

Integrating the Alexander Technique into Classical Singing

Assessing the Impact on an Online Independent Learning Programme

An Eight Week Longitudinal Pilot Study



Ethics Approval was received from the University of Wales Trinity Saint David, WAPPAR, 25th August 2020

Introduction

Primary Goal

To develop an online programme integrating the Alexander Technique (AT) into voice training to address existing contact and teaching constraints due to the Covid-19 pandemic.

Introduction

Secondary Goals

1. Verify existing AT/voice integration research Jones (1972).
 - Improvements to resonance
 - Reduction in respiratory noise.
2. Codify future parameters for AT/voice inquiries.

Literature Review

1. Frame the indirect AT teaching approach. (Alexander, 2001)
2. Review existing AT/voice research.
 - Acoustics (Jones, 1972)
 - Multiple case studies (Lloyd, 1986).
3. Provide a brief acoustics primer.
 - Frame and update the existing research claims (Jones, 1972).
 - Identify current classical voice parameters (Titze, 2000).
 - Contextualise the researcher's findings (Miller, 2008; Titze, 2000; Sundberg, 1987).

Research Design: Mixed Methods

This research took a pragmatic mixed methods approach focusing on the human experience (Morgan, 2007).

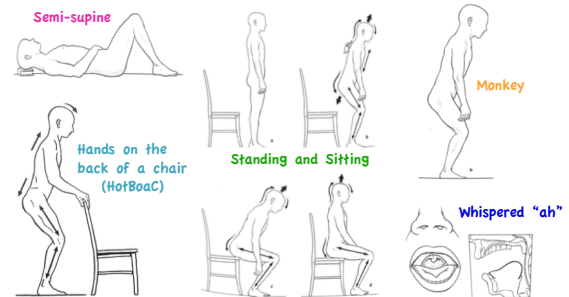
The pragmatic interchange of social and numerical data led to a richer explanation of phenomena (Mitchell, 2018).

Method: Video and Live Guidance

17 Videos Over Eight Weeks (Capalbo, 2020)

- Introduction to AT.
- Two on-demand weekly videos.
 - **AT procedure instruction.**
 - **Application of the weekly AT procedure to the voice.**

Alexander Technique Procedures



Voice Integration Exercises

Summary of exercises that evolved as a result of this programme:

Autonomic Breathing
 Kinesthetic Memory
 Awareness (external locus of attention)
 Simple Vocal Task (devised by participant)
 Critical Moment of Phonation (allowing time and space)
 Unvoiced Semi-Occluded Vocal Tract Exercises (SOVTE)
 Voiced SOVTE
 Whispered "ah" with vowel alternates
 Whispered "ah" with SOVTE Variations
 Integrative Support (HotBoaC)
 Means Whereby Approach to Consonants

Insider Research: The Master Class

Each week concluded with a master class.

Participants were invited to ask questions and sing.

During these interactions the researcher's role shifted toward a participant observer on the emic/etic continuum (Cohen, Manion and Morrison, 2007, p. 179). Both roles are valuable in this inquiry (Mercer, 2007).

Mixed Methods

QUALITATIVE data:

- Initial and final questionnaire.
- Initial semi-structured interview.
- Learning journals submitted weekly.
- Researcher observations.

Mixed Methods

QUANTITATIVE data: VoceVista Video Pro (VVP),
 (Maas et al. 2020).

Spectrum Analysis: Long-term average spectrum (LTAS)
 ▫ Amplitude in decibels (dB)

Vibrato Analysis
 ▫ Vibrato rate in Hertz (Hz)
 ▫ Vibrato extent in cents

Spectrographic Analysis
 ▫ Stylistic assessments and confirmation of perceptual findings.
 (legato, vibrato periodicity, phonation type)

9 recorded bars, Caro mio ben (Giordani, n.d.).

Research Findings: Summary

This inquiry tested **four** hypotheses.

Research Findings: Hypothesis #1

Respiratory noise will be reduced.

This was found to be true with a reduction for all participants and a mean reduction of **6.8dB**.

Remember a reduction of 6dB reduces the sound by half (McCoy, 2012, p. 21).

Research Findings: Hypothesis #1

Case Study	Change in peak dB inhalatory noise from week 1 to week 8
CS1	-10dB
CS2	-5dB
CS3	-6dB
CS4	-6dB
CS5	-7dB
Mean Reduction	-6.8dB

Research Findings: Hypothesis #2

Greater singing ease will be reflected as less spectral energy in the singer's formant range (SFR) between 2.3-4kHz, especially in female voices.

This was substantiated in three of the five participants (60%). The mean reduction of these participants was 4.7dB in SFR amplitude. (CS1, CS2, CS4)

Spectral Energy: LTAS



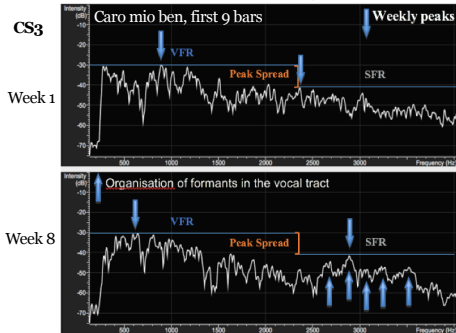
Research Findings: Hypothesis #2

Greater singing ease will be reflected as less spectral energy in the singer's formant range (SFR) between 2.3-4kHz, especially in female voices.

This was substantiated in three of the five participants, with a mean reduction of 4.7dB in amplitude in the SFR (CS1, CS2, CS4).

CS3, showed no change in amplitude levels however there was evidence of more precisely tuned formants in the SFR, corresponding to an enhanced perceptual ring indicative of a classical singing style (Manfredi et al. 2015).

Research Findings: Hypothesis #2



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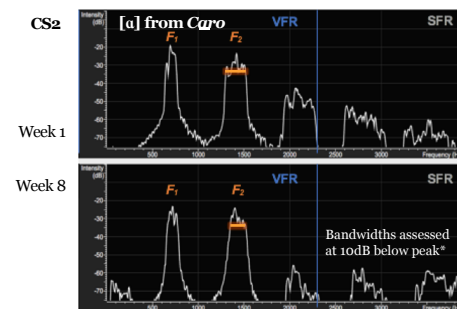
CS5's data did not directly support this hypothesis. However, his data results do not necessarily disprove this theory. CS5's journal and comments reflected his unwillingness to reduce tension if it changed habitual singing style.

Research Findings: Hypothesis #3

Improved resonance will be reflected in the vowel formant range (VFR) between 0-2.3kHz.

This was demonstrated to be true to a degree in all cases as vowel formant tuning became more precise, typified by narrower formant bandwidths.

Research Findings: LTAS



*(McCoy, 2012, p. 40)

Research Findings: Hypothesis #4

Reduction of chronic tension and improved coordination will be reflected acoustically with improved vibrato periodicity, and a smoother legato.

These results related to vocal function affecting the classical singing style are inconclusive.

Legato was reliably improved only with explicit intervention.

Women's vibrato rates stayed or moved toward 5.5Hz (midpoint). Women's extent moved toward the midpoint with an average of 22 cents of movement.

Men's vibrato results did not show spontaneous improvements.

A longer longitudinal study is needed to validate claims related to style.

Consent to Appear in the Presentation

Responses to the request to use their images in this presentation obtained via email.

CS1 – "This is fine with me."

CS2 – "Yes, I'm alright with the use of video."

CS3 – "Sure, you are very welcome to use whatever video with me that you like."

CS4 – "Whatever you need, you have permission to use."

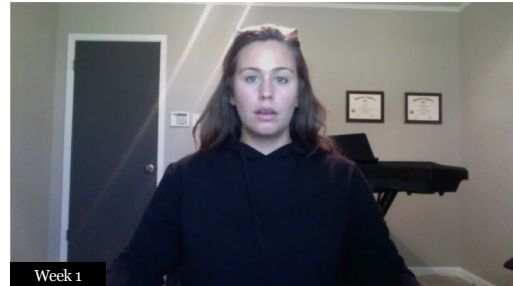
CS5 – "Yes, I give my consent for the video footage from the masterclasses to be shown for academic purposes."

Case Study #1 - Soprano

Initial Observations

Sings with ease in a seemingly relaxed (seated) posture.

Case Study #1



Case Study #1

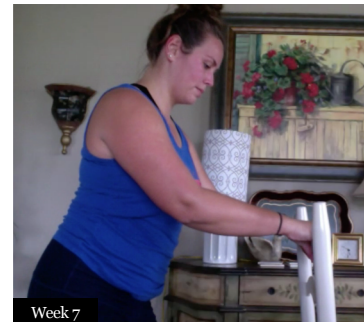
Confronting Habits:

She identified her habit of gasping for air on the inhalation.

She concluded that her postural muscles were weak and worked hard on the monkey to build up her strength.

CS1 met with the researcher three times to check-in on her execution of AT procedures.

Case Study #1 - HotBoaC



Case Study #1

Respiration noise reduction

-10dB

LTAS spectral energy peak to peak reduction

-7.5dB

Case Study #2 - Soprano

Initial Observations

Singing poise is unsettled with her head habitually strongly pulled to her right, unsettling her entire balance.

Tongue tension seems to be an issue.

She chose to use her hands in a particular way this week to stabilise herself.

Note the accented, disjointed legato.

Case Study #2



Case Study #2

Confronting Habits:

Tendency for the head to move toward the right is still present, but the movement is less sharp.

What is clearer in this second example due to the closer angle, is the involvement of the shoulders. This is an area of tension that may have been mitigated by the stabilisation of her hands and arms in the first example, or perhaps it is present because her former habits are being destabilised and a new balance is being sought.

There is a perceptual improvement in her legato as her accented singing style lessens in the next clip.

She is seated in the second example due to a knee injury she sustained at work.

Case Study #2



Case Study #2

Respiration noise reduction

-5dB

LTAS spectral energy peak to peak reduction

-4dB

Case Study #3 - Mezzo Soprano

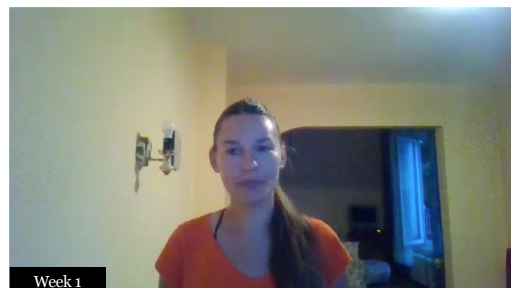
Initial Observations

Tension in the face, especially around the eyes.

High muscle engagement in the arms during phonation affecting her shoulders and entire torso.

Head tilts back especially on the inhalation.

Case Study #3



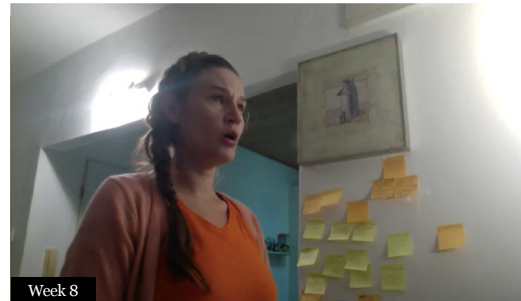
Case Study #3

Confronting Habits:

A reduction in arm and shoulder tension as well as head tilting during inhalation is evident.

Stylistically there is a more ringing quality, although this sample doesn't reflect the same progress she demonstrated in the assessed song task.

Case Study #3



Case Study #3

Respiration noise reduction

-6dB

LTAS spectral energy peak to peak reduction

0.0dB

There was clustering of formants in the SFR.

Case Study #4 - Tenor

Initial Observations

His poise is unsettled, with notable (right) arm tension as if to conduct himself.

Notice also his shifting head balance, which tends to nod along with the pitch near the end of this selection.

Case Study #4



Case Study #4

Confronting Habits:

His right arm is much more settled.

There is a reduction in excess head movement. Specifically, he does not nod with each pitch as he did.

Stylistically, there is a marked improvement in his legato and his vocal quality is more *dolce* rather than *brassy*.

Case Study #4



Case Study #4

Respiration noise reduction

-6dB

LTAS spectral energy peak to peak reduction

-2.5dB

Men tend to have more energy in the SFR due to the classical singing phenomenon of clustering formants (Miller, 2008, p. 120).

Case Study #5 - Baritone

Observations

Postural patterns include excessive head nodding, and movement in the torso during phonation.

His locus of attention is limited to the music on the stand.

Case Study #5



Case Study #5

Identifying Habits

Notice his external focus of attention has improved.

His head and torso movement was greatly reduced over this eight week period.

His whole demeanor is more relaxed and welcoming.

Case Study #5



Case Study #5

Respiration noise reduction

-7dB

LTAS spectral energy peak to peak reduction

+0.5dB

CS5 tended to maintain the same phonation patterns during the eight weeks during the song assessment task.

Conclusion

This research confirmed existing AT/voice research showing a reduction in respiratory noise.

The claim of enhanced resonance was expanded while corroborating existing data.

A modern vocal resonance paradigm was developed for future inquiries.

Supplementary research benefits included a sense of calm and ease.

Practical Outcomes

Teaching Applications

Skill reinforcement between private or group lessons.

University level music course, lectures or workshops.

Young artist training programmes and workshops.

Independent online training programmes.

Glossary of Abbreviations

AT	Alexander Technique
HotBoaC	Hands on the back of a Chair
LTAS	Long-term average spectrum
SFR	Singer's formant range
SOVTE	Semi-occluded vocal tract exercise
VFR	Vowel formant range
VVV	VoceVista Video Pro

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Thank you!