

Three intonations for singers

David D E Evans August 2023

1. **Equal temperament**

Chromatic Scale
Major and Minor Scales
Full tone scale.
Double diminished arpeggio, etc.

2. **Just intonation**

Singing around the circle of fifths adding a sharp each time, (down a perfect fourth or up a perfect fifth) leads you to a sharper tonic (220 hertz > 223hertz).

Singing around the circle of fifths adding a flat each time, (up a perfect fourth or down a perfect fifth) leads you to a flatter tonic (220 hertz > 218 hertz).

Modulation in an acapella song is with circle of fifths tuning.

The major third ($5/4$ hz), fifth, ($3/2$ hz) and ninth ($9/8$ hz) can be sung over an equal temperament accompaniment. They enhance the sound.

3. **Fourth and fifth octave overtone scales**

The first octave has the root and the octave overtone.
The second octave has the 2nd 3rd and 4th overtones.
The third octave has the 4th 5th 6th 7th and 8th overtones.
The fourth octave has the 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, and 16th.
The fifth octave has the 16th, 17th, 18th, 19th, 20th, 21st 22nd, 23rd, 24th, 25th, 26th 27th, 28th, 29th, 30th, 31st, and 32nd.

Choosing your comfortable lowest note as the tonic, the fourth and fifth octaves are the singing range of a trained singer. The overtone scale can be sung in sequence (1, 2, 3, > 32) within your lower octave by transposing.

The 7th overtone is the Barbershop Seventh. It is used in acapella singing but not with equal temperament accompaniment.

A Bugle player uses the 2nd 3rd 4th 5th and 6th overtones for the Last Post but professional trumpeters can easily play the 7th 8th, 9th, and 10th overtones as well.

The overtone notes of the fourth and fifth octaves can be sung together as all are related to the root bass. The 11th and 13th harmonise uniquely. The 15th is a leading note.

Resonance and timbre come with overtones and partials. Singing in harmony you may even hear undertones as well as extra very high overtones.