

INFLUENCE OF THE SENSATION OF VIBRATION ON PERCEPTION AND SENSIBILITY WHILE LISTENING TO MUSIC

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ABSTRACT. *We examined the influence of the sensation of touch on the perception of sound and its effect on sensibility. This was assessed in subjects listening to music while experiencing the vibrations produced by a low frequency tone musical instrument such as a contrabass. Physically experiencing the vibrations produced by the contrabass seemed to increase the clarity of the contrabass sound and the sound source seemed to become closer. In addition, the sensation of playing a contrabass instrument was experienced.*

Keywords: Sense of vibration, Method of listening to music, Perception, Sensibility, Scheffe's paired comparison test

1. Introduction. Very few studies have been conducted on the methods available for listening to music using both the sense of hearing and the sense of touch, which can further enrich the music-listening experience. Although vibration headphones are currently being marketed, the sensitivity of the vibrations they produce has not been examined quantitatively. Furthermore, the vibrations sometimes cause unpleasant sensations around the ears of the listeners. Body-sonic systems have also been developed, but these are usually intended for mental or physical therapy, not the enhancement of music enjoyment [1,2]. Sugitani et al. proposed a music appreciation method that consists of applying vibration to a subject's arm by use of a vibration motor [3]. In their research, they divided the sound frequencies produced by a musical instrument into plural bands by means of a band pass filter and then produced vibrations corresponding to each band. However, this was proposed as a new vibration art form, and no evaluation is known to have been made from the viewpoint of enhancing music appreciation. In response to the issues above, we have been examining a music appreciation method that provides the natural vibration of a musical instrument to a person's body at the same time the person listens to the music [4-7]. In a previous paper [4], we used a MIDI sound source and applied vibrations corresponding to the sounds of various musical instruments by using an electromagnetic coil vibration device. As an extension of that method, the possibility was suggested that we could control a person's impression of music being played by physically applying the vibration and by controlling the type of musical instrument producing the vibration. In a separate previous paper [5], we learned that it was effective to apply air vibrations to the front of a person's body, such as their palm or abdomen. Based on these results, references [6] and [7] proposed the development of a "body sensation sound device" in which a full-range loudspeaker was attached to the sound hole of an acoustic guitar. We then investigated music listening methods associated with vibration sensations and