Vocal Impact of a Prolonged Reading Task in Dysphonic versus Normophonic Female Teachers

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Background

- PhD about vocal loading
- Previous study\(^1\): vocal impact of a 2-hour reading task in normophonic females without professional voice use
- This study\(^2\): vocal impact of a 2-hour reading task in normophonic and dysphonic female teachers


(2) Remacle A, Morsomme D, Berrué E, Finck C. Vocal Impact of a Prolonged Reading Task in Dysphonic versus Normophonic Female Teachers. *J. Voice. In Press*
Methods: participants

16 normophonic female teachers (34.1 years)

16 dysphonic female teachers (33.8 years)
Methods: loading task

Reading a novel in French for imaginary students during 2 hours at 70-75dB(A)
Methods: evaluation protocol

Before the task and every 30 minutes

• Acoustic analysis (MDVP)
  F0, Jitter%, Shimmer%
• Voice range measurements (VRP)
  Frequency and intensity
• Aerodynamic measurements (Aerophone II)
  Maximum Phonation Time
  Subglottic Pressure, SPL
The questions are:

• What are the effects of a two-hour reading task on teachers’ voice?

• Does the vocal load affect differently the dysphonic teachers than the healthy teachers?

Statistical analysis: repeated measures ANOVA

* p<.05
Results: acoustic measurements

![Graph showing F0 over time]

- **F0**: Frequency of fundamental vibration
- **Hz**: Hertz
- **T0, T1, T2, T3, T4**: Time points
Results: acoustic measurements

![Graph showing Shimmer and Jitter measurements over time T0 to T4. The Shimmer line is marked with an asterisk (*) and the Jitter line is marked (NS).]
Results: voice range measurements

**Lowest frequency**: no significant effect of duration

**Highest frequency**: no significant effect of duration

**Frequency range**: no significant effect of duration
Results: voice range measurements

Intensity range significantly increases during the reading
Results: aerodynamic measurements

Maximum Phonation Time

<table>
<thead>
<tr>
<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
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* Sec
Results: aerodynamic measurements

Subglottic Pressure

\[ \text{cmH}_2\text{O} \]

SPL

\[ \text{dB} \]
Results: aerodynamic measurements

**Subglottic Pressure**

![Graph showing changes in subglottic pressure over time.](image)

- cmH₂O
- Data points marked with asterisks indicate significant differences.

**SPL**

![Graph showing changes in sound pressure level over time.](image)

- dB
- Data points marked with asterisks indicate significant differences.
Results: few differences between normophonic and dysphonic groups

**Highest frequency***

- **Hz**
- **T0**
- **T1**
- **T2**
- **T3**
- **T4**

**Normophonics**

**Dysphonics**

**Frequency range***

- **Hz**
- **T0**
- **T1**
- **T2**
- **T3**
- **T4**

**Normophonics**

**Dysphonics**
Results: few differences between normophonic and dysphonic groups

Subglottic Pressure*

Dysphonics
Normophonics

T0 T1 T2 T3 T4

Subglottic Pressure*

cmH\textsubscript{2}O

15
Results: interaction between the duration and the group only for

Lowest Frequency*

Hz

Dysphonics

Normophonics

T0  T1  T2  T3  T4
Conclusions: effects of a 2-hour reading task

• Acoustic analysis and voice range measurements suggest an increased laryngeal tension

• Aerodynamic measurements suggest
  1) lower voice efficiency – increased viscosity and stiffness of the vocal folds
  2) adaptation to vocal loading
Conclusions:
normophonic versus dysphonic groups

• Few differences between both groups

• Voice evolution through the reading task similar for the normophonic and the dysphonic groups
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Thank You!