

Listening to music while driving reduces cardiac stress

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A study by Brazilian researchers suggests that cardiac overload due to the stress of driving in heavy traffic can be attenuated by listening to instrumental music. Credit: Eduardo Cesar: Revista Pesquisa FAPESP

Stress while driving is a risk factor for the development of

cardiovascular disease and sudden cardiac complications such as heart attack (myocardial infarction), according to studies published in recent years. Selecting suitable driving music may be one way to mitigate this risk.

A study by researchers at São Paulo State University (UNESP) in Marília, Brazil, suggests that listening to instrumental [music](#), for example, may relieve [cardiac stress](#).

The results of the study, which were supported by São Paulo Research Foundation—FAPESP, are published in the journal *Complementary Therapies in Medicine*.

Researchers at the University of São Paulo (USP) in Brazil, Oxford Brookes University in the United Kingdom and the University of Parma in Italy also took part in this study.

"We found that cardiac stress in the participants in our experiment was reduced by listening to music while they were driving," Vitor Engrácia Valenti, a professor at UNESP Marília and a principal investigator of the project, told.

The researchers analyzed the effects of music on cardiac stress in five women between the ages of 18 and 23. All subjects were healthy, considered nonhabitual drivers (they drove once or twice a week), and had obtained a license 1-7 years previously.

"We opted to assess women who were not habitual drivers because people who drive frequently and have had a license for a long time are better adapted to [stressful situations](#) in traffic," Valenti explained.

The volunteers were assessed on two days, in different situations and in a random order. On one day, they drove for 20 minutes at rush hour

(5:30-6:30 pm) along a 3 km route in a busy district of Marília, a medium-sized city in the northwest of São Paulo State, without listening to music.

On the other day, the volunteers drove the same route at the same time of day but listened to instrumental music on a CD player coupled to the car radio. The use of earbuds or headphones while driving is a traffic offense.

"To increase the degree of traffic stress, we asked them to drive a car they did not own. Driving their own car might help," Valenti said.

The level of cardiac stress was estimated by measuring [heart rate variability](#) using a [heart rate monitor](#) attached to the participant's chest. Defined as fluctuations in the intervals between consecutive heart beats, heart rate variability is influenced by the [autonomic nervous system](#). The more active the sympathetic nervous system, the faster the heart beats, while the parasympathetic nervous system tends to slow it down.

"Elevated sympathetic nervous system activity reduces heart rate variability, whereas more intense parasympathetic nervous system activity increases it," Valenti said.

Analysis showed a reduction in heart rate variability in the volunteers who drove without music, indicating a lower level of parasympathetic nervous system activity but sympathetic nervous system activation.

Conversely, heart rate variability increased in the drivers who listened to music, indicating a higher level of parasympathetic nervous system activity and a reduction in sympathetic nervous system activity.

"Listening to music attenuated the moderate stress overload the volunteers experienced as they drove," Valenti said.

The study involved only women to control for the influence of sex hormones, he explained. "If men, as well as women, had participated and we had found a significant difference between the two groups, female sex hormones might have been considered responsible," he said.

In his view, the results of the study could contribute to the creation of cardiovascular preventative measures in situations of acute stress, such as driving in heavy traffic.

"Listening to music could be such a preventive measure in favor of cardiovascular health in situations of intense [stress](#) such as driving during rush hour," he said.

More information: Myrela Alene Alves et al, The effects of musical auditory stimulation on heart rate autonomic responses to driving: A prospective randomized case-control pilot study, *Complementary Therapies in Medicine* (2019). [DOI: 10.1016/j.ctim.2019.08.006](https://doi.org/10.1016/j.ctim.2019.08.006)

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