The Science behind “Singing Glasses”

**The Science of Sound**

Sound is made of vibrations. A leaf being blown around by wind creates sound. A piano generates sound when a key hits a string, causing it to vibrate. When the sound waves reach our ears, they delicately move the skin of the eardrum around and cause it to vibrate. “Frequency” of the sound wave (often called pitch) means how often the object vibrates, or more accurately, frequency is the amount of times that a sound wave repeats itself. The more something vibrates, the higher the frequency. Similarly, less vibrations mean lower frequency.

**Singing Glasses**

The science of sound applies to any musical instrument of which singing glasses are discussed in this report. Singing glasses are a group of glasses containing water, partially or in full, that can generate a range of sounds when rubbing a dampened finger along the rim of the glass or tapping it with a metal object. Depending on the size of the glass and the amount of water that it contains, vibration occurs at a certain frequency or pitch. The more water in the glass, the lower the pitch. This is because the water makes it harder for the glass to vibrate; thus, the glass vibrates less. When there is a lower water level, however, the glass will vibrate more. On the other hand, different glass sizes vibrate at different frequencies; the smaller a glass is, the more it vibrates. Therefore, a smaller glass creates a higher pitch whereas larger glasses make lower frequencies. Comparably, thickness affects the frequency of glasses. A thinner glass will vibrate more than a thicker one, consequently creating a higher pitch.

**More about pitch**

Pitch is measured in Hertz (Hz). One Hz is equal to one cycle per second. When Middle C on a piano is pressed, it causes the string to vibrate approximately 262 times per second, meaning that it generates a pitch of about 262 Hz. Our ears cannot detect all pitches. According to [DK Find Out](https://dkfindout.com), “Human ears cannot detect very low-pitched noises, known as infrasound, or very high-pitched noises, called ultrasound.” The lowest and highest pitches we can hear are 20 Hz and 20,000 Hz respectively. Animals, on the contrary, can hear a wider range of frequencies than us.

**References**

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