs are often left undiagnosed and untreated, due to a lack of resources, knowledge, and clinician training. However, due to the frequency of patient visits to a dental provider, the dental hygienist has the ability to bridge this gap between the patient and necessary treatment referrals. In addition, the dental hygienist is in a prime position to begin incorporating preliminary OMD screenings into routine extraoral and intraoral exams.

## Course Test Preview

- 1. One of the main goals of orofacial myofunctional therapy is to \_\_\_\_\_.**
  - a. identify tongue thrust
  - b. correct improper orofacial muscle movements and postures
  - c. fix mouth breathing
  - d. correct anterior open bites
- 2. Myofunctional therapy originated within the field of \_\_\_\_\_.**
  - a. speech-language therapy
  - b. general dentistry
  - c. orthodontics
  - d. medicine
- 3. The muscle that is NOT commonly targeted by the orofacial myologist is/are the \_\_\_\_\_?**
  - a. buccinator muscle
  - b. frontalis muscle
  - c. extrinsic tongue muscles
  - d. orbicularis oris muscle
- 4. The number of muscles that make up the tongue are \_\_\_\_?**
  - a. 8
  - b. 4
  - c. 7
  - d. 5
- 5. The tongue muscle that is NOT innervated by the Hypoglossal (XII) nerve is the \_\_\_\_\_?**
  - a. genioglossus
  - b. inferior longitudinal
  - c. transverse
  - d. palatoglossus
- 6. The most widely identified OMD is \_\_\_\_\_.**
  - a. dysphagia
  - b. mouth breathing
  - c. tongue thrust
  - d. thumb sucking
- 7. The teeth that are most commonly affected during tongue thrust behavior are \_\_\_\_\_?**
  - a. mandibular premolars
  - b. maxillary anteriors
  - c. maxillary molars
  - d. mandibular canines
- 8. At rest, the body of the tongue should be \_\_\_\_\_.**
  - a. high, near the palatal vault
  - b. between the dental arches
  - c. low, near the mandibular arch
  - d. location does not matter, as long as it is touching the maxillary teeth

9. **A clinical sign often present with open mouth posture is \_\_\_\_\_.**
- a. yellowing of the anterior teeth
  - b. larger central incisors
  - c. tense cheek muscles
  - d. inflammation on the anterior gingiva
10. **The three categories of mouth breathing are \_\_\_\_\_.**
- a. acute, chronic, habitual
  - b. long-term, short-term, obstructive
  - c. chronic, anatomic, habitual
  - d. habitual, obstructive, anatomic
11. **Which behavior is NOT classified as a parafunctional habit?**
- a. Bruxism
  - b. Clenching of the teeth
  - c. Tongue thrust
  - d. Thumb sucking
12. **The American Academy of Pediatric Dentistry recommends intervention of oral sucking habits after what age?**
- a. 3 years
  - b. 1 year
  - c. 2 years
  - d. 16 months
13. **The most obvious clinical signs of a sucking habit may be \_\_\_\_\_.**
- a. posterior crossbite or fracturing
  - b. anterior open bite or posterior crossbite
  - c. posterior crossbite or supraeruption
  - d. anterior open bite or gingival inflammation
14. **The factor(s) that affect the severity of malocclusion caused by thumb or finger sucking are \_\_\_\_\_.**
- a. intensity, frequency, severity
  - b. intensity, duration, frequency
  - c. frequency, severity, intensity
  - d. None of the above.
15. **Which sentence best describes orofacial myofunctional therapy?**
- a. Re-training exercises to correct tongue thrust behavior
  - b. Behavior modification to correct parafunctional habits
  - c. Adjunct therapy to be used with orthodontic therapy
  - d. Treatment to restore normal orofacial muscle function
16. **Which of the following is NOT included in the broad goals of OMT?**
- a. Repositioning anterior teeth
  - b. Establish a lip seal
  - c. Correct tongue posture
  - d. Improve muscle tone

- 17. Myofunctional exercises often focus on training the anterior tongue to \_\_\_\_\_ during rest and swallow.**
- a. move down towards the floor of the mouth
  - b. stay near the retroincisal spot
  - c. rest against the anterior teeth
  - d. move with the body of the tongue
- 18. What appliance has a metal gate-like portion used to block the tongue from exerting force on the anterior teeth?**
- a. Bluegrass appliance
  - b. Nance appliance
  - c. Herbst appliance
  - d. Crib appliance
- 19. What technique can be utilized to decrease orofacial muscular tension?**
- a. Desensitization
  - b. Modified
  - c. Sensitization
  - d. Pressure
- 20. A current issue hindering the acceptance of orofacial myofunctional therapy is \_\_\_\_\_.**
- a. not enough speech therapists
  - b. lack of standardized training and licensing
  - c. no need for services
  - d. cost of services
- 21. Current available training for myofunctional therapists includes \_\_\_\_\_.**
- a. private mentoring
  - b. short courses
  - c. information within the educational curriculum
  - d. All of the above.

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### **Additional Resources**

- International Association of Orofacial Myology - [www.iaom.com](http://www.iaom.com)
- American Association of Orthodontists - [www.aaoinfo.org](http://www.aaoinfo.org)
- American Speech-Language-Hearing Association - [www.asha.org](http://www.asha.org)
- Academy of Applied Myofunctional Sciences - [www.aamsinfo.org](http://www.aamsinfo.org)
- Academy of Orofacial Myofunctional Therapy - [www.aomtinfo.org](http://www.aomtinfo.org)



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