ABSTRACT

The tongue is the principle oral organ not only of speech, but of feeding and respiration. By instinctively activating different lingual muscles in various ways we configure the tongue to perform its particular role in each of these functions.
Physics states that concurrent forces in a body (in this case the tongue) meet at a shared common node, a point that uniquely defines and controls the configuration of the forces. This node is a center of mass (or barycenter). The tongue utilizes such specific central nodes for the functions of respiration, mastication and speaking.

The global muscular framework of each function is complex, and the central node remains masked and embedded under various superimposed actions, so that the node is not obvious in everyday experience. However, the significant fact is that through appropriate methodology ideally anyone can sense and manipulate the nodes. Rapid transfer between nodes is common: one can instantly switch between respiration, mastication and speech. Setting the lingual barycenter is sufficient in itself to initiate a particular function, all other associated muscular behaviors appropriately adjust.

Since the congenitally deaf can respire and feed normally, they can control the nodal centers of these functions, but not of speech. They can generate imperfect speech from distorted frameworks based on respiration and feeding. This is replicable: one can produce a type of speech in the breathing or eating states and these sounds like deaf speech. If the deaf succeed in using the speech node, the frame is still easily distorted due to incorrect balance between articulation and phonation forces. Achieving normal articulation arises from correctly locating the lingual node of speech and harmonizing it with that of phonation. The proposed methodology enables such a potential.