

The efficient posture in voice performance: myths, truths and suggested areas of research

Introduction

The relationship between posture and vocal performance represents a critical yet underexplored area within both vocal pedagogy and performance science. In the contemporary performing arts industry, singers and actors are increasingly required to adapt to diverse physical demands, from choreographed movements to prolonged non-neutral positions, without compromising vocal quality or health. (College Art Association of America, 2009; D'haeseleer et al., 2017; Sandgren, 2005; Thurman & Welch, 2000)

Despite the acknowledged importance of alignment for efficient voice production (Jones 1972; Rubin et al. 2004; LeBorgne and Rosenberg 2019), and the documented connection between postural changes and vocal efficiency in both peer-reviewed literature (Heman-Ackah 2005; Kooijman et al. 2005; Nacci et al. 2012) and grey literature (Scoppa 2000; Busquet 2002; Kendall McCreary et al. 2005; Banfi 2010; Dimon 2020; Gucciardo 2022a) the absence of a universally agreed “optimal posture” highlights a significant gap in current professional guidance. Multiple interacting variables, including musical genre, stage requirements, individual anatomical structure, pre-existing postural habits, and physical limitations, have been identified as influential in determining functional vocal posture (Heman-Ackah 2005; Callaghan 2014; Rollings 2018). These factors collectively challenge the notion of a single, universally applicable and static postural model for all singers.

There are several reasons why I chose this topic for this assignment. I am currently a freelance vocal coach and singing teacher, working predominantly with actors and musical theatre performers. In my professional practice, I often need to address voice training in postures determined by the character being portrayed or by the instructions of a director or choreographer. Beyond characterisation, other variables also affect posture and postural habits, including previous training, personality traits, and cultural influences (Scotto Di Carlo 1998; Scotto Di Carlo 2002; Miller 2004; Grimmer-Somers et al. 2008; Shin et al. 2016; Cardoso et al. 2019; Redolfi et al. 2020; von Suchodoletz and Hepach 2021; Savani et al. 2022). These elements create a complex interplay between the artistic requirements of performance and the physiological needs of healthy, efficient voice production.

During my professional work, I have observed that different postures can influence the ease of singing in particular voice qualities or specific parts of the range. However, while certain positions may be beneficial for some singers, they can be detrimental for others. This observation motivated my Module 1 assignment, which explored in greater depth the relationship between cervical posture and voice. The aim was to investigate how changes in head and neck alignment might alter the physical and acoustic conditions for vocal production, and to identify whether consistent pedagogical guidelines could be developed. Research confirms that variations in cervical posture can influence multiple aspects of vocal production, such as:

- Pharyngeal airway space and vocal tract configuration (Muto et al. 2002; Muto et al. 2006; Johnson and Skinner 2009)
- Laryngeal movement and tilt (Honda et al. 1994; Scotto Di Carlo 1998; Honda et al. 1999; Scotto Di Carlo 2002; Knight and Austin 2020)
- Acoustic parameters and formant distribution (Flory 2016; Chiu et al. 2022)
- Perceived phonatory effort and vocal fatigue (Lagier et al. 2010; Gilman and Johns 2017).

These effects are not confined to classical singing (the dominant focus of existing research) but are equally relevant to contemporary commercial music, musical theatre, and spoken performance. However, no universal consensus exists regarding the 'ideal' cervical posture for performance (Knight and Austin 2020). One reason for this lack of agreement is that different voice qualities and musical genres may require distinct postural alignments (Estill et al. 1990; Honda et al. 1994; Titze et al. 2011). In addition, stage conditions (such as costumes, wigs, footwear, and choreographic demands) can modify a performer's posture in ways that influence vocal performance, potentially requiring further adjustments (Miller 2004; Heman-Ackah 2005; Rollings 2018). Another important factor is that individuals differ in body type and may present pre-existing postural conditions factors (Scotto Di Carlo 1998; Grimmer-Somers et al. 2008; Cardoso et al. 2019), meaning that a single posture cannot be effective in all circumstances. This aspect, in my view, is significantly underestimated in voice pedagogy, where some approaches (McKinney 2005; Nair 2007) tend to prescribe one alignment, frequently static and occasionally rigid.

In my Module 1 research, I examined a range of techniques, practices, and protocols, including yoga, the Metodo di Propriocezione Elastica (PROEL), the Alexander Technique, and the Feldenkrais Method, all of which emphasize the inherently dynamic nature of posture and its

impact on voice. Rather than prescribing a fixed alignment, these disciplines view posture as a process of continuous adjustment, where balance, movement, and responsiveness are central (Feldenkrais 1987; Craze 1996; Borrigan et al. 2008; Heirich 2011; Worsley 2016; Borrigan Torre et al. 2017). Despite their different cultural and historical origins, they share key commonalities such as fostering heightened proprioceptive awareness, releasing unnecessary muscular tension, and integrating breath with movement (Feldenkrais 1987; Craze 1996; Gelb 1996; Borrigan et al. 2008; Heirich 2011; Worsley 2016; Borrigan Torre et al. 2017; Lucchini et al. 2018; Alexander 2019). Since completing that study, I have continued to explore these methods through both practical training and theoretical inquiry, in order to deepen my understanding of their dynamic relevance to voice work.

I have particularly deepened my knowledge of yoga. As a long-term yoga practitioner, in recent years I have begun to identify elements of yoga training that could be meaningfully integrated into vocal pedagogy, drawing both on scientific evidence and on established teaching principles. Beyond the healthy and non-competitive pedagogical approach that yoga fosters (Radha 2006), my experience indicates that specific asanas (yoga poses), breathing techniques, and mindfulness-based practices can contribute to enhancing vocal efficiency, postural adaptability, and stress management in performers.

These disciplines, particularly yoga, also offered me another insight that I developed further during my Module 3 research on Music Performance Anxiety (MPA), where I examined the relationship between posture and emotions. I examined the criteria established by the American Psychological Association (APA) for evaluating treatments for this psychological condition (Chambless and Ollendick 2001). Within this framework, physical approaches such as yoga and the Alexander Technique have been described as promising for MPA (Valentine et al. 1995; Khalsa et al. 2009).

Research has suggested links between posture, emotions, and hormonal or behavioural responses (Carney et al., 2010; Cuddy et al., 2015).

Similarly, Bloch (1993) observed that replicating the breathing patterns, facial expressions, and postural alignments characteristic of specific emotions could induce those same emotions. This led to the development of “ALBA Emoting”, a method enabling actors to intentionally evoke, recognise, express, and regulate emotions through targeted physical adjustments.

For vocal training, these insights suggest that postural work could influence not only physiological and acoustic aspects of voice production but also emotional regulation, offering a potential pathway to mitigate MPA through targeted physical interventions.

Clinical experience has also shaped my interest in this area. A significant number of my students have presented with vocal difficulties or complaints, such as hoarseness, challenges in negotiating the passaggio, and unwanted flips or breaks in the voice, that were not explained by laryngoscopic examinations and did not appear to result from technical deficiency, as their true vocal folds appeared healthy and their technical control consolidated over time. In some cases, further medical investigation revealed underlying musculoskeletal issues, such as asymmetry at the level of the arytenoid cartilages or cervical disc prolapse affecting the position of the larynx. When physiotherapy or laryngeal manipulations were prescribed, vocal symptoms often improved or disappeared entirely. These cases suggest that cervical posture and musculoskeletal integrity can exert a direct and significant influence on vocal function, even in the absence of identifiable pathology of the vocal folds.. However, some studies highlight that the relationship between posture, subtle laryngeal asymmetries, particularly those involving the arytenoid cartilages, and functional vocal challenges remains insufficiently standardised in both assessment and intervention protocols (Bonilha et al. 2009; Hussein et al. 2011; Mathew and Menon 2021; Raviraj and Menon 2022; Bamigboye et al. 2024).

This lack of consensus leaves practitioners reliant on anecdotal evidence, grey literature from fields such as osteopathy and manual therapy (Rubin et al. 2000; Ricci Maccarini 2007; Maccarini et al. 2009; Ricci Maccarini et al. 2009), and their own experiential judgement to make case-by-case decisions in training and rehabilitation.

To summarize, from a workplace perspective, the absence of unified detailed guidelines on how to work on posture in the vocal performance highlights a clear developmental need: the ability to assess, adapt, and teach postural adjustments that align with the artistic and physical demands of each performer.

For this assignment, my aim is to investigate, through a thorough narrative review of the available literature, the multiple domains of vocal performance and training, including psychological and emotional dimensions, that may be influenced by posture, as a natural continuation of my previous works. In particular, this study will focus on expanding my understanding of thoracic posture, which has been comparatively less explored in earlier projects. Unlike previous assignments that focused on specific, isolated aspects, in this study I aim to adopt a broader and more integrative perspective, while retaining the ability to distinguish and critically analyse specific themes related to posture, such as posture and emotions, posture and fatigue, and posture and breathing. Building on this broader and more integrative perspective, this study seeks to develop evidence-based tools and criteria for incorporating targeted postural variations into vocal pedagogy, while simultaneously

enhancing my observational and intervention skills. It will consolidate a reflective practice that integrates scientific research, professional experience, and student feedback, in line with the learning outcome of applying research-informed strategies and engaging in critical self-evaluation for continuous professional growth (Schon 1983; Brookfield 1987; Gall et al. 1996; Brookfield 1998; Warwick 2007; Ghaye 2010; Costley et al. 2012; Winter 2020; Winter 2022) . I will also draw on knowledge from complementary disciplines such as yoga, the Alexander Technique, the PROEL method, the Feldenkrais Method, enriching my pedagogical toolkit with approaches that support postural efficiency and vocal performance. The analysis will include both scientific studies and pedagogical sources, with the purpose not of defining a universally “perfect” position, but of establishing guiding principles for the conscious and adaptive use of posture in vocal performance and of suggesting further investigations.

Learning and Development Aims

I believe that deepening my understanding of the relationship between posture and voice will significantly enhance both my professional practice and my career. This study will enable me to:

- Develop the ability to guide students in postural adjustments that can reduce vocal fatigue and effort during performance, acknowledging the established link between posture and vocal effort (Lagier et al. 2010; Caçador 2018)
- Increase awareness of postural habits that may predispose individuals to dysphonia, enabling me to promote preventive strategies or recommend timely referral for medical evaluation. (Gilman and Johns 2017)
- Recognise when postural configurations are likely consequences, rather than causes, of voice disorders, allowing me to guide students towards appropriate professional assessment. (Lagier et al. 2010; Nacci et al. 2012; Nacci et al. 2017; Bruno et al. 2020)
- Develop the ability to use postural training and adjustments to mitigate MPA – Music Performance Anxiety or to help my clients to express their emotions and communicate with the audience more efficiently. (Valentine et al. 1995; Chambless and Ollendick 2001; Khalsa et al. 2009; Carney et al. 2010; Cuddy et al. 2015)
- Acquire greater knowledge to help students achieve postural alignments that facilitate efficient breathing, considering the relationship between posture and breath (Hoit, 1995; Hoit et al., 1996).
- Investigate whether thoracic posture influences cervical posture and, building on my Module 2 findings, determine how such changes may affect voice production (Joshi et al. 2019)

- Explore how posture and alignment influence overall voice production (including range, pitch, quality, and resonance), building on my Module 2 findings with a specific focus on the ways thoracic posture may affect cervical posture and, indirectly, voice production. (Caçador 2018)
- Integrate and evaluate physical and vocal training methods that support efficient posture in vocal performance. Through this integration, I aim to enhance my evaluative and corrective skills, while broadening my teaching repertoire with multidisciplinary approaches that empower performers to self-manage posture and voice in demanding artistic contexts.

Expected Learning Outcomes

The outcomes of this programme are directly aligned with my professional development. By the conclusion of this study:

- I will apply evidence-based postural strategies within technical, artistic, and rehabilitative teaching contexts.
- I will refine my ability to assess and adapt students' posture in alignment with both artistic requirements and vocal health principles.
- I will expand my repertoire of interdisciplinary tools, drawing from relevant methodologies and tailoring interventions to each student's needs, learning style, and physical capabilities.
- I will strengthen my evaluative sensitivity in identifying posture-related vocal challenges, even when laryngeal examination results appear normal, recognising when vocal difficulties originate from compensatory body-use patterns.
- I will be better able to identify the influence of psychological and socio-cultural factors, such as habitual body language, emotional state, or cultural posture norms, on vocal performance.
- I will guide students towards self-awareness and self-regulation in both posture and voice, fostering autonomy in their artistic and professional practice.

Methodology

The ontology and epistemology of the positivist paradigm assume that an objective physical and social reality exists and can be measured (Shanks and Bekmamedova 2018; Winter 2020). It typically seeks to verify hypotheses through measurement and establish causal relationships (Park et al. 2020) While I recognise the value of such approaches, I believe that voice pedagogy involves multiple interacting variables (psychology, proprioception, artistic

preferences, cultural background, body morphology), making it difficult to apply purely positivist methods without losing essential dimensions of practice (Callaghan 2014; McCoy 2014; McCoy 2021).

Moreover, positivist research often requires the researcher to remain distant and objective, external to the phenomenon studied (Shanks and Bekmamedova 2018). This contrasts with voice pedagogy, where teachers frequently act as insider researchers, deeply immersed in the practices they investigate. Insider researchers are “immersed” in the process (Easterby - Smith et al., 2008, p. 94), engaging in both reflection-in-action (thinking while doing) and reflection-on-action (thinking after the event) (Schon 1983; Ghaye 2010).

I therefore reject a strictly positivist stance, recognising that reality in this field is not always fully measurable. A post-positivist approach, which acknowledges the limits of measurement yet posits a single measurable truth (Crotty 1998; Trochim 2007; Winter 2020), also appears insufficient for my aims. Posture, emotions, and daily behaviours are shaped not only by biomechanics but also by societal change. For example:

- Prolonged smartphone use is linked to altered cervical posture (Berolo et al. 2011; Jung et al. 2016; Brühl et al. 2023).
- Social and cultural etiquette, such as norms of stage presence or gender-related posture expectations, affect habitual alignment and movement (Shin et al. 2016; von Suchodoletz and Hepach 2021; Savani et al. 2022).

Given these influences, I will adopt a social constructivist paradigm (Kawulich 2012), which sees reality as socially constructed and shaped by collective meaning-making (Easterby - Smith et al. 2008; Winter 2020). This approach values observation, critical reflection, and interpretation, allowing me to integrate physiological, psychological, and socio-cultural dimensions when analysing posture–voice relationships. I will compare sources that focus on posture and society, posture and emotions, posture and health, and I will attempt a synthesis after critical analysis. As a substantial portion of the observations derives from direct experience and professional practice, a pragmatist paradigm (Feilzer 2010) may also offer valuable insights. In particular, the pragmatist paradigm will help me formulate hypotheses and pursue new lines of research when the findings of available papers apparently collide with my direct or anecdotal experience.

Hermeneutics and Narrative Review

Hermeneutics forms the foundation of this assignment, which aims to interpret and synthesise literature (Costley et al. 2012). I will employ a narrative review, the most suitable format for integrating qualitative interpretation, cross-disciplinary evidence, and practice-based insights (Sukhera 2022).

This choice is justified because:

- Research on posture and voice spans multiple disciplines (voice science, posturology, physiotherapy, performing arts medicine, pedagogy) and often consists of small-scale studies or case reports.
- A narrative review permits integration of peer-reviewed "white" literature with non-peer-reviewed "grey literature" (Lawrence et al. 2014; Winter 2022). Much of voice pedagogy relies on grey literature, such as singing manuals, especially in prescribing "ideal" singing posture. My previous assignments have already noted a lack of consensus in this area, making grey literature analysis both necessary and valuable (Adams et al. 2017).
- This approach facilitates combining theoretical literature with professional experience, generating conclusions applicable directly to teaching practice.

I recognise that reviewing relevant literature cannot always follow a rigid structure; interpretation requires moving between parts and the whole (Boell and Cecez-Kecmanovic 2010; Boell and Cecez-Kecmanovic 2014), the Hermeneutic Circle (Dilthey 1957), to contextualise each source within the broader body of knowledge.

Literature Collection Strategy

This narrative review will follow Toronto & Remington's (2020) step-by-step framework for combining peer-reviewed and grey literature in a single synthesis. This will guide formulation of the research question, inclusion/exclusion criteria, search strategy, and thematic synthesis.

To produce a comprehensive and current review containing primary sources relevant to the problem (Onwuegbuzie and Daniel 2005), I will apply explicit inclusion and exclusion criteria.

Sources will be collected from:

Online research databases, including the UWTSD – University of Wales Trinity Saint David online library, PubMed, and ResearchGate.

1. Inclusion criteria: articles with “posture” and “voice” demonstrating a clear link, in the title or in the abstract, between **overall body posture** (as opposed to exclusively facial, or articulatory posture) and voice. Additionally, a targeted search will be conducted using the keywords "arytenoid asymmetry", "arytenoid posture", and "arytenoid dislocation". An additional search will focus on the relationship between posture and breathing, using the keywords "posture" combined with "respiration" or "breathing".

Exclusion criteria: I will exclude references to jaw posture, SOVT posture, facial posture or severe medical conditions (e.g., Parkinson's disease, vestibular disorders) considered too specific for my scope; studies focusing only on one topic while only incidentally mentioning the other: in database searches, it is common to find articles that focus exclusively on either posture or voice, mentioning the other term (“voice” or “posture”) only incidentally within the text. In other cases, both terms may appear but without a direct conceptual link (for example, when describing how yoga instructors use their voice to guide students through postural changes). Such articles will be excluded.

Prioritisation: Peer-reviewed articles will be prioritised. If the search returns an excessively large number of relevant articles, priority will be given to the most recent publications or, where verifiable via research databases, those with the highest citation counts. Books, particularly those not available online and accessible only through nearby libraries, will be excluded due to time constraints

2. MA Voice Study Centre, which hosts an extensive posture section, predominantly grey literature but highly valuable for pedagogical perspectives.
3. Ursino's “Voce & Postura”, an Italian collection of essays on posture–voice relationships (Ursino 2011). I will select relevant chapters (excluding therapeutic protocols aimed at speech therapy) and mine their bibliographies for further peer-reviewed sources.
4. Previously used literature from earlier assignments: materials on posture already collected, analysed, and cited in my past assignments will be revisited from a different perspective. Their peer-reviewed references will be re-examined to identify additional relevant studies and expand the evidence base for this project.

Data Handling and Coding

As Onwuegbuzie (2005) observes, reviews are often underdeveloped, dated, or theoretically weak (Onwuegbuzie and Daniel 2005). To avoid these pitfalls, I will proceed as follows .

Sources will be separated into white and grey literature. Peer-reviewed material will be further categorised using Cooper's taxonomy (Cooper 1988), facilitating comparison with grey literature.

In line with the Adams framework (Adams et al. 2017) (Adams), all non-peer-reviewed sources will be clearly marked and critically evaluated against available scientific evidence. According to Kepes et al. (2012), grey literature will be categorised into three tiers based on credibility (Winter 2022):

- Tier 1: books, book chapters, non-peer-reviewed journals, government/think tank reports.
- Tier 2–3: news articles, videos, blogs, emails—used only when essential and no Tier 1 material exists for the topic.

Priority will be given to Tier 1 sources, while the use of Tier 2 and 3 will be minimised as far as possible.

The material will be then processed through manual coding techniques (Saldana 2013; Merriam and Tisdell 2016; Neale 2016). I will primarily use descriptive coding to identify recurring concepts, conclusions, and perspectives.

Given the reliance on grey literature, I expect to encounter contradictory statements, for which “versus coding” (Saldana 2013) will be appropriate. While a full longitudinal coding sequence is impractical within the project timeframe, I will note any evolution of concepts over time.

I am also aware that my role as an insider researcher may introduce biases, as the tendency to interpret findings through the lens of my own pedagogical preferences or prior experiences (Lincoln and Guba 1985; Lincoln and Guba 1989; Schwandt et al. 2007). To mitigate these risks, I will adopt methodological triangulation (Lincoln and Guba 1985) by cross-checking insights from different literature sources (white and grey), comparing them with professional case evidence, and, where possible, seeking feedback from colleagues with different backgrounds, as Brookfield's reflective model also suggests (Brookfield, 1998)

Planned Actions

To achieve the aims and outcomes, I will:

- Conduct a structured literature search in PubMed, Researchgate, and the UWTSD library.
- Identify and critically appraise relevant grey literature.
- Map findings across physiological, psychological, and pedagogical dimensions.
- Integrate theoretical insights with professional case examples.
- Organise findings thematically for direct application in teaching.
- Draft conclusions and practical guidelines for voice coaching.

Timeline

A detailed Gantt chart (attached) has been prepared and discussed with my tutor, outlining stages for:

1. Literature search
2. Grey literature integration
3. Analysis and thematic mapping
4. Drafting and review
5. Final submission

Project Start: 5th of April 2025

Project End: 29th of August 2025

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Critical reflection

I have ADHD, which means that without clear frames and structures I am at risk of creating confusion. Moving from the particular to the whole, as required by the hermeneutic circle (Dilthey 1957), presents a particular challenge. While identifying connections between parts may feel natural and intuitive, it can also open multiple avenues of thought and divert attention from the central focus. Conversely, I may become absorbed in hyperfocus on a single aspect.

For this reason, reflective models, as well as research guidelines and techniques (such as coding), are essential in my work.

As a voice pedagogy practitioner, I spontaneously draw on Schön's reflective model in my practice (Schon 1983; Ghaye 2010).

- **Reflection in action** (thinking while doing): questioning the efficiency of different postures in voice training and coaching, as described in books or lessons, or presented as “dogma”; evaluating new options; and adjusting what I had been taught to the needs of my clients' bodies, voice qualities, and stylistic demands, which are also part of my professional artistry (Finlay 2008).
- **Reflection on action** (thinking after the event): realising that I was developing my own searching questions (Bolton and Delderfield 2018), questioning assumptions, and critically appraising what I had learned (Katrak et al. 2004; Toronto and Remington 2020).

Moreover, I needed to use more than one reflective model to avoid bias, deepen my reflection, and reduce the risk of technicism, while benefiting from the comparison of competing perspectives (Warwick 2007; Finlay 2008). I therefore applied Brookfield's four complementary lenses (Brookfield 1998), which are particularly useful for insider researchers, where the risk of bias is high. I was already considering my personal perspective (observations from practice) and my clients' perspective (feedback on fatigue, ease, effort). It then became essential to also observe reality through the other two lenses: colleagues' perspectives (singing training manuals, grey literature) and the theoretical literature (peer-reviewed studies).

Brookfield's model supported this shift in perspectives, while Hyland's discussion of metadiscourse (the ways writers both organize their texts and engage with readers to signal stance and guide interpretation; Hyland, 2017) reminds me that this reflective writing itself is not neutral reporting, but part of an interactive process where I “balance my authority as

practitioner with humility as a disciplinary servant” (Hyland, 2019, p. 108; Winter, 2022). I tried to find a balance between my personal engagement in the assignment topic and maintaining analytical distance. To make my personal stance explicit and distinguish it from academic findings, I deliberately chose to occasionally use “attitude markers” (words that signal the writer’s evaluation of a proposition, such as “unfortunately,” “I agree”, “surprisingly” (Hyland 2005; Hyland 2017; Hyland 2019).

After using Brookfield’s model, I sought to identify a strategy that would allow me to conduct the literature review as a holistic, reflective, and integrative process rather than a series of routine steps (Kerlinger 1960; Daniel 1996; Newman and Ridenour 1998).

While drafting the narrative review, I applied Thomas & Harden’s (2008) third step (the development of **analytical themes**) moving beyond merely summarising findings (descriptive themes) to interpreting them through the lens of my professional experience as a voice coach and the specific needs of performers. This process allowed me to transform a collection of data into applicable principles: for example, changing the posture might mitigate the appearance of Music Performance Anxiety and promote a better communication with the audience.

To facilitate this process and avoid losing focus (a concrete risk with ADHD) I used Borton’s model (Borton 1970), asking myself its three guiding questions::

What? (the situation)

There is a lack of clarity on the ideal posture in voice performance. The same posture does not work for everyone, nor does it always work for the same person: voice qualities and physical conditions often require adjustments. Not everything I learned in past singing lessons about posture seems to hold true in practice.

So what? (the scrutiny)

My observations and the conclusions drawn from my reflection in action and on action (Schon 1983) required validation or critique

I wanted them to contribute to identifying recommendations for further research and to open new lines of inquiry, while avoiding fruitless approaches to posture in voice performance (Gall et al. 1996), I therefore needed to distinguish what has been done from what still needs to be

done, discover important variables to the topic, and relate theory to practice and application (Gall et al. 1996). This required analysing the available scientific findings and peer-reviewed literature, while continuously comparing them with grey literature and the opinions of voice pedagogy practitioners.

Clarity, consistency, and coherence were essential (Hart 1998). This reflection led me to structure the strategies presented in the “Methodology” section of this paper.

All this work led me to conclude that posture has a dynamic nature, both in terms of interactions between body parts and in its relativity to health condition, body type, voice quality, pitch, and many other factors (Scotto Di Carlo 1998; Scotto Di Carlo 2002; Grimmer-Somers et al. 2008; Cardoso et al. 2019; Redolfi et al. 2020).

Now what? (the reflection on development)

Given that posture is shaped by a wide range of interrelated physical, psychological, and socio-cultural factors, it is necessary that I nurture my own interplay with different professionals (physiotherapist, osteopaths, etc), and that I promote more research on specific aspects (for instance the relationship between postural issues and laryngeal misalignments or asymmetry, still underexplored in literature). Meanwhile, I can benefit from different postural methods, protocols, and approaches, such as Alexander Technique, Feldenkrais, and PROEL, some of which have received scientific validation through multiple studies, trials, and reviews.

Looking further ahead to my professional development, I can draw on Kolb’s experiential learning model (Kolb and Fry 1974), which conceptualises learning as a four-stage cycle that may begin at any point. For the purposes of this reflection, I have chosen the following sequence:

- Concrete experience: certain postures presented as correct and efficient for singing do not always prove effective in practice.
- Reflective observation: many factors influence the efficiency of a specific posture in specific circumstances.
- Abstract conceptualisation: posture is dynamic and requires a flexible approach that considers multiple variables; working on posture through movement may be more beneficial than enforcing a static, “ideal” posture.
- Active experimentation: I will apply principles and strategies from different methods and dynamic approaches in my voice pedagogy practice.
- Concrete experience (cycle resumes): evaluate the efficiency of these strategies and exercises under varying circumstances.

Written assignment:**Revisiting “Good Posture” in Singing: Insights from Grey and Peer-Reviewed Literature****WORD COUNT: 4932.**

Posture is one of the most frequently emphasised aspects of vocal pedagogy (McKinney, 2005; Nair, 2007; Dayme, 2005), yet remains among the least supported by consistent scientific consensus (Rubin et al., 2004; Behrman, 2005; Bruno et al., 2020). Much of the pedagogical literature also presents posture in static terms. Yet how can the performer’s body function both as a stable support for the voice and as a vehicle for expressive movement, when these often demand opposing strategies? This paper is guided by the following research question: what role does posture play in vocal function and pedagogy, and is there scientific evidence to support or refine the idea of “good alignment,” particularly in relation to the dynamic and often non-neutral postures required in performance? In particular, the study compares peer-reviewed and grey literature to determine which postural aspects are consistently linked with vocal outcomes, and which commonly taught claims remain unsupported but may merit further research. This study will begin by examining how voice pedagogy has conceptualised “good posture” for singing, critically comparing these definitions with peer-reviewed research available on this topic. It will then address the impact of posture on vocal health, and its relationship with emotions, breathing, larynx and vocal tract configuration. The discussion will consider how different parts of the body interact to shape alignment, before turning to the link between posture and laryngeal asymmetry, a controversial and underexplored aspect of voice production. In this final section, I will present and justify my own position, outline the need for further research; I will then conclude with the pedagogical implications of my findings.

Posture for voice

The necessity for a “good posture” or “good alignment” has been addressed for centuries in voice pedagogy and voice science, both in grey literature (Brown 1996; Dayme 2005; McKinney 2005; Nair 2007; LeBorgne and Rosenberg 2019) and in peer-reviewed literature (Schneider et al. 1997; Rubin et al. 2004; Behrman 2005; Wilson Arboleda and Frederick 2008; Bruno et al. 2009; Bruno et al. 2020). However, research on this topic remains limited, and we usually rely on empirical experience from singers and singing teachers (Nair 2007). Inconsistency is shown by the fact that some pedagogical approaches to posture in voice (Dayme 2005; McKinney 2005; Nair 2007) are highly detailed, while others take a freer approach (Linklater 2006; Sadolin 2008). There are still several elements of disagreements among researchers and practitioners, particularly regarding the cervical posture and the

degree of head extension (Rollings 2018; Knight and Austin 2020). Such variability directly informs the research question: is “good alignment” evidence-based or merely pedagogical? This ongoing discussion may be linked to the inherently dynamic nature of voice production: a complex and constantly adapting system in which various components interact and influence one another, as described by the nonlinear source–filter theory (Titze 2006; Titze 2008; Titze et al. 2011).

Research indicates clear relationships between posture and breathing (Washino et al. 2017), pharyngeal airway space (Scotto Di Carlo 1998; Muto et al. 2002; Muto et al. 2006; Anegawa et al. 2008), and vocal effort (Lagier et al. 2010; Caçador 2018). These aspects, in turn, can be influenced by multiple additional factors, including population variance in habitual resting head postures (Grimmer-Somers et al. 2008), respiratory disorders (Redolfi et al. 2020), different body types that can result in different compensations (Cardoso et al. 2019), and adaptive or maladaptive structural or functional changes and habits (Scotto Di Carlo 1998; Scotto Di Carlo 2002; Wilson Arboleda and Frederick 2008). Furthermore, the Head and Neck Position Sense (HNPS; proprioception of head) which is vital for cervical posture control, might be affected by vestibular system disorders (Armstrong et al. 2008), but also by vision and hearing (Grimmer-Somers et al. 2008). Moreover, stage requirements such as wigs, heels, costumes, choreography, and directions can affect posture (Miller 2004; Heman-Ackah 2005; Nair 2007; Rollings 2018; LeBorgne and Rosenberg 2019). Consequently, different contexts and interacting variables may call for different postures to optimise vocal performance.

Using Brookfield’s (1998) reflective model, this paper presents suggestions from peer-reviewed literature for embedding scientific findings into voice pedagogy. It will first examine recurring themes in the grey literature on posture and voice, comparing them with peer-reviewed evidence and personal observations, and concluding with pedagogical implications and strategies for addressing posture more efficiently in performance.

As previously explained, this work builds on the findings from my Module 1 and Module 3 assignments, which I highlight in Tables before outlining how I proceeded further.

From Module 2 – Controversial definition of good posture.

Good alignment is commonly defined by the ‘plumb line’ method (Braune & Fischer 1889; Kendall et al. 1952), in which a vertical line passes through specific anatomical points (Wilson Arboleda & Frederick 2008). This definition is widely accepted (Schneider et al. 1997; Kendall McCreary et al. 2005; Wilson Arboleda & Frederick 2008; Caçador 2018), but the ideal alignment is considered unattainable (Grimmer-Somers et al. 2008). Natural variation in cervical spine posture occurs even in asymptomatic individuals (Gore et al.
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1986; Juhl et al. 1962; Grimmer-Somers et al. 2008), and Kendall et al. (1952) never found a subject with perfect posture (Grimmer-Somers et al. 2008). See Fig. 1

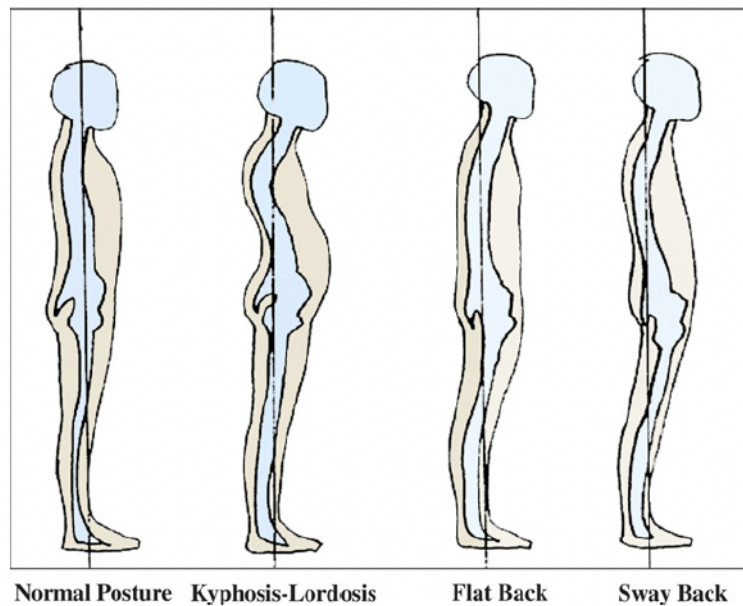


Fig. 1. Postural assessment using the plumb line method (Wilson, Arboleda and Frederick, 2008)

Nevertheless, vocal pedagogy often uses images similar to the “plumb line,” such as imagining the head suspended by a rope (Nair 2007). Variations exist: some propose alignment through the lambda (posterior skull, Fig. 2), producing slight flexion, while others prefer the bregma (anterior skull, Fig. 2), producing slight extension (Nair 2007; Fussi & Magnani 2010; Gucciardo 2020; 2022a; 2022b). The two positions are shown in Figure 3.

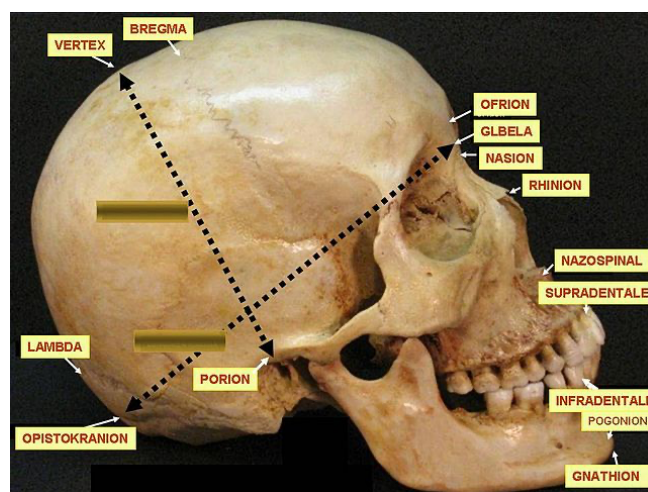


Figure 2. Position of Lambda and Bregma points on the Skull (Source: By Anatomist90 - Own work, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=30857778>)



Figure 3. The thin red line represents the plumb line. a) bregma alignment; b) lambda alignment. Picture taken by the author for a previous assignment.

Table 1 – definition of good posture in singing.

Posture, muscular tension and vocal health

A necessary step in addressing the research question is to determine whether peer-reviewed evidence links posture and voice efficiency, with particular attention to vocal health. Several studies (Jones 1972; Grini et al. 1998; Kooijman et al. 2005; Bruno et al. 2009; Gilman and Johns 2017; Bruno et al. 2020) confirm this link. Behrman (2005) notes that speech therapists routinely include postural observation in assessment, while Bruno et al. (2020), Lagier et al. (2010, Nacci et al. (2012, 2017), describe a bidirectional relationship: postural alterations can affect the voice, and vocal changes can in turn affect posture. In fact, while posture appears to influence vocal fatigue, and shifts in head position may increase self-perceived phonatory

effort (Jones 1972; Gilman and Johns 2017), vocal effort itself can modify posture (Lagier et al. 2010).

A forward head position predicts severe dysphonia (Bruno et al. 2009), and Franzone et al. (2024) link this posture, also called “swayback” (Fig. 4), to Muscle Tension Dysphonia.

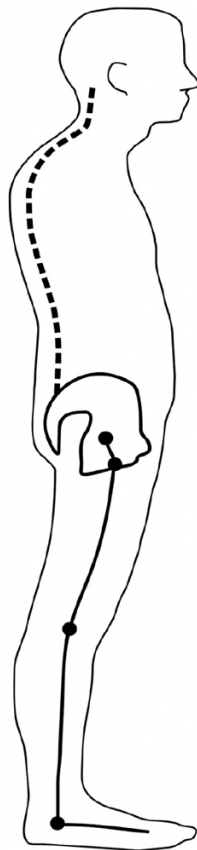


FIGURE 1. Swayback posture.

Fig 4: Swayback posture Source: Staes et al. (2011)

A recent study (Kim et al. 2025) describes that cervical lordosis correlates with voice symptoms in patients with hyperfunctional voice disorders. Franco et al. (2014) also report sagittal plane differences between normophonic and dysphonic speakers. A review (Aparecida Cielo et al. 2014) connects musculoskeletal stress, extrinsic laryngeal muscles, and body posture, noting benefits from craniocervical flexion therapy. Staes et al. (2011) describe improved voice parameters after physical therapy in a student with postural issues but no vocal fold pathology.

However, evidence is not always consistent. Ursino (2011), which is considered grey literature, but in many sections is based on peer-reviewed data, describes distinct postural patterns in hypofunctional dysphonia (forward shift of the centre of pressure, chest collapse, thoracic

flexion, mandibular anteriorisation) versus hyperfunctional dysphonia (posterior thoracic flexion, chest shift forward, centre of pressure shift backwards). These patterns are presented as clinical descriptions rather than the outcome of controlled experimental studies. Yet (Nacci et al. (2017), in a peer reviewed study, found no strong correlation between specific vocal pathologies (nodules, polyps, cysts, Reinke's oedema) and specific postural alterations (except for minor associations with nodules).

Fachinatto et al. (2015) report no perceptual or acoustic differences in asymptomatic male singers after a single spinal manipulation of the thoracic and cervical spine. However, only one session was tested, no objective jitter or shimmer measurements, that can be associated with hoarseness (Teixeira et al. 2013), were taken, and no effort, fatigue, or GIRBAS assessments were included.

Finally, Castillo-Allendes et al. (2025) found no significant differences in phonation or breathing function across four standardised postures in experienced singers, highlighting the need for further research to identify which postural changes are truly relevant to vocal function.

Summarising, while multiple studies support a relationship between posture and vocal function, the nature and extent of this connection, particularly in relation to specific postural patterns, remains insufficiently defined. Even peer-reviewed studies often rely on small samples and heterogeneous outcome measures; the absence of standardised protocols or control of confounding factors (such as genre, prior training, or musculoskeletal variability) limits generalisability. Evidence must therefore be read critically and balanced with clinical observation and grey literature. The mixed evidence, ranging from strong clinical correlations to null experimental results, underscores the need for more targeted, high-quality research to clarify which aspects of posture are most relevant to vocal health and performance.

Posture and emotions

This section informs the research question by showing how posture shapes emotional states and performance contexts. Within a social constructivist framework, it is also necessary to consider how posture and emotions interact with broader social influences. For example, prolonged smartphone use (Berolo et al. 2011; Kang et al. 2016; Brühl et al. 2023) and computer work (Kang et al. 2012) have been linked to altered cervical posture, while social and cultural etiquette can shape habitual alignment and movement (Shin et al. 2016; von Suchodoletz and Hepach 2021; Savani et al. 2022). Through both reflection-in-action and reflection-on-action (Schön 1983), I have consistently observed culturally shared postural

tendencies and behaviours when working across different Countries and performance traditions

Interaction between posture and social context is echoed in the grey literature, where several authors connect posture, emotions, and communication with the audience. Watson et al., 2012) note that psychosocial factors can play a significant role in back pain, while others (Linklater 2006; McKinney, 2005; Nair, 2007) emphasise that a performer's posture may influence audience reactions.

These ideas find support in the academic literature, as I highlighted in my Module 3 assignment (see Table 2) .

From Module 3 – Posture and emotions

Bloch (1993) and Carney et al. (2010) showed that altering posture, breathing, or facial expression can change emotional state and physiology: “high-power poses” (expansive, high testosterone, low cortisol) versus “low-power poses” (contractive, low testosterone, high cortisol) (Figures 5–6).



Figure 5 – examples of high-power poses (Carney et al. 2010)



Figure 6 – examples of low-power poses (Carney et al. 2010)

Bloch (1993) also developed **ALBA Emoting**, a method for triggering emotions through posture, breath, and facial expression.

Cuddy et al. (2015) found that adopting high-power poses improved job-interview outcomes, linked to non-verbal confidence (Figure 7).

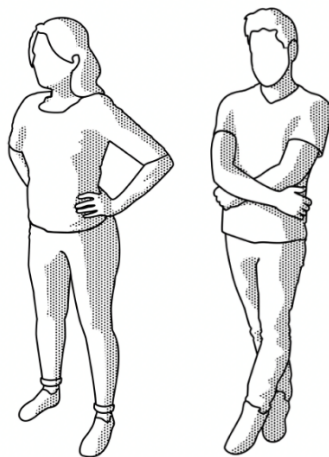


Figure 1. Images depicting the high-power (left) and low-power (right) poses adopted by participants in this experiment.

Figure 7. – examples of high and low-power poses (Cuddy et al., 2015)

In my Module 3 study, high-power posture correlated with fewer behavioural symptoms of MPA (Carney et al. 2010; Cuddy et al. 2015; Juncos et al. 2017). According to APA criteria (Chambless & Hollon 1998; Chambless & Ollendick 2001), physical approaches such as yoga (Lin et al. 2008; Khalsa et al. 2009) and the Alexander Technique (Valentine et al. 1995) are considered “promising” interventions for MPA.

Beyond Anxiety several studies indicate that posture may also influence creativity and emotional communication. Research on actors (Dumas et al., 2020) and musicians (Hallam & Himonides, 2022) links open or closed postures, fluid arm movements, and arm flexion with increased creativity (Friedman & Förster, 2000; Friedman & Förster, 2002; Slepian & Ambady, 2012; Hao et al., 2014; Hao et al., 2017). Other work highlights how specific body postures convey discrete emotional information (Dael et al., 2012), with implications for performance practices in acting and music (Meng, 2024; Zhang, 2024).

Posture and breath

Across different pedagogical traditions, posture is consistently linked to breath management, thus this is a crucial aspect for my research question. Although the descriptions vary, grey literature has emphasised the importance of good posture for breathing for centuries. Even authors who regard breath training as less central in singing pedagogy still address posture in relation to breathing, such as advising singers “not to raise their shoulders when breathing” (Soto-Morettini, 2014; p.37),

McKinney (2005) states that good posture affects the ability to move air in and out, and Gates (2018) refers to respiration when discussing postural release for vocal efficiency. Nair (2007) encourages a “proud posture” that elongates the spine and helps lift and free the sternum, recalling Miller’s description of ‘Garcia’s position’ (sternum elevated, shoulders back and down; Miller, 1988; 2004) though I could not locate such a definition in Garcia’s own writings (Garcia 1894). Nor did I find direct evidence from Lamperti (both Francesco and Giovan Battista) explicitly linking posture and breath connecting posture and breath (Lamperti 1864; Brown 2013). Miller (2004), notes, however, that this posture was later promoted within the Lamperti school, for example by Marchesi (1901).

Historical accounts also converge on the idea of an elevated sternum or “sustained chest” (“sostenutezza di petto”), sometimes paired with pelvic tilt to enhance abdominal and ribcage freedom (Juarra, 1987; Nair, 2007; see also Mancini, 1969). These descriptions suggest an early awareness of how cervical, thoracic, and lumbar regions interact in breathing.

In a more contemporary context, Estill also investigated the role of postural muscle effort in stabilising and controlling airflow during vocalisation, focusing on Torso muscles with particular attention to chest and back (Estill et al. 1990; Steinhauer et al. 2017; Estill et al. 2019a; Estill et al. 2019b).

However, Kayes (2005) takes a different approach, emphasising posture that enables the abdomen, rather than the chest, to “support” the voice.

Dayme (2005) focuses on personal experience, encouraging singers to experiment how different postures can impact breathing.

The link between posture and breathing is supported by peer-reviewed research. Professional opera singers show higher levels of activity in postural muscles. (Pettersen and Westgaard 2004a; Pettersen and Westgaard 2004b; Pettersen 2005). León-Morillas et al. (2021) report that respiratory muscle function correlates with postural stability. Hoit (1995) and Hoit et al.

(1996) affirm that body position has a profound impact on breathing behaviour, while Attali et al. (2025) observed significant changes in breathing and a reduction in vital capacity and functional residual capacity when lying supine. Other studies (Koumbourlis 2006; Qiabi et al. 2015) highlight how postural alterations such as scoliosis can significantly affect respiratory function. Interestingly, further research (Washino et al. 2017; Zafar et al. 2018) points to the role of head, neck, and cervical posture in respiratory performance.

More investigation on this topic is certainly necessary as most of these studies do not refer to voice performance and do not take into considerations different genres or voice qualities.

Posture and interactions with larynx and vocal tract.

This section is particularly guided by the question: what do we know about how cervical posture influences laryngeal biomechanics and acoustic output, and what evidence can inform pedagogical choices across genres?

McKinney (2005) notes that a resonating system as complex as the human voice is influenced by many variables, and research consistently shows that cervical posture influences the biomechanics of both larynx and vocal tract, with consequent effects on voice acoustics such as pitch, intensity and quality.

A review of the literature conducted for my Module 1 on cervical posture led me to conclude that head and neck position significantly influences multiple aspects of vocal function.

Module 1 – Cervical posture and Voice
Research consistently shows that cranio-cervical posture alters pharyngeal width and airway space, with potential consequences for resonance, airflow, and subglottic pressure (Honda et al., 1994; Muto et al., 2002, 2006; Anegawa et al., 2008; Johnson & Skinner, 2009; Miller et al., 2012a,b; Sundberg et al., 1991). It is also closely coordinated with jaw motion: maximum opening is linked to head extension and closure to flexion, reflecting a rhythmic coupling repeatedly demonstrated in experimental studies (Eriksson et al., 1998, 2000; Zafar et al., 2000; Kohno et al., 2001a,b; Miyaoka et al., 2004) and affecting resonance balance and formants (Lindblom & Sundberg, 1971; Nair, 2007; Knight & Austin, 2020; Sundberg et al., 2021; Flory, 2016; Chiu et al., 2022). Acoustic evidence also reports increased F0 amplitude and stronger low partials with extension (Titze, 2008) and higher spectral prominence ratio with flexion, linked to brightness and projection (Knight & Austin, 2020). Cervical posture further affects laryngeal movement and thyroid tilt (Honda et al., 1994, 1999; Iwarsson & Sundberg, 1998; Rubin et al., 2004), both tied to pitch and range

(Vilkman et al., 1996; Sonninen et al., 1999; Steinhauer et al., 2017). Opera singers often exploit these adjustments by raising the chin on high notes (Scotto Di Carlo, 1998; Vilkman et al., 1996; Iwarsson & Sundberg, 1998; Bogduk & Mercer, 2000; Lin et al., 2000; Muto et al., 2002) or using flexion to facilitate thyroid tilt (Honda et al., 1994; Scotto Di Carlo, 1998; Miller et al., 2014), though habitual extension may restrict range by shortening the stylohyoid muscles (Rubin et al., 2004). In summary, evidence points to a strong but complex link between cervical posture, laryngeal biomechanics, and acoustics: a mobile cervical spine is essential, no single “optimal” posture has been identified, and singers adapt alignment contextually depending on quality, genre, and anatomy. Further research is needed to clarify which posture-related adjustments matter most across different voice qualities (Honda, 1994; Titze, 2011; Estill, 2019b).

Database searches for this assignment yielded no new insights beyond my Module 1 findings on cervical posture and voice, so I turned to technological research. A 2010 study on humanoid robots (Otsuka et al. 2010) showed that head movements alter vocal quality, highlighting the importance of consistency between posture and voice. A recent 2025 study (Angelakis et al. 2025) used Skeletal Tracking Sensors to map opera singers' posture, offering more accurate pedagogical feedback and the possibility of linking postural tracking with acoustic measures in research. Another 2025 study (Samlan et al. 2014) used computational modeling to simulate left–right laryngeal asymmetries, finding that some (adduction, bulging, nodal point ratio) significantly influenced acoustic measures and perceived quality, while others did not. The implications for posture remain uncertain and are discussed separately.

Interactions between the different parts of the body

Busquet's muscular chains theory (Busquet, 2002) emphasises the interconnectedness of postural segments (Fig. 8), a principle with direct implications for vocal performance.

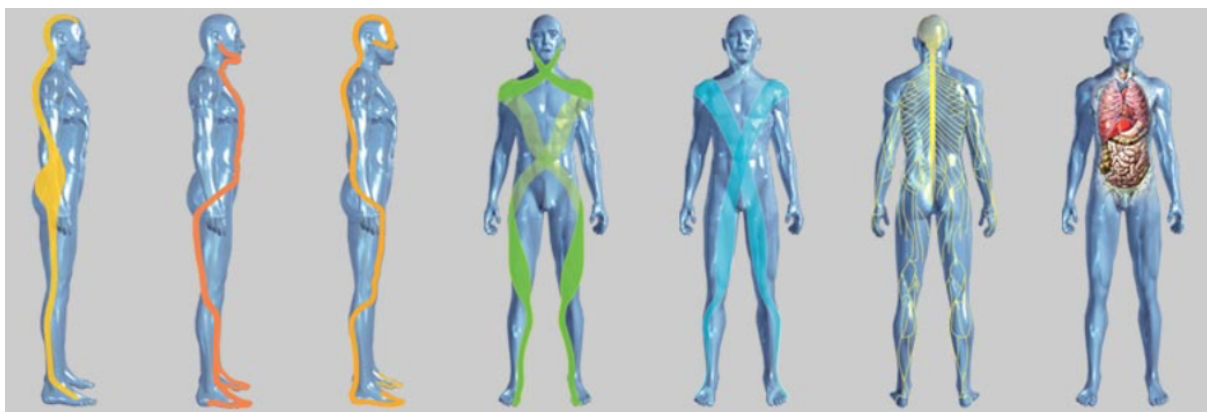


Fig. 8 Busquet's muscular chains Source: <https://www.cavalliniandrea.it/catene-muscolari/>

For instance, footwear provides a concrete example of this interdependence: heels alter spinal alignment and require compensatory adjustments that can influence performance (Rollings, 2018). At the muscular level, Bartoskova's (2021) review suggests possible links between the psoas and the diaphragm, with implications for both speaking and singing, though results remain contradictory. Similarly, Ursino (2011) describes how forward head posture increases cervical load, promotes thoracic kyphosis, and reduces thoracic capacity, illustrating how one segment affects another.

Building on this perspective, R. Miller (2004) argued that singing can be performed equally well standing or sitting, provided that head, neck, and torso remain aligned. Yet such alignment is not always straightforward: Watson's (2009) observations on instrumentalists show how sustained seated or asymmetrical postures can compromise breathing, mobility, and comfort; these insights are also relevant to singers, especially those who perform while playing an instrument (Horvath, 2010). His practical conclusions highlight that:

- the neck, chest, and legs are interdependent
- prolonged fixed postures may cause occupational pain
- ergonomic factors such as chair design and lumbar support significantly affect performers' health.

Peer-reviewed studies support these insights, reporting correlations between thoracic kyphosis and forward head (Joshi et al., 2019), cervical–thoracic interactions in seated alignment (Sato et al., 2019), stiffness in lumbar/thoracic regions influencing sitting angles (Sipko et al., 2024), and changes in joint loading depending on arm and sitting positions (Kwon et al., 2018).

Taken together, these perspectives reinforce a central principle that contributes to the research question by reframing alignment: posture in singing should be viewed as a dynamic and interconnected system, where mobility, adaptability, and ergonomics are more important than any static position.

Posture and laryngeal symmetry

An additional area of both clinical and pedagogical interest concerns the potential relationship between arytenoid asymmetry and broader vocal or postural problems. Arytenoids are the cartilages responsible for closure and opening of the vocal folds, and they play an important role in voice production.

Most published peer reviewed studies involving arytenoid pathology focus on dislocation or subluxation, typically resulting from endotracheal intubation (Rubin et al. 2005; Kong et al. 2022; Lou et al. 2023). These conditions can produce significant and well-documented voice impairments, including hoarseness, breathiness, and reduced phonatory efficiency symptoms (Rubin et al. 2005; Kong et al. 2022; Jiang et al. 2023; Frosolini et al. 2025)

There is no consensus in the scientific literature regarding the functional significance of milder forms of arytenoid asymmetry. Asymmetry in the movement of the arytenoids during adduction can be either physiological or pathological (Bonilha et al. 2009; Mathew and Menon 2021), although Bamigboye et al. (2024) associated it with hoarseness. Arytenoid adduction asymmetry is found in more than one third of the normophonic population (Bonilha et al. 2009; Hamdan et al. 2011a; Hussein et al. 2011; Raviraj and Menon 2022). A study on Opera singers (Clarós et al. 2018) observed that almost one out of two singers was likely to present arytenoid asymmetry in adduction, with no correlation with any vocal symptoms. Also (Hamdan et al. 2011a) observed it in singer and he excluded a correlation with voice symptoms. However, in another study, (Hamdan et al. 2011b) say that it is more frequent among subjects with vocal fatigue.

A recent new study by Santoro (Santoro and Gucciardo 2024), a Master's thesis, thus not peer-reviewed, analysed 134 patients, assessing the incidence of 13 vocal symptoms across four groups with different laryngeal asymmetries. The results confirmed asymmetries in about half of the sample and linked them most strongly to dysodia (singing-voice alteration), phonasthenia, difficulty projecting the voice, and stabbing pain. Strikingly, dysphonia (spoken voice alteration) rates did not differ between those with and without asymmetries. Santoro is the first to assess spoken and singing voice separately, suggesting that asymmetries may be asymptomatic in speech yet more relevant in singing.

In grey literature and within the voice training and rehabilitative communities, aritenoids or other types of laryngeal asymmetries are often associated with postural problem, and treated with laryngeal manipulation, osteopathic treatments or physiotherapy (Rubin et al. 2000; Ricci Maccarini 2007; Ricci Maccarini et al. 2009).

However, peer reviewed literature on this topic is very little and it denies a connection between postural problems and arytenoid asymmetry (Bonilha et al. 2009; Hussein et al. 2011), but I agree with Cardoso et al. (2019) who say that specific evidence concerning body posture and voice disorders has been lacking.

Although there is currently no robust peer-reviewed evidence confirming a causal link between mild arytenoid asymmetry and voice or postural issues, anecdotal reports and theoretical frameworks (often grounded in peer-reviewed research on the interdependence of body segments in terms of mobility and alignment) suggest a plausible connection. This apparent contradiction, alongside the lack of studies directly addressing the issue, highlights the need to critically examine the types of methodologies employed. Such an analysis aligns with both a critical appraisal approach (Guyatt 1993; Katrak et al. 2004; Toronto and Remington 2020) and a pragmatist paradigm (Feilzer 2010), which prioritize functional outcomes and contextual relevance over rigid causal models. Studies that deny a relationship between posture and arytenoids asymmetry (Bonilha et al. 2009; Hussein et al. 2011) are retrospective, cross-sectional studies that assessed the prevalence of arytenoid asymmetry and looked for static statistical correlations (Wang and Cheng 2020). What I believe we need instead is a longitudinal design (Shadish et al. 2002), comparing the same subject's laryngeal setting before and after a postural event or therapy, to explore potential causal links.

Pedagogical implications

Peer-reviewed studies consistently show that postural awareness benefits voice training. Somme et al. (2024) found that opera singers with anatomical and postural knowledge reported better voice quality, less fatigue, and greater attention to body pain, echoing the awareness-based approaches of Nair (2007) and Dayme (2005). At the same time, teachers face practical challenges: most lack training in postural assessment (LeBorgne & Rosenberg, 2019), no standardised method exists for cervical posture (Grimmer-Somers et al., 2008), and observational tools are often unreliable (Moradi et al., 2014; Mohan et al., 2022).

In physiotherapy, range-of-motion tests (Sahrmann 2011; Amiri-Khorasani and Kellis 2015) help identify potential structural issues; alignment exercises with range-of-motion checks, as the ones proposed by Schneider et al. (1997), might therefore be beneficial, though diagnosis remains outside a singing teacher's remit.

Dayme (2005) offers a practical approach: questions about bodily tension and an empirical test based on exploring sound and breath variation in suggested postural changes, drawing personal conclusions. She also distinguishes between "habitual" and "natural" posture, echoing the concept of attractor states from Dynamical System Theory (Kelso, 1991; Kelso, 1995; Wallace, 1996; Steinhauer et al., 2017; Estill et al., 2019a), where repetition creates stable patterns that feel comfortable but may not always be efficient. Thus, personal perception and sound alone cannot determine optimal posture, as re-educative training may initially feel uncomfortable.

Posture and breath are connected, but their interaction can be altered by many variables: since stability is essential for efficient respiration (León-Morillas et al., 2021) and head–neck posture plays a key role (Washino et al., 2017; Zafar et al., 2018), it is necessary to consider both how alignment is maintained in movement or non-neutral postures and how interconnected body regions interact (Joshi et al., 2019; Kwon et al., 2018).

A strongest point of agreement in the literature is the need to avoid swayback and forward-head postures (Bruno et al., 2009; Franzone et al., 2024; Kim et al., 2025), a principle already embedded in the “plumb line” model (Nair, 2007). However, the performers have to deal often with non neutral postures, such as those required by choreography or stage movement; this suggests that posture should be taught dynamically, not statically. Grey literature emphasises flexibility (Dayme, 2005; Linklater, 2006; Nair, 2007; Sadolin, 2008), and studies show that dynamic stretching is more effective than static alignment exercises (Amiri-Khorasani & Kellis, 2015; Behm et al., 2016).

Several authors in grey literature (Malde et al. 2012; Gates 2018; LeBorgne and Rosenberg 2019) and peer reviewed articles (Issever 2020) reference six points of balance that go from the ankles to the head ((Malde et al. 2012; Issever 2020), with Malde et al (2012) noting that arm posture (via its effect on scapulae and clavicles) can limit rib mobility during breathing. Awareness work, as Somme et al (2024) aligns with Body Mapping (Conable 2000; LeBorgne and Rosenberg 2019) which promotes accurate internal mapping of body structures to avoid dysfunctional movement. While this may seem static, it emphasises posture–movement relationships also addressed by the Schlaffhorst–Andersen method (Gucciardo and Mecorio 2023), PROEL (Borragan et al. 2008; Borragan Torre et al. 2017; Lucchini et al. 2018), and Feldenkrais (Feldenkrais 1987; Worsley 2016).

The Schlaffhorst–Andersen method integrates breathing, alignment, and articulation (Saatweber, 2008; Gucciardo & Mecorio, 2023); PROEL (Borragan et al., 2008; Borragan Torre et al., 2017; Lucchini et al., 2018) promotes elastic, non-rigid muscular use; Feldenkrais encourages reorganisation of habitual patterns through guided movement (Feldenkrais, 1987; Worsley, 2016); and the Alexander Technique fosters kinesthetic awareness in the head–neck–back relationship, though evidence remains limited (& Canter, 2003; Klein et al., 2014). Complementary disciplines such as yoga (Khalsa et al., 2009; Belpu & Yeshoda, 2022; Lloyd et al., 2017) and Qigong (Gong et al., 2024) are better supported by empirical data and offer integrative approaches to posture, breath, and emotional regulation.

Finally, posture interacts not only with physiology but also with communication and creativity: expansive or flexible alignment can enhance audience connection (Carney et al., 2010; Cuddy

et al., 2015), reduce symptoms of Music Performance Anxiety (Juncos et al., 2017), support emotional expression (Bloch, 1993), and foster creative thinking (Hao et al., 2014; 2017). For pedagogy, this means treating posture as a dynamic process shaped by awareness, mobility, and context, rather than a fixed position to be imposed on all singers.

Conclusions

To summarise, given the many variables (body type, voice quality, compensatory mechanisms, proprioceptive challenges, pitch or register), it is unrealistic to define a single “perfect” singing posture. Further research is needed to clarify how these factors influence the efficiency of specific postures. Nevertheless, the literature converges on one principle: posture is inherently dynamic, with cervical, thoracic, and lumbar segments continuously influencing one another. Flexibility and freedom of movement are therefore essential to achieving alignment suited to each performer and vocal quality.

This assignment encouraged me to take a more detailed look at posture in my practice. Whereas I once focused mainly on cervical postures for different qualities or pitches, I am now more aware of how posture impacts breathing and how other body parts (lumbar spine, knees, arms) interact, ultimately affecting the voice. I pay greater attention to overall mobility rather than static alignment, and I recognise that working on posture can also boost students’ confidence.

Insights from yoga, Qigong, PROEL, Feldenkrais, and Alexander Technique offer valuable strategies for healthier posture in performance. Collaboration between physiotherapists, Alexander practitioners, and singing teachers could further support a holistic, evidence-based approach.

REFERENCES

Adams, R.J., Smart, P. and Huff, A.S. 2017. Shades of Grey: Guidelines for Working with the Grey Literature in Systematic Reviews for Management and Organizational Studies. *International Journal of Management Reviews* 19(4), pp. 432–454. doi: 10.1111/ijmr.12102.

Alexander, F.M. 2019. *The Use Of The Self*. Spring.

Amiri-Khorasani, M. and Kellis, E. 2015. Acute Effects of Different Agonist and Antagonist Stretching Arrangements on Static and Dynamic Range of Motion. *Asian Journal of Sports Medicine* 6(4). doi: 10.5812/asjasm.26844.

Anegawa, E., Tsuyama, H. and Kusakawa, J. 2008. Lateral cephalometric analysis of the pharyngeal airway space affected by head posture. *International Journal of Oral and Maxillofacial Surgery* 37(9), pp. 805–809. doi: 10.1016/j.ijom.2008.03.006.

Angelakis, E., Bakogiannis, K., Georgaki, A. and Andreopoulou, A. 2025. Operatic Singing Biomechanics: Skeletal Tracking Sensor Integration for Pedagogical Innovation. *Sensors* 25(15), p. 4713. doi: 10.3390/s25154713.

Aparecida Cielo, C. et al. 2014. MUSCULOSKELETAL STRESS SYNDROME, EXTRINSIC LARYNGEAL MUSCLES AND BODY POSTURE: THEORETICAL CONSIDERATIONS. *Rev. CEFAC* 16(5), pp. 1639–1649.

Armstrong, B., McNair, P. and Taylor, D. 2008. Head and Neck Position Sense. *Sports Medicine* 38(2), pp. 101–117. doi: 10.2165/00007256-200838020-00002.

Attali, V., Laveneziana, P., Valentin, R., Sandoz, B., Straus, C. and Similowski, T. 2025. Effects of Posture on the Inspiratory and Expiratory Components of Vital Capacity in Healthy Humans. *Archivos de Bronconeumología* 61(2), pp. 104–106. doi: 10.1016/j.arbres.2024.09.011.

Bamigboye, B.A., Akinola, M.A., Ogunbiyi, A.A. and Somefun, A.O. 2024. Arytenoid adduction asymmetry among patients with laryngeal disorders. *Egyptian Journal of Otolaryngology* 40(1). doi: 10.1186/s43163-024-00591-8.

Banfi, M. 2010. *Canto e postura: Il canto e l'educazione della voce cantata in rapporto alla postura corporea*. Torino: Omega Edizioni.

Bartoskova, M. 2021. The Role of the Psoas Major Muscle in Speaking and Singing. *Voice and Speech Review* 15(2), pp. 200–210. doi: 10.1080/23268263.2021.1891738.

Behm, D.G., Blazeovich, A.J., Kay, A.D. and McHugh, M. 2016. Acute effects of muscle stretching on physical performance, range of motion, and injury incidence in healthy active individuals: a systematic review. *Applied Physiology, Nutrition, and Metabolism* 41(1), pp. 1–11. doi: 10.1139/apnm-2015-0235.

Behrman, A. 2005. Common Practices of Voice Therapists in the Evaluation of Patients. *Journal of Voice* 19(3), pp. 454–469. doi: 10.1016/j.jvoice.2004.08.004.

Belpu, N. and Yeshoda, K. 2022. The effects of Yoga on voice: A systematic review. *Journal of All India Institute of Speech and Hearing* 41(1), pp. 25–32. doi: 10.4103/jose.jose_25_23.

Berolo, S., Wells, R.P. and Amick, B.C. 2011. Musculoskeletal symptoms among mobile hand-held device users and their relationship to device use: A preliminary study in a Canadian university population. *Applied Ergonomics* 42(2), pp. 371–378. doi: 10.1016/j.apergo.2010.08.010.

Bloch, S. 1993. Alba Emoting: A Psychophysiological Technique to Help Actors Create and Control Real Emotions. *Theatre Topics* 3(2), pp. 121–138. doi: 10.1353/tt.2010.0017.

Boell, S.K. and Cecez-Kecmanovic, D. 2010. Literature Reviews and the Hermeneutic Circle. *Australian Academic & Research Libraries* 41(2), pp. 129–144. doi: 10.1080/00048623.2010.10721450.

Boell, S.K. and Cecez-Kecmanovic, D. 2014. *A Hermeneutic Approach for Conducting Literature Reviews and Literature Searches*. Available at: <http://aisel.aisnet.org/cais/vol34/iss1/12>.

Bolton, G.E.J. and Delderfield, R. 2018. *Reflective Practice: Writing and Professional Development*. SAGE Publications.

Bonilha, H.S., O'Shields, M., Gerlach, T.T. and Deliyski, D.D. 2009. Arytenoid adduction asymmetries in persons with and without voice disorders. *Logopedics Phoniatrics Vocology* 34(3), pp. 128–134. doi: 10.1080/14015430903150210.

Borraran, A., Lucchini, E., Agudo, M., Gonzalez, M.J. and Ricci Maccarini, A. 2008. Il Metodo Propriocettivo Elastico (PROEL) nella terapia vocale. *Acta Phoniatrica Latina* XXX1(1), pp. 18–50.

Borraran Torre, A. et al. 2011. 9. Trattamento logopedico/riabilitativo delle disfonie disfunzionali associate ad alterazioni posturali. In: Ursino, F. ed. *Voce & Postura. Correlazione cliniche e anatomico-fisiologiche*. Omega Edizioni.

Borraran Torre, A., Agudo Leguina, M., González Gutiérrez, M.J. and Borraran Salcines, M. 2017. Massima elasticità per riparare e potenziare la voce. Il metodo PROEL. *Logopedia e Comunicazione* 3(2), pp. 133–145.

Borton, T. 1970. *Reach, Touch and Teach*. McGraw-Hill Inc.

Brookfield, S. 1998. Critically reflective practice. *Journal of Continuing Education in the Health Professions* 18(4), pp. 197–205. doi: 10.1002/chp.1340180402.

Brookfield, S.D. 1987. *Developing Critical Thinkers: Challenging Adults To Explore Alternative Ways of Thinking and Acting*. San Francisco: Jossey-Bass Publishers.

Brown, O.L. 1996. *Discover Your Voice: How to Develop Healthy Voice Habits*. San Diego, CA: Singular Publishing Group.

Brown, W.E. 2013. *Vocal Wisdom: Maxims of Giovanni Battista Lamperti*. Literary Licensing, LLC.

Brühl, M., Hmida, J., Tomschi, F., Cucchi, D., Wirtz, D.C., Strauss, A.C. and Hilberg, T. 2023. Smartphone Use—Influence on Posture and Gait during Standing and Walking. *Healthcare* 11(18), p. 2543. doi: 10.3390/healthcare11182543.

Bruno, E., De Padova, A., Napolitano, B., Marroni, P., Batelli, R., Ottaviani, F. and Alessandrini, M. 2009. Voice Disorders and Posturography: Variables to Define the Success of Rehabilitative Treatment. *Journal of Voice* 23(1), pp. 71–75. doi: 10.1016/j.jvoice.2007.06.002.

Bruno, G. et al. 2020. Posture and dysphonia associations in patients undergoing total thyroidectomy: stabilometric analysis. *Updates in Surgery* 72(4), pp. 1143–1149. doi: 10.1007/s13304-020-00844-0.

Busquet, L. 2002. *Le catene muscolari*. Editore Marrapese.

Caçador, M. 2018. The Influence of Posture and Balance on Voice: A Review. *Gazeta Médica* 5. doi: 10.29315/gm.v5i2.159.

Callaghan, J. 2014. *Singing and Science: Body, Brain and Voice*. 2nd ed. Compton Publishing Ltd.

Cardoso, R., Lumini-Oliveira, J. and Meneses, R.F. 2019. Associations between Posture, Voice, and Dysphonia: A Systematic Review. *Journal of Voice* 33(1), pp. 124.e1-124.e12. doi: 10.1016/j.jvoice.2017.08.030.

Carney, D.R., Cuddy, A.J.C. and Yap, A.J. 2010. Power Posing. *Psychological Science* 21(10), pp. 1363–1368. doi: 10.1177/0956797610383437.

Castillo-Allendes, A., Delgado-Bravo, M., Ponce, A.R. and Hunter, E.J. 2025. Muscle Activity and Aerodynamic Voice Changes at Different Body Postures: A Pilot Study. *Journal of Voice* 39(2), pp. 439–447. doi: 10.1016/j.jvoice.2022.09.024.

Chambless, D.L. and Ollendick, T.H. 2001. Empirically Supported Psychological Interventions: Controversies and Evidence. *Annual Review of Psychology* 52(1), pp. 685–716. doi: 10.1146/annurev.psych.52.1.685.

Chiu, C., Weng, Y. and Chen, B. 2022. Tongue Postures and Tongue Centers: A Study of Acoustic-Articulatory Correspondences Across Different Head Angles. *Frontiers in Psychology* 12. doi: 10.3389/fpsyg.2021.768754.

Clarós, P., Clarós-Pujol, A. and Clarós, A. 2018. Arytenoid asymmetry in opera singers. *European Annals of Otorhinolaryngology, Head and Neck Diseases* 135(6), pp. 389–392. doi: 10.1016/j.anorl.2018.08.014.

College Art Association of America. 2009. *Overview of Health Issues for Performing and Visual Arts Students*. Available at: https://nasad.arts-accredit.org/wp-content/uploads/sites/3/2016/03/CAAA-Health_Issues-2009.pdf.

Conable, B. 2000. *What Every Musician Needs to Know About the Body*. 3rd ed. Portland, Oregon: Andover Press.

Cooper, H.M. 1988. Organizing knowledge syntheses: A taxonomy of literature reviews. *Knowledge in Society* 1(1), pp. 104–126. doi: 10.1007/BF03177550.

Costley, C., Elliott, G. and Gibbs, P. 2012. *Doing Work Based Research, Approaches to Enquiry for Insider-Researchers*. London: Sage.

Craze, R. 1996. *Teach Yourself the Alexander Technique*. Hodder & Stoughton.

Crotty, M. 1998. *The Foundations of Social Science Research*. . St Leonards, New South Wales: Allen and Unwin.

Cuddy, A.J.C., Wilmoth, C.A., Yap, A.J. and Carney, D.R. 2015. Preparatory power posing affects nonverbal presence and job interview performance. *Journal of Applied Psychology* 100(4), pp. 1286–1295. doi: 10.1037/a0038543.

Dael, N., Mortillaro, M. and Scherer, K.R. 2012. Supplemental Material for Emotion Expression in Body Action and Posture. *Emotion* 12(5), pp. 1085–1101. doi: 10.1037/a0025737.

Daniel, L.G. 1996. *An Overview with Implications for Professors of Educational Research*.

Dayme, M.B. 2005. *The Performer's Voice: Realizing Your Vocal Potential*. New York, USA: W. W. Norton & Company.

D'haeseleer, E. et al. 2017. The Impact of a Teaching or Singing Career on the Female Vocal Quality at the Mean Age of 67 Years: A Pilot Study. *Journal of Voice* 31(4), pp. 516.e19-516.e26. doi: 10.1016/j.jvoice.2016.12.016.

Dilthey, W. 1957. *Gesammelte Schriften*. Stuttgart; Göttingen: Teubner; Vandenhoeck & Ruprecht.

Dimon, T. 2020. *Anatomia della voce: Una guida illustrata per cantanti, vocal coach e logopedisti*. Padova, Italia: Piccin.

Dumas, D., Doherty, M. and Organisciak, P. 2020. The psychology of professional and student actors: Creativity, personality, and motivation. *PLOS ONE* 15(10), p. e0240728. doi: 10.1371/journal.pone.0240728.

Easterby-Smith, M., Thorpe, R. and Jackson, P. 2008. *Management Research*, . 3rd ed. London: Sage.

Ernst, E. and Canter, P.H. 2003. The Alexander Technique: A Systematic Review of Controlled Clinical Trials. *Complementary Medicine Research* 10(6), pp. 325–329. doi: 10.1159/000075886.

Estill, J., Kobayashi, N., Honda, K. and Kakita, Y. 1990. A study on respiratory and glottal controls in six western singing qualities: airflow and intensity measurement of professional

singing. In: *First International Conference on Spoken Language Processing (ICSLP 1990)*. ISCA: ISCA, pp. 169–172. doi: 10.21437/ICSLP.1990-43.

Estill, J., McDonald Klimek, M., Obert, K. and Steinhauer, K. 2019a. *Estill Voice Training Level One: Figures for Voice Control*. 2nd ed. Estill Voice International.

Estill, J., McDonald Klimek, M., Obert, K. and Steinhauer, K. 2019b. *Estill Voice Training Level Two: Figures Combination for Six Voice Qualities*. 2nd ed. Estill Voice International.

Feilzer, M.Y. 2010. Doing Mixed Methods Research Pragmatically: Implications for the Rediscovery of Pragmatism as a Research Paradigm. *Journal of Mixed Methods Research* 4(1), pp. 6–16. Available at: <https://doi.org/10.1177/1558689809349691>.

Feldenkrais, M. 1987. *Awareness through movement - Health exercises for personal growth*. Penguin Books.

Finlay, L. 2008. Reflecting on 'Reflective practice.' *Practice-based Professional Learning Paper* 52.

Flory, Y. 2016. The influence of head and body postures on the acoustic speech signal. *International Journal of Speech Language and the Law* 23(1), pp. 141–146. doi: 10.1558/ijsl.v23i1.26677.

Franco, D., Martins, F., Andrea, M., Fragoso, I., Carrão, L. and Teles, J. 2014. Is the Sagittal Postural Alignment Different in Normal and Dysphonic Adult Speakers? *Journal of Voice* 28(4), pp. 523.e1-523.e8. doi: 10.1016/j.jvoice.2014.01.002.

Franzone, R., Petrigna, L., Signorelli, D. and Musumeci, G. 2024. The Relationship between Posture and Muscle Tensive Dysphonia in Teachers: A Systematic Scoping Review. *Journal of Functional Morphology and Kinesiology* 9(2), p. 60. doi: 10.3390/jfmk9020060.

Friedman, R.S. and Förster, J. 2000. The effects of approach and avoidance motor actions on the elements of creative insight. *Journal of Personality and Social Psychology* 79(4), pp. 477–492. doi: 10.1037/0022-3514.79.4.477.

Friedman, R.S. and Förster, J. 2002. The Influence of Approach and Avoidance Motor Actions on Creative Cognition. *Journal of Experimental Social Psychology* 38(1), pp. 41–55. doi: 10.1006/jesp.2001.1488.

Frosolini, A. et al. 2025. Optimal Timing and Treatment Modalities of Arytenoid Dislocation and Subluxation: A Meta-Analysis. *Medicina* 61(1), p. 92. doi: 10.3390/medicina61010092.

Gall, M.D., Borg, W.R. and Gall, J.P. 1996. *Educational Research: An Introduction*. 6th ed. London and New York: Longman.

Garcia, M. 1894. *HINTS ON SINGING*. E. SCHUBERT & CO.

Gates, R. 2018. Free_To_Sing_Encouraging_Post. *MTNA e-JOURNAL*.

Gelb, M.J. 1996. *Body Learning: An Introduction to the Alexander Technique, Second Edition*. 2nd ed. Henry Holt and Company.

Ghaye, T. 2010. *Teaching and Learning through Reflective Practice: A Practical Guide for Positive Action*. second. Routledge.

Gilman, M. and Johns, M.M. 2017. The Effect of Head Position and/or Stance on the Self-perception of Phonatory Effort. *Journal of Voice* 31(1), pp. 131.e1-131.e4. doi: 10.1016/j.jvoice.2015.11.024.

Gong, T. et al. 2024. Effects of Liuzijue Qigong Posture on Aerodynamics of Phonation in Healthy Volunteers. *Journal of Voice* 38(4), pp. 967.e1-967.e7. doi: 10.1016/j.jvoice.2021.12.019.

Grimmer-Somers, K., Milanese, S. and Louw, Q. 2008. Measurement of Cervical Posture in the Sagittal Plane. *Journal of Manipulative and Physiological Therapeutics* 31(7), pp. 509–517. doi: 10.1016/j.jmpt.2008.08.005.

Grini, M.N., Ouaknine, M. and Giovanni, A. 1998. [Contemporary postural and segmental modification of forced voice]. *Revue de laryngologie - otologie - rhinologie* 119(4), pp. 253–7.

Gucciardo, A.G. 2022. “*La médecine des arts du spectacle vivant. Histoire, diffusion internationale, pensée, éthique et pratiques.*” (*La medicina delle arti e dello spettacolo vivente. Storia, diffusione internazionale, pensiero, etica e prassi*). Doctoral Degree Thesis (PhD), Montpellier: Montpellier 3 University.

Gucciardo, A.G. and Mecorio, F. 2023. *I lemmi della voce. Glossario minimo ragionato ad uso dei didatti e dei clinici*. Roma: Di Leandro.

Guyatt, G.H. 1993. Users' Guides to the Medical Literature. *JAMA: The Journal of the American Medical Association* 270(17), p. 2096. doi: 10.1001/jama.1993.03510170086037.

Hallam, S. and Himonides, E. 2022. 9. Musicians and Creativity. In: *The Power of Music*. Cambridge, UK: Open Book Publishers, pp. 223–236. doi: 10.11647/OBP.0292.09.

Hamdan, A.-L., Hussein, S.T., Halawi, A. and Sibai, A. 2011a. Arytenoid Asymmetry in Relation to Vocal Symptoms in Singers. *Journal of Voice* 25(2), pp. 241–244. doi: 10.1016/j.jvoice.2009.10.004.

Hamdan, A.-L., Nassar, J., Ashkar, J. and Sibai, A. 2011b. Prevalence of arytenoid asymmetry in relation to vocal symptoms. *The Journal of Laryngology & Otology* 125(3), pp. 282–287. doi: 10.1017/S0022215110002410.

Hao, N., Xue, H., Yuan, H., Wang, Q. and Runco, M.A. 2017. Enhancing creativity: Proper body posture meets proper emotion. *Acta Psychologica* 173, pp. 32–40. doi: 10.1016/j.actpsy.2016.12.005.

Hao, N., Yuan, H., Hu, Y. and Grabner, R.H. 2014. Interaction effect of body position and arm posture on creative thinking. *Learning and Individual Differences* 32, pp. 261–265. doi: 10.1016/j.lindif.2014.03.025.

Hart, C. 1998. *Doing a literature review*. London: SAGE Publications.

Heirich, J.R. 2011. *Voice and the Alexander Technique*. 2nd ed. Mornum Time Press.

Heman-Ackah, Y.D. 2005. Physiology of Voice Production: Considerations for the Vocal Performer. *Journal of Singing* 62(2), pp. 173–176.

Hoit, J.D. 1995. *Influence of Body Position on Breathing and Its Implications for the Evaluation and Treatment of Speech and Voice Disorders*.

Hoit, J.D., Jenks, C.L., Watson, P.J. and Cleveland, T.F. 1996. Respiratory function during speaking and singing in professional country singers. *Journal of Voice* 10(1), pp. 39–49. doi: 10.1016/S0892-1997(96)80017-8.

Honda, K., Hirai, H., Estill, J. and Tohkura Yoh'ichi. 1994. Contribution of Vocal Tract Shape to Voice Quality: MRI Data and Articulatory Modeling. In: Fujimura, O. and Hirano, M. eds. *Vocal Fold Physiology: Voice Quality Control*. San Diego: Singular Publishing.

Honda, K., Hirai, H., Masaki, S. and Shimada, Y. 1999. Role of Vertical Larynx Movement and Cervical Lordosis in F0 Control. *Language and Speech* 42(4), pp. 401–411. doi: 10.1177/00238309990420040301.

Horvath, J. 2010. *Playing (Less) Hurt: An Injury Prevention Guide for Musicians*. Milwaukee, WI: Hal Leonard.

Husseini, S.T., Ashkar, J., Halawi, A., Sibai, A. and Hamdan, A.-L. 2011. Arytenoid Asymmetry in Relation to Posture, Neck Tension and Glottal Attack in Singers. *Folia Phoniatrica et Logopaedica* 63(5), pp. 264–268. doi: 10.1159/000316308.

Hyland, K. 2005. *Metadiscourse: Exploring Interaction in Writing*. London: Continuum.

Hyland, K. 2017. Metadiscourse: What is it and where is it going? *Journal of Pragmatics* 113, pp. 16–29. doi: 10.1016/j.pragma.2017.03.007.

Hyland, K. 2019. *Metadiscourse: Exploring interaction in writing*. 2nd ed. London: Bloomsbury Academic.

Issever, I. 2020. Posture management in vocal training. *Journal for the Interdisciplinary Art and Education* 2(1), pp. 63–84. Available at: <https://www.hopkinsmedicine.org/health/treatment-tests-and-therapies/xrays-of-the-spine-neck-or-back>.

Jiang, T., Fang, B., Yu, Z. and Cao, D. 2023. Hoarseness and arytenoid dislocation: A rare complication after facial bony contouring surgery. *Journal of Plastic, Reconstructive & Aesthetic Surgery* 84, pp. 432–438. doi: 10.1016/j.bjps.2023.06.014.

Johnson, G. and Skinner, M. 2009. The demands of professional opera singing on cranio-cervical posture. *European Spine Journal* 18(4), pp. 562–569. doi: 10.1007/s00586-009-0884-1.

Jones, F.P. 1972. Voice Production as a Function of Head Balance in Singers. *The Journal of Psychology* 82(2), pp. 209–215. doi: 10.1080/00223980.1972.9923808.

Joshi, S., Balthillaya, G. and Neelapala, Y.V.R. 2019. Thoracic Posture and Mobility in Mechanical Neck Pain Population: A Review of the Literature. *Asian Spine Journal* 13(5), pp. 849–860. doi: 10.31616/asj.2018.0302.

Juncos, D.G. et al. 2017. Acceptance and Commitment Therapy for the Treatment of Music Performance Anxiety: A Pilot Study with Student Vocalists. *Frontiers in Psychology* 8. doi: 10.3389/fpsyg.2017.00986.

Jung, S.I., Lee, N.K., Kang, K.W., Kim, K. and Lee, D.Y. 2016. The effect of smartphone usage time on posture and respiratory function. *Journal of Physical Therapy Science* 28(1), pp. 186–189. doi: 10.1589/jpts.28.186.

Juvarra, A. 1987. *Il canto e le sue tecniche: trattato*. Milano: Ricordi.

Kang, J.-H., Park, R.-Y., Lee, S.-J., Kim, J.-Y., Yoon, S.-R. and Jung, K.-I. 2012. The Effect of The Forward Head Posture on Postural Balance in Long Time Computer Based Worker. *Annals of Rehabilitation Medicine* 36(1), p. 98. doi: 10.5535/arm.2012.36.1.98.

Kang, K.W., Jung, S.I., Lee, D.Y., Kim, K. and Lee, N.K. 2016. Effect of sitting posture on respiratory function while using a smartphone. *Journal of Physical Therapy Science* 28(5), pp. 1496–1498. doi: 10.1589/jpts.28.1496.

Katrak, P., Bialocerkowski, A.E., Massy-Westropp, N., Kumar, V.S. and Grimmer, K.A. 2004. A systematic review of the content of critical appraisal tools. *BMC Medical Research Methodology* 4(1), p. 22. doi: 10.1186/1471-2288-4-22.

Kawulich, B. 2012. Selecting a research approach: Paradigm, methodology and methods. pp. 51–61.

Kayes, G. 2005. *Singing and the Actor*. 2nd ed. London: Routledge.

Kelso, J.A.S. 1991. Anticipatory dynamical systems, intrinsic pattern dynamics and skill learning. *Human Movement Science* 10(1), pp. 93–111. doi: 10.1016/0167-9457(91)90034-U.

Kelso, J.A.S. 1995. *Dynamic Patterns: The Self-Organization of Brain and Behavior*. Cambridge, MA: MIT Press.

Kendall McCreary, E.K., Kendall Peterson, F., Provance, P., McIntyre Rodgers, M. and Romani, W.A. 2005. *Muscles : Testing and Function*. LWW.

Kepes, S., Banks, G.C., McDaniel, M. and Whetzel, D.L. 2012. Publication Bias in the Organizational Sciences. *Organizational Research Methods* 15(4), pp. 624–662. doi: 10.1177/1094428112452760.

Kerlinger, F.N. 1960. The mythology of educational research: The methods approach. *School and Society* 85, pp. 35–37.

Khalsa, S.B.S., Shorter, S.M., Cope, S., Wyshak, G. and Sklar, E. 2009. Yoga Ameliorates Performance Anxiety and Mood Disturbance in Young Professional Musicians. *Applied Psychophysiology and Biofeedback* 34(4), pp. 279–289. doi: 10.1007/s10484-009-9103-4.

Kim, S. Il et al. 2025. The Association Between Cervical Spine Alignment and Voice Symptoms in Patients With Voice Disorders: A Prospective Cohort Study. *Journal of Voice*. doi: 10.1016/j.jvoice.2025.07.001.

Klein, S.D., Bayard, C. and Wolf, U. 2014. The Alexander Technique and musicians: a systematic review of controlled trials. *BMC Complementary and Alternative Medicine* 14(1), p. 414. doi: 10.1186/1472-6882-14-414.

Knight, E.J. and Austin, S.F. 2020. The Effect of Head Flexion/Extension on Acoustic Measures of Singing Voice Quality. *Journal of Voice* 34(6), pp. 964.e11-964.e21. doi: 10.1016/j.jvoice.2019.06.019.

Kolb, D. and Fry, R. 1974. Toward an Applied Theory of Experiential Learning. *Theories of group process*.

Kong, X. et al. 2022. Risk factors of arytenoid dislocation after endotracheal intubation: A propensity-matched analysis. *Laryngoscope Investigative Otolaryngology* 7(6), pp. 1979–1986. doi: 10.1002/liv.2.977.

Kooijman, P.G.C., de Jong, F.I.C.R.S., Oudes, M.J., Huinck, W., van Acht, H. and Graamans, K. 2005. Muscular Tension and Body Posture in Relation to Voice Handicap and Voice Quality in Teachers with Persistent Voice Complaints. *Folia Phoniatrica et Logopaedica* 57(3), pp. 134–147. doi: 10.1159/000084134.

Koumbourlis, A.C. 2006. Scoliosis and the respiratory system. *Paediatric Respiratory Reviews* 7(2), pp. 152–160. doi: 10.1016/j.prrv.2006.04.009.

Kwon, Y., Kim, J.-W., Heo, J.-H., Jeon, H.-M., Choi, E.-B. and Eom, G.-M. 2018. The effect of sitting posture on the loads at cervico-thoracic and lumbosacral joints. *Technology and Health Care* 26(1_suppl), pp. 409–418. doi: 10.3233/THC-174717.

Lagier, A., Vaugoyeau, M., Ghio, A., Legou, T., Giovanni, A. and Assaiante, C. 2010. Coordination between Posture and Phonation in Vocal Effort Behavior. *Folia Phoniatrica et Logopaedica* 62(4), pp. 195–202. doi: 10.1159/000314264.

Lamperti, F. 1864. *Guida-Teorico-Pratica-Elementare per lo studio del canto*. Ricordi.

Lawrence, A., Houghton, J., Thomas, J. and Weldon, P. 2014. *Where Is the Evidence? Realising the Value of Grey Literature for Public Policy & Practice, A Discussion Paper* Public Policy & Practice, A Discussion Paper. Available at: <http://apo.org.au/research/where-evidence-realising-value-grey-literature-public-policy-and-practice>.

LeBorgne, W.D. and Rosenberg, M.D. 2019. *The Vocal Athlete*. Plural Pub.

León-Morillas, F., Lozano-Quijada, C., Lérda-Ortega, M.Á., León-Garzón, M.C., Ibáñez-Vera, A.J. and de Oliveira-Sousa, S.L. 2021. Relationship between Respiratory Muscle Function and Postural Stability in Male Soccer Players: A Case-Control Study. *Healthcare* 9(6), p. 644. doi: 10.3390/healthcare9060644.

Lincoln, Y.S. and Guba, E.G. 1985. *Naturalistic Inquiry*. Sage.

Lincoln, Y.S. and Guba, E.G. 1989. Ethics: The Failure of Positivist Science. *The Review of Higher Education* 12(3), pp. 221–240. doi: 10.1353/rhe.1989.0017.

Linklater, K. 2006. *Freeing the Natural Voice*. Drama Publisher.

Lloyd, A., Hoffman-Ruddy, B., Silverman, E., Lehman, J.L. and Lloyd, A. 2017. *Vocal Yoga: Applying Yoga Principles in Voice Therapy*.

Lou, Z., Li, X., Jiang, J.J. and Lin, Z. 2023. Modified Laryngeal Forceps for Arytenoid Cartilage Dislocation Caused by Endotracheal Intubation: A Retrospective Case–Control Pilot Study. *Ear, Nose & Throat Journal*. doi: 10.1177/01455613231205529.

Lucchini, E. et al. 2018. Voice Improvement in Patients with Functional Dysphonia Treated with the Proprioceptive-Elastic (PROEL) Method. *Journal of Voice* 32(2), pp. 209–215. doi: 10.1016/j.jvoice.2017.05.018.

Maccarini, A.R., Malinverno, M.R., Lucchini, E., Bissoni, E., Schindler, A. and Borrigan, A. 2009. PALPAZIONE E MANIPOLAZIONE LARINGEA. In: Schindler, O. ed. *La Voce*. Padova: Plccin.

Malde, M., Zeller, K.-A. and Allen, M. 2012. *What Every Singer Needs to Know About the Body*. second. San Diego: Plural Editions.

Mancini, R. 1969. *L'art du chant*. Paris: Presses universitaires de France.

Mathew, A.S. and Menon, J.R. 2021. “Innocent” arytenoid adduction asymmetry: An etiological survey. *European Archives of Oto-Rhino-Laryngology* 278(2), pp. 427–435. doi: 10.1007/s00405-020-06352-6.

McCoy, S. 2014. Singing music theater and voice science. In: Hall, K. ed. *So You Want to Sing Music Theater: A Guide for Professionals*. New York: Rowman & Littlefield.

McCoy, S. 2021. Reflections on my Life as a Mechanic (Vocal and Otherwise). *journal of Singing* 78(1), pp. 71–74. doi: 10.53830/PHTK5097.

McKinney, J.C. 2005. *The Diagnosis and Correction of Vocal Faults: A Manual for Teachers of Singing and for Choir Directors*. 2nd ed. Long Grove, IL: Waveland Press.

Meng, Y. 2024. The Impact of Actor's Belief on Audience Emotional Resonance and Emotional Transmission. *International Journal of Global Perspectives in Academic Research* 1(1). doi: 10.70339/3m8x6346.

Merriam, S.B. and Tisdell, E.J. 2016. *Qualitative research : a guide to design and implementation*. Fourth edition. San Francisco, CA: Jossey-Bass, a Wiley Brand.

Miller, R. 1988. Sotto Voce: The Garcia Position. *Journal of Singing - The Official Journal of the National Association of Teachers of Singing* 15(2), pp. 33–34.

Miller, R. 2004. *Solutions for Singers: Tools for Performers and Teachers*. New York: Oxford University Press.

Mohan, K., Pillai, V.M., Jayendrakumar, P.D., Sankaran, P. and Chandramohan, A. 2022. Video image-based posture assessment: an approach for dynamic working posture assessment. *Theoretical Issues in Ergonomics Science* 23(6), pp. 749–769. doi: 10.1080/1463922X.2022.2036860.

Moradi, N. et al. 2014. Intrarater and Interrater Reliability of Sagittal Head Posture: A Novel Technique Performed by a Physiotherapist and a Speech and Language Pathologist. *Journal of Voice* 28(6), pp. 842.e11-842.e16. doi: 10.1016/j.jvoice.2014.02.014.

Muto, T., Takeda, S., Kanazawa, M., Yamazaki, A., Fujiwara, Y. and Mizoguchi, I. 2002. The effect of head posture on the pharyngeal airway space (PAS). *International Journal of Oral and Maxillofacial Surgery* 31(6), pp. 579–583. doi: 10.1054/ijom.2002.0279.

Muto, T., Yamazaki, A., Takeda, S., Kawakami, J., Tsuji, Y., Shibata, T. and Mizoguchi, I. 2006. Relationship between the pharyngeal airway space and craniofacial morphology, taking into account head posture. *International Journal of Oral and Maxillofacial Surgery* 35(2), pp. 132–136. doi: 10.1016/j.ijom.2005.04.022.

Nacci, A. et al. 2017. Stabilometric findings in patients affected by organic dysphonia before and after phonomicrosurgery. *Acta Otorhinolaryngologica Italica* 37(4), pp. 286–294. doi: 10.14639/0392-100X-1035.

Nacci, A., Fattori, B., Mancini, V., Panicucci, E., Matteucci, J., Ursino, F. and Berrettini, S. 2012. Posturographic analysis in patients with dysfunctional dysphonia before and after

speech therapy/rehabilitation treatment. *Acta Otorhinolaryngologica Italica* 32(2), pp. 115–121.

Nair, G. 2007. *The Craft of Singing*. San Diego: Plural Publishing.

Neale, J. 2016. Iterative categorization (IC): a systematic technique for analysing qualitative data. *Addiction* 111(6), pp. 1096–1106. doi: 10.1111/add.13314.

Newman, I. and Ridenour, C. 1998. *Qualitative-Quantitative Research Methodology: Exploring the Interactive Continuum Qualitative-Quantitative Research: A False Dichotomy*. Available at:
http://ecommons.udayton.edu/eda_fac_pubhttp://ecommons.udayton.edu/eda_fac_pub/122.

Onwuegbuzie, A.J. and Daniel, L.G. 2005. *Editorial: Evidence-Based Guidelines for Publishing Articles in Research in the Schools and Beyond*.

Otsuka, T., Nakadai, K., Takahashi, T., Komatani, K., Ogata, T. and Okuno, H.G. 2010. Voice-awareness control for a humanoid robot consistent with its body posture and movements. *Paladyn, Journal of Behavioral Robotics* 1(1), pp. 80–88. doi: 10.2478/s13230-010-0009-x.

Park, Y.S., Konge, L. and Artino, A.R. 2020. The Positivism Paradigm of Research. *Academic Medicine* 95(5), pp. 690–694. doi: 10.1097/ACM.0000000000003093.

Pettersen, V. 2005. Muscular Patterns and Activation Levels of Auxiliary Breathing Muscles and Thorax Movement in Classical Singing. *Folia Phoniatrica et Logopaedica* 57(5–6), pp. 255–277. doi: 10.1159/000087079.

Pettersen, V. and Westgaard, R.H. 2004a. Muscle activity in professional classical singing: a study on muscles in the shoulder, neck and trunk. *Logopedics Phoniatrics Vocology* 29(2), pp. 56–65. doi: 10.1080/14015430410031661.

Pettersen, V. and Westgaard, R.H. 2004b. The association between upper trapezius activity and thorax movement in classical singing. *Journal of Voice* 18(4), pp. 500–512. doi: 10.1016/j.jvoice.2003.11.001.

Qiabi, M., Chagnon, K., Beaupré, A., Hercun, J. and Rakovich, G. 2015. Scoliosis and Bronchial Obstruction. *Canadian Respiratory Journal* 22(4), pp. 206–208. doi: 10.1155/2015/640573.

Radha, S. 2006. *HATHA YOGA THE HIDDEN LANGUAGE SYMBOLS, SECRETS & METAPHOR* SWAMI SIVANANDA RADHA TIMELESS BOOKS. Timeless Books. Available at: www.derekshapton.com.

Raviraj, A. and Menon, J.K.R. 2022. Prevalence of arytenoid adduction asymmetry in normophonic speakers: a retrospective study. *The Journal of Laryngology & Otology* 136(8), pp. 713–719. doi: 10.1017/S0022215121002553.

Redolfi, S. et al. 2020. Abnormal Activity of Neck Inspiratory Muscles during Sleep as a Prognostic Indicator in Chronic Obstructive Pulmonary Disease. *American Journal of Respiratory and Critical Care Medicine* 201(4), pp. 414–422. doi: 10.1164/rccm.201907-1312OC.

Ricci Maccarini, A. 2007. La manipolazione laringea nel trattamento dei disturbi della voce,. In: Fussi, F. ed. *La voce del cantante*. Omega, pp. 453–467.

Ricci Maccarini, A., Lucchini, E., Malinverno, M.R., Bissoni, E., Schindler, A. and Borrigan, A. 2009. Palpazione e manipolazione laringea. In: Schindler, O. ed. *La Voce*. Piccin.

Rollings, A.A. 2018. The Effects of Heel Height on Head Position, Long-Term Average Spectra, and Perceptions of Female Singers. *Journal of Voice* 32(1), pp. 127.e15-127.e23. doi: 10.1016/j.jvoice.2017.03.005.

Rubin, A.D., Hawkshaw, M.J., Moyer, C.A., Dean, C.M. and Sataloff, R.T. 2005. Arytenoid Cartilage Dislocation: A 20-year Experience. *Journal of Voice* 19(4), pp. 687–701. doi: 10.1016/j.jvoice.2004.11.002.

Rubin, J.S., Lieberman, J. and Harris, T.M. 2000. LARYNGEAL MANIPULATION. In: *Voice disorders and phonosurgeries*. Otolaryngologic Clinics of North America, pp. 1017–1034. doi: 10.1016/S0030-6665(05)70261-9.

Rubin, J.S., Mathieson, L. and Blake, E. 2004. Posture and Voice. *Journal of Singing* 60(3), pp. 271–275.

Saatweber, M. 2008. How to Help Teachers' Voices. *Folia Phoniatrica et Logopaedica* 60(6), pp. 288–290. doi: 10.1159/000170077.

Sadolin, C. 2008. *Complete Vocal Technique*. CVI Publications.

Sahrmann, S. 2011. *Movement system impairment syndromes of the extremities, cervical and thoracic spines*. Elsevier Mosby.

Saldana, J.M. 2013. *The coding manual for qualitative researchers*. SAGE.

Samlan, R.A., Story, B.H., Lotto, A.J. and Bunton, K. 2014. Acoustic and Perceptual Effects of Left–Right Laryngeal Asymmetries Based on Computational Modeling. *Journal of Speech, Language, and Hearing Research* 57(5), pp. 1619–1637. doi: 10.1044/2014_JSLHR-S-12-0405.

Sandgren, M. 2005. *Voice use and occupational stress in professional opera singers*. Stockholm, Sweden: Karolinska Institutet, Department of Clinical Sciences, Danderyd Hospital. Available at: <http://www.diva-portal.org/smash/get/diva2:194013/FULLTEXT01.pdf>.

Santoro, R. and Gucciardo, A.G. 2024. *Sulle asimmetrie aritenoidee nei cantanti. Stato dell'arte e nostra esperienza*. Università Niccolò Cusano.

Sato, F. et al. 2019. Relationship Between Cervical, Thoracic, and Lumbar Spinal Alignments in Automotive Seated Posture. *Journal of Biomechanical Engineering* 141(12). doi: 10.1115/1.4045111.

Savani, K., Morris, M.W., Fincher, K., Lu, J.G. and Kaufman, S.B. 2022. Experiential learning of cultural norms: The role of implicit and explicit aptitudes. *Journal of Personality and Social Psychology* 123(2), pp. 272–291. doi: 10.1037/pspa0000290.

Schneider, C.M., Dennehy, C.A. and Saxon, K.G. 1997. Exercise physiology principles applied to vocal performance: The improvement of postural alignment. *Journal of Voice* 11(3), pp. 332–337. doi: 10.1016/S0892-1997(97)80012-4.

Schon, D. 1983. *The Reflective Practitioner*. Basic Books.

Schwandt, T.A., Lincoln, Y.S. and Guba, E.G. 2007. Judging interpretations: But is it rigorous? trustworthiness and authenticity in naturalistic evaluation. *New Directions for Evaluation* 2007(114), pp. 11–25. doi: 10.1002/ev.223.

Scoppa, F. 2000. Posturologia: il modello neurofisiologico, il modello biomeccanico, il modello psicosomatico. *Otoneurologia* 9, pp. 3–13.

Scotto Di Carlo, N. 1998. Cervical Spine Abnormalities in Professional Singers. *Folia Phoniatrica et Logopaedica* 50(4), pp. 212–218. doi: 10.1159/000021463.

Scotto Di Carlo, N. 2002. X-Ray Study of a Professional Soprano's Postural Strategy for Increasing Laryngeal Mobility. *Folia Phoniatrica et Logopaedica* 54(4), pp. 165–170. doi: 10.1159/000063193.

Shadish, W.R., Cook, T.D. and Campbell, D.T. 2002. *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston, MA: Houghton Mifflin.

Shanks, G. and Bekmamedova, N. 2018. Case study research in information systems. *Research Methods: Information, Systems, and Contexts: Second Edition*, pp. 193–208. doi: 10.1016/B978-0-08-102220-7.00007-8.

Shin, J., Kang, B., Park, T., Huh, J., Kim, J. and Song, J. 2016. BeUpright. In: *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. New York, NY, USA: ACM, pp. 6040–6052. doi: 10.1145/2858036.2858561.

Sipko, T., Barczyk-Pawelec, K., Piksa, M. and Mencil, J. 2024. Impact of Standing and Sitting Postures on Spinal Curvature and Muscle Mechanical Properties in Young Women: A Photogrammetric and MyotonPro Analysis. *Medical Science Monitor* 30. doi: 10.12659/MSM.944930.

Slepian, M.L. and Ambady, N. 2012. Fluid movement and creativity. *Journal of Experimental Psychology: General* 141(4), pp. 625–629. doi: 10.1037/a0027395.

Somme, L., Audouin, M., Chau, N., Beyaert, C. and Perrin, P. 2024. Associations of Postural Activities and Knowledge for Voice with Breathing Issues and Voice-Physical-Disorders Among Lyric Singers. *Journal of Voice*. doi: 10.1016/j.jvoice.2023.12.016.

Soto-Morettini, D. 2014. *Popular Singing and Style*. 2nd ed. London: Bloomsbury.

Staes, F.F., Jansen, L., Vilette, A., Coveliers, Y., Daniels, K. and Decoster, W. 2011. Physical Therapy as a Means to Optimize Posture and Voice Parameters in Student Classical Singers: A Case Report. *Journal of Voice* 25(3), pp. e91–e101. doi: 10.1016/j.jvoice.2009.10.012.

Steinhauer, K., McDonald Klimek, M. and Estill, J. 2017. *The Estill Voice Model: Theory and Translation*. Estill Voice International.

von Suchodoletz, A. and Hepach, R. 2021. Cultural values shape the expression of self-evaluative social emotions. *Scientific Reports* 11(1), p. 13169. doi: 10.1038/s41598-021-92652-8.

Sukhera, J. 2022. Narrative Reviews: Flexible, Rigorous, and Practical. *Journal of Graduate Medical Education* 14(4), pp. 414–417. doi: 10.4300/JGME-D-22-00480.1.

Teixeira, J.P., Oliveira, C. and Lopes, C. 2013. Vocal Acoustic Analysis – Jitter, Shimmer and HNR Parameters. *Procedia Technology* 9. doi: 10.1016/j.protcy.2013.12.124.

Thomas, J. and Harden, A. 2008. Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology* 8(1), p. 45. doi: 10.1186/1471-2288-8-45.

Thurman, L. and Welch, G.F. 2000. *Bodymind and Voice: Foundations of Voice Education*.

Thurman, L. and Welch, G. F. eds. Collegeville, MN: The VoiceCare Network.

Titze, I.R. 2006. The F0-F1 Crossover Exercise. *Journal of Singing* 62(3), pp. 295–297.

Titze, I.R. 2008. Nonlinear source–filter coupling in phonation: Theory. *The Journal of the Acoustical Society of America* 123(5), pp. 2733–2749. doi: 10.1121/1.2832337.

Titze, I.R., Worley, A.S. and Story, B.H. 2011. Source-Vocal Tract Interaction in Female Operatic Singing and Theater Belting. *Journal of Singing* 67(5), pp. 561–572.

Toronto, C.E. and Remington, R. 2020. *A Step-by-Step Guide to Conducting an Integrative Review*. Toronto, C. E. and Remington, R. eds. Cham: Springer International Publishing. doi: 10.1007/978-3-030-37504-1.

Trochim, W. 2007. The Research Methods Knowledge Base.

Ursino, F. 2011. *Voce e postura*. Milano: Omega.

Valentine, E.R., Fitzgerald, D.F.P., Gorton, T.L., Hudson, J.A. and Symonds, E.R.C. 1995. The Effect of Lessons in the Alexander Technique on Music Performance in High and Low Stress Situations. *Psychology of Music* 23(2), pp. 129–141. doi: 10.1177/0305735695232002.

Wadleigh, A. 2019. *Feldenkrais Exercise For Neck and Shoulder Pain*. Genesin II Publishing Inc.

Wallace, S.A. 1996. The Dynamic Pattern Perspective of Rhythmic Movement: An Introduction. In: Zelaznik, H. N. ed. *Advances in Motor Learning and Control*. Champaign, IL: Human Kinetics, pp. 155–194.

Wang, X. and Cheng, Z. 2020. Cross-Sectional Studies. *Chest* 158(1), pp. S65–S71. doi: 10.1016/j.chest.2020.03.012.

Warwick, P. 2007. Reflective practice: some notes on the development of the notion of professional reflection.

Washino, S., Kanehisa, H. and Yoshitake, Y. 2017. Neck inspiratory muscle activation patterns during well-controlled inspiration. *European Journal of Applied Physiology* 117(10), pp. 2085–2097. doi: 10.1007/s00421-017-3699-5.

Watson, A.H.D. 2009. *The Biology of Musical Performance and Performance-Related Injury*. Lanham, MD: Scarecrow Press.

Watson, A.H.D., Williams, C. and James, B. V. 2012. Activity Patterns in Latissimus Dorsi and Sternocleidomastoid in Classical Singers. *Journal of Voice* 26(3), pp. e95–e105. doi: 10.1016/j.jvoice.2011.04.008.

Wilson Arboleda, B.M. and Frederick, A.L. 2008. Considerations for Maintenance of Postural Alignment for Voice Production. *Journal of Voice* 22(1), pp. 90–99. doi: 10.1016/j.jvoice.2006.08.001.

Winter, D. 2020. *Understanding Research Methods: From Singing Teacher to Practitioner Researcher*. doi: 10.13140/RG.2.2.16046.13122.

Winter, D. 2022. *Exploring the Narrative: Voice Practitioner Research and the Literature Review Process*.

Worsley, V. 2016. *Feldenkrais for Actors - How to do less and discover more*. Nick Hern Books.

Zafar, H., Albarrati, A., Alghadir, A.H. and Iqbal, Z.A. 2018. Effect of Different Head-Neck Postures on the Respiratory Function in Healthy Males. *BioMed Research International* 2018, pp. 1–4. doi: 10.1155/2018/4518269.

Zhang, H. 2024. The Actors Shaping Roles to Stimulate Real Emotions in Drama Performances. *International Journal of Education and Humanities* 13(2), pp. 69–71. doi: 10.54097/sdjs6p77.

APPENDIXES:

APPENDIX A. GREY LITERATURE (as per Kepes et al., 2012)

Author	Title	Type of source	Evidence tier (Kepes et al.)
Alexander, F.M	The Use Of The Self	Book	Tier 1
Banfi, M	Canto e postura: Il canto e l'educazione della voce cantata in rapporto alla postura corporea	Book	Tier 1
Brown, O.L	Discover Your Voice: How to Develop Healthy Voice Habits	Book	Tier 1
Brown, W.E	Vocal Wisdom: Maxims of Giovanni Battista Lamperti	Book	Tier 1
Busquet, L	Le catene muscolari	Book	Tier 1
Callaghan, J	Singing and Science: Body, Brain and Voice	Book	Tier 1
College Art Association of America	Overview of Health Issues for Performing and Visual Arts Students	Report	Tier 1
Conable, B	What Every Musician Needs to Know About the Body	Book	Tier 1
Craze, R	Teach Yourself the Alexander Technique	Book	Tier 1
Dayme, M.B	The Performer's Voice: Realizing Your Vocal Potential	Book	Tier 1
Dimon, T	Anatomia della voce: Una guida illustrata per cantanti, vocal coach e logopedisti	Book	Tier 1
Feldenkrais, M	Awareness through movement - Health exercises for personal growth	Book	Tier 1
Garcia, M	HINTS ON SINGING	Book	Tier 1
Gates, R	Free_To_Sing_Encouraging_Post	Non peer reviewed article	Tier 1
Gelb, M.J	Body Learning: An Introduction to the Alexander Technique, Second Edition	Book	Tier 1
Ghaye, T	Teaching and Learning through Reflective Practice: A Practical Guide for Positive Action. second	Book	Tier 1
Gucciardo, A.G	"La médecine des arts du spectacle vivant	Thesis	Tier 1
Gucciardo, A.G. and Mecorio, F	I lemmi della voce	Book	Tier 1
Heirich, J.R	Voice and the Alexander Technique	Book	Tier 1
Horvath, J	Playing (Less) Hurt: An Injury Prevention Guide for Musicians	Other	Tier 1
Juvarra, A	Il canto e le sue tecniche: trattato	Book	Tier 1
Kayes, G	Singing and the Actor	Book	Tier 1
Kelso, J.A.S	Dynamic Patterns: The Self-Organization of Brain and Behavior	Book	Tier 1

Kendall McCreary, E.K., Kendall Peterson, F., Provance, P., McIntyre Rodgers, M. and Romani, W.A	Muscles : Testing and Function	Other	Tier 1
Lamperti, F	Guida-Teorico-Pratica-Elementare per lo studio del canto	Book	Tier 1
LeBorgne, W.D. and Rosenberg, M.D	The Vocal Athlete	Book	Tier 1
Linklater, K	Freeing the Natural Voice	Book	Tier 1
Lloyd, A., Hoffman-Ruddy, B., Silverman, E., Lehman, J.L. and Lloyd, A	Vocal Yoga: Applying Yoga Principles in Voice Therapy	Report	Tier 1
Maccarini, A.R., Malinverno, M.R., Lucchini, E., Bissoni, E., Schindler, A. and Borragan, A	PALPAZIONE E MANIPOLAZIONE LARINGEA	Book section	Tier 1
Malde, M., Zeller, K.-A. and Allen, M	What Every Singer Needs to Know About the Body . second	Book	Tier 1
Mancini, R	L'art du chant	Book	Tier 1
McCoy, S	Singing music theater and voice science	Book	Tier 1
McKinney, J.C	The Diagnosis and Correction of Vocal Faults: A Manual for Teachers of Singing and for Choir Directors	Book	Tier 1
Miller, R	Solutions for Singers: Tools for Performers and Teachers	Book	Tier 1
Nair, G	The Craft of Singing	Book	Tier 1
Radha, S	HATHA YOGA THE HIDDEN LANGUAGE SYMBOLS, SECRETS & METAPHOR SWAMI SIVANANDA RADHA TIMELESS BOOKS	Book	Tier 1
Ricci Maccarini, A	La manipolazione laringea nel trattamento dei disturbi della voce,	Book	Tier 1
Ricci Maccarini, A., Lucchini, E., Malinverno, M.R., Bissoni, E., Schindler, A. and Borragan, A	Palpazione e manipolazione laringea	Book	Tier 1
Sadolin, C	Complete Vocal Technique	Book	Tier 1
Sahrmann, S	Movement system impairment syndromes of the extremities, cervical and thoracic spines	Book	Tier 1

Santoro, R. and Gucciardo, A.G	Sulle asimmetrie aritenoidee nei cantanti	Thesis	Tier 1
Soto-Morettini, D	Popular Singing and Style	Book	Tier 1
Thurman, L. and Welch, G.F	Bodymind and Voice: Foundations of Voice Education Thurman, L. and Welch, G	Book	Tier 1
Ursino, F	Voce e postura	Book	Tier 1
Wadleigh, A	Feldenkrais Exercise For Neck and Shoulder Pain	Book	Tier 1
Watson, A.H.D	The Biology of Musical Performance and Performance-Related Injury	Book	Tier 1
Worsley, V	Feldenkrais for Actors - How to do less and discover more	Book	Tier 1

APPENDIX B – PEER REVIEWED LITERATURE.

PEER REVIEWED LITERATURE.

Authors	Title	Year	Journal	Theme	Findings
Amiri-Khorasani, M. and Kellis, E..	Acute Effects of Different Agonist and Antagonist Stretching Arrangements on Static and Dynamic Range of Motion.	2015	<i>Asian Journal of Sports Medicine</i> 6(4).	Agonist/ant agonist muscles in stretching	dynamic stretching is more effective than static stretching in facilitating alignment
Anegawa, E., Tsuyama, H. and Kusakawa	Lateral cephalometric analysis of the pharyngeal airway space affected by head posture.	2008	<i>International Journal of Oral and Maxillofacial Surgery</i> 37(9)	PAS and cervical posture	Forward inclination of the head increases the pharyngeal airway space

Angelakis, E., Bakogianis, K., Georgaki, A. and Andreopolou, A	Operatic Singing Biomechanics: Skeletal Tracking Sensor Integration for Pedagogical Innovation	2025	Sensors 25(15),	Posture and Voice	Skeletal Tracking Sensors to map opera singers' posture offers accurate pedagogical feedback and the possibility of linking postural tracking with acoustic measures in research
Aparecida Cielo, C. et al.	MUSCULOSKELETAL STRESS SYNDROME, EXTRINSIC LARYNGEAL MUSCLES AND BODY POSTURE: THEORETICAL CONSIDERATIONS	2014	Rev. CEFAC 16(5)	Review on musculoskeletal stress syndrome	Craniocervical flexion therapy is one of the possible beneficial interventions for musculoskeletal stress syndrome related to voice.
Armstrong, B., McNair, P. and Taylor, D.	Head and Neck Position Sense	2008	<i>Sports Medicine</i>	Highlights important anatomical structures for head position sense	Vestibular problems might alter the proprioception and control of head position

Attali, V., Laveneziana, P., Valentin, R., Sandoz, B., Straus, C. and Similowski, T.	Effects of Posture on the Inspiratory and Expiratory Components of Vital Capacity in Healthy Humans	2025	<i>Archivos de Bronconeumología</i> 61(2)	Effects of posture on breathing.	Reduction of vital capacity when lying supine
Bamigboye, B.A., Akinola, M.A., Ogunbiyi, A.A. and Somefun, A.O	Arytenoid adduction asymmetry among patients with laryngeal disorders.	2024	Egyptian Journal of Otolaryngology 40(1)	Arytenoid asymmetry	Arytenoid asymmetry is associated with hoarseness
Bartoskova, M	The Role of the Psoas Major Muscle in Speaking and Singing	2021	Voice and Speech Review 15(2),	Posture & voice (general)	At the muscular level, Bartoskova's (2021) review suggests possible links between the psoas and the diaphragm, with implications for both speaking and singing, though results remain contradictory.
Behm, D.G., Blazeovich, A.J., Kay, A.D. and McHugh, M	Acute effects of muscle stretching on physical performance, range of motion, and injury incidence in healthy active individuals: a systematic review	2016	Applied Physiology, Nutrition, and Metabolism 41(1),	Stretching	dynamic stretching is more effective than static alignment exercises

Behrman, A	Common Practices of Voice Therapists in the Evaluation of Patients	2005	Journal of Voice 19(3),	Posture and speech therapy	speech therapists routinely include postural observation in assessment
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Berolo, S., Wells, R.P. and Amick, B.C	Musculoskeletal symptoms among mobile hand-held device users and their relationship to device use: A preliminary study in a Canadian university population	2011	Applied Ergonomics 42(2),	Posture & behaviours	Prolonged smartphone use is linked to altered cervical posture
Bloch, S	Alba Emoting: A Psychophysiological Technique to Help Actors Create and Control Real Emotions	1993	Theatre Topics 3(2),	Posture & emotions/M PA	altering posture, breathing, or facial expression can change emotional state and physiology
Bonilha, H.S., O'Shields, M., Gerlach, T.T. and Deliyski, D.D	Arytenoid adduction asymmetries in persons with and without voice disorders	2009	Logopedics Phoniatrics Vocology 34(3),	Laryngeal asymmetry	relationship between posture and arytoids asymmetry
Bruno, E., De Padova, A., Napolitano, B., Marroni, P., Batelli, R., Ottaviani, F. and Alessandrini, M	Voice Disorders and Posturography: Variables to Define the Success of Rehabilitative Treatment	2009	Journal of Voice 23(1),	Vocal health & posture	forward head position predicts severe dysphonia

Bruno, G. et al	Posture and dysphonia associations in patients undergoing total thyroidectomy: stabilometric analysis	2020	Updates in Surgery 72(4),	Posture & laryngeal/tr act	postural alterations can affect the voice, and vocal changes can in turn affect posture
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Brühl, M., Hmida, J., Tomschi, F., Cucchi, D., Wirtz, D.C., Strauss, A.C. and Hilberg, T	Smartphone Use—Influence on Posture and Gait during Standing and Walking	2023	Healthcare 11(18),	Posture & behaviours	Prolonged smartphone use is linked to altered cervical postur
Cardoso, R., Lumini-Oliveira, J. and Meneses, R.F	Associations between Posture, Voice, and Dysphonia: A Systematic Review	2019	Journal of Voice 33(1),	Vocal health & posture	specific evidence concerning body posture and voice disorders has been lacking. different body types that can result in different compensations
Castillo-Allendes, A., Delgado-Bravo, M., Ponce, A.R. and Hunter, E.J	Muscle Activity and Aerodynamic Voice Changes at Different Body Postures: A Pilot Study	2025	Journal of Voice 39(2),	Posture and breathing	no significant differences in phonation or breathing function across four standardised postures in experienced singers

Chiu, C., Weng, Y. and Chen, B	Tongue Postures and Tongue Centers: A Study of Acoustic- Articulatory Correspondenc es Across Different Head Angles	2022	Frontiers in Psychology 12	Acoustics & posture	Cervical posture affects resonance balance and formants
Dael, N., Mortillaro, M. and Scherer, K.R	Supplemental Material for Emotion Expression in Body Action and Posture	2012	Emotion 12(5),	Posture & emotions/M PA	specific body postures convey discrete emotional information
Dumas, D., Doherty, M. and Organisci ak, P	The psychology of professional and student actors: Creativity, personality, and motivation	2020	PLOS ONE 15(10),	Posture & emotions/M PA	open or closed postures, fluid arm movements, and arm flexion are linked with increased creativity
Ernst, E. and Canter, P.H	The Alexander Technique: A Systematic Review of Controlled Clinical Trials	2003	Complementary Medicine Research 10(6),	Alexander technique	Limited evidence that Alexander technique fosters kinesthetic awareness in the head–neck–back relationship.

Estill, J., Kobayashi, N., Honda, K. and Kakita, Y	A study on respiratory and glottal controls in six western singing qualities: airflow and intensity measurement of professional singing	1990	In: First International Conference on Spoken Language Processing (ICSLP 1990). ISCA: ISCA, pp. 169–172. doi: 10.21437/ICSLP.1990-43.	Posture & breathing	Torso muscles are involved in controlling and stabilizing breath
Flory, Y	The influence of head and body postures on the acoustic speech signal	2016	International Journal of Speech Language and the Law 23(1),	Acoustics & posture	Cervical posture affects resonance balance and formants
Franco, D., Martins, F., Andrea, M., Fragoso, I., Carrão, L. and Teles, J	Is the Sagittal Postural Alignment Different in Normal and Dysphonic Adult Speakers? Journal of Voice 28(4), pp	2014	523.e1-523.e8	Posture and vocal health	sagittal plane differences between normophonic and dysphonic speakers

Franzone, R., Petrigna, L., Signorelli, D. and Musumeci, G	The Relationship between Posture and Muscle Tensive Dysphonia in Teachers: A Systematic Scoping Review	2024	Journal of Functional Morphology and Kinesiology 9(2),	Vocal health & posture	swayback and forward-head postures are associated with voice disorders
Friedman, R.S. and Förster, J	The effects of approach and avoidance motor actions on the elements of creative insight	2000	Journal of Personality and Social Psychology 79(4),	Posture & emotions/M PA	arm flexion is linked with increased creativity
Frosolini, A. et al	Optimal Timing and Treatment Modalities of Arytenoid Dislocation and Subluxation: A Meta-Analysis	2025	Medicina 61(1),	Laryngeal asymmetry	Arytenoid subluxations are associated with reduced phonatory efficiency symptoms
Gilman, M. and Johns, M.M	The Effect of Head Position and/or Stance on the Self-perception of Phonatory Effort	2017	Journal of Voice 31(1),	Vocal health & posture	shifts in head position may increase self-perceived phonatory effort

Gong, T. et al	Effects of Liuzijue Qigong Posture on Aerodynamics of Phonation in Healthy Volunteers	2024	Journal of Voice 38(4),	Posture & breathing	Qigong (Gong et al., 2024) offers integrative approaches to posture, breath, and emotional regulation.
Grimmer-Somers, K., Milanese, S. and Louw, Q	Measurement of Cervical Posture in the Sagittal Plane	2008	Journal of Manipulative and Physiological Therapeutics 31(7),	Posture models & alignment	no standardised method exists for cervical posture
Hallam, S. and Himonides, E	Musicians and creativity	2022	The Power of Music. Cambridge, UK: Open Book Publishers,	Posture & emotions/M PA	open or closed postures, fluid arm movements, and arm flexion are linked with increased creativity

Hamdan, A.-L., Hussein, S.T., Halawi, A. and Sibai, A	a	2011	Arytenoid Asymmetry in Relation to Vocal Symptoms in Singers. Journal of Voice 25(2),	Laryngeal asymmetry	Arytenoid adduction asymmetry is found in more than one third of the normophonic population
Hamdan, A.-L., Nassar, J., Ashkar, J. and Sibai, A	b	2011	Prevalence of arytenoid asymmetry in relation to vocal symptoms. The Journal of Laryngology & Otology 125(3),	Laryngeal asymmetry	Laryngeal asymmetry is more frequent among subjects with vocal fatigue.
Hao, N., Xue, H., Yuan, H., Wang, Q. and Runco, M.A	Enhancing creativity: Proper body posture meets proper emotion	2017	Acta Psychologica 173,	Posture & emotions/M PA	open or closed postures, fluid arm movements, and arm flexion are linked with increased creativity

Hao, N., Yuan, H., Hu, Y. and Grabner, R.H	Interaction effect of body position and arm posture on creative thinking	2014	Learning and Individual Differences 32,	Posture & emotions/M PA	open or closed postures, fluid arm movements, and arm flexion are linked with increased creativity
Hoit, J.D	Respiratory function during speaking and singing in professional country singers.	1996	<i>Journal of Voice</i> 10(1), pp. 39–49	Posture & breathing	body position has a profound impact on breathing behaviour
Honda, K., Hirai, H., Masaki, S. and Shimada, Y	Role of Vertical Larynx Movement and Cervical Lordosis in F0 Control	1999	Language and Speech 42(4),	Posture & laryngeal/tr act	Cervical flexion facilitates thyroid tilt
Husseini, S.T., Ashkar, J., Halawi, A., Sibai, A. and Hamdan, A.-L	Arytenoid Asymmetry in Relation to Posture, Neck Tension and Glottal Attack in Singers	2011	Folia Phoniatica et Logopaedica 63(5),	Laryngeal asymmetry	There are no relationships between posture and arytenoids asymmetry

Jiang, T., Fang, B., Yu, Z. and Cao, D	Hoarseness and arytenoid dislocation: A rare complication after facial bony contouring surgery	2023	Journal of Plastic, Reconstructive & Aesthetic Surgery 84,	Laryngeal asymetry	Arytenoids dislocations can produce significant and well-documented voice impairments
Jones, F.P	Voice Production as a Function of Head Balance in Singers	1972	The Journal of Psychology 82(2),	Posture & voice (general)	shifts in head position may increase self-perceived phonatory effort
Joshi, S., Balthillaya , G. and Neelapala , Y.V.R	Thoracic Posture and Mobility in Mechanical Neck Pain Population: A Review of the Literature	2019	Asian Spine Journal 13(5),	Posture models & alignment	correlations between thoracic kyphosis and forward head (Joshi et al., 2019),
Jung, S.I., Lee, N.K., Kang, K.W., Kim, K. and Lee, D.Y	The effect of smartphone usage time on posture and respiratory function	2016	Journal of Physical Therapy Science 28(1),	Posture & behaviours	Prolonged smartphone use is linked to altered cervical posture

Kang, J.-H., Park, R.-Y., Lee, S.-J., Kim, J.-Y., Yoon, S.-R. and Jung, K.-I	The Effect of The Forward Head Posture on Postural Balance in Long Time Computer Based Worker	2012	Annals of Rehabilitation Medicine 36(1),	Posture models & alignment	computer work have been linked to altered cervical posture
Kang, K.W., Jung, S.I., Lee, D.Y., Kim, K. and Lee, N.K	Effect of sitting posture on respiratory function while using a smartphone	2016	Journal of Physical Therapy Science 28(5),	Posture & breathing	Prolonged smartphone use is linked to altered cervical posture
Khalsa, S.B.S., Shorter, S.M., Cope, S., Wyshak, G. and Sklar, E	Yoga Ameliorates Performance Anxiety and Mood Disturbance in Young Professional Musicians	2009	Applied Psychophysiology and Biofeedback 34(4),	Posture & breathing	yoga offer integrative approaches to posture, breath, and emotional regulation.

Kim, S. Il et al	The Association Between Cervical Spine Alignment and Voice Symptoms in Patients With Voice Disorders: A Prospective Cohort Study	2025	Journal of Voice	Vocal health & posture	swayback and forward-head is associated with voice fatigue and voice disorders
Klein, S.D., Bayard, C. and Wolf, U	The Alexander Technique and musicians: a systematic review of controlled trials	2014	BMC Complementary and Alternative Medicine 14(1),	Posture & breathing	Limited evidence that Alexander technique fosters kinesthetic awareness in the head–neck–back relationship.
Knight, E.J. and Austin, S.F	The Effect of Head Flexion/Extension on Acoustic Measures of Singing Voice Quality	2020	Journal of Voice 34(6),	Acoustics & posture	higher spectral prominence ratio, linked to brightness and projection, in head flexion

Kong, X. et al.	Risk factors of arytenoid dislocation after endotracheal intubation: A propensity-matched analysis.	2022	Laryngoscope Investigative Otolaryngology 7(6),	Laryngeal asymmetry	Voice impairments associated with arytenoids dislocations
Kooijman, P.G.C., de Jong, F.I.C.R.S., Oudes, M.J., Huinck, W., van Acht, H. and Graamans, K	Muscular Tension and Body Posture in Relation to Voice Handicap and Voice Quality in Teachers with Persistent Voice Complaints	2005	Folia Phoniatica et Logopaedica 57(3),	Vocal health & posture	postural changes affect vocal efficiency
Koumbourlis, A.C	Scoliosis and the respiratory system	2006	Paediatric Respiratory Reviews 7(2),	Posture & breathing	postural alterations such as scoliosis can significantly affect respiratory function
Kwon, Y., Kim, J.-W., Heo, J.-H., Jeon, H.-M., Choi, E.-B. and Eom, G.-M	The effect of sitting posture on the loads at cervico-thoracic and lumbosacral joints	2018	Technology and Health Care 26(1_suppl),	Posture models & alignment	changes in joint loading can depend on arm and sitting positions (Kwon et al., 2018).
Lagier, A., Vaugoyeau, M., Ghio, A., Legou, T., Giovanni, A. and Assaiante, C	Coordination between Posture and Phonation in Vocal Effort Behavior	2010	Folia Phoniatica et Logopaedica 62(4),	Vocal health & posture	vocal effort can modify posture

León-Morillas, F., Lozano-Quijada, C., Lérída-Ortega, M.Á., León-Garzón, M.C., Ibáñez-Vera, A.J. and de Oliveira-Sousa, S.L	Relationship between Respiratory Muscle Function and Postural Stability in Male Soccer Players: A Case-Control Study	2021	Healthcare 9(6),	Posture & breathing	stability is essential for efficient respiration
Lucchini, E. et al	Voice Improvement in Patients with Functional Dysphonia Treated with the Proprioceptive-Elastic (PROEL) Method	2018	Journal of Voice 32(2),	Posture & breathing	PROEL promotes elastic, non-rigid muscular use;
Mathew, A.S. and Menon, J.R	"Innocent" arytenoid adduction asymmetry: An etiological survey	2021	European Archives of Oto-Rhino-Laryngology 278(2),	Laryngeal asymmetry	Asymmetry in the movement of the arytenoids during adduction can be either physiological or pathological

Miller, R	Sotto Voce: The Garcia Position	1988	Journal of Singing - The Official Journal of the National Association of Teachers of Singing 15(2),	Posture and singing	description of 'Garcia's position' (sternum elevated, shoulders back and down
Mohan, K., Pillai, V.M., Jayendrakumar, P.D., Sankaran, P. and Chandramohan, A	Video image-based posture assessment: an approach for dynamic working posture assessment	2022	Theoretical Issues in Ergonomics Science 23(6),	Posture models & alignment	observational tools for assessing posture are often unreliable
Moradi, N. et al	Intrarater and Interrater Reliability of Sagittal Head Posture: A Novel Technique Performed by a Physiotherapist and a Speech and Language Pathologist	2014	Journal of Voice 28(6),	Posture models & alignment	observational tools for assessing posture are often unreliable

Muto, T., Takeda, S., Kanazawa, M., Yamazaki, A., Fujiwara, Y. and Mizoguchi, I	The effect of head posture on the pharyngeal airway space (PAS)	2002	International Journal of Oral and Maxillofacial Surgery 31(6),	Posture models & alignment	posture alters pharyngeal width and airway space
Muto, T., Yamazaki, A., Takeda, S., Kawakami, J., Tsuji, Y., Shibata, T. and Mizoguchi, I	Relationship between the pharyngeal airway space and craniofacial morphology, taking into account head posture	2006	International Journal of Oral and Maxillofacial Surgery 35(2),	Posture models & alignment	posture alters pharyngeal width and airway space
Nacci, A. et al	Stabilometric findings in patients affected by organic dysphonia before and after phonomicrosurgery	2017	Acta Otorhinolaryngologica Italica 37(4),	Vocal health & posture	no strong correlation between specific vocal pathologies (nodules, polyps, cysts, Reinke's oedema) and specific postural alterations (except for minor associations with nodules)

Nacci, A., Fattori, B., Mancini, V., Panicucci, E., Matteucci, J., Ursino, F. and Berrettini, S	Posturographic analysis in patients with dysfunctional dysphonia before and after speech therapy/rehabilitation treatment	2012	Acta Otorhinolaryngologica Italica 32(2),	Vocal health & posture	speech therapists routinely include postural observation in assessment
Otsuka, T., Nakadai, K., Takahashi, T., Komatani, K., Ogata, T. and Okuno, H.G	Voice-awareness control for a humanoid robot consistent with its body posture and movements	2010	Paladyn, Journal of Behavioral Robotics 1(1),	Posture models & alignment	head movements alter vocal quality (study on humanoid robot)
Pettersen, V	Muscular Patterns and Activation Levels of Auxiliary Breathing Muscles and Thorax Movement in Classical Singing	2005	Folia Phoniatica et Logopaedica 57(5–6),	Posture & breathing	opera singers show higher levels of activity in postural muscles

Pettersen, V. and Westgaard, R.H	a	2004	Muscle activity in professional classical singing: a study on muscles in the shoulder, neck and trunk. Logopedics Phoniatrics Vocology 29(2),	Posture & singing	opera singers show higher levels of activity in postural muscles
Pettersen, V. and Westgaard, R.H	b	2004	The association between upper trapezius activity and thorax movement in classical singing. Journal of Voice 18(4),	Posture & singing	opera singers show higher levels of activity in postural muscles
Raviraj, A. and Menon, J.K.R	Prevalence of arytenoid adduction asymmetry in normophonic speakers: a retrospective study	2022	The Journal of Laryngology & Otology 136(8),	Laryngeal asymmetry	Arytenoid adduction asymmetry is found in more than one third of the normophonic population
Redolfi, S. et al	Abnormal Activity of Neck Inspiratory Muscles during Sleep as a Prognostic Indicator in Chronic Obstructive Pulmonary Disease	2020	American Journal of Respiratory and Critical Care Medicine 201(4),	Posture & breathing	Association between respiratory disorders and posture.

Rollings, A.A	The Effects of Heel Height on Head Position, Long-Term Average Spectra, and Perceptions of Female Singers	2018	Journal of Voice 32(1),	Posture models & alignment	heels alter spinal alignment and require compensatory adjustments that can influence performance
Rubin, A.D., Hawkshaw, M.J., Moyer, C.A., Dean, C.M. and Sataloff, R.T	Arytenoid Cartilage Dislocation: A 20-year Experience	2005	Journal of Voice 19(4),	Laryngeal asymmetry	Arytenoids dislocation is associated with vocal impairments
Rubin, J.S., Lieberman, J. and Harris, T.M	LARYNGEAL MANIPULATION	2000	In: Voice disorders and phonosurgeries. Otolaryngologic Clinics of North America, pp. 1017–1034. doi: 10.1016/S0030-6665(05)70261-9.	Laryngeal asymmetry	Arytenoids asymmetry is often treated with osteopathic treatment or laryngeal manipulation

Rubin, J.S., Mathieson, L. and Blake, E	Posture and Voice	2004	Journal of Singing 60(3),	Posture models & alignment	Posture is poorly supported by consistent scientific consensus:
Samlan, R.A., Story, B.H., Lotto, A.J. and Bunton, K	Acoustic and Perceptual Effects of Left–Right Laryngeal Asymmetries Based on Computational Modeling	2014	Journal of Speech, Language, and Hearing Research 57(5),	Laryngeal asymmetry	computational modeling to simulate left–right laryngeal asymmetries found that some (adduction, bulging, nodal point ratio) significantly influenced acoustic measures and perceived quality, while others did not
Sato, F. et al	Relationship Between Cervical, Thoracic, and Lumbar Spinal Alignments in Automotive Seated Posture	2019	Journal of Biomechanical Engineering 141(12)	Posture models & alignment	cervical–thoracic interactions in seated alignment

Schneider , C.M., Dennehy, C.A. and Saxon, K.G	Exercise physiology principles applied to vocal performance: The improvement of postural alignment	1997	Journal of Voice 11(3),	Posture models & alignment	Alignment uses exercise that check the head and neck motion range.
Scotto Di Carlo, N	Cervical Spine Abnormalities in Professional Singers	1998	Folia Phoniatica et Logopaedica 50(4),	Posture & voice (general)	Opera singers often exploit these adjustments by raising the chin on high note.
Scotto Di Carlo, N	X-Ray Study of a Professional Soprano's Postural Strategy for Increasing Laryngeal Mobility	2002	Folia Phoniatica et Logopaedica 54(4),	Posture & laryngeal/tr act	different body types can result in different adaptive or maladaptive structural or functional changes and habits, such as head flexion in high range to facilitate thyroid tilt

Shin, J., Kang, B., Park, T., Huh, J., Kim, J. and Song, J	BeUpright	2016	In: Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems. New York, NY, USA: ACM, pp. 6040–6052. doi: 10.1145/2858036.2858561.	Posture & behaviours	cultural etiquette can shape habitual alignment and movement
Sipko, T., Barczyk-Pawelec, K., Piksa, M. and Mencil, J	Impact of Standing and Sitting Postures on Spinal Curvature and Muscle Mechanical Properties in Young Women: A Photogrammetric and MyotonPro Analysis	2024	Medical Science Monitor 30	Posture models & alignment	stiffness in lumbar/thoracic regions influences sitting angles
Slepian, M.L. and Ambady, N	Fluid movement and creativity	2012	Journal of Experimental Psychology: General 141(4),	Posture & emotions/M PA	arm flexion are associated with increased creativity

Somme, L., Audouin, M., Chau, N., Beyaert, C. and Perrin, P	Associations of Postural Activities and Knowledge for Voice with Breathing Issues and Voice-Physical-Disorders Among Lyric Singers	2024	Journal of Voice	Posture & breathing	opera singers with anatomical and postural knowledge reported better voice quality, less fatigue, and greater attention to body pain
Staes, F.F., Jansen, L., Vilette, A., Coveliers, Y., Daniels, K. and Decoster, W	Physical Therapy as a Means to Optimize Posture and Voice Parameters in Student Classical Singers: A Case Report	2011	Journal of Voice 25(3),	Posture models & alignment	musculoskeletal stress, can decrease after craniocervical flexion therapy
Valentine, E.R., Fitzgerald, D.F.P., Gorton, T.L., Hudson, J.A. and Symonds, E.R.C	The Effect of Lessons in the Alexander Technique on Music Performance in High and Low Stress Situations	1995	Psychology of Music 23(2),	Posture & emotion	Alexander Technique is considered “promising” interventions for MPA.
von Suchodol etz, A. and Hepach, R	Cultural values shape the expression of self-evaluative social emotions	2021	Scientific Reports 11(1),	Posture & behaviours	cultural etiquette can shape habitual alignment and movement

Washino, S., Kanehisa, H. and Yoshitake, Y	Neck inspiratory muscle activation patterns during well-controlled inspiration	2017	European Journal of Applied Physiology 117(10),	Posture & breathing	head–neck posture plays a key role in efficient breathing
Wilson Arboleda, B.M. and Frederick, A.L	Considerations for Maintenance of Postural Alignment for Voice Production	2008	Journal of Voice 22(1),	Posture models & alignment	Description of postural assessment using the plumb line method
Zafar, H., Albarrati, A., Alghadir, A.H. and Iqbal, Z.A	Effect of Different Head-Neck Postures on the Respiratory Function in Healthy Males	2018	BioMed Research International 2018,	Posture & breathing	head–neck posture plays a key role in efficient breathing
Authors	Title	Year	Journal	Theme	Findings
Amiri-Khorasani, M. and Kellis, E..	Acute Effects of Different Agonist and Antagonist Stretching Arrangements on Static and Dynamic Range of Motion.	2015	<i>Asian Journal of Sports Medicine</i> 6(4).	Agonist/ant agonist muscles in stretching	dynamic stretching is more effective than static stretching in facilitating alignment

Anegawa, E., Tsuyama, H. and Kusakawa	Lateral cephalometric analysis of the pharyngeal airway space affected by head posture.	2008	<i>International Journal of Oral and Maxillofacial Surgery</i> 37(9)	PAS and cervical posture	Forward inclination of the head increases the pharyngeal airway space
Angelakis, E., Bakogianis, K., Georgaki, A. and Andreopolou, A	Operatic Singing Biomechanics: Skeletal Tracking Sensor Integration for Pedagogical Innovation	2025	Sensors 25(15),	Posture and Voice	Skeletal Tracking Sensors to map opera singers' posture offers accurate pedagogical feedback and the possibility of linking postural tracking with acoustic measures in research
Aparecida Cielo, C. et al.	MUSCULOSKELETAL STRESS SYNDROME, EXTRINSIC LARYNGEAL MUSCLES AND BODY POSTURE: THEORETICAL CONSIDERATIONS	2014	Rev. CEFAC 16(5)	Review on musculoskeletal stress syndrome	Craniocervical flexion therapy is one of the possible beneficial interventions for musculoskeletal stress syndrome related to voice.

Armstrong , B., McNair, P. and Taylor, D.	Head and Neck Position Sense	2008	<i>Sports Medicine</i>	Highlights important anatomical structures for head position sense	Vestibular problems might alter the proprioception and control of head position
Attali, V., Laveneziana, P., Valentin, R., Sandoz, B., Straus, C. and Similowski, T.	Effects of Posture on the Inspiratory and Expiratory Components of Vital Capacity in Healthy Humans	2025	<i>Archivos de Bronconeumología</i> 61(2)	Effects of posture on breathing.	Reduction of vital capacity when lying supine
Bamigboye, B.A., Akinola, M.A., Ogunbiyi, A.A. and Somefun, A.O	Arytenoid adduction asymmetry among patients with laryngeal disorders.	2024	Egyptian Journal of Otolaryngology 40(1)	Arytenoid asymmetry	Arytenoid asymmetry is associated with hoarseness
Bartoskova, M	The Role of the Psoas Major Muscle in Speaking and Singing	2021	Voice and Speech Review 15(2),	Posture & voice (general)	At the muscular level, Bartoskova's (2021) review suggests possible links between the psoas and the diaphragm, with implications for both speaking and singing, though results remain contradictory.

Behm, D.G., Blazeovich, A.J., Kay, A.D. and McHugh, M	Acute effects of muscle stretching on physical performance, range of motion, and injury incidence in healthy active individuals: a systematic review	2016	Applied Physiology, Nutrition, and Metabolism 41(1),	Stretching	dynamic stretching is more effective than static alignment exercises
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Behrman, A	Common Practices of Voice Therapists in the Evaluation of Patients	2005	Journal of Voice 19(3),	Posture and speech therapy	speech therapists routinely include postural observation in assessment
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Berolo, S., Wells, R.P. and Amick, B.C	Musculoskeletal symptoms among mobile hand-held device users and their relationship to device use: A preliminary study in a Canadian university population	2011	Applied Ergonomics 42(2),	Posture & behaviours	Prolonged smartphone use is linked to altered cervical posture
Bloch, S	Alba Emoting: A Psychophysiological Technique to Help Actors Create and Control Real Emotions	1993	Theatre Topics 3(2),	Posture & emotions/M PA	altering posture, breathing, or facial expression can change emotional state and physiology
Bonilha, H.S., O'Shields, M., Gerlach, T.T. and Deliyski, D.D	Arytenoid adduction asymmetries in persons with and without voice disorders	2009	Logopedics Phoniatrics Vocology 34(3),	Laryngeal asymmetry	relationship between posture and arytoids asymmetry
Bruno, E., De Padova, A., Napolitano, B., Marroni, P., Batelli, R., Ottaviani, F. and Alessandrini, M	Voice Disorders and Posturography: Variables to Define the Success of Rehabilitative Treatment	2009	Journal of Voice 23(1),	Vocal health & posture	forward head position predicts severe dysphonia

Bruno, G. et al	Posture and dysphonia associations in patients undergoing total thyroidectomy: stabilometric analysis	2020	Updates in Surgery 72(4),	Posture & laryngeal/tr act	postural alterations can affect the voice, and vocal changes can in turn affect posture
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Brühl, M., Hmida, J., Tomschi, F., Cucchi, D., Wirtz, D.C., Strauss, A.C. and Hilberg, T	Smartphone Use—Influence on Posture and Gait during Standing and Walking	2023	Healthcare 11(18),	Posture & behaviours	Prolonged smartphone use is linked to altered cervical postur
Cardoso, R., Lumini-Oliveira, J. and Meneses, R.F	Associations between Posture, Voice, and Dysphonia: A Systematic Review	2019	Journal of Voice 33(1),	Vocal health & posture	specific evidence concerning body posture and voice disorders has been lacking. different body types that can result in different compensations
Castillo-Allendes, A., Delgado-Bravo, M., Ponce, A.R. and Hunter, E.J	Muscle Activity and Aerodynamic Voice Changes at Different Body Postures: A Pilot Study	2025	Journal of Voice 39(2),	Posture and breathing	no significant differences in phonation or breathing function across four standardised postures in experienced singers

Chiu, C., Weng, Y. and Chen, B	Tongue Postures and Tongue Centers: A Study of Acoustic- Articulatory Correspondenc es Across Different Head Angles	2022	Frontiers in Psychology 12	Acoustics & posture	Cervical posture affects resonance balance and formants
Dael, N., Mortillaro, M. and Scherer, K.R	Supplemental Material for Emotion Expression in Body Action and Posture	2012	Emotion 12(5),	Posture & emotions/M PA	specific body postures convey discrete emotional information
Dumas, D., Doherty, M. and Organisci ak, P	The psychology of professional and student actors: Creativity, personality, and motivation	2020	PLOS ONE 15(10),	Posture & emotions/M PA	open or closed postures, fluid arm movements, and arm flexion are linked with increased creativity
Ernst, E. and Canter, P.H	The Alexander Technique: A Systematic Review of Controlled Clinical Trials	2003	Complementary Medicine Research 10(6),	Alexander technique	Limited evidence that Alexander technique fosters kinesthetic awareness in the head–neck–back relationship.

Estill, J., Kobayashi, N., Honda, K. and Kakita, Y	A study on respiratory and glottal controls in six western singing qualities: airflow and intensity measurement of professional singing	1990	In: First International Conference on Spoken Language Processing (ICSLP 1990). ISCA: ISCA, pp. 169–172. doi: 10.21437/ICSLP.1990-43.	Posture & breathing	Torso muscles are involved in controlling and stabilizing breath
Flory, Y	The influence of head and body postures on the acoustic speech signal	2016	International Journal of Speech Language and the Law 23(1),	Acoustics & posture	Cervical posture affects resonance balance and formants
Franco, D., Martins, F., Andrea, M., Fragoso, I., Carrão, L. and Teles, J	Is the Sagittal Postural Alignment Different in Normal and Dysphonic Adult Speakers? Journal of Voice 28(4), pp	2014	523.e1-523.e8	Posture and vocal health	sagittal plane differences between normophonic and dysphonic speakers

Franzone, R., Petrigna, L., Signorelli, D. and Musumeci, G	The Relationship between Posture and Muscle Tensive Dysphonia in Teachers: A Systematic Scoping Review	2024	Journal of Functional Morphology and Kinesiology 9(2),	Vocal health & posture	swayback and forward-head postures are associated with voice disorders
Friedman, R.S. and Förster, J	The effects of approach and avoidance motor actions on the elements of creative insight	2000	Journal of Personality and Social Psychology 79(4),	Posture & emotions/M PA	arm flexion is linked with increased creativity
Frosolini, A. et al	Optimal Timing and Treatment Modalities of Arytenoid Dislocation and Subluxation: A Meta-Analysis	2025	Medicina 61(1),	Laryngeal asymmetry	Arytenoid subluxations are associated with reduced phonatory efficiency symptoms
Gilman, M. and Johns, M.M	The Effect of Head Position and/or Stance on the Self-perception of Phonatory Effort	2017	Journal of Voice 31(1),	Vocal health & posture	shifts in head position may increase self-perceived phonatory effort

Gong, T. et al	Effects of Liuzijue Qigong Posture on Aerodynamics of Phonation in Healthy Volunteers	2024	Journal of Voice 38(4),	Posture & breathing	Qigong (Gong et al., 2024) offers integrative approaches to posture, breath, and emotional regulation.
Grimmer-Somers, K., Milanese, S. and Louw, Q	Measurement of Cervical Posture in the Sagittal Plane	2008	Journal of Manipulative and Physiological Therapeutics 31(7),	Posture models & alignment	no standardised method exists for cervical posture
Hallam, S. and Himonides, E	9	2022	Musicians and Creativity. In: The Power of Music. Cambridge, UK: Open Book Publishers,	Posture & emotions/M PA	open or closed postures, fluid arm movements, and arm flexion are linked with increased creativity

Hamdan, A.-L., Hussein, S.T., Halawi, A. and Sibai, A	a	2011	Arytenoid Asymmetry in Relation to Vocal Symptoms in Singers. Journal of Voice 25(2),	Laryngeal asymmetry	Arytenoid adduction asymmetry is found in more than one third of the normophonic population
Hamdan, A.-L., Nassar, J., Ashkar, J. and Sibai, A	b	2011	Prevalence of arytenoid asymmetry in relation to vocal symptoms. The Journal of Laryngology & Otology 125(3),	Laryngeal asymmetry	Laryngeal asymmetry is more frequent among subjects with vocal fatigue.
Hao, N., Xue, H., Yuan, H., Wang, Q. and Runco, M.A	Enhancing creativity: Proper body posture meets proper emotion	2017	Acta Psychologica 173,	Posture & emotions/M PA	open or closed postures, fluid arm movements, and arm flexion are linked with increased creativity

Hao, N., Yuan, H., Hu, Y. and Grabner, R.H	Interaction effect of body position and arm posture on creative thinking	2014	Learning and Individual Differences 32,	Posture & emotions/M PA	open or closed postures, fluid arm movements, and arm flexion are linked with increased creativity
Hoit, J.D	Respiratory function during speaking and singing in professional country singers.	1996	<i>Journal of Voice</i> 10(1), pp. 39–49	Posture & breathing	body position has a profound impact on breathing behaviour
Honda, K., Hirai, H., Masaki, S. and Shimada, Y	Role of Vertical Larynx Movement and Cervical Lordosis in F0 Control	1999	Language and Speech 42(4),	Posture & laryngeal/tr act	Cervical flexion facilitates thyroid tilt

Husseini, S.T., Ashkar, J., Halawi, A., Sibai, A. and Hamdan, A.-L	Arytenoid Asymmetry in Relation to Posture, Neck Tension and Glottal Attack in Singers	2011	Folia Phoniatica et Logopaedica 63(5),	Laryngeal asymmetry	There are no relationships between posture and arytenoids asymmetry
Jiang, T., Fang, B., Yu, Z. and Cao, D	Hoarseness and arytenoid dislocation: A rare complication after facial bony contouring surgery	2023	Journal of Plastic, Reconstructive & Aesthetic Surgery 84,	Laryngeal asymmetry	Arytenoids dislocations can produce significant and well-documented voice impairments
Jones, F.P	Voice Production as a Function of Head Balance in Singers	1972	The Journal of Psychology 82(2),	Posture & voice (general)	shifts in head position may increase self-perceived phonatory effort
Joshi, S., Balthillaya , G. and Neelapala , Y.V.R	Thoracic Posture and Mobility in Mechanical Neck Pain Population: A Review of the Literature	2019	Asian Spine Journal 13(5),	Posture models & alignment	correlations between thoracic kyphosis and forward head (Joshi et al., 2019),

Jung, S.I., Lee, N.K., Kang, K.W., Kim, K. and Lee, D.Y	The effect of smartphone usage time on posture and respiratory function	2016	Journal of Physical Therapy Science 28(1),	Posture & behaviours	Prolonged smartphone use is linked to altered cervical posture
Kang, J.- H., Park, R.-Y., Lee, S.-J., Kim, J.-Y., Yoon, S.- R. and Jung, K.-I	The Effect of The Forward Head Posture on Postural Balance in Long Time Computer Based Worker	2012	Annals of Rehabilitation Medicine 36(1),	Posture models & alignment	computer work have been linked to altered cervical posture

Kang, K.W., Jung, S.I., Lee, D.Y., Kim, K. and Lee, N.K	Effect of sitting posture on respiratory function while using a smartphone	2016	Journal of Physical Therapy Science 28(5),	Posture & breathing	Prolonged smartphone use is linked to altered cervical posture
Khalsa, S.B.S., Shorter, S.M., Cope, S., Wyshak, G. and Sklar, E	Yoga Ameliorates Performance Anxiety and Mood Disturbance in Young Professional Musicians	2009	Applied Psychophysiology and Biofeedback 34(4),	Posture & breathing	yoga offer integrative approaches to posture, breath, and emotional regulation.
Kim, S. II et al	The Association Between Cervical Spine Alignment and Voice Symptoms in Patients With Voice Disorders: A Prospective Cohort Study	2025	Journal of Voice	Vocal health & posture	swayback and forward-head is associated with voice fatigue and voice disorders

Klein, S.D., Bayard, C. and Wolf, U	The Alexander Technique and musicians: a systematic review of controlled trials	2014	BMC Complementary and Alternative Medicine 14(1),	Posture & breathing	Limited evidence that Alexander technique fosters kinesthetic awareness in the head–neck–back relationship.
Knight, E.J. and Austin, S.F	The Effect of Head Flexion/Extension on Acoustic Measures of Singing Voice Quality	2020	Journal of Voice 34(6),	Acoustics & posture	higher spectral prominence ratio, linked to brightness and projection, in head flexion

Kong, X. et al.	Risk factors of arytenoid dislocation after endotracheal intubation: A propensity-matched analysis.	2022	Laryngoscope Investigative Otolaryngology 7(6),	Laryngeal asymmetry	Voice impairments associated with arytenoids dislocations
Kooijman, P.G.C., de Jong, F.I.C.R.S., Oudes, M.J., Huinck, W., van Acht, H. and Graamans, K	Muscular Tension and Body Posture in Relation to Voice Handicap and Voice Quality in Teachers with Persistent Voice Complaints	2005	Folia Phoniatica et Logopaedica 57(3),	Vocal health & posture	postural changes affect vocal efficiency
Koumbourlis, A.C	Scoliosis and the respiratory system	2006	Paediatric Respiratory Reviews 7(2),	Posture & breathing	postural alterations such as scoliosis can significantly affect respiratory function

Kwon, Y., Kim, J.-W., Heo, J.-H., Jeon, H.-M., Choi, E.-B. and Eom, G.-M	The effect of sitting posture on the loads at cervico-thoracic and lumbosacral joints	2018	Technology and Health Care 26(1_suppl),	Posture models & alignment	changes in joint loading can depend on arm and sitting positions (Kwon et al., 2018).
Lagier, A., Vaugoyeau, M., Ghio, A., Legou, T., Giovanni, A. and Assaiante, C	Coordination between Posture and Phonation in Vocal Effort Behavior	2010	Folia Phoniatrica et Logopaedica 62(4),	Vocal health & posture	vocal effort can modify posture
León-Morillas, F., Lozano-Quijada, C., Lérida-Ortega, M.Á., León-Garzón, M.C., Ibáñez-Vera, A.J. and de Oliveira-Sousa, S.L	Relationship between Respiratory Muscle Function and Postural Stability in Male Soccer Players: A Case-Control Study	2021	Healthcare 9(6),	Posture & breathing	stability is essential for efficient respiration

Lucchini, E. et al	Voice Improvement in Patients with Functional Dysphonia Treated with the Proprioceptive-Elastic (PROEL) Method	2018	Journal of Voice 32(2),	Posture & breathing	PROEL promotes elastic, non-rigid muscular use;
Mathew, A.S. and Menon, J.R	"Innocent" arytenoid adduction asymmetry: An etiological survey	2021	European Archives of Oto-Rhino-Laryngology 278(2),	Laryngeal asymmetry	Asymmetry in the movement of the arytenoids during adduction can be either physiological or pathological
Miller, R	Sotto Voce: The Garcia Position	1988	Journal of Singing - The Official Journal of the National Association of Teachers of Singing 15(2),	Posture and singing	description of 'Garcia's position' (sternum elevated, shoulders back and down)

Mohan, K., Pillai, V.M., Jayendrakumar, P.D., Sankaran, P. and Chandramohan, A	Video image-based posture assessment: an approach for dynamic working posture assessment	2022	Theoretical Issues in Ergonomics Science 23(6),	Posture models & alignment	observational tools for assessing posture are often unreliable
Moradi, N. et al	Intrarater and Interrater Reliability of Sagittal Head Posture: A Novel Technique Performed by a Physiotherapist and a Speech and Language Pathologist	2014	Journal of Voice 28(6),	Posture models & alignment	observational tools for assessing posture are often unreliable

Muto, T., Takeda, S., Kanazawa , M., Yamazaki, A., Fujiwara, Y. and Mizoguchi , I	The effect of head posture on the pharyngeal airway space (PAS)	2002	International Journal of Oral and Maxillofacial Surgery 31(6),	Posture models & alignment	posture alters pharyngeal width and airway space
Muto, T., Yamazaki, A., Takeda, S., Kawakami , J., Tsuji, Y., Shibata, T. and Mizoguchi , I	Relationship between the pharyngeal airway space and craniofacial morphology, taking into account head posture	2006	International Journal of Oral and Maxillofacial Surgery 35(2),	Posture models & alignment	posture alters pharyngeal width and airway space
Nacci, A. et al	Stabilometric findings in patients affected by organic dysphonia before and after phonosurgery	2017	Acta Otorhinolaryngolo gica Italica 37(4),	Vocal health & posture	no strong correlation between specific vocal pathologies (nodules, polyps, cysts, Reinke's oedema) and specific postural alterations (except for minor associations with nodules)

Nacci, A., Fattori, B., Mancini, V., Panicucci, E., Matteucci, J., Ursino, F. and Berrettini, S	Posturographic analysis in patients with dysfunctional dysphonia before and after speech therapy/rehabilitation treatment	2012	Acta Otorhinolaryngologica Italica 32(2),	Vocal health & posture	speech therapists routinely include postural observation in assessment
Otsuka, T., Nakadai, K., Takahashi, T., Komatani, K., Ogata, T. and Okuno, H.G	Voice-awareness control for a humanoid robot consistent with its body posture and movements	2010	Paladyn, Journal of Behavioral Robotics 1(1),	Posture models & alignment	head movements alter vocal quality (study on humanoid robot)
Pettersen, V	Muscular Patterns and Activation Levels of Auxiliary Breathing Muscles and Thorax Movement in Classical Singing	2005	Folia Phoniatica et Logopaedica 57(5-6),	Posture & breathing	opera singers show higher levels of activity in postural muscles

Pettersen, V. and Westgaard, R.H	a	2004	Muscle activity in professional classical singing: a study on muscles in the shoulder, neck and trunk. Logopedics Phoniatrics Vocology 29(2),	Posture & singing	opera singers show higher levels of activity in postural muscles
Pettersen, V. and Westgaard, R.H	b	2004	The association between upper trapezius activity and thorax movement in classical singing. Journal of Voice 18(4),	Posture & singing	opera singers show higher levels of activity in postural muscles
Raviraj, A. and Menon, J.K.R	Prevalence of arytenoid adduction asymmetry in normophonic speakers: a retrospective study	2022	The Journal of Laryngology & Otology 136(8),	Laryngeal asymmetry	Arytenoid adduction asymmetry is found in more than one third of the normophonic population
Redolfi, S. et al	Abnormal Activity of Neck Inspiratory Muscles during Sleep as a Prognostic Indicator in Chronic Obstructive Pulmonary Disease	2020	American Journal of Respiratory and Critical Care Medicine 201(4),	Posture & breathing	Association between respiratory disorders and posture.

Rollings, A.A	The Effects of Heel Height on Head Position, Long-Term Average Spectra, and Perceptions of Female Singers	2018	Journal of Voice 32(1),	Posture models & alignment	heels alter spinal alignment and require compensatory adjustments that can influence performance
Rubin, A.D., Hawkshaw, M.J., Moyer, C.A., Dean, C.M. and Sataloff, R.T	Arytenoid Cartilage Dislocation: A 20-year Experience	2005	Journal of Voice 19(4),	Laryngeal asymmetry	Arytenoids dislocation is associated with vocal impairments
Rubin, J.S., Lieberman, J. and Harris, T.M	LARYNGEAL MANIPULATION	2000	In: Voice disorders and phonosurgeries. Otolaryngologic Clinics of North America, pp. 1017–1034. doi: 10.1016/S0030-6665(05)70261-9.	Laryngeal asymmetry	Arytenoids asymmetry is often treated with osteopathic treatment or laryngeal manipulation

Rubin, J.S., Mathieson, L. and Blake, E	Posture and Voice	2004	Journal of Singing 60(3),	Posture models & alignment	Posture is poorly supported by consistent scientific consensus:
Samlan, R.A., Story, B.H., Lotto, A.J. and Bunton, K	Acoustic and Perceptual Effects of Left–Right Laryngeal Asymmetries Based on Computational Modeling	2014	Journal of Speech, Language, and Hearing Research 57(5),	Laryngeal asymmetry	computational modeling to simulate left–right laryngeal asymmetries found that some (adduction, bulging, nodal point ratio) significantly influenced acoustic measures and perceived quality, while others did not
Sato, F. et al	Relationship Between Cervical, Thoracic, and Lumbar Spinal Alignments in Automotive Seated Posture	2019	Journal of Biomechanical Engineering 141(12)	Posture models & alignment	cervical–thoracic interactions in seated alignment

Schneider , C.M., Dennehy, C.A. and Saxon, K.G	Exercise physiology principles applied to vocal performance: The improvement of postural alignment	1997	Journal of Voice 11(3),	Posture models & alignment	Alignment uses exercise that check the head and neck motion range.
Scotto Di Carlo, N	Cervical Spine Abnormalities in Professional Singers	1998	Folia Phoniatica et Logopaedica 50(4),	Posture & voice (general)	Opera singers often exploit these adjustments by raising the chin on high note.
Scotto Di Carlo, N	X-Ray Study of a Professional Soprano's Postural Strategy for Increasing Laryngeal Mobility	2002	Folia Phoniatica et Logopaedica 54(4),	Posture & laryngeal/tr act	different body types can result in different adaptive or maladaptive structural or functional changes and habits, such as head flexion in high range to facilitate thyroid tilt

Shin, J., Kang, B., Park, T., Huh, J., Kim, J. and Song, J	BeUpright	2016	In: Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems. New York, NY, USA: ACM, pp. 6040–6052. doi: 10.1145/2858036.2858561.	Posture & behaviours	cultural etiquette can shape habitual alignment and movement
Sipko, T., Barczyk-Pawelec, K., Piksa, M. and Mencil, J	Impact of Standing and Sitting Postures on Spinal Curvature and Muscle Mechanical Properties in Young Women: A Photogrammetric and MyotonPro Analysis	2024	Medical Science Monitor 30	Posture models & alignment	stiffness in lumbar/thoracic regions influences sitting angles
Slepian, M.L. and Ambady, N	Fluid movement and creativity	2012	Journal of Experimental Psychology: General 141(4),	Posture & emotions/M PA	arm flexion are associated with increased creativity

Somme, L., Audouin, M., Chau, N., Beyaert, C. and Perrin, P	Associations of Postural Activities and Knowledge for Voice with Breathing Issues and Voice-Physical-Disorders Among Lyric Singers	2024	Journal of Voice	Posture & breathing	opera singers with anatomical and postural knowledge reported better voice quality, less fatigue, and greater attention to body pain
Staes, F.F., Jansen, L., Vilette, A., Coveliers, Y., Daniels, K. and Decoster, W	Physical Therapy as a Means to Optimize Posture and Voice Parameters in Student Classical Singers: A Case Report	2011	Journal of Voice 25(3),	Posture models & alignment	musculoskeletal stress, can decrease after craniocervical flexion therapy
Valentine, E.R., Fitzgerald, D.F.P., Gorton, T.L., Hudson, J.A. and Symonds, E.R.C	The Effect of Lessons in the Alexander Technique on Music Performance in High and Low Stress Situations	1995	Psychology of Music 23(2),	Posture & emotion	Alexander Technique is considered “promising” interventions for MPA.

von Suchodol etz, A. and Hepach, R	Cultural values shape the expression of self-evaluative social emotions	2021	Scientific Reports 11(1),	Posture & behaviours	cultural etiquette can shape habitual alignment and movement
Washino, S., Kanehisa, H. and Yoshitake, Y	Neck inspiratory muscle activation patterns during well-controlled inspiration	2017	European Journal of Applied Physiology 117(10),	Posture & breathing	head–neck posture plays a key role in efficient breathing
Wilson Arboleda, B.M. and Frederick, A.L	Considerations for Maintenance of Postural Alignment for Voice Production	2008	Journal of Voice 22(1),	Posture models & alignment	Description of postural assessment using the plumb line method
Zafar, H., Albarrati, A., Alghadir, A.H. and Iqbal, Z.A	Effect of Different Head-Neck Postures on the Respiratory Function in Healthy Males	2018	BioMed Research International 2018,	Posture & breathing	head–neck posture plays a key role in efficient breathing