Intonation - playing in tune

Playing in tune is the violinist's most obviously essential skill - one that they must learn from the beginning and continually refine all of their musical lives. Beginners have fingerboard tapes to show where to place fingers, but these can only ever be approximations. The sense of being in tune comes primarily from listening - including listening regularly to accurate performances and recordings; and matching these "aural images" when playing. Here's 5 basic steps for young players to learn to play securely in tune:

**Step 1.** Make sure the violin is precisely tuned. Fingers learn distances between notes with surprising accuracy. If the violin is out of tune, these carefully learned note-steps produce off pitches. Check the tuning constantly, especially in hot and humid weather - with an electronic tuner, tuning fork, recorded pitch etc.

**Step 2.** Carefully check the key and notes of the piece. E.g. C# or C♭, B or B ♯? Clarifying the correct note you intend to play helps avoid obvious errors.

**Step 3.** Before starting to play, get fingers in place over the fingerboard. Then accurately (and softly) tune the first stopped note in a piece before you begin. For example, if it is a D on A string, check it with open D, listening for sympathetic resonances (see matching open strings below).

**Step 4.** Practise the section slowly, listening carefully. If necessary, make small adjustments until it sounds just right. Then try to play perfectly in tune without needing to adjust pitches of notes, i.e. with fingers placed in exactly the right place - first time. Don’t be satisfied with notes that sound almost correct: it’s either nicely in tune or not. Make precision a habit.

**Step 5.** Where appropriate, leave lower fingers down in ascending passages to step from one note to the next. Your fingers learn accurate distances between notes (e.g. tone and semitone steps) from each other. Lower fingers act as anchor points for higher fingers - even on other strings. e.g. Perpetual Motion, S Suzuki

![Intonation Diagram](image)

1 keep down
2 keep down
3 keep down to play 4th finger

**Intonation for more advanced players**

So, a note or passage is in tune or it's not, right? The truth is, well, yes and no... and it depends on the context. Small adjustments and refinements in pitch become more significant as your playing develops.

Musicians generally agree there are two or three fundamental systems of intonation (I sometimes call it *intonation*) - and we 'lucky' string players can - or must - use them all. Just intonation is based on natural harmonics; in **Equal Temperament** the octave is divided equally into 12 semitones (pianos are tuned this way) and musicians may use **expressive** or **melodic intonation**, making small adjustments to the pitch according to the flow and shape of the melody and the broader demands of the music itself.

String players may use Just Intonation for notes played simultaneously in a chord, to create the pure sound of natural harmony. However using only natural harmony and harmonics can make it more...
difficult to move seamlessly between keys. Small differences in natural harmonics are magnified as we go up the harmonic series. This means a note can sound ‘in tune’ in one key but not in another. It was this dilemma that resulted in the gradual development of equal temperament tuning, enabling freer movement between keys. It came at a cost - the harmonies are no longer as pure and melodies can be a little colourless. Nonetheless we've become accustomed to the sound of the tempered scale, especially on keyboard and fretted instruments.

Looking on the bright side, string players, singers and trombonists are specially blessed. We've got the best of all worlds. We can choose intonation to suit the music. But what are the implication for study and performance? How do we learn to consistently play in tune? Let's consider some general principles.

- **Match the pitch of open strings.**
  The strings are tuned to each other with pure intervals of fifths. The open strings help us fix the pitch of fingered Gs, Ds, As and Es, causing sympathetic resonances that are an important part of the violin’s tone and projection. For example, playing A on the E string (3rd finger) exactly in tune will cause the open A string to vibrate - you can hear it and see it.

  Similarly D on A string and G on the D string will produce resonances in the D and G strings.

  ![Open String Resonances](image)

  Notes that match open strings will produce clear sympathetic ringing tones, e.g. 4th finger on G in 1st position - the note D causes D string to vibrate.

  ![Closed String Resonances](image)

  A lot of music written for violin suits open string resonances, but take care in keys where these notes are leading tones (e.g. in F major, E is a leading tone and may be sharper than E string in some contexts); or in chords with thirds or sixths.

- **Use pure perfect octaves, fifths and fourths.**
  These easily recognisable intervals provide a reliable guide to playing a note in tune in most circumstances. They form the basic structure of good intonation.

- **Sharpen leading tones.**
  Sharpening leading tones helps to create tension, relieved by the arrival (or sometimes the non-arrival) of the anticipated tonic or key note. In the example below the leading tone, G#, irresistibly moves to resolve to the final A. Slightly sharpening the G# heightens the tension.

Concerto in A minor, Op. 3 No. 6, 1st Mvt, A Vivaldi
• **Adjust melodic major thirds up and melodic minor thirds down.**

Thirds can give the melody its major or minor quality. The slightly sharper major third can brighten an ascending interval or passage.

Concerto in A major K219, 1st Mvt, WA Mozart

Here's a conundrum that illustrates the problems of working with two systems: In the ascending scale of A major, B is the supertonic - a major 2nd up from the tonic; but in the key of G major it is the mediant - a major 3rd - and a little sharper. Experiment by playing B with open D string, adjusting to a pure 6th. Now play this same B against E string. Surprise - it is too flat for a clean perfect 4th!

• **Use natural harmonics as guides.**

Natural harmonics are clearly identifiable guides to good intonation. Their clear ringing sound of harmonics is an attractive feature of many compositions for stringed instruments. In many situations they can substitute for a stopped note.

Concerto in D major K218, 1st Mvt, WA Mozart
• **Adjust intonation to suit the music.**

Music written for solo violin, such as *JS Bach's Solo Sonatas and Partitas*, obviously allows greater freedom for balancing harmonic and melodic intonation. However when playing together with the piano - an equal temperament instrument - a compromise can produce more satisfying results. If the key is in D or G, for example, it is better to tune your violin to the piano centred on one of these open strings, rather than the A. A string should then be tuned to a 'tight' fifth - that still rings - but maintaining the focus on the key of the music.

Playing in a quartet is the most demanding of all contexts, requiring understanding and mutual agreement of each player's harmonic role in chords.