

# Components of Sound

All sounds has following qualities:

Duration (long-short)

Intensity (loud-soft)

Timbre (tone quality)

Pitch (high-low)

## Pitch

Pitch is determined by the frequency of vibrating column. The higher the frequency, the higher the pitch. This is referred to as Hz; formerly cps, or cycles per second. The following factors affecting pitch:

The length of the vibrating column

The shorter the column, the higher the pitch

The tension of the vibrating column

The greater the tension, the higher the pitch

The diameter of the vibrating column

The smaller the diameter, the higher the pitch

The density of the vibrating column

The greater the density, the higher the pitch

Each of the aforementioned factors act independently. For example; a long vibrating column may produce a high pitch if the tension is great. A large diameter column may produce a high pitch if its length is short, or very dense.

## Relationship to brass performance

As the aperture of the lips is made smaller, the length of the vibrating column is shortened, thus producing a higher pitch.

As the tension of the lips is increased, a higher note is produced.

The lips are a muscle and when 'flexed,' the density is increased which produces a higher pitch.

When the mouthpiece is pressed harder against the lips, it decreases the diameter of the vibrating, thus creating a higher pitch. **This technique should not be used** since it creates fatigue, stops the vibration of the lips, and is detrimental to the embouchure.