

Crafting an evidence-based podcast framework to address the real vocal concerns of the female amateur symphonic choral singer.

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Module 6 Proposal - Jane Stansfield 1911459

Crafting an evidence-based podcast to address the real vocal concerns of ageing amateur symphonic choral singers.

Ageing is a natural evolutionary process that results in a linear decline in the function of the cardiovascular, respiratory, skeletal, and muscular systems after the third decade of life, impacting accuracy, speed, endurance, stability, strength, coordination, breathing capacity, and nerve conduction velocity. This can subsequently affect the vocal apparatus, including laryngeal function, resonance, respiration, pitch, range, amplitude and ultimately, the quality of the singing voice (Eichorn, 2018; Ramig et al., 2001; Sataloff, 2000). These may be perceived as reduced volume, increased breathiness, a change in pitch, decreased endurance, increased vibrato and reduced vocal range (Eichorn, 2018).

These changes can pose significant challenges to the female amateur symphonic choral singer, who is expected to perform consistently with a high level of musicianship and vocal ability under the baton of world-class conductors and varied professional orchestras. Singers are often required to commit to weekly rehearsals and demanding performance schedules throughout the year, with many individuals regularly performing with more than one ensemble. Annual auditions are often rigorous, with singers tested on a range of skills, including musicianship and performance ability (Ginsborg et al., 2009). Whilst they are considered amateur musicians and, therefore, do not make a living from singing, they are expected to display similarly high levels of musicianship to the accompanying professional orchestras with whom they perform. This is vital to ensure ticket sales for large concerts, positive reviews, and subsequent profits for the organisations in question (Smith et al., 2019). This, therefore, presents very different vocal demands to those of a social amateur choir member who simply sings for their own enjoyment, attending rehearsals when they are able, and the professional singer who relies on their voice to maintain a living.

As a singer in two symphonic choruses comprising a significant number of women over the age of fifty, I have become acutely aware of the stresses that the ageing voice places upon these singers and the lack of education, tailored intervention and support around this subject matter. From personal experience, many of these women have sung with symphonic choral groups for a substantial part of their adult lives. As well as fulfilling their musical needs, these groups have become integral to their lifestyle, offering a social support network through their advancing years. Maintaining optimum vocal health and agility is absolutely fundamental to these singers, as failure to do so may lead to termination of choral membership. As membership is intrinsically linked to

lifestyle, termination may significantly impact mental well-being, self-identity and future social intercourse (Davidson et al., 2010). Vocal integrity is, therefore, required to sustain both the organisation's performance standards and the social aspect that membership provides, highlighting the unique symbiosis of vocal ability and social intercourse associated with amateur symphonic choral singing. It is, therefore, imperative that singers are made aware of possible age--related changes to the voice to enable them to seek appropriate intervention where necessary, ensuring longevity in the choral organisation.

Research on ageing and vocal health has predominantly concentrated on professional singers, with limited attention given to amateur choral singers (Gick, 2011). Whilst studies have indicated that ageing affects many areas of vocal function, there is a lack of accessible, evidence-based resources tailored to their specific vocal concerns (Gick, 2011). The social and psychological aspects of these changes, particularly among amateur singers, are also underexplored. There is, therefore, a need for a more in-depth investigation into the experiences of ageing female amateur symphonic choral singers and the availability of resources addressing their unique needs. This study aims to bridge the gap between research and practice by translating the experiences and concerns of ageing amateur symphonic choral singers into an accessible and practical resource. The development of an evidence-based podcast series will provide valuable support for ageing symphonic choral singers, improving information flow and increasing awareness of possible vocal complications in this demographic.

Objectives

- To gain an understanding of the areas of vocal change that ageing female choral singers find most problematic if these issues have impacted their place in the organisation that they are involved in, and to ascertain whether they feel adequately informed of these potential changes.
- To deepen my understanding of the vocal requirements of the amateur female symphonic choral singer.
- To deepen my knowledge base on the main areas of vocal change that may impact the ageing female amateur symphonic choral singer.
- To ascertain whether women are aware of these changes and the impact that they may have on vocal ability and vocal health.
- To gain an understanding of the number of women who are affected by age-related vocal change, and determine which areas of change are most problematic, considering both physical and psychological changes.
- To ascertain whether these singers can readily access information on the most appropriate

forms of intervention. • To understand which topics regarding age-related changes these women need further information on to begin a potential syllabus and structure for a podcast series.

- Is the information flow surrounding age-related vocal change for amateur symphonic choral singers adequate to ensure they seek appropriate methods of intervention to maintain career longevity?
- Identify Vocal Concerns: To identify the primary vocal concerns and challenges faced by ageing amateur symphonic choral singers.
- Understand Experiences: To explore the experiences and perceptions of ageing singers regarding their vocal health and performance.
- Develop Resources: To create an evidence-based podcast that addresses these concerns and provides practical advice and support for ageing singers.

Research Methodology

This mixed-methods qualitative study will use structured interviews, focus groups, and questionnaires to gather data from ageing amateur symphonic choral singers. This allows for the triangulation of data sources, enhancing the credibility and validity of the research findings by cross-verifying information and providing a more comprehensive and holistic understanding of the subject matter (Fusch et al., 2015).

All qualitative data will be coded and thematically analysed to identify key themes and patterns. (Braun et al., 2015).

It will be approached from both a constructivist and interpretivist ontological perspective. Constructivism suggests that social interactions and experiences shape reality, while interpretivism underscores the subjective nature of the human experience. This perspective is fitting for reviewing the personal experiences of ageing symphonic choral singers, acknowledging that their views on vocal health and performance are influenced by their social surroundings and individual interpretations (Creswell et al., 2018).

Participants

Approximately 30 female amateur symphonic choral singers aged 45-85 will be recruited from symphonic choral groups, including the Royal Scottish National Orchestra and the Edinburgh International Festival Chorus. Participants will be divided into three age groups (45-54, 55-64, 65-75 + years) for comparison purposes. I am a member of these choruses. These women are,

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therefore, known to me and will be chosen according to age and suitability for the study.

Data Collection and Analysis

Focus Groups: Participants will engage in age-group-specific focus groups to explore common experiences, challenges, and coping strategies related to ageing and choral singing. These will be recorded in the Royal Scottish National Orchestra's green room and transcribed. Institutional consent has been granted to conduct the group sessions on the premises.

Structured Interviews: Individual interviews will be conducted to gather in-depth information on participants' experiences, vocal function and quality of life. These will be recorded in the Royal Scottish National Orchestra's green room and later transcribed. As above, consent has been granted.

Questionnaires: Participants will complete questionnaires on the impact of ageing on vocal function and well-being, the availability of current information on the subject matter, and topics they would like to see addressed in a podcast series. These may also include the Voice Related Quality of Life Questionnaire (V-RQQL).

Data Protection

Participants will be informed of the nature of the research and participation requirements of the study via email before gaining formal written consent. They will be assured that all data obtained will be confidential.

All data collected will be stored on my personal cloud storage, which will be password-encrypted. Names will be redacted to ensure anonymity and coded accordingly. Qualitative data analysis software like NVivo or Atlas will be used to code the data.

All data will be destroyed upon completion of the study.

Ethics

Ethical approval will be sought from the institutional review board.

The study will adhere to ethical guidelines, ensuring informed consent, confidentiality, and the right to withdraw. Participants will be informed about the purpose of the research, the use of their data, and the dissemination of findings.

As the study deals with sensitive issues regarding ageing and mortality, psychological distress

may occur in both participants and myself, the investigator.

I will collate a list of resources and hotlines to provide immediate emotional support if necessary, building rapport with participants before addressing sensitive topics.

Participants will take breaks if necessary, and I will shift topics if distress becomes evident.

After the discussion, I will follow up with participants to check their well-being and offer additional support if needed. I will engage in self-care practices to maintain my own mental health and seek counselling provided through the university if necessary.

Expected Outcomes

Identification of Key Themes: Thematic analysis will reveal the primary vocal concerns and experiences of ageing amateur symphonic choral singers.

Evidence-Based Podcast: The study will result in the development of an evidence-based podcast that addresses these concerns, providing practical advice and support for ageing singers.

Enhanced Understanding: The research will contribute to a deeper understanding of the vocal health and performance challenges of ageing amateur choral singers, informing future research and practice.

Expected Results: I anticipate identifying many common challenges faced by the ageing female symphonic choral singer and gaps in the availability and accessibility of resources addressing their unique needs. Qualitative findings are expected to highlight the multi-faceted effects of ageing in this demographic and the need for more tailored, accessible information on the subject matter.

Timeline

Task	July 2024	August 2024	September 2024	October 2024	November 2024	December 2024
Project Proposal						
Literature Review						
Recruitment of Participants and data collection through Questionnaires						
Conduct focus groups and interviews						
Data Analysis						
Development of Podcast Findings						
Complete Draft						
Submit Final Project						

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Crafting an evidence-based podcast framework to address the real vocal concerns of the female amateur symphonic choral singer.

Introduction

This research project considers the female amateur symphonic choral singer aged 50 years and above and is a continuation of previous desk-based Literature Reviews undertaken in Modules 4 and 5 (Stansfield, 2023, 2024) examining the effects of perimenopause/menopause on the ageing female singer and the impact of ageing on the amateur symphonic choral singer. It proposes the development of an evidence-based podcast addressing the concerns of ageing female amateur symphonic choral singers through the triangulation of data derived from a Literature Review (investigating both the impact of ageing on the female singer and the relevance of podcasts as a medium to disseminate knowledge), questionnaires (distributed to 30 female amateur symphonic choral singers aged 50 years and above, and a chorus master of a symphonic chorus), a focus group with 6-8 female amateur symphonic choral singers aged 50 years and above and a semi-structured interview with a symphonic chorus vocal coach. It will be constructed from a mixed-methods approach.

Previous studies revealed extensive evidence-based research demonstrating physiological and psychological changes that can affect vocal performance in ageing female singers, including thinning of the vocal folds, reduced elasticity, and diminished respiratory capacity, resulting in decreased vocal range, tone, and stamina ((Decoster et al., 2000; Hammond et al., 2000; Ramig et al., 1983; Sataloff, 2017; Sliwinska-Kowalska et al., 2022; Weill Cornell Medicine, 2023). However, critical analysis of this data also concluded that some amateur singers were unaware of the diversity of these age-related changes and the impact that they may have on their vocal capabilities, implying that the delivery of education and general awareness surrounding this subject matter was unsatisfactory.

For many years, due to a significant cultural gap between scientific research and choral application, much of this research has remained primarily within the academic domain. It has been largely directed towards the professional singer or the broader ageing population rather than focussed explicitly on age-related vocal change and the challenges faced by the amateur symphonic choral singer, revealing a gap in how this information is communicated to this niche demographic.

Currently, the availability of evidence-based information on age-related vocal changes for ageing amateur female choral singers is still somewhat limited. However, there have been improvements. Several factors have contributed to a gradual increase in the availability of relevant information to this demographic, including advancements in medical and vocal research, including extensive work by vocal pedagogues and researchers (Miller, 1996; Titze, 2000; Sundberg, 2013; Sataloff, 2017), educational initiatives (although these tend to be in professional and semi-professional ensembles

and remain limited in amateur settings), advancements in online resources and technology including webinars, podcasts and blogs produced by vocal health experts (Dr Dan Vocalist, The Naked Vocalist - however, these cater to a broad audience), and an increase in vocal health organisations and advocacy such as the National Association of Teachers of Singing (NATS) and the Voice Foundation promoting awareness of vocal ageing. However, most of these efforts are still directed toward professional singers or voice teachers rather than directly targeting the amateur choral community, with a limited number of longitudinal studies available tracking the effects of ageing on the amateur symphonic choral singer (Pentikainen et al., 2023, Moisseinen et al. 2024, Zhang et al. 2023, by Perron et al. 2022).

Although some choirs provide educational resources and support for their members, many do not, with individuals left to seek information on their own (Smith et al., 2012, 2013) -

(Based on recent Google searches, it appears that many of the UK symphonic choruses do not appear to offer educational programmes specifically tailored for the ageing voice. however, many of these choirs may provide opportunities for continued vocal engagement and development).

This lack of structured support can lead singers to rely on disparate sources, resulting in conflicting, inconsistent or inaccurate information (Bartlett, 2020; Maxfield et al., 2020; Schmidt, 2024). However, several evidence-based interventions and exercises have been demonstrated to manage and mitigate the impact of vocal ageing, warranting availability to this demographic. Unfortunately, as these resources are derived from several disciplines, including speech and language therapy, physiotherapy, vocal pedagogy, laryngology, and otolaryngology, they are rarely presented in a cohesive format that facilitates accessibility as a practical resource, underscoring the importance of creating a comprehensive and holistic platform for these singers to engage with informative content on vocal health and maintenance. (Internet searches yield three notable programmes that align with this criterion. These are outlined in Appendix 1, with a small number of other valuable resources that present multidisciplinary perspectives on vocal ageing).

As the average life expectancy increases due to medical advancements (World Health Organisation, 2023), the number of years that women will participate in choral singing may also increase. Current UK figures taken from the Office for National Statistics (2018) state that there are nearly 12 million (11,989,322) people aged 65 and above in the UK, of which:

- 5.4 million people are aged 75+,
- 1.6 million are aged 85+,
- Over 500,000 people are 90+ (579,776)
- 14,430 are centenarians (Office for National Statistics, 2018)

These numbers are reflected in the symphonic chorus in which I sing, where the number of current members over 50 years old far surpasses the number of members under the age of 50 years. Of the 124 current singers across both male and female voice parts, 95 are over 50 years old,

representing approximately 76% of the overall membership. Of the 81 female vocalists, 62 are over the age of 50 years, again representing approximately 76% of the membership. It is, therefore, vital that these women understand the changes that may occur to their voices and are able to access practical advice on how to protect and manage their voices as they age to enable them to maintain their positions within their chosen ensemble. Work by Titze (2001) states that singers who have a clear understanding of vocal anatomy and the physiological changes that may occur throughout life are better equipped to deal with their vocal situation, reiterating the importance of education and awareness in vocal health and vocal maintenance.

With the rise of digital audio platforms transforming academic communication, outreach and engagement (Harris & Jones, 2020), this thesis, therefore, explores the development of a framework for an evidence-based podcast, presenting a model for how academic research can be transformed into a practical, real-world tool for a niche demographic.

It will combine research and findings from several disciplines, including medical research and vocal pedagogy, in an engaging and easily accessible format to educate amateur symphonic choral singers on the implications of ageing on the voice and address their specific vocal concerns, promoting vocal health and career longevity.

Based on findings from previous Literature Reviews (Stansfield, 2023, 2024), it is assumed that the podcast will be loosely structured around the following topics:

- Understanding Vocal Ageing
- Techniques and Exercises for Preserving Vocal Health
- Addressing Breath Control, Decreased Range and Fatigue
- Psychological Support
- The Role of Community in Choral Singing

These will, however, be fully determined by the proposed Literature Reviews and data collected from this study.

The study is situated within the wider context of ageing and health, acknowledging the physical, psychological, and social aspects of vocal performance, as well as the vital role of community in choral singing, addressing a demographic that is frequently overlooked in discussions about vocal health.

Aim of Current Study and Project Objectives

The aim of this research is to deepen my understanding of the physiological and psychological impact of ageing on the female symphonic choral singer and highlight any vocal concerns of this demographic through data collected from a Literature review, questionnaires and focus groups with amateur female symphonic choral singers, a semi-structured interview with a symphonic choir vocal coach and a questionnaire with the chorus master of the symphonic choir. It will also consider current interventional practices for mitigating age-related vocal change.

Furthermore, it will explore the medium of the podcast as a conduit for sharing knowledge and improving information flow on evidence-based interventions to the amateur symphonic choral singer, culminating in the creation of a framework for an evidence-based podcast on the impact of the ageing voice.

Personal Learning Outcomes

- Deepen my knowledge of the impact of ageing on the amateur female symphonic choral singer, gaining practical knowledge about how to apply this research in real-world settings.
- Broaden my knowledge of the effectiveness of the podcast for presenting academic research.
- Learn basic statistical analysis to present the quantitative and qualitative data gathered.
- Translate the findings of this academic research into the development of a podcast series on the vocal concerns of the amateur female symphonic choral singer.

Rationale for Undertaking the Project

As an amateur choral singer and trained classical musician involved in two prestigious symphonic choral organisations for over thirty years, I have both witnessed and personally experienced the physiological and psychological challenges that arise from age-related vocal changes, as well as the lack of tailored resources available to symphonic choral singers. These vocal changes can pose significant challenges to this niche demographic, who are expected to perform consistently at a high level of musicianship and vocal ability under the baton of world-class conductors. The expectation to maintain vocal excellence is not only an artistic demand but also a financial imperative for choral organisations, ensuring ticket sales for large concert venues, positive critical reception, and financial viability (Smith et al., 2019).

Despite these demands, many amateur symphonic choral singers remain largely ill-informed about the implications of age-related vocal change until they experience difficulties, often attributing these changes to poor technique rather than physiological ageing (D'Haeseleer et al., 2014; Peckham, 2013; Sundberg, 2019). This gap in education, knowledge and awareness may delay early

intervention and appropriate vocal care, leading to unnecessary vocal decline and, ultimately, challenges in maintaining choral membership (Bos et al, 2022; Schneider et al., 2017). Furthermore, the rigorous demands of the symphonic choral schedule may heighten susceptibility to vocal health issues and potential damage (Hunter et al., 2019; Lortie et al., 2017; Svec et al., 2020).

The stigma surrounding age-related vocal decline may also lead singers to avoid discussing their concerns with peers or choral management due to a fear of being asked to leave. (Davidson et al. 2010), presenting a particularly difficult psychological space for ageing singers to navigate.

Given the lack of awareness and educational support available to amateur symphonic choral singers, alongside the negative impact of ageing on vocal function and the importance of sustaining vocal health to meet the artistic and technical standards of symphonic choruses, this study seeks to explore the podcast as an educational medium for this niche demographic. The research will investigate how podcasts can be leveraged to convey evidence-based interventional practices, expert advice, personal narratives, and practical exercises that support optimum vocal health. By integrating personal stories and lived experiences alongside scientific research and best practices, the podcast aims to provide a multifaceted approach to vocal health education,

(Current relevant resources returned from a Google search can be seen in **Appendix 2**. Whilst there are a number of useful resources, the number of evidence-based podcasts remains limited, supporting the need for additional resources targeting this niche demographic).

Methodology - Epistemology and Ontology

Research Paradigm and Theoretical Framework

This study is grounded in a pragmatic research paradigm, which allows for the integration of qualitative and quantitative methodologies to address real-world issues (Creswell et al., 2018; Morgan, 2014). Pragmatism is particularly well-suited to this research, as it prioritises practical solutions by employing mixed methods to generate insights that are both academically rigorous and practically applicable. Given the complex and multidimensional nature of vocal ageing, this approach enables a more comprehensive understanding by drawing on multiple data sources and perspectives.

The study will incorporate quantitative and qualitative data collection methods, including questionnaires administered to female symphonic choral singers aged 50 and above, as well as to the chorus master. A systematic literature review will examine the physiological, psychological, and social dimensions of vocal ageing and the potential of podcasts as an educational and community-building tool. Additionally, focus groups will capture the collective experiences of ageing female singers, while a semi-structured interview with a symphonic chorus vocal coach will provide expert

perspectives. The use of triangulation—cross-validating findings from different sources—enhances the study's validity and reliability (Creswell et al., 2011). This methodological approach ensures that the research remains both evidence-based and directly relevant to the lived experiences of ageing amateur female symphonic choral singers.

While pragmatism provides methodological flexibility, this study is also informed by constructivist and interpretivist ontologies, acknowledging that singers' experiences of vocal ageing are shaped by both social interactions and individual interpretations (Creswell et al., 2018). Constructivism posits that knowledge is actively co-constructed through experience and social engagement (Mishra, 2023). This perspective is particularly relevant to choral singing, where community, identity, and self-perception influence how singers understand and navigate age-related vocal changes. Within a choral setting, singers learn not only from instructors but also from their peers, collectively developing strategies to manage vocal challenges.

Additionally, interpretivism provides a framework for examining the personal meanings and narratives that ageing singers attribute to their vocal changes. This approach allows for a deeper exploration of how individual singers perceive, adapt to, and emotionally process the physical transformations associated with ageing. It also acknowledges that amateur choral singers, unlike professional vocalists, are primarily motivated by artistic fulfilment, communal engagement, and self-expression rather than external career pressures. Consequently, their experiences of vocal ageing are embedded within the social fabric of the choral ensemble and influenced by interactions with fellow singers and conductors (Pervin, 2022).

From a physiological perspective, vocal ageing encompasses changes such as joint degeneration, respiratory challenges, and vocal fatigue. However, these changes do not occur in isolation; they are mediated through social and psychological factors. A constructivist lens highlights how singers develop an understanding of these changes through their relationships with conductors, vocal coaches, and choir peers. In turn, interpretivism allows for an exploration of how these experiences shape their self-concept, confidence, and continued participation in choral activities.

By integrating evidence-based practices, including research from vocal science, medical studies, and targeted vocal exercises, with the lived experiences and perspectives of ageing female singers, this study ensures that theoretical insights translate into practical applications. The mixed-methods approach, as advocated by Creswell et al. (2018), enables data triangulation and cross-validation, strengthening the study's robustness and applicability.

This research is specifically tailored to the demographic of ageing amateur female symphonic choral singers, a group whose experiences differ from those of both professional and non-symphonic amateur singers. By addressing their unique artistic, physiological, and psychological needs, the study aims to generate insights that will inform the development of a podcast designed to support their continued participation in choral singing. This focused approach will ensure that the

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podcast provides relevant, evidence-based guidance while fostering a sense of community and shared learning.

Literature Review Approach

The Literature Review will follow a thematic approach, identifying recurring themes associated with the impact of age-related change on the female singing voice (Braun et al., 2006). Literature Reviews undertaken in Modules 4 and 5 on the ageing voice (Stansfield 2023, 2024) suggest that emergent themes are expected to include:

- Breath control
- Decreased vocal range
- Resonance and vibrato shifts
- Fatigue and stamina in vocal performance

A meta-analysis will be used to synthesise findings as it allows for a more objective synthesis of research, providing a more precise estimate of an intervention's effectiveness than individual studies alone (Cooper, 2017).

As I have carried out no prior study on the podcast as a medium for disseminating knowledge, the second part of the Literature Review will also employ a thematic framework. However, it is likely to include more of an inductive than deductive approach.

Search Strategy

The literature search will be conducted using academic databases, including:

- PubMed
- Google Scholar
- Scopus

Keywords will include:

- The impact of ageing on the female voice and vocal apparatus
- The impact of menopause and perimenopause on the female singing voice
- Age-related vocal change in female singers
- Symphonic choir and vocal ageing
- Attributes of female symphonic choral singers
- The psychological impact of ageing on singers and female amateur symphonic choral singers
- Physiological changes in ageing female singers

- Evidence-based techniques and exercises for ageing singers and ageing female singers
- Podcasts, music education and vocal health

This search strategy will help establish the impact of ageing on amateur female symphonic choral singers, explore mitigation strategies, and assess the relevance of the podcast as a conduit for knowledge sharing. While the majority of keyword searches are gender-specific, others, such as evidence-based vocal techniques and aspects of general ageing, remain more open-ended as many physical and vocal ageing processes, such as loss of range and breath control issues, are common across genders (Hoit et al., 2013, Gorham-Rowan et al., 2006, Sundberg et al., 2019).

This search criteria ensures a broader collection of relevant data on the subject matter, with the intention of revealing a larger number of evidence-based practices for mitigating change.

Data Selection and Exclusion Criteria

This study will include peer-reviewed articles, books, and dissertations that examine the physiological and psychological impact of ageing on female singers, with a particular focus on amateur female symphonic choral singers. To ensure relevance, the primary emphasis will be on literature published from 2000 onwards (D’haeseleer, 2012; Hamdan, 2017; Moseley, 2020) while also recognising key foundational works that have significantly shaped the discourse on vocal ageing (Smith et al., 2012; David, 2008). These earlier studies will be acknowledged where relevant, particularly in discussions of theoretical frameworks, methodological approaches, and historical perspectives on vocal ageing.

A purposeful sampling approach will be employed to identify information-rich sources (Creswell et al., 2011), complemented by citation mining to expand the literature base and provide a comprehensive understanding of the topic. Additionally, citation analysis tools such as Google Scholar Metrics and Scopus Citation Tracker will be used to assess the impact and relevance of selected sources.

Literature exclusively examining male singers, non-choral singers, or topics unrelated to ageing will be excluded.

Addressing Bias and Research Validity

As a member of two symphonic choruses, I recognise that my perspective may introduce bias. Having personally witnessed age-related vocal changes in close colleagues and observed the lack of diagnosis and structured support, I am aware of potential preconceptions.

To mitigate analytical bias, the research will:

- Acknowledge and challenge personal assumptions
- Ensure objective evaluation of literature - systematic coding and thematic analysis will be employed to ensure that participant voices remain central to the findings.
- Ensure Independent Validation: Where possible, key insights will be reviewed against existing literature and expert input to verify accuracy and consistency.
- Critical Engagement with Findings: Alternative explanations and discrepancies in responses will be explored to avoid over-generalisation and acknowledge the complexity of vocal ageing experiences.
- Assess whether vocal ageing has been underrepresented in mainstream literature

Personal assumptions include:-

- Whilst I believe that many singers may suffer vocal age- related vocal decline, others maintain strong vocal abilities into old age through targeted training and vocal care.
- The perceived lack of structured support and educational resources for ageing female symphonic choral singers may vary, with some vocal pedagogues, speech therapists, and choral programmes offering resources.
- Scientific studies provide the most reliable information on vocal ageing. It is useful to remember that anecdotal experiences, case studies, and artistic perspectives may also offer valuable insights that complement empirical research.

Research Design

The study proposes a comprehensive literature review to determine the impact of ageing on amateur female symphonic choral singers and the relevance of podcasts as a platform for disseminating data. Key themes emerging from the data will inform subsequent questionnaires and focus groups with ageing amateur female symphonic choral singers over the age of 50, a small questionnaire for a symphonic chorus master, and a semi-structured interview with a symphonic choir vocal coach. Triangulation of the data will then be applied to increase the validity of the study incorporating

- Questionnaire Responses (both quantitative and qualitative data)
- Focus Groups (qualitative, participant-driven insights)
- Expert Interview (qualitative, specialised perspectives)
- Literature Reviews on vocal ageing and the podcast (secondary sources, theoretical grounding)

This cross-referencing allows for a well-rounded interpretation of findings, reducing potential biases and ensuring conclusions drawn are grounded in empirical evidence.

Literature Review

The Literature Review will serve a dual purpose to highlight the areas of vocal change in ageing female singers, addressing both physiological and psychological issues that can impact vocal quality, performance and social dynamics within an ensemble setting (Hancock, 2015), and to understand the suitability of the podcast in presenting these academic findings.

It will employ a thematic approach to identify key themes for the podcast content (Braun et al. 2006). These emerging themes will then be used as the basis of the questionnaires, structured interviews and focus groups to gain a deeper understanding of the impact of these on the lived experiences of the female amateur symphonic choral singer, thereby triangulating the data and accurately framing the discussion in the podcast ensuring the content is grounded in evidence.

Questionnaires

The first stage of data collection involves distributing printed questionnaires to a sample of 30 amateur female symphonic choral singers over the age of 50 years.

Participants will be selected using purposive sampling based on age and gender (50 years and above/female). However, the selection process may also be influenced by convenience sampling due to accessibility.

The questionnaire will consist of 33 questions (incorporating both open-ended and closed questions) designed to gather quantitative and qualitative data. The participants will be advised that the questionnaire will take approximately 15-30 minutes to complete. However, participants will be given one week to complete the questionnaires. This timeframe encourages thoughtful responses while minimising disruptions to rehearsals. Completed questionnaires will be collected anonymously at the following week's rehearsal to ensure confidentiality and promote candid participation.

The primary objectives of the questionnaire are to:

- Explore the implications of ageing on the amateur female symphonic choral singer.
- Assess vocal health, perceptions of ageing, and challenges that singers encounter in continuing to sing.
- Identify key trends while also capturing individual experiences related to vocal ageing.
- Assess the appetite for a podcast on the ageing voice and explore topics of interest

From the analysis of Literature Reviews undertaken in Modules 4 and 5 (Stansfield 2023, 2024), it is anticipated that the questionnaire will be structured around the following themes:

- Vocal Health and Performance – Changes in vocal ability, endurance, range, and vocal fatigue.
- Psychological, Emotional, and Social Aspects – Self-perception, confidence, sense of identity, and social dynamics within the choir.
- Vocal Care and Technique – Use of vocal exercises, warm-ups, and external professional guidance

Any additional themes emerging from the Literature Reviews associated with the study will be added accordingly, including those specifically associated with the podcast development.

My position as an insider allows for a unique perspective, as I have a pre-existing relationship with the participants and a deep understanding of the social and cultural context of the choral group. This can offer several advantages, including increased trust, rapport, and access to participants, which may facilitate more candid and reflective responses (Unluer, 2012). However, it also poses ethical and methodological challenges, such as the potential for bias or assumptions to affect data collection and interpretation (Brannick et al., 2007).

To ensure academic rigour and reflexivity, I will:

- Acknowledge my dual role as both a researcher and a chorus member, striving to maintain objectivity throughout the data collection and analysis processes.
- Encourage anonymous responses to alleviate any pressure or social desirability bias.
- Include singers from diverse vocal parts and experience levels to ensure a wide representation of perspectives.

Frequency analysis will be used to calculate percentages for multiple-choice responses, summarising the prevalence of specific vocal concerns among participants, and cross-tabulation will be utilised to explore potential correlations within the data.

Open-ended survey responses will be analysed thematically to highlight trends and relationships within the dataset.

This stage of data collection will provide foundational insights, allowing for the identification of key trends that will inform subsequent focus groups and interviews. These findings will also directly shape the development of the podcast syllabus, ensuring that the content is both evidence-based and responsive to the needs of this demographic.

A blank copy of the questionnaire can be seen in Appendix 6.

Semi-structured interview with the Vocal Coach

Following the questionnaire phase, a semi-structured interview will be conducted with the current vocal coach of the symphonic chorus. This interview aims to build upon key themes emerging from the questionnaire data and Literature Review, offering a professional perspective on age-related vocal changes and strategies for supporting singers within this niche demographic. By integrating expert insights, this phase will provide contextual depth, reinforcing the study's findings.

The interview will be conducted by the researcher, who is also a member of the symphonic chorus. This insider position presents both advantages and challenges that will be carefully managed to ensure research integrity.

Objectives of the Interview

The primary objectives of the interview are to:

- Gain insight into the physiological, psychological, and technical aspects of vocal ageing in amateur female symphonic choral singers from a vocal coach's perspective.
- Explore vocal techniques and exercises used to support singers experiencing age-related vocal changes.
- Assess the role of vocal coaching in maintaining vocal health, longevity, and adaptability.
- Inform the podcast syllabus, ensuring that the data obtained from the Literature Review and questionnaires align with evidence-based vocal pedagogy.

Insider Research, Bias, and Ethical Considerations

As an insider researcher—both conducting the interview and being a member of the chorus, I will consider the following methodological and ethical challenges:-

Potential for bias: Familiarity with the vocal coach and shared experiences within the ensemble could influence questioning and interpretation of responses (Brannicket al, 2007). To mitigate this, the interview structure will be standardised, and questions will be open-ended to avoid leading responses.

Power dynamics and response bias: The existing relationship between the researcher and interviewee may affect how candidly the vocal coach responds. By Ensuring anonymity in reporting findings, I hope to encourage more honest and objective insights (Unluer, 2012).

Ethical safeguards: The interviewee will be given an outline of the study's purpose and how the data will be used, and confidentiality will be ensured, with no identifiable information included in the final report.

Interview Structure and Data Collection

The interview will last approximately 30 minutes and will follow a semi-structured format, allowing for flexibility while ensuring that key themes are addressed. The session will be audio-recorded and transcribed, enabling thematic analysis to identify recurring patterns that align with questionnaire findings. A blank copy of this can be found in Appendix 7.

Focus Groups

Following the questionnaire and semi-structured interview, a focus group will be conducted to facilitate in-depth discussions on vocal ageing among amateur female symphonic choral singers aged 50 years and above. This qualitative methodology will allow participants to share personal experiences, exchange insights, and elaborate on one another's responses, revealing common themes, concerns, and emotional responses related to the ageing voice. (Morgan, 1996).

Research suggests that focus groups provide a dynamic and interactive environment, enabling peer-driven exploration of the topic, which may uncover perspectives not easily captured through questionnaires or individual interviews (Krueger et al., 2015), thereby enhancing the credibility of the study.

Purposive sampling will select 6–8 participants, ensuring representation across different age categories, as reflected in the questionnaire data. This approach ensures that a range of perspectives is included, incorporating different ages, voice parts, levels of experience, and choral backgrounds.

Focus Group Format and Data Collection

The focus group session will last approximately 30 minutes. Discussions will be audio-recorded and transcribed for thematic analysis. The focus group will explore key themes identified in previous research phases.

The researcher (who is also a chorus member) will act as facilitator, ensuring that:

- All participants have an equal opportunity to contribute.
- The conversation remains focused on pre-defined topics while allowing for a natural discussion flow.
- Bias is minimised by encouraging diverse perspectives and neutral facilitation (Flick, 2018).

Inductive coding will primarily be employed to allow themes to emerge organically; however, deductive coding will also be considered to explore themes emerging from the Literature Review. Comparative thematic analysis will also identify commonalities and variations in participant experiences across different demographic groups, including variations by age.

Ethical Considerations

Participants will be briefed on the study's purpose, voluntary participation, and their right to withdraw. Confidentiality will be ensured, with data anonymised in the final analysis. Power dynamics will be managed, ensuring no participant dominates or feels marginalised.

A Questionnaire with the Chorus Master

The final phase of the study will involve a small questionnaire designed for the chorus master. This phase will serve as a means to validate and expand upon themes identified through previous questionnaires, semi-structured interviews, and focus groups, offering a professional perspective on the impact of age-related vocal changes in female symphonic choral singers.

By incorporating the chorus master's insights, this phase will:

- Triangulate findings from the singers' self-reported experiences, vocal coach perspectives, and focus group discussions.
- Assess whether the chorus master's observations align with the singers' perceptions of vocal ageing.
- Identify professional strategies used to support ageing singers in a symphonic choral setting.

The questionnaire will contain a combination of closed and open-ended questions to collect both structured, comparable data and qualitative insights, ensuring measurable trends and nuanced professional observations.

The questionnaire will focus on the following areas:

- Observed Vocal Changes – How the chorus master perceives age-related vocal adjustments in female singers, including changes in tone, range, flexibility, and endurance.
- Performance and Rehearsal Adaptations – Strategies used to accommodate ageing voices in a demanding symphonic choral setting.
- Alignment with Singers' Perspectives – Comparing the chorus master's observations with the self-reported experiences of participants to identify gaps or alignments.
- Support Systems and Vocal Health Strategies – Methods employed to sustain vocal health and ensure the continued participation of ageing singers.

The chorus master will be informed of the nature of the study prior to receiving the questionnaire. It will be emailed and returned accordingly. Anonymity in data presentation will be ensured.

As the researcher is a member of the chorus, steps will be taken to ensure neutrality in data collection and interpretation (Brannick et al., 2007).

A blank copy of the questionnaire can be seen in Appendix 8

Literature Review - Part 1 - The Impact of Ageing on the Female Voice

Research indicates that several physiological changes occur during the ageing process, affecting vocal qualities essential for symphonic choral singing (Hirano, 2005; Sataloff, 2002; Titze, 2005). These changes may arise directly due to age-related change in the vocal apparatus or indirectly due to systemic physiological ageing. However, individual variability plays a significant role, with external factors, lifestyle choices and other comorbidities also affecting change (Baker, 2011). Key studies that have significantly influenced the understanding of vocal ageing and disorders include Ramig et al.'s (1983) study on presbyopia, attributing the age-related decline in vocal quality to structural and functional changes in the larynx, such as muscle atrophy and reduced elasticity of the vocal folds, Titze's (1994) research into the biomechanical properties of vocal fold vibration and their age-related alterations noted decreased vocal fold closure and reduced mucosal wave propagation, resulting in breathiness and diminished vocal efficiency, and Miller's - The Structure of Singing (1996), which effectively synthesises historical pedagogical frameworks with contemporary physiological insights, thereby bridging traditional methodologies with scientific inquiry. Other influential researchers include Sato et al. (1998), Verdolini (2014), and Gould (1969). More recent studies by Linville (2001) have reinforced these findings highlighting increased vocal instability, reduced pitch control, and changes in resonance in ageing female voices. This was reflected in the most frequent areas of age-related vocal implication and concerns to emerge from previous literature reviews undertaken in Modules 4 and 5 (Stansfield, 2023,2024), including:

- Decreased vocal range
- Decreased breath control and support
- Decreased vocal stamina and flexibility
- Increased vocal fatigue
- Pitch instability
- Increased vocal tension and stiffness
- Weaker head voice
- Issues with the passagio
- Changes in vocal quality

Hormonal Changes and Vocal Ageing

While a comprehensive discussion of hormonal fluctuations during perimenopause and menopause is beyond the scope of this study, it's important to note that these transitions typically occur during midlife and can significantly impact vocal health. Perimenopause often begins in women aged 40 to 44, though it can start earlier and is marked by changes in menstrual flow and cycle length. Menopause, defined as the cessation of menstrual periods for 12 consecutive

months, usually occurs between ages 45 and 55, with the average age being 51 years (NHS, 2022).

Research indicates that as oestrogen declines and progesterone and testosterone fluctuate during these periods, the mucous membranes of the vocal folds become drier and less pliable, leading to increased vocal stiffness and discomfort (Caruso et al. (2000), Sataloff R, T, 2017, Lennell et al. 2021).

Commonly reported symptoms include:

- Dryness and frequent throat-clearing
- Vocal fatigue
- Roughness and loss of vocal range
- Deepening of the voice (Hamdan et al., 2017)

While earlier studies primarily linked these vocal changes to declining oestrogen levels (Hamdan et al., 2017), recent research highlights a more complex interplay of hormonal and individual factors, acknowledging the significance of hormone replacement therapy (HRT) in alleviating vocal deterioration. Studies by Caruso et al. (2000) and Meurer et al. (2004) demonstrate that postmenopausal women undergoing HRT tend to maintain a higher fundamental frequency, similar to their premenopausal vocal capabilities. Furthermore, body mass index (BMI) has been recognised as a contributing factor, as a higher BMI can lead to increased endogenous estrogen production, potentially affecting vocal outcomes (Abitbol et al., 1999; Sataloff et al., 2017). Guimarães et al. (2005), therefore, suggest tailored vocal care strategies in conjunction with medical interventions to assist singers with age-related vocal change.

Physical, Emotional, and Psychological Implications

The physical changes associated with vocal ageing often have profound psychological and emotional effects. Research analysis suggests that these changes may result in:

- Frustration, loss of confidence, and increased performance anxiety (Kenny, 2012).
- A shift in singer identity, impacting musical preferences, artistic interpretations, and personal motivations (Welch, 2017).
- A loss of belonging within the choral community affecting group dynamics and vocal blend.

By employing a deductive approach, It is expected that these themes will be reflected in the responses gathered from questionnaires and focus groups. However, I will endeavour to remain open to other potential themes by using open coding (Bingham, 2019).

Key Physiological Factors Influencing Vocal Ageing

Musculoskeletal System

One of the most significant age-related changes is the gradual decline in muscle mass and tone, referred to as sarcopenia (Cruz-Jentoft et al., 2010). This is a major contributor to diminished vocal capacity.

Studies indicate that sarcopenia affects the intrinsic and extrinsic muscles of the larynx, leading to:

- Reduced vocal control, coordination, and stability (Baken, 1987; Enright et al., 2000).
- Loss of resonance, vibrato, timbre, and vocal projection (Sataloff, 2005).
- Degeneration of laryngeal support muscles (sternohyoid, thyrohyoid, omohyoid), contributing to vocal instability and fatigue (Mallur et al., 2018).

Tongue muscle mass may also decline, impacting articulation and phonation (Korn et al., 2018).

Structural Changes in Connective Tissues

In addition to a decline in muscle mass, research by Haus et al. (2020) indicates that ageing may alter the composition and structure of connective tissues, including tendons, ligaments, and fascia, throughout the body. It includes:

- Collagen cross-linking and fibrosis, reducing tissue elasticity.
- Intramuscular fat deposition affecting vocal fold flexibility.
- Reduced vibratory efficiency, leading to hoarseness, breathiness, and vocal strain (Hirano, 1981; Ramig et al., 1996)

The Weakening and Stiffening Theory/Muscle Quality Hypothesis

Linville (20011) refers to this loss of muscular strength and tissue elasticity derived from alterations in the structural and mechanical properties of the muscle tissue as the weakening and stiffening theory or muscle quality hypothesis. The loss of contractile proteins and muscle elasticity

contribute to weaker and stiffer vocal mechanisms. Vocal folds thin with age, making range and flexibility particularly vulnerable. However, emerging scientific research supports improving muscle quality rather than merely increasing mass to counteract functional decline (Kostek et al., 2011). This insight could be utilised within the podcast syllabus to discuss holistic approaches to vocal training and rehabilitation, emphasising exercises that improve both strength and elasticity to support vocal longevity.

It is worth noting here that some of the literature associated with age-related change to the larynx suggests that even if degenerative change does occur, individuals may be able to compensate with various strategies, such as adjusting their breathing or phonation patterns. The impact of laryngeal ageing on voice quality may, therefore, depend on an individual's ability to adapt and compensate (Karkos et al., 2008; Verdolini et al., 2002; Houtz, 2008; Lindstead et al., 2002).

Joint Degeneration and Postural Change

Laryngeal Joint Degeneration

Joint degeneration in the larynx also plays a critical role in age-related vocal decline. The two primary joints affected are the Cricothyroid (CT) Joint, which modulates pitch and vocal fold tension and the Cricoarytenoid (CA) Joint, which controls vocal fold closure and breath control (Hirano et al., 1993; Honjo et al., 1980).

Age-related changes, such as ossification of the laryngeal cartilages, can reduce the flexibility of the CT joint. This decreased mobility may lead to a reduced upper vocal range, pitch instability, and increased vocal strain, making it challenging for singers to reach higher notes and maintain vocal precision. Similarly, research indicates that degenerative change in the CA joint can result in vocal fold immobility or asymmetry, contributing to voice changes such as hoarseness or breathiness (Hirano et al., 1989; Linville, 2001; Pontes et al., 2005; Sato et al., 2002; Ziade et al., 2018).

The chart below demonstrates the function of muscles and joints within the laryngeal structure and the roles that they play in singing.

Structure	Function	Role in Singing
Cricothyroid (CT) Joint	Allows the thyroid cartilage to tilt forward, stretching the vocal folds	Controls pitch modulation (higher notes)
Cricoarytenoid (CA) Joint	Controls the opening and closing of the vocal folds	Influences phonation, breath control, and vocal fold closure
Intrinsic Laryngeal Muscles	Muscles inside the larynx that directly manipulate the vocal folds	Control pitch, intensity, and resonance
Extrinsic Laryngeal Muscles	Muscles that attach the larynx to external structures	Help with laryngeal positioning, stability, and resonance

Joint Degeneration Leading to Postural Misalignment

Joint degeneration (osteoarthritis) has also been evidenced to impact postural alignment and respiratory mechanics (Titze, 2017).

Postural alterations, including forward head position and rounded shoulders, can disrupt breath support, increase muscular tension (particularly in the muscles of the neck, shoulders and jaw), impacting vocal resonance and projection (Brunsen, 2018 Chung et al., 2016; Miller et al., 2017). This can result in increased vocal fatigue.

Osteoarthritis and alterations in spinal curvature, such as thoracic kyphosis and lumbar lordosis, are also cited as major contributors to diminished respiratory mechanics and vocal tract alignment impacting breath support, vocal projection and vocal resonance (Titze, 2017; Dastolfo et al., 2010, Chung et al., 2016, Lee et al., (2015), Miller et al. (2017)

Furthermore, Sataloff et al. (1995) highlight the significance of age-related degeneration to the bone structure of the skull and face on the resonance of the voice, timbre and projection (Sataloff et al., 1995). While these changes are less immediately apparent than postural alterations, their cumulative effect on timbre and projection cannot be overlooked

Berg (1995) also notes a relationship between age-related changes in pelvic tilt and hip alignment, with decreased pelvic floor function and overall trunk stability, potentially resulting in balance and stability problems, which may affect the ability of the singer to stand for long periods during performances.

Interventions for Postural and Joint Support

Pilates, yoga, and Alexander technique have been shown to enhance posture and stability, yet are rarely integrated into choral training (Bailey et al., 2018), highlighting the need for accessible

resources, such as the proposed podcast, to introduce evidence-based strategies for maintaining vocal function.

Respiratory System

Ageing and sarcopenia can also adversely affect the muscles and coordination of the respiratory system involved in voice production, such as the diaphragm, intercostal muscles and abdominal muscles (Cotes et al., 2005; Enright et al, 1994; Guerra et al, 2010; Smith et al, 2019, Takahashi et al., 2020).

Atrophy of these muscles may result in:

- Weakened breath control and support
- Irregular breathing rhythms
- Reduced vital capacity, limiting airflow for phonation (Roy et al., 2000).
- Oxygen deprivation to vocal muscles (hypoxia), causing muscle fatigue and tension (Linville, 2001).

(Hixon et al., 2006, Mendes et al., 2017; Miller et al., 2017)

As a researcher and an ageing female symphonic choral singer, I have had many anecdotal conversations with colleagues concerned with declining breath support and control and have cited this as the most notable change associated with ageing. Whilst it is evident that these changes are well documented in academia, these aforementioned conversations with fellow singers suggest that there still remains a gap in pedagogical and training resources for this demographic and how they are conveyed.

Neurological System/Psychological Implications

Identity and Self-Perception

For many singers, the voice is a fundamental aspect of their identity. Consequently, age-related changes in vocal ability can result in psychological challenges, including diminished self-confidence and a fear of inadequacy during performances. Recent research by Cohen et al. (2020) highlights how ageing female singers often experience anxiety about their declining vocal abilities, fearing that they will no longer make a positive contribution to the choir.

Examination of key literature, however, reveals that the extent of the emotional and psychological changes associated with the ageing voice of the symphonic choral singer is still somewhat underplayed. This is an area that will be explored through the collection of qualitative data from the focus groups to determine the extent of the impact and importance of this key theme of identity and self-perception to this demographic (Cohen et al., 2020; Clements-Cortes, 2015, Price, K, 2022, The Times, 2024, Chorus America, 2013)

Previous literature reviews undertaken in Module 5 (Stansfield, 2023, 2024) highlighted the symbiotic relationship between vocal ability and the social and emotional aspects of belonging to and performing with a high-level symphonic chorus. Maintaining vocal health is essential for preserving this lifestyle. If age-related vocal changes are not successfully navigated, continued participation in a chosen choir may become unfeasible, potentially impacting mental well-being. Singing in a choir has been shown to foster a sense of belonging and provide an outlet for emotional expression (Clift et al., 2010). Consequently, singers who are forced to withdraw due to age-related vocal decline may experience social isolation and emotional distress. Providing emotional support is therefore crucial for these singers.

Current intervention strategies emphasise the value of peer support groups and networks associated with choruses, which help singers develop resilience and solidarity through shared experiences and mutual support within the vocal community (White et al., 2013; Blackwood et al., 2016). Similarly, incorporating personal stories in the podcast can foster a sense of connection and encouragement, allowing listeners to identify with others' experiences and gain insights into navigating vocal ageing. Additional research highlights the importance of integrating coping mechanisms such as self-reflection and mindfulness to promote a positive self-perception of changing vocal identity (Lin et al., 2020; Neff et al., 2018).

Given that podcasts have been shown to foster a sense of community and engagement (Berry et al., 2016), they present a well-suited medium for addressing these challenges through education and support. This will be explored in more depth in the second part of the Literature Review specifically related to the podcast as a medium. A podcast dedicated to ageing amateur female symphonic choral singers could feature personal narratives from singers navigating vocal changes alongside expert advice from vocal health professionals across various disciplines. Such content could include discussions on mindfulness, self-compassion, and psychological adaptation to vocal ageing. This aligns with findings by Welch and Howard (2019), who advocate for vocal health education that extends beyond technical exercises to encompass the psychological dimensions of ageing.

This part of the Literature review identifies and comprehensively discusses the impact of age-related muscular, respiratory and psychological changes on the female singing voice. These key areas/themes will underpin the content of the podcast syllabus.

However, it is also prudent to identify the most common vocal implications of these changes and the evidence-based practices that are recommended to mitigate them to provide relevant content within the podcast. Whilst many of these were touched upon in the analysis of age-related changes to the musculoskeletal, respiratory and psychological systems, the most frequent vocal implications to emerge include:-

- Decreased range and flexibility
- Articulation and resonance
- strength and stamina

Current interventional practices will now be discussed to address these age-related changes.

Management Strategies for Emergent Vocal Implications

Decreased Range

Analysis of data determines that decreased vocal range and access of the head voice appear to be the most common age-related change to the female voice, due in part to the stiffening of the vocal folds and a lowering of the larynx in the throat after menopause (Abbittol et al., 1999, D'Haeseleer et al., 2011, Hamdan et al., 2018, Raj et al., 2010). Overuse of the chest voice can further increase the thickness of the folds, making it increasingly difficult to engage the cricothyroid muscles, essential for head voice production. Therefore, presenting evidence-based exercises that are able to counteract these changes within the podcast syllabus would be highly beneficial to the female amateur symphonic choral singer.

One such approach is Doscher's method (1994). This evidence-based practice seeks to balance all registers of the voice to increase range and flexibility. It focuses on coordinating airflow and subglottal pressure to achieve optimal vocal production. Many of the techniques are detailed in her book, *The Functional Unity of the Singing Voice* (1994).

Appendix 3 provides a brief explanation of her method, along with a table highlighting evidence-based vocal exercises suitable for improving range in ageing female singers and a suggested podcast episode discussing these methods.

It is worth noting here that further research suggests that focusing on the head and middle voice is particularly beneficial for ageing female singers, as these registers tend to weaken due to hormonal and structural changes (Sundberg et al., 1981; Davis et al., 2020; Thompson et al., 2019).

Articulation and Resonance

Similarly, peer-reviewed studies indicate that interventions focusing on resonance training significantly improve vocal quality in ageing female symphonic choral singers, reinforcing the need for such approaches in the podcast syllabus (Hirose et al., 2018; Sundberg, 2006).

These aim to maximise the vibration of sound waves in the vocal tract, contributing to richness, projection and volume. Appendix 4 outlines evidence-based exercises designed to improve articulation and resonance.

Breath Support, Strength, and Stamina

Effective breath management is essential for sustaining vocal quality, particularly as the voice ages. Therefore, the proposed podcast should discuss suitable exercises to counteract respiratory decline. Appendix 5 provides examples of typical breath management exercises.

These exercises are rooted in the foundational techniques established by early pioneers such as Behnke (1891) and Vennard (1967), who developed fundamental principles of breath control and resonance. Their contributions continue to shape contemporary vocal pedagogy and practice. Other valuable resources include Rosenberg's approach, detailed in *The Vocal Athlete: Application and Technique for the Hybrid Singer* (2014). This approach emphasises full-body integration in vocal production, incorporating movement, diaphragmatic breathing, and vocalisation to encourage a free and expressive voice.

Similar benefits have been observed in yoga and Feldenkrais-based techniques, which promote coordination between breath control and vocal output (Nelson et al., 2002)

Other well-established vocal training methodologies that could serve as valuable resources for the podcast include:

- Complete Vocal Technique (CVT) - (Sadolin, C, 2008)
- Estill Voice Training Method - (Estill, J, 1998)
- The Accent Method - (Smith, S, 1995)
- Lee Silverman Voice Treatment (LSVT) - (Ramig et al., 1995)

An explanation of these methods can be found in Appendix 6.

Other exercises to consider include those taken from other UK-targeted rehabilitation programmes, such as singing for health initiatives for lung conditions, Parkinson's' disease, Multiple Sclerosis and Dementia. These focus on improving vocal function, breath support, stamina, and resonance to facilitate both recovery and long-term vocal sustainability and may, therefore, be useful for ageing singers (Scepanovic, 2018).

Other beneficial methods include:-

Semi-Occluded Vocal Tract Exercises (SOVTEs) - to ease vocal strain and strengthen the vocal folds by providing back pressure, enhancing vocal fold closure, resonance, and overall voice quality, particularly in older voices (Espinoza, V. M et al. 2020, Gaskill, C. S et al. 2012, Guzman, M et al., 2013, Meerschman, 2020, Titze, 2006).

Vocal Warm-up and Cool-Downs - Vocal warm-up exercises are useful, particularly those concentrating on the gentle onset of sound, resonance, and flexibility. Likewise, cool-down exercises play a crucial role in relaxing the vocal folds and alleviating tension, thereby facilitating vocal recovery post-performance. These practices are instrumental in preventing vocal strain and contribute significantly to the long-term preservation of the voice(Iranpour et al., 2024; Ragan, 2015; Whitting et al., 2022).

Rest and Hydration - Other useful interventions often overlooked include hydration and rest. According to Sataloff (2017), ageing affects the body's ability to retain water, impacting the lubrication of the vocal folds, particularly during menopause. This is, therefore, particularly useful for this demographic. Adequate rest is also key to maintaining both physical and vocal health, allowing vocal folds to recover and prevent long-term damage (Brown et al., 2019). Physical exercise is particularly important as the physiological condition of the body directly correlates to vocal health (Sandage et al., 2018).

Irritants such as smoking, allergens and medications that may affect vocal health should also be limited. Although the practice of vocal hygiene is well-publicised and adhered to in professional singing circles, it is unclear if amateur symphonic choral singers are fully aware of its importance. This is, therefore, a subject area that can be expanded on for the proposed podcast.

Medical interventions and vocal therapy may also be considered if necessary. Pharmaceutical interventions such as Hormone Replacement Therapy (HRT), which targets hormonal fluctuation, are also common practice (Sandro, 2015). This may be relevant for a proportion of the demographic. However, opinions on HRT remain divided. Some studies (Meurer et al., 2016) suggest positive outcomes, while others (Gerritsma et al., 2017) caution against its use due to possible side effects and a lack of conclusive evidence.

Further interventions worth referencing include technology-based applications that use biofeedback to monitor vocal health. These can be used in conjunction with podcast content and other online resources that offer guided vocal exercises to enable individuals to maintain their vocal abilities and health independently. Current apps include VoiceUp, VocalEase, SingPro, and Telehealth services that provide online consultations with voice therapists.

Although these tools are becoming more accessible, their usage among amateur singers—particularly older individuals who may be less familiar with technology remains limited. Increasing

awareness of these resources through podcast platforms may enhance their adoption among ageing amateur female symphonic choral singers.

Critical Reflections

Reflecting on these findings, it becomes clear that the challenges faced by ageing symphonic choral singers extend beyond physiological limitations to encompass psychological and social aspects associated with choral membership, in addition to non-vocal considerations such as HRT. However, the extent to which female amateur symphonic choral singers are affected by these changes will be realised by the exploration of these themes in subsequent questionnaires and focus groups directed towards current members of the chorus in question. Professional experts associated with symphonic choirs will also give their opinions on vocal ageing and what they perceive to be important when working with the ageing voice, particularly within a choral setting. It is clear that specific evidence-based strategies exist to mitigate the effects of ageing; however, there remains a clear gap between academic research and a practical application for disseminating knowledge.

In considering the proposed content for the podcast focused on the impact of ageing on amateur female symphonic choral singers, it is essential to integrate historical knowledge with contemporary findings. This approach will provide a practical framework that recognises the transition from earlier works predominantly centred on pedagogy to more interdisciplinary methodologies which incorporate insights from fields such as speech pathology, neurology, and gerontology, significantly enhancing the strategies for maintaining vocal health in ageing singers

Literature Review Part 2 - The Podcast

Podcasts have emerged as a significant educational resource in recent years, providing an accessible and flexible platform for learning. Research by Mayer et al. (2018) indicates that the number of people listening to podcasts has grown exponentially over the past decade, with more than 50% of adults in the U.S. reporting regular podcast consumption. Similar trends have been observed in the United Kingdom, where podcast listenership continues to rise. According to Edison Research (2024), over two-thirds of UK adults aged 18 and above have listened to a podcast, with 42% identifying as monthly listeners and 30% as weekly listeners. This underscores the increasing role of podcasts as an educational and informational tool.

Podcasts as an Educational Tool

The increasing popularity of podcasts can be attributed to their accessibility and on-demand characteristics, enabling listeners from diverse backgrounds and geographical locations to engage with content (Hobson et al., 2021; Bolliger, Supanakorn, & Boggs, 2010; Lee & Chan, 2006; McGarr, 2009). This suggests that podcasts are becoming a preferred medium for learners, particularly for niche audiences such as ageing female symphonic choral singers who face unique vocal challenges.

Further analysis suggests that podcasts are particularly effective in health education, conveying complex medical and physiological information in an accessible and engaging format (McGarr et al., 2019; Phua et al., 2020; Lambert, 2013). Auditory delivery—encompassing language, tone, pacing, and volume—also plays a pivotal role in enhancing listener engagement and comprehension (Hill, 2018; Philips, 2017; Ginting, 2019).

Addressing Vocal Ageing Through Podcasts

The episodic nature of podcasts offers a flexible framework for examining specific aspects of vocal ageing. By incorporating insights from professionals and experts from various disciplines, podcasts can provide a multidisciplinary, holistic overview of age-related vocal changes (Dromey et al., 2020). This approach facilitates combining empirical medical data with narrative elements, including interviews with health professionals and vocal specialists, vocal exercises, and personal testimonials from ageing singers. Such content enhances engagement and relevance for listeners (Ko et al., 2021).

Podcasts can also foster emotional connections and reflection, particularly on sensitive topics such as vocal ageing. By addressing these issues openly, they can help demystify the ageing process and reduce stigma (Glick et al, 2023). Research suggests that stigma is closely linked to shame, often causing individuals to internalise negative perceptions and avoid discussing their experiences. Personal narratives from ageing singers can normalise these experiences and

demonstrate that vocal changes are a natural process rather than a personal failing. Additionally, discussions led by experts in vocal health, psychology, and pedagogy can provide evidence-based reassurance. Through storytelling, empathy, and education, podcasts can create a supportive environment where singers feel validated, empowered, and encouraged to engage in proactive vocal care (Glick et al., 2023).

Interactivity and Listener Engagement

Podcasts also function as interactive platforms. Research has demonstrated that they can effectively deliver vocal exercises (Bunn et al., 2022) while allowing listeners to guide content by submitting questions. This responsiveness ensures that the podcast remains relevant to its audience, particularly as new research on vocal ageing emerges. However, while podcasts can introduce evidence-based concepts, their effectiveness may be limited in facilitating practical application without in-person guidance. Studies suggest that podcasts work best as part of a collaborative educational framework, integrating structured learning opportunities to reinforce best practices (Plancahrd et al., 2024).

Limitations of Podcasts

Despite their educational benefits, there are limitations to the podcast format as a learning tool. Variability in content quality presents a challenge, particularly in vocal health, where misinformation could lead to harmful practices. Therefore, any podcast developed for this demographic must adhere to high educational standards and be grounded in evidence-based research. Additionally, listener fatigue—resulting from the overwhelming number of available podcasts—can detract from educational effectiveness. Furthermore, while podcasts can foster a sense of community, they may also inadvertently increase feelings of isolation. If listeners perceive themselves alone in their challenges, they may not seek the interpersonal support needed to navigate the psychological and emotional aspects of vocal ageing.

Existing Podcasts

Currently, only a small number of generic podcasts and online resources specifically address the ageing voice of amateur singers. However, these remain somewhat limited in availability and scope, particularly for female amateur symphonic choral singers. Examples include The Naked Vocalist, Navigating Vocal Ageing by Karen Brunssen, and Your Online Singing Coach. While these resources provide guidance and support, the field remains relatively underrepresented in podcasting, highlighting the need for more targeted, evidence-based resources for this demographic. Appendix 2 provides an overview of existing podcasts with a brief explanation of their content.

Conclusion

This literature review underscores the value of podcasts as an educational tool and a community support platform. By offering structured information, opportunities for interactivity, and fostering psychological support, a podcast tailored to ageing amateur female symphonic choral singers can serve as both an educational resource and a helpline where listeners can submit questions and engage in ongoing discussions. The podcast format has the potential to bridge the gap between academic research and practical application, equipping singers with knowledge and resources to navigate the physical, psychological, and social aspects of ageing. However, its effectiveness depends on maintaining high educational standards, fostering an interactive and supportive environment, and addressing potential limitations through a collaborative approach to vocal health.

Section 2

Questionnaire - Findings section

This section presents the findings from the questionnaire distributed to 30 female members of an amateur symphonic chorus, comprising women aged 50 and above. The questionnaire contained a mix of open-ended and closed questions to elicit both qualitative and quantitative data responses and provide a comprehensive understanding of the subject.

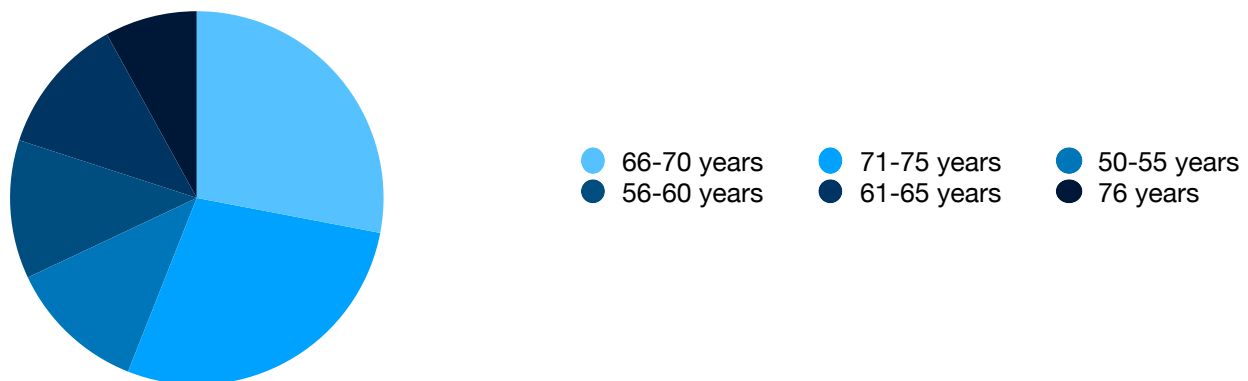
These were divided into age groups (50-55, 56-60, 61-65, 66-70, 71-75, and 76 years plus).

Of the 30 questionnaires administered, 25 were returned. This represents a response rate of 83.3%. A copy of these 25 returned questionnaires can be seen in **Appendix 9** https://www.dropbox.com/scl/fo/xhlt660z81my4x68rkx5k/AJbb_Hx8UXtnwhP_ibK0dcl?rlkey=7g0bjwto56qc567epfnql867o&st=wlmfmq3w&dl=0

Demographics

Question 1 - What age are you?

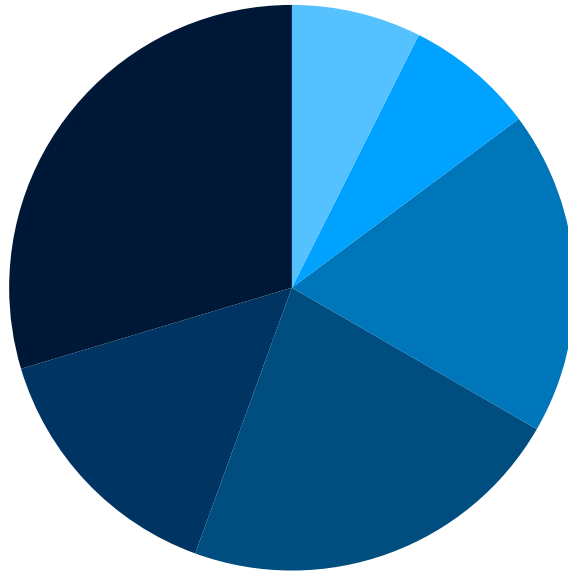
Out of the 25 respondents, 28% were aged 66-70 years, 28% were aged 71-75 years, 12% were aged 50-55 years, and 56 - 60 years, 61-65 years, respectively, with 8% 76 years plus.



Aged 50-55 years	3
Aged 56-60 years	3
Aged 61-65 years	3
Aged 66-70 years	7
Aged 71-75 years	7
Aged 76 years plus	2
Total	25

Question 2 - How long have you been singing in a symphonic choir?

● Less than 5 years
 ● 5-10 years
 ● 11-20 years
● 21-30 years
 ● 31-40 years
 ● 40 years plus

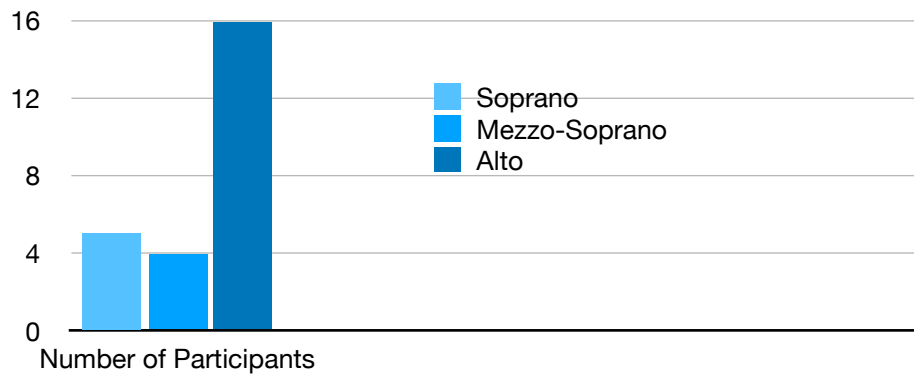


The majority of these (30%) had been singing in a symphonic chorus for more than 40 years,

The table below illustrates the number of years participants have been singing in symphonic chorus by age category.

	Less than 5 years	5-10 years	11-20 years	21-30 years	31-40 years	40 years plus
Aged 50-55years	1	1		1		
Aged 56-60-years			2			1
Aged 61-65 years		1	1			1
Aged 66-70 years	1		2		2	2
Aged 71-75 years				3	2	2
Aged 76 years plus						2

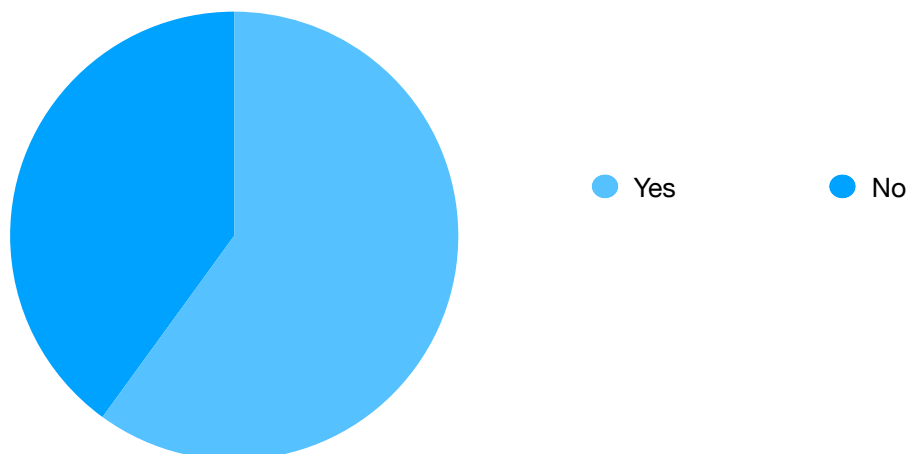
Question 3 - What is your voice type?



These represent a cross-section of soprano (20%), mezzo-soprano (16%) and alto (64%) voices.

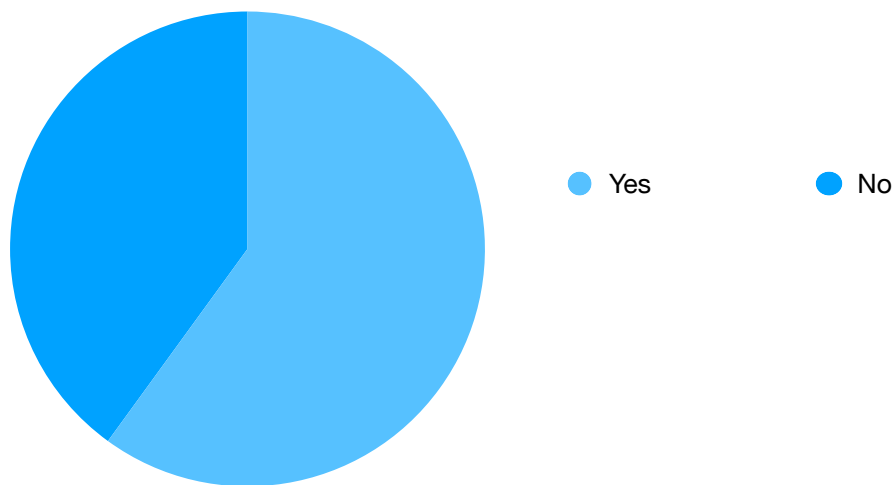
Question 4 - Do you have any formal training?

Of these participants, 60% had formal training.



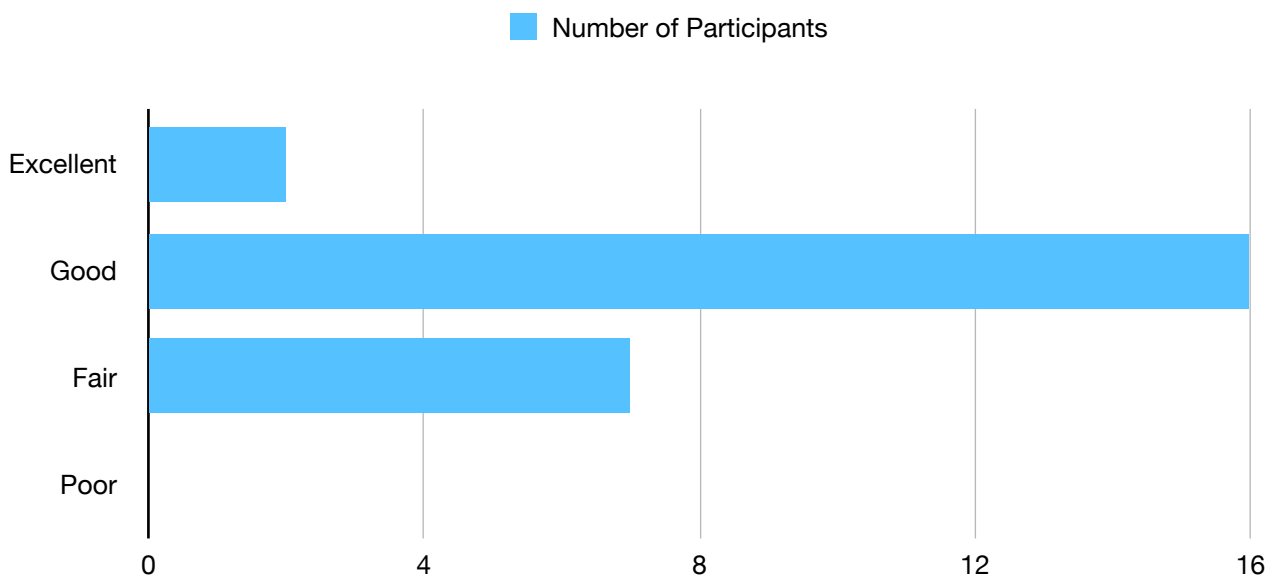
Question 5 - Do you work with a vocal coach?

Currently, only 40% of the participants work with a vocal coach.

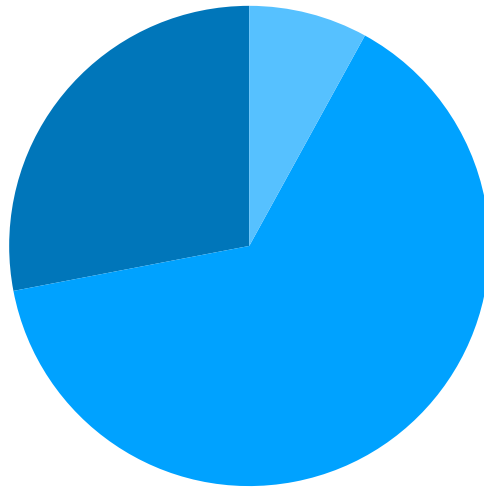


Question 6 - How would you rate the health of your voice?

When asked to rate the overall health of their voice, the majority (64%) rated their voice as good, with 8% as excellent and 28% as fair.



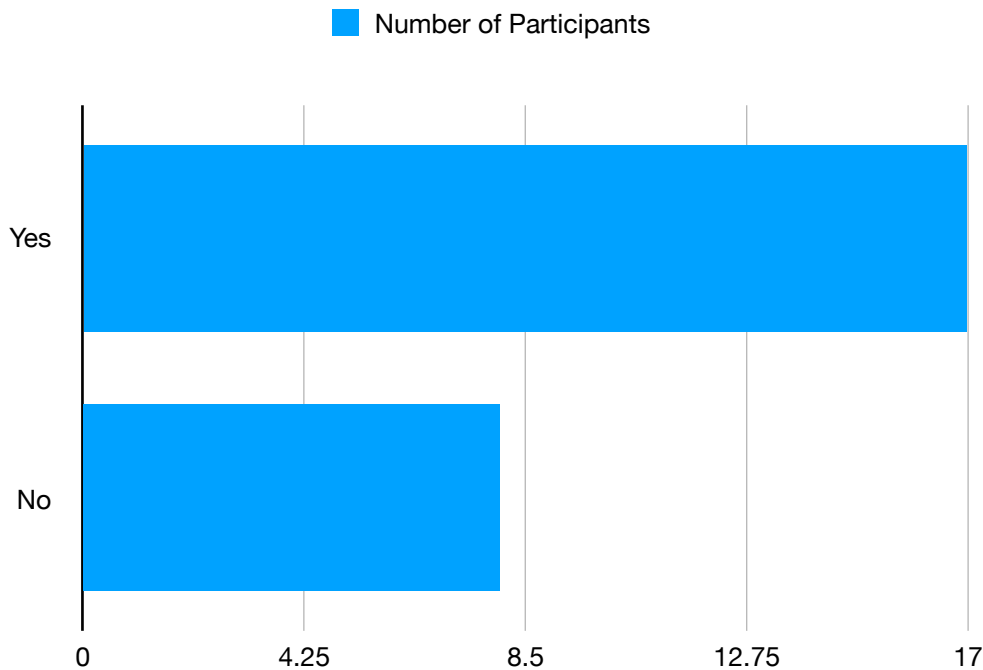
● Excellent
 ● Good
 ● Fair
 ● Poor



This table illustrates answers by age demographic.

	Excellent	Good	Fair
Aged 50-55 years		2	1
Aged 56-60 years		2	1
Aged 61-65 years		1	2
Aged 66-70 years	2	4	1
Aged 71-75 years		5	2
Aged 76 years plus		2	

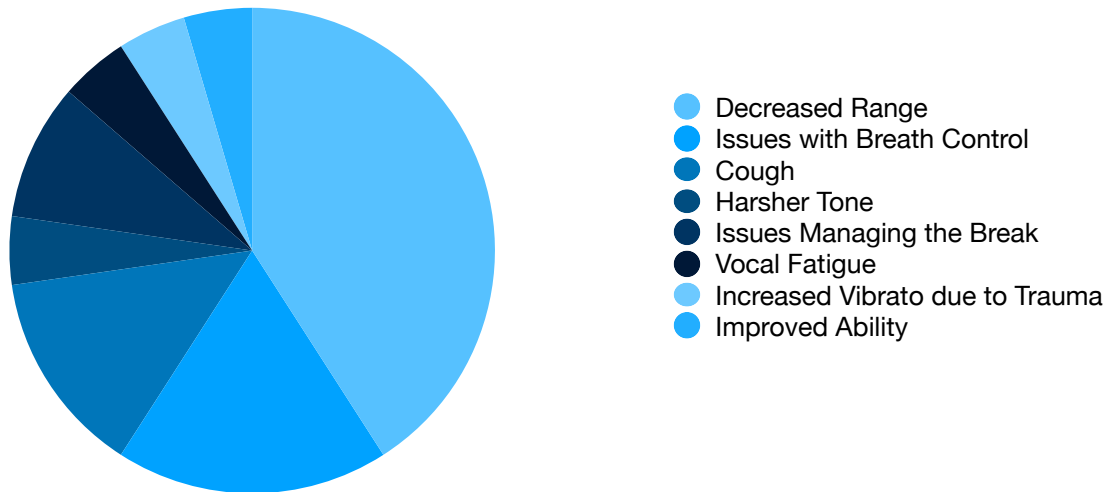
Question 7 - Have you noticed any changes in your singing ability in the last five years?



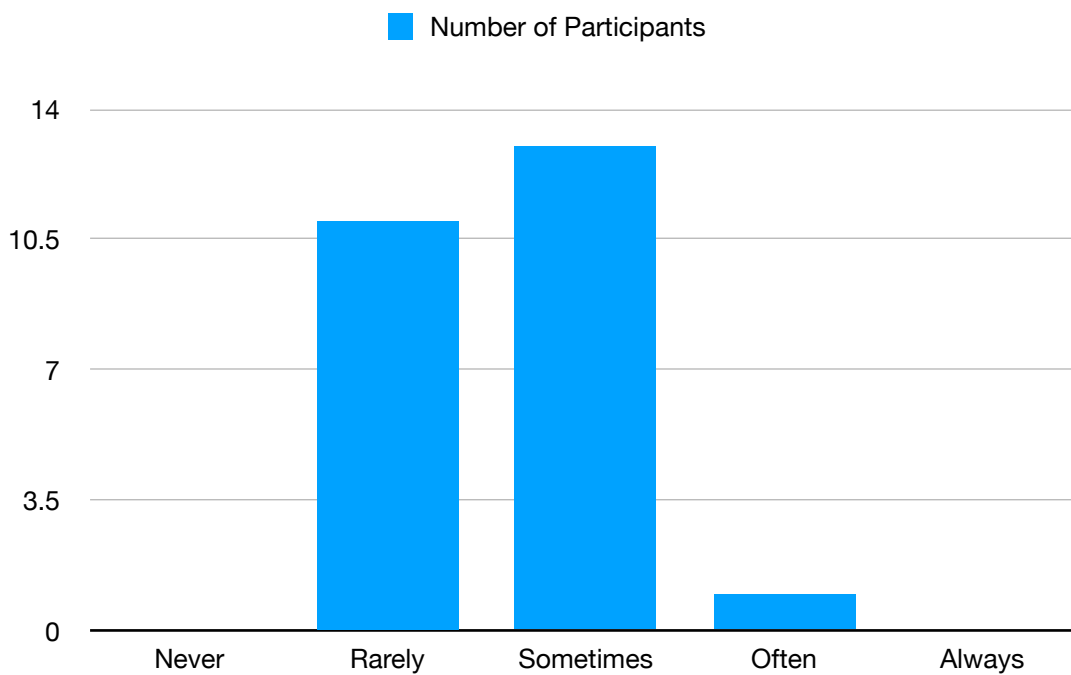
When asked if they had noted any change in vocal ability over the past five years, 54% of respondents noted changes to their voices within the last five years, with 46% noting no change.

Question 8 -If yes, describe the changes that you have experienced.

Of these changes, 41% cited a decrease in vocal range as the most notable change, with 18% citing issues with breath control, 14% with coughs (possibly linked to COVID), and 9% experiencing issues with managing the passagio. Harsher tonal quality, vocal fatigue, increased vibrato, and increased performance ability totalled 5%, respectively.



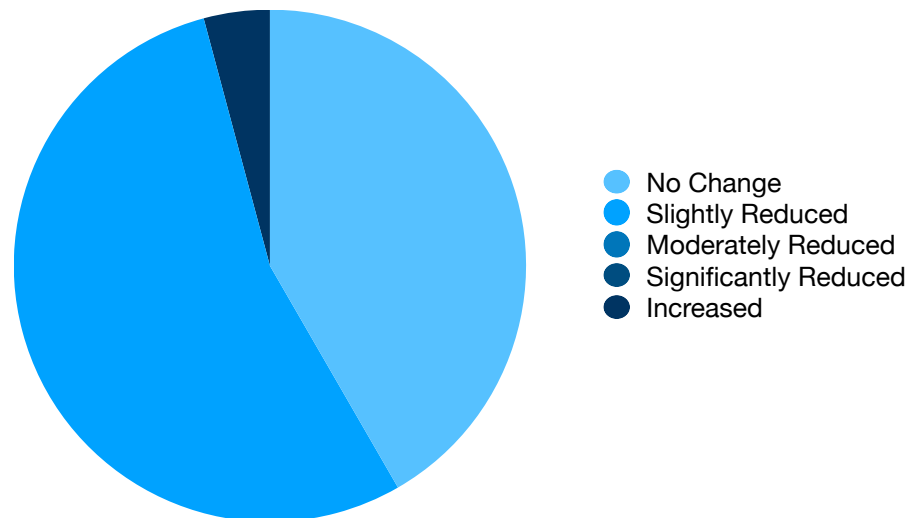
Question 9 - How frequently do you experience Vocal Fatigue?



Of those questioned, 40% suggested that they rarely experienced vocal fatigue, with 48% stating that they sometimes experience vocal fatigue during or after rehearsals, with only 3% experiencing fatigue often.

Question 10 - How would you rate your current vocal range compared to five years ago?

When asked how they would rate their current range compared to five years ago, 54% suggested a slight reduction, 42% said there was no change, and 4% experienced an increase. No participants reported either a moderate or significant reduction.



	Age 50-55 years	Aged 56-60 years	Aged 61-65 years	Aged 66-70 years	Aged 71-75 Years	Aged 76 years
Slight Reduction	2	2	2	2	3	2
No Change	1	1	1	4	4	0
Increased Range	0	0	0	1	0	0
Significant Change	0	0	0	0	0	0

This chart illustrates responses by age category.

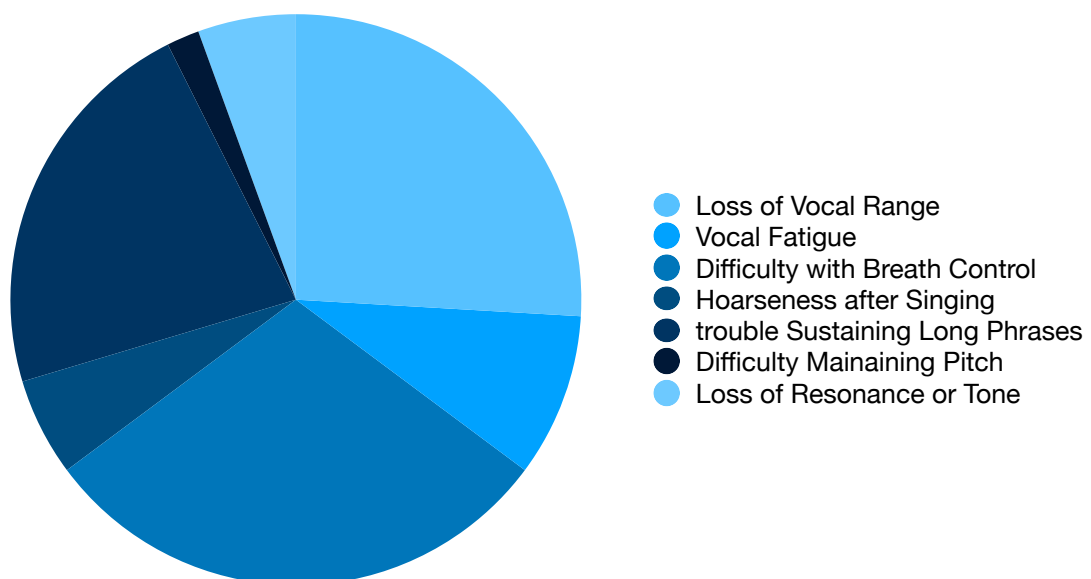
The figures are fairly similar throughout the age groups, with only the 66-70-year-olds showing a more significant number of women experiencing no change. This may suggest that vocal maintenance and hygiene in this age group are appropriate for mitigating the signs of vocal ageing. Of these participants, five had received formal training, and four currently worked with a vocal coach.

Question 11 - Do you experience any of the following symptoms?

Participants were then asked if they experienced any of the following:

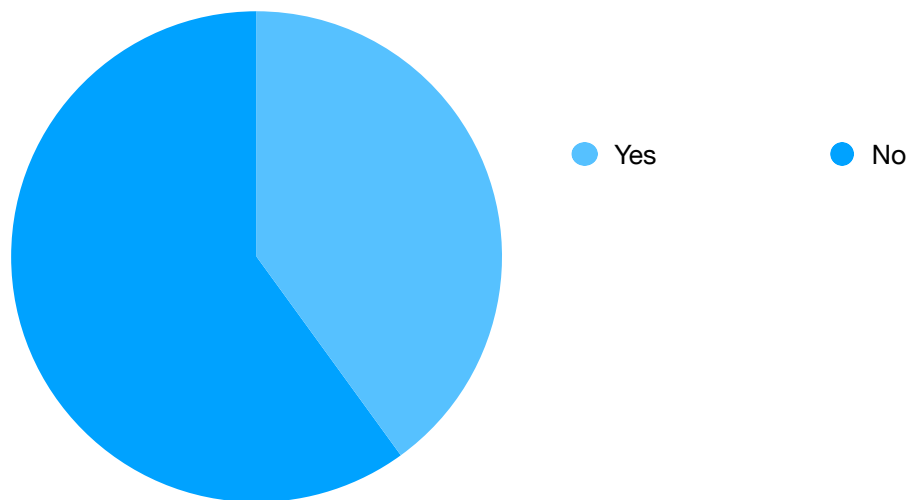
- Loss of vocal range
- Vocal Fatigue
- Difficulty with Breath Control
- Hoarseness after singing
- Trouble sustaining long phrases
- Difficulty maintaining pitch
- Loss of resonance or tone

30% of respondents cited breath control as their primary area of concern. 26% were concerned with a reduction in vocal range, and 22% cited issues with sustaining long phrases. Hoarseness (6%), pitch issues (2%), vocal fatigue 9% and loss of resonance and tone (6%).



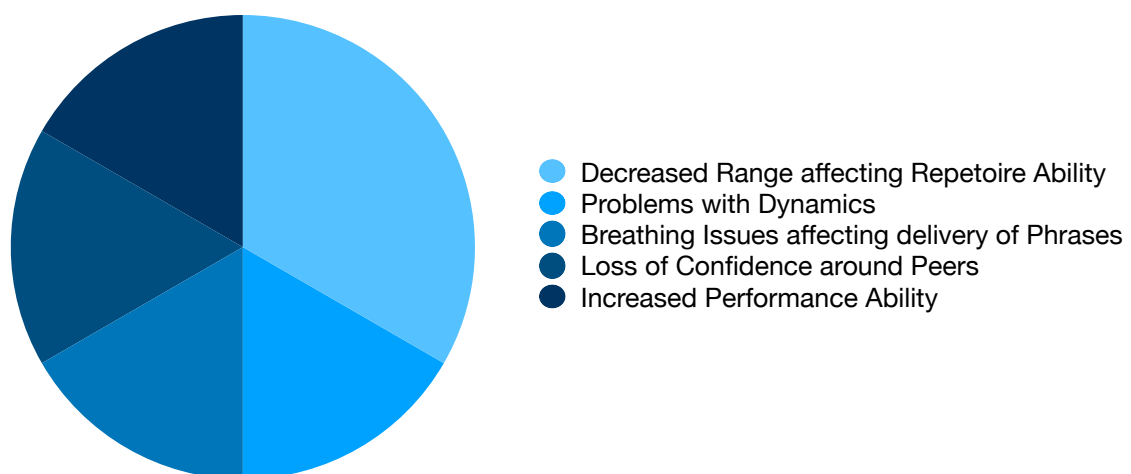
Question 12 - Have these changes affected your performance in the choir?

Despite these changes, 60% of respondents said that they did not affect their performance in the choir.



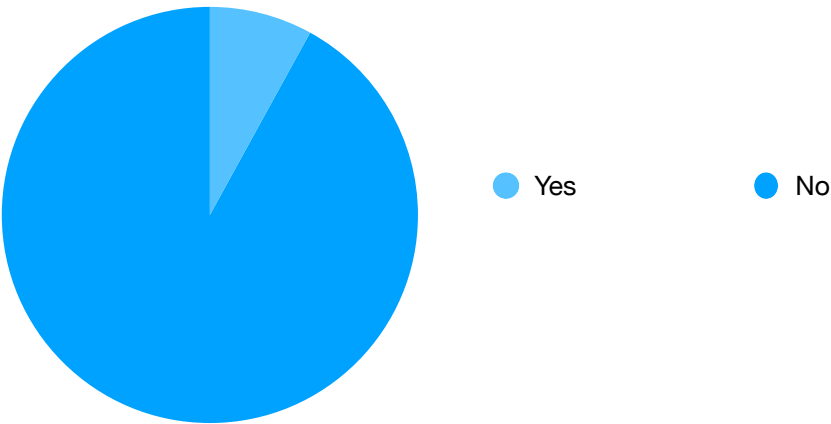
Question 13 - If yes, how have these impacted your performance?

Of the 40% that suggested these changes had impacted their performance ability, 33.33% stated that a decrease in vocal range had impacted their ability to perform all repertoire to their desired performance standards, with breathing issues affecting the delivery of musical phrases (16.67%), 16.67% reporting issues with the delivery of dynamics, 16.67% reporting a loss of confidence around peers, and 16.67% reporting an increase in ability.



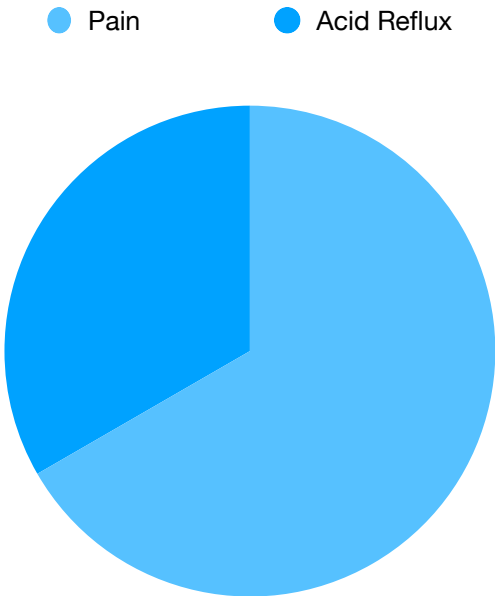
Questions 14 and 15 - Do you have any underlying medical conditions that may impact your performance?

92% reported no medical underlying issue that they thought may impact their performance. This figure suggests that the majority of participants questioned are in good health despite advancing age.



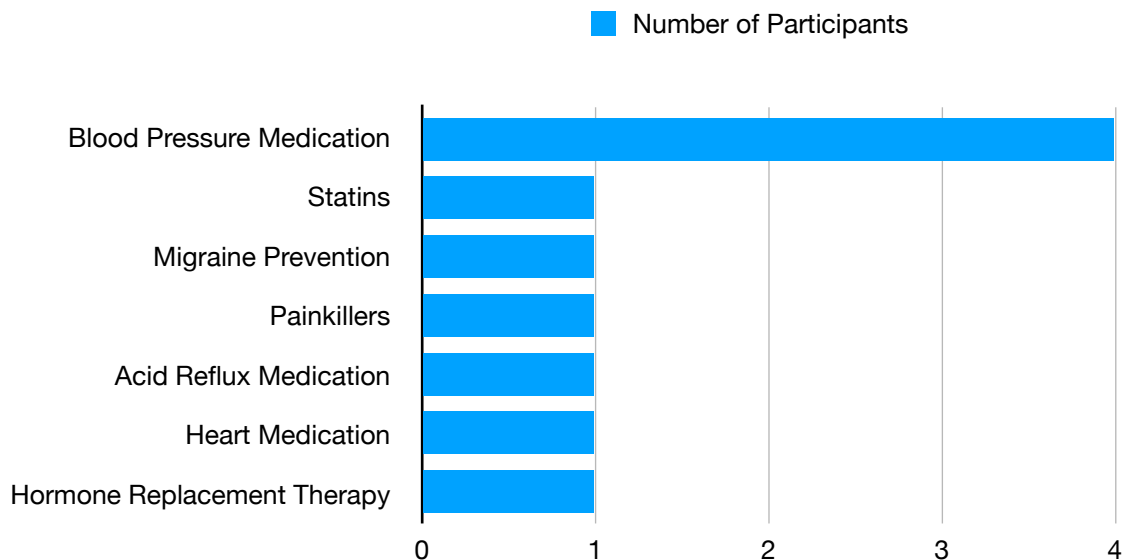
Question 15 - If so, what?

	Pain	Acid Reflux
Number of Participants	2	1



Question 16 - Are you currently taking any medication?

82% reported that they do not currently take any medication. Of those reporting to take medication, the majority cited blood pressure medication, with a small percentage taking reflux medication, painkillers, statins and HRT.

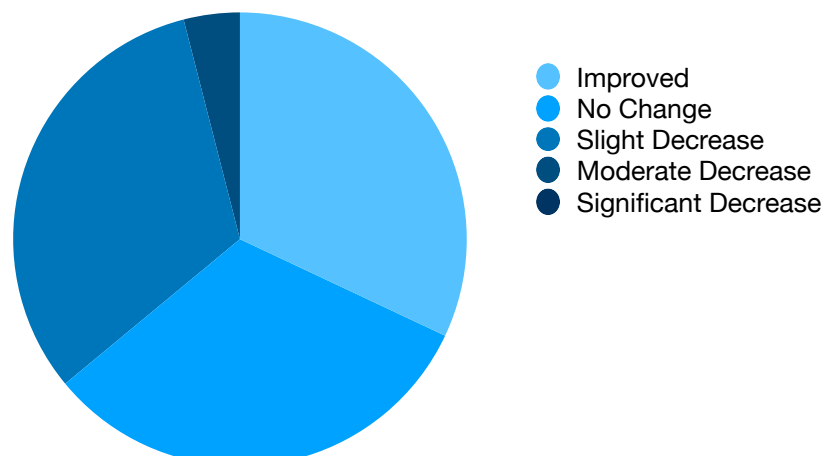


Physiological and Emotional Impact

Section 3 of the questionnaire explored the psychological and emotional impact of ageing on the female symphonic choral singer and the effect that this may have on the singer's position in the choir and choral community. These were all key themes to emerge from the Literature Review.

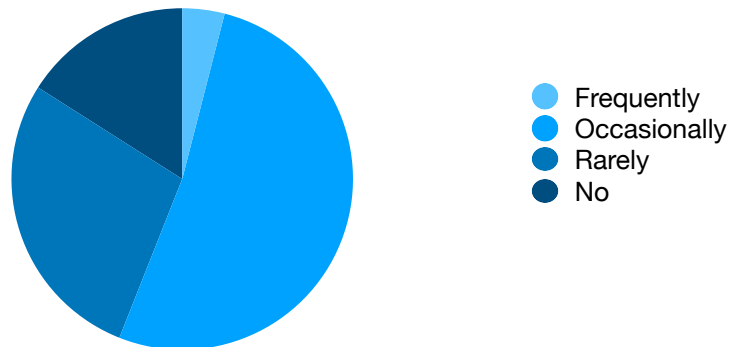
Question 18

When asked if their confidence in their singing ability had changed in the last 5 years, 32% noted that it had improved. 32% cited no change to their ability, 32% reported a slight decrease, with 4 % citing a moderate decrease.



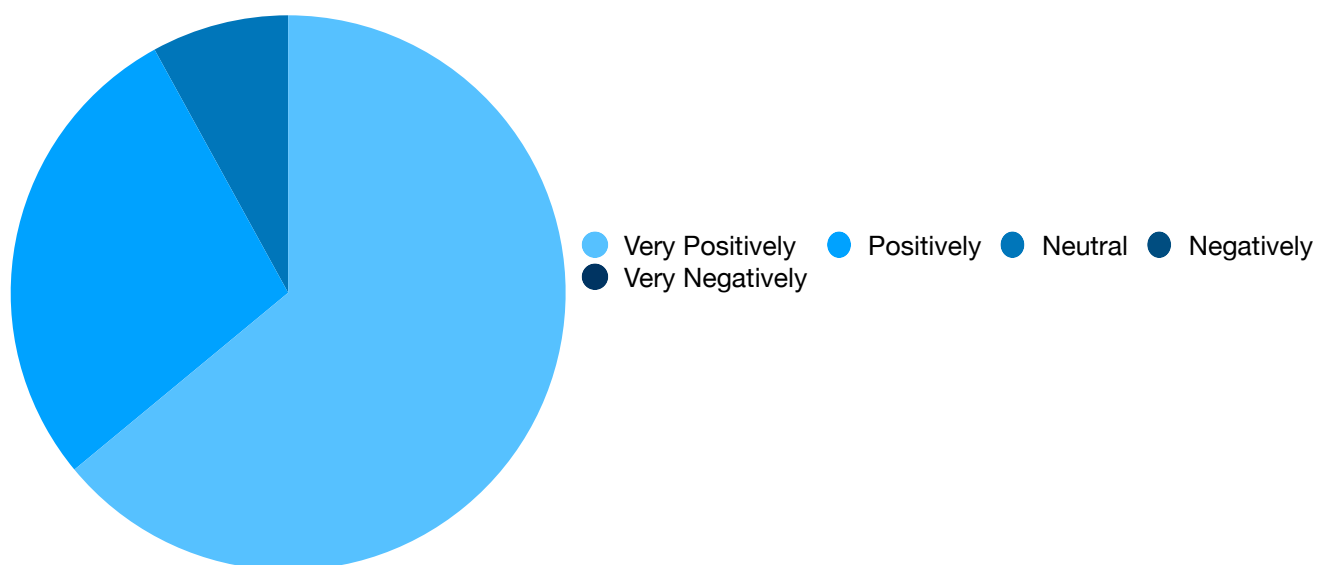
Question 19 - Do you experience anxiety or concern about your vocal performance?

Participants were then asked if they experienced anxiety surrounding their vocal performance. 52% of respondents reported occasional anxiety or concern, with 28% stating that it was rarely a concern, 16% stating this was never a concern, and only 4% suggesting that it was a frequent issue.



Question 20 - How does your participation in the choir impact your sense of belonging?

Most respondents suggested that membership of the chorus impacted their sense of community and belonging in a very positive way (64%), with 28% noting a positive response and 8% noting a neutral standpoint. The age groups citing the greatest importance of community and belonging were those in the age 66- 75 years (40%). This suggests that a sense of belonging increases with age. This may be due simply to the number of years that the members have been in the chorus and the friendships that they have established. It may also be due to life changes, including the loss of partners, friends, etc. This again reflects the sense of community discussed in the Literature



Review.

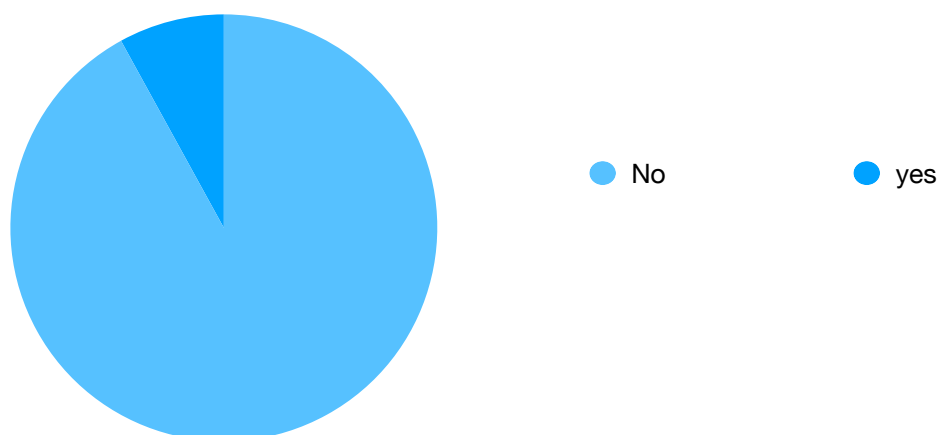
This chart illustrates responses by age category.

	Very positively	Positively	Neutral
Aged 50-55 years	2	1	
Aged 56-60 years	2	1	
Aged 61-65 years	1	2	
Aged 66 -70 years	5	1	1
Aged 71-75 years	5	2	1
Aged 76 years plus	1		

Question 21 - Have you ever considered leaving the choir due to vocal concerns?

Questions 21 and 22 related to vocal concerns impacting membership. Participants were asked if they had ever considered leaving the choir due to vocal concerns, and if so, what were the reasons for this. Only 8% of respondents had considered leaving the choir due to vocal concerns.

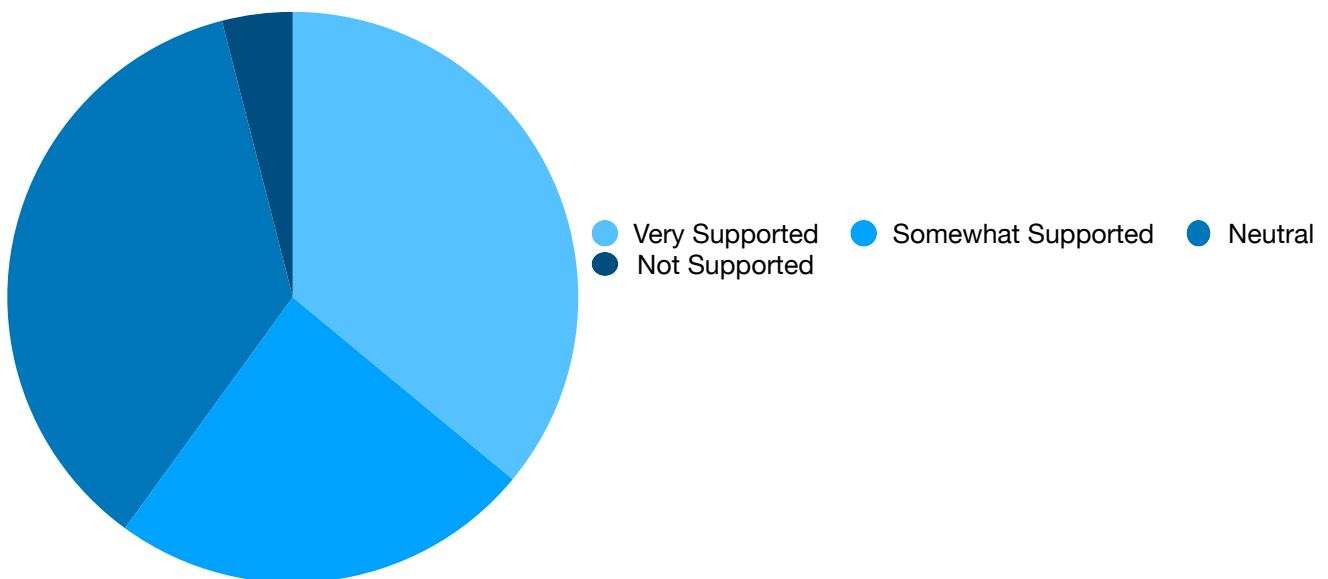
	Yes	No
Number of Participants	2	23



Question 23 - How supported do you feel by your conductor and choral management regarding your vocal concerns?

36% of the participants of the organisation in question felt very supported by the conductor and choral management regarding vocal concerns, 24% somewhat supported, 36% were neutral in their response, feeling neither supported nor unsupported, and 4% questioned felt unsupported.

	Very Supported	Somewhat Supported	Neutral	Not Supported
Number of Participants	9	6	9	1



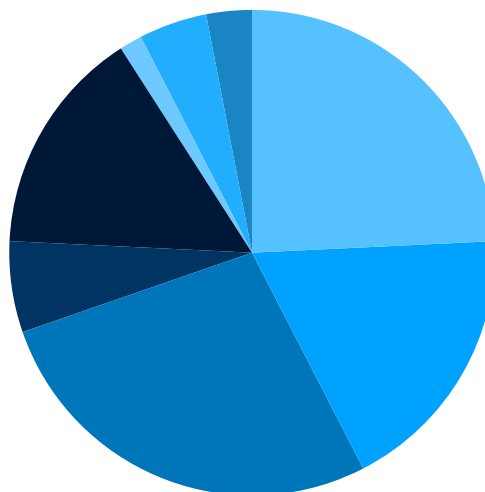
Section 4 - Vocal Care and Techniques

Question 24 - What techniques do you use to manage your vocal health?

Respondents were asked what techniques they use to manage vocal health. A multiple-choice answer was provided, and respondents were asked to select all that applied. These were determined from analysis of data from the Literature Review.

These included

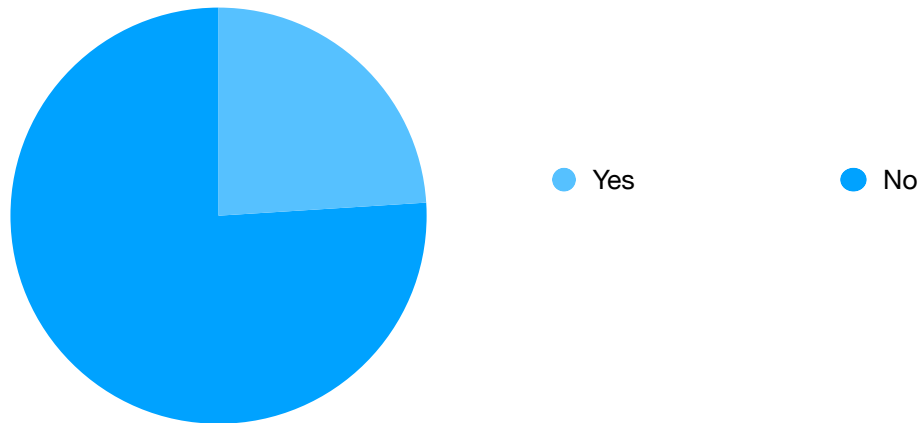
- Vocal warm-ups before rehearsals
- Breathing exercises
- Hydration
- Resting voice after rehearsal/performance
- Avoiding overuse of voice outside of choir
- Working with a vocal coach
- Taking supplements or medication
- None of the Above
- Other



Hydration was the most popular answer at 27%, followed by vocal warm-ups prior to rehearsals (24%), breathing exercises (18%), working with a vocal coach (15%), and resting voice after rehearsal (6%).

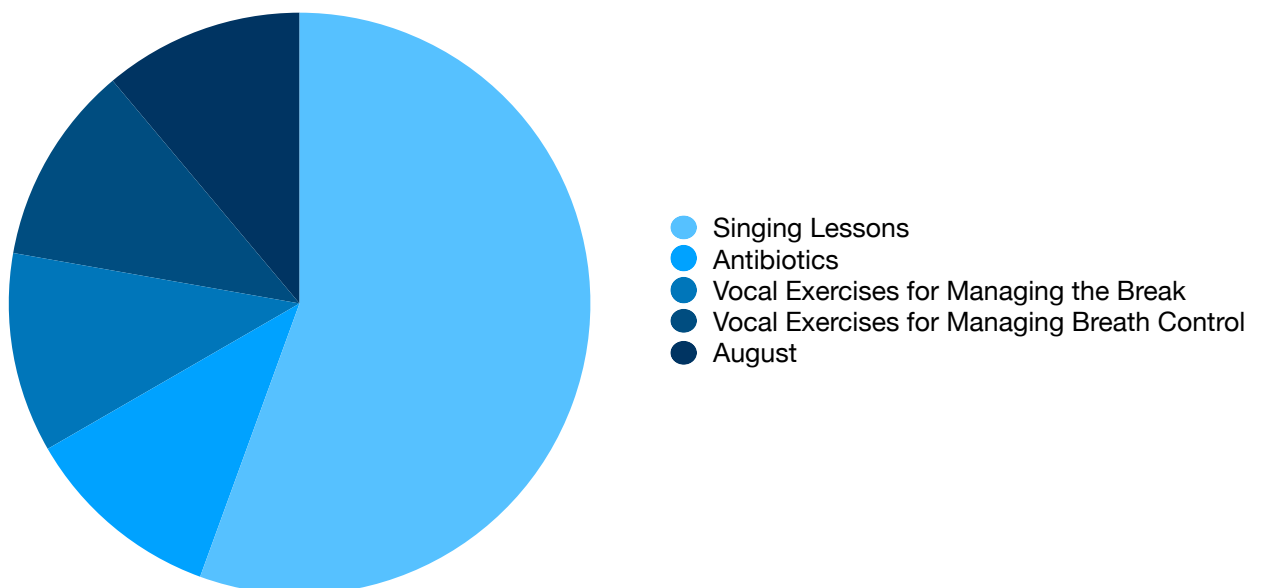
Question 25 - Have you ever sought professional advice for your vocal concerns?

They were then asked if they had ever sought professional advice for these vocal concerns, and if so, what? The majority of 76% of participants did not seek any professional advice.



Question 26 - If yes, what kind of treatment did you receive?

	Singing Lessons	Antibiotics	Vocal Exercises for Managing the Break	Vocal Exercises for managing Breath Control	Yoga Ball Exercises
Number of Participants	5	1	1	1	1

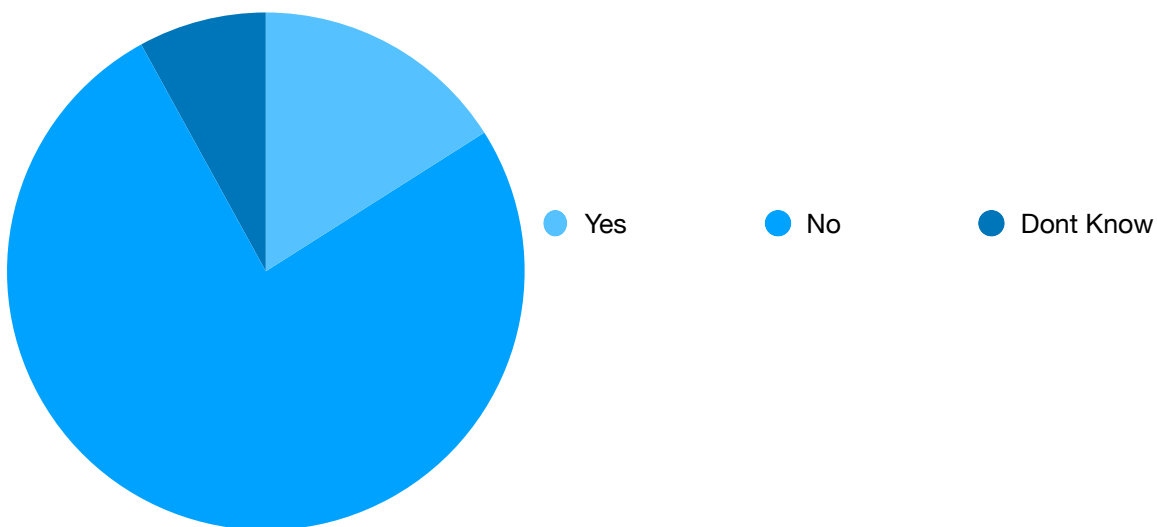


Of those seeking advice, most sought individual singing lessons to address their concerns (56%).

Question 27 - Do you feel that there is enough information and support available to help ageing singers maintain vocal health?

Respondents were then asked if they felt that there was enough information and support available to help ageing singers maintain vocal health. 76% stated that there wasn't enough information available, 16% were happy with the information available to them, and 8% were undecided.

	Yes	No	Dont Know
Number of Participants	4	19	4



Questions 28

A multiple choice was offered to determine what type of resources the respondents felt were most helpful in maintaining vocal health during their advancing years. Respondents were asked to tick all that applied. It included:

- Online videos
- Written guides or books
- Podcasts
- Vocal technique workshops
- Regular vocal coaching sessions
- Group support sessions with fellow singers
- Other

	Online videos/ tutorials	Written guides/ books	Podcasts	Vocal Technique Workshops	Regular Coaching Sessions	Group Support Sessions	Other
Number of Participants	11	5	12	17	15	8	1 Individual Lessons

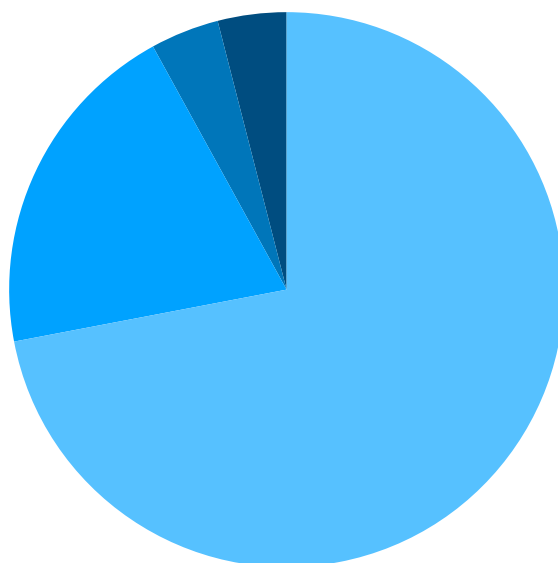
Vocal technique workshops were most popular (25%), regular coaching sessions (22%), podcasts (17%), online tutorials (16%), group support sessions (12%), written guides/books 7% and individual lessons (1%).

Section 5 - Podcast Development

Question 29

Participants were asked if they would be interested in listening to a podcast series focussing on the vocal concerns of amateur female ageing symphonic choral singers. 72% replied yes, 20% no, 4% maybe and 4% did not answer.

● Yes ● No ● Maybe ● Not Answered



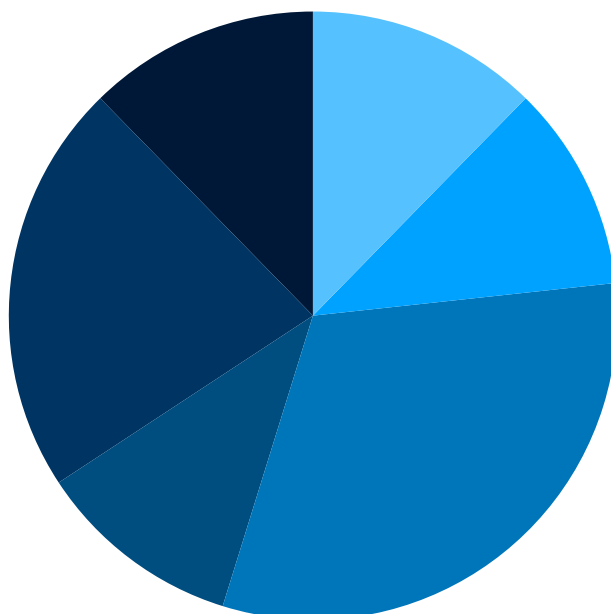
Question 30

They were then asked what aspects/topics of vocal ageing would be of interest and were given the following multiple-choice questions to select all that applied.

- Information on perimenopause/menopause
- Managing vocal fatigue
- Vocal exercises to maintain range and breath control
- Performance anxiety and coping strategies
- Advice from vocal health professionals
- Personal stories from ageing singers
- Other

32% noted interest in vocal exercises to maintain range and breath control, 22% advice from health professionals, 12% personal stories, 12% on perimenopause/menopause, and 11% respectively on managing vocal fatigue and performance anxiety strategies.

These figures were pretty reflective through the age groups. However, there was a slightly increased appetite for advice from vocal health professionals in the older age groups.



In ascertaining the relevance of the podcast as a resource for ageing singers, it is interesting to note the responses from each individual age group to ensure there is an appetite for this type of resource in the older age brackets.

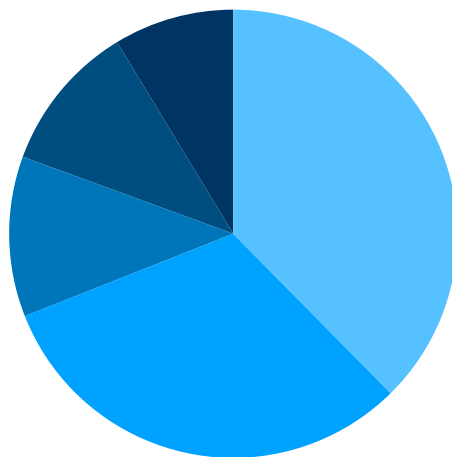
Participants were asked what type of resources they would find most helpful in maintaining vocal health as they age. This table indicates the responses by age range.

Podcasts were noted of equal primary interest to vocal techniques workshops and coaching sessions in the age 50-55 year group. There were similar results in the 55-60 age group. They were still of interest in the aged 61-65 bracket, with equal priority given to podcasts and coaching sessions. In the aged 66-70 year groups, podcasts were second in priority to vocal technique workshops; however, in the 71-75 year group and 76 years and above category, podcasts scored a zero response rate.

While podcasts received interest from individuals under 65 years old, there was little demand for written resources in that age group. However, interest in podcasts diminished significantly, dropping to zero responses for those aged 71 and older, who expressed a preference for written guides instead. Perhaps, therefore, there could be a written guide to accompany the podcast to reach the audience that prefers this format, ensuring inclusivity and maximum reach.

Question 31

When asked how often they would listen to a podcast, 6 participants answered once a week, 4 every 2 weeks, 8 only as needed, and 7 would not listen regularly.



Question 32

Fourteen respondents preferred bite-sized podcasts of 10 minutes or less, 10 participants 15-30 minutes duration, 1 participant for 45 minutes and none for 60 minutes or more.

Question 33

Additional suggestions for content included case studies on ageing voices, which include problem-solving elements, and information on local professionals and practitioners who can aid in vocal health and maintenance.

Critical Analysis of Data from the Questionnaires

Demographics and Vocal Experience

The dataset reflects a diverse age distribution of amateur female symphonic choral singers, with the largest representation (56%) consisting of individuals aged 66-75 years.

Of the respondents, the majority representation is alto voices (64%).

As a current member of the alto section, I am aware that this voice part comprises the largest number of members within the symphonic chorus, and a greater number of questionnaires were given to this voice part for convenience. I also have a greater rapport with the altos which may explain the higher response rate.

Additionally, it is possible that certain soprano and mezzo-soprano voices may have experienced decreased vocal range due to age-related change, resulting in a movement to the alto section, thus increasing the size of the alto section within the chorus. There may also be a preference for recruiting purer, younger soprano voices to balance the ensemble, resulting in fewer females under the age of 50 within this section.

The majority of respondents (32%) have been singing in a symphonic chorus for over 40 years, demonstrating high levels of dedication. While 60% had formal training, only 40% currently work with a vocal coach. This discrepancy suggests that while many singers have foundational knowledge, they may not see the necessity for continued coaching or may face financial or logistical barriers.

Vocal Health, Perceptions of Change and Performance, Vocal Range, Breath Control and Vocal Fatigue.

The self-assessment of vocal health revealed that 64% rated their voice as good, with 8% as excellent and 28% as fair. Although a significant number (54%) reported noticing changes over the past five years, these changes were predominantly described as a slight reduction in range rather than severe deterioration. 42% indicated no change, and 4% experienced an increase in range, with no respondents reporting a moderate or significant reduction in range.

The relatively low number of participants reporting a severe decline may indicate that many of these singers are proactively managing their vocal health. However, the majority noting even a slight range reduction suggests a progressive, gradual impact of ageing on the voice.

The most common concerns were:

Decreased vocal range (41%)

Breath control issues (18%)

Persistent coughs (14%) (possibly linked to COVID-19)

Passaggio difficulties (9%)

Despite these changes, 60% of participants stated that their performance in the choir remained unaffected. This suggests that either the adjustments they have made (such as shifting vocal placement or adapting technique) have been effective or that the expectations within the choir

allow for some vocal variation. However, of the 40% who did feel impacted, range limitations (approx 33%) and breath control (approx 16%) were cited as primary concerns, with respondents highlighting that reduced vocal range may affect their ability to sing all of the required repertoire. This suggests that even minor decreases in range can have a substantial impact on a singer's perception of their performance quality and confidence.

Further analysis of vocal range showed a varied response among respondents. Responses by age group indicate that changes in vocal range are not uniformly distributed. The 50-55 age group reported the highest percentage of singers experiencing range reduction despite being at the younger end of the cohort. This is noteworthy, as this age range coincides with perimenopause and menopause, which are known to impact the voice due to hormonal fluctuations affecting vocal fold thickness, hydration, and flexibility (Davids et al, 2020). None of the singers in this age group had formal vocal training, and only one worked with a vocal coach, further reinforcing the role of structured vocal guidance in mitigating range loss.

Conversely, the 66-70 age group showed a greater proportion of singers who reported no change in vocal range, suggesting that vocal maintenance strategies, such as ongoing training and coaching, may help preserve range. Among those in this group, five had received formal training, and four currently worked with a vocal coach, highlighting a possible protective effect of technical training.

Additionally, the data suggests that those without formal vocal training or regular coaching were more likely to experience range loss, highlighting the role of structured vocal care in mitigating age-related decline.

The questionnaire findings, therefore, provide strong evidence that decreased vocal range is a significant concern among ageing female symphonic choral singers. This aligns with existing research, which highlights age-related vocal fold atrophy, loss of elasticity, and reduced neuromuscular control as primary factors contributing to range reduction (Sundberg, 2019).

A decline in vocal strength and stamina was also evident in the responses. Vocal fatigue was a commonly reported issue, with 48% of respondents stating they sometimes experience fatigue during or after rehearsals. A further 40% indicated that changes in their voice had affected their performance, citing issues such as difficulty sustaining phrases or delivering dynamics. These findings support existing research that suggests vocal endurance decreases with age due to muscle atrophy, diminished breath efficiency, and increased vocal fold stiffness.

However, only 3% of respondents reported frequent vocal fatigue. Given the high demands of symphonic choral singing, this suggests that singers may have developed resilience or effective vocal strategies.

Psychological and Emotional Impact

Contrary to the expectations outlined in the Literature Review, the data indicates that confidence in singing ability remained stable or even increased for the majority of participants. Specifically, 32% reported an increase in confidence, while another 32% noted no change. Conversely, 32% experienced a slight decrease, and only 4% reported a moderate decrease.

These findings challenge the assumption that ageing adversely affects self-perception among choral singers. The sense of community fostered within the choir appears to play a mitigating role, as evidenced by the strong sense of belonging reported, particularly among individuals in older age groups.

However, anxiety emerged as a relevant factor for some participants, with 52% indicating occasional concerns regarding their vocal performance. Given the established correlation between anxiety and vocal strain, this presents an opportunity to explore psychological strategies, which may be addressed in the accompanying podcast, to provide support for these individuals. However, only a very small percentage reported anxiety as a frequent issue. This was surprising, as Literature Review findings suggest that anxiety related to vocal change may be greater in ageing female singers due to loss of past vocal ability.

Membership and Support

Only 8% of respondents considered leaving the choir due to concerns about their vocal performance. This figure is considerably lower than expected, suggesting that the majority of participants are well-supported in maintaining vocal health. However, this statistic may not fully reflect the extent of the issue, as former members who were either asked to leave or chose to resign voluntarily were excluded from the study sample. This omission represents a methodological limitation of the research. Further study aimed at these members would provide a greater understanding of the impact of age-related vocal change, as those who are still members are often marginally affected by vocal concerns. This corroborates the findings of the Literature Review that each individual is affected by age-related vocal change and Perimenopausal/ Menopausal symptoms to a greater or lesser degree. (Schneider et al, 2004).

Support from conductors and management was perceived as relatively strong, with 36% of respondents indicating they felt well supported and 24% reporting a moderate level of support. This indicates that a good support system is in place within the organisation to support these individuals. As a member of this symphonic chorus, I am aware that they offer 2 singing lessons per term to offer guidance with any vocal concerns, as well as regular auditions and assessments for all voice parts. A vocal coach is employed to give ongoing advice at rehearsals, correcting techniques throughout the duration, and a 10-minute warm-up is directed before each rehearsal and performance. Vocal care and exercise sheets to support the voice are also distributed for use at home.

Whats App support groups are also available for each voice section of the chorus, where members can seek peer support or direct questions to management via appointed sectional reps.

Conversely, 36% of respondents expressed neutrality regarding the support they received. These findings suggest that while some members experience sufficient guidance, others may either not require assistance or may seek alternate support through external channels.

Vocal Care and Interventions

In the study, participants reported employing a range of strategies to maintain vocal health, with the most frequently noted methods being hydration (27%), vocal warm-ups (24%), and breathing exercises (18%). It is noteworthy that 76% of the respondents had not sought professional assistance for vocal concerns, indicating a preference for self-management approaches. This trend may be attributed to several factors, including financial limitations—particularly among retired individuals—time constraints arising from professional and personal commitments and a broader perception of choral singing as a recreational activity rather than one that warrants professional intervention.

Despite the predominance of self-management, 76% of respondents expressed that there is a lack of information and support regarding vocal health for older singers, indicating a significant need for enhanced educational resources.

The findings also reveal a considerable interest in podcast content, especially regarding vocal exercises (32%), expert advice (22%), and personal narratives (12%). However, notable age-related differences were observed, with respondents aged over 70 showing minimal interest in podcasts and a preference for written materials. This highlights the potential value of a supplementary written resource to accommodate the diverse needs of different demographic groups.

Additionally, preferences for podcast duration varied among participants, with 56% indicating a preference for episodes lasting 10 minutes or less. This preference illustrates a demand for concise, practical content over more extended, in-depth discussions.

Critical Reflections, Limitations and Implications of the Questionnaires

The findings align with much of the existing literature concerning age-related vocal changes while also providing insights into self-perceived vocal health and psychological resilience among female amateur symphonic choral singers. Notably, the study identifies formal training as a critical factor in preserving vocal quality; however, it also indicates that ongoing engagement with vocal coaching remains limited. Although some physiological issues were reported by participants, these concerns

do not appear to significantly hinder their participation within the chorus, emphasising the vital role of the choral community in promoting confidence and facilitating adaptation.

A lack of current targeted resources, coupled with the expressed preference for practical interventions, highlights the potential efficacy of a podcast format, particularly when accompanied by supplementary written materials.

While the questionnaire findings provide valuable insight into the experiences of ageing female symphonic choral singers, there are several limitations that must be considered when drawing broader conclusions.

Sample Size and Representation

The questionnaire was only distributed to 30 singers from one symphonic chorus. While 25 responses were returned, resulting in a relatively high response rate, the small sample size limits the generalizability of the findings. A larger, more diverse sample, including singers from different choirs and geographical locations, would provide more representative data.

Selection Bias

All participants were current members of the choir, meaning that singers who may have left the choir due to vocal decline or other related issues were not included, introducing an element of bias.

Self-reported Data and Subjectivity

The questionnaire relied on self-reported assessments, which introduces an element of subjectivity. Participants were asked to evaluate their own vocal health, range, fatigue levels, and performance ability, which may be influenced by personal perception, confidence levels, and psychological factors. The lack of objective measures limits the validity of conclusions regarding vocal decline.

Other Factors

It is prudent to note that vocal health and ageing are influenced by multiple factors, including hormonal changes, general health conditions, vocal training, lifestyle habits, and choir rehearsal intensity. While the questionnaire explored some of these aspects (e.g., medication use, coaching, and training), it did not control for other variables such as diet, hydration, sleep patterns, or previous vocal injuries, all of which can impact vocal range and stamina. Without controlling for these factors, it is difficult to isolate age as the primary cause of the vocal changes reported.

Qualitative Findings

Focus Groups

Two separate focus groups comprising four amateur female symphonic choral singers over 50 years and three amateur female symphonic choral singers over 50 years were facilitated by the researcher, recorded and transcribed.

I had initially intended to include one larger focus group but was unable to coordinate the dates to include all of the participants. The group was, therefore, split into two groups, with the data from each group considered separately.

A focus group of 4 female amateur symphonic choral singers representing different age categories were selected for participation. The group comprised of the following:-

- 1 - aged 59 years
- 1 - aged 64 years
- 1 - aged 71 years
- 1- aged 66 years

All participants have been members of symphonic choruses for between 30 and 40 years plus. The transcript of this can be seen in Appendix 10.

A second focus group was conducted with a further 3 female members of a symphonic chorus over the age of 50 years old, representing the following age-groups - Age 50-55 years, 71- 75 years, and 66-70 years (Appendix 11).

A small questionnaire was then given to the chorus master of the symphonic choir in question (Appendix 5)- and an informal semi-structured interview was undertaken with the current Vocal coach of the chorus (Appendix 6).

Focus Group 1 Response - (Copy of Transcript Appendix 10)

Vocal Changes

A mixed response was given when asked to describe if the participants had encountered any changes to their voices due to ageing.

Decreased vocal range, including changes in both upper and lower registers, vocal fatigue, problems with breath control and sustaining long phrases, dryness in the throat, harsher tone in the higher register, and a lowering of the voice were mentioned, however, others hadn't noticed any significant changes, with one participant in their 70s noting a marked improvement in her voice after forced rest due to COVID-19 restrictions from singing. She has since moved from Alto 2 to Alto 1.

Some found it hard to distinguish whether changes were due to ageing, menopause, or a long break from singing during COVID-19. There was a general awareness that hormonal shifts, especially during perimenopause and menopause, may contribute to vocal change.

Vocal Health and Maintenance

Participants emphasised the importance of vocal exercises and physical health in preserving vocal function.

Participants underscored the importance of training and early vocal education, with some citing examples of singers maintaining their voices into their late 80s, due to early correct training and vocal coaching.

Techniques such as semi-occluded vocal tract exercises (SOVTs) were acknowledged for their benefits, though participants expressed a desire for clearer guidance on how to use them effectively.

Psychological and Emotional Dimensions

The psychological impact of vocal ageing and the community aspect of belonging to a choir were also discussed. Feelings of frustration, grief, and loss were expressed as emotions that participants would expect to encounter if they were no longer able to sing in the chorus. Conversely, it was suggested that singing offered significant emotional benefits, fostering a sense of purpose and connection and helping them process trauma.

Confidence was noted to increase with age, even as some participants observed tonal changes or experienced concerns about vocal longevity. This dichotomy highlights the complex interplay between ageing, skill retention, and self-perception in the context of choral singing.

Physical Health and Its Impact on Vocal Performance

Health challenges, such as adult-onset asthma and reduced breath control due to radiotherapy, were identified as significant barriers to vocal performance. Participants who turned to alternative therapies, such as Pilates, reported improvements in core strength and breathing, underscoring the interdependence of physical fitness and vocal health. “Exercise and keep your body as healthy as you can”

Desired Content for a Podcast

Participants expressed a strong interest in practical tips for breath control, vocal exercises, and strategies for maintaining vocal health over time when discussing possible podcast content. Topics such as alternative therapies and personal experiences were also discussed as desirable podcast content. These themes emphasise the importance of a platform that merges expert insights with relatable stories, promoting both education and a sense of community among listeners.

Focus Group 2 (Transcript - Appendix 11)

The following themes and key points were identified -

Ageing and the voice

Participants noted age-related changes in both upper and lower registers, vocal fatigue, and dryness in the throat. Some found it hard to distinguish whether changes were due to ageing, menopause, or a long break from singing during COVID-19. There was a general awareness that hormonal shifts, especially during perimenopause and menopause, may contribute to vocal change. These responses were similar to those of Focus Group 1.

Vocal Training and Technique

All participants had received vocal training, although only one participant had taken lessons early in life. The other two participants had received vocal training specifically for entrance auditions to the chorus. All continued with sporadic lessons, mainly to address specific vocal concerns or for re-audition preparation.

Participants cited vocal exercises, breath control, and core engagement as crucial for maintaining vocal strength.

Breathing and Stamina

Reduced lung capacity and breath control were discussed as concerns, though not universally reported as significant issues. Anxiety and unfamiliar repertoire were identified as key factors that impact breath control during rehearsals and performances. Reduced lung capacity and breath

control emerged as concerns, albeit not uniformly regarded as major issues among participants. To address these challenges, some participants engaged in vocal training and relaxation techniques to enhance their breath support.

Impact of COVID on Singing

Participants had mixed experiences—some lost vocal strength due to inactivity, while others found their voices improved after a period of rest.

Online choirs and virtual rehearsals were highlighted as beneficial for staying engaged and exercising the voice, although the experience lacked the joy of live singing.

The Role of Community in Choral Singing

Participants suggested that the chorus serves as a strong social and emotional support system.

Many expressed that leaving the choir due to vocal decline would be a significant loss.

Some hoped for honest feedback from the chorus leadership when their voice was no longer at the required standard.

Desired Podcast Content

Participants discussed the following subjects -

- Personal Narratives - Stories from other ageing singers about their challenges and adaptations.
- Expert Insights - Advice from vocal coaches, health professionals, and choral directors.
- Vocal Exercises: Practical exercises tailored toward ageing female voices.
- Workshops and Guest Lectures
- Physical and Alternative Therapies: The role of yoga, Pilates, meditation, and postural alignment in vocal health.

Physical Health and Singing

Core strength, fitness, and posture were identified as essential for maintaining vocal health.

Yoga, Pilates, and gym workouts were highlighted as beneficial for breath control and stamina.

Some participants emphasised the importance of overall physical wellness in sustaining a long singing career.

Vocal Coach Transcript Highlights (Appendix 12)

Key Themes to emerge from the semi-structured interview with the symphonic vocal coach include:-

Physiological changes to the voice - Loss of vocal elasticity, breath control difficulties, reduced range, and altered resonance. Although these should not be viewed as problematic. “They can almost always be improved with exercises, practice, proper vocal technique and interventional practice”.

From her professional perspective, the biggest issue that she encounters with ageing female choral singers is managing the *pessaggio*, however this was not mentioned by the choral participants as an area of concern.

Psychological impact - Confidence loss, frustration, and anxiety over vocal changes.

Importance of Regular Vocal Exercises - Training as a form of vocal maintenance: ‘If you don’t use it, you lose it’. Regular practice and vocal exercises can improve breath control, resonance, flexibility, and range.

Vocal Technique and Postural Support - Postural alignment and body/breath connection are key and critical for vocal longevity. Care should be taken with breath coordination, emphasising low and expansive breath support rather than high clavicular breathing. This leads to clean vocal onsets and reduces compensatory gripping—a common issue among ageing singers.

Exercises - Lip trills, voiced consonants, and onset training to maintain clarity in tone.

Social and Psychological Benefits of Choral Singing - She reinforced the importance of singing as a community activity in maintaining mental health, social inclusion, and well-being. A loss of choral singing during COVID-19 reinforced the importance of group singing for emotional well-being.

Emotional connection to voice - Trauma, stress, and emotional states influence vocal function.

Many of these responses are reflective of data obtained from the Literature Review, however, the vocal coach was adamant that ageing should not be regarded as problematic, and the majority of vocal changes can be improved with vocal exercises and regular targeted practice.

Problems with the *pessaggio* and clean onsets were mentioned as the most common age-related challenges.

Implications for the Podcast/Topics to Cover

- How the voice ages: Understanding physiological and psychological changes.

- Vocal exercises: Demonstrations and guides to improve flexibility, range, breath control and managing the passaggio.
- Postural Exercises.
- Confidence and mindset: Addressing anxiety and rebuilding confidence in vocal ability.
- Community and social benefits: Exploring how choral singing supports mental well-being.

Chorus Master Highlights - (Blank Copy Appendix 12, Returned Copy Appendix 13)

The chorus master found the questionnaire somewhat negative, suggesting a more neutral or even positive framing. This aligns with a strengths-based approach, focusing on adaptability rather than loss. His comments on “real vocal concerns” imply that while changes happen, they are not necessarily problems—rather, they are part of the natural evolution of a singer’s voice. This aligned with the vocal coach’s viewpoint on the ageing voice.

Observed Vocal Changes

Loss of extreme high range, occasional vibrato, and slight loss of flexibility; however, he noted that these changes do not significantly impact balance or volume within the choir.

The need for reassurance - commenting that some singers perceive decline to be more drastic than it actually is.

Choral Management of Ageing Voices

No major changes in rehearsal techniques, though expectations are adjusted slightly.

Emotional support is crucial: Many singers need reassurance about their abilities.

Lessons and vocal maintenance are strongly encouraged.

The Reality of Declining Ability

Some singers overestimate their abilities, which can lead to difficult conversations about suitability for high-level choral work.

He noted the importance of differentiating between casual singing (which should always be encouraged) and professional/amateur high-demand choral settings.

Impact on Choral Sound

Ageing sopranos and tenors may impact the overall timbre.

Lower voices often contribute warmth and richness to the sound.

Social and Emotional Well-being

Choirs offer vital community and social benefits, though not exclusively for ageing singers.

Resources & Podcast Implications

He did not see a strong need for new resources on vocal ageing but acknowledged that the discussion could be interesting.

The podcast should be balanced, addressing both positives and negatives.

Suggested topics

Maintaining vocal flexibility and avoiding over-singing.

Practical strategies, vocal maintenance, and confidence-building rather than just issues or challenges.

The overall tone and content of the answers suggest that he does not view the ageing voice as problematic, which is somewhat surprising given the answers of the focus groups and analysis of the Literature Review on the ageing voice.

Critical Conclusion - Triangulation of the Data

Physiological Changes and Vocal Implications

A primary objective of this study was to evaluate the physiological changes in the ageing female voice and their impact on the performance of female amateur symphonic choral singers. The literature review provided substantial evidence that age-related changes—including muscle atrophy, reduced elasticity of the vocal folds, decreased breath control, and loss of vocal range—can significantly affect female singers post-menopause (Sataloff, 2017; Titze, 2017; Abitbol, 2006).

These findings were supported by the questionnaire responses, where 54% of respondents reported a slight reduction in vocal range over the past five years, and 30% cited breath control as their primary concern. Additional vocal challenges were also noted. Focus group discussions reinforced these findings, with participants highlighting diminished vocal range, breath control issues, vocal fatigue, and difficulty accessing the head voice as key concerns. However, individual experiences varied, with some singers reporting improvements in vocal quality due to strategic interventions such as physical exercise and structured vocal training.

Despite these reports, the focus group had limited awareness of advanced vocal techniques, such as semi-occluded vocal tract exercises, which the literature review identified as effective in mitigating vocal ageing. This suggests a knowledge gap that an evidence-based podcast could address.

Expert perspectives aligned with the idea that while vocal changes occur with age, they should not be viewed as an inherent problem. They acknowledged challenges such as decreased vocal range, difficulties managing the passaggio, and increased vibrato but emphasised that most of these changes could be improved through targeted vocal exercises. They highlighted the importance of consistent vocal practice and maintaining flexibility through structured training, echoing the principle of "use it or lose it."

The chorusmaster reinforced this viewpoint, stating, "Encouraging singers to maintain their singing with lessons is vital; it's a muscle; it needs to be used." He further noted that "exploring ways to maintain flexibility without oversinging" is particularly useful and emphasised that "a maintained voice remains viable well into later years." These insights suggest that while ageing inevitably impacts the voice, proactive vocal care can significantly mitigate these effects.

Vocal Changes and Management

Survey data indicated that 54% of singers experienced vocal changes, with range reduction (41%) and breath control issues (18%) being the most common concerns. The chorus master corroborated that higher voices, such as sopranos, may lose some of their extreme upper range and occasionally develop an uncontrolled vibrato. However, he emphasised that these changes do not render a voice unusable, and with proper care, older singers can maintain their choral viability. Despite the singers' age-related vocal concerns, he did not perceive widespread difficulties in choral balance. He acknowledged a slight shift in tonal quality among higher voices but noted that lower voices often contribute warmth to the ensemble's sound. This contrast suggests that while individuals may feel their voices are changing significantly, these changes may be less pronounced at the ensemble level. He also observed that many ageing singers maintain their ability well and remain active in the chorus.

Breath Control and Stamina

The survey revealed that 30% of respondents cited breath control as a major concern. While the chorus master did not identify this as a prevalent issue in his direct experience with the chorus, focus group participants highlighted how breath control can be affected by factors such as anxiety, unfamiliar repertoire, and overall physical health. Expert insights, particularly from the vocal coach, reinforced the importance of postural alignment and core strength in maintaining effective breath support.

Additionally, 48% of singers reported experiencing vocal fatigue at times, aligning with the chorus masters' assertion that stamina—rather than range loss—is often the determining factor in a singer's ability to continue in a high-level chorus. While most respondents had not sought professional help, he emphasised that regular vocal training is essential for longevity. Expert recommendations further supported the idea that ongoing vocal exercises can help mitigate the effects of ageing and sustain choral participation.

Psychological and Emotional Dimensions

Beyond physiological factors, the psychological impact of vocal ageing emerged as a critical theme. The literature review highlighted that self-identity, confidence, and community belonging are intrinsically linked to vocal ability (Cohen & Weber, 2020; Clift et al., 2010).

The chorus master acknowledged that some older singers may feel insecure about their vocal abilities. This reinforces insights that were substantiated by questionnaire responses, where 52% of respondents acknowledged occasional anxiety about their vocal performance. Paradoxically, 32% reported improved confidence over the past five years. This was reiterated in the focus group - "I think your confidence increases as you age". This perhaps suggests that general confidence, not just in one's singing ability, may increase with age.

This contradiction was further explored in the focus groups, where singers imagined feelings of frustration, grief and loss if vocal issues prevented them from singing in the chorus. This highlights the strong sense of community within the choral environment, which may play a pivotal role in mitigating negative emotions.

Choral membership was described as a lifeline, reinforcing previous studies on the psychosocial benefits of singing in choirs (Welch, 2017), with 64% of questionnaire respondents citing a strong sense of belonging. This indicates that although vocal ageing may pose difficulties, a supportive choral environment can enhance emotional resilience and psychological well-being. This was reiterated by the choral master: "I would imagine that the sense of community, striving together

towards a common goal and the camaraderie of the big social group who perform some high-level music is highly important; though not just to 'ageing singers' but to all the members of the chorus”.

Barriers to Vocal Health Maintenance

Despite acknowledging the benefits of vocal training, the study revealed a gap in access to structured vocal health education. The literature review indicated that while interventions such as semi-occluded vocal tract exercises (SOVTEs), postural realignment techniques, and breath support exercises are effective (Titze, 2006; Guzman et al., 2013), many amateur singers lack awareness or training in these areas.

This was confirmed in the questionnaire responses, where 76% of participants felt that there was insufficient information available on vocal health for ageing singers. Additionally, only 40% of participants currently work with a vocal coach, highlighting a lack of continuous professional guidance. Focus group discussions also emphasised the need for practical, evidence-based vocal maintenance strategies, with participants expressing a desire for clearer guidance on vocal exercises, breath management, and alternative therapies.

Need for Vocal Ageing Resources

A key divergence emerged between the chorus masters' perspective and the survey responses regarding the necessity of targeted vocal ageing resources. While 76% of singers felt there was insufficient support available, he did not see a growing need for specialised training on vocal ageing. His perspective suggests that for conductors, the primary concern is maintaining choral blend and balance, whereas, for individual singers, personal vocal maintenance and adaptation are more pressing concerns.

This highlights a critical gap between singers' self-perceived needs and the perspectives of choral leadership. Singers may benefit from resources that address their individual concerns, even if choral directors do not perceive these issues as significantly impacting ensemble performance. This discrepancy reinforces the need for accessible education, such as a podcast, to provide singers with evidence-based strategies tailored to their vocal needs.

The Viability of a Podcast as an Educational Resource

Given the identified gaps in vocal health education, the research explored the feasibility of a podcast as a medium for addressing these concerns. The literature review suggested that podcasts are effective tools for knowledge dissemination, particularly in health education (Mayer et

al., 2018; Hobson et al., 2021). They offer an accessible, flexible, and cost-effective way to engage listeners with expert insights, practical exercises, and personal narratives.

The questionnaire responses supported this notion, with 72% of participants expressing interest in a podcast focused on vocal ageing. However, a demographic breakdown of responses indicated that interest was significantly higher among singers under 65, whereas older participants (71+) preferred written resources. This highlights the need for multimodal content delivery, potentially supplementing podcast episodes with accompanying written guides to ensure inclusivity. Preferred content included vocal exercises to maintain range and breath control and expert advice. The focus group discussions reinforced these preferences, with participants advocating a blend of structured expert guidance, real-life stories, and practical demonstrations. Expert interviews further suggested that flexibility and proper vocal technique should be central themes, along with managing performance anxiety and maintaining vocal longevity.

The choral master, however, advised caution against an overly negative portrayal of vocal ageing, which reinforces the need for a balanced podcast approach—highlighting both the challenges and the potential for longevity in choral singing.

Challenges and Considerations for Podcast Implementation

While the proposed podcast format was generally well-received, challenges and limitations were also identified. Research suggests that while podcasts are useful for raising awareness, their effectiveness in skill acquisition may be limited without interactive components (McGarr et al., 2019; Phua et al., 2020). This aligns with the questionnaire findings, where 25% of participants expressed a preference for in-person vocal technique workshops over podcasts.

Additionally, the potential for misinformation in freely available digital content was raised as a concern. Ensuring the credibility and accuracy of information within the podcast will be crucial, emphasising the need for collaboration with vocal health professionals. Furthermore, while podcasts foster a sense of community, they may also reinforce isolation if not paired with interactive opportunities such as Q&A sessions, live workshops, or discussion forums.

Final Reflections and Future Research Directions

This study illustrates the interplay of physiological, psychological, and social factors associated with vocal ageing, emphasising the need for a comprehensive, interdisciplinary approach to education and intervention in this domain. By synthesising the data from the Literature Review, questionnaires, and focus groups, it becomes clear that while age-related vocal challenges are real, they are neither universally experienced nor an inevitable consequence of ageing.

The findings advocate for the development of a multifaceted, evidence-based podcast designed to equip ageing amateur female symphonic choral singers with essential tools and knowledge to maintain their vocal health, confidence and position within the chorus. The podcast will cover key topics discussed in the Literature Review, featuring contributions from vocal health experts' personal narratives and interactive elements to enhance engagement and foster a sense of community. It will balance scientific rigour with practical application.

An introduction to the proposed podcast syllabus and considerations to be taken into account when constructing the podcast can be seen in Appendix 7.

Future research should explore the experiences of former choir members who have withdrawn due to vocal concerns, offering deeper insight into the long-term implications of vocal ageing.

Additionally, further studies could assess the effectiveness of digital resources—such as podcasts—in promoting vocal health compared to traditional in-person vocal coaching and workshops.

These findings could then be presented in future podcast episodes.

Ultimately, this research underscores the need for accessible, targeted resources that empower ageing female symphonic choral singers to embrace their evolving vocal capabilities with confidence, knowledge, and community support. By offering a practical resource that bridges the gap between academic research and practical application, singers will be able to continue singing for many years.

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