



On the Voice

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Warming Up the Choir: Bridging the Domains of Singing Voice Pedagogy and Voice Science

by Regina McAllen, Melissa Forbes, and Diane Hughes

For many singers, the choral director¹ serves as their most influential teacher of singing.² Additionally, choral directors may also be singing voice teachers and provide singing lessons to individual students. Warm-up exercises are used in both contexts. However, noticeable differences in terminology arise not just between choral directors and singing voice instructors but also among speech-language pathologists and voice scientists. The introduction of newer terminology adds to the existing confusion, requiring clarification in cross-disciplinary discussions and within the field of voice education.³ Moreover, scholarly research on the most effective methods for teaching vocal technique in a group setting is scarce.⁴ Similarly, there are a range of perspectives on the utility of warming up the voice within the voice science community.⁵ Such divergences in both practice and research present an opportunity to explore the purpose and objectives of choral warm-ups, with a view to bridging the gap between the pedagogical and voice science domains and fostering a more comprehensive understanding of the warm-up for choral directors.

Vocal Exercises and Their Contexts

A fundamental step in teaching students to sing involves warming up the voice. In the following discussion, we specifically focus on those exercises that fall within “warm-ups,” as these are central in preparing and facilitating students to sing. In doing so, however, we do not discount the inclusion of a cooldown routine. Rather, we view this as a discrete category of vocal exercises that is intended to produce different physiological effects from warm-ups.⁶

The literature firmly establishes that warm-up routines are widely practiced in both choir rehearsals and singing lessons.⁷ One of the most prominent figures in the field of voice pedagogy, Richard Miller (1926–2009), characterized the choral director as a voice teacher, emphasizing their need to possess exceptional qualifications to develop the singer holistically, both as a soloist and chorister.⁸ Through warm-up exercises, teachers may strive to deepen students’ understanding of their voices, address their unique vocal needs, and foster confidence in their singing abilities. Choral directors and singing voice teachers, however, often hold contrasting viewpoints regarding the purpose of warm-

ups. The terminologies applied to vocal exercises are not universally standardized either, with different exercises adopting varying practices related to voice function and/or vocal efficiency.⁹ This complexity extends to vocal education where terms such as “warm-ups,” “singing exercises,” “vocalises,” “functional exercises,” and “exercises for vocal technique” may be used without establishing a clear distinction.

Choral directors often use the term vocal (or choral) “warm-ups” as a comprehensive phrase encompassing singing preparation, skill acquisition, and preparation for performance. Patrick Freer states that a vocal warm-up is “a sequence of activities focused on the coordina-

tion of vocal skills in preparation for the requirements of a specific rehearsal.”¹⁰ On the other hand, Miller emphasized the need for a clear distinction between vocalization for technical development purposes and vocalizing before a performance.¹¹ Supporting Miller’s perspective, Matthew Hoch and Mary Sandage agree that the nature and purpose of a warm-up varies depending on whether it is used for vocal training preparation or as a preperformance exercise.¹²

During individual singing voice lessons, warm-ups may be used to prepare the student for exercises in the vocal technique to follow, or beyond the lesson, and may be used for performance preparation.¹³ The singing voice teacher can exclusively concentrate on a warm-up tailored to individually targeted functional and vocal technique exercises. Here, distinctions can be made between exercises that prepare the voice to sing, exercises to render the initiation of healthy and efficient singing, and those targeted toward technical development. The nature, purpose, and duration of these exercises are therefore context dependent. In contrast, choral directors may use the term vocal “warm-ups” more broadly to encompass creating group focus, achieving a unified blend, intonation, aural and function exercises, and for performance preparation.¹⁴ Choral directors will often use solfège during warm-up time to assist singers in learning aural and music theory skills¹⁵ that their instrumentalist counterparts usually already possess.

Performance preparation is another point of departure between choir rehearsals and individual voice lessons. In a choir setting, the director plays a crucial role in guiding the preparation process, eliminating the need for singers to independently devise their own routine. Consequently, the choral director must carefully choose exercises so that the vocal warm-ups comprehensively address both voice and function.¹⁶ In contrast, the individual singer will customarily assume responsibility for warming-up prior to a performance, employing their own distinctive systematic warm-up procedure.¹⁷

Choral directors and singing voice teachers share the common objective of addressing technical issues and promoting skill acquisition. However, there remains a notable difference between the two. Since it is usually not practical for choral directors to predict each singer’s individual vocal requirements, they tend

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to incorporate vocal exercises into the warm-up, aiming to provide a comprehensive and balanced opportunity for skill development across the ensemble.¹⁸ On the other hand, singing voice teachers have the advantage of working one-on-one with singers, allowing them to provide specific technical exercises tailored to each student. This personalized approach enables the singing voice teacher to address specific technical challenges and facilitate targeted skill development.¹⁹

For a choral director overseeing a large and diverse ensemble, engaging all students simultaneously can be challenging, which makes the inclusion of focusing exercises crucial.²⁰ High school students exposed to constant noise during bus commutes, in hallways, cafeterias, lively classrooms, the school bell, and during sports activities must transition to focused listening when they enter rehearsals.²¹ It therefore becomes challenging for choral directors to enhance the auditory sharpness and mental alertness of singers.²² The choral director faces the task of motivating and sustaining the interest of multiple singers with different vocal needs in a group setting. To achieve this, the choral director employs diverse content, energetic pacing, and efficiently covers a wide range of choral concepts in innovative ways.²³ When comparing individual singing voice lessons and choir settings, however, there is a distinction in the application of focusing exercises. In individual voice lessons, these exercises are generally considered unnecessary due to the one-on-one setting, which tends to promote individual motivation and focus throughout the lesson.²⁴ In this setting, there is less need to direct the student's focus, allowing for extensive and detailed work to be undertaken during warm-up through both functional and technical exercises.

Voice Science and Warming Up

Of note for this discussion is that voice science and singer perceptions can vary regarding the role, nature, and effectiveness of the warm-up.²⁵ There also appears to be no clear consensus among practitioners regarding the definition and purpose of warming up.²⁶ Despite this, some studies provide evidence supporting the physiological advantages of warming up. For example, research has shown that warming up can enhance vocal quality in female singers, albeit with variations ob-

served across voice categories.²⁷ Furthermore, warming up has been found to promote more resonant and in-tune singing in particular choral contexts, to impact phonation threshold pressure (though effects may differ between individuals), and to enhance the regularity and stability of vibrato for some singers.²⁸ A study by Edward Połrolniczak and Michał Kramarczyk aimed to assess the potential positive impact of vocal function exercises on vocal quality. Their analyses yielded noteworthy improvements across a wide range of parameters. The findings indicate that engaging in vocal technique exercises as part of a warm-up enhances “the regularity of the acoustic signal of singing.”²⁹ According to Jo Levett and Tim Pring’s research, including choir warm-up sessions is important for amateur singers who may lack awareness of vocal health risks and how to address them.³⁰ Although some studies propose that tailored voice function exercises conducted over several weeks could potentially improve a singer’s vocal range,³¹ Frank Ragsdale and colleagues determined that there is no uniform or optimal duration of warm-ups that results in both objective and subjective improvement in voice quality.³²

The complexity of warm-up considerations and the self-perception of singers is further evident in a study conducted by Lynda Moorcroft and Dianna Kenny, who recorded singers performing eight measures of a classical aria.³³ Six highly trained listeners then rated the singers’ vocal quality and attempted to identify if the recording was pre- or postvocal warm-up. Based on their self-ratings, all singers agreed that their tone quality had improved significantly after twenty-five minutes of vocal exercises. However, the expert listeners could not reliably determine whether the voices had improved. Similarly, Carla Ann Helmbrecht’s study on warm-ups also found that some singers believed their warm-up routine improved their vocal quality, although analyses of voice quality (objective measurements of vocal perturbation and formant structure) revealed that their warm-up method was ineffective and produced “the opposite of the desired effect, which might even be harmful to the voice.”³⁴ Another study that aligns with these findings is the exercise duration research conducted by Ragsdale and colleagues who examined nine classical vocalists over five weeks.³⁵ Again, expert listeners found no significant differences in vocal quali-

ty before or after the singers had warmed up. However, all participants *felt* their voices responded positively to a five or ten-minute warm-up. Perhaps the differences in these results between measures, ratings, and self-perception, may relate to the singers' kinaesthetic awareness and a perceived improvement in the ease of their vocal delivery which are beyond objective measures.

Comparisons are often made in the literature and in practice between singers and dancers or athletes, who warm-up muscles before their practices and performances. The underlying assumption here is that warming up the vocal folds stimulates blood circulation and enhances overall function.³⁶ However, Rima DeFatta and Robert T. Sataloff examined research that compared the muscles of athletes and singers. Following a comprehensive view of the available literature, they concluded that making a comparison of results was "challenging."³⁷ Nonetheless, the authors proposed that incorporating warm-up (and cooldown) exercises, as suggested by experienced voice pedagogues, remains "appropriate and prudent."³⁸

While warming up for singing remains "hotly contested,"³⁹ the disparity in the research findings reported above may be influenced by a lack of consistency in research parameters, participant abilities and experience, and musical styles. This inconsistency makes it difficult to align results in such a broad field. Furthermore, while some uncertainty surrounds the specific physiological benefits of warming up, it is important to highlight that none of the studies examined in this discussion reported any serious adverse outcomes associated with engaging in appropriate vocal warm-up. While the prevailing belief among singers supports the relevance of vocal warm-ups and further to the kinaesthetic reasoning offered above, a psychological factor may also influence singers' beliefs in the positive impact of vocal warm-ups. Confirmation bias may also play a role here, as singers may interpret their experiences in line with the commonly held belief that warm-ups are beneficial.⁴⁰

Beyond the Physiological

Perhaps significant merit in warming up lies in its psychological advantages. For solo singers, warming up provides an ideal opportunity to quieten the mind, fo-

cus attention on the body and sound production, and even begin to move psychologically into "performance mode." In addition, for choirs, warming up is an opportunity for singers to tune into the group sound and focus on becoming part of the collective. While not necessarily denying the physiological benefits of warm-ups, Stuart Barr asserts that preparation for singing requires nurturing both the body and the mind: "We have a vocal instrument that follows physiological rules, but which is controlled by a brain that follows emotional ones."⁴¹ Webb agrees, stating, "While singing is physical, it also requires a great deal of mental effort. Mental warm-ups are a great way to get singers' minds involved."⁴² Edward Byrom concurs and emphasizes that fostering a collective mindset takes precedence over technical objectives in the choral warm-up process.⁴³ Highlighting the engagement of both mental and physical abilities in a choral context, Robert Briggs suggests that the term "activation exercises" may be more fitting for the choral warm-up process. This encompasses the concept that one of the purposes of the warm-up is to enhance focus.⁴⁴ In line with this perspective, Peter Hunt recognizes that some groups may require additional support aligning their mental focus with their physical presence. Hunt, therefore, advocates for a group warm-up that not only establishes a musical connection but also serves as a focusing activity.⁴⁵ Similarly, John Hylton recommends the use of focusing activities to encourage singers to think as a cohesive ensemble.⁴⁶

Recommendations and Considerations in Defining Vocal Warm-Ups for Choirs

Despite the distinct pedagogical differences between choral singing and solo singing, the choral director is in a position to address and accommodate dual goals by supporting individuals within the group setting by focusing on essential vocal concepts and techniques.⁴⁷ However, Duane Cottrell reports that choral directors express a sense of being underprepared to integrate the most recent discoveries in voice science and pedagogy into their practice.⁴⁸ Frauke Haasemann and James Mark Jordan highlight the convergence of teachings, emphasizing that both voice instructors and choral instructors prioritize key aspects such as proper breathing, posture, vocal range, creating resonating capacity, and

vocal flexibility.⁴⁹ By leveraging these shared principles, the choral director can effectively nurture individuals and foster their growth, paving the way for their success within the ensemble and beyond.

In recognition of the duality of choral directors' influence, there is an opportunity to provide guidance and instruction to choral singers for the development of essential skills for effective participation while equipping them with the necessary tools to enhance individual vocal technique. It is appropriate to note though that both solo and choral singers must adjust their vocal technique to accommodate the distinct requirements of each context.⁵⁰ This entails adapting phonation and articulation to achieve a vocal "blend" while also maintaining engaged respiration, physical freedom, and vocal flexibility. The latter essential elements are shared by both solo and choral singing.⁵¹ In the context of any singing training, teachers should adopt distinct and intentional approaches to warm-ups used in lessons, rehearsals, and preperformance.⁵² Simply going through a standard routine of vocal exercises without intent serves no purpose.⁵³

To attain optimal outcomes, it is crucial for teachers and directors to set clear objectives for both choir and solo singers and to customize vocal exercises accordingly.⁵⁴ By adapting their methods to support the unique needs and goals of individual performers, singing voice teachers can provide tailored guidance and ensure that warm-up routines align effectively with the specific requirements of solo singing. Similarly, in adopting a dual role, choral directors can design warm-ups that account for the types of warm-ups suited to their groups and to the development of the singers within them.

When preparing for performance, in our experience it is crucial to create warm-up routines that recognize both the physical and psychological aspects of singing, all aimed at achieving captivating and engaging performances. Such warm-ups may encompass a range of rituals, vocal exercises, and mental strategies designed to enhance confidence, concentration, and overall stage presence. Unlike vocal function and technique exercises geared towards voice production and development, pre-performance warm-ups create a state of readiness and cultivate an optimal performance mindset for both solo singers and choir members alike. Therefore, choral directors might wish to reflect on how to best tailor their

warm-up routines for the different requirements of rehearsal and performance.

The duality of the choral director's role presents immense potential for integrating effective warm-ups that address both the physiological and psychological dimensions of the singing voice. However, to fully leverage this potential, it is essential for voice professionals (choral directors, singing voice teachers, speech pathologists, voice researchers) to bridge the gap in terminologies and methods. This has the potential then to establish a cohesive and comprehensive framework for warming up. The first step in this direction is to recognise that any singing—whether choral or solo—exists on a continuum, from initiation of tone (where warming up is usually undertaken), to more targeted and technical exercises, to rehearsing repertoire, and ultimately, to performance. When seen this way, warming-up a choir for routine rehearsal (including achieving mental focus and technical development) or warming up for performance (to achieve energized, confident performance readiness) should take different forms and contexts. Based on the literature detailed in our discussion, we make the following distinctions in categorizing choral warm-ups and their contexts that bridge the fields of singing voice pedagogy and voice science: (a) preparation exercises, (b) functional exercises for efficient and healthy vocal delivery, (c) vocal tech-

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nique and expression exercises for specific skill acquisition, and (d) preperformance exercise routines. Table 1 provides a summary of these categories along with their context and related considerations, examples, or outcomes. These are broadly presented; each style of singing would have its own proclivities for classical and contemporary stylisms.

We envisage that the distinctions provided in Table 1 will assist in clarifying warm-ups and their contexts. This is particularly relevant to the duality of the choral director role. Despite conflicting research results identifying differences in the self-perception of singers and other measures, it remains judicious to continue warming up the voice. Broadly, though, research is needed to explore the impact of warm-ups on executive functions such as attention, focus, and memory in relation to performance preparation. Additionally, considering that singers perceive warm-ups as being beneficial, investigating the role of warm-ups as psychological or mind-body preparations, alongside their physiological aspects, is warranted.

Conclusion

As the literature identifies, the role of a choir director in music education can extend far beyond leading a choral ensemble. In recognizing the influential role of choral directors as primary voice teachers for many singers, a collaborative path between choral singing, singing voice pedagogy and voice science, that maximizes the benefits of warm-ups and nurtures the true potential of our students' voices is justified. In the context of the choir, warm-ups require consideration of the group context and its situation, the body/mind connection, vocal production for efficient delivery, the acquisition of vocal and musical skills, and the facilitation of preperformance confidence. These considerations cross physiological and psychological boundaries and bridge the knowledges afforded by singing voice pedagogy and voice science. 

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Table 1. Choral warm-up contexts, categories, and considerations/examples.

Context	Preparation	Functional	Technical/Expressive	Pre-performance
Nonverbal	Movement	Breathing for singing	Breath management Gestures	Readiness Context dependent
Vocal	Sounds	Vowels Articulation Registration	Range extension Resonance	Selected exercises
Physiological	Breathing	Tone initiation Balanced/flow phonation Vocal health	Specific skill development Expressive techniques	Selected repertoire
Psychological	Focus	Focus	Focus	Focus Confidence

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NOTES

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