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FEATURE

Effects of BLAfit® on Orobuccal Muscle and Facial Structure

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Abstract: *The aim of this study was to investigate the effect of daily one minute usage of BLAfit® (Bella Lip Appliance®, BLAfit Inc), a facial exercising device with built-in resistance on orobuccal muscles, as well as esthetic physical changes to the facial structure after one month. Twenty healthy female volunteers aged 18-57 participated in this research. Ten of the participants were placed in the study group and trained to use BLAfit® exercises for one minute a day for a period of one month and ten as control. The center of the philtrum of every subject was measured (landmark for measurement of orbicularis oris muscle) at the beginning and the conclusion of the experiment. Results indicated an average increase of muscle thickness of 0.626mm for the experimental population and a 0.021mm decrease in thickness for the control population. Non-parametric tests (Mann-Whitney U tests) showed a statistically significant ($p<0.05$) difference between the two final measurements. The results demonstrated that daily facial exercise with BLAfit® led to a significant increase of orobuccal muscle mass as compared to control as well as increased facial symmetry, reduction of jaw pain and headaches, reduction of snoring, and other favorable physical changes in the facial structure such as more protruded and pronounced cheekbones, more defined jawline, and reduction of jowls.*

Key Words: *Lip appliance, Lip enhancement, Non-invasive facial procedure, Cosmetic facial appliance, Facial exercise, Orobuccal muscles*

Introduction

Facial beauty is characterized as a combination of a beautiful broad smile along with balanced facial musculature. It can be defined as a state of harmony - a balance of facial proportions - a balanced relationship among skeletal structures, teeth, and soft tissue.[1] Resistance training has been shown to be the most effective method for developing skeletomuscular strength, and it is currently prescribed by many major health organizations for improving health and fitness.[2] Flexibility exercises do not improve resistance or strength, but Castillo-Garzón et al. have shown that they increase muscular performance and tendon flexibility.[3] They also extend the amplitude of movement and the functionality of the joints.[3] It is, therefore, beneficial to incorporate these exercises into any program directed towards improving physical fitness.[3] The face also consists of over 57 muscles and is no different than the rest of the body. Thus, they need strengthening as well as flexibility exercises.[3] Regular exercise is a practical strategy used to defend against age-related dysfunctions.[3] Although the anti-aging effects of exercise have been studied extensively, [4, 5] not many studies have been done on the face specifically to show improvement in muscle mass and facial rejuvenation through resistance build exercise devices.[6] Injections of Botox, fillers, and cosmetic facial contouring procedures and surgery are among procedures that millions of people around the globe spend billions of dollars yearly for facial enhancement.[7] These procedures, although routine and expensive, are not free of complications. Every day a larger population of individuals are leaning toward noninvasive and more holistic approaches toward their appearance. The most recent scientific evidence has demonstrated that regular and appropriate physical exercises are currently the best way to delay or even prevent the process of aging.[8] Such exercises always bring benefits, irrespective of the age, sex, health, or the physical condition of the person who undertakes it.[8] On the other hand, a lack of exercise clearly accelerates aging and has an impact on health and physical appearance. Correction of craniomandibular misalignment as well as crowded upper and lower arches requires creating custom-made precision orthodontic appliances, along with braces to create beautiful broad smiles without drastic changes of facial muscles. Dr. John W. Witzig in *The Clinical Management of Basic Maxillofacial Orthopedic Appliances*, clearly shows that a total patient is a combination of an aesthetic full face, a broad beautiful smile, functional occlusion, and a healthy TMJ.[9] The importance of nutrition in tooth structure and facial development has been clearly described in Aelred C. Fonder's book, *The Dental Physician*. [10] As our world continues to modernize and keep pace with increasing population (in a modern and technological world where individuals have less time to focus on cooking their own wholesome and natural meals), we are relying more on processed food and softer quicker meals.[10] Thus, the reduction in mastication causes facial muscle atrophy, and therefore result in flat facial musculatures, saggy faces and lips, and unbalanced facial muscles.[10] The need to add a facial exercising regime that does not require too much time away from our fast life prompted the creation of BLAfit® (Bella Lip Appliance®).

BLAfit® is a device with built-in resistance anchoring around the lips in both vertical and horizontal directions for two

different workouts for the entire face and neck (Figures 1-8). Significant increase of orobuccal muscle mass increases facial symmetry and reduction of jaw pain.

Figures 1-4: Horizontal Exercise: The user places the BLAfit ® into the inner corners of the mouth, then squeezes the corners of the mouth medially. The duration of the horizontal exercise is 30 second.

Figures 5-8: Vertical exercise: The user fits the BLAfit ® between the upper and lower lip with their mouth open, then brings the arms together using the lip muscles and as they are getting closer to closing their mouth, the lower jaw should be moved forward activating the neck muscles

Table 1: Raw data collected from the control population of the experiment.

Individual	A	B	C	D	E	F	G	H	I	J
Age	30	57	52	55	23	32	31	38	24	33
Weight (kg)	65	61	61	70	58	61	59	70	57	59
Height (cm)	168	168	171	160	150	171	163	180	160	165
BMI	23.0	22	21	27	25	21	22	22	22	22

Table 2: Raw data collected from the experimental population of the experiment. Measurements of the orbicularis oris muscle taken before the patients began use of the BLAfit®, and after one month of use.

Individual	K	L	M	N	O	P	Q	R	S	T
Age	53	46	20	19	47	18	32	18	23	45
Weight (kg)	102	71	58	58	61	50	64	59	62	50
Height (cm)	160	155	168	168	170	155	168	170	168	168
BMI	40	30	21	21	21	21	23	20	22.0	18

Figures 9-13: Photos of women, side-by side before (left) and after (right) of 30 consistent days of BLAfit exercises for 60 seconds daily

Materials and Methods

Twenty consenting adults (age range 18-57) (Tables 1-2) volunteered to participate in the study. Of the twenty participants, ten were instructed to use BLAfit® for an average of 60 seconds per day for a month as controls. The participants in the experimental group were personally instructed on proper direction of use by the inventor of the BLAfit® before the testing period began, in order to provide accurate results. The thickness of the center of the philtrum (a vertical indentation in the middle area of the upper lips) was measured using Boley Gauge Device (Miltex 68-693 Stainless, Germany) before and after one month of exercise, as compared to the control. During the course of the experiment, the users checked with the Principal Investigator on a weekly basis to ensure consistency in usage. Pictures were taken before and after the experiment (Figures 9-13). A non-parametric test (Mann-Whitney) was used for statistical measurement.

Results

An average increase of muscle thickness of 0.626mm was measured for the experimental population. This was diametrically opposed to the control population's average 0.021mm decrease in thickness. Mann-Whitney U tests indicated a statistically significant ($p<0.05$) difference between the final measurements of the control population versus the experimental population. Photos of the participant in the study group clearly demonstrated a more balanced facial musculature as well as fuller lips and more sculpted faces. An alternative and unexpected result of the survey conducted revealed that the majority of participants in the experimental population reported a more relaxed jaw and reduction in headaches. (Table 3 and 4).

Table 3: Data from control population of upper lip mass before and after the 30 day period. Measurements are in millimeters.

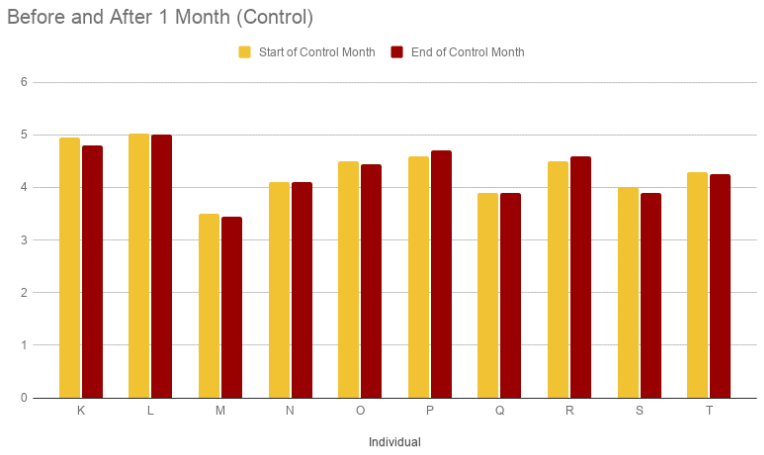
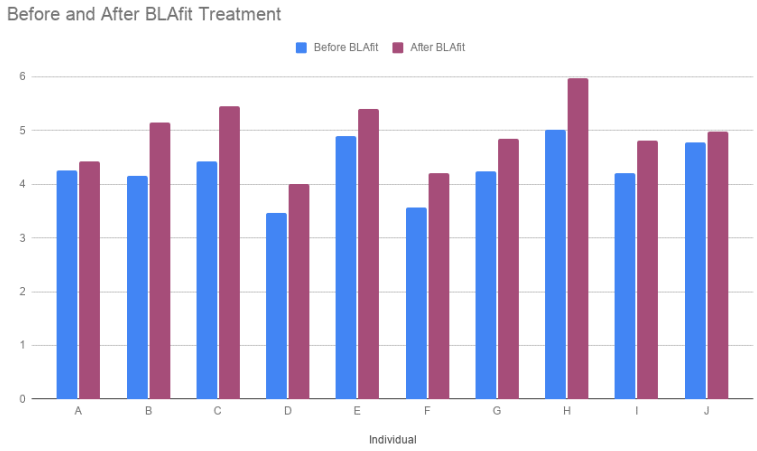


Table 4: Data from experimental population of upper lip mass before and after the 30 day period. Measurements are in millimeters.



Discussion/Conclusion:

Facial aging reflects the dynamic cumulative effects of time on the skin, soft tissues, and deep structural components of the face and is a complex synergy of skin textural changes and loss of facial volume. Many of the facial manifestations of aging reflect the combined effects of gravity, progressive bone resorption, decreased tissue elasticity, and redistribution of subcutaneous fullness.[11] Loss of tonicity and wrinkling contribute to aging flat skin elasticity. Lack of use of facial muscles will create flatter facial features, as a result of a physiological process. For years we have isolated our facial muscles from the rest of our body in the area of fitness and exercise. The general public is not aware that there are devices that can help build facial muscles and create symmetric and lifted faces without need of injections, surgery, or any other invasive treatments. Although there are a few devices that claim to be effective, BLAfit® is designed to be used both horizontally and vertically. The device was specially crafted by a team of medical professionals and engineers (Ducommun, Gardena, CA) and demonstrated to be effective, safe, and durable (Interket USA, Houston, TX). BLAfit® demonstrated a significant increase in orobuccal muscle thickness of the upper lips after one month of daily exercise. Participants in the study reported better sleep, more relaxed jaw and fewer headaches. Patients were also content to observe their faces lifted, lips rejuvenated as well as more sculpted jawline and fuller faces. This study has opened up the door to understanding the relationship between BLAfit® usage and improvement of myofascial muscles that would affect TMJ. The effects of BLAfit® extend farther than just the mouth and can impact the oropharynx, TMJ, and facial structure as well. Furthermore, we have noticed that daily usage of BLAfit® delays the atrophy of facial muscles which is more common in elderly populations. A current study is in progress which has implemented new protocols by adding BLAfit® daily exercises in patients who are suffering from TMJ and is also being used in a study on migraine prevention. Further research is recommended to explore the effectiveness of BLAfit® usage in the field of speech therapy, physical rehabilitation of the face after stroke, and strengthening of lip muscles after lip augmentation procedures, especially for burn victims.

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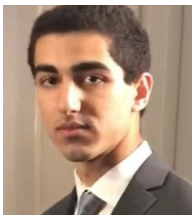

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