

Music intensifies effects of anti-hypertensive medication

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Study shows anti-hypertensive drugs improving heart rate more in patients who listen to music after taking medication . Credit: Pixabay

Researchers report that listening to music significantly enhances the effect of anti-hypertensive drugs. According to a study conducted by researchers on of São Paulo State University (UNESP) in Brazil and international collaborators, music intensifies the beneficial effects of medication a short time after it is taken to control high blood pressure. The results of the study were published in *Scientific Reports*.

"We observed that [music](#) improved [heart rate](#) and enhanced the effect of anti-hypertensives for about an hour after they were administered," said Vitor Engrácia Valenti, a professor in the Speech Language Pathology Department of UNESP Marília's School of Philosophy & Sciences (FFC) and coordinator of the study.

A few years ago, the researchers at UNESP Marília began studying the effects of music on the heart in conditions of stress. One of their findings is that classical music tends to lower heart rate. "We've observed [classical music](#) activating the parasympathetic nervous system and reducing

sympathetic activity," said Valenti. The sympathetic and [parasympathetic nervous systems](#) constitute the autonomic nervous system, which maintains homeostasis. The sympathetic nervous system accelerates heart rate, constricts blood vessels and raises [blood pressure](#). The parasympathetic nervous system controls the body at rest, slowing the heart, lowering blood pressure, and stabilizing blood sugar and adrenaline.

The researchers followed up this finding by measuring the effect of musical stimulation on [heart rate variability](#) in ordinary situations such as treatment for [high blood pressure](#), in which music therapy has been studied as a complementary intervention. "Previous research showed music therapy has a significant positive effect on blood pressure in hypertensive patients," Valenti said. "But it wasn't clear if music could influence the effects of medication on heart rate variability and on systolic and [diastolic blood pressure](#)."

Synergy

The researchers performed an experiment to measure the effects of musical auditory stimulus associated with anti-hypertensive medication on heart rate and blood pressure in 37 patients with well-controlled hypertension. The subjects had been undergoing anti-hypertensive treatment for between six months and a year. Measurements were taken on two random days with a gap of 48 hours.

On one day, after taking their usual oral anti-hypertensive medication, patients listened to instrumental music via earphones for 60 minutes at the same volume. As control, on the other day, they underwent the same research protocol, but the earphones were not turned on. Heart rate variability was measured at rest and at 20, 40 and 60 minutes after oral medication. Several statistical and mathematical techniques were used to detect differences between heart rates at different times,

with high precision and sensitivity.

Analysis of the data showed heart rate diminishing significantly 60 minutes after medication when patients listened to music in the period. Heart rate did not fall as significantly when they did not listen to music. Blood pressure also responded more strongly to medication when they listened to music.

"We found that the effect of anti-hypertension medication on heart rate was enhanced by listening to music," Valenti said.

One of the hypotheses raised by the researchers is that music stimulates the parasympathetic nervous system, increases gastrointestinal activity and accelerates absorption of anti-hypertensive medication, intensifying its effects on heart rate.

More information: Eli Carlos Martiniano et al, Musical auditory stimulus acutely influences heart rate dynamic responses to medication in subjects with well-controlled hypertension, *Scientific Reports* (2018). [DOI: 10.1038/s41598-018-19418-7](https://doi.org/10.1038/s41598-018-19418-7)

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