

**Belting and *Bel Canto*: An Aesthetic and Physiological Comparison and
Their Use in Music Education**

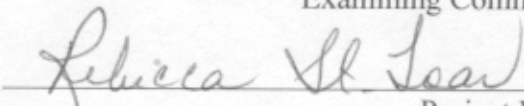
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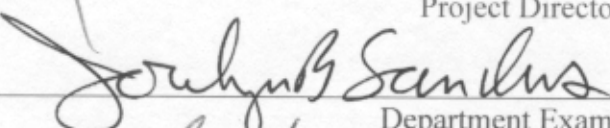
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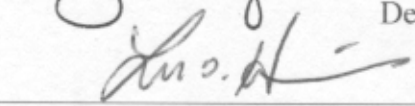
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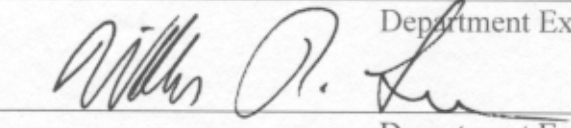
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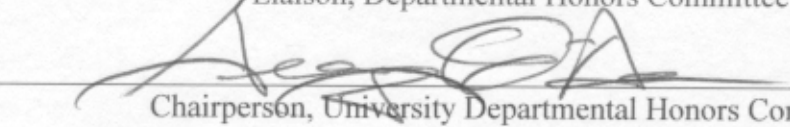
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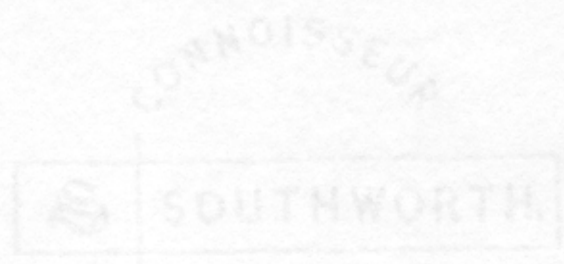
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Belting and *Bel Canto*: An aesthetic and Physiological Comparison and
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Singing is one of the most personal expressions of human emotion and one of the most physically demanding, requiring precise muscle control, flawless technique, and self-abandonment in its execution. At the core of this art form is the larynx, the tiny, intricate set of cartilages below the pharynx, or throat, which contains the vocal folds, whose manipulation determines each and every utterance of human sound.¹

For decades, many vocal pedagogues have held fast to the classical, *bel canto* technique, often dismissing the importance of other singing styles. However, with the rising popularity of musical theatre and today's chart-topping music, the demand for choral teachers to provide instruction in alternative vocal techniques is also increasing. Despite the request, teachers are leery of approaching other vocal styles, primarily those used in musical theatre, either because they are not commonly accepted in classical pedagogy or for fear of teaching them improperly.²

At the forefront of this controversy lies what is known as belting, a technique that some teachers deem necessary and important while others call it dangerous and inappropriate. Belting is most commonly used in musical theatre, but is also used in varied forms by many popular music artists such as Barbara Streisand, Celine Dion, and others.³

Several issues arise concerning the case of belting versus *bel canto*. *What are the physiological and aesthetic differences in the two vocal modes? Is belting truly as dangerous as once thought? Can it be taught safely and effectively? Should belting*

be taught in choral classrooms or in private instruction alongside traditional bel canto singing? This project will attempt to answer these questions based on current medical and professional opinion. The comments and works of several voice teachers and specialists in belting are consulted for the purpose of answering these questions. The backgrounds of those consulted in this study are varied. It should be noted that the many of those referred to are basing their comments on personal experience and opinion such as Anthony Winter, Catherine Sadolin, Jeanette Lovetri, and Neil Semer. Others, such as Miller and Schute and Lawrence, have done scientific research to back up their assertions. Earl Year Rogers, author of an article mentioned later wrote long before any scientific strides had been made in analyzing any physiological activity in the vocalis.

Until the work of Jo Estill, to whom an entire section is devoted later, no one had done such extensive physiological testing to determine what occurs physically in the vocal tract during the singing of different styles. Her method will be explained later. While the opinions and assertions made by other teachers cited give insight and have relevant points, Estill's findings are the most conclusive of all those consulted for this project, and should be regarded highly.

To fully understand why belting is so controversial, one must look at the most widely accepted style of singing among vocal scholars in comparison—*bel canto*. *Bel canto* singing traces its roots into the Middle Ages, but emerged into the mainstream during the sixteenth and seventeenth centuries. The Italian singer learned this style through rigorous and repetitive training, seeking just the correct sound, which could only be

attained by the proper pharyngeal and laryngeal alignment. Initially only used by men, *bel canto* became the standard vocal technique as opera grew in popularity during the Renaissance. Today, *bel canto* is the method used in classical voice studios across the world.⁴

According to Anthony Winter, an Australian voice coach who teaches both *bel canto* and musical theatre styles, belting found its origins in the work songs of African-American slaves in the spirit of call and response. Working outside created the need for volume and power, two characteristics of belt voice. Many popular vocal artists of the 1960s such as the Pointer Sisters, Aretha Franklin, and later those mentioned in the introduction took this style to a new level that continues today. Also, belting as defined here refers primarily to females. Men *can* belt, but most often their regular voices provide the power necessary to create the desired effect.⁵

The conflict exists between *bel canto* and belting because the two techniques are physically and aurally very different. The purpose of *bel canto* is to produce an aesthetically pleasing, continuous tone, hence its literal meaning of “beautiful singing.” It is used in every genre from opera to religious, and was used by popular musicians into the middle of the twentieth century. The purpose of belting is not necessarily to be beautiful, but often to provide power, resonance, and color not always attainable with *bel canto*. The controversy itself has two categories: aesthetic and physiological. First is the aesthetic category. To understand it, one must examine aural and physical differences that create the aesthetic effect.⁶

Aural Differences

Much of the controversy over belting is its bright, brassy, raw timbre and sound. *Bel canto* is a smooth, mellifluous sound, and the best executors of the method can move from phrase to phrase with minimal interruption, sustain long passages, and seem virtually effortless in their physical exertion.⁷ The tone is extremely focused with no breathy, harsh tones, and the vowels must often be modified in order to achieve this sound. Belting, on the other hand, is often termed "metallic" or "twangy," both having negative connotations.⁸

Renowned researcher Jo Estill defines belting as "loud, brassy, twangy, and sometimes nasal."⁹ In her article "NATS 2001 Winter Workshop: Music Theatre and the Belt-Voice II," National Association of Teachers of Singing board member Anne Peckham quotes definitions and different views of belting from the clinicians.

Teacher Mary Saunders defines belting as a "dynamic theatre sound produced from a mixed speaking voice" or the "apex of a spoken crescendo. . .includ[ing] all the colors and mobility of a well-trained speaking voice."¹⁰

Jeanette Lovetri characterized belting as having a "chest-register quality, *mf* to *ff* in volume, carried above F4."¹¹ Lovetri also says that it allows a voice to be heard in the back of a theatre without artificial amplification using natural, spoken vowels, and in her opinion, the vowels do not have to be modified to obtain the desired sound, unlike in *bel canto*.¹²

British coach Catherine Sadolin disagrees with Lovetri, contending that in order to achieve this bright, brassy sound, it is necessary to modify vowels to "EE, "I, "EY,"

"AH," and "OE" in the high voice.¹³

One criticism of the aural characteristics of belting is that the loud, brassy sound that belting produces is aesthetically unpleasant. Winter asserts that because of its characteristically abrasive, forward sound, belting can be quite irritating to listeners, especially without a mix of vocal qualities and tones to provide musical expression and variance.¹⁴ Therefore, in summary, belting is a loud, rich, bright, metallic sound, mostly utilized in musical theatre settings, but also used in gospel and rock.¹⁵

Looking at aural characteristics alone, it seems that any approval or disapproval of belting is highly subjective and based on primarily aesthetic markers. Many classical pedagogues refuse to teach belting because they do not personally like popular music. Though the aesthetic qualities of belt voice versus *bel canto* alone create controversy, the fundamental debate really lies in comparing the physiological aspects of the two vocal modes.

Physiological Differences

Bel canto production is very intricate, and requires controlled muscle activity, but only in the small area of the larynx, which is slightly tilted. According to Barbara Doscher, author of *The Functional Unity of the Singing Voice*, the ideal means of phonation, or sound production, is the *coup de glotte*, or “stroke of the glottis”, first coined by Manuel Garcia. Doscher points out the opinion of Dr. Morell MacKenzie, a contemporary of Garcia, who says that the *coup de glotte* is the “exact correspondence between the arrival of the air at the larynx and the adjustment of the

cords.¹⁶ In layman's terms, this means that the inhaled air meets the cords and the appropriate tension at exactly the right time, eliminating breathiness or harshness.¹⁷

Jan Cochrane, an Estill Method-Certified teacher, maintains that the defining physiological characteristic of *bel canto* is a tilted thyroid cartilage.¹⁸

Winter contends that the sound of belting is “based on the idea of calling out in the open air to get someone's attention.”¹⁹ The clear, forward sound achieved by making such a sound if sustained on a pitch is what he deems as belting.

In belting, the larynx is raised, and the cords are used at a extremely high energy level. Estill says that the “larynx is high, and the vocal folds thick...the vocal tract (pharynx) is very small. There is a high level of effort in the head, neck, and torso which is constant. The higher the pitch, the higher the effort level, ” while Neil Semer expresses an opinion that there is a “greater degree of thyroarytenoid (vocal cord) activity than western classical singing [*bel canto*] in the middle and upper-middle voice. . .” and “doesn't include excessive heaviness in the low register, and is not pure chest resonance.”²⁰ Estill’s recent physiological research shows that, unlike *bel canto*, belting uses a tilted cricoid cartilage rather than thyroid.²¹

Ken Burton, voice teacher and writer for the Singing Zone, acknowledges the purpose of “twang,” or the tilting of the larynx, to provide power, but notes that in belt technique specifically, the soft palate is raised, giving a greater area for resonance, thus smoothing out the tone and creating a fuller, richer tone and assuaging the ears of those listening.²²

The physiological debate exists between *bel canto* and belting because of the

stress and damage to the vocal cords and larynx. In a 1993 *Journal of Voice* article, Schute and Miller from the Voice Research laboratory at Groningen University in The Netherlands discuss some of the actual tests done on belters and the pathology found therein. Actual vocal registers play a major part in their research, and understanding the laryngeal position of these registers is necessary in understanding the belt voice. In 1969, Earl Rogers wrote an article in the *NATS Bulletin* entitled “To Belt or Not to Belt...that is the question.” Here, he defines belting as “singing a song in chest voice almost exclusively.”²³ At this time in vocal research, there were three ways of looking at vocal registers: “The Idealistic Approach-One Register...The Realistic Approach-Three Registers...and The Hypothetical Approach-Two Registers.”²⁴ He stated that a female voice, where belting is most common, has three registers-chest, middle, and head, and that they should be blended to achieve a bridge or *voix mixte*.²⁵

While some experts say that the belt voice is not chest voice, or resonance coming from the chest cavity rather than the pharynx, others hold that it is the chest voice extended upwards, though the clear means of executing belt voice is still unclear. Miller and Schute maintain this position, too. A singer using chest voice closes the larynx by a fifty-percent quotient. This voice is raised above the lower voice into the middle range. A spectrogram, which charts results of quantitative vocal tract information gathered by a spectrum analyzer, was used to evaluate the closed larynx time quotient. In one such spectrogram comparing a song performed in a belt voice and a classical voice, scientists found that the belt voice with higher larynx position

creates higher first and second formants, like that of the speaking voice, thus leading many scientists to believe that belt voice is simply a more energetic speaking voice. Raising the larynx produces a more open middle sound as compared to the low larynx classical middle voice.

Schute and Miller note that, in comparison, pure chest voice requires great effort at the glottis and at the vocal tract, and that the essential difference between chest and belt voice is that the degree of larynx elevation must match the first formant with the second harmonic on open vowels, specifically G4 to D5 in women. Thus the second harmonic dominates, giving the belt voice a unique sound. Essentially, the difference in belt and chest voices is the way the larynx is elevated and how that effects the acoustics of the sound produced. They are quick to note, however, that there is a difference, too, in "classical chest" voice, "pop" and belt voice. Belt sounds differ from classical chest because the extremely high larynx position takes the chest register higher than in classical singing, while "pop" is more of a laryngeal adjustment like the classical middle voice, and a combination of the two in the upper middle range is often called "belt mix."²⁶

In contrast, Winter identifies four vocal registers: "chest voice," "powered chest voice," "head voice," and "strengthened low head voice." Like Schute and Miller he defines belting as powered chest voice. The strengthened lower head voice he calls the "Broadway Mix Sound," "fake belt," or "cheat voice," also known as *voix mixte* in classical singing, similar to that described by Rogers.²⁷

The 1988 Estill Study

As mentioned earlier, Jo Estill has become one of the foremost researchers of belting, conducting the only major physiological research into what actually happens during belting. Her empirical research has served to prove or disprove many hypotheses made about belting, many of which were educated guesses based on professional experience, etc.

With the assistance of medical doctors and scientists bipolar electrodes were placed into one vocal fold and seven intrinsic vocal muscles, after which two tests were done that I will not explain because of their technical nature. Using these methods she tested a singer vocalizing five pitches from 196 MHz to 784 MHz, or low G to G two octaves above using the vowel /i/. The singer vocalized in the following modes: speech, falsetto, low larynx, twang-nasalized, opera with the singing formant, and belting. The acoustic analysis of this study showed that when the amplitude of the fundamental tone matched the 3kHz mark, the area of the acoustical spectrum where the human ear is the most sensitive, the energy would appear louder. Simply by the looking at the amplitude, one can assume that the vocal folds are highly active and that they are closed for a long period of time.²⁸

In the next phase of the trials, the scientists involved studied the subjects with an Electroglottograph, a device which watches vocal fold closure. Here they found that, as expected, belting revealed the longest closure, followed by speech. The vocal folds were mostly open in opera mode. Each voice quality proved to have a different degree of vocal fold closure, which led the scientists to investigate the vocal musculature.

A comparison of the two studies would illuminate some of the questions. When the frequency and closed larynx time are plotted for belting, speech, and opera, it superficially seems that, as mentioned before, belting is "merely speech at a higher level of effort," but a comparison of an Electromyograph, (EMG) measuring the overall proportion of closed vocal fold time, with one showing the effort of the extrinsic vocal muscles used in speech prove this is not true.²⁹

Interestingly, opera vocalization required a greater amount of effort by the extrinsic muscles than the vocalis up to 587 MHz, after which the vocal muscles take on the larger work load. Belting, as expected, showed the entire body working harder and the larynx in a different position from either opera singing or speaking, as well as greater activity in the vocalis and extrinsic muscles, and as "the frequency increas[ed], the closed phased remain[ed] relatively unchanged, while the EMG activity of the vocalis increases to the highest level recorded for the thyroarytenoid (vocal cords).³⁰ Thus, in all of these studies, belting is proven to be more than simply energized speaking. Rather, it is all bodily muscles working together with greater vigor than in *bel canto* with one exception: the tongue, which serves to color the vocal tones. Estill says that belting requires much harder work than opera because it involves not only the vocal folds, but also the extrinsic vocalis muscles.³¹ The bright sounds of *bel canto* and belting, according to Estill, are achieved in much different ways. When trying to achieve "squillo" in opera mode, or the characteristic *bel canto* brightness, the larynx must be higher than usual. Therefore, the singer needs to retract the tongue in order to allow a larger resonating space, or the anterior-

posterior pharyngeal space, serving to darken and round out the sound without losing brilliance. Belters simply reduce pharyngeal space for the brilliant sound.³²

Estill notes that it is much easier for good belters to become opera singers, but that opera singers are much more reluctant to subject themselves to the more exhaustive belting method due to fears of injuring their instruments. Regardless, it is physically more demanding to belt than to sing opera, and the greatest difference therein is the position of the larynx.³³

Health Factors

All personal opinions and aesthetic preferences aside, many voice pedagogues are wary of belting simply because of the risks involved with the method. Most teachers agree and scientific testing has proven to an extent that the extreme effort and stress on the vocal folds causes a myriad of vocal problems.

In analyzing Estill and Colton's 1976 study of laryngeal observations of belters, Dr. Van Lawrence of the MacGregor Medical Clinic Association in Houston, TX found that there was a clear relationship between the degree of pathology present and the amount and quality of previous vocal training, with the best trained singers clearly showing the least amount of physical abnormality. Therefore, there was a negative relationship between the knowledge the singers possessed about healthy use of their instruments and the occurrence of vocal maladies. Lawrence notes that among belters in general, the pathologies were mostly in the larynx itself—polyps, nodules, irritation, etc.—where classical singers had rare events of thyroid hypofunction.³⁴

There are definite risks involved with belting. A 1995 study at the Center of Voice

Disorders at Wake Forest University summarizes the hypotheses and results of the research done years prior. They took one hundred subjects, some professional singers, some amateurs, some having classical voice training, others not, and tested the larynx of each as they sang in their preferred methods and in a standard method. The “classical” methods proved to have far less muscular tension during phonation, therefore resulting in less swelling, irritation, nodule growth, or developments of other pathologies in the laryngeal area. Those who sang musical theatre, bluegrass or country, and gospel or rock had respectively greater degrees of muscle tension. When a classically trained subject did sing in a belting style, the degree of tension also increased. This muscle tension is not necessarily indicative of future vocal disorders or improper technique, rather of simply extreme laryngeal effort, which in some cases, can cause nodules or irritation or other problems.³⁵ It seems, then, that there is indeed great stress placed on the vocalis when belting, whereas *bel canto* is essentially effortless. The strain on the vocalis while belting can cause serious problems if not done with care and awareness of proper vocal care.

Edwin, Miller and Schute contend that some voices simply are not made for the rigors of belting or certain types of belting. Combining a high larynx with a high degree of vocal fold closure and high pressure place belters at a great risk for damage. Though some singers such as Judy Garland and Barbara Streisand sang for years with no apparent vocal difficulty, most belters will have some vocalis irritation at the very least. The “pop” approach should be incorporated into belt singing whenever possible, using less air pressure and a lowered larynx, though the raised larynx is

necessary for the ring desired in belting. Miller and Schute recommend proper voice training for singers of any style, as Lawrence did, so that they may understand proper function and maintenance of the vocal instrument. It is through this training that teachers can develop efficient, proper and healthy breathing techniques for belters by incorporating and utilizing *bel canto* methods.³⁶

In contrast to the opinions of many, Burton maintains that the technique of belting was designed to protect the vocal cords from stress, and when done properly creates no tension on the vocal folds. Because of the tilted larynx, he insists, “there is no undue strain or pressure put on the vocal folds.”³⁷ This assertion is in such opposition to the findings and opinions of other experts that its credibility is questionable.

Cochrane contends that belting can be done safely and is in fact done safely as musical theatre performers are required up to eight shows per week. She notes that potential pathologies are present in both belting and *bel canto* singing if they are done improperly. The most common vocal injury is the act of pushing air against the vocal folds which creates nodes on the folds. In regards to the cause of injury Cochrane says,

In Belting the folds are closed 70% of the time. If the singer pushes air against closed folds it blasts them open. In *bel canto* singers would push air to create more volume and that can cause nodes also. Any singer can suffer from repetitive strain syndrome...using the instrument too much.....that would be up to the individual to be smart about their instrument.³⁸

Thus, in any case, it is important for singers to be aware of what is happening in their voice and how it feels. Pain is often a signal to stop singing.

The bottom line is that both belting and *bel canto* can damage the voice if done

improperly or without taking the necessary precautions and care to prevent injury.

While belting is more intense physiologically, opera can be just as deleterious to the instrument if forced, strained, or overdone.³⁹

The Duty of Vocal Teachers

So how should a teacher approach a student who wants to belt? Of all the sources consulted, it is the consensus that teachers are responsible for bringing an awareness of the mechanism of the voice and to instruct the student in its maintenance.

Inevitably, with the strong influence of popular music, some students will want to belt. Earl Rogers asserts that teachers should develop belt voices with vocalises, breath control, and posture just as they cultivate the students of traditional classical voice. Voice pedagogues should also prevent the belter from overextending or simply overusing her voice, which can irreparably damage it. Proficient and promising belters should be encouraged and assisted, whereas in cases where the singer simply cannot belt in a healthy manner, the teacher should gently advise against it.⁴⁰ Similarly, Cochrane maintains that belting should definitely be taught in high school settings, as it is better to teach it so that proper, safe technique is learned to avoid injury. However, she also says that *bel canto* training does not necessarily assist in the safe learning of belting because the two vocal styles are so different in physiological nature.⁴¹

Robert Edwin asserts that teachers should not, however, try to make their belters classical singers unless they want to learn *bel canto* technique, but rather they should use it in a comparative approach

to show the belt singer another process of voice production. By separating the vocalist from his/her chosen style, variables such as registration, tone colors, breathing, tongue and mouth configurations, laryngeal and palatial positions, and posture and attitude can be explored.⁴²

At the same time, the voice teacher needs to specify what kind of belt voice the singer has so that the repertoire chosen does not further complicate the process of safe belting.⁴³

Winter insists that a singer, especially a developing singer, should consult a master voice teacher when looking to learn belt technique.⁴⁴ Teachers should also advise their students while using any vocal technique in producing, rather than reaching, extremely high or low notes safely and correctly.⁴⁵

So many classical pedagogues still have prejudices regarding belting and other non-classical techniques for reasons ranging from good-willed health concerns to simple closed-minded thinking. Estill believes that teachers must move beyond their personal timbre, sound, and technique preferences in order to deal with belters and the method, and to keep in mind that musical techniques are an ever-evolving entity, and that what was *passé* a century ago is now common practice.⁴⁶

The Future of Belting in Music Education

Based on the aesthetic and physiological factors discussed here, it seems clear that those who remain wary of belting have good reason to be so. The risk factors associated with singing in belt style are undeniable, but many of these same risks are also present in *bel canto*, though at a lower rate. Physical issues aside, many teachers just do not approve of belting as a valid technique or think the sound is too brassy and

bright. Despite these factors, the demand for instruction in belting is growing. Recent motion pictures such as “Chicago” and “Moulin Rouge” have accelerated the popularity of musical theatre. Mainstream television shows drive children and teenagers to sing like their popular music idols, many of whom use a style similar to and incorporating belt voice. Thus, belting should be treated carefully by singers and teachers alike.

Choral directors in secondary schools should also consider the issue of belting. Many choir members also study or should be encouraged to study voice privately. Directors should be cognizant of those students who belt or want to belt and either offer or refer students to a teacher who will provide safe, effective instruction in both belting and *bel canto*. Show choirs often use musical theatre pieces in their programs, and often their young voices are pushed to the limit to achieve a bright, twangy sound. In this case, the director should at least be knowledgeable enough of belt technique to monitor the students vocal health and keep their singing at protected levels. Directors of jazz bands who use vocalists should also be aware of their singer’s vocal health, as vocalizing over the amplitude of a jazz band can cause extreme stress on the cords if done improperly.

With more studies like those of Jo Estill and Wake Forest and the like, it is possible that a century from now, belting will be taught with the same respect as we teach *bel canto* now once the research can comfort teachers who fear the unknown technique. Perhaps Jan Cochrane most accurately describes the new realm of belting when she says:

I feel certain that smart teachers/singers are accepting the need to branch out to other techniques due to market demand and the obvious knowledge that classical technique doesn't cut it in the commercial (if you will) styles of singing. People are comfortable in the worlds we build for ourselves and it takes courage to explore new avenues.⁴⁷

Conclusion

There is no doubt a considerable difference in the vocal modes of belting and *bel canto*. Just as musical styles possess varying characters, functions, colors, and purposes, so do vocal styles. And as with any form of the arts, personal preference effects one's focus. Some who are classically trained may embrace the honey-like sounds of *bel canto* while disliking the more stringent sounds of country while people raised on the twang of bluegrass may abhor the sound of opera. Aesthetic preference, though it does play a role in the case of belting versus *bel canto*, is not at the heart of the issue. The debate and concern lies in the mechanical events that take place in the intricate instrument called the voice during the two fundamentally different vocal modes and how it effects the overall health and well-being of that instrument.

While it has been proven by researchers like Miller and Schute that belting is much more strenuous on the voice than classical singing, the groundbreaking, scientific tests of Estill have illuminated the mechanisms involved in belting and begun to develop safe, effective instruction methods for teaching this vocal style.

It is my hope as a music educator that the classically trained teachers will open themselves to the possibility that belting can be used safely and with great aesthetic and musical results.

Voice teachers should encourage those singers who seem to possess the ability to belt

and who can execute it with ease. Simultaneously, they should instruct them in ways to protect and develop the voice safely. Conversely, those whose voices simply cannot endure such rigorous activity should be advised of this and trained accordingly. Perhaps as young voice students turn into vocal instructors, perhaps they will be more willing to learn and teach their students this technique.

Thus belting, when practiced and developed under healthy, positive instruction can be done without damage to the instrument and in an effective manner. It should be studied and addressed rather than simply dismissed on aesthetic or preferential grounds. Though not currently accepted in the mainstream classical community, it is my hope as a belter that as more definitive research is done by Estill and others, belting will become a viable vocal technique taught as a supplement to *bel canto*.

Notes

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