

How Singing in a Choir Helps Your Heart...Physically and Emotionally

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My friend Claire is one of the most serene yet productive people I know. She's seldom frazzled and almost always smiling, despite her busy life with three teens at home and a full-time job. Shortly after meeting Claire and observing her enviable unflappability, I asked her what her secret was. Was it meditation? Yoga? Xanax?

Her surprising answer: Singing in a choir. Every time she leaves her church choir practice or Sunday performance, she said, she feels healthy and energized—as if she has just had a nap, massage and yoga session all rolled into one. Not only that, she feels a strong sense of community with her fellow choir members.

Claire's experiences are likely due to a fascinating phenomenon that occurs when people sing together—a phenomenon that benefits the cardiovascular system as well as the psyche. An intriguing new study explored the science behind the singing.



HEARTS BEATING AS ONE

Our heart rate changes constantly as we adjust to various levels of activity or stress, when the heart's natural pacemaker, the *sinoatrial node*, picks up signals from the nervous system. This beat-to-beat change in heart rate, called *heart-rate variability*, can be seen on an electrocardiogram—and it serves as a sign of well-functioning communication between the heart and the brain. Our breathing rate also changes—for instance, when we're active or anxious, we tend to breathe more quickly. Slowing down our breathing helps to reduce feelings of anxiety.

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When our respiration and heart-rate variability are in sync, referred to as *respiratory sinus arrhythmia* (RSA), our circulation and cardiovascular function improve and we experience a soothing sense of well-being. (Even though we usually think of arrhythmia as meaning a potentially harmful irregularity in heart rhythm, in the case of RSA, it is beneficial.)

Using slow and controlled breathing, such as the type often done during yoga, tends to produce RSA—which is one reason why yoga is good for blood pressure and mood. Singing also requires slow and regular breathing, especially for songs with long phrases. Singers inhale in the little pauses between phrases, then exhale as they sing. The quick

inhalation causes the heart rate to increase...and the long exhalation cause the heart rate to slow, producing the beneficial RSA.

New study in Sweden: Researchers wanted to see whether songs of different structures would cause different patterns in respiration that would, in turn, lead to different patterns of heart-rate variations. For the study, 15 singers sang together while their heart rates were monitored.

First the singers hummed in monotone for five minutes, with each member of the group pausing to inhale whenever he or she wanted to. Because this style of singing has no set structure, this was a test of *unsynchronized* singing.

Next, participants joined in singing a well-known hymn (“Fairest Lord Jesus,” aka “Beautiful Savior”) in Swedish, which has a slow and simple structure typical of hymns. This style of singing imposes some degree of coordination of respiration while also allowing individual singers some freedom in when to breathe. For instance, some singers might inhale after every eight bars, while others inhale after every 16 bars.

Finally, the choir sang a simple 10-second mantra over and over, with everyone inhaling only at the end of each 10-second cycle and exhaling slowly during the song phase. The mantra singing was intended to be completely coordinated among all choir members because the structure of the song left no room for choice of when to break for inhalation.

Results: For each type of singing, all members’ heart-rate variations were plotted on one graph—all overlapping one another. In the graph for humming, the lines representing the heart-rate variations were, as expected, all over the place and not coordinated. The graph for the hymn showed that the heart-rate variations were mostly clustered together at the same general area, but not precisely. The graph for the mantra, though, showed that the heart-rate variations were all clustered around the end of the 10-second phrase, when the singers paused to inhale before repeating the phrase. In other words, when choir members breathed together, their hearts accelerated and decelerated together, too!

In addition to the benefits related to heart-rate variability and RSA seen in this study, other research shows that choral singing may stimulate production of *oxytocin*, a hormone that promotes an emotional bond. Choir participation also may promote that mental state known as *flow*, a highly productive state that combines sharp attention with calmness. What’s more, as people’s hearts and lungs work in synchrony, their emotions often become synchronized, too—a phenomenon that may help people move from a self-centered perspective to a collective consciousness or shared world view.

So why not give choir a try? Or, if you’re not into hymns (or if your voice isn’t quite up to snuff for public performances), consider inviting some friends over for a fun sing-along of some old favorite tunes.

Cool video: See the video below to watch as researchers describe the physiological and psychological benefits as they sing together.

Source: Björn Vickhoff, PhD, neuroscientist and researcher, Institute of Neuroscience and Physiology, Sahlgrenska Academy, University of Gothenburg, Sweden. He is also a professional singer and songwriter. His study was published in *Frontiers in Psychology*.