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## The relationship of pain threshold and autonomic nervous activity by sounds

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**Introduction & Aim:** Pain plays a crucial role in transmitting hazard signals to the body, but it causes stress. The pain threshold is reduced by listening to music. On the other hands, the pain raises sympathetic nerve activity, so it is thought that there is an association between pain and autonomic nerve activity. In this study, we examined the relationship of pain perception and autonomic nervous activity by four sounds.

**Methods:** Twenty-five women were investigated for pain thresholds on the forearm and lower jaw gingiva in the oral cavity by using pain vision PS-2100 (Nipro) which a current value gradually increases. The subjects are measured autonomic nervous activity by using Bonaly Light (GMS). The measurements were performed when they were listening to classical music, popular music, the sounds of ultrasonic scaler and alarm clock. These data were compared with those without sound. The four kinds of sounds were estimated to be pleasant or unpleasant by Visual Analogue Scale (VAS).

**Results & Discussion:** The classical and popular music were assessed at pleasant stimulation and the sounds of ultrasonic scaler and alarm clock were assessed at unpleasant stimulation. The thresholds of pain on two areas were significantly higher when the subjects were listening to popular music than those without music. Parasympathetic nervous activity values increased significantly under listening to two kinds of music or scaler's sound compared without sound. Sympathetic nervous activity values decreased significantly under listening to classical music and scaler's sound compared without sound. In conclusion, the present findings suggest that the pain perception might be effected with emotion for the environment, but the correlation between the pain perception and the autonomic nerve activity was not recognized.

## Biography

Tomida M graduated from School of Dentistry at Asahi University and Gifu University Graduate School of Medicine, and acquired PhD. After having worked as an Oral Surgeon for four years, she became a Teacher of Physiology at the same university. And she started to investigate the relationship between pain and emotion by using rat and human models. She found that the pain was involved with nerve cells of an amygdala and the cingulate cortex from animal experiment. It was clear that to listen to music reduces the pain perception from human experiment. However, the reason is unclear. Now, she looks into the relation between pain threshold and autonomic nerve activity.

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