

Importance of Myofunctional Therapy in Orthodontics and Sleep Disordered Breathing

Dr. Brock Rondeau, D.D.S. I.B.O., D.A.B.C.P., D-A.C.S.D.D., D.A.B.D.S.M., D.A.B.C.D.S.M
Alicia Lewis, RDH

The key to optimum health is that all patients must have a patent airway. Orthodontic treatment and myofunctional therapy will help achieve these goals. Mouth breathing is one of the main problems. Mouth breathing can cause poor tongue function. Proper tongue function requires the tongue to fit completely on the roof of the mouth during swallowing. This helps keep the maxilla expanded to prevent malocclusions (teeth crowding), TM dysfunction and sleep disorders (snoring and sleep apnea). The first step would be to orthopedically expand the maxillary arch to normal with an expansion appliance, either removable or fixed. When the maxilla is expanded it frequently converts a mouth breather to a nasal breather. Nasal breathers get 20% more oxygen than mouth breathers which is important from a total health standpoint.¹ The second step would be to have the myofunctional therapist retrain the tongue to achieve the correct swallow so the expanded maxilla will not relapse. An abnormal swallow could also cause dysfunction of the tongue which could cause an anterior open bite. The myofunctional therapist can help solve this open bite also by prescribing tongue exercises to encourage a normal swallow.

Many authorities believe that the cause of the Class II skeletal malocclusion is an airway obstruction which causes a constriction of the maxillary arch causing the mandible to retrude in order to achieve a satisfactory occlusion.² A large percentage of these Class II skeletal patients with retrognathic mandibles develop TM dysfunction. When they swallow, their condyles are posteriorly displaced and impinge on the nerves and blood vessels in front of the ear which causes considerable discomfort. Symptoms include headaches, ringing in the ears, stuffiness in the ears, neck pain, fainting, dizziness, difficulty swallowing, pain behind the eyes, clicking noises when opening and closing, limited opening, numbness in the hands. Obviously, early treatment to expand the maxilla, retrain the tongue and prevent the Class II skeletal malocclusion would be the ideal scenario. The medical profession is trained to treat the symptoms of TM dysfunction with muscle relaxants, pain medication, anti-inflammatories and even anti-depressants.

Only an orthodontic clinician working with a myofunctional therapist can achieve the best treatment to successfully treat the symptoms by eliminating the cause of the TM dysfunction. The treatment for the Class II skeletal malocclusions would be to expand the maxilla to normal with an expansion appliance, retrain the tongue to swallow normally and also utilize a functional jaw repositioning appliance to move the lower jaw forward to its correct Class I skeletal position.

Mara Appliance to Advance the Mandible



BEFORE



AFTER



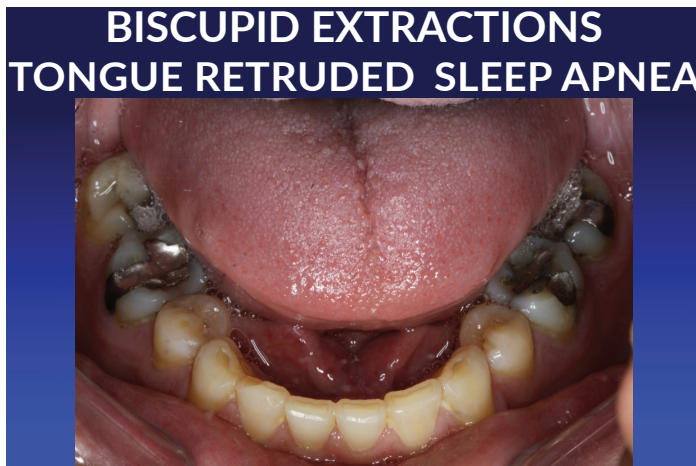
BEFORE



AFTER

Another way to treat Class II skeletal malocclusions with retrognathic mandibles is to extract the upper first bicuspids and retract the upper six anterior teeth back to close the extraction sites. To retract the maxilla when clearly the problem is an undeveloped mandible is completely illogical. As mentioned earlier in many cases this also predisposes patients to TM dysfunction and sleep apnea. Frequently when the upper bicuspids are extracted the lower bicuspids

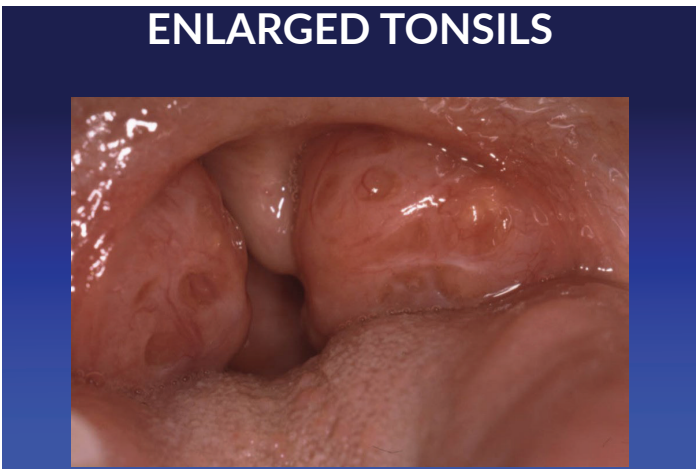
are also extracted which can decrease the size of the lower arch by up to 16 mm. This much smaller lower arch creates a serious problem for the tongue. Due to lack of space the tongue retracts to the back of the throat. This is particularly a serious problem when the patient sleeps supine and the tongue falls back and blocks the airway. Bicuspid extractions flatten the face, significantly reduces the width of the smile, closes the airway, moves the tongue back and increase the future risk of snoring and sleep apnea.



Symptoms include high blood pressure, heart attack, stroke, Type 2 diabetes, atrial fibrillation, acid reflux, kidney problems, 5 times greater chance of cancer, dementia, Alzheimer's.^{3,4,5,6,7,8,9} The extraction of the upper bicuspids causes the maxillary arch to become narrower and the tongue to go to the floor of the mouth. This creates an abnormal swallow. The solution would be to expand the upper and lower arches with expansion appliances and then once space has been created for the tongue, have myofunctional therapy to retrain the tongue to allow for a normal swallow to help expand the maxilla and prevent relapse. First establish a proper form (orthodontically) and then achieve proper function (myofunctional therapy).

In order to achieve a patent airway it is important to evaluate the size of the tonsils and adenoids. If enlarged, you must take photos and send letters to the family medical doctors to request referrals to an ENT Specialist for removal.

As I mentioned at the beginning the key to optimum health is to create and maintain a patent airway. We must



keep these objectives in mind whatever technique is utilized to treat the malocclusion. The orthodontic clinician must be responsible for making room for the tongue by creating space by expanding the upper and lower arches. Then the myofunctional therapist is critical to retain the tongue and create the normal swallow to prevent future relapse.

In myofunctional therapy, soft tissues, musculature, and posture are worked on to retrain or re-pattern the muscles of the orofacial complex. "Most rapid growth is complete by age 7 with facial development largely complete (82 to 92%) by age 5".⁹Therefore, it is crucial to intervene sooner rather than later, as dysfunction begins early.

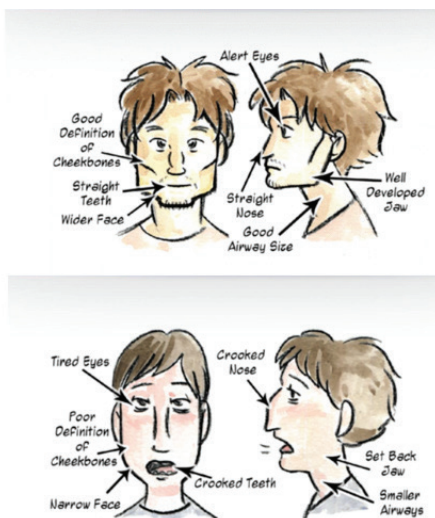
Efforts are made to remove unintentional pressures from



dental structures. Counterbalancing the pressure from the lips, tongue, and cheeks. Day and night, we want to achieve nasal breathing patterns, establish a competent lip seal, and establish proper palatal tongue rest posture including the tip, the middle, and the back of the tongue. Chewing patterns should be optimized, with bilateral alternating mastication, to ensure proper bone loading, improve swallowing patterns, and eliminate any oral habits. Anything that goes in the mouth will affect oral rest posture, including prolonged use of pacifiers, bottles, finger or thumb sucking, and nail biting. The tongue drops, the lips open, and the jaw slides back.

Every single patient, of ALL AGES, can benefit from myofunctional therapy. There will always be soft tissue dysfunction present unless their teeth erupt perfectly. In orthodontics, the teeth are viewed as the focus, with the misconception that you should wait until the primary teeth have all exfoliated and the adult teeth have erupted, which is usually around 11 or 12 years old. This approach treats the symptoms rather than the underlying causes. In orthodontics, treating the symptoms only results in straight teeth; if the teeth do not have a fixed retainer, they will shift. Since you haven't addressed breathing or muscular function, orthodontic retention is limited, and straight teeth are only temporary. In the end, the teeth will land where the muscles direct them. It is important to treat the cause with early intervention orthodontic treatment and myofunctional therapy to help guide the trajectory of a child's orofacial development and supports a healthy airway.

Myofunctional therapy is not new and dates to the early 1900's. Dr. Edward Angle discusses the Influences of mouth breathing, open mouth posture, tongue posture, and how negative oral habits negatively impact orthodontic results.¹⁰



Correct oral habits for successful retention and orthodontic stability. Focus first on growing the jaw, then on the teeth. Bad teeth and bad bites are not just inherited from parents. The underlying causes of this issue, which is muscle weakness and muscle dysfunction, are what have led to the client needing treatment in the first place.

“Orthodontic treatment, in presence of bad habits (i.e.

Thumb sucking, oral breathing, atypical swallowing, labial interposition) and dysfunction of the orofacial musculature, is not enough to solve the orthodontic issues. Therefore, it is necessary to combine it with the myofunctional therapy.”¹¹



There is a huge difference between treating the symptoms and treating the cause. Is it an orthodontic or a foundational issue? Breathing well or not is based on this foundation. We become unhealthy if we are unable to breathe well through our noses. Symptoms like ADHD, bedwetting, emotional outbursts, and academic lags are recognized by parents. Most parents are unaware that these are associated with sleep disordered breathing, along with habits such as teeth grinding, mouth breathing, and snoring. As healthcare professionals, we should be screening our clients for sleep issues.

Tongue ties and enlarged adenoids and tonsils can have a significant impact on the airway and overall breathing function. A tongue tie, or restricted lingual frenulum, can restrict the movement of the tongue, leading to difficulties in proper tongue posture and function. This can result in a narrowed airway, as the tongue may not rest on the palate correctly, potentially causing issues with breathing, especially during sleep.

Enlarged adenoids and tonsils can also obstruct the airway, particularly in children. When these tissues become inflamed or enlarged, they can block the nasal passages and affect airflow, leading to symptoms such as snoring, mouth breathing, and sleep apnea. Both tongue ties and enlarged adenoids and tonsils can contribute to airway restrictions and breathing difficulties, highlighting the importance of addressing these issues for optimal respiratory function and overall health.

A tongue tie release is an important element of comprehensive orthodontic treatment aimed at preventing orthodontic relapse, particularly in cases of tongue thrust that are common with tongue ties. It is often observed that individuals with an open bite exhibit tongue thrust or have

LEVEL I INTRODUCTION TO ORTHODONTICS

AIRWAY FOCUSED ORTHODONTICS

ALSO AVAILABLE ONLINE



Brock Rondeau, D.D.S. I.B.O., D.A.B.C.P., D-A.C.S.D.D., D.A.B.D.S.M., D.A.B.C.D.S.M.
Diplomate International Board of Orthodontics
Diplomate American Board of Craniofacial Pain
Diplomate-Academy of Clinical Sleep Disorders Disciplines
Diplomate American Board of Dental Sleep Medicine
Diplomate American Board of Craniofacial Dental Sleep Medicine

Course Objective & Content

The purpose of this comprehensive program is to teach general and pediatric dentists how to diagnose and treat simple orthodontic cases. Emphasis will be placed on thorough records and diagnosis. Treatment will involve using a combination of functional appliances, mainly in mixed dentition and fixed orthodontic braces (straight wire technique) in permanent dentition. Dr. Rondeau's systematic approach, organization and marketing tips make incorporating orthodontics into the general practice relatively easy.

Toronto, ON

Session 1 September 20 & 21, 2024
Session 2 November 15 & 16, 2024
Session 3 January 10 & 11, 2025
Session 4 March 7 & 8, 2025

Calgary, AB

Session 1 October 18, & 19, 2024
Session 2 December 13 & 14, 2024
Session 3 Feb. 28 & March 1, 2025
Session 4 April 11 & 12, 2025

Per Session Fee: \$1,295 (plus applicable taxes)

Includes extensive course manual

Payment in Full: \$4,780 (plus applicable taxes)

for all 4 sessions - **SAVE \$400**

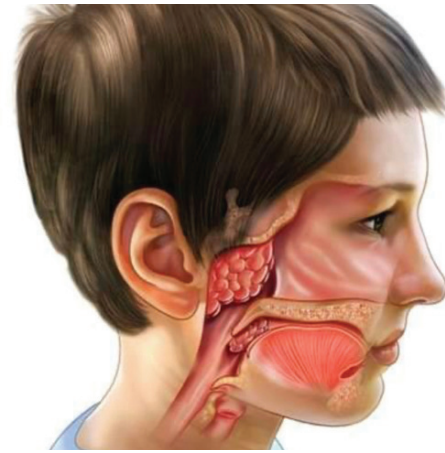
Includes 4 course manuals

Bonus for Full Payment:

- Bring 2 staff members to Level I Session 1 at no cost
- Free patient education video online access featuring 6 interceptive ortho cases



Rondeau Seminars (Canada) Inc.
Nationally Approved PACE Program Provider
for FAGD/MAGD credit.
Approval does not imply acceptance by any
regulatory authority or AGD endorsement.
3/1/2024 to 2/28/2027
Provider ID# 217653



a common tongue tie that causes them to have difficulty swallowing and maintaining proper tongue posture. It is essential to address these issues not only for orthodontic stability, but also to avoid complications like sleep disorders and breathing difficulties that can lead to sleep apnea. Tongue ties require myofunctional therapy prior to surgery for strengthening, preparing the tissues for surgery, and identifying areas of tension for a complete release. After release, myofunctional therapy is necessary to retrain the tongue to function properly, correcting years of improper use. Rehabilitating the tongue after it has been released is crucial to maintaining oral health and well-being following the release. A person who undergoes knee surgery will need physiotherapy and rehabilitation as part of the healing process, so why should our tongue be any different when considering its importance?

While the removal of enlarged tonsils and adenoids can help alleviate airway obstruction, without addressing proper nasal breathing and correcting oral dysfunction, it can still adversely affect a child's dental and maxillofacial development.

Our overall health is affected by how we breathe and sleep. In addition to affecting cognition and immunity, sleep-disordered breathing can have significant consequences. Furthermore, it may affect cardiovascular health, metabolism, growth, emotional well-being, and overall quality of life. The risk of hypertension, heart disease, stroke, diabetes, depression, and anxiety increase with untreated sleep-disordered breathing conditions such as sleep apnea. Moreover, chronic sleep disruption impairs concentration, memory, and decision-making abilities, making work, school, and daily activities difficult. To maintain healthy physical and mental function, it is imperative to address sleep-disordered breathing. Sleep disordered breathing is the result of a foundational issue, which has influenced a structural issue. Orofacial development that requires, or required, skeletal changes due to a narrow jaw, misaligned teeth and a bite that is not correct, or an underdeveloped jaw have required orthodontic treatment due to muscular dysfunction, leading to an unhealthy airway.

The best results are achieved when orthodontic treatment is combined with Myofunctional therapy. Orthodontic treatment corrects the dental arch alignment

and straightens the teeth, as well as skeletal changes such as palatal expansion, which is crucial to widening the airway. For orthodontic retention and overall health, myofunctional therapy addresses soft tissue dysfunction.

Myofunctional therapy offers significant benefits for individuals with sleep apnea by addressing key underlying issues. It helps strengthen and retrain the tongue, throat, and mouth muscles so they function properly during sleep. The tongue plays a crucial role in maintaining the patency of the upper airway during sleep. As the tongue needs to rest on the palate all night, weak tongue muscles can lead to tongue collapse. As a result of an unstable posterior portion of the tongue, gravity allows the tongue to fall back, blocking the airway and resulting in episodes of sleep apnea. By targeting specific exercises to strengthen Oropharyngeal muscles, exercises can reduce AHI by 50% in adults and 62% in children.¹²



Myofunctional therapy can effectively improve airway stability and reduce collapse caused by obstructive sleep apnea by increasing muscle tone and improving tongue positioning. Myofunctional therapy also focuses on correcting oral habits such as mouth breathing and improper tongue posture, which can contribute to constriction of the airways.

As a result of promoting nasal breathing and the placement of the tongue in the correct position, this therapy enhances airflow and helps to reduce the severity of sleep apnea symptoms. It contributes to the advancement of a child's orofacial development, reducing sleep apnea severity, and improving overall sleep quality by improving airway

function, influencing, and guiding the trajectory of the child's development.

Take advantage of the Tied 2 Myo online program platform if you do not have access to a myofunctional therapist in your area. To ensure that as many people as possible can benefit from Myofunctional therapy, I aim to make the program accessible and affordable. This program can be accessed effortlessly, empowering people to achieve their goals and improve their lives with my online program. A variety of resources are available on the online program with guided audio and video to support them through their Myofunctional therapy sessions, including in-office and virtual sessions.

You can access the online platform at www.tied2myo.com. For more information, please call 226-980-9822 or email info@tied2myo.com.

With our combined expertise, we can elevate oral and overall health, guiding your clients to a dynamic shift into wellness. **So**

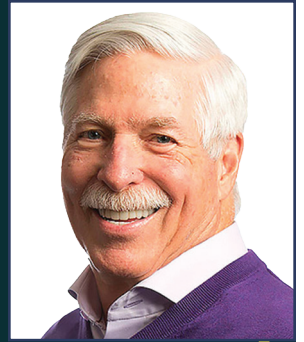
References

1. Recinto C, Efthymeou T, Boffelli PT, Navalta JW. Effects of Nasal or Oral Breathing on Anaerobic Power Output and Metabolic Responses. *Int J Exerc Sci.* 2017 Jul 1;10(4):506-514. PMID: 28674596; PMCID: PMC5466403.
2. Harvold EP, Tomer BS, Vargervik K, Chierici G. Primate experiments on oral respiration. *Am J Orthod.* 1981 Apr;79(4):359-72. doi: 10.1016/0002-9416(81)90379-1. PMID: 6939331.
3. Shahar E, Whitney CW, Redline S. et al. Sleep-disordered breathing and cardiovascular disease: cross-sectional results of the Sleep Heart Health Study. *Am J Respir Crit Care Med.* 2001;163:19-25.
4. Dyken ME, Somers VK, Yamada T, Ren ZY, Zimmerman MB. Investigating the relationship between stroke and obstructive sleep apnea. *Stroke.* 1996;27:401-407.
5. Peppard PE, Young T, Palta M, Skatrud J. Prospective study of the association between sleep-disordered breathing and hypertension. *N Engl J Med.* 2000;342:1378-1384.
6. Hoffstein V, Mateika S. Cardiac arrhythmias, snoring, and sleep apnea. *Chest.* 1994;106:466-471.
7. Somers VK, White DP, Amin R, Abraham WT, Costa F, Culebras A, Daniels S, Floras JS, Hunt CE, Olson LJ, Pickering TG, Russell R, Woo M, Young T. Sleep apnea and cardiovascular disease: an American Heart Association/American College of Cardiology Foundation scientific statement from the American Heart Association Council for High Blood Pressure Research Professional Education Committee, Council on Clinical Cardiology, Stroke Council and Council on Cardiovascular Nursing Council. *J Am Coll Cardiol.* 2008;52:686-717.
8. Babu AR, Herdegen J, Fogelfeld L, et al., "Type 2 diabetes, glycemic control and continuous positive airway pressure in obstructive sleep apnea", *Arch Intern Med*, 165, 447-452, 2005
9. Albert, A. M., & Wright, C. L. (2016). The Progression of Craniofacial Growth and Development: An Anthropological Study Applicable to the Forensic and Identity Sciences. *Global Journal of Anthropology Research*, 3(1), 16-21.
10. Mew, J. (2015). The influence of the tongue on dentofacial growth. *Angle Orthodontist*, 85(4), 715-716.

11. Saccomanno, S., Antonini, G., D'Alatri, L., D'Angelantonio, M., Fiorita, A., & Deli, R. (2012). Patients treated with orthodontic myofunctional therapeutic protocol. *European Journal of Pediatric Dentistry*, 13(3), 241-243.
12. Camacho, M., Certal, V., Abdullatif, J., Zoghi, S., Ruoff, C. M., Capasso, R., & Kushida, C. A. (2015). Myofunctional Therapy to Treat Obstructive Sleep Apnea: A Systematic Review and Meta-analysis. *Sleep*, 38(5), 669-675

BROCK RONDEAU,

**D.D.S. I.B.O.,
D.A.B.C.P.,
D-A.C.S.D.D.,
D.A.B.D.S.M.,
D.A.B.C.D.S.M.**



Dr. Rondeau has been treating children's orthodontic orthopedic problems for over 35 years and has taught over 24,000 dentists worldwide. He recommends early orthodontic treatment for children utilizing a functional philosophy which is a non-extraction, non-surgical approach. By developing the arches with functional appliances he avoids the extraction of permanent teeth. He utilizes functional appliances to reposition the lower jaw forward which prevents orthognathic surgery and future TMJ and snoring and sleep apnea problems.

Treatment must be implemented to prevent children from mouthbreathing which causes malocclusions and many health problems such as ADHD, aggressive behaviour, poor marks in school, bedwetting, bruxism, snoring and sleep apnea.

Since 75% of children and adults have a malocclusion general dentists need to take courses in order to treat them. Parents are looking for general dentists to help not only improve the appearance of their children but also increase their overall health by creating beautiful, broad smiles, patent airways and healthy TM joints.