Rethinking the 'Water' in Water Resistance Therapy:

Electroglottographic and Aerodynamic Effects of Phonation Through ***Non-Newtonian Fluids***

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Effect of Varied Tube Phonation in Water Exercises on Nasometric and Electroglottographic parameters: Modification in Terms of Fluid Density and Tube Submerged Depth

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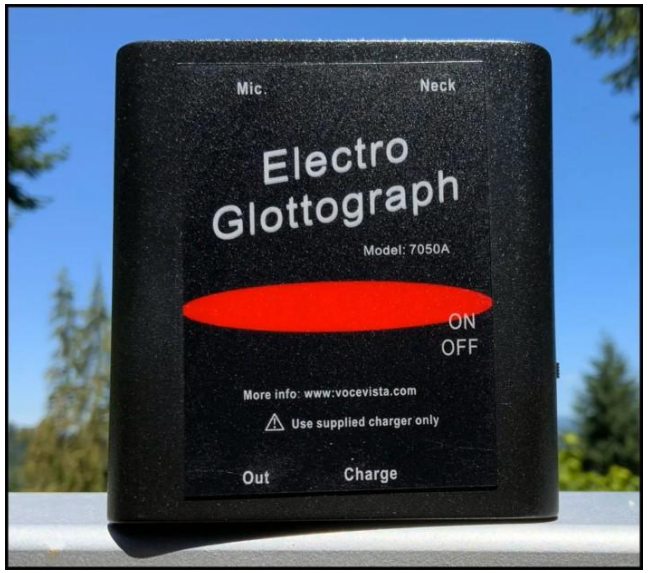
- **Higher post-exercise CQ** with nectar vs. water
- **Only 2 cm + nectar** significantly changed CQ from baseline
- **No CQ differences *during* exercise** across all conditions → likely bubble interference disrupting EGG signal
- **f_o increased after nectar** → higher subglottic pressure driven by increased fluid resistance

Material

ELECTROGLOTTOGRAPHY + INTRAORAL PRESSURE



VoceVista EGG

+

Soundcard Oscilloscope 1.4.0

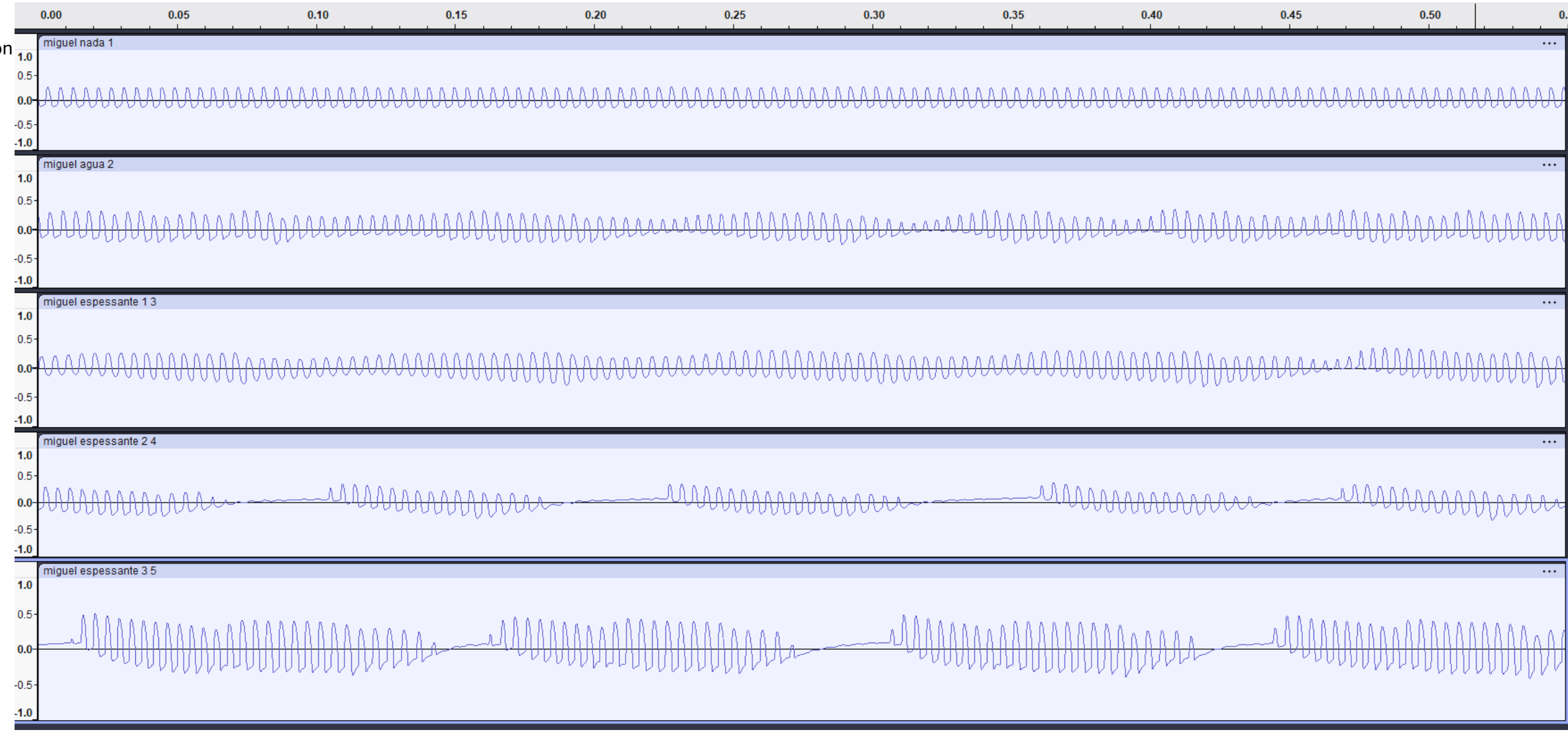
PCE-P01 pressure meter

+

Serial Studio Pro 3.2.6

Microscopic vs ***Macroscopic*** analysis of EGG?

Free phonation



Water

+ 1 sc powder

+ 2 sc powder

+ 3 sc powder

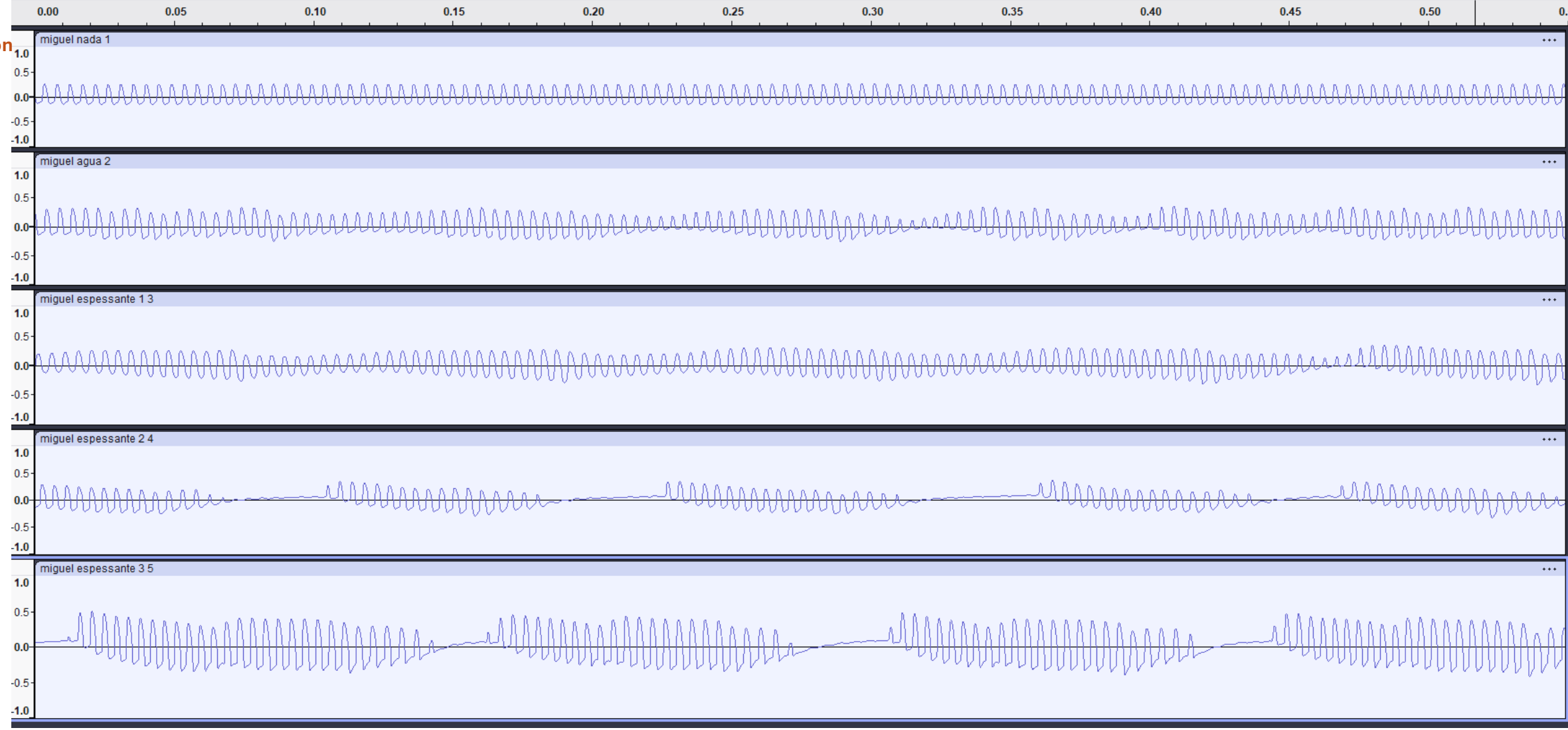
Free phonation

Wa er

+ 1 sc p wder

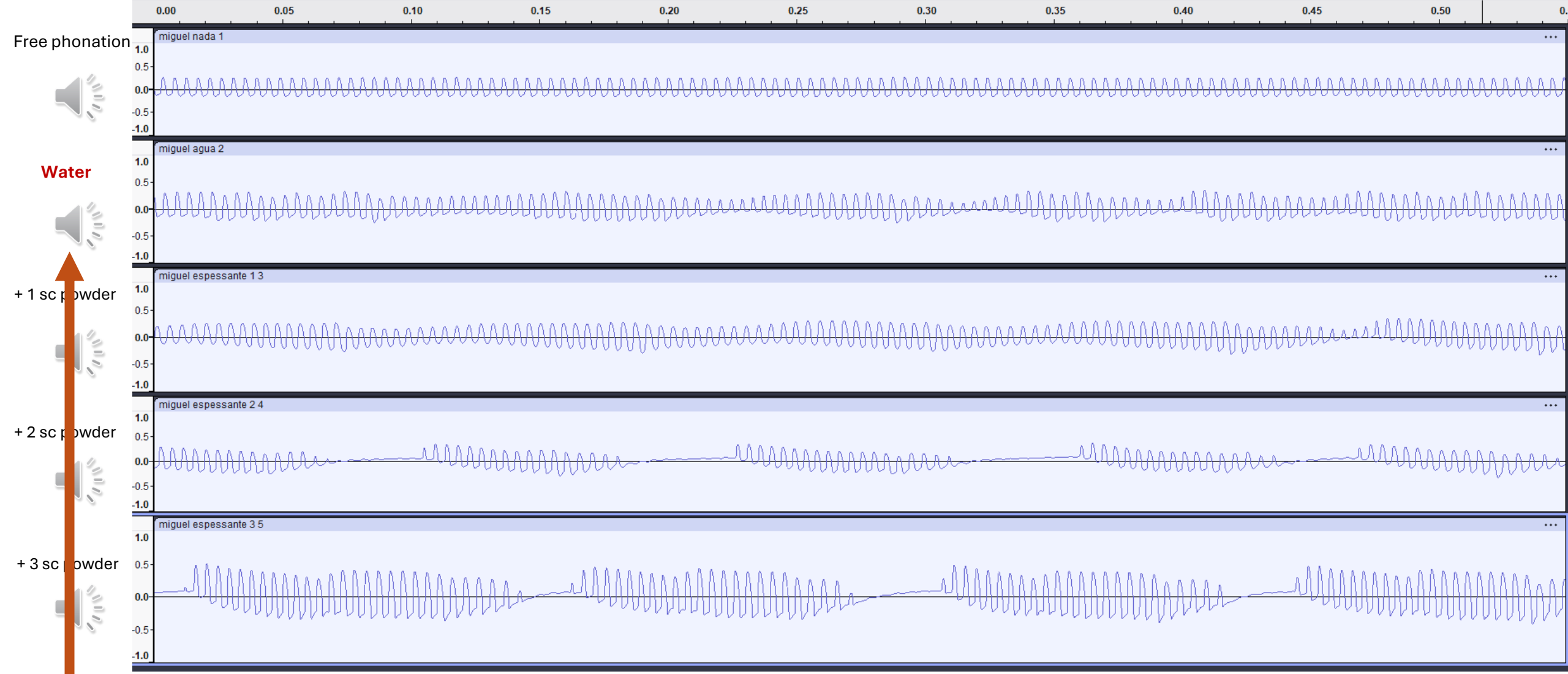
+ 2 sc p wder

+ 3 sc p wder

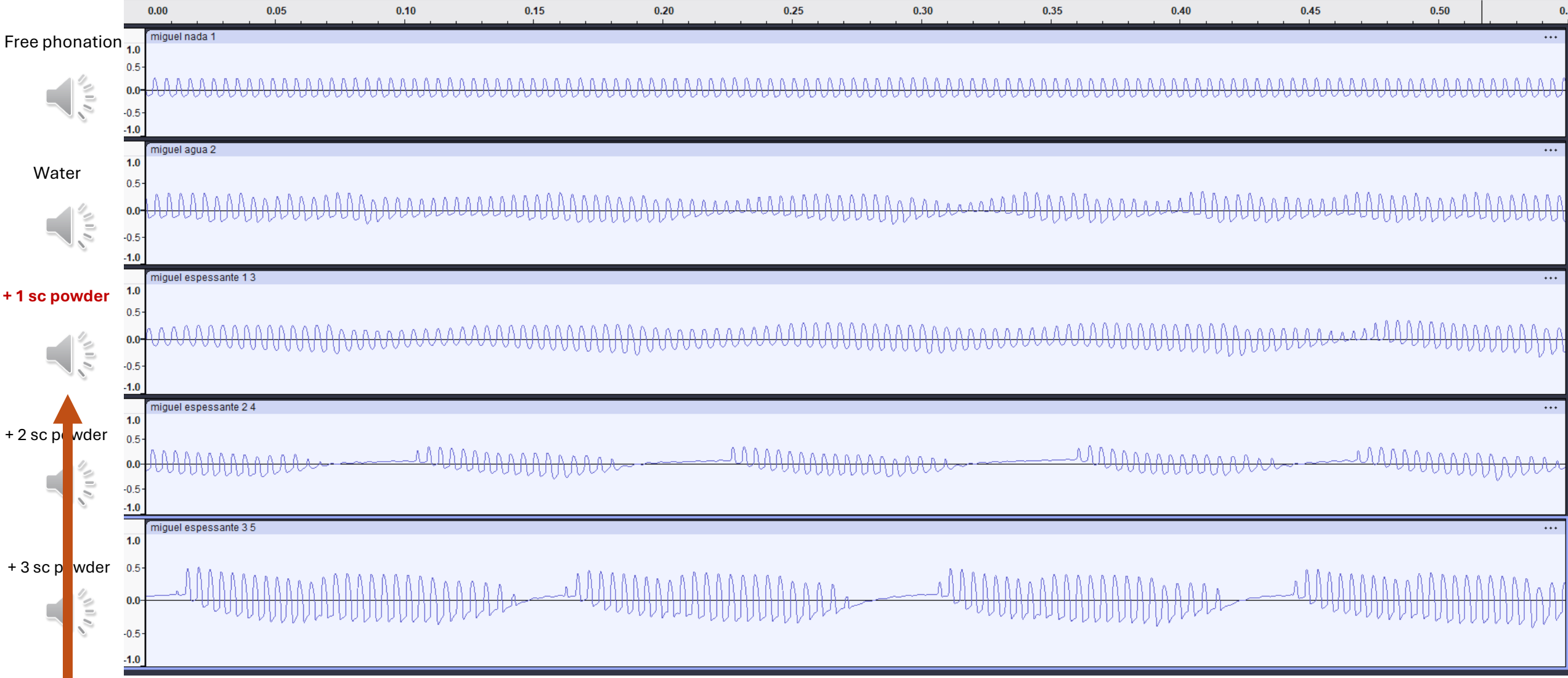


Macro: Continuous and completely stable phonation throughout.

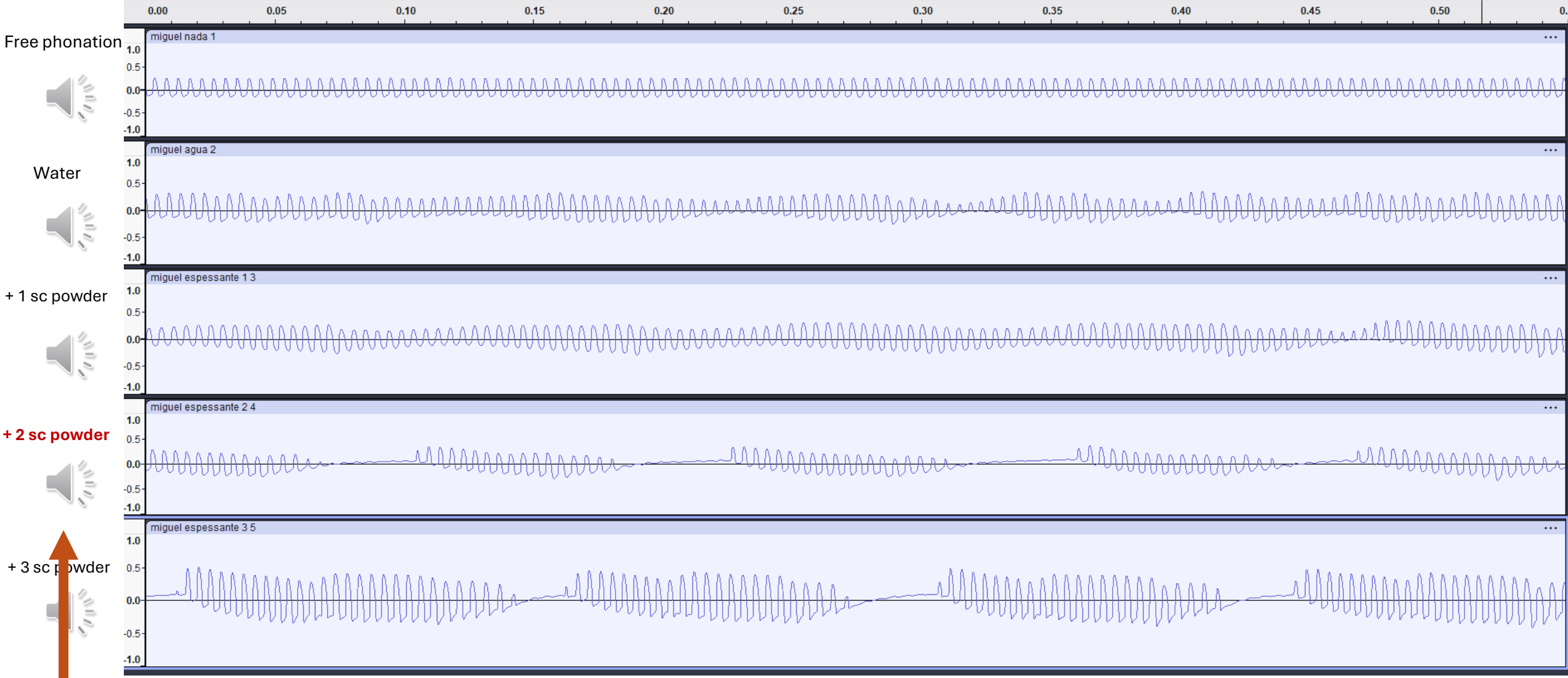
Micro: Uniform, regular cycles with no relevant variations.



Macro: Continuous and stable phonation with a slight decrease in amplitude over time.
Micro: Regular cycles with no relevant alterations.

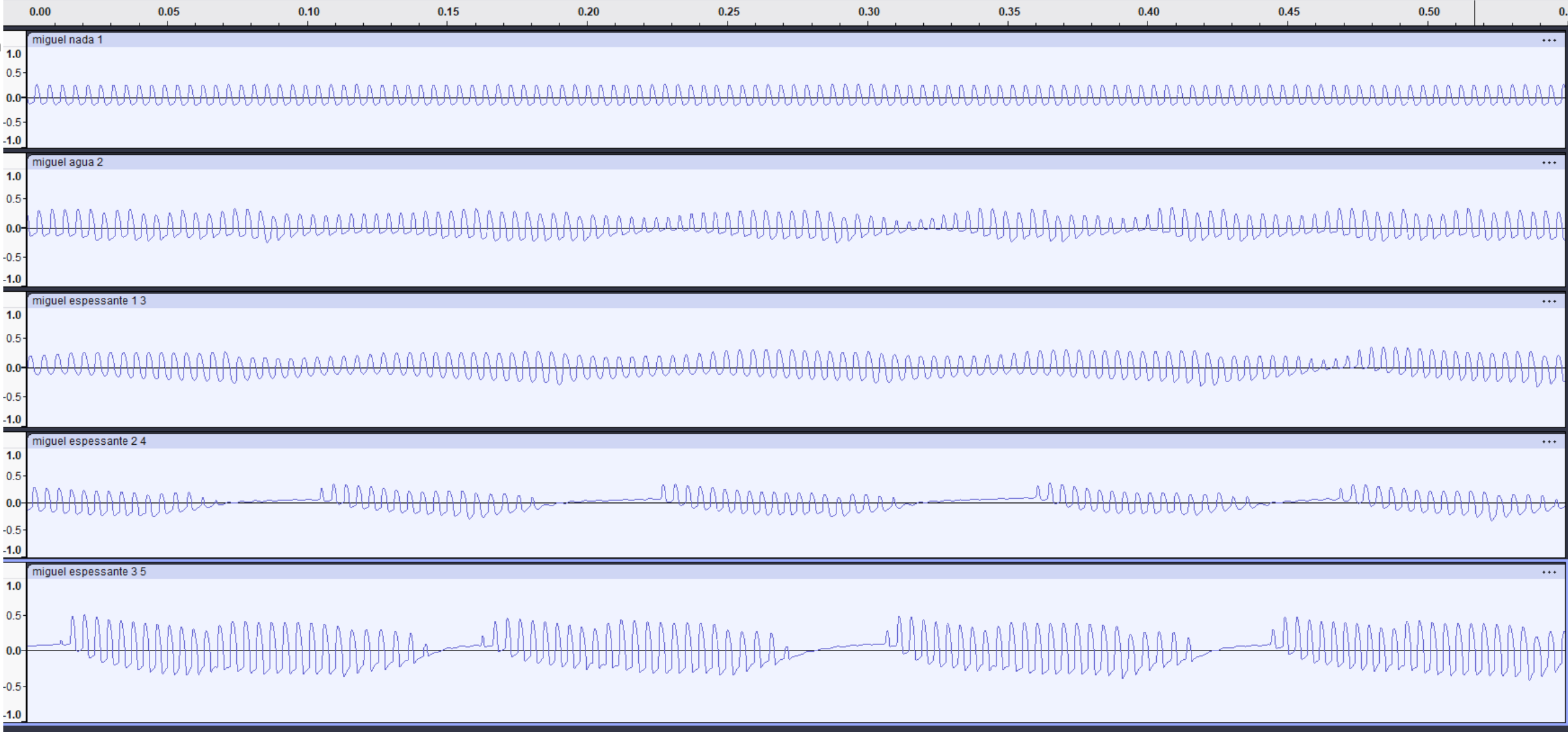


Macro: Continuous phonation with a slow, wave-like variation in amplitude over time.
Micro: Still regular cycles but with progressively less uniform amplitude.



Macro: Phonation repeatedly interrupted by pauses; each restart occurs at a different vertical level.
Micro: Recognisable cycles but with variable amplitude within each block.

Free phonation



Water

+ 1 sc powder

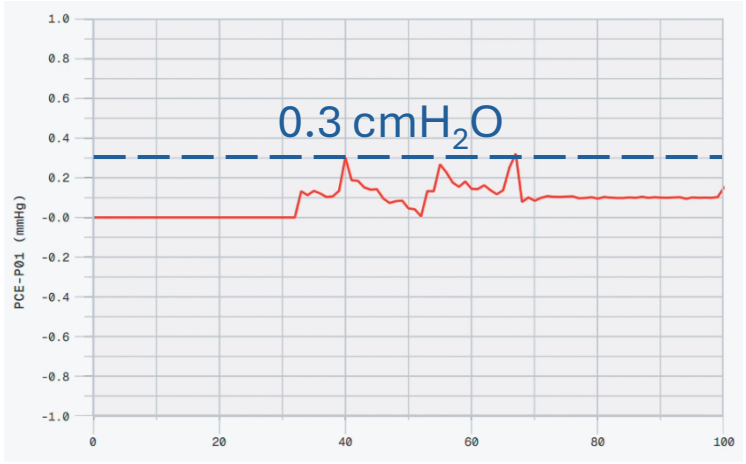
+ 2 sc powder

+ 3 sc powder

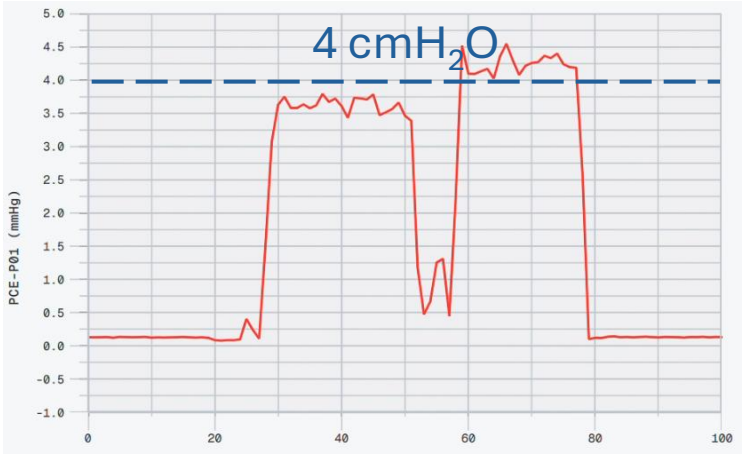
Macro: Highly irregular phonation with frequent pauses and restarts at unpredictable vertical levels.
Micro: Irregular cycles with inconsistent shape and amplitude.

Intraoral Pressure (cmH_2O)

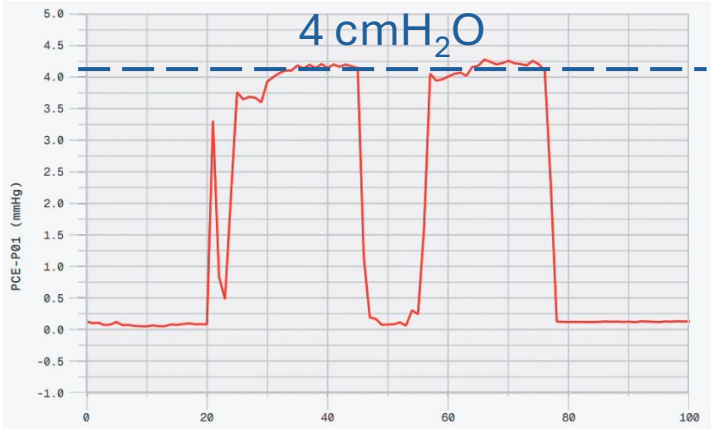
Free phonation



Water

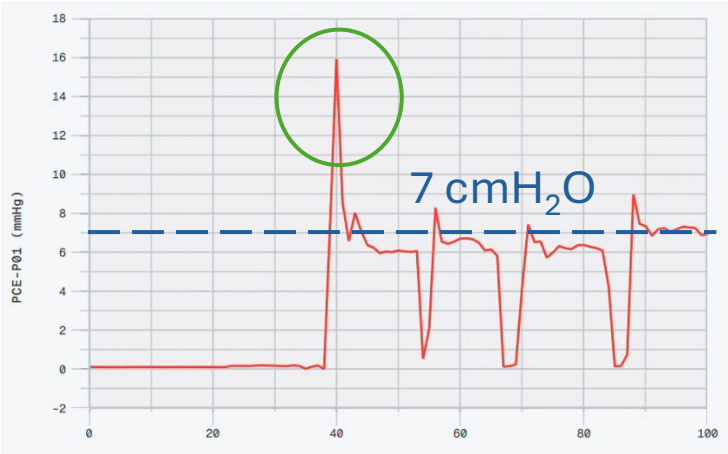


+ 1 sc powder



+ 2 sc powder

+ 3 sc powder



Food for thought… (***or liquid***)

This points to an ***optimal therapeutic viscosity*** window — high enough to augment the SOVT effect, but not so high as to fragment phonation.

Remember… this was just for the workshop!
It must not be used in training or clinical setting! (***yet***)

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