**Breathe in for nothing: an interpretative phenomenological analysis exploring the influence of a Pilates warm-up in singers. An overview of the study**

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**Abstract:**
Research on the use of Pilates for classical singers is limited, despite the well-documented benefits of this somatic (mind-body) exercise modality on the general public. This study sought to ascertain the mental, physical and vocal benefits of a Pilates warm-up on four university singing students and one professional singer using Interpretative Phenomenological Analysis (IPA). A Pilates warm-up for singers was taught to the participants over six weeks, with three workshops of five days each interspersed with home practice. The effects thereof were documented, before-and-after questionnaires (GAD-7, Becks Depression Inventory and the RAND 36-Item short-form quality of life survey instrument) were completed, heart rate measurements taken (to determine if the warm-up initiated a parasympathetic nervous system response) and three semi-structured interviews were conducted with each participant. A focus group was then held with the participants to discuss the effects of the regime. The lived experience of the participants' use of the Pilates warm-up was analysed and together with the collected data, was grouped into sub-themes named: Singing; Wellbeing; Preparation for Singing/Preparing the Body to Sing; Tools; Resilience; Mindfulness; Mind-Body Communication; Nervous System; Strengthening the Body; Relaxation through Movement and Pilates Breathing. In the cyclical interpretative process of an IPA, these sub themes were then grouped to form the main themes of the study, namely: Tools; Nervous System and Singing.
The results showed an overall improvement in the quality of life as well as an increase in mindfulness and relaxation which benefitted all of the singers vocally in some way. Heart rate measurements and anxiety and depression scores showed a generally positive trend, although these results were inconclusive and require further study. The Pilates warm-up provided the singers with specific tools with which to address their various issues which had an impact on their singing. Performance preparation and posture were found to be enhanced, as well as reduced muscle tension, increased vocal range and improvements in stamina and breathing. This study highlights the potential benefits of the use of a Pilates warm-up for classical singers and the areas of research that should be undertaken to further delineate these benefits.

**Keywords:** Singing; Pilates; Pilates for singers; vocal warm-up; muscle tension

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## Introduction

Singing and Pilates are not the most obvious combination. As a singer and a Pilates teacher, I knew the benefits of the method first-hand. Having designed a Pilates warm-up for personal use, the logical progression was to formally investigate, if it could be of as much use to other singers. However, there is little scientific research on the use of Pilates for singers.

Every singer is physically, emotionally and psychologically different, and it might not be within the capability of every singer to attain the 'ideal voice product' easily and therefore less desirable methods of singing might be employed. The human body is capable of doing what necessity requires of it, regardless of the potential side effects or future negative consequences. Performing and singing can cause an accumulation of physical and mental tensions. Even daily life places strain and tension on bodies and this can result in a variety of physical issues, such as postural problems and misalignments of the spine. The singer might find themselves in need of physical and mental fortification and rehabilitation to perform at their best. As a rehabilitative mind-body exercise method, Pilates seems underutilised by singers, therefore, I wanted to understand what the influence of a Pilates warm-up on other singers would be.

## Overview of the existing literature

Much research has been done on singing technique and health and well-being, however, little attention is given as to how this knowledge can be integrated practically for the singer specifically, with very little scientific research on Pilates for singers. My research, therefore, had to be interdisciplinary and it was necessary to delve into the literature on neuroscience, psychology, sports science, medicine, anatomy and singing to understand the possible benefits of a Pilates warm-up specifically designed for singers.

Asher (2009:80;127), devised an integrated Pilates/singing pedagogy in which **theoretically,** "breath management and posture are the central idea[s] that connect[] singing and Pilates-based exercises". McCarther (2012:50) alludes to Pilates as one of the "modalities or methodologies that can be beneficial to students" and gives various Pilates exercises for posture and breathing (McCarther, 2012:15,23-26,35-38,43,47-49). Unfortunately, **neither study actually researched the effects of these exercises on singers.** According to Searle and Meeus (2001:8) and Robinson *et al*. (2000:7), the Pilates method of exercise is known to improve posture, restore correct alignment, improve muscle tone, change body shape, improve outlook and reduce stress. Robinson *et al*. (2000:7,230) state that Pilates, by focusing on aligning the spine and gently warming up and strengthening the body, can improve mental and physical states and ***could*** have benefits to the voice as well. Misins (2012:228), mentions Pilates for "proper breathing" and Melton (2001), discusses the "powerful benefits of Pilates training" for singers despite some discussed "incompatibilities". Vendafreddo (2012:12) discusses Pilates in movement training for musical theatre singers "to supplement the goals of kinesthetic awareness, proper alignment, relaxation and concentration" and Neely (2012:ii) examined the use of complementary approaches (Pilates, the Alexander Technique, Feldenkrais and yoga) for creating awareness and alignment in singers, and concluded that more research is needed.

The singer's body is the instrument and therefore a singer's exercises should be sympathetic to this function. Buckmire and Rosen (2001:52) mention that "hydration and general physical health" are an important part of a singer's good vocal hygiene. La Pine (2008:27) discusses the negative effects of musculoskeletal tensions on the correct functioning of the larynx but does not give any suggestions to the singer as to how to alleviate or prevent this. Robinson *et al.* (2000:230) note that singers "need excellent breathing techniques and a strong centre" and that the improvement in posture and alignment of the head and neck through Pilates can "dramatically improve your voice". Gilman and Johns (2017:131.e1) confirm that "posture may play a more important role in vocal fatigue than previously thought". This is because posture can determine how much stress and strain are placed on the body.

There are already well-documented benefits of Pilates in other groups of people. For example, Atilgan *et al.* (2017:642-644), stated that Pilates, as "a therapeutic exercise, provides proper posture by enabling the deep postural muscles to be strengthened" and further found Pilates to have "protective effects on health", that it "raised awareness and enhanced well-being" and that "flexibility improved and postural distortions were prevented". As a mind-body exercise method, Pilates uses visualisations and mental focus to help create body awareness and enhanced physical

control (Searle & Meeus, 2001:56). Weinstein *et al.* (2009:383) researched the effects of mindfulness on a sense of well-being and mental health and found it to be psychologically beneficial.

According to a study of musicians commissioned by Help Musicians UK (Gross & Musgrave, 2017:5), “71.1% of respondents identified as having suffered from panic attacks and/or anxiety, and 68.5% from depression”. However, as Vancini *et al.* (2017:850,855) claim that “Pilates training may be used as an effective alternative approach to improve overall patient health, self-esteem, emotional and psychological state, mood, and motivation”, therefore, Pilates could prove beneficial to the singer on many levels. The physical state of the body is known to impact the mind through cardiac vagal tone (Grossmann, *et al*., 2016:1-2). Azevedo *et al.* (2017) state the importance of good vagal tone to control heart rate due to its impact on both physical and mental health. According to Moore (2016) “increasing activity level and fitness increases autonomic activity correlating with increased ability for the body to regenerate energy, repair tissue, and more capably respond to both physical and mental stress.” The parasympathetic nervous system (vagus nerve/vagal nerves), is important for singers, because “[the recurrent laryngeal nerves […] are branches of the vagal nerves” (Dankbaar & Pameijer, 2014:743).

The stresses involved in performing require the singer's attention due to their effects on the body, for example, the “self-poisoning by adrenaline” caused by stage fright (Acocella, 2015). The over activation of the sympathetic nervous system by performance nerves is something that all singers need to control to some extent. This is because prolonged exposure to adrenaline and cortisol, due to the heightened stimulation of the sympathetic nervous system, has negative effects on the body (Randall, 2011). However, for a good state of physical readiness to sing, a balance is required between the sympathetic and the parasympathetic nervous systems. According to Peifer *et al.* (2014:66), to achieve this state of balance for the attainment of 'flow', certain physiological mechanisms need to be in place.

**Research problem and objectives**

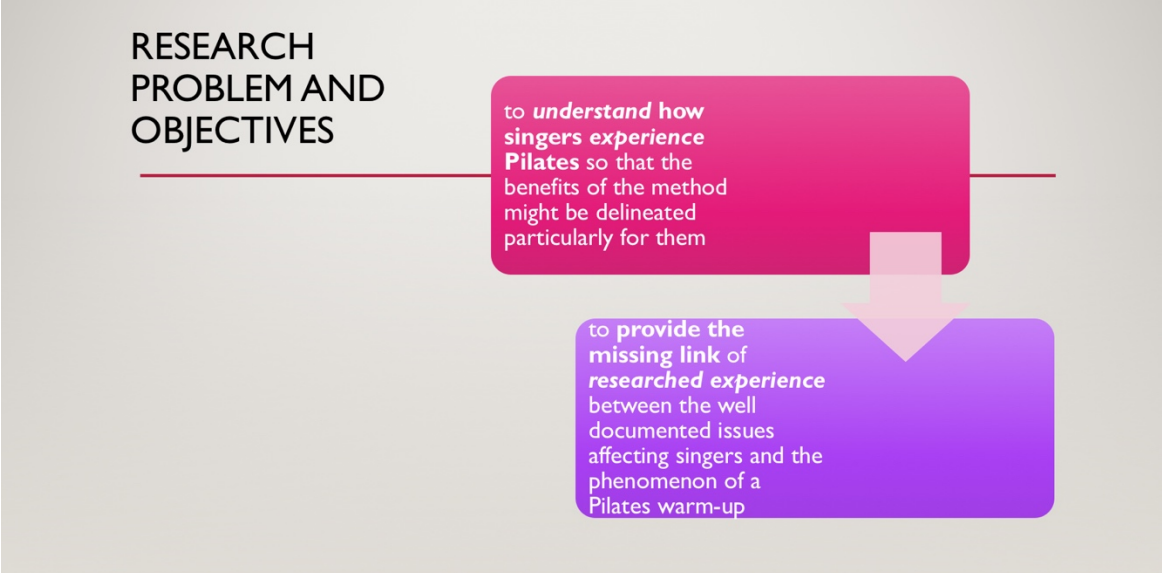


Figure I: Research problem and objectives.
Source: Author

The existing literature shows the impact of the Pilates method on both the mind and the body and alludes to these benefits for singers indirectly. With very little research showing a link between the Pilates method and singers specifically, it is difficult to understand *what* the impact of Pilates on singers and the voice is and *how* a Pilates warm-up might influence them as a unique group. The multidisciplinary findings could all be beneficial to singers but new research on Pilates for singers is needed to *link* them. I, therefore, needed to *understand* how singers *experience* Pilates so that the benefits of the method might be delineated particularly for them. In other words, I needed to provide the missing link of *researched experience* between the well-documented issues affecting singers and the phenomenon of a Pilates warm-up. Experiential research exists in the domain of a qualitative research method called interpretative phenomenological analysis (IPA).

There were three points of focus to my research, namely the singer's voice, body (which houses the instrument) and mind. I proposed that:

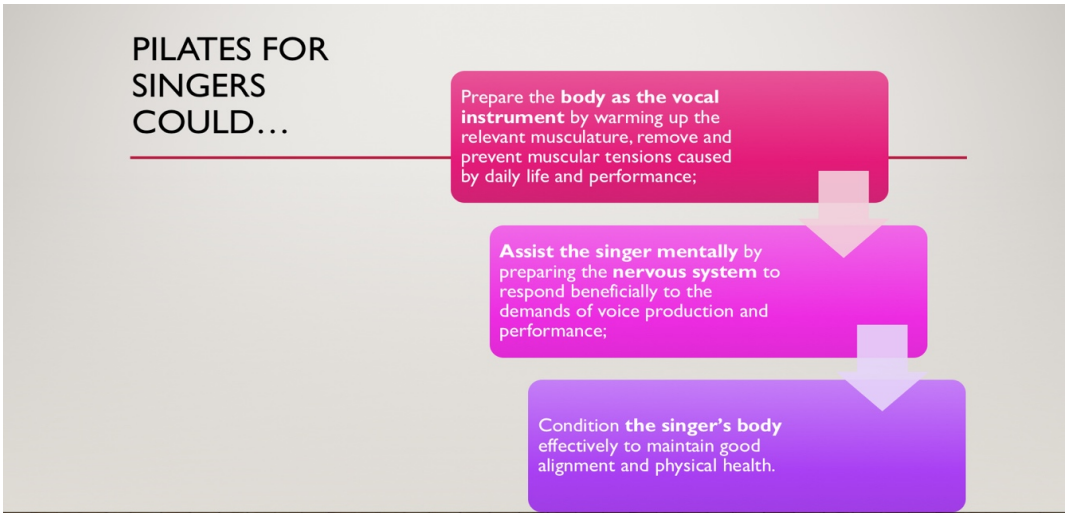


Figure II: Potential benefits of Pilates for singers.
Source: Author

The research question was: how could a Pilates warm-up influence singers? I needed to evaluate the efficacy of the Pilates warm-up in its influence on the following goals which the literature does not cover specifically for singers:

1. **Singing benefits:** how would the singer's technique be influenced by the use of a Pilates warm-up designed to strengthen and stretch the complimentary muscles used in voice production?
2. **Physical/health benefits:** how would the process of restoring physical integrity and countering the effects of physical wear and tear (from general life as well as the demands and tensions placed on a singer's body through singing and performance) assist the singer?
3. **Psychological benefits:** how could improved mindfulness through a Pilates warm-up be utilised for singers and what psychological benefits might they attain as a specific group?

**Research design**

I decided on a qualitative approach to the research, to gain insight into 'how' a Pilates warm-up could influence singers. IPA was chosen as IPA studies seek to ascertain if a phenomenon under investigation has "relevance and personal significance" for a specific group (Pietkiewicz & Smith, 2014:10). Smith and Osborn (2008:55) state that research using IPA is typically done on a small group, while Pringle *et al.* (2011:23) assert that IPA "recognises the central role of the analyst in understanding the experiences of participants." Smith *et al*. (2009:1,2) explain that IPA is "phenomenological in that it is concerned with exploring experience in its own terms" and

that it seeks to find significance when the “flow” of an experience is brought to the participants' attention. Pringle *et al.* (2011:24) explain that by focusing in great depth on an individual's experience of a given phenomenon, IPA can provide insights that can be applied to the greater whole.

This IPA can be summarised as follows:

Table I: IPA Table.

| | |
|---|---|
| The group | Singers |
| The phenomenon under investigation | Effects of a Pilates warm-up |
| Analysis of the experiences of the participants | How it effects the singer’s body, singing and mind |

Source: Author

**Research methodology**

My research examined the impact and experience of a Pilates warm-up in five singers (four were advanced singing students at university level and the fifth was a seasoned professional opera singer) using IPA. It further investigated if it could improve their physical and mental well-being and assist them as vocal performers.

To study the impact of a Pilates warm-up on singers, they had to first learn it. The learning of the warm-up (over six weeks), semi-structured interviews, questionnaires (measuring depression, anxiety and quality of life), heart rate measurements and observations provided the data set for the IPA (see Figure 3). A focus group was held at the end of the final workshop to ascertain if any new information would come to light, to assist in the development of the IPA themes in the analysis of the interviews and for purposes of triangulation.


Figure III: Data collection
Source: Author

I anticipated that through a Pilates warm-up, the singers would gain the ability to activate both the parasympathetic and the sympathetic nervous systems (which together make up the autonomic nervous system) through working on the central nervous system, to attain a state of physical and psychological readiness for singing and performance. While the psychological impact is something that can be express in words, I was curious to know if the effects of the warm-up on the nervous system would be reflected if measured by taking a pulse (at the start, middle and end of each lesson). These readings can be used to assess levels of parasympathetic stimulation. In neuroscience, heart rate variability (HRV) is used as a tool to gauge the state of balance between the sympathetic and the parasympathetic nervous systems. So, although I would be unable to measure HRV directly (as I did not have access to the equipment used by neuroscientists), I could use the literature on HRV and the influence of the warm-up on the pulse to infer and understand what the Pilates warm-up was doing to the participants. Seeing what was happening to their heart rate and thereby their nervous system during the warm-up, provided a deeper layer of data that I could use to inform the IPA, especially considering the importance of the vagus nerve in singing (see figure 4).

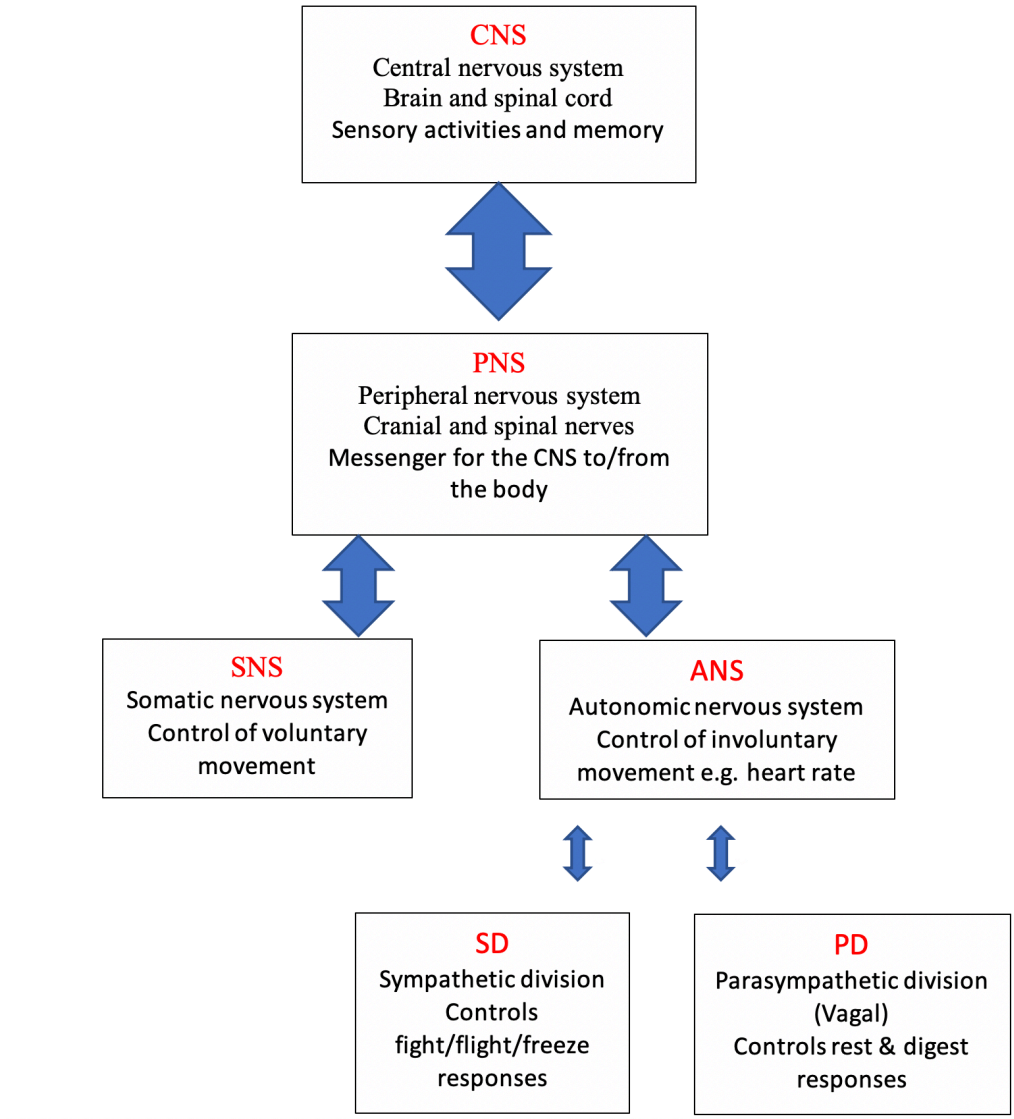


Figure IV: Nervous System.
Source: Author

Pietkiewicz and Smith (2014:11,12), define three stages of analyses of IPA data, namely:

1 Thoroughly reading and making noted commentary on transcribed interviews (a cyclical process);

2 Finding common themes in these commentary notes (see Figure 5);

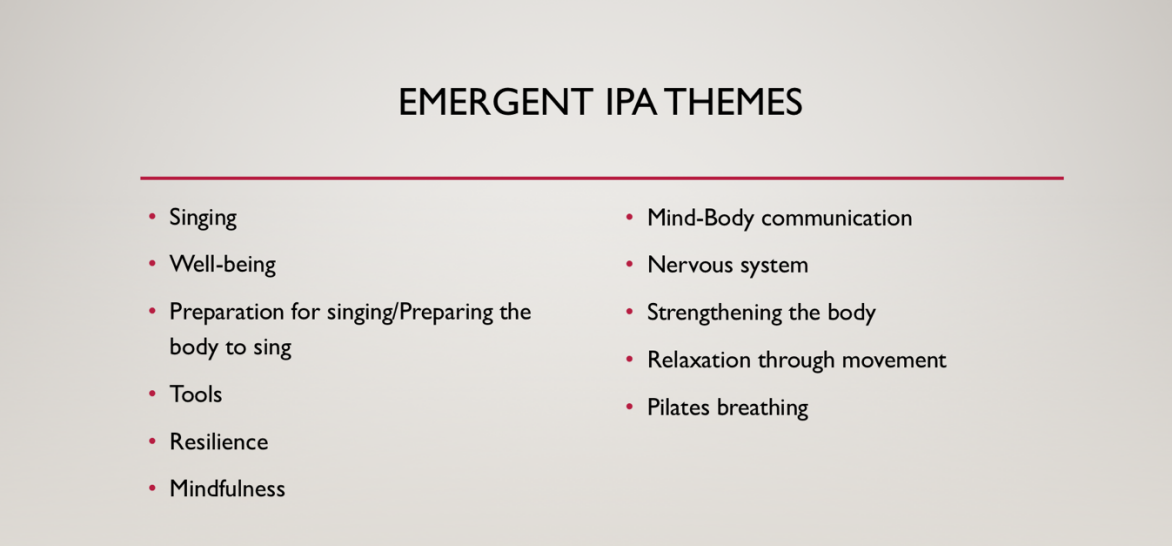


Figure V: Emergent IPA themes.
Source: Author

Recognising groups of similar important themes and naming them as well as assigning them with importance or relevance to the research (see Table 2).

Table II: Main theme headings of the IPA.
Source: Author

| Theme | Name | Abbr. | Description |
|---|---|---|---|
| Theme 1 | Tools | T1 | Having solutions. This combines Tools and Pilates Breathing (plus all references to breath). |
| Theme 2 | Nervous System | T2 | Any reference to the CNS, ANS or emotional state. This theme now includes Mindfulness, Mind-Body Communication and Resilience (both mental and physical) as well as Relaxation through Movement. It also includes the GAD-7 and BDI scores. The theme of Wellness plus the data from the SF-36 tool used at the start and end of the study is incorporated here. |
| Theme 3 | Singing | T3 | All singing references. This now includes Strengthening the Body, and Preparation for Singing. |

**The influence of the Pilates warm-up on the participants**

The warm-up used in my research was one that I had put together for myself over the many years that I have been performing. I found the most benefit was gained vocally and for performance if, upon completion of the warm-up, I could feel both energised, relaxed, physically warm but not tired and comfortable in my movements without any aches or strains. I was concerned about very specific outcomes for my body, as vocalising and performing optimally were the primary goals.

These singing specific goals for exercising the body as an instrument can be described as:

- Creating a state of physical relaxation so that the voice can flow with ease;
- Warming up the musculature to physically support the voice;
- Releasing the neck and pelvis to sing without undue strain;
- Freeing the ribcage and diaphragm and strengthening the entire breathing mechanism for better breath control;
- Working on shoulders and posture due to their effects on the voice;
- Freeing the spine due to its direct influence on the nervous system and thereby pre-performance nerves, and finally,
- Promoting stability and mobility in the body so as to move with ease while singing.

How did the participants experience the warm-up? The 'pseudonymized' participants are described in Figures 6-10 below and show some results of the study. The HR readings were inconclusive and require further investigation.

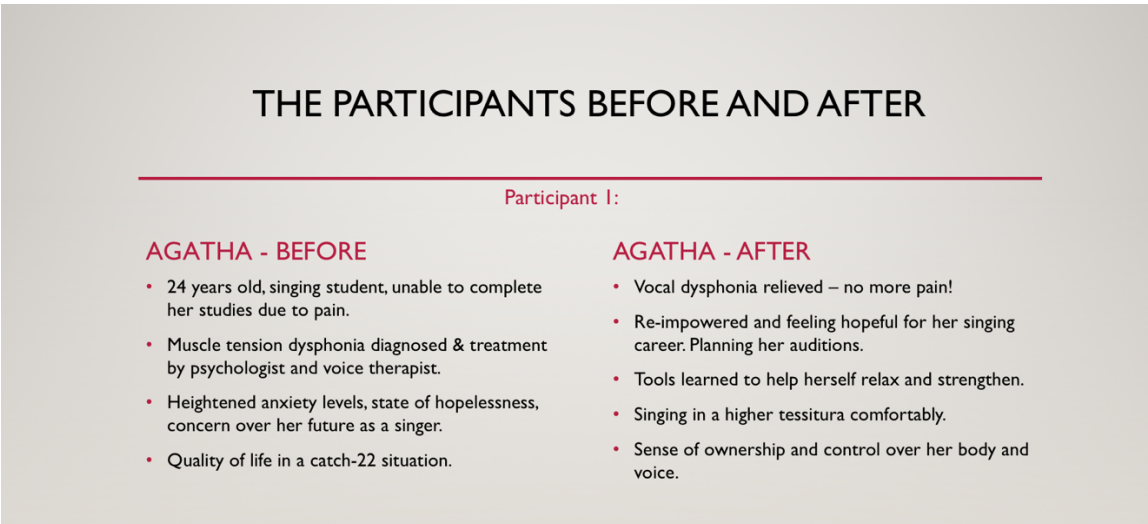


Figure VI: Participant 1 Agatha

Source: Author

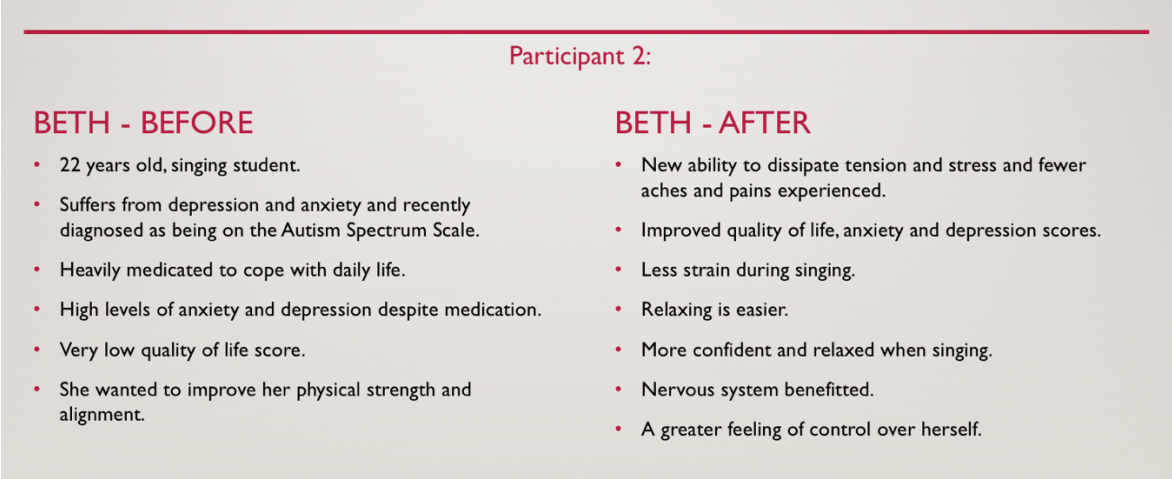


Figure VII: Participant 2 Beth
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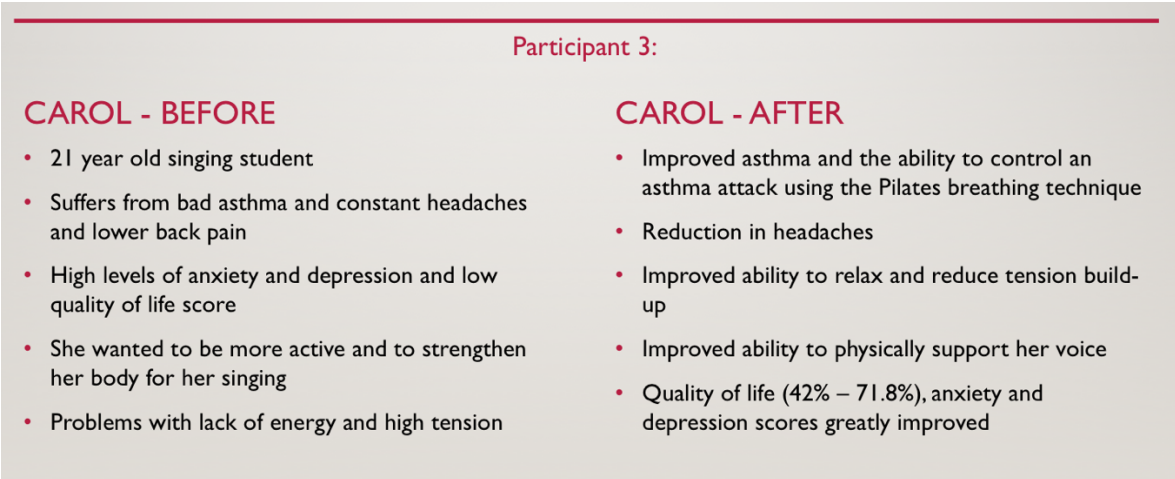


Figure VIII: Participant 3 Carol.
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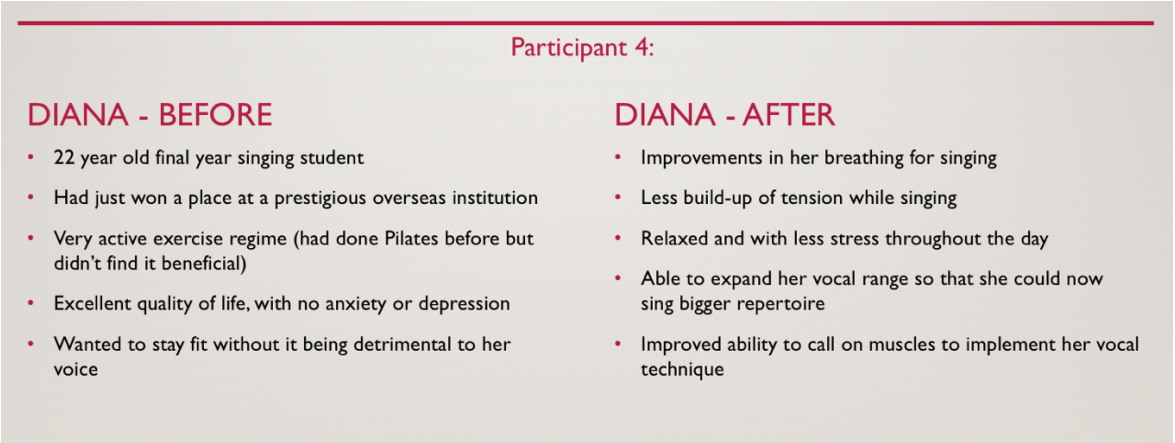


Figure IX: Participant 4 Diana.
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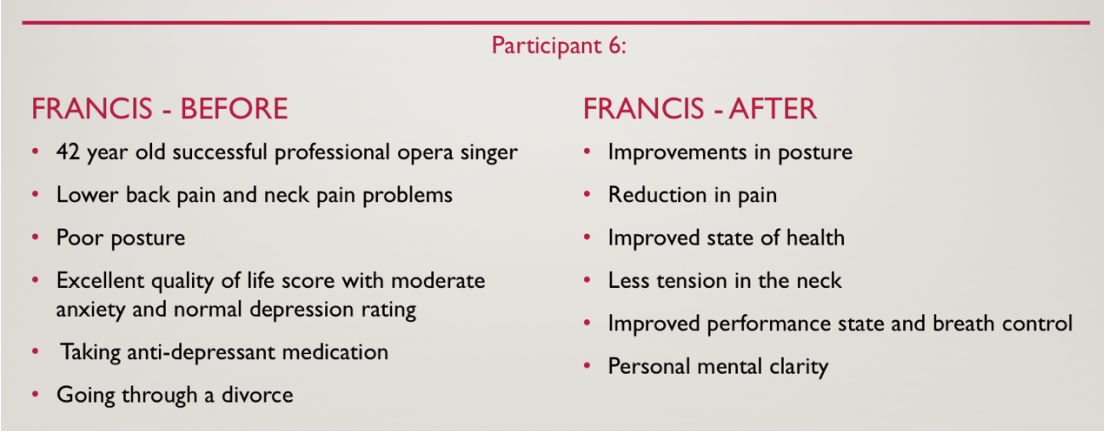


Figure X: Participant 6 Francis.
Source: Author

## Conclusion

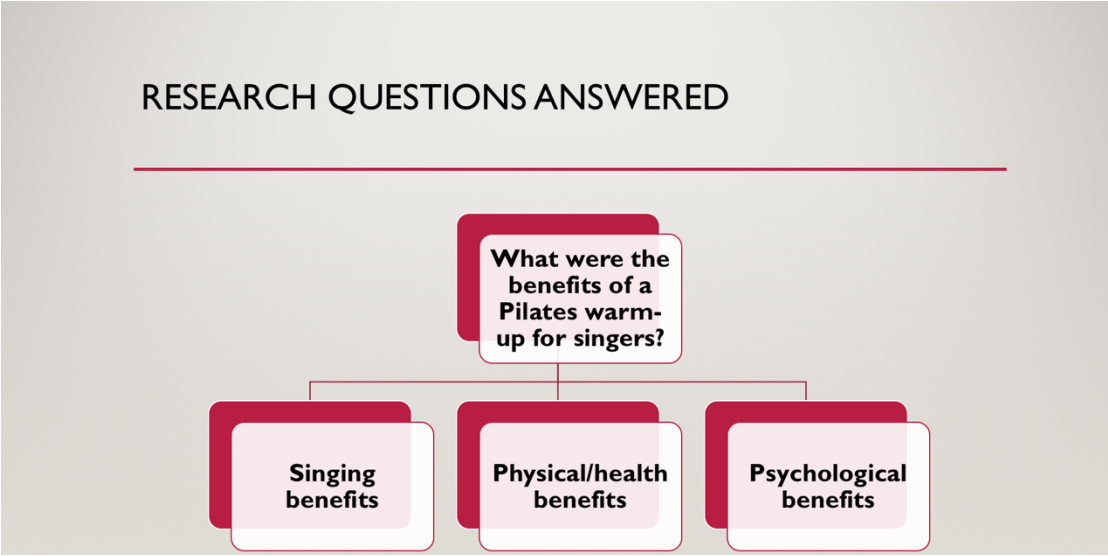


Figure XI: Research questions answered
Source: Author

**Singing benefits:** The singers all commented on vocal improvements due to the Pilates warm-up e.g. improved stamina, increased vocal range, decreases in tension, improved performance state and recovery from vocal dysphonia. The student singers found they were able to better understand and/or implement aspects of their singing technique, not by focusing on the voice, but by focusing on the body through the use of a Pilates warm-up.

**Physical/health benefits:** All of the participants experienced physical benefits during the study especially as pertained to improved use of the body for singing. The alleviation of asthma symptoms, increased energy, improved posture, reduction in pain, improvements in general health and the ability to overcome injury were reported.

**Psychological benefits:** Increased relaxation was enjoyed. Stress was reduced and depression and anxiety were improved or contained. Mentally, clarity for performance was enhanced. Overall there were feelings of being more in control and an improved sense of well-being.

The crucial apex of this research was that the Pilates warm-up was able to assist the voice without actually using or involving the voice in any way except through the muscular and neural activations it was engaging.

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