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A Case Study on Humming Phonation

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Abstract

There are restrictions on singing songs with Corona. Humming is one of the vocalizations that is considered to have a low risk of infection. Since humming is uttered only by the sound without adding words, it is used as a vocal practice or in chorus aiming at a special effect. Humming vocalization has features such as confirming the sound of the voice, avoiding the strained power of the singing voice, and not burdening the throat. However, many humming instructions are subjective, and the mechanism and actual conditions are not well understood. This study examined what kind of acoustic features the humming with closed the mouth and various gestures have. Since a mask is required in singing with corona, this study investigated the case of using mask, mouth shields, and face shields.

The subject made three types of gestures by humming with the mouth closed (humming with a narrow mouth, humming with a wide mouth, and humming with a lowered throat). One female music teacher uttered humming three times at C4, G4, and C5. The recording was done in a music classroom. These three types of humming were uttered with four types: no mask, disposable non-woven mask, mouse shield, and face shield. These voices were taken into a personal computer and acoustic analysis was performed using Praat. A 0.5 sec of the stationary part where the voice was stable was extracted, and the acoustic analysis of that part was performed.

Of the three types of humming vocalizations, the sound intensity was lowest for humming with the oral cavity narrowed and highest for humming with the larynx lowered.

comparing non- woven masks, mouse shields, and face shields, the non- woven masks had the lowest sound intensity. The sound intensity of the face shield was also lower, but the volume of the mouse shield was higher than that without the mask. In humming with the larynx lowered, the 4th formant tended to be closer to the 3rd formant.

There was a difference in the sound depending on the humming gesture with the mouth closed and the pitch. Humming with the larynx lowered increased the sound and volume. This result is effective as one of the methods for obtaining the sound of the voice in humming with the mouth closed.