

The TRAINER System in the context of treating malocclusions

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Part 1 of three

Functional maxillary orthopedics (FMO), also known as dento-facial orthopedics, is the subject in dentistry that studies the treatment of malocclusions by stimulating or inhibiting the activity of the masticatory and/or facial muscles. Doing so stimulates modeling and remodeling of the maxillaries, permitting a better tooth alignment.

FMO helps to correct and treat all the functional problems that can be associated with incorrect positioning of the teeth (Ramirez-Yañez and Farrell, 2005) due to erroneous force delivered on the teeth by the muscles (Fujiki et al., 2004). Consequently, teeth tend to position better and to align correctly.

Therefore, the first matter that must be understood is that FMO's goal is to correct the position of the teeth, similarly to fixed orthodontics. However, traditional orthodontics only moves the teeth, and it is expected that the entire cranio-mandibular system (CMS) is going to adapt to the new position of the teeth.

FMO, on the other hand, produces a balance between the muscles of the CMS, followed by improving the relationship between the upper and lower maxillaries. Consequently, the teeth tend to position better.

In other words, orthodontics and FMO have the same goal — the way that goal is achieved is totally different.

There is a huge variety of removable appliances that may be classified as FMO appliances. However, they do not all produce the same effect on the CMS.

Some work by increasing the muscular activity of the masticatory muscles by positioning the mandible forward (e.g., Monoblock and Bionator); others stimulate the masticatory and/or facial muscles, thus improving the relationship between the mandible and maxilla through increasing the lateral excursions



Fig. 1: The T4K for treatment of developing malocclusion and myofunctional habits.

of the mandible (e.g., Bimler and some Simoes Networks); and others work on the buccal area of the mouth, stimulating the transverse development of the maxillaries while improving the position of the mandible (e.g., Frankel's Function Regulator).

More recently, new appliances have been developed that stimulate the masticatory and facial muscles and furthermore re-educate the posture of the tongue, bringing the CMS into a physiological equilibrium of the force delivered on the maxilla mandible and teeth. Some of these new appliances are the Simoes Network 2 and 3, as well as all the appliances composing the TRAINER System™.

It is very important to understand the modus operandi of each of the FMO appliances that are available to treat malocclusions. This permits the health professional to understand the philosophy behind each appliance, what the successes are and what the limitations that can be expected are when treating with each of them.

The TRAINER System

The TRAINER System is composed of various appliances that can be used accordingly with the age of the patient, including the Infant TRAINER, the TRAINER for Kids (T4K™) (Fig. 1), the TRAINER for Adolescents/Adults (T4A™), the TRAINER for Brackets (T4B™), the TRAINER for Class II malocclusion (T4CII™),



Fig. 2: The MYOBACE for dental alignment and arch development.

TRAINER Lingua™ and the MYOBACE® (Fig. 2). Although their indications may vary, all appliances within the TRAINER System, including the MYOBACE, work in an identical way.

The goal of this paper is not to give the indications for each of the trainers, but to explain the way that all the appliances in the TRAINER System produce their effect when treating the various types of malocclusions. Those readers not familiarized with these appliances may find the indications for each of them and the appliances manuals at www.myoresearch.com.

Many orthodontists tend to see the MYOBACE as a different appliance as it does not have the name TRAINER attached to its name. The MYOBACE works similarly to the other trainers, stimulating the muscular balance of the facial and masticatory muscles, as well as re-educating tongue posture.

The only difference is that the MYOBACE has a structure added (inner-core) to increase the resistance of the buccal shields, therefore counteracting the force delivered by the buccinators on the posterior teeth when the activity in those muscles is increased. This is further explained later. Also, the MYOBACE includes additional channels at the area of the anterior teeth, which can deliver a direct force on the teeth improving their alignment.

Otherwise, the MYOBACE maintains the specifications and features of the other trainers, and therefore, all the information provided regarding the modus operandi and the scientific evidence regarding the trainers is applicable to the MYOBACE.

Thus, the purpose of this document is to explain how the appliances comprising the TRAINER System produce the changes observed in thousands of patients treated with these appliances around the world and to explain why the TRAINER System appliances guide the facial and masticatory muscles to work

properly, as well as correct the imbalance of the force produced by an incorrect posture of the tongue. This document also shows scientific evidence supporting the use of FMO appliances and, particularly, the scientific research gathered from using the TRAINER System.

Modus Operandi of the TRAINER System appliances

As suggested by the name, the appliances of the TRAINER System just train or exercise the muscles at the CMS to physiologically load the bones, stimulating growth and development in the structure composing the CMS. Through development of the maxilla, the mandible and the dental arches, as well as by re-educating tongue posture, the teeth tend to position better and align correctly.

The effects produced by the trainers on the maxilla and mandible have been demonstrated through scientific studies (Usumez et al., 2004; Ramirez-Yañez et al., 2007), as well as through clinical cases successfully treated with these appliances and reported in the literature (Ramirez-Yañez GO and Faria P., 2008; Kanao et al., 2009).

Currently, there is ongoing research with the TRAINER System appliances focusing on understanding their effect on the muscular activity of the masticatory and facial muscles, as well as further investigating the positive effect the appliances can have in mouth-breathing patients and on some altered oral functions, such as swallowing.

In the next two parts of this article, the modus operandi of the TRAINER System appliances will be explained, considering separately their effect on the three dimensions of the mouth: sagittal, transverse and vertical.

Scientific literature supporting the physiological concepts involved on the effects produced by the trainers will be presented to further support the concept that the TRAINER System appliances (including the MYOBACE) are a viable alternative to treat malocclusion.

Look for Part 2 of this article in the October issue of Ortho Tribune. References will appear at the end of Part 3. [OT](#)

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