



# Singing for People with Parkinson's







# Singing for People with Parkinson's

Designing and delivering singing sessions for people with  
Parkinson's and other degenerative neurological disorders

Nicola Wydenbach and Trish Vella-Burrows  
in association with Grenville Hancox



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# Contents

Acknowledgements	vi
Foreword by Stephen Clift	vii
Introduction	ix
Introduction to Sing to Beat Parkinson's®	xi
1. Parkinson's: statistics, definition, symptoms, current treatments	1
2. How does Parkinson's affect the Voice?	9
3. Singing and people with Parkinson's	20
4. Singing exercises to help the voices of people with Parkinson's	24
5. How to structure a session	27
6. Setting up a singing group for people with Parkinson's	54
Case Studies	57
Conclusion	62
Appendices	
1. Planning Form	63
2. Feedback Form	64
3. Singing and People with Parkinson's: A Goals Framework	66
4. Examples of Standard Repertoire	71
5. Abbreviations	73
6. Glossary of Medical Terms	74
7. Useful websites and resources of music suppliers	78
8. Associations and Organisations	79
9. Bibliography	80
About the Authors	85



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# Foreword

Throughout the world, populations of all countries are aging and the prevalence of chronic, progressive health problems is growing. Medicine can offer some help for such conditions, but such assistance has limits. Old age will catch up with all of us eventually; but the challenge is how to live well as we grow older, and manage as well as we can, the health challenges that will inevitably arise. It is in addressing this challenge that the creative arts and cultural activities have something very powerful to offer.

The last twenty years has seen a veritable explosion of interests world-wide in the power of creative arts and culture, in promoting health and wellbeing. All forms of creative and cultural activity, from engaging in music and dance, to attending concerts, galleries and museums, to devoting time and energy to crafts, gardening and cooking, can bring important benefits. In all these activities, people are actively engaged, physically, mentally, socially and spiritually in projects they value. This is at the heart of the health and wellbeing potential of the creative arts and cultural engagement – the free pursuit of activities that are valued and enjoyable, but which engage and exercise the body and the mind, and which meet our fundamental human needs for social contact and a sense of purpose and achievement in life.

As a university academic and specialist in public health, I have had the privilege of contributing something towards the evidence base for the power of the arts, and especially singing for health and wellbeing. Singing is perhaps the most accessible, inexpensive and effective form of musical engagement for people with little or no formal training and a growing body of evidence points to the value of regular group singing in promoting a holistic sense of wellbeing for people of all ages and backgrounds. Research shows also that for people with difficulties associated with breathing and the voice, regular singing can have real therapeutic value.

I am delighted to commend this excellent book by musician and research colleagues I have worked closely with over many years. It offers readers, whether people affected by Parkinson's or other neurological conditions, family members, health and care professionals or musicians who lead music for health activities, a wonderful resource. They share their wealth of practical experience and insights, offer useful guidance in relation to practicalities and demonstrate clearly that the use of singing as a resource for health and wellbeing is securely grounded in a growing body of robust scientific evidence.

## **Stephen Clift**

Professor of Health Education and Director, Sidney De Haan Research Centre for Arts and Health, Canterbury Christ Church University, UK









# Introduction

Singing has always been a basic human function. We sing before we speak and the majority of cultures sing still in some form today. Recently there has been a growing trend towards using singing in health settings. For example, singing is now being used for people with dementia, chronic respiratory conditions, mental health problems, strokes, during childbirth and for women with postnatal depression. The list goes on. Using singing as a rehabilitation tool for people and Parkinson's and other degenerative neurological conditions is gathering momentum (e.g. Magee, et al., 2017; Davis, 2018) Through research and its application, the benefits of group singing range from voice-strengthening to camaraderie – as well as the sheer joy that is widely-acknowledged that singing in a group can bring.

Therefore, this book is aimed at Singing teachers and leaders running groups for People with Parkinson's and community musicians interested in expanding their practice to work with people with Parkinson's. The material and exercises contained here render the book of value to other professionals, including Musicians looking to change direction; Speech and Language Therapists; Occupational Therapists; People who are directly affected by Parkinson's and their families, friends and/or carers; Parkinson's nurses; and volunteers and members of Parkinson's UK support groups.

This book provides musicians and vocal leaders with a fun, but practical set of exercises to help lead singing groups for people living with the effects of Parkinson's. It also provides information for a basic understanding of the latest research and knowledge about the benefits of singing for people with Parkinson's. This book comes at a time when the benefits





of health promotion, modern day lifestyles and biomedical science have converged to contribute significantly to people living longer in higher-income countries. However, increased longevity brings with it a rise in age-related, chronic ill-health conditions. The personal and financial burden of these conditions – including Parkinson’s – hampers good quality of life (QoL) and weighs heavily on the purses of national economies.

The content of this book is not designed to be strictly or exclusively followed. It has been written by two passionate practitioners in the field, who would like to encourage and inspire new musicians and singing leaders to set up their own singing groups for people with Parkinson’s and to offer support, and evidence-based practice ideas, to established practitioners who are leading existing groups.

The exercises in this book are designed to safely support the maintenance of vocal and broader physical functioning, and to promote mental and social well-being and cognitive functioning. They relate to the Sing to Beat Parkinson’s© Goals Framework (see Appendix 3). This Framework was initially designed by Trish Vella-Burrows and later revised by Trish and Nicola Wydenbach in 2018. Each of the goals can be approached in a flexible and creative way. Practitioners are therefore encouraged to bring their own facilitation ideas and alternative repertoire to meet the specific, and overall, desired outcomes.

Ultimately though, the book and exercises are meant to inspire and inform singing sessions for people with Parkinson’s. Sessions should be fun and uplifting for all involved!





## Introduction to Sing to Beat Parkinson's©



*Logo by kind permission of  
Canterbury Cantata Trust*

Sing to Beat Parkinson's© (StBP) is an international organisation for singing groups that work with people with Parkinson's. A collective of like-minded practitioners who subscribe to the idea that singing improves both the physical and mental health of people with Parkinson's, thus improving quality of life, it is a network of singing groups led by practitioners sharing practice methods, resources and training opportunities all of whom are aware of, and contributing to, research in the field of singing and health.

The first StBP singing group in the UK, Skylarks Canterbury, was founded in February 2010 by Roger Clayton, who was diagnosed with Parkinson's in 2006, and Professor Grenville Hancox MBE, Artistic Director for Canterbury Cantata Trust and then Director of Music, Canterbury Christ Church University.



*Photograph by kind permission of Canterbury Cantata Trust*



Throughout his long career in music and education Grenville Hancox has encouraged participation in music-making through singing. His formative years were characterised by singing in a West Midlands chapel and membership of a youth orchestra – cementing connections with the community through music-making. An initial degree in music and education from UCW Aberystwyth preceded a teaching career characterised by implementing innovative methods, contributions to teacher education through courses and publications – and for thirty years leading and developing the music department of Canterbury Christ Church University. Appointed as the first music professor of the university in 2000, his collaboration with Professor Stephen Clift led to the publication of a seminal work (*The Perceived Benefits of Singing: Findings from preliminary surveys of a university college choral society*) and the founding of the Sidney De Haan Research Centre for Arts and Health. Grenville Hancox left the university in 2012 and established Canterbury Cantata Trust, an umbrella organisation advocating *Caring Through Singing* through its constituent groups. Awarded the MBE for services to music and a Civic Award from Canterbury City Council, he founded Sing to Beat Parkinson's© in 2016 as a further element in his long-term desire to realise *Singing on Prescription*.

Since handing the regular session baton over to other StBP practitioners earlier this year, Grenville continues to lead the group in mass community choir singing events that illustrate the scope of the StBP model. The model uses techniques shown by over 10 years of research to help those with Parkinson's or dementia to maintain or improve their psychological and physical well-being through taking part in regular singing activity.



*Skylarks Canterbury:  
Sing to Beat Parkinson's  
inaugural group –  
launched in February 2010.*

*Photograph by kind permission of Canterbury Cantata Trust*



Through local forums and Snape Music ([snapemaltings.co.uk](http://snapemaltings.co.uk)), StBP practitioners come together to share training on the underpinning science that supports singing activities for people with Parkinson's and to learn about practice methods and musical materials. Practitioners can also keep up to date with, and to contribute to, research and training resources for practice development.



Photograph by Matthew Jolly

*'I firmly believe that singing with Skylarks has strengthened my voice, or at least delayed my voice becoming weaker or incoherent. We sing our hearts out with a well-chosen selection of well-known (and sometimes, not so well-known) songs. The simple act of singing in a group is exhilarating; I leave each session with my spirits lifted.'*

*Singer – Skylarks Canterbury*







# 2

## How does Parkinson's affect the Voice?

As people move through their Parkinson's journey, the mechanisms for creating vocal sound are commonly compromised. This centres largely on poor neuromuscular efficiency, which relies on a vast and complex series of processes.

### The components of vocal sound production

In broad terms, vocal sound production has four components:

1. Respiration – the power source
2. Phonation – the sound-making source, which includes the laryngeal structures
3. Resonators – the amplification sources, which include internal elements, such as the nasal and oral cavities, and external acoustic properties
4. Articulation – the packing together of sound into meaningful utterances

*(Rubin, 2014)*





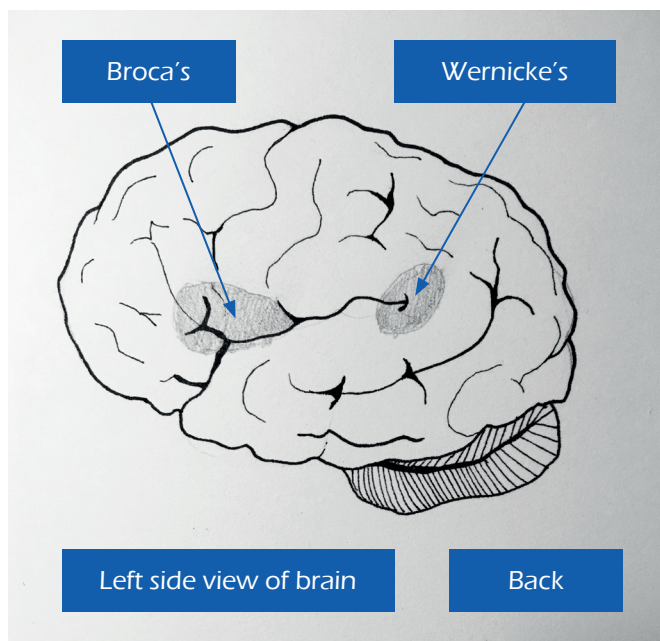


### **Parkinson's Pointer**

Prosody is the psycho-physical subcomponent of phonation involving rhythm, pace, stress and volume, that gives speech linguistic meaning. This process relies on good functionality of each of the sound-making components. Parkinson's commonly compromises effective prosody because of its effect on the neuromuscular systems of sound-making.

## The brain and vocal sound-making

The auditory (hearing) cortex in the brain, where the neural processing begins, triggers into action two key areas, *Wernicke's area* and *Broca's area*. These are both located in the dominant hemisphere of the brain, usually the left (Figure 1). *Wernicke's area* is associated with the comprehension of language and *Broca's area* is associated with speech-production in addition to comprehension (Petrides, 2013). But these areas are by no means exclusive in understanding and speaking language. For example, the motor cortex is activated on hearing, saying, or even reading words associated with kicking a football, and the olfactory cortex (smell receptor) is activated by words associated with strongly scented flowers or cooking.



*Key areas of the brain responsible for understanding and producing language.*

*Artwork courtesy  
Orla Francesca Isaacson.*







Singing, particularly singing polyphonic harmonies and reading notation or song lyrics, stimulates a multitude of neurotransmitters (chemical messengers) and brain regions (Kelber and Zarate, 2014).

### ***Parkinson's Pointer***

A study from the Department of Communication Sciences & Disorders, University of South Carolina, shows that patients with Broca's Aphasia (inability to formulate words and sentences, commonly associated with stroke) can benefit from Speech Entrainment Therapy in which they mimic short, repeated speeches (Fridriksson, et al., 2015).

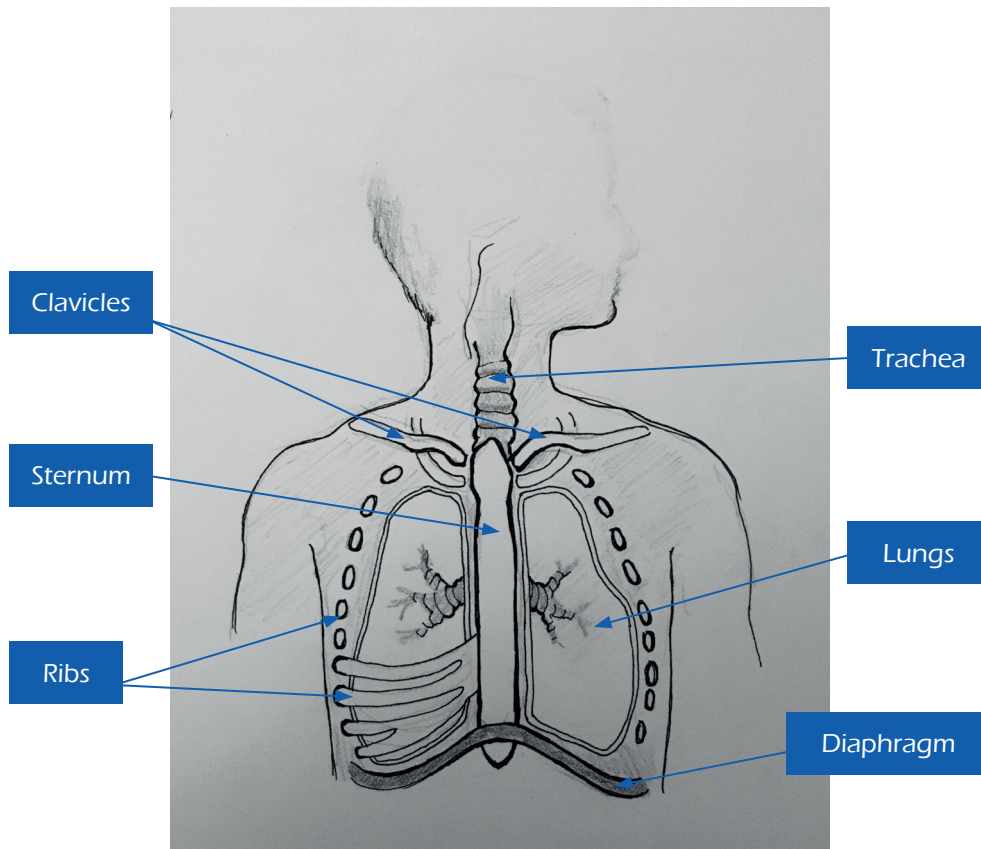
Including repeated intoned or sung everyday sentences regularly into your singing programme has potential to maximise and/or to rehabilitate Broca's area function. This reflects a technique used in Lee Silverman Voice Therapy (LSVT) for people with Parkinson's (see p.18).

## **The anatomy of vocal sound production**

On preparing to speak or sing, neurotransmitters in the brain are responsible for triggering automatic brainstem activity that elicits appropriate inhalation (respiration). This is rapidly followed by positioning of the vocal tract (phonation and resonators) and mouth/face (articulators) needed for producing meaningful sound. The anatomical structures involved in these processes are described below.

On a rudimentary level, the vocal sound apparatus comprises the diaphragm, lungs and the trachea (respiration), the larynx and vocal tract (phonation) – which also includes the pharynx together with the nasal and oral cavities (resonators), and the lips, teeth and all areas of the inner mouth (articulators) (Linklater, 2004).





*Figure 2. Anatomy of vocal production: the chest.*  
Artwork courtesy Orla Francesca Isaacson.

Figure 2. shows the skeletal structure that houses the lungs and the trachea (breathing tube). These are the large sternum, the ribs and the vertebral (spinal) column. Below this are the pectoral girdle, which includes the clavicle (collar bone) and scapula (shoulder blade) and the pelvic girdle, which includes the ilium (hip) and pubic bones. These are attached to the vertebral column and activated during good singing technique. Compromised mobility and flexibility in the muscles and ligaments connected to and between these structures can benefit from gentle exercise over time for more effective and comfortable movement. The functionality of each structure and coordination between them, impacts on the efficiency and quality of vocal sound production (Seikel, et al., 2013).



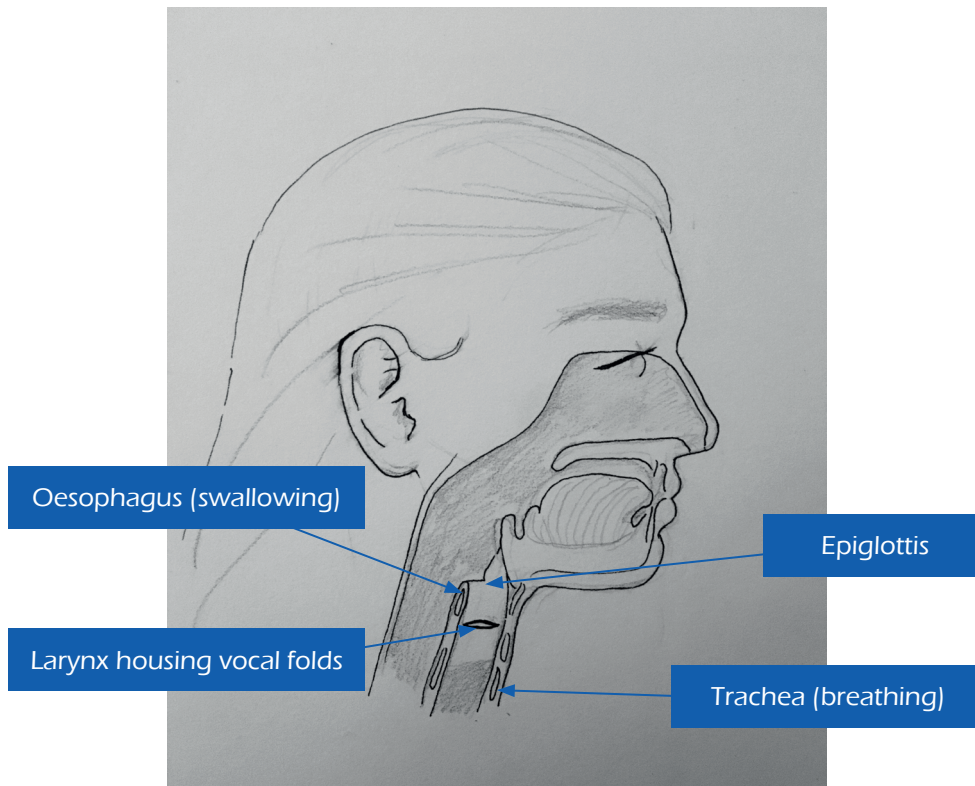


Figure 3. The position of the vocal folds.

Artwork courtesy Orla Francesca Isaacson.

Figure 3 shows the position of the vocal folds within the larynx. This organ straddles the top of the trachea and the oesophagus (food passage) and houses the vocal folds and the opening between the folds. It is composed of tiny cartilages, muscles and ligaments that need careful management to avoid strain and constriction.

Vocal sounds are produced by air being forced up from the lungs to pass through the larynx. The position of the vocal folds in the larynx will determine the sound produced. If they are open, as in open-mouthed breathing, they do not vibrate, and the sound made is referred to as *voiceless*. When the folds come together as in humming, air is met with an obstruction. In this case, the folds vibrate as the air pushes through and the sound produced is referred to as *voiced*.



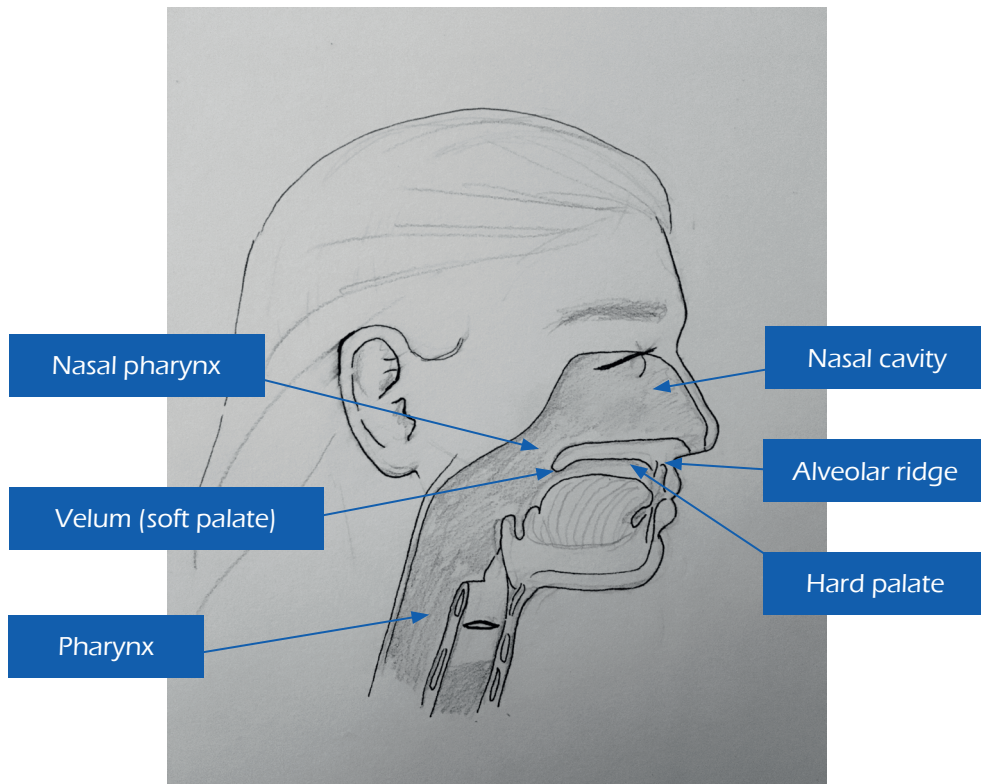


Figure 4. The resonators

Artwork courtesy Orla Francesca Isaacson.

The pharynx, which is positioned behind the larynx on the lateral wall of the throat behind the tongue, the nasal and oral cavities are the main resonating chambers, shown in Figure 4. These work together with the vocal tract and the articulators to produce the myriad shapes and sounds of language and vocal expression. The articulators include the lips, tongue, teeth, uvula and the alveolar ridge (the bone that holds the teeth in place).

### **Parkinson's Pointer**

The external space into which sounds are projected has specific resonating properties. Singing group practitioners should consider the level of acoustic buoyancy of a venue when choosing the space for StBP activities.



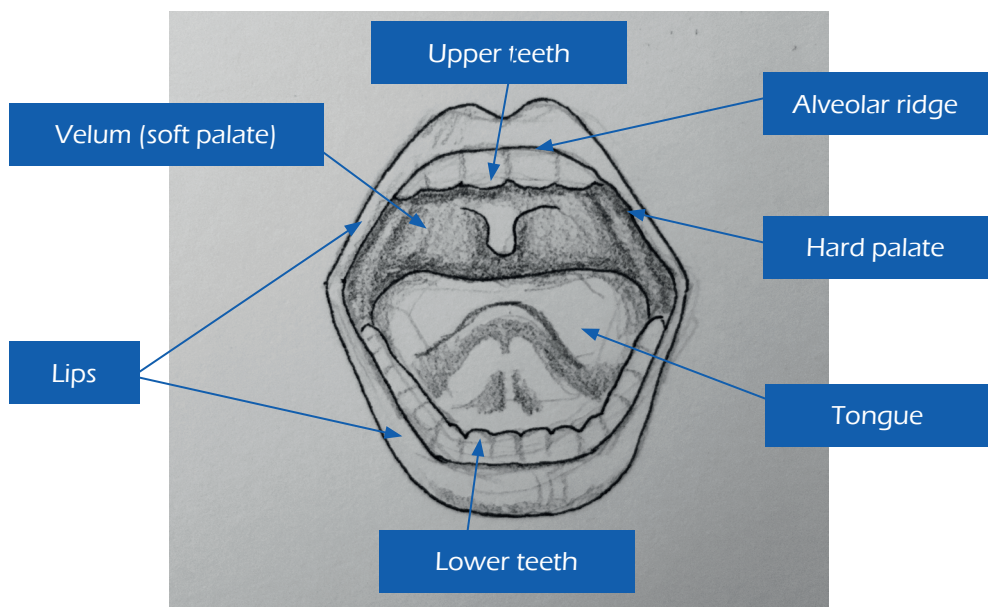


Figure 5. The articulators  
 Artwork courtesy Orla Francesca Isaacson.

Figure 5 shows the main vocal articulators. The articulators work in specific ways to produce different types of consonants. Some actions differ across different languages. The examples given here relate to spoken English. In bilabial consonants the lips come together (e.g. /p/ /b/) and for labio-dental consonants, the lower lip and upper teeth meet (/v/ /f/). Inter-dental consonants involve the tongue and upper teeth (e.g. /th/), and for alveolar consonants the tip of the tongue meets the alveolar ridge (e.g. /z/ /s/ /l/). The tongue moves towards the hard palate for palatal consonants (/r/) and the back of the tongue makes contact with the soft palate for velar consonants (/g/ as in go, /k/). The vocal folds come together to produce friction for sounding the glottal consonant (/h/), and the soft tissue behind the tongue, which directs air either through the mouth or the nose, is necessarily lowered for nasal sounding /m/ and /n/ (Zemlin, 2010).



### ***Parkinson's Pointer***

To expand the efficiency and flexibility of the respiratory, phonation, resonator and articulator structures and function, invite your participants to engage in different sound-making exercises, e.g. quiet, loud, high, low, sirening, staccato, legato.

These can be achieved through, for example, singing short phrases staccato/legato; large/small dog-barking/whining; cat/kitten-meowing; Father Christmas 'Ho-Ho-Ho-ing'; and witch's cackling. Try affecting different tonal qualities, such as nasal duck-quacking, or singing like an opera star.

Also, explore or compose material that has repeated and varied consonants and vowel sounds to maximise holistic vocal exercise.

Vowels sounds, of which there are twelve pure variations, are produced by vocal fold vibrations. The different vowel sounds are also determined by the height and position of the tongue and the degree of lip-rounding and tension of the muscles in lips and cheeks (Zemlin, 2010).

### **Changes in vocal quality in people with Parkinson's**

Neurophysical problems resulting from Parkinson's can seriously impede the quality of vocal sound production over time. For example, the larynx and swallow mechanisms are likely to weaken or become uncoordinated. In this case, in addition to creating problems with speaking, food and drink can slip below the vocal folds into the oesophagus. The efficient/unsafe transfer of food, liquid and even saliva from the mouth to the stomach is known as *dysphagia* (Tjaden, 2008). When unresolved by coughing, food or liquid can enter the lungs and result in aspiration pneumonia, a serious chest infection. Among frail elderly people and the neurologically compromised population, aspiration pneumonia often causes prolonged ill-health and can be fatal.







### ***Parkinson's Pointer***

It is important to advise anyone in your group that reports voice changes with pain to seek the advice from their GP or speech therapist. Whilst vocal distress is common for people with Parkinson's, a persistent poor voice-quality that does not improve with gentle exercise might also need the attention of an Ear Nose and Throat (ENT) specialist. This is to preclude other pathologies such as cancer of the larynx.

Giving advice of this nature should be undertaken diplomatically to avoid undue worry.

Facial masking (hypomimia) not only inhibits emotional expression but interferes with the proficiency of the vocal articulators and resonators. The over-production of, and inability to control saliva also contributes to the challenge of producing clear speech (Miller, 2012).

These combined effects can impede volume, or the maintenance of volume (hypophonia), and produce a hoarse, breathy voice (dysphonia), mono-pitch, hypernasality or imprecise articulation.

### ***Parkinson's Pointer***

The theory behind singing activities may be of interest to some of your participants. You will need to gauge if this is the case. The most important element to your sessions is that they are fun and uplifting. If you feel that some facts would enhance participants' experiences it is recommended that this should be undertaken with a light-touch, in an uncomplicated manner and expressed with tact and diplomacy.





## About the Authors

The authors of this book collectively span a wide breadth of personal and professional experiences in studying and teaching, community music and high art music, singing healthcare for people with degenerative neurological conditions, composing and arranging music and research on the relationship between singing health and well-being. These experiences, together with the invaluable advice and guidance from people affected by Parkinson's and professionals working in this field, make possible a unique perspective on the theory and practice of singing to benefit people living with the condition.

The Sing to Beat Parkinson's® model of singing considers medical, symptomatic and personal experiences and the management aspects of Parkinson's and how the application of singing can help to maintain and protect the vocal apparatus and wider functioning, to provide positive mental, cognitive and social stimulation as part of a holistic treatment.

### Nicola Wydenbach:



*Photograph by Adrian Travis*

Nicola Wydenbach is a vocal graduate of the Royal College of Music. Supported by a scholarship from Diva Opera, she completed her Graduate Diploma. She has worked for major opera companies in the UK and Europe. She is also an experienced educationalist working in outreach departments of major arts organisations including the BBC, Opera North, English National Opera, the Royal Opera House, Youth Music, Streetwise Opera, Garsington, Glyndebourne and Snape Music.

In 2014, Nicola was awarded a Scholarship from the Finzi Trust to pursue research into Singing and Parkinson's. She travelled to California to observe The Tremble Clefs ([trembleclefs.com](http://trembleclefs.com)) and, following her return to the UK, she now runs two

groups for people with Parkinson's; one in Pimlico, London and another at King's College Hospital, London. Since 2016, as Director of Training for Sing to Beat Parkinson's®, Nicola has been running yearly training courses for future leaders working with Singing and Parkinson's at Snape Music and in London in conjunction with Morley College, London.







**Dr Patricia (Trish) Vella-Burrows RN., PhD., FRSPH.**



*Photograph by Dover Design*

As a Registered Nurse and community music practitioner, Trish has been delivering singing activities to people with long-term conditions for over 40 years and working in the field of arts and health research since 2001. These experiences, and her current role of Deputy Director and Principal Research Fellow for the Sidney De Haan Research Centre for Arts and Health, Canterbury Christ Church University, have enabled a wide breadth and depth of research and applied practice in the field. Specific interests centre on the role of music and singing in the maintenance and rehabilitation of older people living with degenerative neurological conditions. Trish was awarded a Finzi Scholarship in 2010 to compare the music practices of staff in care homes in the UK, Italy, Sweden and the West Indies and she gained a doctorate in music and dementia in 2011. Trish has authored and co-authored a range of published papers and reports, such as *Singing and People with Parkinson's* (Vella-Burrows and Hancox, 2012). She has developed model singing and health frameworks to help health professionals and music practitioners. Trish is Co-Director for the social enterprise company, Music4Wellbeing (M4W) which delivers music-for-health training to health and education professionals. She is also M4W's Musical Director and facilitates several music and singing programmes for people with dementia and Parkinson's. The aim of the programmes, which are informed by a medical understanding of the conditions and the neurology of music, is to positively support people navigating their lives through long-term health challenges.

