

Functional Education with Trainer Treatment: What Role in Improving Breathing?



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Abstract

In orthodontics, almost all the children with dental or skeletal malocclusions present functional anomalies, it concerns chewing, phonation and swallowing but also in most cases breathing disorders. This can explain the insufficiency of orofacial growth in the three planes of space. The various dysfunctions have until very recently been supported by devices with limited action but currently trainer treatment allows a functional education with an improvement of all the orofacial functions and furthermore the improvement of the dental and skeletal anomalies.

What about breathing, what is the role of trainer device?

The method consists on using a flexible gutter (trainer) as early as possible after the removal of any obstacle to physiological breathing. Positive effects are observed very quickly when the device is worn regularly.

Keywords: breathing disorders; growth; trainer treatment; functional education; positive effects

Introduction

Breathing disorders are frequent and have a proven impact on the development of dentoalveolar arches, many orthodontic anomalies are due to the presence of breathing obstacles which must be removed when it is indicated. This can help to obtain positive and perennial results for both the orthodontic and breathing problems [1,2]. The collaboration between orthodontics on the one hand and otolaryngology on the other hand is required because it is necessary not only to provide a treatment for the breathing disorders but also to create or restore the optimal conditions for the course of breathing which is the role of the orthodontist. The practitioner will treat the orthodontic malocclusions but also educate the breathing by the removal of bad habits acquired and the relearning of correct postures: cephalic, lingual and labial. Methods are numerous according to the indications. Treatment will preferably be early and involves Orthodontics and otolaryngology. The treatment approach must be concerted and synergistic for the benefit of the general and oral health of the child.

Orthodontic and otolaryngology (ENT) Collaboration

First of all, it is important to assess the orthodontic possibilities considering the orthodontic indications as well as the expected therapeutic results and also the contribution of the ENT care. ENT practitioner will proceed to the removal of obstacles to nasal breathing by appropriate surgical and / or drug treatment. The orthodontist will then proceed to the functional

and skeletal unlocking in the three planes of space to strengthen the muscles of the face (masticatory muscles and muscles of the cheeks, the lips and the tongue) and to activate the maxillary and / or mandibular growth especially in the transverse direction. The objective is to promote the repositioning of the tongue in the upper and anterior position and to allow the lip contact not only for a balanced and functional eruption of the definitive teeth but also to improve all the orofacial functions in particular the nasal breathing [3].

Role of trainer treatment in improving breathing function



Figure 1: Orthodontic trainer.

The trainer appliance has a particular design, it allows by using a single device to act at the same time on different anomalies. It is performed in different shapes and sizes according to the orthodontic indications (Figure 1). The device acts on the

two arches and has a dental silicone positioner, a tongue tag, a lip bumper, tooth channels and lip bows. It can be used since primary or mixed dentition; functional education is its main action with a recommended use in a purpose of prevention and interception.

Treatment of buccal breathing is associated to the numerous roles of the device that are [4,5]:

- Eruption Guiding of permanent teeth;
- Lingual repositioning;
- Improvement of dentoalveolar arches growth;
- Deletion of digital suction;
- Improvement of orofacial functions (swallowing, chewing and phonation);

- Orthodontic anomalies interception at an early stage of evolution (incisor crowding and proclination, open bite, deep bite, class II skeletal malocclusion);

The device is worn overnight and two hours during the day for 1 or 2 years according to the orthodontic indications, the oral trainer screen promote the recovery of a natural breathing through the nose.

Breathing exercises are recommended in order to optimize the results: it consists on nasal breathing with joined lips during inspiration followed by deep expiration 10 to 15 times intermittently during daytime.

And depending on the orthodontic anomaly treated, it may be necessary to use a complementary therapy at the same time or in a second step.



Figure 2: Case presenting a chronic rhinitis and orthodontic malocclusions: Functional and dentoalveolar improvement after 18 months of trainer treatment.

The positive effects on breathing are possible through (Figure 2):

- Improvement of neuromuscular behaviour;
- Correct postures (cephalic, lingual and labial);
- Equilibrate development of the dentoalveolar arches in the three planes of space;
- Oral muscles enhancement (lip contact);
- Lingual stimulation of the jaw's growth;
- Maxillary transverse dimension increase and so on nasal cavity (Figure 3).

Conclusion

Both orthodontist and ENT practitioner intervene according to the indications and treatment purposes established and in a personalized way for each patient. However, it is better when they collaborate together to increase the possibilities of success and post-treatment stability. The orthodontist plays a key role in the detection of a breathing disorder and the treatment of the malocclusions related to it or having aggravated it. More particularly, he performs respiratory education, an essential and complementary step after the removal of an obstacle to breathing. Functional education through the use of a trainer treatment makes responding to this purpose possible by a positive action on breathing, and also on the orofacial muscular and dentoalveolar environment, which contributes directly or indirectly to the proper course of the breathing function.

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Figure 3: Maxillary transverse dimension increase and positive effects on nasal cavity after functional education.

Many studies have shown that these positive effects can be observed from the first months of using the device [6-9] however it is necessary to guarantee patient compliance for a fast and effective functional rehabilitation.

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