GUEST EDITORIAL: RESEARCH AND CLINICAL FINDINGS- A WHOLISTIC VIEW

MARVIN L. HANSON, PhD

ABSTRACT

Valuable information is available to clinicians both from research articles, and reports from clinicians. Both sources have limitations. Research, with the exception of longitudinal studies, tends to isolate a variable or two from the whole, limiting its usefulness. Clinical techniques reported are sometimes biased, and perform well for certain therapists in certain settings, and not so well for others. Interrelationships are important among variables such as dentition, anatomy, physiology, oral muscle functions, oral rest postures, eating, and speech. Each affects the others. Equally important are interrelationships among all the specialists who treat patients with orofacial myofunctional disorders. A wholistic approach to the evaluation and treatment of orofacial disorders is advocated.

INTRODUCTION

The November, 2011 issue of the International Journal of Orofacial Myology (IJOM) included an excellent article by Dr. Robert Mason, who for decades has championed the work of orofacial myologists. Dr. Mason's experience as a speech-language pathologist with a PhD, and a practicing orthodontist, has made his contributions to the IJOM and to the International Association of Orofacial Myology (IAOM) conferences unique and valuable. His 2011 article in IJOM exposed several myths popular among some practitioners in the field, along with specialists in related fields. Dr. Mason supported his criticism of those myths with references to research in dental journals and in the IJOM. As one who has published extensive longitudinal research articles in several journals, and who treated patients with orofacial myofunctional problems for 30 years, I appreciate the contributions of researchers and clinicians to the literature, and to the vast body of knowledge available to interested persons.

The purpose of this editorial is to present a wholistic view of the field of orofacial myology, including both research and clinical findings. Both are important. Each has its strengths and weaknesses. Clinicians are predisposed to write and speak about successes, and sometimes to generalize excessively. Much of research, but not all of it, requires the isolation of a single variable in order to determine its validity, shortcoming, or contribution to knowledge. Longitudinal research tries to avoid that limitation by observing a select group of behaviors or conditions repeatedly over a long period of time, and measuring their interrelatedness. This article will focus on positive findings, in an effort to complement the information in the Mason (2011) article.

Interactions among variables, as well as the importance or validity of isolated variables, are critical. Anatomical, physiological, dental, behavioral, environmental, speech articulation, and many other factors all interrelate. In addition, interactions of specialists who treat patients with orofacial disorders are important. A team approach enhances the understanding and implications of these interactions. The gestalts of the fields need to be considered, in addition to their specific components. The focus here will be on interrelationships. Some examples of interrelationships all supported by both clinical and research reports include relationships between malocclusions, tongue thrust, lip and tongue resting postures and: bolus formation and posterior oral movement; lingual movement during speech; chewing and swallowing; primarily nasal or oral breathing habits; cosmesis and self concepts; and, vertical and horizontal palate configurations.

Everything is related to everything. The cause of everything is everything. Causes and effects are reciprocal. When I began studying speech pathology at the University of Utah, some 55 years ago, my good head professor, Dr. Boyd Sheets (1957), taught me something I have always tried to apply over the years, as a clinician: When you see a patient, think of that person first as a whole, unique human being; next as a person with a problem. Finally, as a person you have the training and experience to help.

That wholistic approach is why we all enjoy this field so much. We don't first see the problem, then prescribe or drill. We work intimately with patients and parents, and deal with their whole lives: their sleep, their inter-communication with others, their eating, their breathing, their self-concepts, their futures, and their dental occlusion. We see how cooperative efforts among orofacial myologists, dental professionals, family members, and sometimes psychologists and social workers lead to dramatic changes in people's lives. This issue of IJOM provides a wealth of information that will help the orofacial myofunctional therapist in their assessment process. The variables addressed in the protocols included in this issue will help to ensure a wholistic approach to the identification and treatment of individuals with orofacial myofunctional disorders.

FROM THE JOURNALS

In three issues of the IJOM, beginning with the July, 1977 issue, Ysaye Barnwell began a three-part compilation. It was titled, "Bibliography: Oral Myology, Oral Myofunctional Disorders and Oral Myofunctional Therapy." In the three articles, approximately 750 sources of all kinds were referenced. All were relevant to the field of orofacial myology. The references included writings of clinicians and researchers. That was 35 years ago. Without counting journal articles written since then, there have certainly been hundreds. Much of the literature in dental journals for the past 20 years has had to do with openbite, rather than overjet or overbite. In my practice, by far, most of my referrals were individuals who primarily had an overjet. Openbite must provide orthodontists with their greatest challenges. And by far, most of the articles on openbite were case studies, rather than controlled research on groups, or longitudinal research. A generalization, but an accurate one is: The most carefully conducted, most useful, best controlled studies, and the most longitudinal ones, are to be found in the IJOM.

Some articles on interrelationships provide insight into orofacial myofunctional disorders. From a roundtable discussion among orthodontists, the following is a statement from Dr. Harfin (2006): "Muscle equilibrium is very important in maintaining a quiet muscle-teeth relationship. Every habit causing a muscle-teeth imbalance can be considered pernicious for post-treatment stability. Not only do we have to correct the habits, but we also have to determine the real causes that produce and increase these habits. Otherwise the habits return, and of course, the post-treatment instability. We consider the following habits in our clinical history at the beginning of treatment: Airway problems such as large tonsils, obstructing adenoids, and nasal constriction; tongue-posture problems, lip habits and incompetent lips, and finger- and thumb sucking (p. 46). Dahan (2000) in his study reported that: Sensory feedback is important for muscle function. Stereognostic testing can be used to assess tactile perception. Stereognosis is sensitive to age, to upper and lower anterior arch perimeters, and to oral habits (p. 385).

The Hanson and Andrianopoulos study (1987) of middle-age persons indicated that: "A significantly greater percentage of persons with Class I occlusion had no tongue thrust than those who had tongue thrust. A significantly greater percentage of persons with Class II occlusion had tongue thrust than those with no tongue thrust. Significantly more persons with openbite had tongue thrust than those whose tongue habits were normal." (p. 6). The Farrett and Jurach (1998) study conducted in Brazil reported, "Definite, significant correlations were found between speech and dental occlusion, in 113 subjects, ages 9 to 14. None of 12 with normal occlusion had articulatory problems. 20 had malocclusions and articulatory problems." (p 24).

Hale, Kellum, and Bishop, (1988) studied 229 orthodontic patients, from 6 years of age to adulthood. Of this total population, 73.3% demonstrated tongue thrust behaviors, and 71.6% demonstrated a low and forward tongue rest posture. They concluded that oral muscle factors and negative oral habits were in unusually high incidences in orthodontic patients.

Nashashibi (1987) examined 1000 school children ages 9 to 14. He found that 141, or 14.1% of the total population were tongue thrusting, while 67, or 54.6%, of those with abnormal occlusion were tongue thrusting. The difference between incidence of tongue thrust in those with normal occlusion and those with malocclusions was significant at the 0.0001 level. Significant differences between normal and abnormal swallowers were found in measures of vertical malocclusions, teeth-spacing, and presence of

other oral habits. The author concluded that tongue thrust increases proclination of teeth, spacing of teeth, and incomplete overbite. The cause and effect conclusion is **unwarranted**, but the examination of interrelationships among variables is noteworthy.

Wadsworth, Maul, and Stevens (1998) studied children in kindergarten through sixth grade. They found that tongue thrusting was significantly related to resting postures of the tongue and anteriorization of the 't, d, s, and z' sounds. Abnormal tongue resting posture was significantly related to open mouth posture and anteriorization of the 'l, t, d, s, and z' sounds. Dental malocclusions were related to the anteriorizations of those same sounds. Tongue thrust swallows were found in 76.3% of the children with an abnormal 's' sound. Hanson and Mason (2003), in their book wrote that they had observed clinically that tongue thrusters with anterior openbite, as well as those with Class II malocclusions, tend to possess the following constellation of morphologic characteristics: (1) a small oral isthmus, both horizontally and vertically; (2) a short mandibular ramus; (3) a relatively small oropharyngeal space; (4) an anterior resting posture of the tongue (p.98). Hanson and Cohen (1978), in their longitudinal study, found a total of 22 positive correlations. Some of these correlations were noted between tongue thrust and:

narrower palatal arch:
greater palatal height;
more mouth breathing;
more upper respiratory system allergies;
more overjet;
more dentalized speech sounds;
more mentalis muscle activity during swallowing.

Significant correlations were also noted between:

greater palatal height and digit sucking;
upper respiratory allergies and s sound dentalization;
narrower palate and digit sucking;
greater palatal height and overjet.

Many more studies finding interrelationships between and among form and function could be cited, but the above provide consistent findings.

EFFECTIVENESS OF THERAPY

In a more limited manner follows information from the journals on the effectiveness of therapy for orofacial myofunctional disorders. In the Barrett and Hanson book (1974), a large number of studies (beginning on page 98) indicated that the authors had already found therapy to be effective. Hanson and Mason (2003) report that of 20 studies found in the literature, 19 reported favorable results. (See page 254 in Hanson & Mason, 2003, for a listing of those studies.)

The Andrianopoulos and Hanson research (1987) found therapy to be effective in limiting orthodontic relapse. In subjects aged 16 to 30 years, 17 had received therapy for tongue thrust, and a matched group had received no therapy. The mean relapse in overjet, at least one year after the completion of orthodontic treatment, differed significantly between groups. The therapy group had relapsed a mean of 0.56 mm; while the nontherapy group had relapsed 1.94 mm. A nearly 2 mm. relapse in overjet is significant.

A Swiss study, by Oaglio, Schwitzer, and Wuthrich (1993), dealt with the effectiveness of therapy, and found very positive results. The patients studied demonstrated the combined presence of malocclusions, tongue thrust, and oral dyskinesia (difficulty with voluntary control of muscle functions).

CONCLUSIONS:

Malocclusions, tongue thrust, mouth and tongue rest posture, articulatory disorders, and the stability of orthodontically treated occlusion, are all interrelated. Numerous studies have demonstrated that therapy

for orofacial myofunctional disorders is effective in facilitating the success of orthodontic treatment and in limiting relapse. The literature is replete with well-controlled and longitudinal research, with case studies, and with procedures and conclusions advocated by experienced orofacial myofunctional therapists and orthodontists.

Citing advice from Peachey and Hanson (1991) "Let research findings combine with your own clinical experience to help you make sound decisions in evaluating and treating oral myofunctional disorders. Allow individualization of procedures to replace cookbook approaches. Replace questionable labels with accurate, understandable descriptions. Become the best possible communicator you can" (p.4). I would add: Beware of superficially attractive approaches, abbreviated programs, and techniques and procedures that tend to make our profession of questionable authenticity. And, hold your head up high!

GUEST EDITOR
Marvin L. Hanson, PhD
Phone: 435-627-1830
lhamhan@q.com

REFERENCES

Barnwell, Y (1977). Bibliography: Oral myology, oral myofunctional disorders and oral myofunctional therapy. *International Journal of Orofacial Myology,* 3, 13-23.

Barrett, R. and Hanson, M.L. (1978). *Oral Myofunctional Disorders.* St. Louis: The C. V. Mosby Company. 98.

Christensen, M. and Hanson, M. (1981). An investigation of the efficacy of oral myofunctional therapy for prefirst grade children. *Journal of Speech and Hearing Disorders,* 46, 160.

Oaglio, S., Schwitzer, R., and Wuthrich, J. (1993) Orthodontic changes in oral dyskinesia and malocclusion under the influence of myofunctional therapy. *International Journal of Orofacial Myology,* 19, 15-24.

Dahan, J., Lelong, O., Celant, S., Leysen, V. (2000). Oral perception in tongue thrust and other oral habits. *American Journal of Orthodontics and Dentofacial Orthopedics* 118(4), 385-391.

Farret, M, Jurach, E., and Srandao, L. (1998). Relationship between malocclusion and fonoarticulatory disorders. *International Journal of Orofacial Myology*, 24, 20-26.

Hale, S.T., Kellum, G.D., & Bishop, F.W. (1998). Prevalence of oral muscle and speech differences in orthodontic patients. *The International J. of Orofacial Myology.* 14(2), 6-10.

Hanson. M. and Andrianopoulos, M. (1981). Tongue thrust and malocclusion: a longitudinal study. *International Journal of Orofacial Myology*. 7, 6-11.

Hanson, M., and Andrianopoulos, M. (1987). Tongue thrust and the stability of overjet correction. *Angle Orthodontist*, 57, 121-133

Hanson, M., and Cohen, M. (1973). Effects of form and function on swallowing and the developing dentition. *American Journal of Orthodontics*, 63-494.

Hanson, M. L., and Mason, R. M., (2003) *Orofacial Myology: International Perspectives*. Charles C. Thomas, Publisher, p 28, 254

Harfin, J. (2006) . Roundtable discussion. *Journal of Clinical Orthodontics,* 46 , 28.

Mason, R. (2011). Myths that persist about orofacial myology. *International Journal of Orofacial Myology* 37, 26- 38.

Nashashibi, I., (1987). Variation of swallowing patterns with malocclusions. (Journal of Pedodontics. 11, 332) Abstracted by Marvin Hanson in *International Journal of Orofacial Myology* 12, 17.

Peachey, G., and Hanson, M. (1991). Current issues in orofacial myology. *International Journal of Orofacial Myology 16*, 4-7.

Sheets, B. (1957) Personal Communication.

Wadsworth, S.T., Maul, C. and Stevens, E.J., The prevalence of Orofacial Myofunctional Disorders Among Children Identified with Speech and language Disorders in Grades Kindergarten Through Six. *International Journal of Orofacial Myology.* 1998, 24, pp. I-19.