

## Horns As Therapy Tools

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If horns had not been invented by ancient civilizations, surely modern day speech therapists would have had to invent them. From didgeridoos to trumpets, the controlled use of wind for the production of phrased sound anticipates oral-motor therapy (OMT) in more than tidy, metaphoric allusion. To some it is hard to believe that a simple toy horn could be other than a plaything, but in the realm of speech and language practitioners small, unsophisticated horns are effective therapy tools. This article will address how these devices can be used to correct articulation disorders, deal with deficits in phonation or breath control, work with cleft palate repairs, teach velopharyngeal functions and improve speech clarity.

Over the past twenty-eight years as a practicing speech and language pathologist I have learned that when a muscle cannot perform a specific skill - for example the failure to achieve lip closure - that muscle is saying "I want exercise"! This is the work of oral-motor therapy: to normalize oral musculature through exercise. Traditional speech therapy without the proper muscle control cannot be completely successful, but it is equally important to remember that oral-motor therapy is an adjunct to traditional therapy, not a replacement. It is critical that clinicians not stop or replace their clients' current therapies in favor of oral-motor therapy, rather that they use it as an additional building block. When the targeted muscles do normalize, the introduction of traditional methods such as auditory feedback, or phonological processing approaches, attain measurably higher degrees of success. Using toy horns as therapy devices to achieve that goal is powerful and fun.

In the last fifteen years I have experimented with over eighty horn-type devices to identify which ones work on targeted muscles as well as which ones can be used on an abdominal airflow hierarchy. During the last eight years that has evolved into a program that includes fourteen progressively more complex horns. This hierarchy works on designated goals such as correcting an interdental lisp, improving lip-rounding and working on specific phonemes. It deals with the development of muscles in three areas and in this order: phonation through the abdominal muscles, resonance through muscles of the velum and articulation via the muscles in the jaw, lips and tongue.

We are going to talk about two broad categories of clients; ones who will start at the first horn and work to complete the entire hierarchy and then those clients whose specific needs can be treated by the use of individual horns that work on their personal speech deficits. Picture your clients. If we work our way down, those clients who lack grading in only the jaw, tongue or lip are the least impaired. Those who have deficiencies in velopharyngeal closure must address those defects before the jaw, tongue or lip issues are addressed. Those with abdominal deficiencies are, for the purposes of this discussion, considered the most severely impaired. This bears repeating: the jaw, tongue and lips cannot be addressed until the velum is addressed, and the velum cannot be addressed until the abdominal control for airflow is addressed.

Clients with more severe problems start with the first horn and successively master each one until they reach horn fourteen, the final horn. This approach would be suitable for clients with Cerebral Palsy or Down Syndrome and could take as long as two years. Less severely impaired clients may start with a specific horn at a predetermined point within the hierarchy, using only those horns that address their specific goals. This gives the clinician a methodic, scientific way to create an individualized program for each client that often is completed in four to five months. These exercises can be used by clients of all ability and age groups starting as young as eighteen months. In a few instances I have used them with clients as young as twelve months and had success with a client one hundred-four years old!

The horns are organized by goals and the muscle movement required to produce phonemes. Each horn incrementally becomes a degree harder when working in the hierarchy, rechallenging the client's achievements in a rewarding way. They are suitable for group therapy environments, like those with school children, and some can be adapted to create interest for visually impaired clients. Horns are also an important part of a drooling program because they address awareness of lips, maintenance of lip closure and teach retraction of saliva back over the tongue, much of which can be taught without cognitive cooperation. With horn therapy even our clients with major deficits make significant therapeutic progress.

At the outset of the program, after diagnosis, the therapist introduces a target horn and determines the highest number of repetitions that can be achieved in rapid succession at one time without a break. The goal with each horn is to achieve twenty-five successive repetitions, taking a small breath between each blow. If the maximum number of repetitions produced is less than the targeted goal of twenty-five the therapist stops there and assigns the attained number as homework to be practiced each day. These exercises should be practiced at least twice a week with the therapist and, ideally, at least once a day at home. As each horn is mastered, the therapist introduces either the next horn in the hierarchy or the next horn appropriate to the client's goals. Parents and caregivers assist the client to practice their homework. As we know, it is vitally important that parents/caregivers be assigned a meaningful role in treatment. Many of our young cognitively impaired patients can barely interact with their parents. Involvement in this homework gives them an easily fulfilled assignment that gives immediate emotional and therapeutic feedback for the child and the parent/caregiver.

Let's briefly review a few specific horns to better understand their interaction in the hierarchy and discuss some of their unique attributes. The first horn is so easy that it requires almost no abdominal constriction and no constriction of the obicularis oris muscle. It produces sounds almost from the client's vegetative breathing. This horn teaches jaw elevation with minimal lip closure as the client learns to volitionally control airflow. Outside of the hierarchy it improves the production of the sounds /m, b, p /.

The second horn is a harmonica-like device that teaches further lip closure and the skill of projecting exhalation in a frontal manner. By gradually covering up the side holes until only the central holes remain exposed, clients can feel (and hear) the redirecting of airflow to the very front of the lips. Used alone, this instrument works on the standard production of /s / by assisting in the correction of a lateral lisp.

The third implement is similar to a slide whistle. It requires more than elementary lip closure and teaches first level lip rounding for the production of /w, oo, sh, ch, j /.

The fourth horn has a flat mouthpiece and must be blown for a one-two second duration. These variations increase the abdominal and lip closure difficulty, furthers the work on production of /m, b, p / and the prolongation of oral language statements.

The horns five, six and seven address additional prolongation of sound, bilabial sounds, oral-tactile defensiveness and low jaw sounds required for vowels and open-mouth consonants. Horns eight and nine work on bilabial sounds and tongue retraction. Horn nine is also an important tool for clients working on oral-nasal contrasts, especially after cleft palate repair.

Horns ten through fourteen work on intensifying the degree of duration of exhalation, lip-rounding, lip protrusion, tongue retraction/release, abdominal constriction/tension and they specifically target the correction of the interdental lisp.

As we said horns are fun, and fun is a motivator. Part of the success of this therapeutic approach is that this is work, and for many clients, difficult work. The work is disguised as a toy and the fun that they have repetitively using the toy is exercise, the same as doing ten, twenty or thirty sit-ups is exercise. Recreating a muscle movement through the element of repetition is our goal with each horn used. But keep in mind that this is not play therapy, this is work! Accordingly there are certain rules that must be followed during therapy:

1. Whether an adult or a child, the client's feet must be firmly on the floor, or other stabilizing surface, and the body should ideally achieve 90° angles in the pelvis, knees and ankles. This does not vary whether your client is in a chair, a wheelchair or you are working with them over therapy balls, bolsters or in a prone-stander. The importance of posture during these exercises cannot be overstated. Stabilization in the body allows for mobility in the mouth. Seating and posture are so imperative that I encourage you to consult with a physical or occupational therapist to achieve optimal or maximal positioning. This postural work has been traditionally in their realm, but for the purposes of these exercises it is now ours, too. During all of your therapy sessions with the client, and during homework, it is important to maintain this maximal posture.
2. The therapist holds the horn and makes sure that there is no biting, because if these horns are used incorrectly they will become toys and rendered ineffective for therapy. If a therapist were to simply hand a child the horn their first reaction would be to put it into their mouth and bite on it. Biting eliminates the therapeutic jaw-lip-tongue dissociation component of horn therapy. Beginning with the ninth horn clients who are cognitively involved with the therapy and who show that they are capable of following directions can be allowed to hold the horns by themselves while the therapist continues to monitor posture and placement. For older children and adults, therapists should use their discretion based on diagnosis and cognitive ability.
3. Remove the horn from their mouth after each blow. This therapy requires repetition. We are recreating muscle movement over and over again to develop strength/muscle memory. The goal with each horn is to be able to blow, with controlled exhalation, twenty-five successive repetitions and for the jaw, lips and tongue to successfully reposition prior to each blow.

The client populations who benefit from these techniques are truly diverse. For example, clients who have the diagnosis of apraxia/dyspraxia can use horn therapy to learn motor-planning movements for the eventual development of speech clarity. These methods sidestep their deficiencies. The stimulus-response technique of the horn creates the muscle action allowing the muscle to take that movement into memory. A clinician can put their hand on a client's stomach and push inward during an exhalation getting the air to go through the horn and produce sound. This gives the client a new awareness of the fact that something that happens in their abdomen creates sound from their mouth. Cognitively impaired clients gain this same awareness devoid of verbal instruction.

Many clients of various diagnosis have insufficient ability to contract and grade their abdominal muscles and must learn to tighten them in order to control their exhalation. Low tone in their abdominal muscles produces insufficient amounts of air that only support single words or short phrases. Horn therapy assists to accomplish this without using compensatory skeletal movements such as shoulder elevation and/or whole body tightening. These are just two kinds of clients whose problems have not been adequately addressed by traditional speech therapy. The result has been a significant inhibition of the client's ability to express themselves at their cognitive level. At the completion of the horn therapy program, whether using the complete hierarchy or a therapist prescribed progression of specific horns, we have clients with the adequate strength and mobility to start traditional articulation therapies, including auditory feedback and the phonological approach - and they got to make a little music along the way.