



FROM STUDIO TO STAGE: DESIGNING A SOMATIC VOCAL CONDITIONING FRAMEWORK FOR MUSICAL THEATRE PERFORMERS

Cathrine Hopkins

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Table of Contents

COMPONENT ONE.....	3
Introduction	3
Theoretical Influences	3
Best Practice Influences	4
Somatic and Alignment Based Practices	4
Progression-Based and Conditioning Models	4
Performance-Reality Pedagogy	5
Methodological Influences	5
Epistemological Position	5
Practice-Led Development	5
Reflective Cycles and Experiential Learning for the Artefact Development Process....	7
Aims and Objectives	7
Overall Aim	7
Objectives, Activities and Assessment Criteria	7
COMPONENT 2.....	10
Introduction	10
Contextualising the Artefact	11
The Need for Integrated Musical Theatre Pedagogy	11
From Technical Perfection to Performance Reality	11
Theoretical and Somatic Influences Informing the Artefact	12
Voice Science and Respiratory–Phonatory Coordination	12
Somatic and Movement-Based Influences	13
Reformer Pilates and singing	14
Artefact Development.....	15
Initial Pedagogical Problem.....	15
Development of Progression-Based Exercises	15
Running the Artefact.....	17
Development of the Vocal Exercises	18
VOCAL EXERCISE DESIGN	19
Stage 1 – Vocal Function Exercises (VFEs)	20
Stage 2 - Resonance Development	22

Stage 3 – Register Transition Development	22
Stage 4 – Laryngeal Adaptability and Vocal Tract Flexibility	23
SOMATIC EXERCISE DESIGN	23
Phase 1 – Static Respiratory Awareness	23
Phase 2 – Controlled Movement Integration	26
Phase 3 – Dynamic Alignment and Rotational Loading	28
Phase 4 – Choreographic Transfer and Performance Application	30
Conclusion	31
CRITICAL REFELCTION	32
BIBLIOGRAPHY	36
APPENDIX	40
Appendix A – Artefact Framework.....	40
Appendix B – Vocal Exercise Framework	41
Appendix C – Vocal Function Exercises	58
Appendix D – Reformer Pilates Exercise Illustrations	59
Appendix E - Dynamic Alignment and Rotational Loading Illustration.....	60
Appendix F – Reflective Journal Entries and Artefact Development Evidence	61
Appendix G – Historical Exercise Designs and Pedagogical Development Materials .	67

COMPONENT ONE

Introduction

As a musical theatre tutor and vocal coach, I tutor Higher Education students to develop skills in singing and dance in Musical Theatre (MT). A recurrent challenge for these students is how choreography impacts vocal quality, particularly through breath control, alignment, and projection (Linklater, 1976; Gates, 2018). This is especially pronounced within highly stylised movement vocabularies in choreographic heavy musicals.

In Module 3, I conducted a small practice-led study investigating six professional performers currently performing in *Chicago*, the musical in three different countries (China, England and South Africa) (Hopkins, 2025). These participants described significant physiological and vocal challenges associated with sustaining vocal performance whilst executing Fosse choreography. Reported difficulties included increased muscular tension, restricted torso flexibility, vocal fatigue, and the development of individualised coping strategies to manage performance demands. These findings aligned with emerging voice science research investigating how dynamic postural states influence vocal production (Castillo-Allendes et al., 2022). Following this, I conducted a narrative literature review across voice science, vocal pedagogy, and MT performance studies, which established that vocal production in MT cannot be meaningfully separated from the postural and respiratory conditions under which it occurs. Instead, vocal function emerges through the interrelationship between posture, alignment, respiration, and phonation, all of which are influenced by choreographic demand (McKinney, 2005; Castillo-Allendes et al., 2022). Within current MT teaching practice, there is a significant gap between how singing technique is traditionally taught and how it is required to function within choreography laden performances.

The aim of this project is to develop a progression-based pedagogical framework that supports the integration of voice and movement within choreography-heavy MT training.

Theoretical Influences

In a choreography specific context a performers alignment needs to be understood as a physiological function rather than just an aesthetic requirement: In the stylised postures, the interaction between vocal function and choreography causes physiological limitations on breath management, positioning a performer in a constant state of conflict between aesthetic requirement and sustainable vocal output (Slieden et al., 2017; Thomas and Alexander, 2025).

According to Verdolini, Abbott et al. (2012) singing and vocal conditioning attests that voice, and breathing systems are adaptable and responsive when trained and therefore, vocal function is trainable within adaptable postural states, rather than having to be dependent on maintaining optimal neutral alignments. However, there is literature that argues that maintaining good postural alignment is a significant contributor to vocal efficiency. Cardoso et al. (2019) identified associations between altered posture, vocal symptoms and reduced vocal quality, suggesting that compensation strategies may not entirely mitigate the physiological consequences of non-neutral alignment. More importantly for this study, Lagier et al. (2010) argues that posture and phonation operate as highly integrated motor systems, and that disruption to postural organisation may compromise vocal efficiency despite adaptive capacity. In a MT environment where choreography is integral to the art form, adaptive strategies are imperative for the singer to execute the requirements of the artform. Morton (2014) states there is a significant disconnect within “triple threat” training environments, where singing, dance and acting are trained separately despite their simultaneous integration within performance. This project therefore positions MT performance as an embodied practice requiring integrated pedagogical approaches rather than isolated technical disciplines

Best Practice Influences

Somatic and Alignment Based Practices

Investigating the integration of singing and movement training requires a larger understanding of somatic and physiological approaches beyond the conventional standard vocal teaching practice. Whilst my previous research showed the respiratory and vocal challenges associated with Fosse choreography, this next stage of investigation explores whether existing somatic and alignment-based practices may offer transferable principles capable of supporting MT performers.

To support this I also need to investigate the current best-practice approaches that address alignment, breath management, postural awareness and the somatic coordination required, including practices like Reformer Pilates. These approaches build the techniques required in supporting body awareness, kinaesthetic efficiency, postural coordination, and respiratory freedom (Dayme, 2009; Shewell, 2009; Csepregi et al., 2022), and may offer transferable principles relevant to MT performers.

Progression-Based and Conditioning Models

This project also looks at research of progression-based conditioning models commonly associated with movement training. Existing literature demonstrates that both respiratory and

musculoskeletal systems can adapt to increasingly complex physical demands through structured progressive conditioning (Schneider, Dennehy and Saxon, 1997; Johnson, 2021).

The artefact developed through this project therefore intends to explore whether controlled vocal and somatic exercises may be progressively adapted from neutral alignment into increasingly complex movement conditions.

Performance-Reality Pedagogy

This project adopts the position that best practice within MT pedagogy must be contextually aligned with performance reality. According to Morton (2014) and Cuny (2022), more integrated and interdisciplinary approaches to MT performer training are needed with simultaneous demands placed upon the performer's body and voice.

This project therefore takes best practice not as a fixed set of vocal exercises, but rather as a framework for the alignment between training and performance environments (Gates, 2018). The pedagogical framework developed through this project will aim to support performers within the actual physiological conditions of choreography heavy performance rather than idealised technical voice exercises within a studio.

Methodological Influences

Epistemological Position

This study is underpinned by a constructivist epistemological position, acknowledging that knowledge is constructed through experience, reflection, and contextualised practice rather than existing as fixed, objective truth (Kolb, 1984; Schön, 1983). Within MT teaching practice, learning develops and emerges through the interaction between embodied experience, theoretical understanding, and practical application (Nelson, 2013).

Practice-Led Development

My journey towards developing this artefact emerged through personal professional experience. As MT performer working in choreography-heavy productions including *Hairspray* and *The Rocky Horror Picture Show*, I experienced vocal fatigue, and maladaptive respiratory–phonatory compensations whilst attempting to sustain vocal performance during complex choreography.

As a vocal coach, I observed similar patterns repeatedly amongst my students. Performers were able to execute sound technical vocal function within isolated singing exercises, yet frequently experienced increased tension and loss of vocal consistency once choreography

demands were introduced. It was through these recurring observations that the idea of developing a more integrated training approach first emerged.

I began adapting studio exercises informally using dance training I had previously learned during university study, experimenting with different approaches and refining exercises through performer feedback and reflective observation. Over time, this process developed into an ongoing cycle of experimentation, adaptation, and pedagogical reflection that has continued across approximately twelve years of professional practice.

In 2018, I completed the Voice Teacher Training programme in New York at New York Vocal Coaching under Justin Stoney. This training expanded my understanding of vocal exercise design and the practical application of CCM pedagogy. In 2020, I attended the CCM Vocal Pedagogy Institute summer intensive at Shenandoah University where I participated in intensives facilitated by Dr Wendy LeBorgne and Dr Matt Edwards, exploring CCM vocal techniques and vocal health, specifically learning about Vocal Function Exercises (VFEs) and practical applications of CCM vocal techniques. As one of my career goals is to become a consultant in MT voice and choreography coordination, this research project emerged from a desire not only to refine practical application, but to critically bolster the pedagogical and physiological rationale underpinning the training programme itself. The artefact therefore has developed through the integration of practical experimentation, professional observation, pedagogical training, and reflective practice. This aligns closely with practice-led methodologies in which knowledge is generated through active engagement with practice rather than solely through theoretical analysis (Nelson, 2013). As such, the artefact currently exists theoretically rather than a fully empirically tested program, and its design remains intentionally exploratory, open to further refinement through future practice-led implementation and evaluation.

Viewed through Nelson's (2013) practice-as-research framework, the development of the artefact integrates propositional, procedural and reflexive forms of knowledge. "Know That" is represented through engagement with voice science, somatic practice, vocal pedagogy and MT literature, which provide the theoretical foundations informing the framework. "Know How" emerges through embodied and procedural knowledge accumulated across twelve years of professional practice as a performer, vocal coach and musical director, informing practical design decisions including the selection of Vocal Function Exercises as an entry point, the incorporation of Reformer Pilates principles, and the progression of movement-based conditioning tasks. "Know What" is reflected in the emergent understandings generated through the process of artefact development itself, as theoretical concepts, professional experience and reflective practice interact to shape a pedagogical framework

intended to address the specific demands of choreography-heavy musical theatre performance.

Reflective Cycles and Experiential Learning for the Artefact Development Process

Whilst Nelson's (2013) Know That, Know How and Know What framework is adopted within Component 2 as a means of critically evaluating the knowledge embedded within the artefact, the structure of my project is based on Kolb's (1984) experiential learning cycle. Kolb explains knowledge as being created through experience of the practitioner, positioning learning as an iterative process of experience, reflection, conceptualisation, ultimately focusing on future action. This approach aligns closely with the realities of arts-based professional practice, where pedagogical understanding is often developed through cycles of doing, observing, adapting and refining rather than through linear theoretical inquiry alone. As a novice researcher and academic, my position as a practitioner, the process-oriented nature of this framework provides a pragmatic means of documenting how my artefact is created, allowing the research to reflect the experiential nature of knowledge creation whilst remaining grounded in critical academic analysis. Nelson's framework is therefore employed as an evaluative lens, whereas Kolb provides the structure through which the artefact's creation and refinement can be explained.

This process acknowledges that the final artefact will remain unfinished by design, functioning not as a definitive solution but as an evolving pedagogical framework capable of continued development through future practice and investigation.

Aims and Objectives

Overall Aim

To develop a practice-led MT vocal training framework that builds somatic and vocal conditioning exercises that may support respiratory-phonatory efficiency within choreography-heavy performance contexts, specifically Fosse-style movement.

Objectives, Activities and Assessment Criteria

Objectives
To identify the efficacy of current physiological and somatic training approaches available to MT performers, including practices such as reformer Pilates and Alexander Technique, through a small targeted narrative literature exploration.

To investigate how voice science principles may be translated into practical vocal and physical exercise design, and movement-based vocal conditioning within MT.		
Activities		
Targeted interdisciplinary literature exploration		
Analysis of somatic and alignment-based training approaches		
Development of practical vocal and movement exercises (Documentation of this process may include reflective notes, exercise development records, rehearsal observations, and artefact refinement logs).		
Assessment Criteria		
OBJECTIVES	CRITERIA	EVIDENCE
Process of Development: Practice Led Research (PLR)	Critical engagement with literature	Evidence will include a small, targeted narrative review section, and contextual application to the artefact development.
	Integration of theory and practice	The extent to which insights from the literature review are meaningfully translated into practical exercise design and pedagogical application. These insights need to be translated and adapted into practical vocal and physical exercise design and will be a core indicator of success, as MT training requires the theoretical knowledge applied to its performance-specific context (Arboleda and Frederick, 2008; Nelson, 2013).
Practitioner Development	Improved biomechanical research clarity:	This will be evaluated through comparative analysis of reflective

	Demonstrate the development of accuracy and specificity of physiological explanations within academic writing and teaching.	teaching documentation, including the evolution of explanatory language, and clarity of communication through reflective journaling (Gibbs, 1988; Ghaye, 2011).
Artefact	Development Iterative practice-led development	The developmental process of the artefact will be iterative rather than linear, allowing exercises and pedagogical strategies to evolve through repeated reflective cycles informed by practice (Kolb, 1984; Schön, 1983). Evidence will include reflective journals, annotated exercise revisions, and rehearsal observations.
	Elevated self -reflected practice	The level of critical engagement with my own practice, using different reflective models such as Ghaye (2011) and Schon (1983).

COMPONENT 2

Introduction

It has been established that musical theatre (MT) performances that involves significant amounts of choreography can create and develop significant physiological difficulties for the performers who need to execute simultaneously the required singing and dancing style for the production they are cast in. These challenges are particularly prevalent regarding the interaction between posture and physical alignments, breath management and subsequent vocal production (Verdolini, Abbott et al., 2012; Bourne and Kenny, 2015; Beck and MacDonald, 2017; Sliiden et al., 2017; Johnson, 2021; Castillo-Allendes et al., 2022). In 2025, I conducted a practice-led investigation surveying professional MT performers in professional productions of *Chicago* (Hopkins, 2025) that showed performers had to create their own personalised strategies to manage and mitigate the required sustained vocal performance within stylised Fosse choreography. Despite these professionals having received recognised vocal and dance training, they reported not having training strategies to help facilitate these specific dual-demand challenges. Within both voice science and MT pedagogy there remains limited research investigating training approaches that help build facility and endurance for this specific performance requirement (LeBorgne and Rosenberg, 2014).

Current MT training often trains vocal techniques in studios in neutral and controlled conditions (Arboleda and Frederick, 2008; Morton, 2014) despite professional performers using these learned techniques within demanding, non-neutral, dynamic environments.

In this component, I will progress from identification of the problem to developing a potential teaching strategy through practice-led investigation. The aim of this is not to establish a definitive practical solution, but to explore how interdisciplinary theoretical knowledge and personal practice experience may be developed to form a practical pedagogical application.

The artifact that I am developing in this project therefore has dual function: It will become a practical training programme for the performer, and a procedure to help me generate better knowledge as a vocal coach through its development and my own reflective practice.

The training program is established within a constructivist and practice-led framework where the knowledge gained is from the interaction between theoretical research and subsequent understanding, the physiological experience for the performer (untested), and personal reflective practice (Schön, 1983; Kolb, 1984 Nelson, 2013).

Contextualising the Artefact

The Need for Integrated Musical Theatre Pedagogy

According to Morton (2014) MT performers must be proficient in simultaneously execution of singing, acting and dance and yet traditional training methods separate these disciplines. Whilst training these three disciplines facilitates technical development in each field, it also creates challenges when performers try to combine these disciplines within required rehearsal and performance environments; particularly in choreography-heavy contexts where respiratory and vocal coordination are placed under increased physiological demand (Sliiden, Beck and MacDonald, 2017; Cuny, 2022).

This artifact therefore is founded on the principle of developing training approaches where vocal function is explored under conditions which performance actually occurs and not as just a combination of dance and singing classes.

From Technical Perfection to Performance Reality

A foundational principle in creating this artefact is from what I have personally experienced as both a professional performer in MT and as a vocal coach: That best practice within MT training cannot be defined nor demonstrated in idealised technical conditions. The integration of singing and dance is complex and often “messy,” asking the performer to experiment with their bodies and their voice whilst in rehearsals. It’s a physiological and auditory exploration, using iterative adaptations in real-time rather than the reliance on idealised and calm technical conditions. It is collaborative and reflective engagement between the trainer, the performer and the unpredictable rehearsal and performance spaces (Kolb, 1984; Schön, 1983; Nelson, 2013).

In my own teaching practice, my students often demonstrate good technical vocal skills in static and controlled environments and then experience significant changes in breath management, vocal timbre and muscular tension in the throat as soon as choreography is introduced. These observations align with existing literature suggesting that concurrent singing and movement significantly alter respiratory and phonatory behaviour (Sliiden, Beck and MacDonald, 2017).

Knowing that phonatory and respiratory changes will occur, my artifact will therefore be designed not to eliminate vocal load or simplify movement complexity to better facilitate phonation, but rather to explore how performers may be progressively trained and conditioned to manage these behaviours more efficiently.

Theoretical and Somatic Influences Informing the Artefact

Voice Science and Respiratory–Phonatory Coordination

Over the past four modules I have looked at literature that investigates the relationship between posture, breath management and vocal production from interdisciplinary sources across voice science, dance science, voice pedagogy and MT pedagogy. The research establishes that non-neutral alignment affects diaphragmatic movement, thoracic flexibility leading to compromised respiratory efficiency, limited laryngeal mobility and compromised vocal production (Hodges, Sapsford and Pengel, 2007; Cielo et al., 2014; Castillo-Allendes et al., 2022). According to Gould (1971), Heman-Ackah (2005) and Gilman and Johns (2017) postural instability experienced by a vocalist restricts thoracic mobility (limiting ribcage expansion and reducing respiratory flexibility during phonation) and forces the singer to rely on accessory respiratory musculature including the sternocleidomastoid, scalene, and upper trapezius muscles to produce ideal phonation, resulting in compensatory upper-chest breathing patterns and increased phonatory effort (Arboleda and Frederick, 2008; Castillo-Allendes et al., 2022). This is experienced by singers as pushing, straining, breathiness, vocal heaviness, or the sensation of needing to work harder to achieve vocal output (Gilman and Johns, 2017).

Within choreography-heavy musical theatre contexts such as *Chicago*, these physiological demands become increasingly complex, as performers are required to sustain respiratory–phonatory coordination whilst simultaneously negotiating movement, stylised alignment, and vocal performance (Sliiden, Beck and MacDonald, 2017; Thomas and Alexander, 2025).

However, after interviewing and surveying professional performers (Hopkins, 2025), alongside personal observations and experiences as both a professional MT performer and vocal coach, it has become increasingly evident that the voice and the physiological systems supporting vocal production are adaptable rather than inherently fragile. Contemporary voice science and vocal conditioning literature increasingly recognises that respiratory–phonatory systems are capable of responding positively to appropriately structured loading, conditioning, and recovery processes (Verdolini Abbott et al., 2012; Kang, Scholp and Jiang, 2018; Johnson, 2021). Similarly, exercise-based vocal training approaches suggest that vocal endurance, respiratory coordination, and postural efficiency may be progressively developed through context-specific conditioning and repeated exposure to performance demands (Schneider, Dennehy and Saxon, 1997; Bourne and Kenny, 2015).

However, this perspective is not universally accepted. Whilst contemporary conditioning literature increasingly emphasises adaptability, other researchers continue to highlight the

vulnerability of the voice to excessive loading and biomechanical inefficiency. Studies investigating posture and phonation have demonstrated that altered alignment may negatively affect respiratory function, laryngeal positioning, and vocal efficiency (Lagier et al., 2010). Reviews of the posture–voice literature suggest that vocal effort is accompanied by both segmental and global postural adjustments, and that dysphonic individuals may demonstrate greater postural instability during phonation (Caçador and Paço, 2019). Similarly, research examining occupational voice users has identified increased vocal symptoms and fatigue in environments characterised by sustained vocal demand and inadequate recovery (Kooijman et al., 2006; Castillo-Allendes et al., 2022). From this perspective, adaptation should not be interpreted as evidence that the voice can function optimally under all conditions, but rather that physiological systems possess a finite capacity to respond to training whilst remaining subject to biomechanical and environmental constraints. Consequently, although conditioning approaches may improve performers' ability to manage choreographic and vocal demands, the extent to which such adaptations can mitigate the physiological challenges associated with non-neutral postures and high vocal load remains an area of ongoing discussion.

This research is fundamental to my artefact design: Could I gradually expose performers to increasingly difficult and demanding respiratory-phonation coordination within controlled progression-based exercises, where movement complexities (choreography) are used to help adapt traditional vocal techniques into functioning vocal and respiratory coordination that embody the reality of a MT performance.

Somatic and Movement-Based Influences

The design of this artefact is physiologically based on movement and somatic principles that incorporate postural awareness, breath management and coordination, and kinaesthetic efficiency. Kinaesthetic efficiency is proprioceptive awareness, neuromuscular coordination, postural awareness and movement patterns that are energy efficient (Wells, Kolt and Bialocerkowski, 2012; Batson and Wilson, 2014). This awareness allows the body to execute complex physical coordination with improved compensatory tension and improved reactivity to dynamic movement requirements. In the context of physical MT performance, this awareness may help performers discover and apply good respiratory-phonation coordination whilst singing and dancing at the same time; meaning less tension in the accessory respiratory musculature, ultimately improving the integration between breath, vocalisation and movement.

Reformer Pilates and singing

Reformer Pilates is an adaptation from Joseph Pilates “Contrology” method that was originally created to improve physiological control, postural alignment, breathing efficiency and muscular coordination (Latey, 2001). Newer research from Curi et al. (2018) and Wells, Kolt and Bialocerkowski (2012) shows that Pilates training may improve thoracic mobility, engagement of the respiratory muscles and improve postural stability. Furthermore, a recent systematic review by Li et al. (2024) found that Pilates interventions were associated with improvements in postural alignment, balance, movement control, and body awareness. These improvements could be used as transferable principles relevant to MT performers who are required to maintain efficient respiratory-phonatory coordination in choreography challenging musicals such as *Chicago*.

According to Kloubec (2010), Pilates conditioning may positively influence muscular endurance and breath management through sustained low-to-moderate muscular activation, particularly within the stabilising musculature of the torso, pelvis and spine, whilst coordinating movement with controlled breathing patterns. Similar findings have been reported by Curi et al. (2018) and Li et al. (2024), who suggest that Pilates-based interventions may improve postural control, respiratory coordination and movement efficiency. These outcomes appear relevant to the complex physical demands experienced by MT performers. However, the current evidence base does not directly establish that improvements in muscular endurance and respiratory coordination transfer to enhanced phonatory efficiency or vocal sustainability during simultaneous singing and choreography. Consequently, whilst Pilates provides a compelling theoretical rationale for conditioning body–voice coordination, the extent to which these physiological adaptations support vocal performance under choreographic load remains unclear.

Within this artefact, Pilates-informed principles are therefore incorporated as a potential conditioning strategy rather than as an empirically validated solution to MT vocal demands.

Reformer Pilates is a form of Pilates-based movement conditioning performed using a specialised resistance apparatus known as the “Reformer,” which consists of a moving carriage, spring-based resistance system, pulleys, and adjustable straps designed to facilitate controlled movement, postural alignment, and muscular coordination (Latey, 2001).

Unlike mat-based Pilates, Reformer Pilates requires performers to coordinate and sustain breathing, posture and core activation whilst moving under varying levels of resistance and changing alignment demands. Research suggests that Reformer Pilates can improve postural control, respiratory coordination and muscular efficiency (Curi et al., 2018; Li et al., 2024), qualities that appear relevant to the complex physical demands placed upon MT

performers. However, the existing evidence base does not directly establish that these physiological adaptations transfer to maintained phonatory efficiency during simultaneous singing and choreography. Consequently, whilst the literature provides a rationale for exploring Reformer Pilates as a conditioning approach, its application within MT vocal pedagogy remains largely theoretical.

Within the context of this artefact, Reformer Pilates is therefore positioned as a potential training methodology to support body–voice coordination rather than as an evidence-based solution to vocal challenges under choreographic load. The principles underpinning Reformer practice, including controlled breath, dynamic alignment, somatic awareness and movement precision, inform the design of the conditioning framework. Although these principles may provide useful insights into supporting respiratory–phonatory coordination in choreography-heavy performance contexts, further investigation would be required to determine the extent to which such benefits transfer to vocal performance outcomes.

Artefact Development

Initial Pedagogical Problem

The initial pedagogical issue identified within my teaching practice centres around the transition between static vocal technique and movement integration. Students frequently demonstrated competent breath management and vocal consistency during static singing exercises, yet experienced immediate changes in respiratory coordination and vocalisation once stylised choreography was introduced.

Particular difficulties emerged during:

- Transitions into different physical alignments
- Sustained torso restriction affecting breath management
- Vocal overloading and compromised vocal timbre
- Movement sequences requiring simultaneous vocal sustains

Development of Progression-Based Exercises

The artefact is designed using principles of progression-based conditioning using exercise physiology, motor learning, voice science and somatic practices. Within this project, progression-based conditioning refers to the gradual increase of respiratory, postural, and movement demands to support adaptive respiratory–phonatory coordination under increasingly performance-specific conditions (Schneider, Dennehy and Saxon, 1997; Johnson, 2021).

Therefore, I will not put performers into a fully choreographed routine with vocal exercises to practice but rather structure the exercises to gradually increase new coordination for respiratory, alignment and movement requirements whilst teaching the vocalist to try and maintain efficient respiratory-phonation coordination. This approach is using the suggestions from peer reviewed literature that iterates both voice and musculoskeletal systems and coordination have an adaptive nature when being exposed to structured loading and repeated task-specific actions (Schneider, Dennehy and Saxon, 1997; Verdolini Abbott et al., 2012; Johnson, 2021).

However, before the designing and implementation occurs, in my experience, recognising the importance of the performer's individual awareness and subjective experience of singing whilst moving and how they communicate that is of prime importance. Voice pedagogy explains that efficient vocal coordination is closely connected to kinaesthetic awareness, understanding of breath management, posture and alignment, and the performer's ability to recognise and respond to internal sensory feedback (Linklater, 1976; Shewell, 2009). Consequently, the design process will not focus solely on correcting technical faults externally, but also on developing performers' awareness of how their respiratory coordination, experienced muscular tension, and phonatory effort are physically experienced within their own bodies. To do this, I need to listen to the language that the singer uses to describe their experience, including how their physical sensations experienced, their judgement of sound and rating of their voice fatigue. According to Schön (1983) and Kolb (1984) pedagogical approaches that are student centred and reflective are more effective in a technically instructed environment. In a future research project, where this artefact will be tested, feedback from the singer will become a primary component in shaping how exercises are adapted and then explained within the rehearsal environment.

The artefact is aimed to evolve incrementally from controlled vocal technical exercises into increasingly more complex coordination specific to the requirements needed to execute the choreography required. Initial exercises will focus on:

Breath: Exercises focusing on the isolation of respiratory muscles to improve their awareness of diaphragmatic movement, thoracic expansion, abdominal coordination, and compensatory accessory muscle engagement during singing and movement.

Thoracic Mobility: The flexibility and movement capacity of the ribcage and thoracic spine during respiration and movement, supporting efficient respiratory expansion, postural adaptability, and coordinated phonatory function (Hodges, Sapsford and Pengel, 2007; Castillo-Allendes et al., 2022).

Postural Organisation: Recognising posture as a dynamic and continuously adapting system involving the interaction between the spine, pelvis, ribcage, head, neck, and surrounding musculature during movement and breathing tasks (Shewell, 2009; Melo et al., 2015). Efficient postural organisation allows the body to maintain stability and movement coordination with minimal unnecessary muscular tension or compensatory effort (Kooijman et al., 2018).

Compensatory Vocal Tension: Rather than voice being produced through balanced respiratory support and efficient laryngeal function, singers experiencing compensatory vocal tension often recruit additional musculature to maintain vocal output, stability, intensity, or breath control (McKinney, 2005). This compensation commonly involves increased activation of the extrinsic laryngeal and accessory respiratory musculature, including the sternocleidomastoid, scalene, jaw, tongue, neck, and shoulder muscles (Arboleda and Frederick, 2008; Kooijman et al., 2018).

The artefact will add on movement variability through Reformer Pilates movements, that cause shifts in posture and alignment and then instruct the performer to sing vocal exercises at the same time. The sequencing of the artefact is informed by somatic and dance-based literature that evidence that postural control, physiological awareness and muscular coordination can be strengthened progressively through repetition under manageable physiological conditions (Kloubec, 2010; Wells, Kolt and Bialocerkowski, 2012; Curi et al., 2018).

Once the foundational exercises are set and practiced, the aim of the artefact is always to develop the performers' adaptability from what they learn in the studio into the environment of choreography-heavy musicals. According to Sliiden, Beck and MacDonald (2017) and Thomas and Alexander (2025) performers in MT often experience respiratory inefficiency, increased muscular tension and elevated vocal effort when singing and dancing together. Therefore, the primary function of the artefact is always to condition performers progressively and safely towards dual-demand environments rather than separating movement from singing technique.

Running the Artefact

The artefact is structured around the integration of somatic and vocal training, with each somatic phase paired with a progressive sequence of vocal exercises, the artefact is designed to explore how respiratory–phonatory coordination responds to increasingly complex movement and alignment demands. This approach is informed by research suggesting that postural control and phonatory function operate as coordinated physiological systems rather than discrete processes (Lagier et al., 2010). Ultimately this approach

reflects calls for more integrated pedagogical models that acknowledge the simultaneous vocal and physical requirements of MT performance (Morton, 2014)

The somatic part of the program is conducted through phases, and the vocal exercise of the program is conducted through stages.

Task 1 is the somatic phase and Task 2 is the vocal exercise stage. These happen concurrently.

This cyclical structure reflects the artefact's progression-based approach, allowing performers to revisit and refine key vocal coordination whilst gradually increasing physiological complexities and vocal loading.

Each phase should be completed sequentially, with performers demonstrating consistency and comfort within the current phase before progressing to the next. The framework is intended as a flexible pedagogical guide rather than a prescriptive training programme, allowing adaptation in response to individual performer needs and responses.

[See Appendix A](#)

Development of the Vocal Exercises

Across my professional practice as a performer, vocal coach, and musical director, I have identified four recurring vocal abilities as particularly important for performers working in MT and CCM styles. These are resonance, including the purposeful use of nasality; efficient transition between vocal registers (M1 and M2); vocal agility; and laryngeal flexibility and adaptability. Whilst the importance of these abilities may vary according to genre, contemporary CCM and MT pedagogies frequently emphasise register negotiation, resonance shaping, vocal tract flexibility, and stylistic adaptability as core element of sustainable contemporary singing practice (Titze, 2006; LeBorgne and Rosenberg, 2014; Edwin, 2016).

Consequently, the design of exercises was intentionally aligned with the central problem underpinning this artefact: how can performers maintain efficient respiratory–phonatory coordination when transitioning from static vocal tasks into increasingly demanding movement environments.

The vocal exercises presented in [Appendix B](#) are informed by my training with New York Vocal Coaching (NYVC) and the pedagogical principles taught by Justin Stoney. Whilst the specific exercise progressions have been adapted and organised to align with the aims of this artefact, they draw upon established CCM voice training approaches that utilise targeted

vocal exercises to develop resonance, register transitions, vocal agility, and laryngeal adaptability (Titze, 2006; LeBorgne and Rosenberg, 2014).

Drawing upon my training with NYVC, the vocal component of the artefact is designed to progress from foundational Vocal Function Exercises (VFEs) towards increasingly demanding vocal tasks through the four-stage progression program. This approach is to help facilitate the gradual integration of respiratory, postural, and vocal coordination whilst progressively increasing vocal and movement demands.

The design of these exercises is primarily from my professional experience as a vocal coach and musical director, informed by over twelve years of studio practice, performer observation, and student feedback. Consequently, the progression should be viewed as a practice-informed pedagogical framework rather than a validated training model. This position aligns with practice-led and constructivist perspectives, which recognise that pedagogical knowledge develops through the interaction of professional experience, reflection, and appropriate application (Schön, 1983; Kolb, 1984; Nelson, 2013).

[See Appendix F](#)

Alongside each exercise, a teaching tips column has been included to illustrate the practical pedagogical language frequently employed within my own teaching practice. These cues do not represent formal scientific terminology but rather the experiential and metaphorical language that has evolved in my vocal coaching. Such language reflects the reality of studio-based voice teaching, where exercises are explained colloquially and complex physiological processes are often communicated through imagery, sensation, and performer-centred feedback to facilitate understanding and practical application (Schön, 1983; LeBorgne and Rosenberg, 2014). I also intentionally use humour to encourage relaxation, curiosity and trust within the learning environment, helping performers engage more freely with exploratory vocal tasks and reducing anxiety associated with producing unfamiliar or imperfect sounds. This approach aligns with student-centred pedagogies that position psychological safety and reflective experimentation as important components of effective learning, enabling learners to take creative risks without fear of judgement (Schön, 1983). The inclusion of these teaching cues therefore acknowledges the relationship between theoretical knowledge and situated pedagogical practice that underpins the development of this artefact.

VOCAL EXERCISE DESIGN

[See Appendix B](#)

As performers progress through each somatic phase, they complete four vocal exercise stages:

Stage 1 – Vocal Function Exercises (VFEs)	Establishing efficient airflow, phonation, and vocal endurance.
Stage 2 – Resonance Development	Developing resonance awareness, resonance consistency, and resonance flexibility.
Stage 3 – Register Transition Development	Developing efficient M1–M2 transitions and mixed voice coordination
Stage 4 – Laryngeal Adaptability and Vocal Tract Flexibility	Encouraging efficient adjustment across changing vowel configurations and resonance.

Stage 1 – Vocal Function Exercises (VFEs)

See Appendix C

This phase has been influenced by “The Vocal Athlete” model written by LeBorgne and Rosenberg (2014) which describes CCM vocalists has high performance vocal athletes that require progressive development and conditioning in breath management in four ways: Strength, agility, flexibility and stamina (p.54). Therefore, initial focus will be on the performer becoming more aware of their breath through low-loaded exercises, both physically and vocally. Low loading exercises can be defined as controlled vocal and movement tasks performed under relatively low respiratory, muscular, and phonatory demand to facilitate efficient coordination and reduce compensatory tension before introducing greater performance complexity (Titze, 2006; Verdolini Abbott et al., 2012). This will help facilitate the singer to improve their breath perception, thoracic expansion, allowing gentle changes in alignments and respiratory-phonation coordination before making movements more complex.

This artefact will use the use Vocal Function Exercises (VFEs) as the first stage of the vocal exercises.

Vocal Function Exercises

Originally developed by Stemple et al. (1994) VFE’s are a systematic approach to improving vocal efficiency, endurance, and respiratory–phonatory coordination in vocalists. They are designed to strengthen and balance laryngeal musculature, improve respiratory–phonatory coordination, increase endurance, reduce excessive phonatory effort, and develop efficient

vocal fold vibration (Sabol, Lee and Stemple, 1995). Within this project, these principles form the early stages of the conditioning framework, particularly through low-load vocal tasks focused on breath-flow awareness, sustained phonation, and efficient airflow management. Whilst traditional VFEs are generally performed within static vocal conditions, this artefact seeks to explore how these conditioning principles might be progressively adapted into movement-based and choreography-specific MT contexts. Consequently, VFEs form part of preparatory tasks used to establish greater respiratory awareness, vocal efficiency, and kinaesthetic coordination before introducing increased postural and choreographic complexity.

The table below shows the Four Classic Vocal Function Exercises and their proposed relevance to the artefact framework (adapted from Stemple et al., 1994; Sabol, Lee and Stemple, 1995).

Exercise	Purpose	Relevance to Artefact
Warm-up sustained /i/	Establishes efficient phonation and airflow	Breath awareness with low-load phonation
Stretching glide	Develops flexibility and coordination	Breath management through changing vocal demand – elongation and increased oscillation of the vocal folds as well as respiratory stability during the change in muscular demand
Contracting glide	Supports controlled adduction and coordination	Breath management through changing vocal demand – contracting and decreased oscillation of the vocal folds as well as respiratory stability during the change in muscular demand
Sustained musical notes	Builds endurance and airflow control	Respiratory–phonatory endurance under sustained load

Stage 2 - Resonance Development

The purpose of Stage 2 is to develop resonance awareness, consistency, and flexibility through the systematic manipulation of consonants, vowels, and melodic patterns. Within MT singing, performers are frequently required to modify resonance strategies in response to changing pitch, vocal quality, stylistic demands, and movement conditions. Consequently, the ability to maintain efficient resonance whilst adapting vocal tract configurations is an important component of sustainable vocal function (Titze, 2006; LeBorgne and Rosenberg, 2014).

The exercises within this stage progress from simple awareness tasks towards increasingly complex resonance challenges. Nasal consonants such as /ŋ/ and /m/ are used to encourage vibratory feedback and facilitate awareness of resonance sensations, whilst contrasting vowel shapes promote flexibility in vocal tract configuration and resonance tuning (Titze, 2000; McCoy, 2012). As the stage progresses, performers are required to maintain resonance consistency across changing vowels, wider pitch relationships, and more complex melodic patterns. This progression reflects the artefact's broader aim of developing adaptable respiratory–phonatory coordination that can be maintained under the changing vocal and movement demands encountered within musical theatre performance.

Stage 3 – Register Transition Development

The purpose of Stage 3 is to develop efficient register transitions, mixed voice coordination, and vocal flexibility across changing pitch relationships. MT repertoire frequently requires performers to move seamlessly between chest-dominant and head-dominant vocal qualities. Consequently, singers must develop the ability to negotiate transitions between M1 and M2 efficiently whilst maintaining vocal stability, resonance consistency, and stylistic authenticity (Titze, 2000; LeBorgne and Rosenberg, 2014).

The exercises within this stage progress from establishing foundational mixed voice strength towards developing balance, stability and flexibility across the singer's range. Using carefully selected vowels, melodic patterns and glides, performers are encouraged to explore the coordinative adjustments required to transition between registers without excessive tension or abrupt shifts in vocal quality, consistent with contemporary CCM approaches that emphasise efficient vocal function and balanced registration (LeBorgne and Rosenberg, 2014). As the stage progresses, increasing pitch demands and sustained vocal tasks challenge performers to maintain consistent respiratory–phonatory coordination whilst adapting to changing register relationships. This progressive loading reflects broader principles of vocal conditioning and endurance training, whereby vocal efficiency is developed through structured exposure to increasing task demands (Verdolini Abbott et al.,

2012; Johnson, 2021). However, whilst vocal conditioning literature supports the progressive development of vocal coordination and endurance, there is limited evidence directly examining whether these gains transfer to singing within choreography-heavy performance environments. Consequently, the progression supports the artefact's wider aim of developing adaptable vocal function capable of remaining stable under the increasing movement and alignment demands introduced throughout the somatic phases

Stage 4 – Laryngeal Adaptability and Vocal Tract Flexibility

The purpose of Stage 4 is to develop laryngeal adaptability flexibility through the manipulation of vowels, resonance, and pitch. Rather than attempting to directly control laryngeal position, the exercises encourage performers to develop efficient coordinative adjustments. This flexibility is particularly important within MT singing, where performers are frequently required to modify vocal qualities, resonance strategies, and stylistic approaches whilst maintaining vocal efficiency and consistency (Titze, 2000; McCoy, 2012).

The exercises progress from relatively simple vowel modifications towards increasingly complex combinations of articulatory, resonatory, and register challenges. Contrasting vowel shapes require continual adjustment of tongue position and oral space, encouraging performers to avoid rigid or fixed coordinative patterns whilst developing flexible vocal tract configurations that can be adapted to changing pitch and resonance demands (Titze, 2008; LeBorgne and Rosenberg, 2014). As the stage develops, wider pitch ranges and extended scale patterns further challenge the singer's ability to maintain efficient vocal function across more complex physiological demands. This final stage therefore seeks to develop the adaptability required for performers to respond effectively to the vocal demands encountered within MT performance.

SOMATIC EXERCISE DESIGN

The somatic component of the artefact has been developed to progressively explore the relationship between posture, respiration, and movement. Informed by reformer Pilates methodologies, the exercises aim to develop breath awareness, postural organisation, and movement coordination before introducing the increased physiological demands associated with musical theatre choreography.

Phase 1 – Static Respiratory Awareness

Several reformer Pilates exercises were investigated within the artefact development process due to their emphasis on coordinated breathing, dynamic postural stability, thoracic mobility, and controlled movement under low levels of resistance. Exercises including footwork sequences, supine arm work, bridging, mermaid stretches, and standing balance

tasks were explored as potential somatic conditioning tools capable of supporting respiratory awareness and postural dynamics during movement-based performance tasks.

Contemporary Pilates literature suggests that reformer-based training may positively influence respiratory muscle coordination, thoracic expansion, trunk stability, and kinaesthetic efficiency through the integration of breath with controlled movement patterns (Kloubec, 2010; Wells, Kolt and Bialocerkowski, 2012; Curi et al., 2018).

The table below outlines six reformer Pilates exercises that I would explore within the artefact development process, including their proposed respiratory, postural, and pedagogical relevance to MT training.

Reformer Pilates Exercise	Relevance	Respiratory Relevance	Application
Footwork on the Reformer	Develops breath coordination under low physiological load; encourages pelvic stability; promotes controlled exhalation during movement; trains sustained abdominal support without excessive rigidity.	Performers coordinate inhalation and exhalation with resisted lower-body movement whilst maintaining trunk stability and postural organisation.	Helps develop early respiratory coordination, identifying abdominal tensing patterns, and stabilising breath during gradually increasing movement demand.
Supine Arm Exercise	Integrates ribcage control with upper-limb movement; encourages thoracic expansion awareness; challenges shoulder and neck tension patterns.	May expose compensatory accessory breathing strategies, particularly excessive sternocleidomastoid (SCM) and upper trapezius engagement during inhalation.	MT performers who elevate the shoulders or create excessive upper thoracic tension during choreography and vocal performance.
Bridge	Improves pelvic–spinal organisation;	Supports coordination between the pelvis,	Potentially valuable within Fosse-

	encourages diaphragmatic release; mobilises the thoracic spine.	abdominal wall, ribcage, and breath sequencing during movement transitions.	specific contexts where pelvic tilt and rib restriction frequently disrupt respiratory–postural organisation.
Mermaid Stretch	Encourages lateral thoracic expansion, rib mobility, and awareness of side-rib breathing patterns	Facilitates intercostal mobility, thoracic flexibility, and reduced rib restriction during inhalation.	Particularly relevant to performers experiencing restricted thoracic mobility and reduced rib expansion within stylised choreographic postures.
Elephant	Encourages spinal lengthening, posterior chain organisation, and controlled breathing during weight-bearing movement.	Can reveal breath holding, abdominal gripping, and thoracic restriction patterns during movement tasks.	Useful for increasing performer awareness of compensatory tension patterns whilst maintaining respiratory organisation under physical load.
Scooter / Standing Leg Press Variations	Develops dynamic stability, balance, and breath coordination during asymmetrical movement tasks.	Requires performers to stabilise breathing whilst negotiating changing weight distribution and movement sequencing.	Begins approximating the breath stabilisation and postural adaptability required during choreographic transition and movement-heavy MT performance.

[See Appendix D](#)

Phase 2 – Controlled Movement Integration

Phase 2 introduces controlled movements into the VFE framework, designed to investigate how dynamic alignment states affect the respiratory-phonatory coordination in the singer. In my observations and through my research, the moments that generate the most compensatory habits: increased vocal tension and disrupted air flow management are the transitory moments between stable and then unstable postural states (Sliiden, Beck and MacDonald, 2017; Castillo-Allendes et al., 2022).

Rather than assuming a fixed physiological response, this phase approaches movement integration as an exploratory and practice-led process, recognising that individual performers may experience and adapt to respiratory, postural, and phonatory demands differently according to their own technical training and compensatory patterns.

The pedagogical aim is to begin to help condition performers towards maintaining vocal consistency whilst incorporating changing directional movement, weight transfer, changing balance relationships, and low-level choreographic sequencing.

The table below outlines the movement principles explored within Phase 2 and their application through reformer Pilates exercises to support respiratory–phonatory coordination during movement. The exercise design progressions show what vocal tasks the singer will execute in combination with the principal movement.

Movement Principle	Reformer Pilates Application	Respiratory / Vocal Focus	Relevance to the Artefact
Simple directional movement- laterally and vertically: moving side to side and onto a Relevé (raise onto toes)	Controlled carriage movement through footwork, scooter, and standing balance variations (Latey, 2001; Wells, Kolt and Bialocerkowski, 2012).	Coordinating inhalation and exhalation with carriage direction and return whilst maintaining trunk stability and alignment awareness.	Explore how breath stability and postural organisation change during low-complexity movement transitions and identify moments of breath holding. This aligns with literature suggesting that respiratory coordination and postural organisation function

			interdependently during movement tasks (Hodges, Sapsford and Pengel, 2007).
Weight transfer exercises	Asymmetrical standing reformer tasks including scooter variations and standing leg press sequences (Kloubec, 2010; Li et al., 2024).	Maintaining respiration and thoracic mobility whilst shifting body weight between supporting and moving limbs.	Investigate how balance changes, pelvic organisation, and asymmetrical movement affects breath coordination and compensatory muscular tension. These exercises could reflect findings that altered alignment and movement variability influence respiratory mechanics and muscular compensation patterns (Castillo-Allendes et al., 2022).
Coordinated breath and phonation tasks	Low-load reformer sequences including footwork and supine arm work	Synchronising breath timing, airflow management, and vocal onset with resistance-based movement and carriage control	Develop awareness of respiratory sequencing, airflow consistency, and postural adaptability during gradually increasing movement demand. These principles align with vocal conditioning literature emphasising efficient respiratory–phonatory

			coordination and reduced phonatory effort through low-load vocal exercises (Stemple et al., 1994; Verdolini Abbott et al., 2012).
Movement-based vocal sustains	Bridging, mermaid stretches, and standing carriage-control tasks	Sustaining vocal consistency and respiratory–phonatory coordination during continuous movement and changing alignment relationships	Explore how thoracic restriction, pelvic organisation, and dynamic movement influence vocal stability within controlled choreography-like conditions. These exercises seek to assess the dual-demand conditions experienced within choreography-heavy MT performance environments (Morton, 2014; Sliiden, Beck and MacDonald, 2017).

Phase 3 – Dynamic Alignment and Rotational Loading

Having established respiratory awareness (Phase 1) and movement integration (Phase 2), performers are now exposed to deliberate changes in torso orientation and alignment whilst maintaining vocalisation. These exercises are designed to investigate how rotational movement, spinal extension and asymmetrical loading influence sustained respiratory–phonatory coordination, as such movements require increased postural control, balance and muscular coordination to maintain stability (Lagier et al., 2010; Melo, Carvalho and Martins, 2015). This phase reflects evidence suggesting that postural organisation and vocal production operate as interconnected physiological systems rather than independent

processes. However, although posture-related changes have been associated with alterations in respiratory and phonatory behaviour, existing research has largely examined static postural manipulations rather than the dynamic movement demands characteristic of musical theatre performance (Lagier et al., 2010; Castillo-Allendes et al., 2025). Consequently, it remains unclear how effectively findings from posture-based studies translate to choreography-heavy performance environments.

The table below is a simple proposal of reformer-based progression as part of the artefact's Dynamic Alignment and Rotational Loading phase. Rather than functioning as a prescriptive training protocol, the progression is loosely designed as an exploratory method through which performers can experience how rotational movement, postural variation, and asymmetrical loading influences their breathing patterns, vocal stability, and respiratory–phonatory coordination.

Exercise Tasks	Alignment Target	Potential MT Application
Seated torso rotation with resistance straps	Thoracic rotation	Rotational movement frequently occurs during directional changes, partner work, and jazz isolations. In musicals such as <i>Chicago</i> , torso twists where the pelvis remains relatively stable whilst the upper body rotates is especially prevalent (Morton, 2014; Castillo-Allendes et al., 2022).
Lean back against spring resistance	Trunk extension	Simulates postural demands associated with MT choreographers, such as Fosse postures and <i>Cats</i> choreography. Sustained spinal extension and held presentational moments in MT choreography requiring performers to sing whilst the centre of mass shifts posteriorly (Morton, 2014; Hodges, Sapsford and Pengel, 2007).
Forward flexion against spring resistance	Trunk flexion	Transfers to choreographic moments involving spinal flexion, character-driven postures, floor

		work, contraction-based movement, and singing during forward-leaning postures (Melo et al.,2015; Castillo-Allendes et al.,2022).
Alternating extension-flexion	Dynamic alignment change	Reflects the continual postural transitions required throughout MT choreography where performers move rapidly between extension, flexion, and neutral alignment whilst maintaining vocal continuity (Sliiden, Beck and MacDonald, 2017; Morton, 2014).
Standing rotational carriage work	Asymmetrical loading	Replicates directional changes, travelling choreography, weight transfer, turns, jazz walks, and off-centre performance positions frequently encountered in MT performance (Morton, 2014; Kooijman et al., 2006).

[See Appendix E](#)

Phase 4 – Choreographic Transfer and Performance Application

The final phase of the artefact is theoretical and represents the next stage in its development. This stage would transfer the singer from the reformer bed to the rehearsal floor, where these movements would be developed into choreographic sequences. The singer, using the new knowledge and coordination developed on the bed, would then apply it within movement-based performance tasks. The aim would be to investigate whether respiratory–phonatory coordination has improved when executing postural and movement demands that have previously presented vocal challenges. Emphasis would be placed on examining how performers apply and retain the coordinative strategies developed during the earlier phases when exposed to increasingly authentic performance demands. Potential indicators of successful transfer may include performer self-reports of vocal effort and confidence, observations of vocal consistency during movement tasks, and evidence of improved respiratory–phonatory coordination when compared with performers' previous responses to similar choreographic demands.

As a constructivist and practice-led project, the development of this phase would be guided by performer feedback, reflective observations, and insights generated through engagement with the artefact itself. Consequently, the precise structure of Phase 4 cannot be predetermined and will be adapted in response to performers' experiences. This would provide the foundation for future investigation into the transfer of respiratory–phonatory coordination from conditioning environments into choreography-heavy musical theatre performance, whilst offering preliminary criteria through which the potential impact of the artefact could be evaluated.

Conclusion

Titze (2006) states that voice exercises are tools rather than universal solutions, and that their effectiveness depends on the individual's vocal condition and response. In the same context, MT pedagogy cannot rely upon universally fixed exercises, as performer responses remain highly individual and context dependent. Consequently, the value of the artefact lies not in the exercises themselves, but in the reflective and adaptive pedagogical framework underpinning them.

The artefact developed through this research does not position stylised movement as inherently problematic for MT singers. Instead, it proposes that respiratory–phonatory coordination may be better supported through integrated, progression-based pedagogical approaches that more closely reflect the embodied realities of performance (Morton, 2014).

By combining voice science, somatic awareness, reflective practice and movement integration, this project hopes to contribute towards the development of more contextually responsive MT pedagogy. In doing so, it begins to address a disconnect frequently identified within musical theatre training, whereby singing and movement are often developed as separate disciplines despite their simultaneous integration within performance. The artefact therefore offers a preliminary framework through which voice and movement may be trained more holistically, with the potential to support more sustainable and performance-relevant learning experiences for musical theatre performers. This artefact is not an endpoint, but a beginning of an ongoing pedagogical investigation into how MT performers may be trained more sustainably and effectively within choreography-heavy performance environments.

CRITICAL REFLECTION

For this critical reflection, I will use the Gibbs' Reflective Cycle (1988) as it's structured and pragmatic approach aligns well with my practitioner-researcher perspective, enabling me to translate the experiences of this study into meaningful professional reflection. Throughout this project, my long-held belief that MT training does not adequately prepare performers for the simultaneous demands of singing and dancing was critically examined through engagement with literature, artefact development and professional insights.

Description

My research project set out to explore and investigate the role Reformer Pilates could play as a conditioning and training tool for MT performers. The research has come from my professional experience as a MT performer and vocal coach. In my research I have learned whilst there is existing literature that evidences the importance of physical conditioning, posture and voice-breath coordination in vocal performance, there is limited research in whether somatic conditioning practices such as reformer Pilates could help contribute to these areas with vocal technical training. To investigate this gap, this project involved literature reviews in several different MT areas: Vocal pedagogy, dance science, performer conditioning, alongside professional performer perspectives and my own observations as a MT performer and vocal coach. The information gathered helped me design an artefact where Reformer Pilates exercises are integrated with vocal technical exercises to teach performers how to better integrate body and voice for choreograph-heavy vocal performances. The artefact was developed through a cyclical process of research, reflection and refinement, consistent with Kolb's (1984) experiential learning cycle, in which knowledge is generated through the continual transformation of experience.

Feelings

Whilst I was confident that there was value in exploring a conditioning-based approach to performer training, I was also conscious that many of the exercises and teaching prompts that informed the artefact had evolved through years of teaching rather than formal academic research. My teaching style frequently relies on humour, imagery and unconventional descriptors to communicate complex physical and vocal concepts, approaches consistent with voice pedagogies that utilise metaphor, sensation and imaginative engagement to facilitate embodied learning (Linklater, 1976; Schön, 1983). Consequently, I was uncertain whether my experiential knowledge would be considered sufficiently rigorous to contribute meaningfully to the research process. As the project progressed, however, I began to recognise that practice-based research values the

knowledge generated through professional experience, whilst also requiring that such knowledge be critically examined and situated within existing literature. This encouraged me to view my practitioner expertise not as a limitation, but as a valuable source of insight that could be strengthened through critical reflection and scholarly engagement (Nelson, 2013; Nelson, 2022).

Evaluation

Looking back at this module, I believe there were several aspects of the project were successful. Firstly, there was a strong alignment between the research topic and my professional practice. This allowed me to draw upon my industry experience when interpreting findings and consider how their practical application could benefit my students. Furthermore, my previous research exploring the experiences of professional performers singing whilst executing choreography provided a useful foundation from which to develop this current study.

However, one of the most significant limitations was the scarcity of literature directly examining the relationship between reformer Pilates and vocal performance. As a result, it was necessary to synthesise evidence from multiple disciplines, including vocal pedagogy, exercise science, dance training and Pilates research. Translating and adapting these findings into practical exercises that were both evidence-informed and accessible to performers proved complex.

Analysis

One of my significant lessons to emerge from this project was not the identification and inclusion of a somatic-based training intervention for vocalists, but rather a deeper understanding of the complexity of preparing performers for the integrated demands of MT that goes beyond vocal pedagogy.

The literature consistently highlighted the interconnected nature of posture, respiration, movement efficiency and vocal production, supporting the notion that vocal performance cannot be viewed in isolation from the wider physiological systems that underpin it. Furthermore, Kolb (1984) suggests that knowledge is created through the transformation of experience, and the iterative process of researching, designing and refining the artefact enabled me to critically reconsider how performer preparation might be approached within MT education leading me to ask how do we better develop performers' adaptability, physical conditioning and movement competence as key components of sustainable performance practice as vocal coaches.

The development of the artefact also prompted reflection on my personal opinions on the legitimacy of practitioner knowledge. Many of the exercises and teaching prompts included within the resource originated from years of studio-based teaching and professional experience rather than directly from academic literature. Initially, I questioned whether this experiential knowledge was sufficiently rigorous to contribute to scholarly enquiry. However, practice-based research literature recognises that professional practice can generate valuable forms of knowledge when critically examined and situated within existing scholarship (Nelson, 2013). Rather than replacing my practical expertise, the research process enabled me to better understand, justify and articulate it.

Ultimately, the artefact is a synthesis of research evidence, professional experience and pedagogical reflection. The process has strengthened my belief that MT training requires more integrated approaches to performer preparation, whilst also highlighting the need for further research into how conditioning-based interventions may support singers working within physically demanding performance contexts.

Conclusion

I believe this project successfully addressed its primary aim of exploring how reformer Pilates principles might be applied to support the preparation of MT performers singing whilst dancing. Whilst the artefact provides a practical starting point, its development highlighted the importance of viewing performer training through a more holistic lens that integrates conditioning, movement and vocal function.

Through critical engagement with the literature and the ongoing development process, I recognise that experiential knowledge can make a meaningful contribution to research when critically examined and supported by evidence (Schön, 1983; Nelson, 2013). Nevertheless, I acknowledge that the artefact has not yet undergone extensive implementation or evaluation within a training environment, limiting the extent to which its effectiveness can currently be determined.

Action Plan

The next stage of development will involve implementing and evaluating the artefact within a higher education MT setting. Collecting student feedback and observations from practical application hopefully providing insight into its effectiveness and identify areas for refinement.

In the next module I hope to explore the impact of conditioning-based interventions on performers' perceived stamina, confidence and ability to maintain vocal efficiency whilst executing choreography. Such research would contribute to the growing body of literature

surrounding integrated MT training and help inform evidence-based approaches to performer preparation.

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APPENDIX

Appendix A – Artefact Framework

The table below outlines a proposed progression-based conditioning framework designed to explore the integration of somatic and vocal training within choreography-heavy musical theatre contexts. The framework is organised across four sequential somatic phases, each paired with four vocal conditioning stages. Together, these components seek to progressively develop respiratory awareness, postural organisation, vocal efficiency, and movement adaptability before ultimately transferring these coordinative strategies into rehearsal and performance environments.

SOMATIC TRAINING	VOCAL TRAINING
Phase 1 – Static Respiratory Awareness Establishing breath awareness, thoracic mobility, postural organisation, and efficient respiratory–phonatory coordination in low-load static conditions.	Stage 1 – Vocal Function Exercises (VFEs) Establishing efficient airflow, phonation, and vocal endurance. Stage 2 – Resonance Development Developing resonance awareness, resonance consistency, and resonance flexibility. Stage 3 – Register Transition Development Developing efficient M1–M2 transitions and mixed voice coordination Stage 4 – Laryngeal Adaptability and Vocal Tract Flexibility Encouraging efficient adjustment across changing vowel configurations and resonance strategies
Phase 2 – Controlled Movement Integration Introducing directional movement, weight transfer, and low-level movement whilst maintaining respiratory–phonatory coordination	Stages 1–4 repeated under increasing movement demand
Phase 3 – Dynamic Alignment and Rotational Loading Introducing thoracic rotation, spinal flexion and extension, asymmetrical loading, and	Stages 1–4 repeated under changing alignment conditions

dynamic postural adaptation through reformer-based tasks	
Phase 4 – Choreographic Transfer and Performance Application Translating coordinative strategies developed through the artefact into rehearsal, choreography, and performance environments.	Stages 1–4 repeated within choreography-specific and repertoire-based contexts

Appendix B – Vocal Exercise Framework

This appendix presents the vocal exercise framework developed as part of the artefact. The exercises were informed by my training with New York Vocal Coaching (NYVC) and the pedagogical principles taught by Justin Stoney, whilst also drawing upon over twelve years of professional practice as a musical theatre performer, vocal coach, and musical director. The framework has been adapted specifically to support the aims of this project and therefore should not be viewed as a replication of existing NYVC exercises, but rather as a practice-informed progression designed to address the vocal challenges associated with integrating singing and movement.

The exercises are organised into four developmental stages: Vocal Function Exercises (VFEs), Resonance Development, Register Transition Development, and Laryngeal Adaptability. Each stage is intended to be completed within every somatic phase of the artefact, allowing performers to revisit and refine key vocal coordination's whilst gradually increasing movement, alignment, and choreographic demands. The teaching cues included within the framework reflect the informal, performer centred language commonly used within my own teaching practice to facilitate understanding, sensory awareness, and practical application.

STAGES	AREA OF FOCUS	REASONING	DEVELOPMENT	EXERCISES	TEACHING TIPS
					This is technical work not a rep session. You are exercising the muscles here. Similar to barre work. Ballerinas don't look elegant doing it. They sweat, they swear and they look ridiculous. But it's a means to an end. Your voice is a MUSCLE NOT A MIRACLE. It needs training. So, embrace

					the ugly sound. It's 100% okay!
STAGE 1: VFEs	Respiratory– phonatory coordination	VFEs improve the coordination between airflow and vocal fold vibration, supporting efficient voice production and reducing unnecessary phonatory effort (Stemple et al., 1994; Sabol, Lee and Stemple, 1995).	Used as an entry point within each phase to establish awareness of airflow management before introducing increasing movement and alignment demands.	See appendix A	Breathe in through your nose like you are entering a kitchen with freshly baked cookies. It's not a forced inhale. Keep your volume medium soft. When you exhale don't collapse your centre!
	Vocal efficiency	VFEs aim to encourage balanced laryngeal function, efficient vocal fold vibration, and economical	Exercises progressed from static conditions towards increasingly complex movement tasks whilst		Feel free to walk around when doing these. Do some shoulder rolls. Even better – roll

		voice production (Stemple et al., 1994).	maintaining vocal economy.		up and down through your spine – notice that even when you are upside down you can sing. Let the neck go!
	Vocal endurance	Repeated sustained phonation tasks have been shown to improve vocal stamina and resistance to fatigue through systematic conditioning (Sabol, Lee and Stemple, 1995).	Sustained phonation tasks to be revisited throughout each phase to investigate whether endurance can be maintained under increasing respiratory and choreographic load.		Be cognisant of your exhale. Don't force it out. Let the air do the work – your body knows how to do this. Pushing the air out isn't going to help.
	Reduced phonatory effort	Efficient vocal function reduces excessive muscular tension and compensatory behaviours	VFEs provide a low-load baseline from which performers can identify changes in effort as		Be like Elsie – LET IT GO! Move, squirm your body, roll your hips,

		associated with vocal fatigue (Verdolini Abbott et al., 2012; Titze, 2006).	movement complexity increased.		shoulder rolls. Let the air do the work!
	Pitch flexibility and register coordination	Glide exercises within the VFE framework encourages flexibility, register transition, and coordinated laryngeal adjustment (Stemple et al., 1994).	Adapted to explore how M1–M2 transitions respond to changing postural and movement demands.		Don't increase your volume here. Keep medium soft. It's okay if it doesn't sound good. You are singing through a straw – no one sounds good! Trust the process. Just let the sound happen. Release your neck!
	Progressive conditioning	VFEs are grounded in exercise physiology principles, using	Informed the artefact's broader progression model, whereby vocal		Write down what feels different. Say it out loud. Don't judge your

		systematic progression to develop functional vocal capacity over time (Sabol, Lee and Stemple, 1995).	and movement demands increased incrementally across each somatic phase		language when describing it. Just get the words out. We need to solidify your new sensations. Saying them out loud and then writing them down will really help you.
STAGE 2: Resonance	AREA OF FOCUS	REASONING	DEVELOPMENT	EXERCISES	TEACHING TIPS
Exercise 1	Resonance awareness and resonance transfer	The nasal consonant /ŋ/ encourages forward vibratory sensation and semi-occluded resonance, whilst transitioning to /a/ ("AH") encourages performers to maintain resonance	Introduces awareness of resonance continuity whilst changing vocal tract shape. The octave pattern additionally encourages adaptation across changing pitch relationships	1-3-5-8-5-3-1 NG-AH-NG-AH – NG	Keep jaw open and relaxed, tongue resting behind bottom of teeth. If tongue is protracting back slightly, move tongue to lie on the

		efficiency when moving from a more occluded to a more open vocal tract configuration (Titze, 2006; LeBorgne and Rosenberg, 2014)			bottom lip slightly. Let the back of the tongue work and do not move the jaw. It doesn't sound pretty – it's impossible to sound good saying NGAA. Even Idina wouldn't sound good.
Exercise 2	Resonance consistency and vowel shaping	The vowel /ɪ/ ("IH") narrows the vocal tract and may facilitate efficient resonance tuning. The repeated return to /ŋ/ encourages maintenance of resonance placement and vocal	Develops the performer's ability to maintain resonance efficiency whilst negotiating subtle vowel modifications across the range	1 -3-5-8-5-3-1 KIHNG-ING .	Use the K to avoid tongue retraction, whilst keeping the bright resonance vowel sound. As you go higher in pitch – keep your sound in

		tract stability (Titze, 2000; Edwin, 2016)			your face, not in the sky!
Exercise 3	Oral-nasal resonance balance	The introduction of /m/ encourages vibratory awareness through bilabial closure, whilst /ɔ/ ("AW") promotes a more open vocal tract configuration. Alternating between these sounds develops awareness of resonance adjustment and vocal tract flexibility (McCoy, 2012; LeBorgne and Rosenberg, 2014).	Progresses from simple resonance awareness towards greater flexibility in resonance shaping and vowel modification	1-3-5-5-5-5- 3-1 MAWNG- AWNG	Ensure tongue is kept at the back of the bottom teeth. Keep round, warm tone throughout.
Exercise 4	Resonance adaptability under increasing complexity	The consonant /g/ encourages tongue engagement	Introduces increased melodic complexity requiring	1-3-2-4-3-5- 4-2-1 GAHNG- AHNG	As you are progressin g up pitch and you sense

		and posterior oral space awareness, whilst transitions between /a/ and /ŋ/ require performers to maintain resonance efficiency during changing articulatory configurations . The less predictable melodic pattern increases coordinative demand (Titze, 2006)	performers to sustain resonance consistency whilst negotiating more varied pitch and articulatory patterns.		potential instability, use the glottal of the G to “grab the note”. Keep jaw and tongue relaxed as much as possible. Use your hands if you need to find out how much your jaw is moving. Let your hands help you keep your jaw loose.
STAGE 3: Transition	AREA OF FOCUS	REASONING	DEVELOPMENT	EXERCISES	TEACHING TIPS
Exercise 1	Mix strength and Cricothyroid (CT)–Thyroarytenoid (TA) coordination	The lip-rounded /u/ vowel encourages vocal tract narrowing and may facilitate efficient vocal fold closure	Introduces foundational mixed voice coordination through a relatively stable vowel configuration and predictable melodic pattern	Mix strengthener 1-3-5-8-5-3-1 BUUB	Try maintaining the darkened tone as you transition between registers. Keep larynx

		whilst reducing excessive laryngeal effort. The octave arpeggio challenges register transition and encourage coordination between chest-dominant and head-dominant function (Titze, 2000; LeBorgne and Rosenberg, 2014)			neutral. Use the B consonant to help you capture the note (especially when attempting to sing at higher pitches). Be careful not to modify the vowel in this exercise. It's "dark". You might end up saying "BIB" as you sing higher. Keep it dark. Yes, you won't sound great. It's a physiological exercise.
Exercise 2	Mix balance and register negotiation	The /ε/ vowel ("EH") encourages a slightly more	Develops consistency and balance across register	Mix Balancer 1-2-3-4-5-5-6-7-8-7-6-5-	Use the neutrality of the vowel to keep the

		open vocal tract configuration, requiring greater balance between vocal fold adduction and resonance strategy. The scale pattern provides continuous navigation through the passaggio region (Edwin, 2016; McCoy, 2012).	transitions whilst maintaining vocal quality through ascending and descending movement.	4-3-2-1 NEHN	volume between registers the same. Use the N to encourage nasal resonance to lighten the vocal load if you are struggling. If it's "breathy" or "airy" that's okay. The more you work on this, the stronger your compression will become.
Exercise 3	Mixed voice endurance and stability	The bright front vowels /i/ and /ɪ/ encourage vocal tract shaping associated with efficient CT engagement	Progresses towards sustaining mixed voice coordination rather than simply accessing it during	Chest mix vowel sustains 5-8-8-8-8-8-5-3-1 KEEN-NEEN .	Ensure to use the K to keep tongue retraction at the minimum. The bright vowel will make it

		and resonance focus. Repeated sustained pitches allow singers to stabilise coordinative patterns whilst resisting the tendency to revert to either chest-dominant or head-dominant production (Titze, 2000; LeBorgne and Rosenberg, 2014)	transitional moments		more challenging to sustain the 8th tones. This takes time to get right. You need to repeat this to build up the strength to sustain the top notes. As you go higher do not squeeze! Imagine your throat is a PVC pipe – it's doesn't narrow. Imaging your sound expanding into a Y shape – grow into it.
Exercise 4	Register integration and flexibility	Sliding between the bright, narrow /i/ vowel and the more open /a/	Encourages flexible integration of chest, mix, and head voice functions whilst	8-1 Slide on HEE-YAA	Wok though the passagio (your break). If you are

		vowel requires continual adjustment of vocal tract shape, resonance strategy, and laryngeal coordination. Glissandi additionally encourage smooth register transitions and reduce abrupt muscular shifts (McCoy, 2012; Edwin, 2016)	promoting adaptability across changing vowel and pitch conditions.		struggling, first sing it softly and as you start to allocate your beak zone more clearly, you can slowly add more volume. If you are still breaking, do this exercise using a straw to help your brain process the coordination, better. Don't let the cracking put you off. Cracking is good – it's information we need. It's telling us feedback. Work with it!
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STAGE 4: Larynx Mobility	AREA OF FOCUS	REASONING	DEVELOPMENT	EXERCISES	TEACHING TIPS
Exercise 1	Laryngeal adaptability and vowel modification	The transition from the brighter /eɪ/ vowel to the more open /ɔ/ vowel requires substantial adjustment of vocal tract shape and resonance strategy. These modifications encourage flexibility in vocal production whilst maintaining consistent phonation across changing configurations (McCoy, 2012; Sundberg, 1987)	Introduces awareness of how vocal quality can remain stable despite significant vowel modification and changing resonance demands.	1-5-1 KAY-YAWN:	KAY (1) is sung neural placement and then lower larynx on the YAWN (5-1). Reset larynx before singing the next key. Use your hands here and place them in the front of your neck and feel your larynx move up and down. Encourage yourself to make those movements . That's your instrument – yes, it feels weird

					– we like weird. We embrace weird.
Exercise 2	Vocal tract flexibility and resonance adjustment	Movement between the narrow front vowel /i/ and the rounded back vowel /u/ requires considerable reshaping of the vocal tract. This encourages adaptability in resonance tuning and coordination whilst maintaining vocal efficiency (Titze, 2000; LeBorgne and Rosenberg, 2014)	Develops the singer's ability to transition between contrasting vocal tract configurations without introducing unnecessary tension.	1-3-1 HEE-UUN	HEE (1) Keep bright and then drop larynx on the UUN (3-1). Reset larynx before the next key. You might crack – again that's good. It's information we need. Try lower your volume a little here. And don't send your sound backwards because you're scared. Sound goes forward.

Exercise 3	Dynamic vowel negotiation	The exercise requires continual modification between open, rounded, and nasalised vowel environments. These changes encourage flexibility in articulatory coordination and resonance adjustment whilst maintaining vocal stability (McCoy, 2012; Edwin, 2016)	Progresses from simple vowel shifts towards more complex articulatory and resonance transitions.	1-3-1-3 1 HAY-OO- AYN .	HAY (1) neutral larynx– OO (3) allow larynx to naturally lift slightly) – AYN (1-3-1) lower larynx Use your hands. Keep sound forward. Embrace the weird sound. It's muscle working, not repertoire class.
Exercise 4	Integrated laryngeal flexibility across range	Ascending and descending through an extended scale challenges performers to maintain efficient vocal function whilst	Integrates previous skills into a continuous coordinative task requiring flexibility, consistency, and adaptability	Chest Mix Larynx Control Scale GEE- UUN 1-2-3-4-5-6- 7-8-9-8-7-6- 5-4-3-2-1	Keep bright tone ascending and then lower larynx on the 9 th and keep lowered as descending . Reset

		navigating register shifts, changing resonance demands, and increasing pitch requirements	across the vocal range.		larynx before the next key change. Be careful not to close your throat or “squeeze” going up. Keep the throat open as much as possible.
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Appendix C – Vocal Function Exercises

This appendix contains the Vocal Function Exercise (VFE) protocol developed by Dr Wendy LeBorgne and utilised as a foundational component of the vocal training framework within this artefact. The version presented here has been reproduced for educational and research purposes to illustrate the foundational exercise principles that informed Stage 1 of the artefact's vocal conditioning progression. Subsequent stages of the vocal framework were developed by me in response to the specific aims of this project and the movement-related demands of musical theatre performance.



Wendy D. LeBorgne, Ph.D. CCC-SLP
Voice Pathologist & Vocal Athlete Expert
www.drwendy.me
(513) 368-4770
contact@drwendy.me

VOCAL FUNCTION EXERCISES FOR THE HEALTHY SINGER

GOAL: MAXIMIZE GLOTTAL EFFICIENCY THROUGH BALANCE OF
RESPIRATION (BREATH)-PHONATION (SOUND) – RESONANCE (FILTER)

WARM-UP

Maximally inhale (through nose), sustain nasalized /i/ vowel to maximum exhale. Do 2x.

STRETCHING

On lip buzz/tongue trill/whoop/ol, glide from your lowest pitch to your physiological (not artistic) highest pitch. Do 2x.

- Do not raise chin
- Do not come back down (siren exercise)
- No audible register transitions

CONTRACTION

On lip buzz/tongue trill/whoop/ol, glide from your highest pitch to your physiological (not artistic) lowest pitch. Do 2x

- Do not tuck chin
- No glottal fry (rather think “yawn”)
- No audible register transitions

POWER EXERCISE

Maximally inhale. Posture the /ol or who/ sound by puckering the lips forward (as if whistling), keep pharynx/throat open. If done correctly, you should hear/feel a sympathetic “buzz” on the lips. Do each of the 5 notes listed for your voice type 2x on each note

- Do not blow air
- Ensure you maintain the buzz from the onset to end of the exercise
- Suspend your breath (at onset)-midway through gradual release of breath-engage abdominal muscles at end of breath (abs contract towards spine)
- Onsets should be perfect (no glottal attacks, no aspirate attacks)

Sopranos: C, D, E, F, G – Warm up on F
Mezzos/Altos: B, C, D, E, F – Warm up on E
Tenors: E, F, G, A, B – Warm up on A
Baritones/Basses: C, D, E, F, G – Warm up on F

Figure: Vocal Function Exercises for the Healthy Singer (LeBorgne, n.d.).

Source: LeBorgne, W.D. (n.d.) *Vocal Function Exercises for the Healthy Singer*.
Unpublished teaching resource.

Appendix D – Reformer Pilates Exercise Illustrations

This appendix presents the reformer Pilates exercises selected to support the somatic training phases of the artefact. The exercises were chosen for their potential to develop respiratory awareness, thoracic mobility, postural organisation, dynamic alignment, and movement coordination, all of which were identified within the literature as relevant to respiratory–phonatory function. The illustrations have been included to provide a visual reference for the proposed exercise positions and movement patterns utilised within the artefact.

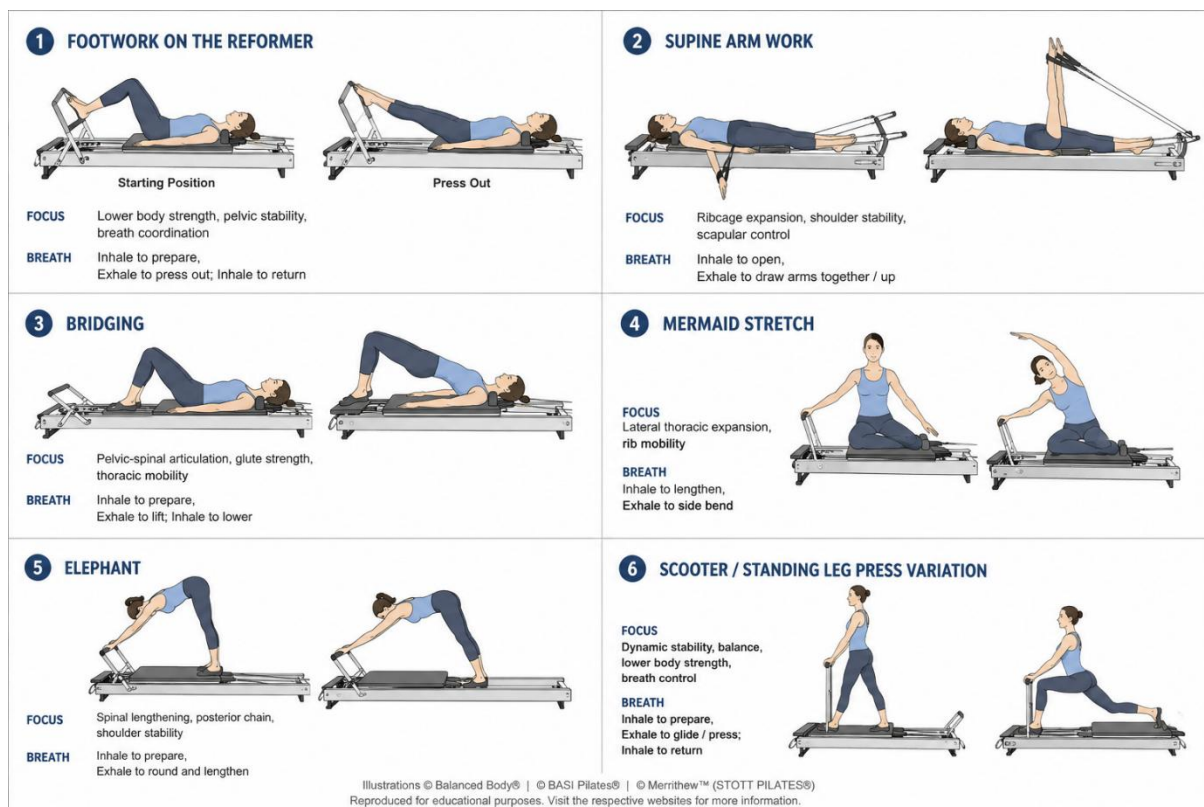


Figure: Reformer Pilates exercises utilised within the somatic conditioning framework: Footwork, Supine Arm Work, Bridging, Mermaid Stretch, Elephant, and Scooter/Standing Leg Press Variation.

Source: Illustrations reproduced from Balanced Body®, BASI Pilates®, and Merrithew® (STOTT PILATES®) educational resources. Reproduced for educational and research purposes.

Appendix E - Dynamic Alignment and Rotational Loading Illustration

This appendix presents the proposed Phase 3 progression developed for the artefact. Building upon the respiratory awareness and controlled movement integration established in the preceding phases, Phase 3 introduces rotational loading, dynamic alignment changes, spinal flexion and extension, and asymmetrical loading challenges. The purpose of this phase is to explore how respiratory–phonatory coordination responds to increasingly complex postural and biomechanical demands whilst maintaining vocal function.

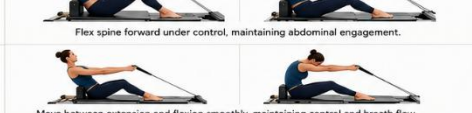
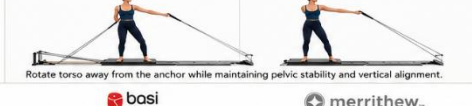
PHASE 3 – DYNAMIC ALIGNMENT AND ROTATIONAL LOADING				
Reformer Exercises for Rotations, Postural Changes and Vocalisation				
EXERCISE	REFORMER SET-UP & EXECUTION		ALIGNMENT CHALLENGE	FOCUS & INTENTION
1. SEATED TORSO ROTATION WITH RESISTANCE STRAPS (BASIC) • Long box on carriage, sitting facing sideways. • Hold one strap handle with both hands.	 Rotate torso to the side while maintaining a tall spine and neutral pelvis.		• Thoracic rotation against lateral resistance. • Spinal rotation with pelvic stability.	Explore how thoracic rotation and resistance affect breath support, rib expansion and vocal steadiness.
2. SEATED TORSO ROTATION WITH RESISTANCE STRAPS (ADVANCED) • As above, increase spring resistance or hold arms further from the body.	 Increase range or resistance while maintaining axial length.		• Increased rotational demand and anti-rotational control. • Greater challenge to spinal and pelvic stability.	Investigate how increased rotational loading influences airflow management and phonatory stability.
3. LEAN BACK AGAINST SPRING RESISTANCE • Sit facing footbar, hold shoulder blocks or straps. • Walk feet in, lean back keeping spine long.	 Lean back into controlled extension while maintaining rib control and pelvic stability.		• Trunk extension with posterior chain lengthening. • Thoracic extension under load.	Explore the effect of spinal extension on breath flow, laryngeal position and tone quality.
4. FORWARD FLEXION AGAINST SPRING RESISTANCE • Sit facing footbar, hold shoulder blocks or straps. • Round spine to flex forward.	 Flex spine forward under control, maintaining abdominal engagement.		• Trunk flexion with anterior compression. • Controlled spinal flexion.	Investigate how spinal flexion affects respiratory capacity, airflow efficiency and vocal placement.
5. ALTERNATING EXTENSION – FLEXION • From upright, alternate leaning back (extension) and forward (flexion).	 Move between extension and flexion smoothly, maintaining control and breath flow.		• Dynamic alignment changes. • Transitions between extension and flexion.	Explore how dynamic postural changes influence breath management and vocal continuity.
6. STANDING ROTATIONAL CARRIAGE WORK • Stand sideways on carriage. • Hold one strap handle. • Rotate torso while stabilising lower body.	Rotate torso away from the anchor while maintaining pelvic stability and vertical alignment.		• Asymmetrical loading. • Rotational challenge with standing balance.	Examine how asymmetrical loading and rotation impact vocal stability, balance and postural control.
 Images for educational illustration only. Refer to manufacturer guidelines.				

Figure: Phase 3 – Dynamic Alignment and Rotational Loading: Proposed reformer-based progression for investigating the effects of thoracic rotation, postural adaptation, and asymmetrical loading on respiratory–phonatory coordination.

Note: This figure was developed by the author as part of the artefact. Exercise positions were informed by established reformer Pilates methodologies, whilst the progression model, alignment challenges, and application to musical theatre performers represent the author's original pedagogical adaptation.

Source: Exercise illustrations adapted from Balanced Body®, BASI Pilates®, and Merrithew® (STOTT PILATES®) educational resources. Progression framework and musical theatre application developed by the author.

Appendix F – Reflective Journal Entries and Artefact Development Evidence

This appendix contains selected extracts from my reflective journal, developmental notes, planning documents, and artefact design materials generated throughout the project. These materials provide evidence of the iterative and practice-led nature of the artefact's development, illustrating how ideas evolved through, experimentation and pedagogical decision-making.

As a practice-led study, the artefact did not emerge through a linear design process. Rather, its development was informed by ongoing reflection upon professional experience, observations from teaching practice, engagement with relevant literature, and the progressive refinement of exercise concepts. The materials presented within this appendix therefore serve as supporting evidence of the reflective processes that informed the development of the final artefact.

Figure F1. Initial concept notes exploring respiratory-phonatory coordination during movement.

PHASE 1: STATIC RESPIRATORY AWARENESS

i) Breath Awareness Tasks:

Breath placing (Shewell)

- sensory information to connect singer to relevant muscle movement
- * use hands (theirs and mine)
- * name the specific muscles
 - show picture (aid sensory awareness)
- * HANDS WHERE:

Problem areas observed:
neck - sternocleidomastoid
chin tilt up
Valsalva breathing -
chest up pigeon
sitting in the pelvis.

Note: All materials contained within this appendix were generated by the author during the development of the artefact and are included as evidence of the project's reflective and iterative design process.

Figure F2. Early planning sketches for the somatic progression framework.

Exercise progression

- ① start ~~o~~ hold open
vowel or
until full exhale
complete.
then inhale through
nose and repeat up
C D E F G
and then descend

check on: - tension

- full air out @ end
of exhale

- inhale - where?

watch out for
clavicular / SCM tension

- make sure inhale is not
audible.

NB! PASSIVE FORCE NB!

STAGE ONE

vowel modification
light → heavier
♪ → ○

STAGE TWO

resonance
ng - pah - ng - pah

STAGE THREE

Transitions
vocal knitting
straw if needed

STAGE FOUR

Larynx flexibility
hey taxi vs phantom
ad man / santa

STAGE FIVE

agility / volume
○ < ○ > ○
+ pentatonic scales

vowel shape
VFE'S - STRAW
SOVT'S

soft palate
(flexibility) ▼

nasality
(PAH PAH w/out)
attenuate for training
motor system

larynx position

- add flageolet

volume play
- add flageolet.

Figure F3. Reflective journals extract documenting revisions to Phase 2.

1) Simple directional movement

vowels open (better to hear)
(keep throat open)
(easier to sustain notes)

ALTO ♀	C4 - G4	} ?
SOPS ♀	D4 - A4	
tenor ♂	F#4 - C4	
bass	D4 - A4.	

For throat tension - add straw.
For unsustained lip trill - add straw.

"V" / "Z" - some form of resistance needed.

→ keep in mix
→ no belt - if student doesn't understand - describe as mp

Figure F4. Draft exercise sequencing and progression planning.

② simple tones ascending
and descending check on
above. watch breath



③ increase interval



④ change vowel to Matt
Edwards - throat open.

Appendix G – Historical Exercise Designs and Pedagogical Development Materials

This appendix contains selected vocal exercise designs, teaching resources, and workshop materials I have developed throughout my professional practice as a vocal coach and musical theatre educator. These materials pre-date the current study and are included as evidence of the pedagogical experimentation, reflective practice, and exercise adaptation that ultimately informed the development of the artefact.

Whilst these exercises were not originally developed within a formal research context, they illustrate the practical foundations from which the present project emerged. As such, they provide evidence of the iterative relationship between professional practice, observation, experimentation, and subsequent theoretical investigation that characterises practice-led research (Nelson, 2013; Schön, 1983).

Collectively, these materials demonstrate my interest in progression-based vocal conditioning and provide evidence of the practical foundations from which the current artefact emerged.



MASTERCLASS

NOTES

TA DOMINANT BELTING /CHEST STRENGTHENING EXERCISES

Before you do these exercises ensure you have warmed up correctly. These exercises take time for the TA's to bulk up. Be mindful of what you are feeling and if you tire out, stop. Try again tomorrow. These exercises should be done in conjunction with CT and mix workouts.

1.) Descending slides:	3	1	3	1	3
GAH/HAH/MAH/GAHNG	f	mf	f	mf	mf
2.) Descending slides:	4	1	4	1	4
GAH/HAH/MAH/GAHNG	f	mf	f	mf	mf
3.) Descending slides:	5	1	5	1	5
GAH/GURH/MAH/MURH	f	mf	f	mf	mf
4.) Descending triad staccato:	5	3	1		
HAH/WUH/KAH					
5.) Descending staccato:	5-5	3-3	1		
HAHA/GAGA/MAMA					
6.) Descending triplets:		5-5-5	3-3-3	1-----	
BAH-DEH-GA/MEHN-NEN-NEN					
7.) Descending full arpeggios:	8	5	3	1	
HAH/GAG/GEH/GIE/GOO					
8.) HEY TAXI/HEY MOM:	1	5	1		
9.) GO BIG OR GO HOME:	1	3	5-----3	1	
GAH-NAH-NUHN	1	3	5	5	5 3 1
	1	3	5	8-8-8- 8-7-6-5-4-3-2-1	

Figure G1. Historical chest-dominant belting and TA-strengthening exercise sequence developed for use within professional vocal coaching practice.

Note. This resource was developed by myself as part of my vocal coaching studio VocalCoachSA. The exercise sequence illustrates an early example of my approach to exercise design, progression-based vocal training, and the adaptation of vocal exercises to address specific technical objectives. It is included as evidence of the pedagogical experimentation and reflective practice that informed the subsequent development of the artefact.

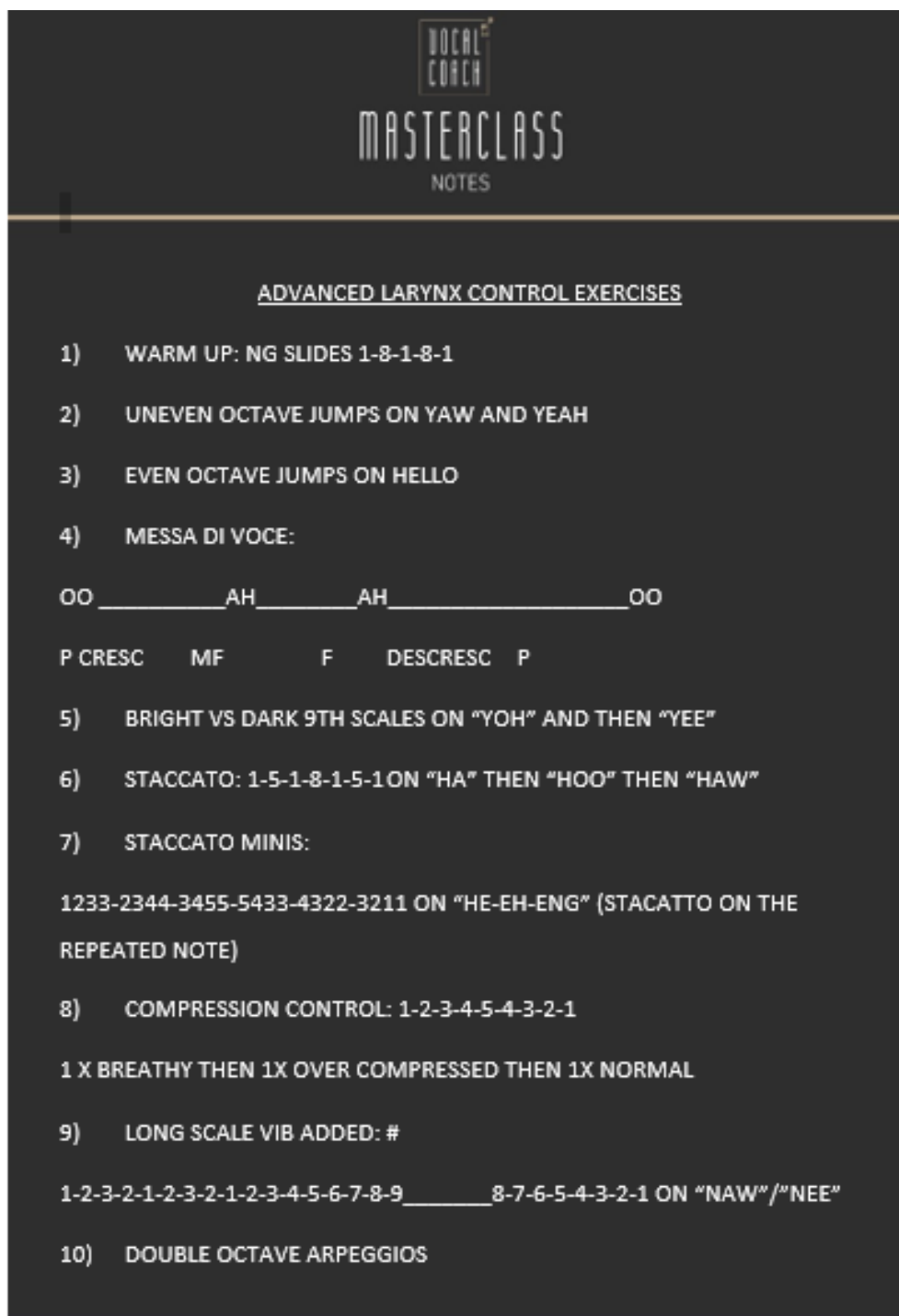


Figure G2. Historical advanced laryngeal control exercise sequence developed for use within professional vocal coaching practice

Note. This resource was developed by myself as part of my professional vocal coaching studio VocalCoachSA. The exercise sequence demonstrates an early exploration of laryngeal adaptability, vocal tract shaping, register transition, resonance modification, and dynamic control. Several of these concepts later informed the development of the artefact's Resonance, Transition, and Laryngeal Adaptability stages.

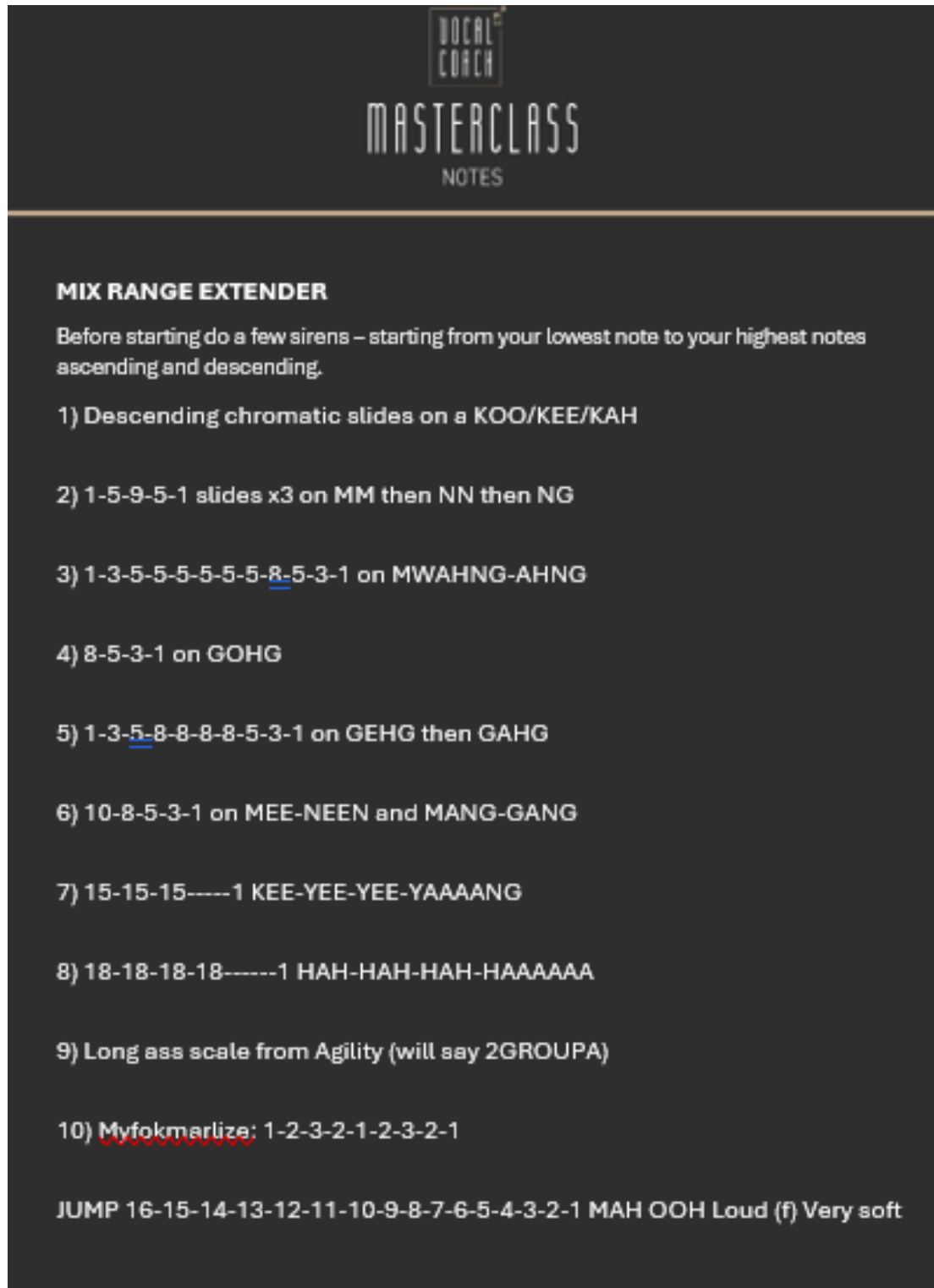


Figure G3. Historical mix-range extension exercise sequence developed for use within professional vocal coaching practice.

Note. This resource was developed by myself as part of my professional vocal coaching studio VocalCoachSA. The exercise sequence was designed to develop register transition

efficiency, mixed voice coordination, range extension, resonance balancing, and vocal flexibility across changing pitch demands. The figure is included as evidence of my ongoing exploration of progression-based exercise design and demonstrates early pedagogical approaches that subsequently informed the Transition Development stage of the artefact.