**MDVP**

Multi-Dimensional Voice Program (MDVP), Model 5105 he Multi-Dimensional Voice Program (MDVP) is the gold standard software tool for quantitative acoustic assessment of voice quality, calculating more than 22 parameters on a single vocalization. Based on extensive field testing with normal and disordered voices, MDVP is unique in its ability to work accurately over a wide range of pathological voices. Its normative references are based on an extensive database of normal and disordered voices; and results are graphically and numerically compared to these normative threshold values. MDVP quickly and easily provides a revealing snapshot of voice quality

The MDVP software of Kay Pentaxcalculates 33 measures, and those of major interest in the literature are the frequency measures: f0; maximum f0 (fhi); minimum f0 (flo); standard deviation f0 (STD); frequency perturbation measures; absolute jitter (Jita); Jitterpercentage (Jitt); Relative measure of the pitch disturbance (RAP); pitch perturbation quotient (PPQ); smoothed pitch perturbation quotient (sPPQ); f0 variation (vf0); measures of perturbation intensity: Shimmer in dB (ShdB); percentage Shimmer (Shim); amplitude perturbation quotient (APQ); smoothed amplitude perturbation quotient (sAPQ); amplitude variation (vAm); Noise-to-harmonics Ratio (NHR); Voice turbulence index (VTI); Smoothed phonation index (SPI); voice break measures: Degree of voice breaks (DVB); Number of voice breaks (NVB); mute or unvoiced segments measures: Number of unvoiced segments (NUV); Degree of unvoiced segments (DUV); sub-harmonic segments measures: Degree of sub-harmonics (DSH); Number of sub-harmonics (NSH)

Fundamental **frequency** (Fo) is the vibratory rate of the **vocal** folds. It can be **measured** in hertz (Hz) or cycles per second (cps). Average fundamental **frequency** during conversation for males ranges from 100 to 150 Hz, whereas for females it ranges from 180 to 250 Hz.

**Jitter** is a measure of frequency instability, while shimmer is a measure of amplitude instability. A normal **voice** has a small amount of instability during sustained vowel production. Normal instabilities are influences by tissue and muscle properties.

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| MDVP:Fo (Hz) | Average vocal fundamental frequency |
| MDVP:Fhi (Hz) | Maximum vocal fundamental frequency |
| MDVP:Flo (Hz) | Minimum vocal fundamental frequency |
| MDVP:Jitter (%) | Five measures of variation in fundamental frequency |
| MDVP:Jitter (Abs) |
| MDVP:RAP |
| MDVP:PPQ |
| Jitter:DDP |
| MDVP:Shimmer | Six measures of variation in amplitude |
| MDVP:Shimmer (dB) |
| Shimmer:APQ3 |
| Shimmer:APQ5 |
| MDVP:APQ |
| Shimmer:DDA |
| NHR | Two measures of ratio of noise to tonal components in the voice |
| HNR |
| RPDE | Two nonlinear dynamical complexity measures |
| D2 |
| DFA | Signal fractal scaling exponent |
| Spread1 | Three nonlinear measures of fundamental frequency variation |
| Spread2 |
| PPE |
| Status | Health status of the subject: one, Parkinson’s; zero, healthy |