

Objective pitch and loudness evaluation for trans and gender-diverse individuals for gender-affirming voice and communication therapy

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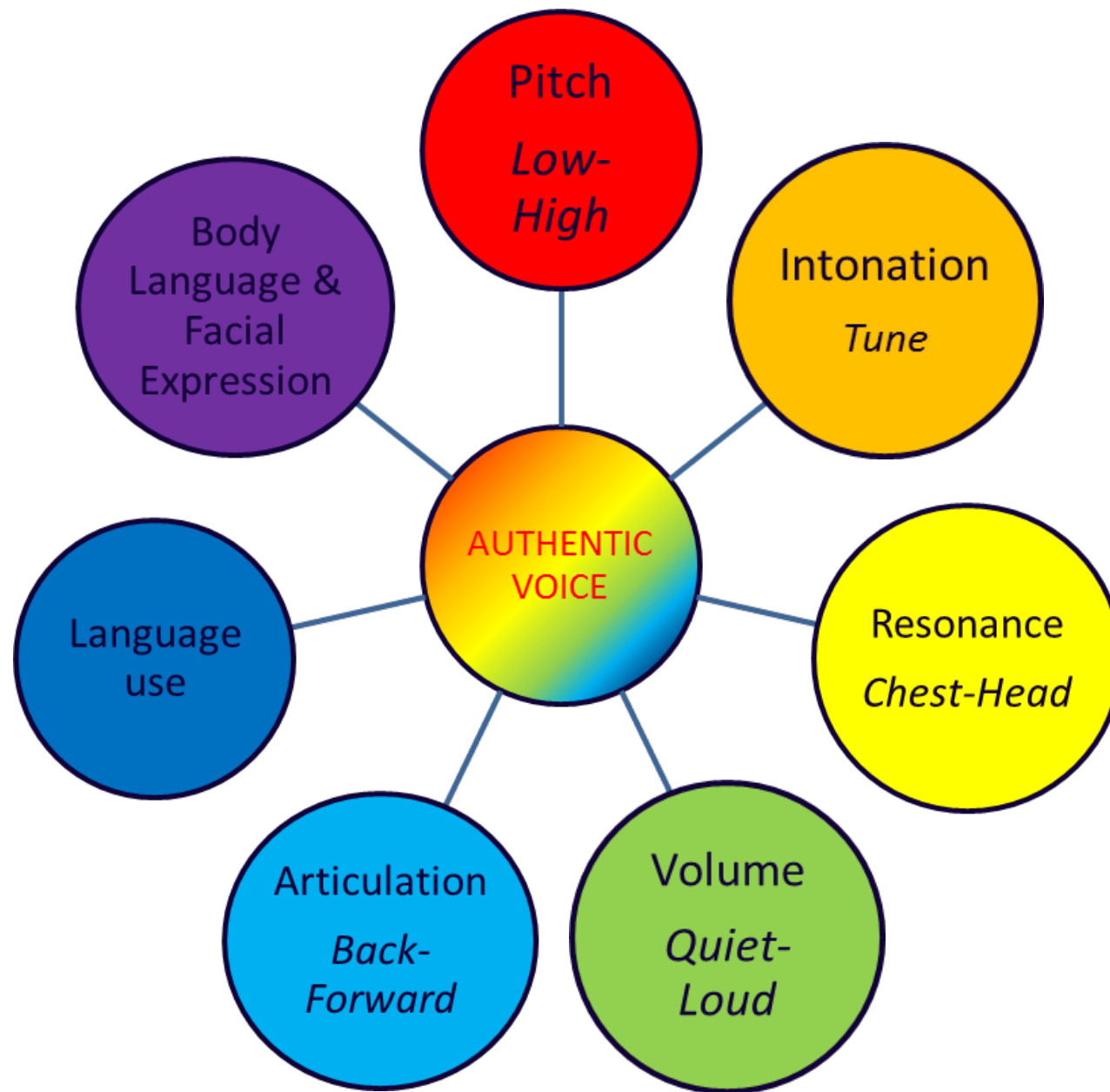
Ellissia Porter ('she/her')

Speech and Language Therapist

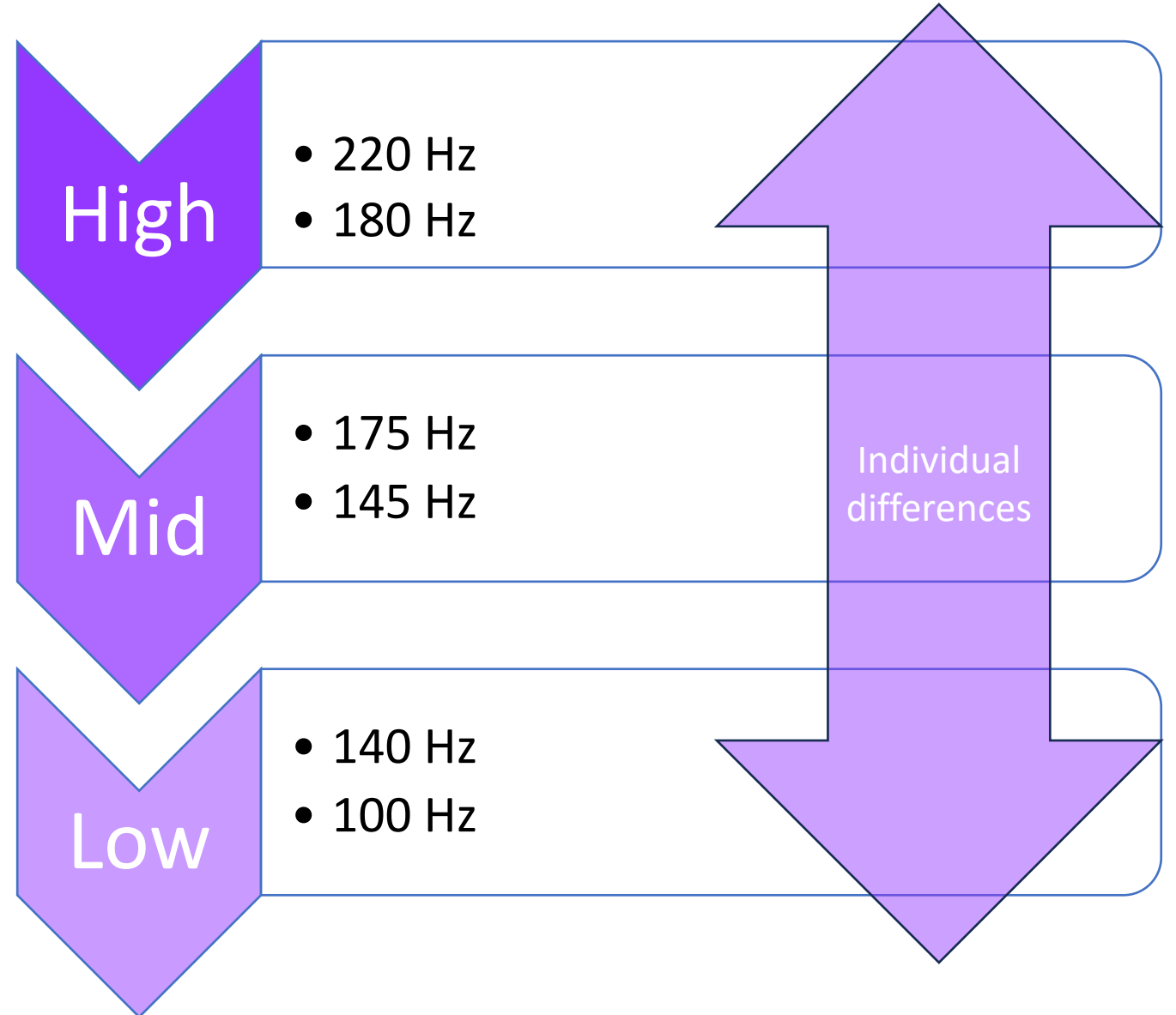
Authentic voice for trans and non-binary people

Mills & Pert, 2023

Authenticity of voice should focus on more than just fundamental frequency (Davies et al., 2015)



Listener perceptions and Fundamental frequency (f_0)

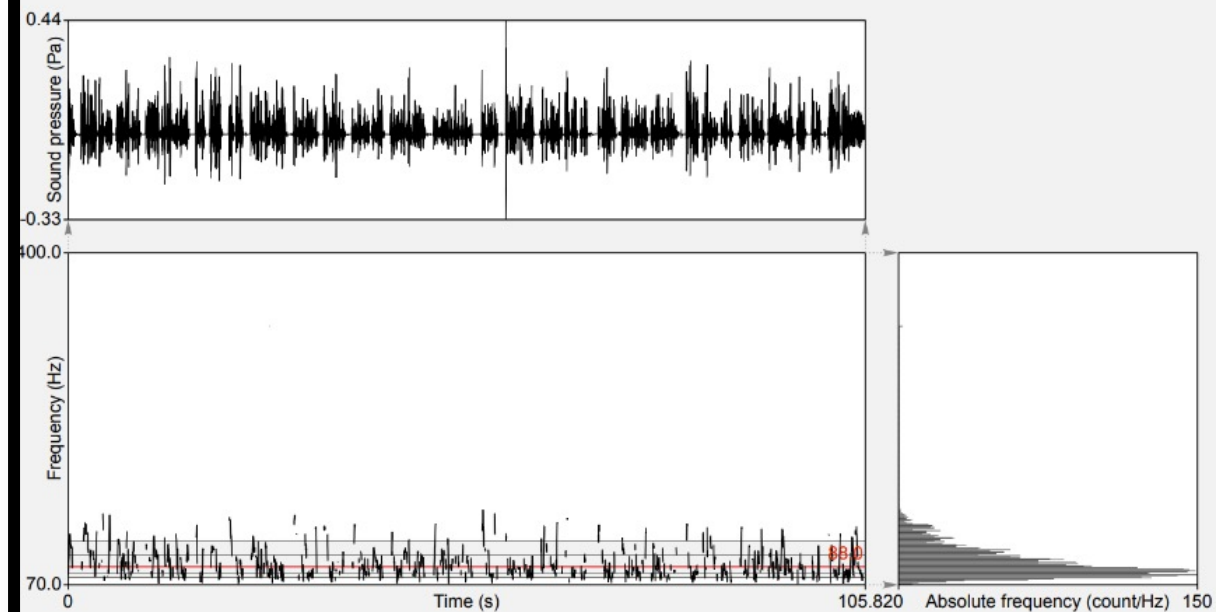


(Davies et al. 2015)

Voice Evaluation: F_0 , SPL

VOCAL FUNDAMENTAL FREQUENCY (f_0) v.02.04

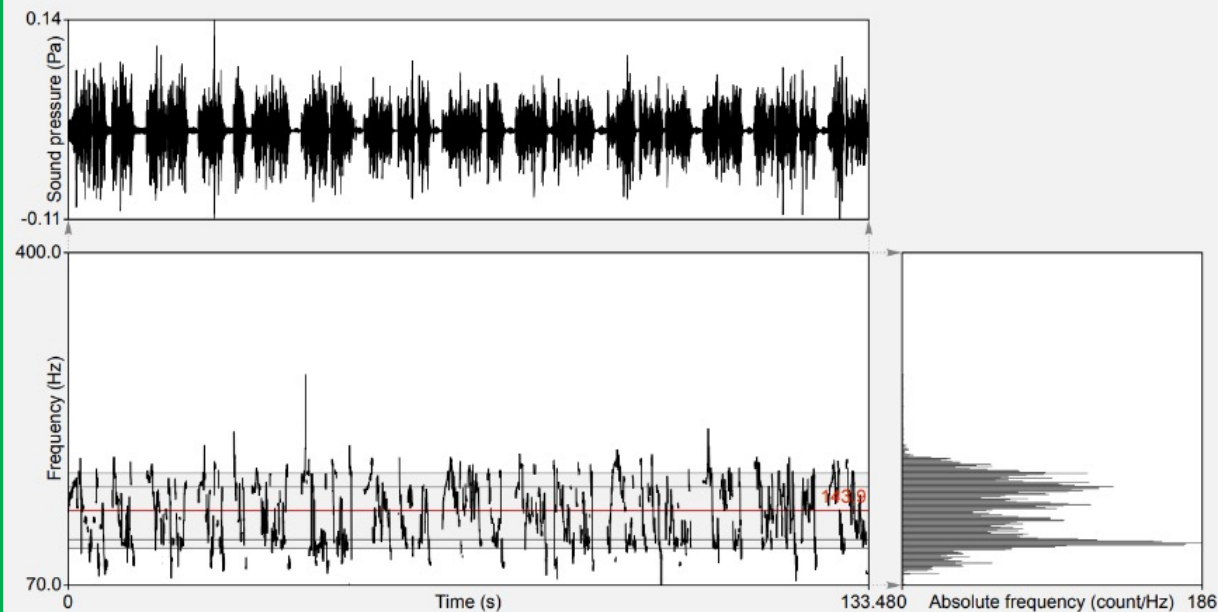
Initial Appointment



Measures of vocal f_0	in Hertz (Hz)	in semitones (relative to 1 Hz)
Minimum	70.72	73.73
10 th percentile (P10)	77.56	75.33
25 th percentile (P25) - 1 st quartile (Q1)	81.49	76.18
50th percentile (P50) - 2nd quartile (Q2) - median	88.02	77.52
Mean	92.26	78.13
75 th percentile (P75) - 3 rd quartile (Q3)	99.55	79.65
90 th percentile (P90)	113.53	81.92
Maximum	327.26	100.25
Standard deviation	15.22	2.56
Interquartile range (IQR) - Q3-Q1	18.06	3.47
Range between 10th and 90th percentiles - P90-P10	35.97	6.60

VOCAL FUNDAMENTAL FREQUENCY (f_0) v.02.04

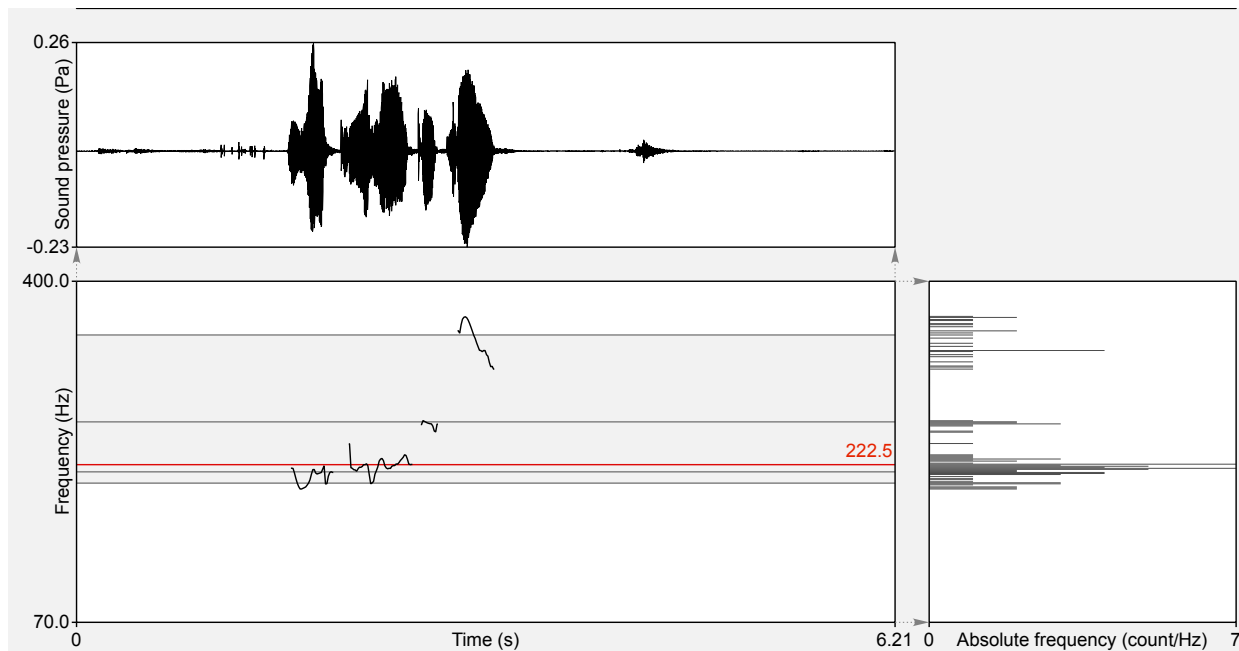
Outcome Appointment



Measures of vocal f_0	in Hertz (Hz)	in semitones (relative to 1 Hz)
Minimum	70.00	73.55
10 th percentile (P10)	106.62	80.84
25 th percentile (P25) - 1 st quartile (Q1)	115.31	82.19
50th percentile (P50) - 2nd quartile (Q2) - median	143.94	86.03
Mean	142.63	85.49
75 th percentile (P75) - 3 rd quartile (Q3)	167.48	88.65
90 th percentile (P90)	181.21	90.02
Maximum	279.40	97.51
Standard deviation	29.29	3.68
Interquartile range (IQR) - Q3-Q1	52.17	6.46
Range between 10th and 90th percentiles - P90-P10	74.59	9.18

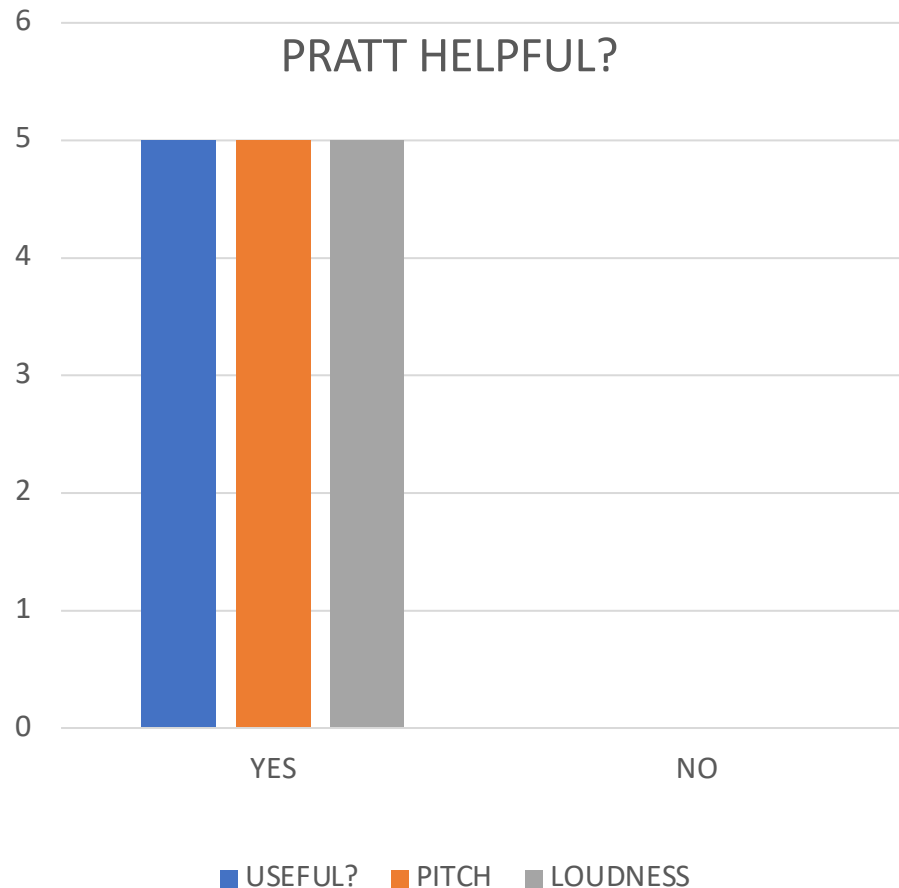
During therapy: examples and feedback

E.g., Rising intonation



Measures of vocal f_0	in Hertz (Hz)	in semitones (relative to 1 Hz)
Minimum	198.98	91.64
10 th percentile (P10)	204.71	92.13
25 th percentile (P25) - 1 st quartile (Q1)	215.55	93.02
50th percentile (P50) - 2nd quartile (Q2) - median	222.54	93.58
Mean	250.58	95.28
75 th percentile (P75) - 3 rd quartile (Q3)	263.92	96.53
90 th percentile (P90)	348.03	101.32
Maximum	365.64	102.17
Standard deviation	53.38	3.38

Service User Feedback on the use of PRAAT



Yes, it helped visualise what the pitch actually means and some people need visual learning

It helped me understand where my voice Hz at

Helpful in illustrating the impact of different methods / techniques

I'm happy it shows me how breathing can assist with my pitch