

# lingWAVES Voice Protocol (VPR)

# WEVOSYS

## Reliable, Quick and Objective

A quick and easy 10 minute Standard voice assessment protocol - gives reliable and objective measures for voice assessment tasks used worldwide.

A must - have for every clinic - whether you are a voice specialist or only see an occasional voice or Parkinsons client. Saves time in gathering and analyzing data instantaneously and provides a clear instant printed report including progress tracking and outcomes.

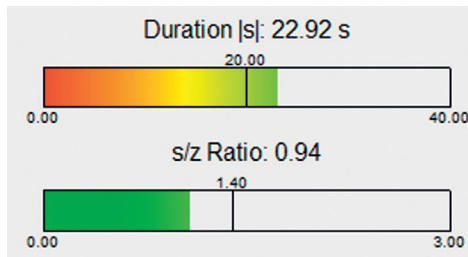


Walks you through 4 assessment screens and then provides a supplementary screen (Real Time Pitch and real SPL Loudness) for your own assessment tasks and client biofeedback and performance measures for treatment tasks:

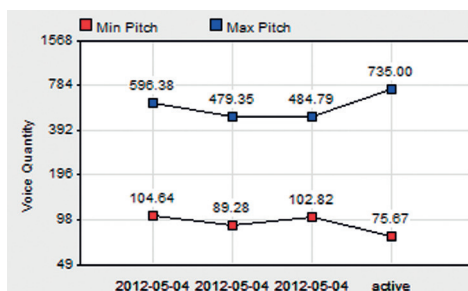
- ▶ Step 1 - s/z ratio, MPT (Maximum Phonation Time)
- ▶ Step 2 - F0 / pitch, loudness, glide, voice quality, jitter, shimmer, irregularity, noise (GNE)
- ▶ Step 3 - DSI (Dysphonia Severity Index)
- ▶ Step 4 - Spoken Text Analysis - Pitch and SPL range in running speech
- ▶ Additional: Screen for your own preferred assessment tasks and client biofeedback and performance measures for treatment sessions

## But that's not all ...

1. VPR Voice assessment data is clearly displayed and most results are compared with norm data. A graphical and numerical display allows easy interpretation of the results at first glance.



2. Track progress and outcomes - Make several pre-post voice assessments during your treatment. lingWAVES VPR shows results of all client sessions on a time line.



3. Use real time pitch and loudness display for biofeedback, e.g. if you treat Parkinson patients.
4. It doesn't matter what recording hardware and sound card you have - lingWAVES VPR comes with a certified SPL meter / microphone and a plug-and-play lingWAVES Connector USB,

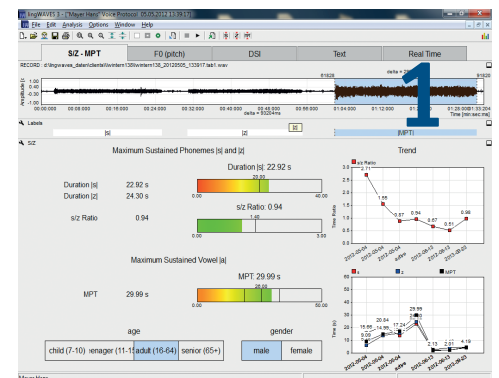
with its own sound card. You can compare results from different computers - calibration is **not** necessary. All you need is a recent Windows 10 computer (see system requirements)

## Step 1: s/z Ratio and Maximum Phonation Time (MPT)

3 minutes for step 1: Record and label s, z and MPT and get instant results compared with norm data and displayed on a time line with other client sessions (e.g. for pre-post assessment analysis)

*The s/z ratio is an indicator of voice disorder. It measures the ability to sustain the voiceless sound 's' in comparison to sustaining the voiced sound 'z'. 95% of people who have some difficulty affecting the function of their vocal cords have an s/z ratio of greater than 1.40.*

*Maximum Phonation Time (MPT) is a useful measure of vocal function. It provides a simple test of glottic efficiency. MPT is useful as an indicator of laryngeal pathology and is frequently used to monitor progress - lingWAVES VPR does this instantly for you.*



s/z ratio and MPT analysis with time line display.



lingWAVES  
Connector  
USB  
standardization

lingWAVES  
REAL  
SPL  
technology

  
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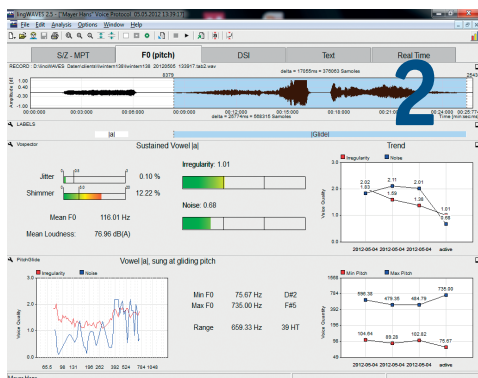
## Step 2: F0-Pitch Analysis

2 minutes for step 2: Record and label a 3 seconds sustained vowel and perform a glide from your lowest to highest pitch.

See instant data of jitter, shimmer and the new objective measurements related to perception - irregularity (roughness) and noise (breathiness), compared with norm data and displayed on a session time line.

**NEW:** lingWAVES introduces a new pitch glide analysis - voice quality as a function of fundamental frequency / pitch to show vocal fold regularity of movement and vocal fold closure.

*Pitch, in speech is how high or low a tone is perceived by the ear. This depends on the number of vibrations per second - fundamental frequency (F0) - produced by the vocal cords. Pitch is the main acoustic correlate of tone and intonation.*

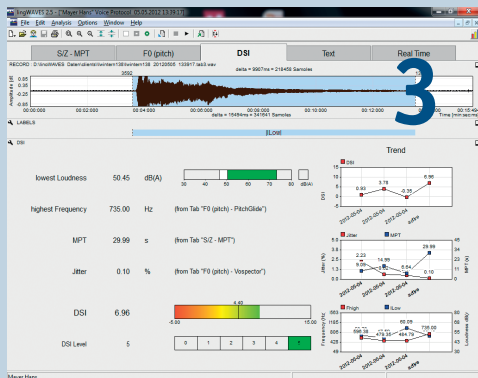


F0-Pitch analysis with voice quality assessment.

## Step 3: Dysphonia Severity Index (DSI)

1 minute for step 3: All you need now for a DSI calculation is the client's minimum loudness. Highest Frequency, MPT and Jitter are already measured before. Record a sustained vowel [a:] from normal to low-est loudness. The display shows a time line (pre-post) for measured data.

*The vocal quality and degree of dysphonia of a client is modeled by means of a Dysphonia Severity Index (DSI), which is designed to establish an objective and quantitative correlate of the perceived vocal quality. DSI is based on a multidimensional approach and not only based on a single acoustic measurement (e.g. cepstral analysis, jitter, ...) and therefore more close to perceptual evaluation.*



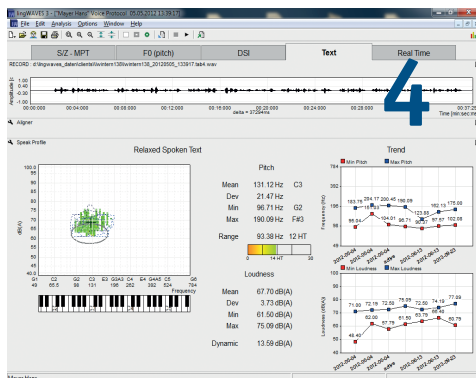
Vocal quality and degree of dysphonia with DSI.

## Step 4: Spoken Text Analysis

3 minutes for step 4: Record a standard text (Rainbow Passage) which is shown on the screen during recording of your client. Pitch and loudness data are displayed instantly after reading completion.

**NEW:** Frequency and absolute loudness (dB) data are displayed in a frequency / loudness graph, comparable with a VRP (Voice Range Profile). This graph provides a better and easier to understand overview.

*VPR spoken text analysis is a voice analysis of continuous speech with fundamental frequency and absolute loudness measurements. It gives information about the mean fundamental frequency / SPL loudness as well as pitch range and loudness dynamic.*

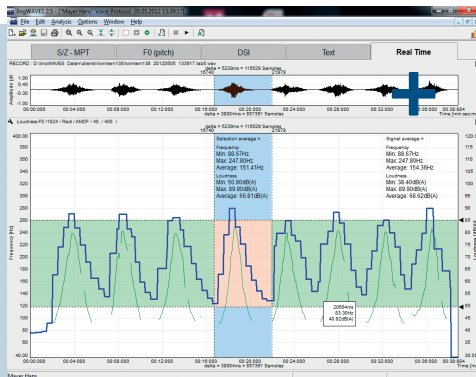


F0-Pitch / Loudness analysis in running speech.

## Step 4+ extra Benefit: Real Time Pitch and Loudness

Real time display: F0-Pitch and loudness (SPL) for objective measurement in your own preferred assessments or for visual biofeedback in treatment sessions such as Parkinsons client biofeedback. It provides a visual biofeedback of loudness and pitch characteristics of a patient's voice / speech and can also display a target loudness level to enhance a patient's self-perception and motivation.

Intonation, stress, timing patterns as well as target pitch and absolute loudness values during running speech can be seen as they are said by the client.



Biofeedback for real time pitch and real loudness.

## Perfect if you use CAPE-V

The CAPE-V indicates salient perceptual vocal attributes, identified by the core consensus group as commonly used and easily understood. The attributes are: (a) Overall

Severity; (b) Roughness; (c) Breathiness; (d) Strain; (e) Pitch; and (f) Loudness.

lingWAVES Voice Protocol provides 4 of 6 objective measured CAPE-V data.

*The Consensus Auditory-Perceptual Evaluation of Voice (CAPE-V) was developed as a tool for clinical auditory-perceptual assessment of voice. Its primary purpose is to describe the severity of auditory-perceptual attributes of a voice problem, in a way that can be communicated among clinicians. Its secondary purpose is to contribute to hypotheses regarding the anatomic and physiological bases of voice problems and to evaluate the need for additional testing.*

## Sets with Voice Protocol

lingWAVES VPR can be purchased as a suite with voice recording, spectrography and VDI / VHI-12 module. It is also included in the lingWAVES Voice Clinic Suite Pro. Upgrades to other lingWAVES modules like Nasality, Voice Range Profile, MSDA, TheraVox, EGG ... are possible using the same application and client management.

## System Requirements (2023-03)

OS: Windows 10 or 11, Hardware: PC or notebook, min. i5, i7, min. 8 GB RAM, loudspeaker, 1 x USB (lingWAVES Connector USB), no sound card required - no more trouble with poor quality sound cards and microphones. Frequent updates and international customer-friendly support.

More information:  
[www.wevosys.com](http://www.wevosys.com)

Made in Germany

