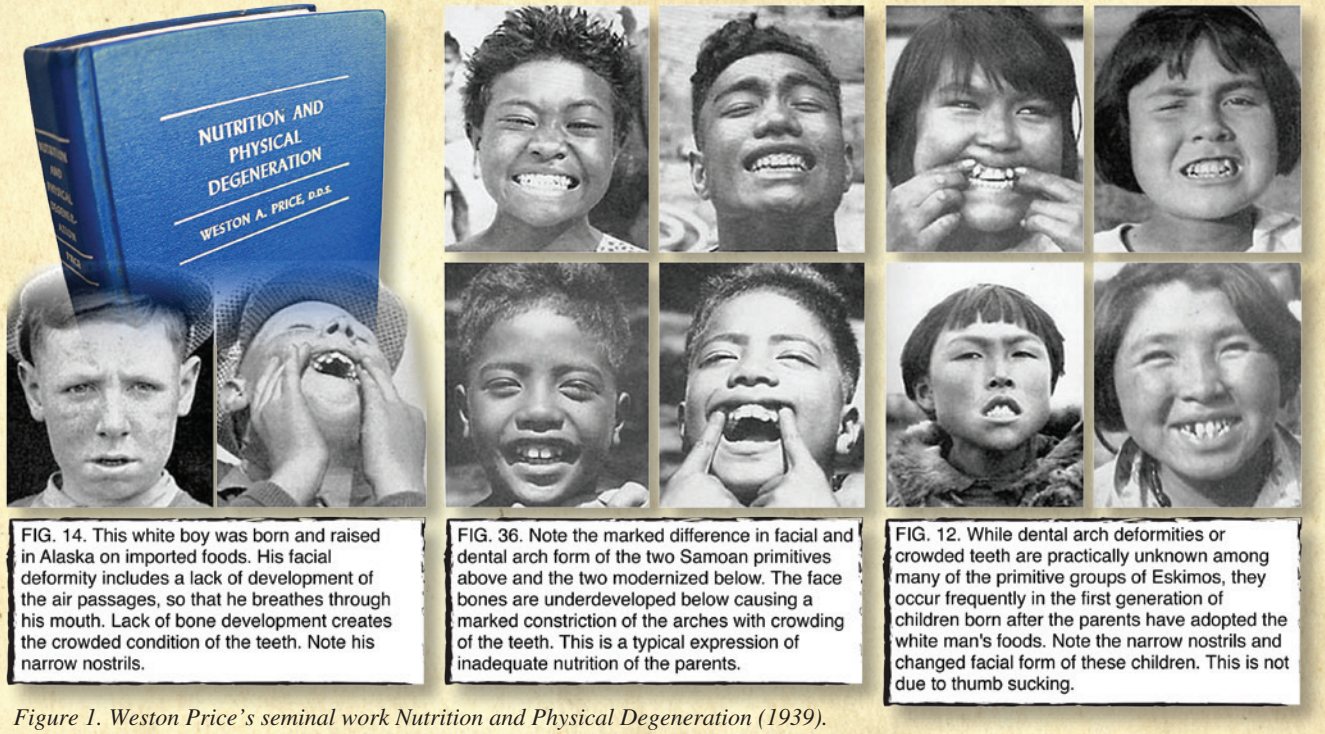

Figure 1. Weston Price's seminal work Nutrition and Physical Degeneration (1939).

The Myobrace® System: Biologically focused treatment innovation

By Dr Chris Farrell BDS, CEO & Founder of Myofunctional Research Co.

THE philosophies underpinning traditional orthodontic practice have remained largely unchanged since the profession's beginning. Delay treatment until the permanent dentition; if necessary, create space through extraction; mechanically align teeth into an arbitrary Class I; then add permanent retention.

Even after Graber advised the profession to find scientific evidence of the causes of malocclusion then treat those, the profession continued to target treatment at the effects. Fortunately, Graber's urging did not fall entirely on deaf ears and modern research has aimed a spotlight on the restricted development, poor habits as well as inadequate diet and nutrition causing malocclusion in the majority of modern children.

Modern health-centred approaches now prompt examination into the roots of the patient's malocclusion and require differentiation between the malocclusion's causes and associated symptoms.

For much of the last 100 years, advances in orthodontic practice focused on more efficient and easier means of mechanically straightening teeth into an arbitrary class one. Unfortunately, for countless patients, while technically outstanding, these treatments had little scientific grounding and failed to address the aetiological factors causing malocclusion while providing questionable long-term benefit with extractions, relapse, root resorption and permanent retention the norm. Graber addressed this failure to recognise the aetiology of malocclusion in the 1960s when he urged the profession to investigate the unrecognised causative aetiological


Dr Chris Farrell

agents of malocclusion[1] and aim treatment towards correcting these, rather than merely addressing effects.

In recent decades, research has highlighted how malocclusion is the result of incorrect or restricted craniofacial development caused by poor myofunctional habits as well as inadequate diet and nutrition.

Dr Weston Price established more than 80 years ago that diet was a cause of tooth decay. He also demonstrated that when "modern" foods displaced traditional diets in diverse communities around the world, rampant tooth decay was the immediate result. Additionally, he noticed

"The Myobrace System is aimed at unlocking the patient's innate biological development by eliminating or correcting the factors that are inhibiting it. Rather than just a permanently retained Class I occlusion, MRC's myofunctional orthodontic treatment is focused on achieving more whole-health outcomes, with correct craniofacial development the goal..."

the generation raised on these modern diets developed narrower faces, mouth breathing and crowded teeth.[2] This association was picked up by Graber in his 1962 text book. However, until recent decades this remained unrecognised and mechanical treatments remained the norm.

Nowadays, it is well-recognised that if a child breathes through their mouth, they will have an incorrectly postured tongue resulting in incorrect swallowing patterns, which directly affect the dental alignment. Craniofacial growth is also restricted and these result in malocclusion. This seems obvious and raises the question - how did it remain unrecognised for so long? The answer appears to be because the profession was overly focused on the teeth, which in the case of malocclusion, is aiming treatment at the effects rather than the causes.

This recognition of the causes of malocclusion has given rise to new treatments that are evidence-based and biologically focused. Rather than relying on mechanical force to align teeth, myofunctional orthodontics treats the aetiological causes of malocclusion with an aim towards promoting correct, natural craniofacial growth and development. Myofunctional Research Co.'s (MRC) Myobrace® System is at the forefront of a push towards modern, evidence-based treatment and is focused on treating the causes of malocclusion as soon as they become evident, rather than attempting to correct the effects once they have already occurred.

"The paucity of our present knowledge of etiology in orthodontics compels us to attack the cause and effect relationship from the wrong end - that of effect. By working backward we shall undoubtedly arrive at the beginning someday. How nice it would be to approach it from the other end." ***GRABER 1962***

The Myobrace System is aimed at unlocking the patient's innate biological development by eliminating or correcting the factors that are inhibiting it. Rather than just a permanently retained Class I occlusion, MRC's myofunctional orthodontic treatment is focused on achieving more whole-health outcomes, with correct craniofacial development the goal. By packaging habit correction, arch expansion, airway correction and dental alignment into a cohesive, functionally-designed treatment, Myobrace treatment addresses the aetiological factors interfering with craniofacial growth and causing malocclusion.

Myobrace treatment goals were developed to assist the patient in reaching their full developmental potential and include:

- Establish nasal breathing instead of mouth breathing;
- Correctly posture the tongue within the maxilla;
- Swallow correctly (no lip movement);
- Lips together unless eating or speaking;
- Healthy eating habits;
- Correct alignment of teeth and jaws;
- Uninhibited craniofacial development;
- No extractions or retention;
- Minimal or no use of braces; and
- Achieving optimal health.

Although every parent would want this to happen for their children, the success of achieving these goals is dependent on treatment compliance as well as the patient's inherent biological ability to alter poor myofunctional habits and incorrect developmental patterns during growth between ages 3 - 15 years. In order to ensure the patient is provided with the strongest chance of attaining these goals, The Myobrace System is built on a foundation of education and interactivity. Right from the first Myobrace consultation and on through the four treatment stages, MRC has developed innovative tools for effective 21st century education as well as patient/parent management. These tools ensure the practitioner is strongly equipped to efficiently and effectively deliver the treatment and ensure the patient is provided with the best possible opportunity to achieve their treatment goals.

Myobrace consultation

At this point in the treatment process parent, and to a lesser extent patient, education is the key. In addition to the risks and limitations of traditional treatment options, the parent must be educated regarding the myofunctional causes of their child's malocclusion as well as the importance of early intervention. They should also be presented with information about myofunctional orthodontics, The Myobrace System and how treatment is aimed at the causes of malocclusion as soon as they become evident (from 3 years old). After the Myobrace Consultation, the patient/parent must also clearly understand the importance of compliance. While the provider can expertly facilitate treatment, the responsibility for attaining the best possible treatment results rests with the patient who must dedicate effort towards changing their habits and if necessary diet in order to unlock correct, natural craniofacial development.

In order to systemise the educational, as well as the administrative process involved in the Myobrace Consultation and ensure the most effective delivery of the information, MRC has created the Myobrace Patient Consultation App. Combining a series of interactive questionnaires with MRC's educational multi-media then placing this at the click of a button, the app both streamlines the initial consultation for the practitioner and presents information to the patient/parent in the most effective and efficient possible way.

Treatment

1. Habit Correction

Because poor myofunctional habits are significant contributors to the aetiology of malocclusion, habit correction is a crucial part of Myobrace treatment and essential for unlocking the patient's innate developmental potential. The Myobrace System assists the patient to change incorrect myofunctional habits via a combination of intra-oral appliance use (1-2 hours each day and overnight while sleeping) and myofunctional activities, designed to encourage nasal breathing, correct tongue posture, teach the correct swallowing technique as well as strengthen and develop the orofacial musculature. Diet and nutrition also play a role in the aetiology of malocclusion so educational programs that teach healthy dietary habits are also introduced during this stage.

Myobrace appliance use is an integral part of the first phase of treatment and is aimed at addressing poor myofunctional habits. The appliance retrains the tongue to rest in the correct posture, establishes nasal breathing, amends incorrect swallowing and helps to align the teeth correctly. The Myobrace appliance is a powerful tool for helping the patient overcome incorrect habitual function and begin to address factors inhibiting their natural development. Because treatment is best started as soon as incorrect habitual function becomes evident and addresses habits rather than teeth, the appliances are suitable for children as young as 3.

Compliance is a vital factor in achieving the best possible outcome during this early stage of treatment and the patient must play an active role in their own treatment. MRC developed the Myobrace Activities App (available to the patient during scheduled clinic visits in the interactive Myobrace Activities Area as well as at home) is designed to facilitate the patient's interaction with the treatment. Using MRC created multimedia, the app educates patients regarding habit correction and dietary change. It also sets benchmarks for Myobrace appliance use, while regulating the myofunctional "Myobrace Activities" exercises. Habit correction is achieved by reaching the benchmarks for appliance use and exercise effort, set by the Myobrace Activities App and customised by the practitioner for individual patients. If the patient makes an effort to improve on the benchmarks set by the Myobrace Activities App, exceptional results are possible.

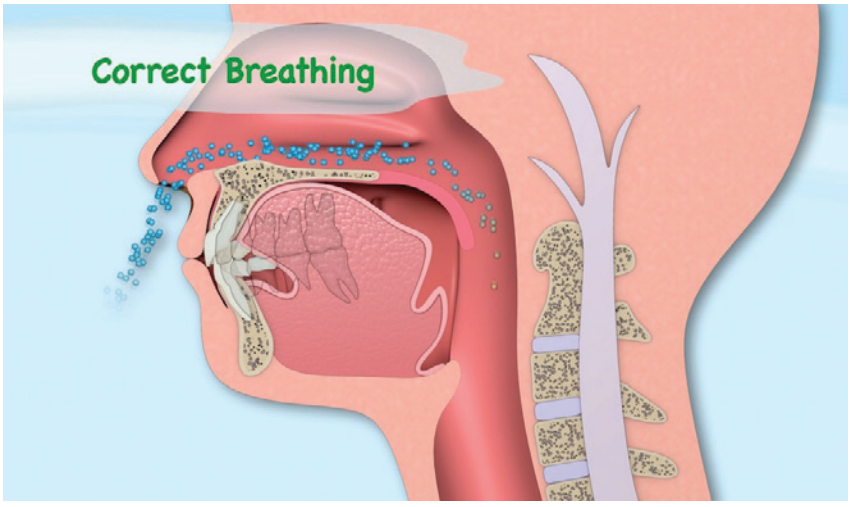

Figure 2. The Myobrace System focuses on correcting poor myofunctional habits.

Figure 3. The Myobrace appliances are used in combination with patient education programs such as the Myobrace Activities.

2. Arch Development

In patients older than 8 years, with underdeveloped jaws and where there is limited space for the tongue, additional arch expansion techniques may be necessary. However, correct tongue posture, which habit correction focuses on, is a fundamental part of Myobrace treatment and if arch expansion is required, it must not interfere with this. While traditional treatment relies on extraction of often healthy teeth to create space for the teeth to align mechanically or intrusive expansion devices that interfere with tongue posture, Myobrace treatment promotes biologically based arch development. Myobrace arch development techniques such as the Farrell Bent Wire System™ (BWS™) allow the tongue to posture correctly, which assists with expansion, allowing the teeth to align naturally into well-developed jaws.

MRC courses educate practitioners and provide them with the technical knowledge as well as practical ability to deliver Myobrace® treatment. To ensure treatment for arch development does not interfere with correct tongue posture, these arch development techniques are a subject of MRC's myofunctional treatment courses, which take place regularly in the purpose built practice clinic and lecture theatre at MRC HQ as well as in other centres and via online streaming.

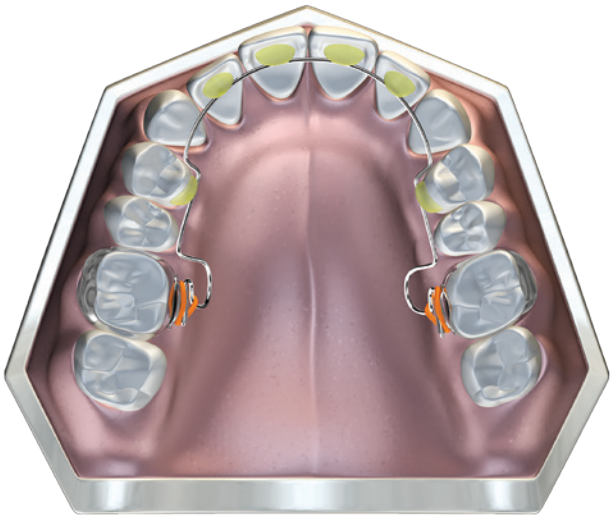

Figure 4. The Farrell Bent Wire System™ (BWS) is used in combination with Myobrace appliances.

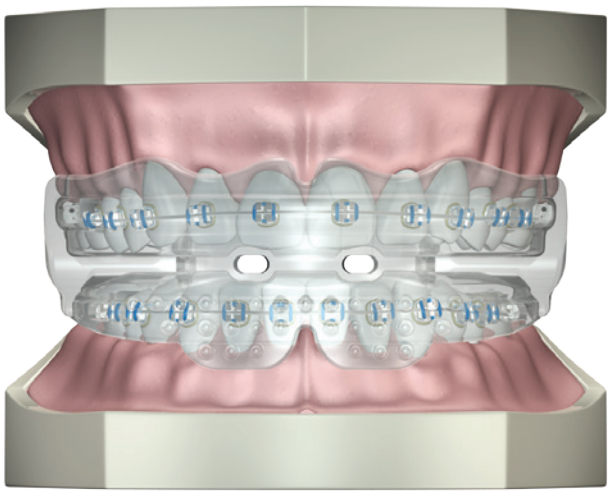

Figure 5. Fixed braces can be used in conjunction with the Myobrace for Braces series if additional alignment is required.

3.Dental alignment

During Myobrace treatment, dental alignment, which is assisted by Myobrace appliance use, occurs in conjunction with habit correction and where necessary, arch expansion. When functioning correctly, the forces exerted on the dentition by the cheeks, lips and tongue muscles move the teeth into their natural alignment. If extra space to fit the teeth is required, Myobrace arch development techniques such as the Farrell Bent Wire System can achieve this without interfering with correct tongue position and therefore not inhibiting correct function. With good compliance, which is essential to achieving the best possible outcome, the intraoral appliance assists this and helps to ensure optimum dental alignment for each patient.

The customisable aspect of the Myobrace Activities App enables practitioners to design individual habit correction and appliance use plans for each patient. A tailored, interactive treatment plan focused on their myofunctional weaknesses provides patients with the means to correct their function and naturally align their teeth.

Because correct growth and function are foundation goals of treatment, most often fixed appliances are not needed. However, establishing correct function is reliant on the patient's compliance with the treatment plan as well as their biological capacity for change, so if teeth require any additional alignment, a short period of fixed braces can be used in conjunction with the Myobrace for Braces series.

Figure 6. Interactive media assists in patient compliance.

4. Retention

With traditional mechanical treatment methods, unless permanent retention is put in place, relapse is all but guaranteed. However, if the patient's poor myofunctional habits are corrected and maintained, natural development occurs and indefinite retention can be avoided, which is one of the Myobrace treatment goals. With positive compliance and effort by the patient during treatment and providing correct function is maintained, outcomes achieved by myofunctional orthodontic treatment can have a positive lifelong impact on the patient's health and well-being.

In addition to being an evidence based and biologically focused treatment, MRC has developed innovative 21st century tools into The Myobrace System. These tools, which include facilities and courses for provider education, apps for patient /parent education and administration as well as apps for treatment delivery, mean The Myobrace System can be easily integrated into the practice and effectively offered to the patient.

1. Graber, T. M. (1962) Orthodontics; Principles & Practice, Chapter 6, Etiology of Malocclusion - Extrinsic or General factors.
2. Price, W. A. (1939) Nutrition and Physical Degeneration.

To find out more information about how to begin offering Myobrace® treatment, visit www.myoresearch.com.