The Falsetto Voice

by

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A common topic of discussion among singers and voice teachers is that of vocal registers. A vocal register is composed of neighboring pitches which are produced in the same way physiologically and which have similar timbre. Registers are groups of notes that sound similar because they are produced in a similar manner. There are several registers in which singers utilize their voices. Not only are there many registers in singing, but there are also many different names given for these registers. Some of these registers include the chest voice or lower register, the mixed voice or head voice, the light mechanism, falsetto (in men), and whistle register (in women). This is a controversial area of singing which is subject to debate. There is no universal agreement about the number of registers, their names, their influence on the voice, or even their very existence.¹ The writings of Douglas Stanley which date back to the early 20th century provide interesting insight on this topic, in particular the use of the falsetto voice. Stanley argues that there are possible benefits of falsetto singing. He believes that a singer must have a vocal instrument which is able to act as one entity without any audible breaks or cracks.² It is probable that many people would agree with Stanley if said singer is expecting to have a performing career. Contemporary research agrees that breaks may be heard when shifting between registers if the registers are not blended together.³

A vast majority of untrained male singers are only capable of singing in two registers. Those two registers are commonly the chest voice or lower register, and the high register, known

as falsetto. A disparity between these registers is often heard, resulting in a break while shifting between them. While there are other register changes which occur in the male voice, the change between C4 and G4 is the one for which finding a solution is of the utmost importance. According to Donald Miller, these two registers must be unified or the disparity will continue to exist.4

The male voice is of particular interest because it is in this voice type that this problem is most frequently found. Renowned bass Jerome Hines even goes so far as to say that it is a problem which must be solved in all voices.5 Light sopranos may avoid having to deal with this issue by refraining from the use of a thyro-arytenoid dominant tone production. However, all other voice types, including dramatic sopranos and mezzo-sopranos, need to address the issue.6

How does a singer go about solving such a problem? It is a daunting task to say the least. Can focusing on developing the falsetto help to blend the registers and improve the other registers of the male voice? Since the breaks between lower tones and higher tones in the male voice are so common, some teachers believe that singing in the falsetto range is a beneficial way to help solve this problem.7 Others do not advocate singing in falsetto. A singer may even be told that there are no such things as different registers in the voice, or that the falsetto register does not exist at all. Tenor Jussi Bjoerling said once to Jerome Hines that he did not have a falsetto. In


6 Ibid., 48.

response to this claim, Dr. Leo Reckford, who treated both of them, explained to Hines that “of course he has a falsetto. It’s just that he slips in and out of it so easily that he is not aware that anything is happening.”8 It is apparent that there are those gifted singers who are lucky enough that they do not have to deal with the issue of moving in and out of falsetto. However, many other singers have to deal with this issue and some experts feel that those registers must be unified.9

There are many potential reasons why a singer would use the falsetto register in order to develop other registers of the voice. Some believe that laryngeal conditions while singing in falsetto are similar to those of the legitimate male head voice, a register which is more suitable for solo singing. Head voice and falsetto are both produced through use of the cricothyroid musculature, though head voice also uses the thyroarytenoid musculature. Therefore, it makes sense that in order to find access to the head voice, one could begin singing in his falsetto as a way of introducing the musculature to singing in the head register, which is sometimes difficult to find.10 Another possible purpose of using the falsetto voice is to allow the singer to feel the ease with which he can sing high notes, in at least some form, and then apply that ease to singing with a heavier, more substantial mechanism. Accomplished voice pedagogue and teacher Richard Miller explained that a singer can use this method to “build on the perception of effortlessness that accompanies the falsetto” right before engaging in his full voice.11 However, Miller does

8 Hines, 48.
9 Donald Gray Miller, 28.
11 Ibid., 123.
provide an interesting viewpoint against the use of falsetto. He states that excessive singing in falsetto can damage the vocal folds to the point of causing the development of nodules because the folds do not have complete closure in this register. He also states that the purpose of falsetto is not to use it to the point of making it blend and become a part of the legitimate part of the singing voice. In his writings, Miller mentions famous tenor Alfredo Kraus who once said he was “completely opposed to the practice or use of falsetto.” It is possible that other voice teachers also discourage falsetto singing for reasons mentioned by Miller and because of the view of famous professional singers like Kraus.

In order to better understand the potential benefits of using falsetto as a tool to develop other parts of the voice, it is necessary to understand what is happening anatomically inside the larynx during phonation in falsetto. As previously mentioned, there are two muscle groups intrinsically located within the larynx which are responsible for lengthening and shortening the vocal folds. These muscle groups, known as the cricothyroids and the thyroarytenoids, are responsible for causing pitch increase and decrease in the voice. The level of finesse with which this occurs depends on the delicate interplay between these two muscle groups. The cricothyroid muscles are the main instigators of the falsetto voice while the thyroarytenoids are

12 Ibid., 122.
13 Ibid., 123.
14 Ibid., 121.
16 McCoy, 66.
employed when the lower register is in use. The vocal folds exhibit different behavior depending on which part of the musculature is in action.

Thyroarytenoid-dominant production, hereafter abbreviated TDP… is characterized by a relatively high closed quotient…which generally exceeds 50%. During TDP, the vocal folds are thickened by contraction of the [thyroarytenoid muscles]…resulting in greater mass per unit of length. They also exhibit a vertical phase difference during each cycle of vibration… Because the area of contact between the folds is wide and glottal closure is rapid and prolonged, the sound has… strong acoustic energy in high harmonics. TDP is at the core of several sound qualities, including chest voice…in men.

Behavior of the vocal folds during cricothyroid-dominant production is quite different from the behavior exhibited during thyroarytenoid-dominant production.

In [cricothyroid-dominant] phonation mode, pitch modulation is controlled primarily through contraction of the cricothyroid muscles…which simultaneously elongate and thin the vocal folds. This elongation results in a narrow area of glottal contact during vocal fold oscillation. Vertical phase differences cease to exist and mucosal movement occurs almost exclusively along the medial margins of the vocal folds…Amplitude of high harmonics is reduced in [cricothyroid-dominant production]…because of the slower glottal closing rate, longer open phase, and narrower area of contact between the folds during oscillation… [cricothyroid-dominant production] is the glottal source of sound qualities identified as falsetto in men, and head voice…in women.

In falsetto, the vocal folds are elongated which results in a narrower area of vocal fold contact during phonation. The glottis during falsetto phonation may never actually completely close. Because of the continued vibration of the vocal folds, the glottis becomes wider and narrower. Variations in air pressure still exist, thus causing the perception of sound.

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17 Ibid., 65.
18 Ibid.
19 Ibid., 66-67.
20 Ibid., 67.
Part of the difficulty of singing can be attributed to dealing with these muscles which perform radically different functions. They can easily operate as isolated entities and often do in untrained voices. The point made by some experts is that the voice cannot perform as a single unified instrument when these musculatures are at odds with each other.21

The break or crack which one can often hear in male voices is caused by an attempt to sing each note with the heavier mechanism while ascending the scale. The reason for this occurrence is that when a certain pitch is reached, the thyroarytenoids suddenly decrease their function and the cricothyroids suddenly begin to take over in facilitating the production of the sound. In order to prevent this from happening, a certain level of skill is needed to coordinate the actions of these muscles so that neither one takes over suddenly from the other. The usual reason for the existence of this problem is that one register is used excessively more than the other, causing unequal strength between registers. The lower register in male voices, controlled by the thyroarytenoids, is used as the primary mechanism for speech. This is the reason why many men can have such a prominent break in their voices.22

In summary, while singing in the falsetto voice, the thyroarytenoids are not active and the cricothyroids are engaged, thus lengthening the vocal folds and also allowing them to remain relaxed. Because of this configuration, less breath pressure is required to commence the vibration of the vocal folds.23 In addition to the difference in musculature involvement, there is also a


23 Ibid.
different behavior of the vocal folds during falsetto phonation. In falsetto, the edges of the vocal folds are the only parts which vibrate. In the lower register, the whole of each vocal fold vibrates. The phenomenon known as vertical phase difference, which involves the fold opening from bottom to top with each vibration, occurs as well. This phenomenon is absent during falsetto.\footnote{James McKinney, \textit{The Diagnosis and Correction of Vocal Faults} (Nashville: Broadman Press, 1982), 103.}

Cornelius Reid believes that there are certain conditions that must be present for a tone to be considered pure falsetto. He believes it must be a tone which is produced without any influence from any muscle in the larynx other than those which concern the production of falsetto. He considers normal falsetto range to be about one octave and breathy sounding. Because of a high rate of breath expulsion, the duration of the note lasts only three to four seconds. The sound lacks in aesthetic quality and there is an inability to make the tone crescendo or decrescendo. When falsetto takes on the opposite qualities of the above characteristics it becomes a “falsetto derived tone.”\footnote{Reid, \textit{Psyche and Soma}, 40.} This means that in order for it to have the ability to swell or diminish, not sound breathy, or have greater aesthetic quality, it becomes a “coordinated falsetto – one in which, to a degree, the chest register acts as a participating agent.”\footnote{Ibid.} Because falsetto uses some of the same musculature that head voice uses, falsetto is useful for developing this

\footnote{William Leyerle, \textit{Vocal Development Through Organic Imagery} (Geneseo, New York: College Printing Shop of the State University College at Geneseo, New York, 1977), 73.}
lighter mechanism of the head voice. Conversely, if a singer is unable to sing in his falsetto, he will most likely have a faulty head voice.

Marilee David defines head voice as “those pitches…which combine the muscular activities of low and falsetto registers in varying combinations so that the lower pitches exhibit more characteristics of the low register and only slight influence of the falsetto. As the pitch rises, the falsetto becomes more prominent while the influence of the low register decreases.” It is clear from this definition that the same musculature involved in producing falsetto is also involved in the production of the head voice. However, in head voice there is additional muscle interaction from the thyroarytenoids.

Because of similar musculature function between head voice and falsetto, falsetto may be an option for developing the rest of the voice. Bjoerling denied having a falsetto voice because he was gifted with natural muscle coordination. According to Reid, practicing in falsetto should only be used when such muscle coordination is lacking. He believes it will not benefit a singer who has already developed a great degree of this coordination.

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28 Ibid.
29 David, 62.
30 McKinney, 104.
31 Hines, 48.
If someone who is lacking the ability to smoothly transition between registers spends time practicing in falsetto, then he may be able to add brilliance and clarity to his normal singing range. In every healthy male larynx there is the possibility to produce falsetto. Any man who has cricothyroid muscles, vocal folds, and all the necessary cartilages is set up properly to sing in this register. Based off of these conditions, men are scientifically capable of producing falsetto. It is true that certain individuals may need a lot of coaxing and training in order to produce such a tone. However, any male who has normal laryngeal anatomy has the framework in place for singing falsetto. It does not make sense to focus on only practicing in one register of the voice. Studies show that using every part of the voice may benefit the whole and that possibly the low register benefits vicariously from singing in falsetto.

Initial practice in falsetto should be minimal and not consume too much time. This should be no more than five minutes per day. There are many different approaches on how one should practice his falsetto voice. Hines states that men should imitate the fullness of sound that female voices use in the range of their high operatic register. Practicing in this manner will encourage development of the head voice.

Many singers experience tension during vocal onset. For many, this tension can be difficult to eliminate. Singing in falsetto can be a way of eliminating this tension from the

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33 Hines, 90.
34 Reid, *The Free Voice*, 141.
35 Ibid., 140.
36 Hines, 89.
voice. It will enable a singer to truly feel the sensation of phonating without the tension to which he is most likely accustomed. An exercise for accomplishing this is to begin a note in falsetto on any vowel and then transition into head voice while remaining on the same pitch. This exercise can be difficult at first, but it is possible. It can teach a singer to reduce tension in the voice.

Another approach is to let the shift happen naturally. This approach for male voices suggests that the singer ascend the scale and when the voice reaches a point where it wants to shift into falsetto, he lets it happen naturally instead of forcefully. Initially, the voice will crack or break as there is a sudden shift from a predominance of one musculature to the other. The idea is to eventually eliminate this break by diminishing it or blurring it so it is unnoticeable. In fact, once the voice is considerably loose, it will feel as if it is shifting continuously on each pitch. The shift is not being forced or even initiated. It is allowed to happen naturally, which is a result of accurate and regular exercise. As a result of these efforts, the range of the voice will expand. “Muscle goes out of the vocalism as air flow takes over.”

The following are suggestions of pedagogue Cornelius Reid. He suggests that when beginning falsetto exercises, only a narrow range of pitches be used. It would not make sense, in an effort to create greater relaxation in the vocal musculature, for a singer to tense his voice while singing falsetto in order to increase the range. The safe pitch range for males to begin their

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38 Ibid.

39 Smith and Chipman, 102.

40 Ibid.
falsetto exercises spans from E4 to B5. Initial practicing in this area of the voice will yield less than desirable results at first. However, once the falsetto voice has been established in this small range and the singer is able to make a clear tone with adequate texture, then the falsetto can be used further down in the vocal range. The singer should be cautioned to not sing above B5. It is helpful to sing exercises in a descending pattern down into the lower register as far down as one can phonate. The volume should decrease as the singer works his way down. If this process is worked correctly, then the upper register will be made more pure and the lower register will be made more pure as well. A dedicated practice of this technique will provide the singer with greater amounts of clarity, resonance, and flexibility in the lower register.  

In taking into account Stanley’s historical stance that “every great singer uses a developed and properly resonated falsetto,” it is not to be the only element in the high note of a great singer’s voice. It is to be coordinated into the overall production of the sound. For this reason, practice of the falsetto should be considered. When a singer first begins practicing in his falsetto, the sound will have a high degree of breathiness as a result of the musculature not being fully developed. This breathiness is one of the characteristics of the pure falsetto. Finding and using the pure falsetto is of key importance. If in singing falsetto, the singer interferes with the

41 Reid, *The Free Voice*, 140.
42 Stanley, 68.
43 Reid, *Psyche and Soma*, 40.
44 Stanley, 69.
45 Reid, *Psyche and Soma*, 40.
seemingly unpleasant sound, the pure falsetto will become constricted in the throat and will be non-existent.\textsuperscript{46}

Stanley argues that in order to most effectively develop falsetto tones, it is beneficial to sing an [i] vowel with the lips rounded, almost as if singing [y] in French. This vowel formation should be carried into the upper extremes of the voice. More importantly, however, is that it is also carried down to the lower extremities of the voice.\textsuperscript{47} This may be difficult at first but improvement comes quickly with a little practice. The falsetto voice will continue to function throughout almost the entire lower register, though it may be reduced to a “whisper” at its lowest points.\textsuperscript{48} Presumably, after consistent practice, the upper register will eventually develop and falsetto will no longer be apparent. The voice will function as a complete whole instead of being broken up by distinct, differently sounding registers. Stanley contends that the range of the voice will extend as high as the falsetto is able to extend.\textsuperscript{49}

The goal of any singer should be absolute freedom and relaxation in his singing. Anatomically, the production of falsetto shares musculature with other parts of the voice. Since most males use the lower register for speaking, it is considerably stronger and better coordinated than the higher register. Subsequently, an imbalance is created. With proper falsetto exercises, a singer may strengthen his high register, thus creating a balance in the voice. Practicing in falsetto can lead to greater vocal coordination and an elimination of the breaks and cracks that are often

\begin{itemize}
\item \textsuperscript{46} Stanley, 69.
\item \textsuperscript{47} Ibid., 70.
\item \textsuperscript{48} Ibid.
\item \textsuperscript{49} Ibid.
\end{itemize}
heard in changing between registers. With this balance in his voice, the male singer can also add
greater brilliance to his lower register. Research shows that singing in falsetto can give great
benefit to the singing voice in a variety of ways.