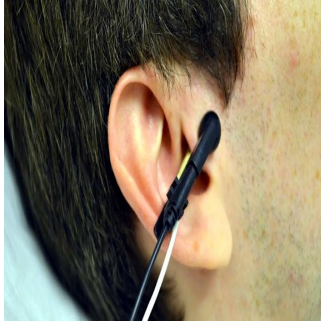


## Ear 'Tickling' May Be Good for the Heart



Stimulating the nerves in your ear may help improve the health of your heart, according to researchers at the University of Leeds (UK) who applied electrical pulses to the tragus, the small raised flap projecting in front of the ear canal, using a standard TENS (transcutaneous electrical nerve stimulation) machine.

The stimulation changed the influence of the nervous system on the heart, reducing the nervous signals that drive a failing heart to work harder. There is a tickling sensation in the ear when the TENS machine is on, although it is painless, explained Prof. Jim Deuchars of the University of Leeds' Faculty of Biological Sciences.

This is how the investigators conducted the experiment:

- Electrodes were applied to the ears of 34 healthy individuals and the TENS machines were turned on for 15-minute sessions;
- variability of subjects' heartbeats and the activity of the part of the nervous system that drives the heart were monitored; and
- monitoring was continued for 15 minutes after the TENS machine was turned off.

There were significant residual effects, the investigators noted, with neither heart rate variability nor sympathetic nerve activity going back to the baseline 15 minutes after the TENS machine had been turned off.

### Nerve Activity Reduced by Half

"We measured the nerve activity directly and found that it reduced by about 50 percent when we stimulated the ear. This is important because if you have heart disease or heart failure, you tend to have increased sympathetic activity. This drives your heart to work hard, constricts your arteries and causes damage," according to lead researcher Dr. Jennifer Clancy of the University of Leeds' School of Biomedical Sciences.

Many treatments for heart failure seek to stop that sympathetic activity. Beta blockers, for example, try to block the hormones that implement such signals. "Using the TENS, we saw a reduction of the nervous activity itself," Dr. Clancy said. Incidentally, the machine is the same used to relieve labour pains.

The research team said their technique works by stimulating an important nerve, the vagus, which plays an important role in regulating vital organs including the heart. The vagus has a sensory branch situated in the outer ear and thus, by sending electrical current down the nerves and into the brain, researchers succeeded in influencing outflows from the brain that regulate the heart.

"We now need to understand how big and how lasting the residual effect on the heart is and whether this can help patients with heart problems, probably alongside their usual treatments," Prof. Deuchars said. "The next stage will be to conduct a pre-clinical study in heart failure patients."

In the past, vagal nerve stimulation has been employed to treat conditions such as epilepsy.

Source: ScienceDaily.com  
Image Credit: University of Leeds

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