

Tutorial

Treatment of deviant swallow patterns with neuromuscular facilitation

Mervyn L. Falk

Suggested Citation

Falk, M. L. (1977). Treatment of deviant swallow patterns with neuromuscular facilitation. *International Journal of Oral Myology*, 3(1), 27-29.

DOI: <https://doi.org/10.52010/ijom.1977.3.1.12>



This work is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/).

The views expressed in this article are those of the authors and do not necessarily reflect the policies or positions of the International Association of Orofacial Myology (IAOM). Identification of specific products, programs, or equipment does not constitute or imply endorsement by the authors or the IAOM. The journal in which this article appears is hosted on [Digital Commons](https://digitalcommons.elsevier.com/), an Elsevier platform.

Treatment of Deviant Swallow Patterns with Neuromuscular Facilitation

Mervyn L. Falk, Ph. D.
Wayne State University
Detroit, Michigan

Purpose

Changes in the swallow pattern as a result of adapting Rood's techniques of neuromuscular facilitation to selected tongue musculature have been previously reported (1). The current paper is intended to describe the specific techniques used and to relate certain observations to previously published reports.

Method

The basic principle in the use of neuromuscular facilitation to treat tongue thrust relates to the reflexive properties of muscles and their responsiveness to specific types of stimulation. Rood has advocated positioning, brushing, icing, pressures, and resistance to stimulate sensory receptors to obtain a motor response through the reflex arcs (2). For the purpose of treating the tongue pattern used for the act of swallowing, brushing, icing, and pressure are selected and used in that sequence.

The first procedure, brushing, is intended to reduce the flaccidity of the tongue which is usually observable in tongue thrust patients. Brushing is accomplished with a No. 6 stiff-bristled oil paint brush. The tongue is maintained in a hyperextended position and the lateral margin is brushed with a light, slow stroke first from the labial commissure on one side to the midpoint of the tongue and then from the commissure of the other side to the midpoint of the tongue. Stimulation is maintained for ten seconds only, since responsiveness is quite minimal after this period of time. Each side is stimulated the same number of times, however, since deviation to the more frequently stimulated side can be noted after a prolonged period of stimulating one side of the tongue more often than the other.

The purpose of brushing is to create increased tonicity of the tongue mass. This form of stimulation results in a narrowing of the tongue and reduction in flaccidity due, perhaps, to increased activity of the superior longitudinalis muscle. In approximately six weeks, it may be observed that the broad, flat configuration of the tongue upon extension is eliminated and tonicity of the mass is significantly increased. At the same time, reaction of the long superior musculature to brushing can be visually observed in a reflexive, undulatory-type motion of the dorsum of the tongue.

Next, icing behind the upper central incisor units at the level of the incisal papilla is performed. A stick of ice of appropriate dimension is best made with the tube from a commercially-available brand of lip balm. This is accomplished by exposing all except an approximate 1/2" of the lip balm and cutting this off at the top of the tube. The remaining lip balm is then lowered to the base of the tube to permit the introduction of water into the remainder of the tube. The cap is then replaced on the tube and the tube is positioned in

inverted fashion into the freezing compartment of a refrigerator. When the ice is formed and the cap removed, the amount of ice extending beyond the wall of the tube is of sufficient length to ice the intended tissue. Icing ensues for ten seconds with care being taken to remain behind the upper central incisors. A reflexive property of the appropriate tongue musculature directs the blade of the tongue to the area iced. It is also important, therefore, to prevent any other tissue from being touched with the ice stick. It can be observed that, rarely, is the tongue tip in contact with the primary palate during the normal swallow act. Focus in treatment for tongue thrust, then, is to condition the blade to elevate and not the tip. In addition, the width of the central incisors is used to make use of the tongue in its narrowed, pointed configuration which results from the brushing which precedes the application of ice.

The next phase of treatment utilizes pressure to the dorsal, lateral, and inferior tongue areas. For approximately the first six weeks, only dorsal and inferior pressures are used. Lateral pressure is added when there is notable response to brushing and to dorsal pressure, since lateral pressure tends to result in responses which are similar to the responses of brushing and dorsal pressure. Dorsal pressure is accomplished with the rounded end of a commercially-available cocktail mixing stick. Precaution is taken to be certain that the round end is perfectly smooth. With the tongue resting in a relatively relaxed position within the lower dental arch, light pressure is applied in a rapid, alternating fashion over the anterior surface of the tongue. The reflexive response of the tongue is to withdraw in a posterior direction.

After several weeks, this response appears to attenuate and, in addition, the desired response to brushing can be observed. It then becomes desirable to modify this procedure, and, also, to add lateral pressure. Dorsal pressure is modified by having the patient position the tongue tip in a relaxed fashion on the lower lip. Pressure is then applied as before and tongue retraction is again observable. Stimulation is maintained for ten seconds for either condition.

Lateral pressure to the tongue is performed with the handle of the stick. Light pressure is applied first to one side and then the other in a slow alternating pattern, moving back and forth three times on each side. Both narrowing and retraction of the tongue mass may be observed as responses to lateral pressure after a period of time.

Inferior lingual pressure is next applied. This is accomplished with an extended index finger placed over the geniohyoid muscle. The patient assumes a position of readiness for the swallow act and digital pressure is then momentarily applied. The patient is instructed to then swallow after pressure is removed. This procedure is used four times. Since there is usually a lack of sufficient saliva to swallow given immediate repetition of this procedure, it is advisable to instruct the patient to drink a small amount of water between applications in order to moisten the oral and pharyngeal tissue. Each swallow should then be performed as naturally as possible.

Treatment Modifications

In general, the procedures for treatment as described are sufficient to result in the desired alteration of tongue configuration and function. At times, however, certain swallow patterns need to be treated in a somewhat differing fashion. These tend to be associated with severe Class II, Division 1 relationships and or with symptoms of lingual parasthesia, generally in one or both posterior quadrants.

For these patients, protracted treatment time is generally necessary and the treatment plan usually is modified after approximately three months. Brushing is then done with the tongue relaxed within the lower dental arch. Brushing, icing, and alternating pressure with the rounded end of the mixing stick are all applied in that sequence to the area previously described as being iced alone. Lateral and inferior pressure are performed in the same fashion as before.

Treatment Time

Patients are instructed to follow their treatment programs prior to eating a meal or snack and to integrate two additional times each day into a routinized regimen which is followed for six months. This generally results in use of the program 5-6 times daily. Only reduced daily application and or the patient for whom modifications are necessary tend to require more than six months of treatment.

When tongue retraction for the swallow act has remained observable for approximately three months, a reinforcement period of six months is initiated. The reinforcement schedule requires the patient to perform the same treatment routine utilized immediately prior to this period. The regimen is used before breakfast and before the evening meal across the total six-month time block.

Comments

Collateral to the treatment of the tongue pattern, it is clinically evident that molar contact and nasal vegetative breathing must be established in order to complete the treatment of a deviant swallow pattern. At present, neuromuscular facilitation has not been applied to correct such deviations from norm. Further, it does not seem necessary to provide exercise-type activity for the patient in order to achieve strength of the masseter or orbicularis oris musculature since these muscles are routinely used for other functions. Instead, conscious functioning of the mandible so as to maintain molar contact and conscious maintenance of lip closure for the purpose of nasal vegetative breathing are used in conjunction with neuromuscular facilitation for the tongue. In general, patients tend to achieve the total swallow pattern within the first six months of treatment. When the desired lip and molar relationships are not established in this time period, however, the tongue pattern may, nevertheless, be normalized. Treatment is not held to be completed, however, until this triad is demonstrable. The reinforcement period for tongue function may still begin and continued patient effort to establish habitual lip and molar approximation continues. For the purpose of lip closure and molar contact becoming routine, it would appear that concern for oral vegetative breathing during sleep is contraindicated. Effort during only the waking hours appears adequate for meeting this need.

Summary

Treatment procedures for a home training program to resolve tongue thrust are presented. These procedures represent a refinement of the experimental treatment results reported by Falk, et al (1) in which changes in anterior dental relationships are demonstrated with concern only for tongue function in the total swallow act.

Random post-treatment examination of patients after as long as two years has indicated no regression. All patients are examined three months after the cessation of treatment and rarely has regression been noted.

It is necessary for the clinician to examine patients monthly when neuromuscular facilitation is utilized. Only when beginning treatment is it indicated that the patient be examined approximately one week following initial instruction so as to be certain that procedures are being appropriately followed.

References

- (1) Falk, M., Wells, M., and Toth, S.: A subcortical approach to swallow pattern therapy. *Am J. Orthodont* 70: 419-427. 1976.
- (2) Huss, J.: Application of the Rood techniques to treatment of a physically handicapped child. in West, W.L. (editor): *Occupational Therapy for the Multiple Handicapped Child*, Chicago, 1965, University of Illinois.