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Orthodontics and Myofunctional Therapy: A critical review of the best complementary treatments of orofacial dysfunctions

PART 1

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Highlights

Purpose The orofacial complex is indeed complex and requires knowledge spanning various fields to address disorders and their resolution. An important component of both orthodontics and myofunctional therapy involves neuroplasticity and its applied principles. Together, orthodontics and myofunctional therapy can help patients with a wide variety of disorders, including obstructive sleep apnea, facial/TMJ pain, or insufficient nasal breathing, although other professionals might be needed for a full resolution of the disorders. Prevention is still the best cure, and it should start on day one and be a lifelong lifestyle.

Abstract

Purpose This critical review article illustrates the anatomo-physiological complexity of the orofacial district that makes orthodontic and myofunctional therapies naturally complementary.
Methods The evolution of the face and mouth's structures and functions intimately connects not just bones and muscles but several functions: breathing, sucking, swallowing, chewing, biting, protective mechanisms such as spitting or coughing, and parafunctions such as clenching or nocturnal bruxism. These functions (among others) are mediated by an extremely complex neural system that involves, affects, or is affected by relevant cranial nerves, the sensory-motor system, the sympathetic and parasympathetic systems, the enteric system, and the breathing system.
Results By understanding and implementing the principles of neuroplasticity, both myofunctional therapists and orthodontists can work together to help the patient identify the origin of the dysfunction and restore optimal orofacial health.
Conclusion This interdisciplinary approach promotes the lasting success of orthodontic treatment and supports overall body wellbeing.

KEYWORDS oral breathing, chewing, parafunctions, orthodontics, myofunctional, neuroplasticity.

INTRODUCTION

Intuitively, anyone can understand what oro- (mouth) facial- (face) dys- (ill, bad) functions are. And yet, the list of what constitutes orofacial dysfunctions (and disorders) has been growing in the last 20 years to include nasal and oral breathing, sucking, swallowing, chewing, protective mechanisms (spitting, coughing, vomiting, etc.), sleep apnea (with tongue thrust, slack or protruded jaw and nocturnal bruxism), salivation, biting, pain and stress control (clenching, or grinding also called daytime bruxing). What professionals need is to be better acquainted with orofacial myofunctional sciences to appreciate both functions and dysfunctions of the orofacial district. And it seems that this knowledge is still not widespread [Van der Straeten et al., 2025]. Orofacial dysfunctions impact both hard structures (teeth, bones and articulations) and soft tissues (muscles, fascia, ligaments and skin) therefore a minimum of two groups of specialists: orthodontists and myofunctional therapists, must work together because they treat complementary structures to each other and one cannot properly function or be treated without the other, due to their complex relationship [Saccomanno et al., 2012a; Saccomanno et al., 2014]. Moreover, there is still confusion regarding what constitutes a parafunction or compensatory behavior. For example, sucking on a pacifier can be a useful physiological behavior in babies [Moon et al., 2022] but if it's prolonged then the palate collapses inwards, the dentition develops into an anterior open bite and the tongue "learns" a dysfunctional pattern position and movement. However, there are some genetic components that guide the growth and development of the bones and soft tissue, and they are classified in orthodontics as dolichcephalus, brachicephalus and normocephalus. One of the reasons why hard tissues and soft tissues constantly interact is the interplay between genetics (the form and function determined by genes) and epigenetics or the impact of the environment (lack of habitual nasal breathing, non-age appropriate food texture, excessive use of a pacifier, or nail biting) on dentition, jaw position, freeway space or tongue position [Moss, 1997a; Moss, 1997b; Moss, 1997c; Moss, 1997d; Gilbert, 2003; Lieberman, 2011; Zink & Lieberman, 2016]. From a physiological perspective we know that it's the soft tissues surrounding the bones that constantly interact and guide the bone expression, from its shape to its issues (like bone spurs) [Moss, 1997a; Moss, 1997b; Moss, 1997c; Moss, 1997d]. And it's not just bones vs muscles and vice versa [Saccomanno et al., 2012b]. The nervous system is highly integrated in the orofacial district, by way of the sensory-motor system, the vasovagal system, the enteric system, the sympathetic and para-sympathetic system [Leeuw & Klasser, 2013]. This very complex system developed across eons, with a huge recent change, due to environmental changes in "modern" times. If for any reason, the balance that coordinates all the growth forces is disturbed already in early childhood [Paglia, 2023], the ideal growth line deviates and disorders appear, such as sleep disorders [Bonuck et al., 2012]. At that point, only an intervention, on habits and dysfunctions that always precede the establishment of defects such as malocclusion, can allow them to be avoided [Paolantonio et al., 2019; Grippaudo et al., 2013a]. That's why it's important for paediatricians as well to be knowledgeable about the impact of orofacial dysfunctions on overall health, and to refer the youngest patients to specialists early on, before the change from deciduous to permanent teeth, thus allowing the child to quickly bring their growth line back on track and avoid the onset of malocclusion, a narrow palate and thus restricted anterior nasal passages [Do & Buchman, 2021; Grippaudo et al., 2014; Saccomanno et al., 2022]. Keeping in mind the three pillars of Evidence Based Practice: support of reputable peer-reviewed science, professional experience (and therefore single case presentations), and the patients' preferences and values, the multidisciplinary team should remember that the patients are active participants in their own treatment, therefore facilitating their compliance across disciplines. The purpose of this critical review is to evaluate through literature the complementary role of orthodontics and myofunctional therapies, their physiological and neurological connections and complementary diagnostics and treatment protocols.

METHODS AND RESULTS

Because myofunctional and orthodontic principles have been around for decades, although their complementary role has not been as widespread as it should be, this literature review encompassed articles dating back to the early 1900s all the way to 2025, to illustrate a progression of knowledge added or replaced, and of confirmed or disproved theories over time. Modern science and medicine is based on observational articles written long time ago and just like the human body is complex, having a historical perspective to our understanding of it may provide a useful context and be a base for new research. A search for adequate articles was pursued between March 2024 and March 2025. 70 complete articles were obtained through Pubmed, SCieLO, using the keywords: oral breathing, sucking, swallowing, chewing, protective mechanism, parafunctions, orthodontics, myofunctional, epigenetics and neuroplasticity [Van der Straeten et al., 2025; Moon et al., 2022; Moss, 1997a; Gilbert, 2003; Lieberman, 2011; Zink & Lieberman, 2016; Leeuw & Klasser, 2013; Bonuck et al., 2012; Do & Buchman, 2021; Clark, 2003; Corruccini & Pacciani, 1989; Boyd, 2011; Boyd et al., 2021a; Boyd et al., 2021b; Price, 2010; Katsaros et al., 2006; Mavropoulos et al., 2010; Blasko et al., 2023; Crété et al., 2024; Corruccini et al., 1985; Proffit & Mason, 1975; Kimura et al., 2006; Spito & Cavaliere, 2019; Mathur et al., 1995; Pillar et al., 2001; Smith & Kier, 1989; Fiegler-Rudol et al., 2024; Olczak-Kowalczyk et al., 2017; Wang et al., 2021; Lee et al., 2013; von Wowern et al., 1996; Skoretz et al., 2020; Terech-Skóra et al., 2023; Avivi-Arber et al., 2011; Mortimore et al., 1995; Weiss et al., 2005; Engelke et al., 2011; Svensson et al., 2003; Fogel et al., 2001; Koka et al., 2021; Chen et al., 2015; Poncin et al., 2024; Messner et al., 2020; Deshkar et al., 2024; McCrossan et al., 2021; Dawoud & Ariyaratnam, 2016; Lee & Aronowitz, 2021; Mylaraiah et al., 2024; Hata & Ihara, 2024; Ahrari & Eslami, 2011; Canuto et al., 2016; Ramanathan & Vadivel, 2022; McKeown et al., 2021; Passali et al., 2011; Saccomanno et al., 2023; Warzocha et al., 2024; Eli et al., 2022; Schames et al., 2016; de Felício et al., 2010; Machado et al., 2016; Borges et al., 2024; Shortland et al., 2021; Altuhafy et al., 2024; Schames et al., 2012; Lombardo et al., 2020; Grippaudo et al., 2013b; Ferro et al., 2016; Carli et al., 2023; Farronato et al., 2012; Bardellini et al., 2025] out of a total of 3359 articles. Only full articles in English were accepted, and included case review studies, systematic reviews, meta-studies, epidemiological studies, randomised clinical trials. Research articles involving both humans and animals, in vivo and in vitro articles, were accepted for review. There was no restriction on age or gender or physiological condition, and whenever the cases reported were not necessarily orthodontic or myofunctional cases, they were selected to illustrate how physiological principles change in disease and disorders. To familiarise the readers with general concepts useful in multidisciplinary prevention, diagnostics and therapy, one full book chapter [Leeuw & Klasser, 2013], eleven articles in relevant books [Moss, 1997a; Moss, 1997b; Moss, 1997c; Moss, 1997d; Gilbert, 2003; Lieberman, 2011; Zink & Lieberman, 2016; Leeuw & Klasser, 2013; Price, 2010; Machado et al., 2016; Jenkins, 2017; Peterson, 2011] and one tutorial [Clark, 2003] were included.

DISCUSSION

Relevant evolutionary changes

Anthropological findings [Lieberman, 2011; Zink & Lieberman, 2016; Corruccini & Pacciani, 1989; Boyd, 2011; Boyd et al., 2021a; Boyd et al., 2021b] suggest that ancient humans had very different orofacial functions because child birth and child rearing favored the healthiest of humans, where there was only breast feeding with all the benefits that derive from it; weaning was short and transition to tough food texture was fast because there were no alternatives and chewing food took hours as opposed to minutes as it is currently. This was also documented in 1939 by Weston Price, who traveled to areas where local people were not exposed to Westernised diet and what happened after they did [Price, 2010]. Some studies on mice support the theory of chewing as promoting healthy jaw and palatal bones [Katsaros et al., 2006; Mavropoulos et al., 2010; Blasko et al., 2023]. All that nasal breathing and hard chewing created nicely formed upper and lower jaws, with space for all 32 teeth and often with additional retention of deciduous teeth and with the heavy use of teeth as a "third hand" [Crété et al., 2024]. Those physiological orofacial characteristics are preserved in people who currently live in areas where the "ancestral feeding" practices and foods are still preserved, reflected in good nasal breathing, ample palates, normo-occlusion and physiological chewing and swallowing [Corruccini et al., 1985; Proffit & Mason, 1975]. Except for genetic disorders or accidents, in ancient populations, good nasal and orofacial functions were the only conditions allowing people to breathe or eat [Lieberman, 2011; Zink & Lieberman, 2016; Price, 2010]. That's true for animals as well [Katsaros et al., 2006]. Although our brain evolved, bypassing the upper airways and the mouth for breathing and eating still prevents the neurological sensory system from issuing the physiological commands for the breathing and digestive systems, mediated by the complex vasovagal system and other relevant cranial nerves. Artificial breathing or parenteral feeding can now keep a person alive, but they are not physiological functions anymore. For example, dyspepsia is a very common side effect of parenteral feeding (gastric tube or nasogastric tube), and a study by Kimura et al. suggested that the autonomic nervous activity is reduced in patients who are unable to masticate and swallow food, resulting in adverse effects on gastric motor function and excretion function [Kimura et al., 2006]. And permanent intubation or a tracheostomy or even chronic mouth breathing causes the loss of the many filtering and optimising properties of the nose, which warms or cools air, humidifies it, filters the air from dust and bacteria, senses the air flow and assists the respiratory system to adapt to the inflow. All these functions are lost if the air does not go through the nose and they represent a real medical challenge [Spito & Cavaliere, 2019]. These examples of extreme or just routine medical cases illustrate how intricate is the relationship between orofacial-nasal functions and general health or disease and how important it is to preserve as much as possible normal, proper orofacial and nasal functions as they affect and are affected by many different diseases and dysfunctions [Mathur et al., 1995; Pillar et al., 2001; Smith & Kier, 1989; Fiegler-Rudol et al., 2024; Olczak-Kowalczyk et al., 2017; Wang et al., 2021; Lee et al., 2013; von Wowern et al., 1996; Skoretz et al., 2020; Terech-Skóra et al., 2023].

The uniqueness of our orofacial complex

The way our orofacial complex evolved to optimise breathing and eating is quite astounding and we have unique muscles, bones and other features that changed over time to serve specific functions, although they are not exclusive to humans. One unique bone is the lower jaw (mandible), which is the only bone in the body that has both articulations or joints along the same axis, allowing a sort of "hinge" movement but with a range of movement that is unparalleled in other joints, allowing protrusion, retrusion, depression, elevation, pitch, and yaw. The mandible moves in any direction to principally serve stability for the tongue position, which needs to stay away from the airways, then the mandible opens wide when the need for air is necessary, like after a run. The jaw and the teeth are uniquely designed to optimise chewing, food comminution and food bolus preparation along with saliva, and the mandible adapts to tooth loss, or tooth pain. The jaw is very much involved in protective mechanisms such as vomiting, coughing, sneezing, spitting, biting, daytime and nighttime bruxing and clenching. Most importantly, the jaw is the bone on which almost all the muscles that support the position of the larynx and the tongue are inserted, thus proving stability to the upper airways. Facial muscles are activated by the sensorimotor cortex [Avivi-Arber et al., 2011], so they are involved not just in facial expressions but in keeping food and liquids in the oral cavity during chewing and swallowing or while swishing liquids in the mouth. Plus, facial muscles are involved in closing shut the eyes for protection and opening the eyes wide when there is darkness. Facial muscles are quite involved in nasal breathing as well and their involvement is clear when we observe children and adults with allergies, in which some facial expressions pull the skin down or up to open the nostrils further, enlarging the anterior nasal passages. Some muscles of the oropharyngeal complex need to serve both the breathing and the alimentary system so either they are innervated differently (the so-called dilator muscles, which keep the airways open at all times), or are regulated by a dual neurological governing center, such as the case of the genioglossus muscle, which is the main component of the tongue [Mathur et al., 1995; Pillar et al., 2001; Mortimore et al., 1995; Weiss et al., 2005].

The tongue and its functions

The tongue by itself is an amazing organ that has many purposes and characteristics [Smith & Kier, 1989; Engelke et al., 2011; Svensson et al., 2003; Fogel et al., 2001] which turn out to be a challenge and a benefit to myofunctional therapy [Clark, 2003]. The genioglossus is thoroughly involved in chewing, swallowing and oral clearance but first is involved in optimising air intake especially in case of sudden or chronic reduction of the upper airways space (nasal cavities and pharynx in particular). Any time the airways are insufficient the genioglossus contracts and pushes forward, appearing as a "tongue thrust". A tongue thrust used to be considered a parafunction, or worse a vice, of the patient, even in babies, without understanding the correlation between breathing and tongue position. A tongue thrust is more likely to be seen in patients with obstructive sleep apnea or enlarged adenoids [Koka et al., 2021; Chen et al., 2015; Poncin et al., 2024] or even in obese patients who have increased fatty pads on the tongue itself [Weiss et al., 2005; Poncin et al., 2024; Messner et al., 2020], but also in genetic disorders [Deshkar et al., 2024; McCrossan et al., 2021] and certain diseases like amyloidosis [Dawoud & Ariyaratnam, 2016; Lee & Aronowitz, 2021]. The push of the tongue forward during sleep apnea is visible in the "scalloping" of the front and lateral borders of the tongue [Weiss et al., 2005], although there are other reasons for the scalloping, unrelated to sleep [Mylaraiah et al., 2024; Hata & Ihara, 2024]. The movement of the genioglossus to optimise airflow can be problematic for orthodontists who easily observe the bite change, the mandible not in a physiological position and the development of an anterior open bite in children [Gelb et al., 2021]. In the past, and in some areas still today, devices such as tongue rakes or tongue spurs are used to push the tongue back from the front teeth [Ahrari & Eslami, 2011; Canuto et al., 2016; Ramanathan & Vadivel, 2022], which can be effective in moving teeth, but they are not addressing the real, physiological cause of the tongue thrust, which is comfortable nasal breathing daytime and nighttime. However, orthodontists can be invaluable in restoring nasal breathing [Jenkins, 2017]. Another consequence of reduced upper airways is the change in breathing patterns daytime and nighttime [McKeown et al., 2021] and the position of the head, which moves forward, with a jutting jaw and usually a mouth open. This condition: forward head posture or FHP, is well known by posturologists, chiropractors, orthopedists or physical therapists [Peterson, 2011]. Although it does contribute to optimal breathing (given the situation), a FHP is linked to muscular neck pain, a straightening of the cervical spine, which should be naturally curved, changes in the fascial tension of the shoulders and a change in the overall body function and wellbeing. Changes in the normal upper respiratory pattern also changes saliva production, which can be increased, especially in little children, or reduced like in adults and elderly. Saliva is a very complex fluid in the body [Navazesh & Kumar, 2008] and not only does it keep the mouth moist so that the various components move freely, but it also contain ptyalin which breaks down carbohydrates already in the mouth during chewing. Saliva is a fluid with basic pH, so it buffers excessive acidity in the stomach, if the food is properly chewed (comminuted) and coated with saliva. Moreover, saliva is part of the continuous and common "liquid film" containing lysozyme, which lubricates, protects and moisturises. This liquid film (mucus) goes from the nose to the larynx and beyond while the mouth (saliva), goes down to the pharynx, the esophagus and beyond. Nobody thinks about saliva until they have mouth dryness (xerostomia) which impacts not only eating but also sleeping, speaking, chewing, swallowing, and oral clearance. Carbohydrates are more likely to stick to teeth in presence of reduced saliva, therefore requiring more aggressive oral hygiene. Saliva or lack of it can affect not only eating and food bolus preparation but also it can contribute to obstructive sleep apnea as the lack of saliva makes the tongue and soft palate stick to the pharyngeal walls. This oropharyngeal "stickage" can be compounded with a reduction of the nasal muco-ciliar flow while asleep, creating significant air flow restriction (snoring and sleep apnea) [Passali et al., 2011]. The interplay between nasal breathing, oral rest posture, chewing and swallowing are evident when that nasal breathing is obstructed or reduced by hypertrophic adenoids or congested nasal mucosa. Chewing in people with poor nasal breathing is characterised by reduced rotatory movement, chewing with the mouth open, smacking noises, tongue thrust, poor oral clearance, need to constantly drink during meals, aerophagia, burping, recruitment of the neck (forward head posture) and face muscle (grimaces) during swallowing. Poor chewing and then poor swallowing have been related to choking episodes [Saccomanno et al., 2023]. Moreover, oral breathing often significantly alters the freeway space between the two dental arches. Spontaneous chewing can be even observed in patients with encephalitis, as cerebral fluid pumping is promoted by rhythmical movements such as breathing, swallowing and chewing [Miao et al., 2019], although it has been studied more extensively in animal models [Miao et al., 2019].

Functions, dysfunctions and parafunctions

Oronasal functions, as presented, are responsible or are contributing factors in orofacial pain, especially TMJ disorders. An open mouth posture, oral breathing, poor chewing or a soft diet can contribute to those problems. In the case of women, other contributing factors are the hormonal makeup,

Orofacial Dysfunction	Clinical Signs/Symptoms	Potential Consequences
Mouth breathing	Open mouth posture, dry lips, snoring	Long face syndrome, malocclusions, poor sleep
Tongue thrust	Anterior open bite, articulation disorders	Relapse post-orthodontics, speech impairment
Lip incompetence	Passive lip seal, flaccid perioral muscles	Malocclusion, esthetic concerns
Atypical swallowing	Use of perioral muscles during swallowing	Dental misalignment, TMJ strain
Incorrect tongue posture	Low resting position, absence of palatal suction	Maxillary underdevelopment, crossbite

TAB. 1 Main Orofacial Dysfunctions and Their Clinical Manifestations

Orthodontic Appliance	Primary Function	Effects on Orofacial Dysfunction	Limitations
Rapid Palatal Expander (RPE)	Transverse maxillary expansion	Improves nasal breathing, supports correct posture	Relapse if not associated with re-education
Myobrace / Functional Appliances	Muscle training, arch development	Encourages nasal breathing, tongue posture correction	Requires compliance; less effective alone
Fixed Braces	Dental alignment	Indirect improvement via structural correction	Does not address habits; relapse risk
Invisalign First / Clear Aligners	Aesthetic orthodontic correction in children	Can be integrated with myofunctional protocols	May not control muscle behavior alone

TAB. 2 Orthodontic Treatments and Their Effect on Orofacial Functions

Technique	Goal	Common Exercises	Evidence of Efficacy
Orofacial muscle training	Strengthening lips, cheeks, and tongue	Lip sealing, tongue lifting, swallowing drills	Moderate to strong (Level II–III)
Breathing retraining (nasal)	Promoting nasal breathing	Buteyko method, slow diaphragmatic breathing	Strong if combined with RPE
Tongue posture correction	Palatal suction and correct rest posture	Spot training, tongue elevation	Strong (when supervised)
Habit reversal training (thumb, pacifier)	Eliminating deleterious habits	Awareness techniques, alternative responses	Strong in children

TAB. 3 Myofunctional Therapy: Key Techniques and Goals

presence of hormonal disorders such as Hashimoto's [Warzocha et al., 2024], and probably even sex practices, since the peak of orofacial pain is between 20 and 40 years of age, just during the peak of sexual activity. However, so far, this correlation has been studied only in female sex workers [Eli et al., 2022]. Moreover, quite often, dental pain is only referred pain when the cause may be muscular [Schames et al., 2016]. Myofunctional therapy has shown positive results in the treatment of temporomandibular disorders [de Felício et al., 2010; Machado et al., 2016; Borges et al., 2024], with or without various adjunctive devices [Shortland et al., 2021; Altuhafy et al., 2024]. To control pain and/or stress, often the only system working is biting or clenching or daytime bruxing. Although there are other reasons for these functions, when they are excessive in terms of frequency, duration and intensity of the events, they become parafunctions, maintained not only as "mood" stabilisers but also as habits, mediated by the neuroplastic characteristics of the brain. In particular, nighttime bruxing, although it's considered by many a parafunction, it's the bane of dentists for its destructive power on occlusion and teeth health and it's often associated with orofacial pain and TMJ disorders. However, bruxing wakes people up from REM sleep and allows breathing to be restored in case of obstructive sleep apnea. So bruxism can be a lifesaving parafunction [Schames et al., 2012]. To understand the correlation between the various functions and persistence of "parafunctions" we have to consider the brain's neuroplasticity, which is the mechanism that creates habits, adaptations and parafunctions [Avivi-Arber et al., 2011].

CLINICAL IMPLICATIONS

Comprehensive assessment Each orthodontic evaluation should include a functional examination of breathing, swallowing, tongue posture, and perioral muscle tone. Collaboration with myofunctional therapists, speech-language pathologists, ENT specialists, and physiotherapists ensures a more accurate diagnosis and a personalised treatment plan.

Early intervention and prevention Detecting altered breathing, sucking, or swallowing patterns early in life allows for prompt functional correction, guiding craniofacial growth and preventing structural maldevelopment.

Functional re-education Orthodontic results are more stable when combined with myofunctional exercises. Retraining nasal breathing, proper tongue posture, and correct swallowing patterns is essential for maintaining long-term equilibrium.

Neuroplastic reinforcement Myofunctional therapy leverages the brain's adaptive potential. Consistent and mindful repetition of exercises fosters neuromuscular memory, ensuring lasting postural and functional correction.

Patient and family engagement Active patient participation is crucial. Educating and motivating patients, especially children and their families, fosters compliance, autonomy, and sustained success beyond the active treatment phase.

Holistic health benefits The orthodontic–myofunctional partnership extends beyond occlusion. Improved airway function, better sleep, enhanced posture, and overall wellbeing

Orofacial Dysfunction	Best Orthodontic Approach	Best Myofunctional Complement	Evidence Level	Notes
Mouth breathing	RPE or nasal stent	Breathing retraining	High	ENT evaluation often needed
Tongue thrust	Fixed or clear aligners	Tongue posture training	Moderate to High	Therapy should precede and follow orthodontics
Atypical swallowing	Functional appliance	Orofacial myofunctional therapy	High	Early intervention preferred
Lip incompetence	Myobrace or passive trainer	Lip muscle strengthening	Moderate	Long-term follow-up recommended
Incorrect tongue posture	RPE + myofunctional exercises	Tongue elevation & suction drills	High	Better outcomes with early mixed dentition treatment

TAB. 4 Best Complementary Treatment Combinations

Aspect	Advantages	Challenges / Limitations
Interdisciplinary approach	Holistic care; treats cause not just symptoms	Requires collaboration between specialists
Early intervention	Prevents relapse and reduces treatment time	May require long commitment and motivation
Patient compliance	Enhances results and retention	Highly variable, especially in young children
Long-term stability	Significantly improved with myofunctional aid	Needs regular monitoring and reinforcement

TAB. 5 Critical Evaluation of the Integration: Pros and Cons

reflect the global impact of restoring physiological orofacial function.

CONCLUSIONS

The orofacial complex represents one of the most intricate and finely regulated systems of the human body. Structure and function are inseparable — any change in one inevitably affects the other. Within this framework, orthodontics and myofunctional therapy emerge not as separate disciplines but as two complementary aspects of a single rehabilitative process. Orthodontics acts primarily on the skeletal and dental architecture, while myofunctional therapy restores and stabilises the neuromuscular balance that maintains these structures over time. The synergy between these two fields is reinforced by the principle of neuroplasticity, which allows the nervous system to reorganise itself in response to repeated, targeted stimuli. Through myofunctional re-education, patients can retrain their oral functions — breathing, swallowing, tongue posture, and lip seal — to achieve lasting improvements in occlusion, airway health, and overall physiological harmony. Equally crucial is the role of prevention. Early intervention, ideally in early childhood, can redirect growth along a physiological trajectory, preventing malocclusions, narrow palates, or dysfunctional breathing patterns before they become established. By addressing habits and orofacial functions from the start, we can reduce treatment complexity and improve long-term stability. Ultimately, the integration of orthodontics and myofunctional therapy exemplifies the principles of modern, evidence-based, and patient-centered care. This interdisciplinary approach not only enhances functional and esthetic outcomes but also promotes systemic wellbeing — transforming orthodontic treatment into a comprehensive path toward health, balance, and quality of life.

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