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Integration of Fascial Exercises Into The Ministry of National Education Individual Voice Training Curriculum

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Abstract
This study examines the extent to which fascia-based exercises can be pedagogically integrated into the Ministry of National Education (MoNE) Individual Voice Training curriculum, with particular focus on the "Teaching–Learning Practices" related to preparing the body for singing. The primary aim is to analyze existing curricular practices through the lens of contemporary fascia science and movement-based pedagogy, and to propose a structured, sustainable integration framework aligned with international literature. Using a qualitative document analysis design, official MoNE Individual Voice Training curricula implemented from Grades 1 to 8 were systematically reviewed. Preparatory practices related to bodily warm-up, posture, breathing, diaphragm use, vocal warm-up, and articulation were examined through predefined analytical criteria and interpreted using descriptive analysis.Findings indicate that while the curriculum consistently emphasizes preparing the body for singing, these practices are not conceptualized within an explicit fascia-based or movement-oriented pedagogical framework. In particular, the interpretation of "upright posture" as static and rigid poses potential risks for breath coordination, bodily fluidity, and vocal resonance. However, the strong emphasis on breathing and diaphragmatic work provides a viable entry point for fascia-based integration. The study proposes a concise, four-stage fascia-based preparation protocol, dynamic mobilization, breath–movement coupling, multi-planar/cross-body coordination, and transition to phonation, that preserves existing curricular goals while enhancing effectiveness, vocal health, and sustainability. This research contributes to voice pedagogy by offering the first literature-informed, fascia-based integration model for primary and lower secondary voice education within the Turkish national curriculum (Grades 1–8).

Keywords: Fascia-based pedagogy; Voice education; Movement-based learning; Breathing and posture; Curriculum integration
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Introduction

Individual voice training constitutes a multidimensional pedagogical process that, from early childhood onward, aims not only to develop musical skills but also to foster the healthy, sustainable, and embodied use of the voice. Particularly for students in developmental stages, voice education must be conducted with an approach that respects the anatomical and physiological limits of the larynx, prioritizes bodily awareness, and places vocal health at the center of pedagogical practice (McCoy, 2012).

An examination of the Individual Voice Training curricula issued by the Turkish Ministry of National Education (MoNE) reveals that, beginning in the first grade, explicit emphasis is placed on activities designed to "prepare the body for singing." The curriculum systematically highlights practices such as stretching the arms and shoulders, neck rotations, spinal flexibility exercises, demonstrations of correct postural alignment, bodily relaxation, and the regulation of internal dynamics. At higher grade levels, this approach is further expanded to include vocal and breathing exercises, physical warm-up movements, and postural awareness practices (MoNE, 2025).

However, despite the presence of these bodily preparation statements within the curriculum texts, their practical implementation is often characterized by a mechanical, fragmented, and muscle-centered understanding. In many instructional contexts, students are directed toward static, rigid, and movement-restricted positions under the notion of "proper posture." Contemporary anatomy and somatic education literature, however, demonstrates that voice production does not operate solely through isolated muscular activity but rather through the holistic organization of the fascial system (Schleip, Findley, Chaitow, & Huijing, 2012).

Fascia is a living connective tissue network that envelops muscles, organs, and skeletal structures within a three-dimensional continuum, playing a decisive role in force transmission, postural organization, and respiratory coordination. In the context of voice training, the fascial lines identified as the Deep Front Line and the Spiral Line are of particular significance due to their functional relationships with the diaphragm, pelvic floor, spinal stability, trunk rotation, and breath–voice coordination (Myers, 2014). Within this study, the Deep Front Line and Spiral Line are employed not as prescriptive anatomical claims, but as pedagogical mapping tools to structure breath–movement–posture coordination.

The Deep Front Line is directly associated with the depth, continuity, and efficiency of breathing through its anatomical connections with the diaphragm, psoas muscle, pelvic floor, and anterior cervical structures. The Spiral Line, on the other hand, contributes to three-dimensional postural balance, rotational movement capacity, and postural elasticity. The integrated and functional operation of these two fascial lines provides a fundamental basis for the fluidity, resonance, and dynamic balance required in healthy voice production (Stecco et al., 2014).

During childhood, the high plasticity of fascial tissue allows this system to be effectively supported from an early age through conscious, developmentally appropriate, movement-based exercises. Empirical studies indicate that practices grounded in movement, breath, and fascial awareness reduce postural rigidity, enhance respiratory capacity, and exert positive effects on vocal performance (Koch, Morlinghaus, & Fuchs, 2016).

Within this framework, restructuring the learning outcomes related to "preparing the body for singing" in the MoNE Individual Voice Training curricula through exercises grounded in fascial anatomy, particularly those targeting the Deep Front Line and Spiral Line and integrating these exercises with movement and breath may contribute to a more efficient, sustainable, and health-oriented voice training process for students.

Accordingly, this study aims to examine the Individual Voice Training curricula of the Ministry of National Education through document analysis and to propose a fascia-based exercise integration model aligned with the existing learning outcomes.

The Individual Voice Training curriculum analyzed in this study is situated within the framework of the Türkiye Yüzyılı Maarif Model and is designed not for general public middle schools, but for talent-oriented and specialized educational environments, including Science and Art Centers (BİLSEM) and conservatories that admit students at the primary and lower secondary levels. These contexts encompass selective or enrichment-based programs that provide individualized or small-group instruction for students with identified musical aptitude.

Purpose of the Study

The aim of this study is to examine the learning outcomes related to "preparing the body for singing" in the Ministry of National Education Individual Voice Training curriculum from a fascia-based perspective, and to propose pedagogical frameworks and instructional approaches for integrating fascia-oriented exercises, particularly those centered on the Deep Front Line and Spiral Line fascial pathways, into the national voice education curriculum.

Significance of the Study

This study is significant in that it offers an alternative to muscle-centered and static postural approaches in voice pedagogy; reinterprets the MoNE curricula through the lens of somatic education and fascial anatomy; and presents a literature-supported pedagogical framework for integrating fascia-based exercises aimed at protecting vocal health and supporting efficient voice production from the primary school level onward. Moreover, to the best of the author's knowledge, this study represents one of the first pedagogical proposal in Türkiye to address primary and lower secondary voice education through a fascia-based approach.

Problem Statement

Although the Ministry of National Education Individual Voice Training curricula include practices and activities aimed at preparing the body for singing, these practices are not structured within a fascia-based or movement-oriented framework. In classroom implementation, students are frequently directed toward static, rigid, and movement-restricted postural positions (MoNE, 2025). Such approaches may negatively affect essential components of healthy voice production in children, including breath coordination, bodily fluidity, and resonance capacity. Consequently, the need to examine and develop the integration of fascia-based exercises into the Individual Voice Training courses, first implemented in the 2025–2026 academic year, has been identified as a pedagogical priority.

Research Question

What pedagogical frameworks and approaches are most effective, health-oriented, and sustainable for integrating fascia-based exercises into the "Teaching–Learning Practices" that include body preparation for singing within the Ministry of National Education Individual Voice Training curricula implemented in the 2025–2026 academic year?

Sub-Questions

1. Which body-preparation practices for singing are defined within the "Teaching–Learning Practices" section of the Ministry of National Education Individual Voice Training curricula?
2. How can these body-preparation practices be evaluated from the perspective of the fascial system and movement-based pedagogical approaches?

3. What are the potential effects of directing students toward static and rigid postures on breath coordination, bodily fluidity, and resonance capacity in individual voice training?
4. What pedagogical contributions can fascia-based exercises, particularly those targeting the Deep Front Line and Spiral Line, offer to the individual voice training process?
5. To what extent do the existing "Teaching–Learning Practices" in the Ministry of National Education Individual Voice Training curricula allow for the integration of fascia-based exercises?
6. Which fundamental principles should be considered to ensure that fascia-based exercises applicable from the primary and lower secondary school level onward are structured in an effective, healthy, and sustainable manner within the process of preparing the body for singing?

Methodology

Research Design

This study was conducted using a qualitative research design based on document analysis. Document analysis is a qualitative research approach that aims to systematically examine, interpret, and make meaning of official documents, curricula, and written materials (Bowen, 2009).
The primary aim of the study is to evaluate the teaching–learning practices related to preparing the body for singing in the Individual Voice Training curricula issued by the Turkish Ministry of National Education, through fascia-based and movement-oriented perspectives. Based on the findings, the study seeks to propose a literature-supported pedagogical framework and approach for integrating fascia-based exercises into the existing curriculum. The study does not include an experimental intervention or effect measurement; rather, it is grounded in curriculum analysis and theoretical interpretation.

Data Sources

The primary data sources of the study consist of the Individual Voice Training Course Curricula published by the Ministry of National Education. Within this scope, particular attention was given to the curricula implemented beginning in the 2025–2026 academic year. The sections examined as focal documents include explanations under the following headings:

- "Teaching–Learning Practices"
- "Preparing the Body for Singing"
- "Voice and Breathing Exercises"
- "Posture, Alignment, and Use of the Body"

The secondary data sources comprise peer-reviewed journal articles, academic books, and theoretical studies published in the fields of voice education, vocal pedagogy, fascia science, somatic approaches, and movement-based learning. These sources were used to support the evaluation of the curricula and to ground the proposed integration framework within the existing literature.

Data Collection Process

In this study, data collection was carried out through the systematic examination of official curricula documents, without the use of any measurement instruments. The curricula were reviewed in line with the research problem and sub-questions, based on the following criteria:

- The scope and content of statements related to preparing the body for singing
- The emphasis placed on movement, relaxation, and breathing practices
- Whether posture is addressed in a static or dynamic manner
- Pedagogical guidance related to students 'use of the body

These criteria functioned as an analytical framework guiding the data collection process.

Data Analysis

In this study, descriptive analysis was employed as the overarching analytical strategy, while a hybrid deductive–inductive coding process was used within this framework to refine and elaborate the thematic structure. Descriptive analysis is a qualitative data analysis method that aims to organize, summarize, and interpret data according to both predetermined and emergent themes (Yıldırım & Şimşek, 2021).

Accordingly, the data analysis process was conducted through the following stages:

1. Practices related to preparing the body for singing within the curricula were identified.
2. These practices were examined within the context of fascia-based and movement-oriented pedagogical approaches.
3. The findings were interpreted with reference to the literature, particularly in relation to the roles of the Deep Front Line and Spiral Line fascial pathways in breathing, posture, and voice production.
4. Based on the analysis results, a pedagogical framework and approach were developed for the integration of fascia-based exercises into the existing curriculum.

The analytical framework was developed through a hybrid coding strategy combining deductive and inductive approaches. Initial thematic categories were derived deductively from the research questions and the theoretical framework of fascia science, movement-based pedagogy, and voice education literature (e.g., posture, breathing, movement, diaphragm use, and bodily preparation). Subsequently, an inductive process was applied during close reading of the curriculum documents to identify recurrent patterns, emphases, and omissions that were not fully captured by the preliminary categories. This iterative process allowed themes to be refined, expanded, and reorganized to reflect both the structure of the curriculum texts and their alignment with contemporary fascia-informed pedagogical principles.

To enhance analytical rigor and trustworthiness, the coding and interpretation process followed principles of qualitative transparency and reflexivity. The analytical decisions, theme development, and interpretive steps were systematically documented to create an audit trail. This documentation enabled continuous comparison between the curriculum texts, emerging themes, and the theoretical framework, reducing the risk of interpretive drift and supporting analytical consistency. Preliminary thematic interpretations and the proposed fascia-based integration framework were reviewed through peer debriefing with experts in voice pedagogy, somatic education, and movement-based learning. Feedback was used to refine conceptual clarity, ensure terminological accuracy, and strengthen alignment between curriculum analysis and contemporary fascia literature.

Development of the Pedagogical Framework

In the final stage of the study, a pedagogical framework for integrating fascia-based exercises into the teaching–learning practices of Individual Voice Training courses was developed based on the findings of the document analysis and the relevant literature. This framework aims to propose an approach that:

- Preserves the existing learning outcomes of the curricula,
- Is appropriate to students ’age and developmental characteristics,
- Holistically integrates movement, breathing, and bodily awareness, and
- Prioritizes sustainable practices that support vocal health.

FINDINGS

Findings Related to the First Sub-Question

Which body-preparation practices for singing are defined within the "Teaching–Learning Practices" section of the Ministry of National Education Individual Voice Training curricula?

An examination of the Individual Voice Training curricula issued by the Ministry of National Education across grade levels from Grade 1 to Grade 8 reveals that practices aimed at preparing the body for singing are systematically included under the heading "Teaching–Learning Practices," with increasing intensity across grade levels. While these practices remain largely similar in content throughout the grades, their scope expands progressively at higher grade levels.
Based on the document analysis, the practices related to preparing the body for singing were identified and categorized under the following thematic headings:

1. Bodily Warm-Up, Stretching, and Relaxation Movements

The curricula explicitly include bodily warm-up, stretching, and relaxation movements as part of the preparation process for singing, particularly from Grades 1, 3, and 5 onward. Within this scope, the following practices are defined as fundamental preparatory activities prior to vocalization:

- Stretching of the arms and shoulders,
- Rotations of the neck to the right and left, and upward and downward,
- Circular movements of the shoulders,
- Stretching movements involving raising the arms upward and extending them laterally,
- Spinal stretching and general body relaxation exercises.

These practices are intended to facilitate students 'physical readiness before vocal performance.

2. Proper Posture and Body Alignment

Across all grade levels, proper posture and body alignment are emphasized as essential components of preparing the body for singing. The curricula specify that:

- When singing in a standing position, the shoulders should remain relaxed, the spine upright, the chest open, and the jaw positioned appropriately;
- When singing in a seated position, the spine should be upright, the feet should be placed flat on the floor, and overall bodily balance should be maintained.

Furthermore, it is stated that establishing correct posture prior to vocalization contributes to the effective use of the voice in terms of appropriate pitch and loudness.

3. Voice and Breathing Exercises

Another prominent practice consistently emphasized across all grade levels involves voice and breathing exercises. Within this context, the curricula highlight:

- The implementation of breathing exercises prior to vocalization,
- Exercises aimed at enabling students to use their voices at appropriate pitch and dynamic levels,
- The integration of breathing exercises with students 'prior learning experiences.

These practices are identified as indispensable components of the body preparation process for singing.

4. Exercises Targeting Diaphragmatic Use

Beginning particularly from Grade 4, the curricula explicitly incorporate exercises aimed at activating and utilizing the diaphragm. Diaphragmatic exercises are described as serving the purposes of:

- Establishing breath control,
- Supporting the appropriate tempo and dynamic level of vocal output,
- Promoting bodily relaxation and facilitating internal balance.

5. Bodily Relaxation and the Regulation of Internal Dynamics

One of the recurring emphases across all grade levels involves activities designed to promote bodily relaxation and the regulation of internal dynamics. These activities are presented as preparatory practices that encompass both the physical and internal dimensions of preparing the body for singing.

6. Articulation and Facial Exercises

From Grade 5 onward, articulation- and facial-area-focused exercises are incorporated into the body preparation process. These include:

- Lip exercises,
- Tongue exercises,
- Jaw opening and closing movements,
- Lip trill exercises,
- Closed-mouth humming practices.

These applications are aimed at enhancing articulatory readiness prior to vocal performance.

7. Holistic Pre-Vocal Preparation Practices

At upper grade levels (Grades 5–8), the preparation process for singing is addressed in a more holistic manner. Bodily relaxation, proper posture, diaphragmatic and breathing exercises, and vocal exercises are considered collectively, emphasizing that students should undergo a comprehensive preparatory process before performing pieces from their repertoire.

Table. 1 *Body Preparation Practices for Singing in the Ministry of National Education Individual VoiceTraining Curriculum by Grade Level*

Grade	Stretching / Mobilization (Neck–Shoulder–Arm–Lower Back)	Posture / Position (Standing–Seated)	Breathing Exercises	Vocal Warm-up / Phonation (Trills, Humming, etc.)	Diaphragmatic Exercises	Relaxation / Internal Dynamics – Balance	Articulation (Lips–Tongue–Jaw)	Body Language (Gestures–Facial Expression)
1	Arm–shoulder stretching, neck rotations, lower back stretching	Open chest, shoulders back, "upright and relaxed"	–	–	–	Implicit: "preparing the body"	–	–
2	–	–	Voice–breathing exercises	–	–	Relaxation, internal dynamics	–	–
3	Neck and shoulder circles, arm stretching and release	Distinction between standing and seated positions	✓	Lip trills, arpeggios, closed-mouth humming	–	Relaxation, stretching, internal dynamics	–	–
4	–	–	✓	–	Exercises targeting diaphragmatic use	Relaxation, internal balance	–	–
5	Emphasis on stretching and relaxation	Repetition of correct posture	✓	–	✓	✓	Lips–tongue–jaw	Gestures and facial expressions
6	–	Emphasis on correct posture	✓	–	✓	✓	–	–
7	–	Emphasis on correct posture	✓	–	✓	✓	–	–
8	–	Emphasis on correct posture	✓	–	✓	✓	–	–

Based on the document analysis, it was determined that the practices aimed at preparing the body for singing in the Ministry of National Education Individual Voice Training curricula are structured around bodily warm-up and relaxation, proper posture, voice and breathing exercises, diaphragmatic use, the regulation of internal dynamics, and articulation work. These practices demonstrate a recurring and progressively expanding structure across grade levels, with similar core components being revisited and elaborated as students advance through the curriculum.

Findings Related to the Second Sub-Question

How can these body-preparation practices be evaluated from the perspective of the fascial system and movement-based pedagogical approaches?

Unlike the first sub-question, which focuses on the *presence* of preparatory practices in the curriculum, this sub-question requires an evaluation of their adequacy and alignment with contemporary scientific conceptualizations of the fascial system and with the functional interrelationship among movement, breathing, and posture. The document-analysis findings are presented below through a set of evidence-informed thematic interpretations.

Theme 1: The curriculum's "preparatory" practices provide a foundation that is broadly compatible with fascia-informed frameworks; however, fascia is not conceptually articulated

The stretching–relaxation activities, postural adjustments, breathing practices, and diaphragmatic work described in the MoNE curriculum are, in principle, congruent with the fascial system's role as a body-wide network involved in force transmission, postural organization, and respiratory coordination (Adstrum et al., 2017; Bordoni & Zanier, 2013; Stecco & Schleip, 2016). In the contemporary literature, fascia is not defined merely as a passive "wrapping tissue," but as a system functionally interrelated with musculoskeletal, visceral, and neural components, contributing to movement and postural regulation (Adstrum et al., 2017; Stecco & Schleip, 2016). Moreover, fascia has been described as a richly innervated sensory network that may be implicated in perceptual and interoceptive processes (Schleip et al., 2014).

Despite this conceptual compatibility, the curriculum does not explicitly refer to fascia, and the recommendations related to movement and relaxation remain general and fragmented in scope (Ministry of National Education, 2025). Accordingly, while the curriculum's approach to "preparing the body" appears to contain latent potential for fascia-informed pedagogical development, it does not operationalize this potential within an explicit fascia-based pedagogical framework (Adstrum et al., 2017).

Theme 2: The emphasis on "upright posture" may constrain functional voice production if interpreted through a static/rigid lens

If the Grade 1 emphasis on "upright and correct posture" is enacted in practice as a fixed and rigid postural set, it may conflict with the elastic tensioning and dynamic adaptability that support efficient fascial function (Huijing, 2009; Stecco & Schleip, 2016). Evidence syntheses on the posture–voice relationship indicate that effective posture, whether in stillness or in motion, may facilitate redistribution of intermuscular tension and support laryngeal freedom; conversely, rigid and "frozen" postural concepts may introduce pedagogical risk (Cardoso et al., 2019).

The literature also reports associations among posture, voice production, and dysphonia, including evidence that posture can influence voice and that voice-production mechanisms may, in turn, modify postural organization (Cardoso et al., 2019). Complementing this, a case report documenting improvements in selected vocal parameters following postural rehabilitation in a classical singing student suggests that postural interventions can be meaningfully linked to vocal outcomes in certain contexts (Staes et al., 2011).

Therefore, unless the curriculum's postural statements are reframed through principles of fascial elasticity, mobility, and adaptable alignment, the risk emerges that "upright posture" may be pedagogically translated into a counterproductive static stance (Cardoso et al., 2019; Stecco & Schleip, 2016).

Theme 3: The curriculum's emphasis on breathing and the diaphragm constitutes a strong entry point for fascia-informed integration

The systematic recurrence of "voice–breathing exercises" beginning in Grade 2 and explicit "diaphragm work" beginning in Grade 4 represents the most robust integration opportunity from a fascia-informed perspective (Ministry of National Education, 2025). The literature emphasizes that the

diaphragm should not be treated solely as an isolated muscle; rather, it functions as a critical "intersection" structure within connective tissue continuity, with extensive anatomical and functional interconnections across regions (Bordoni & Zanier, 2013).

Additionally, research on myofascial force transmission indicates that tension generated by muscles can be transmitted to adjacent tissues and fascial structures, challenging the assumption that muscles act in isolation (Huijing, 2009). These findings suggest that the curriculum's breath–diaphragm–relaxation triad could be systematically structured through fascia-informed exercises that support deep anterior connections (e.g., diaphragm–trunk organization relationships) (Bordoni & Zanier, 2013; Huijing, 2009). Supporting this perspective, randomized controlled trial evidence indicating acute effects of myofascial diaphragm release on outcomes such as chest-wall mobility and posterior-chain flexibility further strengthens the rationale for conceptualizing the breath–mobility interface within a fascial framework (Marizeiro et al., 2018).

Theme 4: Movement is present in the curriculum, yet it is not specified at an operational level (movement type, purpose, and targeted functional pathways)

Movements such as neck–shoulder–arm stretching and release in Grades 1 and 3, together with the relaxation emphasis in higher grades, offer a positive starting point for fascia-informed pedagogy (Ministry of National Education, 2025). However, because these movements are not defined in terms of goals, dosage, sequencing, breath-coupling, or safety criteria, the curriculum provides limited guidance for reducing the risk of unsystematic or ad hoc implementation (Adstrum et al., 2017).

Fascia literature underscores the importance of conceptual and terminological clarity when fascia is described as a "system," particularly for translating scientific frameworks into practice (Adstrum et al., 2017). Moreover, systematic reviews on myofascial continuity and meridian-based models synthesize evidence for anatomical connections while emphasizing that functional interpretation remains an active research agenda, thereby reinforcing the need for greater clarity at the curriculum level regarding "which movement, for what purpose" (Wilke et al., 2016). Consequently, although the curriculum's existing practices create a foundation for fascia-informed integration, they require operational elaboration, particularly in terms of fascial awareness and breath-coupled dynamic preparation, to support consistent pedagogical enactment (Adstrum et al., 2017; Wilke et al., 2016).

Theme 5: Articulation and facial-region practices introduced in Grade 5 provide an opportunity to connect "local" and "global" coordination through fascial continuity

The inclusion of articulation (lips–tongue–jaw) and gesture/facial expression work in Grade 5 supports not only local motor control but also the integration of head–neck coordination with phonation and postural organization (Ministry of National Education, 2025). Recent experimental findings examining relationships between oral/articulatory posture and pitch perception/performance suggest that mouth posture can influence pitch judgments even during "inner singing" tasks (Körner et al., 2023). This finding indicates that articulation-focused practices in the MoNE curriculum may be particularly amenable to integration with fascia-informed approaches that address head–neck–thorax coordination in conjunction with breathing and phonation (Bordoni & Zanier, 2013; Körner et al., 2023).

Synthesis of Findings for the Second Sub-Question

Overall, the document-analysis findings indicate that the MoNE Individual Voice Training curricula include preparatory practices (stretching–relaxation, posture, breath–diaphragm work, vocal warm-up, and articulation) that contain components potentially compatible with fascia-informed frameworks. However, these practices are not structured within an explicit pedagogical model grounded in fascia concepts, breath–movement coupling, and dynamic postural organization (Ministry of National Education, 2025; Adstrum et al., 2017; Stecco & Schleip, 2016). Scientific definitions of

fascia (Adstrum et al., 2017; Schleip et al., 2014; Stecco & Schleip, 2016), together with review-based and clinical evidence on posture–voice relationships (Cardoso et al., 2019; Staes et al., 2011), suggest that a static interpretation of "upright posture" may be pedagogically risky, whereas the curriculum's sustained emphasis on breathing and diaphragmatic work offers a particularly strong gateway for fascia-informed integration (Bordoni & Zanier, 2013; Huijing, 2009; Marizeiro et al., 2018).

Findings Related to the Third Sub-Question

What are the potential effects of directing students toward static and rigid postures on breath coordination, bodily fluidity, and resonance capacity in individual voice training?

1) Potential Effects on Breathing Coordination

A fixed/rigid posture may challenge respiratory mechanics, the primary "motor" of voice production, through two main pathways: (i) restricting rib cage–abdominal coordination and (ii) reducing the efficiency of expiratory control (airflow and subglottal pressure regulation). Research in the speech-breathing literature demonstrates that body position (e.g., standing and postural organization) can modify chest wall and abdominal movement patterns, with measurable implications for respiratory tasks (Hoit et al., 1995).

In the context of singing, when goals such as "activating the diaphragm" or performing "breathing exercises" are pursued within a static trunk/thorax configuration, students may be more likely to rely on superficial and compensatory breathing strategies (e.g., elevation of the shoulder girdle, increased activity in cervical and upper thoracic musculature). This risk is consistent with review findings suggesting that postural dysfunction may be associated with increased muscular resistance/tension and voice-related problems (Cardoso et al., 2019).

Furthermore, in musician–singers facing posturally demanding conditions (e.g., singing while accompanying themselves on an instrument), posture has been reported to influence expiration and phonation. Indicators such as maximum phonation time (MPT) and selected resonance-related measures may vary as a function of postural organization (Longo et al., 2020). Such findings suggest that a "locked" posture may indirectly compromise breath management and respiratory efficiency during vocal tasks (Longo et al., 2020).

2) Potential Effects on Bodily Fluidity (Dynamic Posture) and Phonatory Efficiency

In voice education, "fluidity" is not merely an aesthetic attribute; it refers to the capacity of the larynx and the integrated respiration–posture system to perform fine-grained micro-adjustments. A fixed/rigid posture may reduce these adjustments, thereby decreasing phonatory efficiency and increasing perceived effort. An experimental study in healthy individuals demonstrated that alterations in head position (anterior/posterior) and postural configuration can increase perceived phonatory effort even during short-duration phonation (Gilman & Johns, 2017).

In addition, clinical and observational work that considers postural deviations and muscular hypertonicity alongside vocal outcomes suggests that as postural components of imbalance increase, voice quality may be negatively affected. For example, among teachers, postural patterns and extrinsic laryngeal muscle tension components have been reported to relate to voice handicap scores and indicators of dysphonia severity (Kooijman et al., 2005).

Similarly, findings of differences in thoracic sagittal alignment measures (e.g., kyphosis indices) in dysphonic adults support the premise that the posture–voice relationship should be conceptualized not solely at the level of the neck, but across whole-trunk organization (Franco et al., 2014).

3) Potential Effects on Resonance Capacity

Resonance capacity is closely associated with the configurability of the vocal tract, the vertical position of the larynx, and head–neck alignment. Evidence indicates that head flexion/extension can significantly alter acoustic measures in singing—particularly indices such as the singing power ratio (SPR), which is often used as a proxy for singer's formant-related efficiency (Knight & Austin, 2020). This provides direct support for the claim that a rigid, uniform postural approach may constrain the fine adjustments required for optimal resonance (Knight & Austin, 2020).

Moreover, body position has been reported to influence acoustic and morphological characteristics of the vocal tract, with potential downstream effects on formant organization and resonance outcomes (Vorperian et al., 2015). In musician–singers, posture has also been shown to affect resonance-related indicators such as singer's formant amplitude, further supporting the notion that posture can influence resonance not only indirectly but in measurable acoustic terms (Longo et al., 2020).

Summary of Risks Identified in the Literature

Taken together, directing students toward fixed and rigid postures during individual voice training may entail the following risks:

- **Breathing coordination:** Reduced rib cage–abdominal synchrony and less efficient expiratory control (Hoit et al., 1995; Longo et al., 2020).
- **Bodily fluidity and phonatory efficiency:** Increased perceived phonatory effort and tension-based compensations due to reduced dynamic adjustability (Gilman & Johns, 2017; Kooijman et al., 2005).
- **Resonance capacity:** Constrained head–neck configuration and reduced vocal-tract adjustability, potentially reflected in changes in acoustic indices such as singer's formant/SPR (Knight & Austin, 2020; Vorperian et al., 2015).

Findings Related to the Fourth Sub-Question

What pedagogical contributions can fascia-based exercises, particularly those targeting the Deep Front Line and Spiral Line, offer to the individual voice training process?

1) Literature-Based Framework: How Should the "Line" Approach Be Positioned?

The terms Deep Front Line (DFL) and Spiral Line (SL) originate from the conceptual mapping proposed within the *Anatomy Trains* model, which is widely used in movement pedagogy and body literacy contexts (Myers, 2020). However, the academic literature does not provide uniform levels of empirical support for all myofascial continuity or "chain/line" claims. For instance, cadaver-based evidence suggests moderate support for spiral-line-like continuities, while reporting weaker evidence for certain other lines (Wilke et al., 2016). More recent reviews similarly indicate moderate evidence for the Spiral Line, alongside varying levels of support, stronger or weaker, for other proposed lines (Kalichman, 2025).

Accordingly, in the present study, the DFL and SL are not presented as claims of absolute anatomical reality. Rather, they are framed as pedagogical constructs that render breath–posture–movement coordination more teachable and intelligible within educational contexts. This positioning reflects both scientific caution and a developmentally appropriate language for curriculum design (Kalichman, 2025; Wilke et al., 2016).

2) Pedagogical Contributions (with a Focus on the DFL and Spiral Line)

A) Structuring Breathing Coordination Through "Deep Support" (Aligned with the DFL)

Within individual voice training, emphasis on breathing and diaphragmatic engagement is already prominent in the curriculum. A DFL-oriented perspective enables this breathing instruction to be conceptualized as a holistic organization of pressure and balance across the rib cage, diaphragm, abdominal wall, and pelvic floor. Contemporary anatomical literature conceptualizes the diaphragm not merely as an isolated muscle but as a critical regulatory structure embedded within connective tissue continuity (Bordoni & Zanier, 2013; Liu & Wiedman, 2024).

***Pedagogical implication*:** Instead of interpreting the instruction "take a breath" as an upper-chest-dominant action, students learn to experience effective breath support as a coordinated expansion of the lower ribs combined with abdominal-wall engagement and trunk stability (Liu & Wiedman, 2024).

B) Reframing "Upright Posture" as Dynamic and Adjustable Rather Than Static

The posture–voice relationship is described in the literature as bidirectional: posture may facilitate efficient voice production, yet the direction and magnitude of this relationship vary across contexts (Cardoso et al., 2019). A DFL/SL-informed approach supports teaching "upright posture" not as a locked position but as adjustable balance, emphasizing rib cage–pelvis relationships and head–neck freedom. This pedagogical language reduces the risk of unnecessary tonic activation that may result from rigid commands such as "stand straight" or "pull the shoulders back," particularly in children (Cardoso et al., 2019).

C) Enhancing Resonance Capacity Through Thoracic Mobility and "Spiral Expansion" (Aligned with the Spiral Line)

A Spiral Line focus is particularly functional for teaching the three-dimensional mobility of the thorax, rotation and lateral expansion, which is critical for singing, as well as upper–lower body coordination (e.g., scapula–pelvis cross-patterning). The layered structure of the thoracolumbar fascia and its role in tension distribution provide a conceptual background for understanding the trunk as an integrated "arch-like" system, thereby rendering cross-body movement patterns pedagogically meaningful (Willard et al., 2012).

From a pedagogical standpoint, resonance-related instructions may thus shift from "lift the chest" to more functional and sustainable cues such as "expand the ribs laterally and posteriorly" or "lengthen the trunk spirally."

D) Bodily Awareness and Self-Regulation: The Sensory Role of Fascial Tissue

Fascia is not merely a mechanical container but a richly innervated tissue with sensory and proprioceptive functions that contribute to motor control and bodily awareness (Schleip et al., 2012; Suárez-Rodríguez et al., 2022). This sensory dimension supports the integration of skills such as listening to bodily cues, releasing unnecessary tension, and reorganizing posture, capacities that are particularly relevant for managing performance anxiety and habitual tension in children.

3) DFL- and Spiral-Line-Focused Exercise Proposals Adaptable to the MoNE Curriculum

The following proposals aim to systematize the curriculum's existing practices, warm-up, relaxation, breathing/diaphragm work, and posture, through a fascia-informed instructional language. (Suggested duration: 2–5 minutes. Exercises should be discontinued in cases of pain or dizziness and may be adapted through age-appropriate play.)

A) Deep Front Line–Focused (Breath, Deep Support, Axial Lengthening)

1. **Lower-rib "umbrella breathing" (standing or seated)**
   Hands placed on the lower ribs; during inhalation, the ribs expand laterally, while exhalation is accompanied by gentle abdominal-wall recoil.

Rationale: Supports accurate teaching of diaphragmatic mechanics and holistic breath support (Bordoni & Zanier, 2013; Liu & Wiedman, 2024).

2. **"Lengthening spine" with jaw release (micro postural scan)**
   Neck lengthened, jaw relaxed; shoulders are "heavy and free" rather than locked downward/backward.
   Rationale: Reduces postural "locking" risks associated with voice production (Cardoso et al., 2019).
3. **Half-kneeling breath-supported trunk lengthening (Grades 6–8)**
   Emphasis on anterior hip lengthening combined with lower-rib breathing.
   Rationale: Concretizes hip–pelvis–diaphragm relationships within DFL pedagogy (Bordoni & Zanier, 2013; Willard et al., 2012).

B) Spiral Line–Focused (Cross-Body Coordination, Thoracic Rotation, Resonance Space)

1. **"Open book" thoracic rotation (seated or side-lying; Grades 4–8)**
   Gentle opening and closing of the trunk coordinated with breath.
   Rationale: Teaches spiral/rotational capacity and three-dimensional thoracic movement; anatomical evidence for spiral continuity is moderate (Kalichman, 2025; Wilke et al., 2016).
2. **Standing cross-body reach and gather**
   One arm reaches diagonally upward while the opposite heel remains grounded; sides alternate.
   Pedagogical goal: Organizing the trunk for resonance and "relaxed uprightness" without postural locking (Willard et al., 2012).
3. **Lunge with rotation (upper grades)**
   Simple lunge combined with gentle trunk rotation, synchronized with breath.
   Rationale: Strengthens cross-body coordination and introduces the language of "spiral expansion."
4. **Shoulder circles with spiral trunk wave (gamified; Grades 1–3)**
   Existing shoulder-circle movements are integrated with gentle trunk spiraling.
   Outcome: Curriculum movements are taught as holistic patterns rather than isolated segments.

4) Embedding These Proposals Within the "Teaching–Learning Practices" of the MoNE Curriculum

At the beginning of each lesson, the curriculum's existing "body preparation" component can be transformed into a concise micro-protocol:

- **30–45 s:** DFL-oriented breathing (lower-rib expansion)
- **45–60 s:** Dynamic postural scan (head–neck freedom; rib cage–pelvis balance)
- **60–90 s:** Spiral movement (cross-body reach or thoracic rotation)
- **30–45 s:** Vocal warm-up/articulation (e.g., trills, humming), aligned with curriculum content

This structure preserves the curriculum's intended learning outcomes while operationalizing the breath–movement–posture relationship through a fascia-informed pedagogical framework (Kalichman, 2025; Liu & Wiedman, 2024; Wilke et al., 2016).

Findings Related to the Fifth Sub-Question
To what extent do the existing "Teaching–Learning Practices" in the Ministry of National Education Individual Voice Training curricula allow for the integration of fascia-based exercises?

1) The emphasis on "preparing the body for singing" provides a strong and natural entry point for fascia-based integration

Within the Ministry of National Education (MoNE) Individual Voice Training Curriculum, the behavior of "preparing the body before performing a piece" is explicitly targeted across grade levels. This objective is operationalized through practices such as relaxation and stretching, breathing

exercises, vocal warm-ups, and, at upper grade levels, diaphragmatic work within the teaching–learning practices (MoNE, 2025). Such practices are fundamentally compatible with contemporary conceptualizations of the fascial system as a holistic connective tissue network that actively participates in movement and postural organization rather than serving merely as a passive covering (Adstrum et al., 2017; Willard et al., 2012).

Accordingly, the current curricular orientation does not necessitate the construction of an entirely new instructional structure for fascia-based integration. Instead, it points to the need for re-framing existing preparatory practices through scientifically grounded rationales and principles of movement quality.

2) The relatively general wording of the teaching–learning practices affords pedagogical flexibility for teachers

The "Teaching–Learning Experiences" section of the curriculum emphasizes that the selection of methods and techniques should be aligned with learning outcomes and content, while also being adaptable to the characteristics of the school and classroom context (MoNE, 2025). This flexibility represents a significant advantage for fascia-based integration: fascia-oriented exercises can be incorporated by preserving the intended learning outcome of "preparing the body" while transforming the same instructional time into a more functionally organized preparatory sequence.

Moreover, the curriculum's school-based planning approach provides a structural foundation that enables teachers to make context-sensitive micro-adaptations in line with their students ' developmental and situational needs (MoNE, 2025).

3) The curriculum allows for a high degree of integration; however, two critical gaps shape the quality of implementation

a) Conceptual gap

Because the concept of "fascia" is not explicitly articulated in the curriculum text, teachers ' interpretations of stretching and relaxation practices may remain muscle-centered and segmental. In contrast, fascia-oriented terminology emphasizes movement not as isolated regional stretching, but as load transmission and elastic recoil within a system of tensional continuity (Adstrum et al., 2017; Willard et al., 2012). Without addressing this conceptual gap, integration efforts risk remaining at the level of general warm-up rather than constituting a genuinely fascia-based approach.

b) Operational gap (dosage, sequencing, and breath–movement coupling)

The curriculum does not specify how body-preparation practices should be sequenced, dosed, or coordinated with breathing. Consequently, implementation quality is largely dependent on individual teacher interpretation. However, implementation science literature consistently emphasizes that a program's real-world impact is determined less by written content than by its feasibility and fidelity of application (Carroll et al., 2007; Durlak & DuPre, 2008). Therefore, while leveraging the curriculum's existing flexibility, fascia-based integration requires the clarification of core components, such as breath-coupled dynamic preparation, safe movement principles, and age-appropriate dosage, to ensure instructional quality.

4) The risk of interpreting "upright posture" statically increases the need for re-framing, while simultaneously revealing curricular openness to reinterpretation

Although the curriculum includes references to correct posture, there is a risk that these references may be enacted in practice as rigid or fixed postural positions. Research on posture–voice relationships emphasizes that effective posture is not a frozen alignment but rather an organization capable of redistributing tension dynamically and supporting laryngeal freedom (Cardoso et al., 2019).

Fascia literature similarly conceptualizes posture in terms of load transfer and elastic adaptability within connective tissue continuity (Willard et al., 2012).

From this perspective, the curriculum's "body preparation" components do not require formal rewriting to support fascia-based integration; rather, they can be pedagogically reinterpreted through teacher instructions and exemplar activities that emphasize dynamic posture and fluid alignment instead of postural locking. This indicates that the curriculum is pedagogically open to integration (MoNE, 2025).

5) The integration of a Deep Front Line and Spiral Line focus is feasible through scientific grounding and pedagogical translation

The terms Deep Front Line and Spiral Line do not constitute standardized anatomical nomenclature; rather, they function as modeling language frequently used to translate the concept of myofascial continuity into instructional design. Evidence related to the continuity aspect of this concept is discussed primarily within the cadaver-based myofascial connectivity literature (Wilke et al., 2016).

To ensure curricular compatibility, two guiding principles are proposed:

- **Alignment with curricular language:** The curriculum's existing terminology, such as breathing, relaxation, diaphragmatic work, and vocal exercises, should be retained, with the fascia-based framework introduced as a functional explanatory layer rather than a replacement (MoNE, 2025; Bordoni & Zanier, 2013).
- **Pedagogical translation of movement concepts:** Line/meridian language should be translated into goals related to bodily awareness and coordination. For example, "spiral coordination" may be reframed in age-appropriate classroom language as "cross-body connection and balanced turning."

This approach is compatible with the curriculum's flexible structure; however, it necessitates brief implementation guidelines and a simple instructional checklist for teachers (Carroll et al., 2007; Kershner et al., 2014).

Synthesis of Findings for the Fifth Sub-Question

Overall, the current MoNE Individual Voice Training Curriculum affords a high degree of opportunity for the integration of fascia-based exercises, as it defines "preparing the body for singing" as an inherent component of teaching–learning practices and grants teachers contextual flexibility in method and technique selection (MoNE, 2025). Nevertheless, for such integration to be genuinely fascia-based, three conditions are essential:

1. Clarification of the scientific framework underlying fascia conceptualization (Adstrum et al., 2017; Willard et al., 2012);
2. Reinterpretation of static "upright posture" cues through principles of dynamic postural organization (Cardoso et al., 2019); and
3. Identification of core components and teacher-support mechanisms to ensure implementation quality (Carroll et al., 2007; Durlak & DuPre, 2008; Kershner et al., 2014).

Findings Related to the Sixth Sub-Question
Which fundamental principles should be considered to ensure that fascia-based exercises applicable from the primary and lower secondary school level onward are structured in an effective, healthy, and sustainable manner within the process of preparing the body for singing?

1) Developmental Appropriateness and Safety (age-appropriate, pain-free, play-based)

For primary and lower secondary school children, exercise content should be designed not for "maximal performance" but for developing a safe movement repertoire, enhancing bodily awareness, and fostering consistent habits. Training loads should remain low to moderate, be non-painful, and be implemented under teacher supervision (Faigenbaum et al., 2009; Chaput et al., 2020).

2) Framing "Posture" as Dynamic Organization Rather Than a Static Template

Because the fascial system is conceptualized as a network demonstrating continuity across musculoskeletal structures and participating in load transfer and movement organization, "correct posture" should be taught through principles of adaptable alignment rather than freezing or locking the body into rigid positions (Adstrum et al., 2017).

3) Prioritizing Dynamic Mobilization in Warm-Up and Limiting Static Stretching Dosage

In preparing the body for singing, dynamic mobilization, rhythmic, fluid movements that employ controlled joint range of motion, should be prioritized. If static stretching is used, it should be brief and followed by dynamic activity. This approach is supported by evidence indicating that acute effects of stretching, particularly prolonged static stretching, may exert small-to-moderate negative effects on performance, whereas dynamic approaches tend to be more advantageous in warm-up contexts (Behm et al., 2016).

4) Fascia Adaptation Logic: Low Dose, Consistency, and Gradual Progression

Because fascial tissues may show relatively slow adaptation to loading, a "less, but regular" principle is essential. Weekly planning should incorporate 3–8-minute micro-sequences within each lesson, complemented by 1–2 more structured (yet still developmentally appropriate) repetitions per week. Load should be increased progressively over time (Schleip & Müller, 2013).

5) Using Elastic Recoil and "Spring-Like" Energy Management in Safe Micro-Forms

Elastic recoil and the principle of preparatory countermovement constitute key components of fascia-informed training. At the primary and lower secondary school level, however, this should not take the form of high-intensity plyometrics. Instead, it should be implemented through safe micro-applications such as very small-amplitude rhythmic oscillations, gentle bouncing, and controlled heel-to-toe transitions (Schleip & Müller, 2013).

6) Multi-Planar and Cross-Patterned Movements (consistent with fascial continuity)

A myofascial continuity perspective suggests that multi-planar movements, particularly cross-body patterns and rotational actions, may provide pedagogically meaningful grounding compared with single-joint or single-plane movements (Wilke et al., 2016). This supports structuring "spiral/cross-body integration" through child-appropriate play patterns such as contralateral knee–elbow touches, cross-body reaching, and rotational reaching in a safe manner (Wilke et al., 2016).

7) Breath–Movement Coupling and the Fascial Connections of the Diaphragm

In the preparation phase for singing, breathing should not be taught merely as "inhaling and exhaling" in isolation. Rather, it should be coordinated with movement (e.g., inhalation paired with expansion/lengthening; exhalation paired with softening/gathering). The diaphragm's anatomical and fascial connections across multiple systems provide a robust conceptual framework supporting the role of breathing in whole-body organization (Bordoni & Zanier, 2013).

8) Proprioceptive Awareness: Tactile Cues, Slow Exploration, and Interoceptive Language

Systematic findings on fascial innervation emphasize the importance of fascia's sensory components, rendering a "feel–notice–regulate" pedagogical approach particularly meaningful for children. This may include simple tactile prompts, slow scanning, and guided noticing of load transfer. Proprioceptive refinement is also explicitly emphasized as a principle within fascia-oriented training recommendations (Schleip & Müller, 2013; Suárez-Rodríguez et al., 2022).

9) Implementation Integrity and Sustainability: Teacher Guidance and Adherence-Focused Design

For sustained impact, exercise sequences should be easy to deliver, compatible with classroom management, brief, and amenable to standardization. Teacher competence in delivery and student adherence are primary determinants of effectiveness. Even when neuromuscular training programs demonstrate preventive or rehabilitative benefits in youth, the literature highlights participation and maintenance as critical challenges (Emery et al., 2015). Accordingly, fascia-based sequences require clear instructions, time–repetition parameters, and safety warnings, and they may necessitate in-service teacher training focused on fascia-aware exercise delivery (Emery et al., 2015).

10) Monitoring and Adaptation: Individual Differences and Risk Flags

At the primary and lower secondary school level, exercises should be immediately adapted or discontinued in cases such as pain, dizziness, shortness of breath, pronounced hypermobility, or acute musculoskeletal complaints. Child exercise literature emphasizes that appropriate supervision, correct technique, and individualization constitute the backbone of safe implementation (Faigenbaum et al., 2009). Consistent with this principle, it is recommended that these exercises be delivered by teachers trained in fascia-informed practice or, where possible, under the guidance of a qualified fascia specialist.

Answer to the Main Research Question

1) Conceptual Framework: What Does "Fascia-Based Integration" Mean?

In this study, fascia-based exercise integration is defined as moving curriculum-based preparatory practices beyond the level of "general warm-up" and transforming them into a teachable and standardizable micro-protocol grounded in:

1. dynamic posture,
2. breath–movement coordination,
3. multi-planar/cross-body movement,
4. sensory awareness (proprioception), and
5. progressive loading principles.

This approach is anchored in contemporary definitions of fascia as a connective tissue network that actively contributes to movement and postural organization rather than functioning merely as a covering tissue (Adstrum et al., 2017). Furthermore, while myofascial continuity/chain concepts can support the pedagogical rationale for cross-patterned and multi-planar movement design, evidence is not equally strong across all proposed "lines." Therefore, the recommended language should be grounded not in absolute anatomical claims, but in teachable coordination principles and tissue continuity concepts (Wilke et al., 2016).

2) Pedagogical Design Principles: Core Elements for an Effective, Safe, and Sustainable Structure

The curriculum's existing body-preparation elements (relaxation/stretching, breath–voice exercises, diaphragm work, posture) can be translated with high fidelity into a fascia-informed framework (MoNE, 2025). The core design principles include:

- **Dynamic mobilization priority in warm-up:** Controlled rhythmic movements should take precedence over prolonged static stretching; where static stretching is used, it should be brief and followed by dynamic activity (Behm et al., 2016).
- **Breath–movement coupling:** Breathing should be taught through three-dimensional lower-rib expansion and controlled exhalation, synchronized with movement rather than "stacked into the chest" (Bordoni & Zanier, 2013).
- **Teaching posture as dynamic organization:** Posture should be framed as adaptable balance and freedom rather than as a locked alignment; review evidence supports functional organizational language over rigid templates (Cardoso et al., 2019).
- **Multi-planar/cross-body patterns:** Thoracic rotation and cross-body reach–gather patterns can be pedagogically justified through a myofascial continuity perspective (Wilke et al., 2016).
- **Sensory awareness and safety:** Innervation findings support the pedagogical value of "feel–notice–regulate" elements via simple tactile cues and slow scanning (Suárez-Rodríguez et al., 2022).
- **Progressive loading and sustainability:** Fascia-informed training emphasizes regularity, gradual progression, and low-risk dosage for elements such as elastic recoil and proprioceptive refinement (Schleip & Müller, 2013).

3) Integration Architecture: A Framework to Embed Within MoNE "Teaching–Learning Practices"

A) A "Fascia-Based Preparation Protocol" (3–8 minutes) as a stable lesson core

It is recommended that the curriculum's existing "preparing the body for singing" component be standardized as a four-stage routine at the start of each lesson (MoNE, 2025):

1. **Dynamic mobilization (60–90 s):** shoulder girdle mobilization + gentle trunk oscillation + pain-free micro range of motion (ROM) for the neck
   Aim: tissue warming and mobility without locking (Behm et al., 2016).
2. **Breath–movement coupling (60–90 s):**" lower-rib umbrella breathing" with lateral/posterior expansion on inhalation and soft gathering on exhalation
   Aim: diaphragmatic/respiratory organization and pressure–balance coordination before singing (Bordoni & Zanier, 2013).
3. **Cross/spiral patterning (60–120 s):**
   - Grades 1–4: contralateral knee–hand patterns; cross-body reach and gather (play-based)
   - Grades 5–8: standing thoracic rotation; simple lunge with small rotation
     Aim: multi-planar coordination, thoracic mobility, and load transfer (Wilke et al., 2016).
4. **Bridge to vocal warm-up (30–60 s):** lip trill / hum / closed-mouth humming (curriculum-aligned)
   Aim: transition into phonation while preserving postural freedom (Cardoso et al., 2019).

B) Grade-level progression to support sustainability

- **Grades 1–2 (3–4 min):** predominantly play-based mobilization + basic breath coupling
- **Grades 3–4 (4–5 min):** increased thoracic rotation; establishment of "dynamic uprightness" language

- **Grades 5–6 (5–6 min):** varied cross-patterns; breath ratios (short vs. longer exhalation)
- **Grades 7–8 (6–8 min):** breath control and resonance-aligned thoracic mobility and balance emphasis

This progression aligns with the fascia-informed principle of low-dose, consistent practice supporting long-term adaptation (Schleip & Müller, 2013).

4) Implementation Quality: A Teacher-Focused Structure to Ensure Fidelity

When curriculum language remains general, practical outcomes are primarily determined by feasibility and implementation quality. Therefore, integration should not be presented as a simple "exercise list," but as a model that specifies core components and includes brief checklists to support fidelity (Carroll et al., 2007; Durlak & DuPre, 2008).

A minimal implementation checklist for lesson observation/self-review may include:

- Was dynamic mobilization implemented (no prolonged static stretching)? (Behm et al., 2016)
- Was at least 60 seconds of breath–movement coupling completed? (Bordoni & Zanier, 2013)
- Were "upright posture" cues delivered in ways that avoid postural locking? (Cardoso et al., 2019)
- Was at least one cross-body/rotational pattern included? (Wilke et al., 2016)
- Were risk flags (pain, dizziness) monitored and acted upon? (Suárez-Rodríguez et al., 2022; Schleip & Müller, 2013)

In summary, the proposed pedagogical framework for integrating fascia-based exercises into the existing MoNE "preparing the body for singing" practices consists of a brief, four-stage Preparation Protocol applied systematically in each lesson. The protocol is grounded in: 1) dynamic mobilization, 2) breath–movement coupling (lower-rib/diaphragm-oriented), 3) multi-planar cross-patterning, 4) sensory awareness, 5) progressive loading and consistency, and 6) implementation quality assurance through a checklist-based approach (MoNE, 2025; Adstrum et al., 2017; Behm et al., 2016; Bordoni & Zanier, 2013; Cardoso et al., 2019; Carroll et al., 2007; Durlak & DuPre, 2008; Schleip & Müller, 2013; Suárez-Rodríguez et al., 2022; Wilke et al., 2016).

Conclusion

The document analysis conducted in this study demonstrates that the *Learning–Teaching Practices* section of the Ministry of National Education Individual Voice Training curriculum systematically recommends a range of practices aimed at preparing the body for singing, including stretching and relaxation, postural regulation, voice and breathing exercises, diaphragm-focused work, and, at certain grade levels, articulation and facial-region activities (MoNE, 2025).

However, the findings indicate that these practices are not presented within a conceptual framework explicitly grounded in the fascia system or movement-based pedagogical principles. In particular, the emphasis on "correct/upright posture," when interpreted in practice as a static or rigid alignment, may pose a risk of weakening the bodily fluidity that supports functional voice production (Cardoso et al., 2019; MoNE, 2025).

The central outcome of this research is the identification of a feasible approach that preserves the curriculum's existing "preparing the body for singing" components while reorganizing them into a brief, repeatable, four-stage fascia-based preparation protocol. This protocol, consisting of dynamic mobilization, breath–movement coupling, multi-planar/cross-body coordination, and a bridge into phonation, offers a practical framework that supports effectiveness, vocal health, and long-term sustainability (Behm et al., 2016; Bordoni & Zanier, 2013; Schleip & Müller, 2013).

Finally, the study concludes that the success of such integration depends not solely on *which* exercises are selected, but on implementation fidelity and the quality of teacher delivery within the school context. Accordingly, the development of a concise implementation guide, clearly defined core components, and basic monitoring tools should be regarded as integral elements of any fascia-based integration effort (Carroll et al., 2007; Durlak & DuPre, 2008).

Discussion

The document analysis finding that preparatory practices are present, yet not structured within a fascia-based framework gains pedagogical significance when considered alongside contemporary literature that conceptualizes fascia not merely as an anatomical "sheath," but as a multi-component system actively involved in movement and postural organization (Adstrum et al., 2017). From this perspective, the stretching/relaxation and breathing practices included in the MoNE curriculum can be seen as providing a foundational *ground* for a fascia-based approach; however, for this ground to translate into pedagogical outcomes, instructional design parameters such as purpose, sequencing, dosage, and breath–movement coupling must be explicitly articulated.

When the movements recommended in the warm-up and preparation phase remain at the level of "general stretching," classroom practice may drift toward prolonged static stretching and rigid patterns. A comprehensive review comparing the acute effects of static stretching, dynamic stretching, and proprioceptive neuromuscular facilitation (PNF) demonstrates that especially long-duration static stretching can negatively affect performance outcomes, whereas dynamic approaches are more justifiable within a warm-up context (Behm et al., 2016). Accordingly, strengthening the curriculum's "preparing the body" component through a micro-protocol that prioritizes dynamic mobilization would enhance both pedagogical clarity and safety.

The curriculum's strong and recurrent emphasis on breathing and diaphragmatic work constitutes one of the most functional entry points for fascia-based integration. Conceptualizing the diaphragm not merely as a respiratory muscle, but as a *crossroads* with extensive anatomical and fascial connections, supports the proposal to align breath instruction with whole-body organization (Bordoni & Zanier, 2013). In this context, implementing breathing work at the beginning of lessons in a brief, structured, and movement-coupled format may enhance postural freedom and coordination in voice production.

The discussion surrounding the field interpretation of "upright posture" aligns closely with literature that systematically examines posture–voice relationships. The systematic review by Cardoso et al. (2019) emphasizes that effective posture should not be understood solely as static "correctness," but rather as a dynamic organization capable of supporting laryngeal freedom and redistributing tension across muscle groups, both at rest and in motion. This finding places the pedagogical translation of postural cues, away from locking and toward adaptability, at the center of the discussion regarding the MoNE curriculum's posture-related statements.

Within the proposed framework, the inclusion of multi-planar and cross-body movement patterns can be pedagogically justified through the concept of myofascial continuity; however, scientific caution regarding the level of evidence remains necessary. A systematic review on myofascial chains supports the existence of connective tissue links between muscles, while also underscoring the ongoing need for research into their functional implications (Wilke et al., 2016). Consequently, constructs such as the Deep Front Line or Spiral Line may be employed as a mapping language in instructional design, while academic justification is more robustly grounded in concepts such as multi-planar coordination, load transfer, and postural adaptability.

Finally, as this study is based on document analysis, the effects of the proposed integration framework have not yet been empirically tested through student outcome data. This limitation further underscores the importance of the *implementation fidelity* perspective, which is critical when translating educational programs into practice. If implementation does not occur as intended, program

effects may be underestimated or misinterpreted; therefore, integration efforts must be accompanied by monitoring and quality assurance components (Carroll et al., 2007; Durlak & DuPre, 2008).

As a document-based qualitative study, the findings reflect curricular intentions and pedagogical possibilities rather than direct classroom practices; therefore, interpretations are situated at the level of curriculum analysis and theoretical integration.

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Recommendations

1) Curriculum development and instructional materials at the Ministry of National Education (MoNE) level

Micro-protocol supplements for "preparing the body for singing.": Without altering the core curriculum text, supplementary or guidance documents should be developed within the *Teaching–Learning Practices* section, presenting exemplars of a 3–8 minute, four-stage preparation protocol (dynamic mobilization–breath/movement coupling–cross-body patterns–bridge to voice) (MoNE, 2025; Behm et al., 2016).

Clarification of postural language: Instructions referring to "upright posture" should be explicitly framed as *non-locking, dynamic posture*. Teacher guides should include concrete correct/incorrect examples to support consistent pedagogical interpretation (Cardoso et al., 2019).

Short standardized guidelines for breath instruction: Age-appropriate instructional templates should be developed for diaphragm- and lower-rib-focused breathing (360° expansion, controlled exhalation) explicitly coupled with movement, thereby standardizing breath teaching without reducing pedagogical flexibility (Bordoni & Zanier, 2013).

Digital Micro-Protocol Supplements (QR-Code–Based Delivery): To enhance accessibility, standardization, and pedagogical fidelity, it is recommended that the proposed fascia-based preparation protocol be supported through digital micro-supplements embedded within the curriculum materials. Each exercise component (dynamic mobilization, breath–movement coupling, cross-body coordination, and transition to phonation) may be accompanied by a QR code linking to short (30–90 second) video demonstrations.

These videos should present age-appropriate, safety-guided, and classroom-feasible versions of each movement, narrated with pedagogical cues rather than clinical terminology. QR-code integration would allow teachers to rapidly access standardized visual references during lesson preparation or in-class implementation, thereby reducing inter-teacher variability and supporting implementation fidelity.

From a progressive education perspective, this hybrid analog–digital model aligns with contemporary principles of micro-learning, teacher autonomy, and inclusive instructional design. Moreover, it enables iterative curriculum enrichment without necessitating frequent reprinting of official textbooks, thus supporting sustainability and scalability within the national education system.

2) Practice-level recommendations for teachers

Use of fidelity checklists: A brief checklist (6–8 items) should be routinized for the opening protocol of each lesson, addressing duration, dynamic quality, breath–movement coupling, inclusion of cross-body patterns, transition to voice, and safety considerations (Carroll et al., 2007).

Dosage and sustainability: Fascia-oriented practices should follow a *low-dose, high-frequency* principle rather than high-intensity loading, with continuity across the week emphasized as a primary goal (Schleip & Müller, 2013).

Incorporation of sensory awareness prompts: Short (10–15 second) body-awareness questions (e.g., "Where did you feel the breath expand?") should be integrated to support proprioceptive learning. Evidence regarding the sensory role of fascia strengthens the pedagogical value of this approach (Suárez-Rodríguez et al., 2022).

3) Recommendations for future research

Pilot implementation and process evaluation: The proposed protocol should be piloted in one or two schools using designs that assess not only outcomes, but also implementation fidelity and contextual factors influencing application (Durlak & DuPre, 2008).

Mixed-methods research designs: Future studies are encouraged to combine qualitative data on student and teacher experiences with quantitative measures of voice-training outcomes and bodily awareness, thereby capturing both process and effect dimensions (Carroll et al., 2007; Durlak & DuPre, 2008).

Empirical examination of movement components: Research focusing on the functional effects of cross-body and multi-planar movement patterns could help address the current gap in the myofascial chains literature regarding functional significance, thereby generating higher-level evidence within educational contexts (Wilke et al., 2016).

Teacher Training and Professional Development for Fascia-Informed Delivery: The successful implementation of fascia-based preparatory practices depends not only on curricular design, but also on the professional competencies of teachers.

At the foundational level, in-service training modules (8–12 hours) should be developed to introduce core principles of fascia science, breath–movement coupling, dynamic posture, and age-appropriate mobilization strategies. These modules should emphasize pedagogical translation rather than clinical or therapeutic depth, thereby ensuring accessibility for non-specialist educators.

At an advanced level, optional certification programs may be offered for teachers who wish to specialize in fascia-informed voice pedagogy. These programs could be developed in collaboration with somatic education institutes or university departments specializing in movement science, physiotherapy, or vocal pedagogy.

To ensure implementation fidelity, teacher-training materials should include standardized movement descriptors, safety guidelines, age-specific contraindications, and lesson-integration templates. This professionalization pathway would allow fascia-informed practices to be scaled sustainably within the national education system without requiring all music teachers to function as clinical practitioners.

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Credit Author Statement:

Author 1: Conceptualization: Formulation of research aims; Data Curation: Organization and preservation of data; Formal Analysis; Visualization: Preparation of tables, and data presentation;

Writing – Original Draft: Preparation of the initial draft; Writing – Review & Editing: Revision and critical evaluation.

Joint contributions of Author 1 and Author 2: Investigation: Data collection; Methodology: Method development and model design; Project Administration: Management of the research process; Resources: Provision of materials or analytical tools; Supervision: Oversight of the research process; Validation of results.

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