

# EVALUATION OF A NEW CONCEPT OF FUNCTIONAL THERAPY SUPPORTING ORTHODONTIC TREATMENT

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**Aim:** Persisting orofacial dysfunctions impede the normal development of the orofacial and craniocervical region and reduce the stability of any orthodontic treatment. Myofunctional therapy is a treatment concept to harmonize orofacial function and is conducted by speech therapists. Because of waiting periods before the start of treatment and the duration of myofunctional therapy an overall time period of one to two years must be taken into account between referral and end of myofunctional therapy. Furthermore, individual treatment outcome depends on several factors.

This clinical study was designed to evaluate a new method of treatment with a face former appliance in comparison with myofunctional therapy. Face former therapy can be supervised by the orthodontist. It is a daily exercise program to strengthen orofacial muscle and harmonize function with the face former [Figure 1 and Figure 2 a-c].

**Materials and methods:** The clinical study comprised 45 children aged 5-12 years with orofacial disturbances such as incompetent lip closure, habitual mouth breathing, infantile swallowing pattern, generalized orofacial hypotonicity and sigmatism. Therefore, in all children myofunctional therapy was indicated. The children were randomly divided into two groups: 17 children were referred to myofunctional therapy in private practices in Hamburg and served as controls. The remaining 27 children were treated with the face former at the Department of Orthodontics. The overall observation time was nine months. The development in all children was evaluated every three months by an orthodontist and speech therapist. At every control date lip closure was measured with the myobar [Figure 3 a and b], swallowing pattern was controlled by palatography [Figure 4 a and b] and changes of the dentition and speech were determined by a clinical extra- and intraoral examination by means of a standardized diagnostic sheet by an orthodontist and speech therapist. The statistical analysis was generated with the SPSS program 10.0 for Windows.

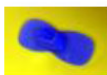


Fig. 1: The face former is made of a soft elastic material. It consists of a labial vestibular mouthpiece and a lip wedge.



Fig. 2a, b and c: Therapy with the face former: during all exercises the neck should be stretched and the tip of the tongue should rest a few millimetres behind the upper incisors at the hard palate (a and b). The face former is positioned in the vestibule. The lip wedge is set between the lips outwards. All patients should be trained to press the lip wedge together (c).

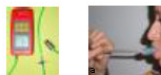


Fig. 3a and b: The myobar measures the lip strength.



Fig. 4a and b: Tongue thrust in a patient during swallowing. Palatography demonstrates the contact of the tongue with the incisors and posterior teeth during swallowing.

**Results:** In all children orofacial function could be improved. Children treated with the face former tended to show a more palatal tongue position during swallowing, a stronger lip pressure and a habitual mouth closure than children with myofunctional therapy. The specific results were as followed:

**Respiratory pattern:** Changes of the respiratory pattern were not statically significant in the control group. In the study group the improvement of the respiratory pattern was statistically high significant ( $p < .001$ ).

**Lip strength:** Improvement of lip strength was highly statistically significant in both groups. Children with the face former therapy reached the improvement within a shorter period of time.

**Swallowing pattern:** The swallowing pattern was determined with the help of palatography. Although not all children reached a physiological swallowing pattern at the end of the observation time, the harmonizing of the swallowing pattern was highly statistically significant in the face former group. Improvements in the myofunctional therapy group were not statistically significant.

**Sigmatism:** In both groups in some children sigmatism could be corrected, but the observed improvements were not statistically significant.

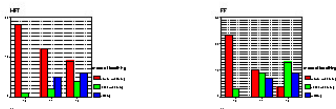


Fig. 5a and b: Respiratory pattern in children with myofunctional therapy and face former therapy.

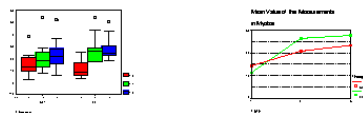


Fig. 7a and b: Lip strength [bar] at the different examinations. Although children in the face former group had a reduced lip strength at T0 compared to the controls, they reached a higher lip strength within a shorter time.

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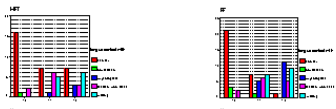


Fig. 6a and b: Swallowing pattern as determined by palatography in children for the control and for the face former group at all three examination times.



Fig. 8a and b: Sigmatism could be corrected in some children in both groups. However, the improvements were not statistically significant.

**Conclusion:** Therapy with the face former seems to be a good alternative to myofunctional therapy. Longitudinal studies will follow to judge if the established orofacial balance could be automatised. Both treatment concepts did not succeed in the correction of sigmatism. Additional speech therapy has to be initiated.