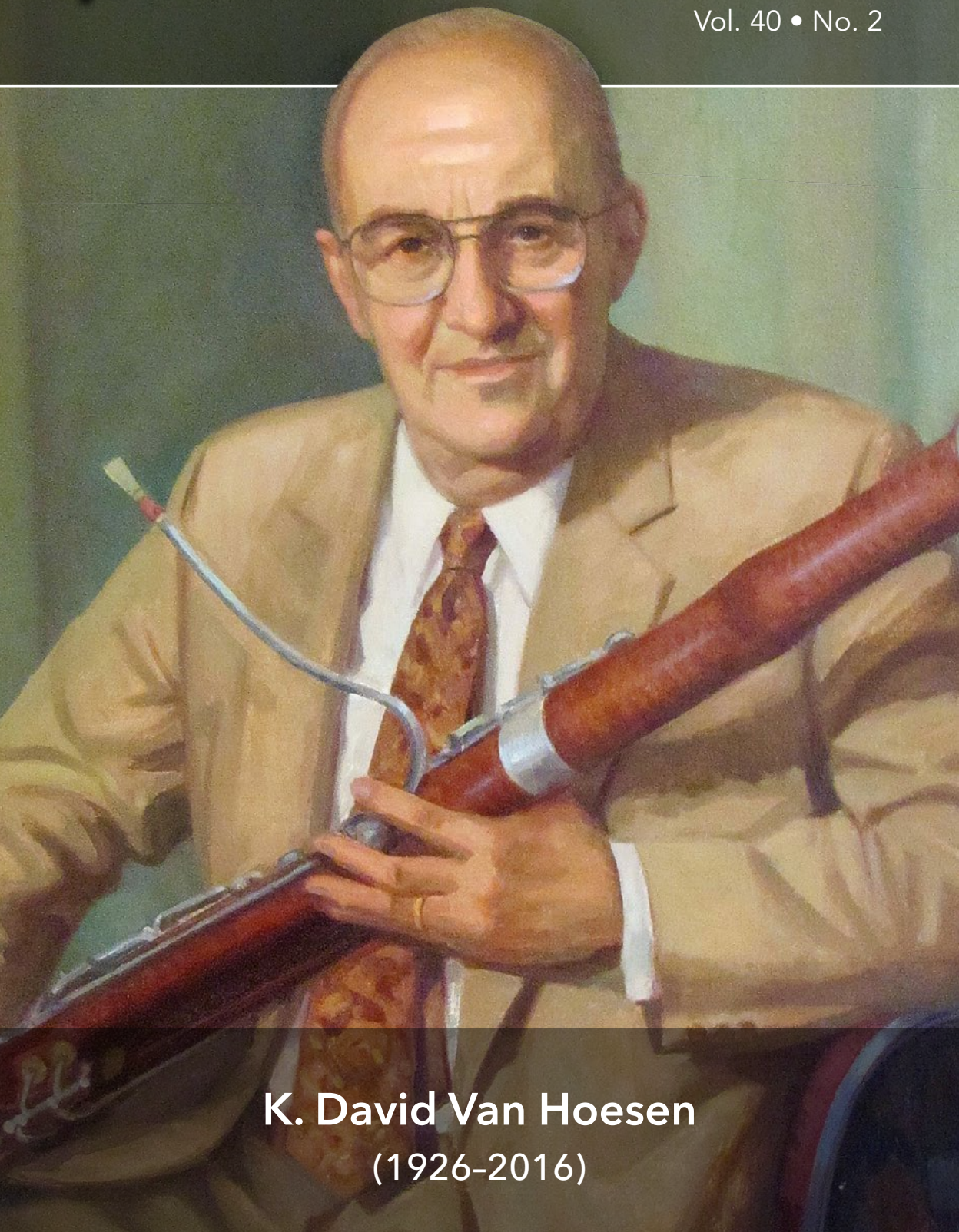




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Laryngeal and Vocal Health Issues for Double Reed Players

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Introduction

What may be the most surprising fact to double reed players (as well as all wind players) is that we recently have been designated as “professional voice users” (Eckley, 2006). Although most professional oboists and bassoonists do not consider themselves to be voice users, there are very good reasons (as explored in this article) for this designation. Double reed players have long been interested in how vibrato is generated on our instruments, with numerous studies investigating and concluding that the larynx is engaged in vibrato production. Vibrato is only one small aspect of laryngeal action (or possibly, reaction) that is only now being addressed and investigated more aggressively in the musical-medical aspects of a very specialized area of ENT (Ear, Nose, and Throat) medicine known as Laryngology. The purpose of this article is to share current information regarding the larynx in double reed behavior, what we already do know, what we do not know, advice and cautions on conducting your own research in this area, and non-performance laryngeal issues that still can affect playing. The information shared is from the chapter “Respiratory Behaviors and Vocal Tract Issues in Wind Players” by Valerie Trollinger & Robert Sataloff in Sataloff, R.T. *Professional Voice: Science and Art of Clinical Care, 4th Ed*, published by Plural Publishing (June 30, 2017). A more affordable option, in which the same chapter will be published, is *Vocal Health and Pedagogy, 3rd Ed*, also published by Plural, which will be available in July 2017.

The larynx is a somewhat forgotten associate of the wind-playing process unless we are addressing vibrato, start experiencing throat discomfort while playing our instruments, or are encouraging students to play with an “open throat.” Definitions among wind players differ on what an open throat is and moreover, playing with the throat *not* open would be impossible. Usually, we are more concerned with issues concerning breath support and mouth positions. Lips, tongue and vocal tract are all connected and affect each other as well as the overall degree of tension or relaxation in playing. Tension in the shoulders, arms, and hands can also extend to the laryngeal area.

There has been confusion between how vibrato occurs in singing and how that correlates with wind instrument performance. While some instrumentalists have collaborated with ENT physicians to document how the larynx works while playing their instruments, the results of those studies are confusing, often because the ENT physician does not have specialized training in laryngology and so is not trained to observe the larynx in depth. However, these studies should not be discounted, as they have yielded some very interesting videos that need more careful analysis.

Readers who wish to become familiarized with the vocal mechanism can investigate numerous videos and educational materials online, such as those available at the Voice Foundation (<http://www.voicefoundation.org>). These resources tend to focus on phonation during speech and singing, but are still useful for us non-singers as they also provide information on baseline laryngeal behaviors.

Singing vs. Wind Playing

When we play our wind instruments, the vocal mechanism behaves very differently from the way it does when we sing. In singing, the vocal folds approximate (that is, close the glottal opening) mostly along their length as phonation happens. In a professionally trained classical singer, the larynx will not rise very much even during ascending pitch, and the overall behavior is quite relaxed and balanced. However, in wind instrument playing, particularly in bassoon and oboe, we have observed a glottal configuration that shows adducted, rigid, vocal folds.

Dr. Claudia Eckley, a renowned Brazilian laryngologist who trained with the author (Robert T. Sataloff: RTS), made some additional medical observations when she evaluated wind instrumentalists in her 2006 study. In addition to the adducted vocal folds of the glottis, she noted the following:

1. There was greater lateral tension in larynx and overall constriction and tension of the vocal tract when the instrumentalist played a technically difficult passage.
2. The instrumentalists reported suffering from dysphonia (their voices sounded different or functioned with greater difficulty, temporarily) after intense playing.
3. They experienced increased throat secretions after intense playing.
4. Researchers saw mild-to-moderate increased swelling in the arytenoids and inter-arytenoid area.

Her original research has not yet been expanded upon. We do know that in singers, such tension-producing behaviors can contribute to vocal damage, but we do not know the degree of the effect of these behaviors for wind instrumentalists, although one of the authors of this article (RTS) has treated patients in whom these instrumental performance behaviors appear to have been the only cause of voice pathology.

Concerning vibrato, the manner in which it is produced for singing appears to be vastly different from how it is created in wind playing, primarily because in singing, the vocal folds touch to create the sound, whereas in wind instruments, they do not touch most of the time.

In one type of Baroque vibrato (the one often humorously called “goat in the throat” or the “Elmer Fudd” trill), the vibrato occurs through rapid and successive glottal stops while singing. This style is impossible to do on a wind instrument since the airflow is stopped as well. Additionally, one of the authors of this article (Valerie L. Trollinger: VLT) has observed that many double reed players have claimed that

they can play their instruments with vibrato yet are unable to sing with a healthy vocal vibrato. This leads to a hypothesis that the excessive tension in the vocal tract developed through their technique of playing a wind instrument might affect or lead to damaging levels of vocal tension in singing and speaking (one reason why wind instrumentalists are considered professional voice users). Conversely, there are double reed players who have studied both voice and their instrument and have not experienced this problem. This is an area that needs more research.

Inhalation and Exhalation for Wind Players and the Effect on the Larynx

Wind players instinctively inhale and then slam the glottal area shut (by forcefully closing the vocal folds) to keep the air in until it is required to start the sound. This behavior has been observed as instinctual, not unlike what one does when holding one's breath under water. Forceful and habitual closing of the vocal folds in this manner can be traumatizing to the vocal folds and can contribute to damage. However, this habit can be remediated by learning to inhale, suspend, and exhale the breath the way that singers are taught in the *apoggio* approach to singing (see "The Structure of Singing" by Richard Miller, 1986). Instead of closing the glottis to hold in the air, one simply keeps the glottis open and suspends the air in the vocal tract and then uses the abdominal muscles to exhale when needed to start the sound. This technique works well for one of the authors of this article (VLT) and also for students, and is especially effective if one allows a longer inhalation and starts the air into the instrument before the articulation to start the sound is needed. This behavior is not instinctual and needs to be rehearsed to become habit, but it will reduce some of the tension in the vocal tract. Alternatively, it is also possible to close the glottis completely but gently—another technique used by some singers not only for singing but also for exercise such as lifting weights.

Laryngeal and Tongue Position and the Effect on Tension

A number of researchers have investigated tongue position and laryngeal position in wind instrumentalists, with the findings showing that the larynx tends to rise (adding to the constriction previously mentioned) and that the back of the tongue also tends to arch and rise (adding yet more constriction). It is not yet known if these behaviors are a necessary response to playing the instrument or if they can indeed be manipulated to decrease tension while not interfering with the sound. One strategy VLT has experimented with for herself and her students and has shared with colleagues is to aim for more "tallness" in the back of the throat, mentally encouraging the back of the tongue to go down just a bit and the jaw to lower (heuristically thinking of dropping the back of the jaw) at the same time. This is similar to what is done in singing: relaxing the tongue at its base decreases constriction in the air. Anecdotally, double reed students have reported that they also "feel less tension" in the throat area. The result of thinking about tallness in the back of the throat is more air flowing into the instrument with less resistance. This requires an

adjustment in breath support while requiring less effort in the mouth and neck. Our anecdotal observations also have shown that the double reed sound is freer and the tongue still moves freely (especially in double-tonguing on the bassoon). However, investigation of this technique needs to take place in a clinical research setting to see if it is indeed an effective strategy, accomplishing what it seems to accomplish.

Velopharyngeal Insufficiency

Oboists and bassoonists are both susceptible to velopharyngeal insufficiency (VPI), which occurs when the velum (soft palate and pharyngeal area) does not seal and allows air to escape into the nasal passages when one is playing, resulting in the uncomfortable grunting sound one may experience when playing. Evans, et al (2010) reported that the highest prevalence of VPI was reported by musicians who played the following instruments, in this order:

1. clarinet
2. oboe
3. saxophone
4. bassoon
5. French Horn
6. trumpet

Males reported a higher incidence of VPI than females.

The degree of occurrence of VPI was attributed by the musicians in the study in the following descending order:

1. muscular fatigue
2. performance-related stress
3. other kinds of stress
4. prolonged and intense periods of music-making
5. returning to practice after a significant vacation from the instrument

In a later study (Evans, et al, 2015), the researchers concluded further that fatigue and stress, along with specific anatomical features of the musicians who were investigated, can affect velopharyngeal closure in musicians diagnosed with stress VPI. Most musicians who suffer regularly from VPI do not know that the problem can be remediated medically or that it can be addressed through speech and voice therapy. It is not known whether musicians with high incidence of VPI suffer from other vocal health issues (Trollinger & Sataloff, 2017). Strategies suggested in the previous paragraphs, when clinically evaluated for effectiveness and then applied correctly, may help wind instrumentalists play with less stress and alleviate some discomfort for performers who suffer from VPI that is not severe. More research is needed in this area as well.

Future Research

Research focused on vocal and laryngeal issues in wind instrument players is currently under way. Areas that warrant investigation in relationship to vocal health include but are not limited to issues concerning vibrato; laryngeal and pharyngeal tension; double, triple, and other tonguing techniques; the interaction between tongue and laryngeal stress; embouchure issues; breathing and laryngeal interactions; differences between novice and expert performers; and possible treatment or remediation strategies for wind instrumentalists experiencing debilitating laryngeal problems affecting their instrumental performance and voice use.

Until more is known, we strongly recommend that any wind player experiencing vocal stress, pain, or other issues consult a laryngologist (a subspecialist) and not a general ENT physician to receive the sophisticated evaluation and care provided to professional voice users. A place to start looking for a specialist is:

<http://www.billboard.com/articles/news/magazine-feature/6738182/music-top-throat-doctors-adele-sam-smith-steven-tyler>.

Readers are also welcomed to contact the authors for additional help in locating a specialist.

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