

Research Article

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MYOFUNCTIONAL THERAPY: BRIEF INTERVENTION

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ABSTRACT

This study addresses speech-language therapy in orofacial myology utilizing a Brief Intervention (in Portuguese: *Interveno Fonoaudiolgica Breve*) (IFB). IFB is applied to patient groups between the ages of 8 and 15 years with orthodontic/orthopedic appliances in 1997. Results are presented indicating the advantages of using IFB for breathing, feeding, oral-facial habits, buccal hygiene and corporal posture/physical activity. It concludes that Brief Intervention can be accomplished in 8 sessions, is economically advantageous for use in group therapy, and may be used before or in conjunction with Myofunctional Therapy/Myotherapy.

INTRODUCTION

Myofunctional Therapy (MT) can reestablish the functions of breathing, mastication, swallowing, speaking and sucking (if necessary) in myofunctional disorders. Myotherapy (M) addresses adapting force and movement of the muscles which are involved, and working on the removal of parafunctional habits and posture of the body.

With gains in knowledge of physiology, speech-language therapists began to better understand the relationship between shape and function establishing exercises for each specific case. Treatments began to be individualized but not all of them were successful, due to organic alterations of superior air ways, dental arch, and/or temporomandibular joint (TMJ), as well as difficulty in habituation of newly learned patterns.

In these cases, speech-language therapists awaited the intervention of the orthodontist or other professionals involved prior to treatment of the patient. Many times the patient did not return to the speech-language therapists or patients prolonged their return to therapy which could damage facial growth. The patient may have been able to receive limited MT/M treatment, addressing only the treatable functions. However, identifying the possible functions which may be targeted for limited intervention is not well described in the literature.

The challenge for therapy in Myofunctional Disorders consists of: shape/function limitations; the difficulty of providing therapy in group situations; and, time

allotted for therapy. To address these challenges a review of the literature was completed which provided the basis for the development of therapeutic procedures as the basis for this study. Three fundamental aspects were identified: consciousness, motivation and systematization. The aspect of consciousness was intended to help the patient understand the problem by feeling the oral-motor sensation, describing it, comparison with other group members, understanding it and understanding the importance of treatment. The motivation aspect attempted to motivate the patient to do exercises with interest. The aspect of systematization was meant to provide therapy systematically within a structured format with the activities planned by the therapists prior to each session.

MATERIALS AND METHODS

The population for this study consisted of 59 patients, between the ages of 8 and 15 years, who were registered for orthodontic treatment in the Clinic of the School of Professional Improvement of the Brazilian Association of Dentistry - Campo Grande/MS/Brazil from September of 1996 to August 1997. 54 of these patients were included for the projected special therapeutic procedures for which the objective was to systematize therapeutic form and minimize the time necessary to obtain satisfactory results in relation to breathing, feeding, oral-facial habits, buccal hygiene and corporal posture/physical activity.

Following the review of literature, the authors elaborated the anamnesis (case history) and the speech-language evaluation in order to define the oral myofunctional disorders of the population. In an attempt to standardize procedures data was collected with the goal of developing alternatives to traditional therapy. These considerations included:

- the complaint
- the related treatments
- the development history
- the oral-facial habits
- the sleep
- the feeding
- the general health

The evaluation procedure included:

- indirect observations
- direct exams of the dental arch, teeth, facial characteristics, of the oral structures and breathing, mastication, swallowing and speech functions
- measures with a special ruler (capipter).

The 59 evaluated individuals were divided in two groups. One group was evaluated by Cybele Rispoli and the other by Stella Bacha. Each anamnesis and individual evaluation lasted 1 hour. Each individual was photographed four times (front photo-face in breathing rest, right profile, left profile and front occlusion). In addition to the photos, films of mastication, swallowing and speech functions were made. The same procedure was used in reevaluation, which occurred 11 months after the initial evaluation.

Of the 59 individuals evaluated, only 3 had shape conditions relating to the dental arch which allowed immediate MT/M. Two of the individuals had indications of need for other types of speech-language intervention (one with delayed development of language and an other with cleft lip). The 54 remaining did not have shape conditions which permitted them to benefit from unrestricted immediate MT/M. The following referrals were made: 31 to otorhinolaryngology, 5 to oral surgeons (lingual frenum), 2 to orthopedics/physiotherapy, 1 to the psychology, 1 to ophthalmology. 14 cases were not in need of referrals.

The criteria used to exclude individuals for unrestricted immediate MT/M were:

- 1 - occlusion: without conditions of providing ideals patterns of mastication, swallow and speech (class I: with agglomeration and/or accentuated overjet, deep overbite, cross bite, open bite; class II; class III)

- 2 - signs of problems in TMJ (atypical movements of the jaw during speech or rest; improper posture positions; pain when speaking, when chewing or during palpation; deviations or cracks when opening the mouth).

In addition to the previous two criteria, the authors suggest the addition of a third criteria which should be included as an indication for the exclusion of individuals from unrestricted immediate therapy. This criteria focused on the type of appliance being worn by individuals which may preclude immediate MT/M (for example a palatine bar). This criteria was identified by the authors at the time of re-evaluation, and therefore was not included in the original criteria

In addition to the 54 patients with contraindication of unrestricted immediate MT/M due to limited myofunctional and organic situations, therapy for some of these individuals could be recommended with limitations due to other factors. These factors referred included:

- limitation of physical space in room size;
- restricted time for attendance;
- socioeconomic status of the sample - inability to pay for treatment and/or lack of health insurance to pay for treatment;
- only 2 speech-language pathologists;
- large number of patients;

The new intervention form of therapy (IFB), focused on the treatable deficient functions identified in the initial evaluation (breathing, feeding, oro-facial habits, buccal hygiene and corporal posture/physical activity), within groups divided by age group, in 8 sessions. Once suitable cases were identified and the initial evaluation was completed, therapy was initiated using IFB based on three fundamental aspects: CONSCIOUSNESS, MOTIVATION and SYSTEMATIZATION.

To become aware, to motivate, to systematize ...the authors feel that it is necessary that the patient has knowledge of him/herself, to wake up their interest in modifying their behaviors...

Before starting the Brief Intervention (IFB) a lecture was presented to impress on the parents and patients the importance of treatment, emphasizing the necessity of having the patient accompanied by a responsible adult in all sessions. Of the 54 individuals selected to participate in this study of IFB, 33 attended the first session. It is important to note that the therapists insisted for two weeks with 21 other individuals to participate in the group, but success was not obtained. IFB began in

February 1997, after the individuals had been using the orthodontic/orthopedic appliances for approximately 2 months.

It is necessary that the participants have trust as the basis for the relationship with the therapist/s. This intervention format targeted the motivational factor through the development of knowledge of, and understanding of physiology, understanding the nature of habits, reinforcing self-esteem, respecting and uniting forces, and believing in the effective participation of the group.

It is fundamental that the family participates! At every treatment session the same responsible adult or mother/father was required to be present with the child during the entire process, to help with the activities of the family routine and the home carryover portion of the program. The importance of parental participation was emphasized. It was stressed that parental involvement needed to be cooperative, motivating, without authoritarianism, and seeking to strengthen the patient's autonomy. The role of the therapist was not to impose an interaction pattern between the patient and the responsible adult, but to ask them questions, and find a better way of introducing proposed changes.

At the beginning of every session the reasons for being in the group were stated (verbally and, in one instance in writing), for needing to use the orthodontic/orthopedic appliance and the necessity of change of the targeted items. In this systematic way the therapists attempted to reinforce the motivation of group participants. Each activity presented to the group was systematically planned: the sequence of the topics to be addressed, the forms of presentation and the tables/charts on which information was to be recorded.

Intervention consisted of 8 sessions, one group session a week of 1 hour duration for each session, with the constant presence of a responsible adult. The two speech-language pathologists treated together. Each patient had a control record containing a summary of the evaluation, written activities for each targeted item for each session, including results of requested exams. To proceed, the therapists initiated therapy in feeding, breathing, oro-facial habits, buccal hygiene, and body posture and physical activity.

Feeding

Consistency, quality, amount and mastication rhythm was observed with closed

mouth. Therapists worked directly with mastication and swallowing function within the limitations of the occlusion and TMJ. Because the corrections in nutritional habits were not imposed, but came from understanding the concepts involved, there was freedom for the group to develop proposals about changing nutritional habits. Some patients argued that due to economic problems it would be impossible for them to buy certain foods. However, through the positive group process for change, they were able to identify appropriate alternatives.

Written instruction were supplied to each patient. These instructions were accompanied by verbal explanations.

Patients were requested to use food of harder consistency. Specific directions were provided to cut food in little pieces, to not eat fruit with peelings, and other instructions focusing on preventing the breakage of the orthodontic appliances. Therapists emphasized rhythmic mastication with closed mouth respecting the individual limitations.

As for the quality of food, therapists guided the use of the food, in order of importance for oral motricity: first - proteins; second - calcium; third - vitamins A and C; fourth - carbohydrates. Therapists provided information regarding the amount of the food for daily meals.

The control group maintained records. The patient wrote down his/her daily food intake. Therapists controlled through the number of meals (breakfast, morning snack, lunch, afternoon snack, dinner and night snack), and the properties of the food (proteins, calcium, vitamins A and C and carbohydrate). In each session therapists worked with the information the patient brought in on their records. Therapists talked more and more about the importance of including balanced nutrients in each one of the 6 suggested meals. The consistency of food was also discussed. Therapists noticed that even when patients ate "forbidden" foods (foods that could damage the orthodontic apparel - nutritious or not -, as bullets, chewing gums, soft drinks, fruits with peel, etc.) or when they did not have a balanced diet, they recorded such facts honestly. This facilitated the course of the program and promoted changes. The parent's and/or responsible adult's collaboration, was a vital influence. The records facilitated the implementation of the process and directed the

therapists attention to the possible need for specific direction.

Breathing

Medical and/or surgical treatment was accompanied by emphasizing the importance of proper breathing while using the orthodontic appliance for the whole organism and in particular the stomatognathic system. Therapists introduced exercises for establishing nasal patency, through the use of "nasal wash" and of "nose wipe". Wiping the nose was emphasized mainly at bath time and after the nasal wash. Four patients received these instructions from their doctors. Besides the references found in the speech-language pathology literature, the therapists based their procedures for the other patients on otorhinolaryngologist recommendations. Therapists guided nasal wash with water and thick salt (half glass of lukewarm filtered water and a shallow spoon "teaspoon" - of

thick salt) to be used once a day. Individuals were directed to use the nasal wash two or more times a day when they had a cold respecting medical contraindications.

Exercises for nasal breathing were provided using a Host (a small thin wafer-like piece of bread) initially to be placed between the lips while the patient performed 3 to 5 diversified activities during the day for a duration of 5 minutes each. Later, the Host was removed and therapists targeted nasal breathing during the day with closed mouth at rest. Behaviors were recorded using a chart with signs + and - or with notes from 0 to 10. Therapists emphasized the assistance of the responsible adult.

Oro-facial habits

When therapists began treating oro-facial habits, they observed the intensity, duration, and frequency with which the oro-facial habits occurred. The targeted habits were: nail biting, lip biting, licking lips, biting objects, biting cheeks, baby bottle use, finger sucking, lingual sucking, resting the hand on the face for face support during the day and face support during the night. In the cases of multiple oro-facial habits, therapists worked on treating habits one at a time allowing the patient to choose which habit would be targeted.

Therapists used varied resources to eliminate habits (noted below) but in all cases, therapists worked through the aspects of consciousness and motivation, with

systematization. This was conducted by keeping records of the presence or absence of the habit (marks of + and -) and by recommending that the patient and adult establish a signal for each habit.

- Biting nails: file the fingernails and polish them; place a note with colored adhesive on the top of the pen/pencil when at school.

-Biting lips: place a note with colored adhesive on the point of the pen/pencil when at school.

-Licking lips: hydration, any kind of lipstick; therapists reinforced closed mouth position (parallel work).

-Biting objects: place a note with colored adhesive on the point of the pen/pencil when at school.

-Baby bottle use: just the generic action.

-Face support of the day: just the generic action.

-Lingual sucking: just the generic action.

-Finger sucking: just the generic action. In one of the cases of finger sucking a mechanical resource recommended by the orthodontist was used.

-Night face support: night face support was recorded mainly with the mother's help or responsible adult. In order to control this habit the patient's hand was placed beside the pillow until he slept. Whenever possible the adult returned several times to the room to observe and if necessary position the hand correctly. Because a night habit is more difficult to control, the help of several family members was needed so as not to overload the designated adult.

In cases where therapists observed that a habit evidenced emotional components a referral was made to a psychologist. In order to adequately treat habits a psychologist should have been on the team.

Buccal Hygiene

The parent was informed about the need to maintaining good buccal hygiene. Therapists reviewed the patient's recorded information regarding the amount of daily tooth brushing. The orthodontists advised the patient regarding the quality of the dental brush.

Body Posture and Physical Activity

Based on the clinical evaluation and parents' explicit concerns regarding attempts of working, without success, on the patient's posture at home referrals were made immediately to the orthopedist/physiotherapist. Therapists treated awareness of body posture

by improving the patients' perception of their posture and increasing their knowledge about posture in general relating it to the stomatognathic functions. Information was recorded in order to verify body posture and later on to be used for its daily control.

Therapists worked towards the patients' understanding of the need for physical activity,

by providing explanations relating to the whole body and mainly to the stomatognathic system. Therapists limited suggestions to encouraging the frequent practice of physical exercises. In the area of body posture and physical activity, the presence of a physiotherapist on the team was needed.

RESULTS

The following data was collected vis a vis initial anamnesis and evaluation, the IFB and the revaluation:

Table 1 Distribution of the suitable treatments

	Initial A.	IFB Revaluation	%	Non IFB Revaluation	%
mf/m	03	04	12.12	02	9.52
mf/m + ifb	00	00	-	03	14.28
ifb	54	01	3.03	12	57.14
myotherapy	00	06	18.18	00	-
new reaval.	00	22	66.66	04	19.04
other	02	00	-	00	-
Total Patients	59	33	21		

Speech-pathology treatments (mf/m = myofunctional therapy/myotherapy, ifb = brief intervention, in portuguese: intervenção fonoaudiológica breve), myotherapy, or other speech language pathology treatment, besides the indications of new revaluation, among the results of initial a.(initial evaluation) and of the revaluation of the submitted to IFB (IFB) and of the not submitted to IFB (NON IFB).

Table 1 indicates that 57.14% of the patients that were not submitted to IFB, still needed intervention in breathing and/or body posture-physical activity, feeding habits, oro-facial, buccal hygiene. Of those who received IFB, 3.03% still needed intervention. The "new revaluations" were completed after 8 months after the "revaluations".

Table 2 suggests significant effect of IFB relative to alimentary quality/frequency. The item pasta/bread/cookies/crackers contains 100% of food more frequently consumed by patients. Therapists observed, however, that this item did

not have the most significant increase, because it was already observed to be consumed 90.9% of the time during the initial evaluation. The items of more significant increases were of green vegetables (of 30.3% to 72.72%) and vegetables (27.27% to 60.60%).

In the NON IFB group, there were gains, but not equal to the IFB group. There were items that demonstrated a decrease in consumption (fruits, green vegetables and milk). Therapists observed that feeding warrants adult guidance and control because it is not a conscious action within the age group of the sample.

Table 2 Distribution of food

		IFB				NON IFB			
		EVA	%	Re	%	Eva	%	Re	%
Meat	f	24	72.72	32	96.96	16	76.19	17	80.95
	v	08	24.24	01	3.03	04	19.04	03	14.28
	n	01	3.03	00	-	01	4.76	01	4.76
Fruits	f	19	57.57	22	66.66	12	57.14	09	42.85
	v	14	42.42	11	33.33	09	42.85	10	47.61
	n	00	-	00	-	00	-	02	9.52
Green V.	f	10	30.30	24	72.72	10	47.61	09	42.85
	v	16	48.48	09	27.27	08	38.09	10	47.61
	n	07	21.21	00	-	03	14.28	02	9.52
Vegetable	f	09	27.27	20	60.60	09	42.85	12	57.14
	v	19	57.57	13	39.39	08	38.09	08	38.09
	n	05	15.15	00	-	04	19.04	01	4.76
Milk	f	24	72.72	31	93.93	16	76.19	13	61.90
	v	04	12.12	00	-	03	14.28	03	14.28
	n	05	15.15	02	6.06	02	9.52	05	23.80
past./bre coo./cra	f	30	90.90	33	100.00	21	100.00	20	95.23
	v	03	09.09	00	-	00	-	01	4.76
	n	00	-	00	-	00	-	00	-

Frequency of victuals (f = frequently, s = sometimes, n=never), among the results of the Initial Evaluation (Eva) and of Revaluation (Re), of the submitted patients to IFB (IFB) and of the not submitted to IFB (NON IFB). Meats, fruits, green vegetables (green v.), vegetables, milk and pasta/ bread/ cookies/crackers (pas./bre./coo./cra).

Table 3 Distribution of the Posture of the lips

	IFB		Non IFB	
	Eva	Re	Eva	Re
closed lips	11	14	05	11
open lips	07	01	04	05
partly open lips	07	06	08	04
sometimes open, sometimes closed lips	03	11	03	01
lipdental interposition	05	01	01	00
nasal breath	11	18	07	11
mixed breath	08	12	09	07
buccal breath	14	03	05	03

Posture of the lips in rest and of the most common breathing way, during the day, with obtained data in the Initial Evaluation (Eva) and in Revaluation (Re), of the patients treated by IFB (IFB) and of the not treated by IFB (NON IFB).

In the 33 individuals submitted to IFB, there were 14 with buccal breathing, of which 3 (21.42%) maintained the habit. In the 21 individuals that were not submitted to IFB, there were 5 with buccal breathing and 3 (60%) maintained the habit.

IFB increased the improvement of nasal breathing in the treated patients. Of the 33 subjects there were 11 nasal breathers. After the

treatment, 18 mouthbreathers began nasal breathing demonstrating an improvement from 33.33% to 54.54%

In relation to open lips, 6 of the 7 treated via IFB improved and presented with closed labial posture. While in the NON IFB, there was an increase (from 4 to 5) of the labial malposture.

Table 4 Distribution of the oro-facial habits

	IFB				NON IFB			
	Eva	%	Re	%	Eva	%	Re	%
bite nails	17	51.51	01	3.03	14	66.66	04	19.04
lick lips	12	36.36	02	6.06	11	52.38	05	23.80
bite lips	06	18.18	00	-	07	33.33	01	4.76
bite cheeks	01	3.03	00	-	00	-	00	-
bite objects	14	42.42	01	3.03	09	42.85	03	14.28
suck tongue	03	9.09	02	6.06	01	4.76	01	4.76
baby bottle	03	9.09	00	-	00	-	00	-
finger sucking	03	9.09	01	3.03	00	-	00	-
face day	02	6.06	01	3.03	02	9.52	03	14.28
face night	07	21.21	11	33.33	04	19.04	05	23.80
Total Habits	68		19		48		22	

Oro-facial habits with data obtained in Initial Evaluation (Eva) and in Reevaluation (Re), of the patients negotiated by IFB (IFB) and of the not negotiated by IFB (NON IFB). They are: to bite nails, to lick lips (lip), to bite lips, to bite cheeks (che), to bite objects (obj.), suck tongue (tong), baby bottle use, finger sucking, face support during the day (face day) and face support during the night (face night).

IFB obtained positive results in the elimination of nail biting. Of the 33 evaluated patients, 17 presented with this habit of which only 1 maintained it after the treatment (5.88%). Of those not submitted to IFB, 14 presented with the habit of biting nails, of which 4 (28.57%) maintained the habit.

IFB was effective in the correction of the habit of biting objects because only 7.14% maintained the habit. Of the patients not submitted to IFB, 9 presented with the habit, of which 3 maintained object biting - that is 33.33%.

IFB was neither effective in decreasing the habits of supporting the face at night nor during the day. However, NON IFB evidenced an increase of such habits. This item suggests that the mothers were observing more closely their child at the end of the IFB process.

Although habits treated and eliminated and/or controlled may not be considered permanently overcome, the table makes clear that IFB was effective and efficient with the sample.

Table 5 Distribution of the habits

	IFB				NON IFB			
	Eva	%	Re	%	Eva	%	Re	%
multiple	20	60.60	02	6.06	16	76.19	07	33.33
unique	12	36.36	13	39.39	03	14.28	08	38.09
without habit	01	3.03	18	54.54	02	9.52	06	28.57
Total patients	33		33		21		21	

The amount of occurrence in the patients treated by IFB (IFB) and not treated by IFB (NON IFB), with data of the Initial Evaluation (Eva) and Reevaluation (Re): patients with multiple habits, patients with an unique habit and patients without oro-facial habits

For patients in the IFB group, there were 20 patients who demonstrated multiple habits. After treatment 2 still maintained multiple habits. This suggests the effective contribution of systematic

intervention for therapy procedures. Of 12 patients in the IFB group that presented with just 1 habit, there was an increase to 13 patients. This was due to the elimination of

multiple habits which were present prior to IFB in patients who maintained at least one of their prior habits. Therapists found that of these 13 habits, 11 were night face support.

For the habits that were continued in the IFB group, there was a significant reduction in the frequency of the habit. One of these continued habits was finger sucking. A referral was made to a psychologist in this case.

Table 6 Distribution of the buccal hygiene (teeth and gums)

		IFB		NON IFB	
		Eva	Re	Eva	Re
Teeth	Good	19	26	16	12
	Same	01	06	00	07
	Bad	13	01	05	02
Gums	Good	22	20	09	05
	Same	00	08	02	10
	Bad	11	05	10	06

Table with obtained data in the Initial Evaluation (Eva) and in Revaluation (Re) of the patients treated by IFB (IFB) and of the not treated by IFB (NON IFB).

Of the treated individuals, therapists verified that good dental hygiene improved from 19 to 26 individuals. While the untreated individuals presented a decline in good dental hygiene from 16 to 12.

Relative to gum hygiene, the IFB group evidenced a decline from 22 to 20 individuals.

While the untreated group exhibited a more significant decline from 9 to 5. The data above suggest the hypothesis that the orthodontic appliances worn by the patient can be a detrimental factor to gum hygiene.

Table 7 Distribution of the corporal posture and of the physical activity

		IFB		NON IFB	
		Eva	Re	Eva	Re
good posture		17	18	11	13
bad posture		16	15	10	08
with physical act.		31	32	20	20
without physical ct.		02	01	01	01

Corporal posture and physical activity (act.) patients treated by IFB (IFB) and of the not treated by IFB (NON IFB), with obtained data in the Initial Evaluation (Eva) and in Revaluation (Re).

Relative to oral posture, significant alteration was not observed among the individuals treated with IFB and those not treated. Oral posture can be related, mainly, to malocclusions still present according to MacConkey (1991), consistent with the literature review (p. 19).

IFB reinforced the physical activity of 31 patients who were physically active and it promoted the inclusion of 1 patient, who had been previously sedentary. Those not submitted to IFB stayed unaffected in relation to the physical activity.

CONCLUSIONS AND RECOMMENDATIONS

After reviewing the literature and applying the Brief Intervention process to a

group of 33 patients (from 8 to 15 years old), who attended the orthodontic clinic of the Specialization Course in Orthodontics (Professional Improvement School / MS / 1997), the authors concluded that:

- The focus on the physiologic aspects relating to the mastication and swallowing function improved through giving information about general nutrition as a support of speech-language/myofunctional therapy.
- The review of literature does not address within devised parameters what can be labeled as good or bad nasal flow, nor the use of the ipaqui metroí (special ruler) accurately.

- IFB established previously unpublished forms of therapeutic action with feeding in oral motricity, and standardized the period of brief intervention (8 sessions) in group therapy sessions, with a responsible adult's accompaniment.

- IFB provided to individuals wearing orthodontic/orthopedic appliances is effective. It provides another resource added to the solemnity-correction with positive results in relation to:

- feeding activities (Table 2)
- breathing and the day lips posture (Table 3)
- correction of oro-facial habits (Tables 4 and 5)
- buccal hygiene (Table 6)

- IFB is appropriate and may be implemented prior to, or concurrently with orthodontic/orthopedic treatment, and if possible should be implemented during earlier stages of cranio-facial growth than that of the patients in this study.

- IFB when targeting breathing, feeding, oro-facial habits, buccal hygiene, body posture and physical activity, precedes or may be used as MT/M.

- IFB is a speech-language pathology/orofacial myology procedure that is economically advantageous, may be implemented by clinics and/or providence institutions.

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