

# Hitting a high note for health

## A simple tune can boost mood, memory and the immune system -- and ease stress.

By Susan Brink, LA Times Staff Writer  
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IT'S George's fault that I never sang. Freckle-faced, hair-licked, musical-fingered George. Starting in first grade, I sat behind him in the alto row in music class, and that remained my place for eight years of grammar school. He was Mr. Perfect Pitch, the kid who could play "Flight of the Bumblebee" on the piano. I'd open my mouth to sing, and he'd turn around and snap, "You're flat. You're flat."

"I've been workin' on the railroad...." I'd begin.

"You're flat," I'd hear from the seat in front of me.

Pretty early on, I learned to lip-sync.

There are others like me, people who sing in the car, but only alone with the windows up — maybe quietly in church if there are several hundred other voices to hide behind. Never with any volume, mortified at the thought of being heard.

They should all get over it. Belting one out, it turns out, is good for us.

Where to belt, and with whom, can be a problem. Sure, every city has singing teachers, but what about people who aren't as much interested in learning vocal techniques as they are in inclusive, nonjudgmental group singing? The pickings are slim — an occasional workshop at Esalen Institute in Big Sur, a church choir that doesn't require auditions, a local karaoke bar.

In the catalog of one of my favorite spots, Breitenbush Hot Springs in Oregon, I found a spring workshop, "How to Sing in the Shower." Billed as a kind of retreat for amateur singers, as well as a haven for non-singers who wanted to sing, it filled the bill not just for me but for a somewhat tentative group of seven other people who came together to do nothing but sing. We were guided by a teacher who had breathing suggestions, volume tips and lots of encouragement.

It makes intuitive sense that singing is psychologically good, that it can elevate one's mood or provide an outlet for sadness. But a growing body of science shows that not only is singing mentally healthful, it's also physically good for you. It can improve the body's immune response. In elderly people, it can reduce the use of prescription drugs, doctor visits and emergency room care. The conscious breathing from the diaphragm involved in singing can itself reduce stress.

"Stress affects the immune system," says Robert Beck, a UC Irvine professor who has studied singing's effects. "If you feel good about what you're doing, the immune system recovers and gets a boost."

It was with high hopes, and nary a goal of Broadway stardom, a role with the Met or a Grammy award, that I headed up to Oregon. It's too late to sing for my own babies, now that they're out of college and married. But it's not too late to sing to my children's children.

That's a fairly typical motivator, says Cathleen Wilder, our workshop teacher. "A lot of people, right around their 50th birthday, decide they want to sing," she says. "They tell me they want to sing to their grandchildren."

The seven others possessed a variety of talents and fears. The setting, a fend-for-yourself rustic retreat in the rain forest on the west slope of Mt. Jefferson, was enough to call the vocal muse.

Our classroom, named the Forest Shelter, was a hand-hewn yurt whose skylight opened up to towering Douglas firs and whose rear windows looked down a wooded hill to the white water of the Breitenbush River. Tucked in the woods off the beaten path between guest cabins and the lodge that housed the dining room, the eight of us had plenty of privacy.

Wilder, from Seattle, had the voice of an angel, the training of an opera singer and the will to convince people that singing is their birthright. "I don't care about the research," she said. "I know it makes you feel good. It's about the joy."

Mumbling mantras such as "what have you got to lose" and "how bad could it be," my turn came to sing a note, solo. I laughed nervously, offered an apology for the sound that soon would escape. Wilder hit a key, and I tried to match it. "Close," she said. "Try again." She hit the note again while raising her conducting hand a bit higher. I raised my voice a bit higher. "Good," she said. "You got it."

Two tries, and I got the note right, guided only by the keyboard and her hand. No one declared me flat. Nor did any one tell fellow student Helen Rueda, as her friends once did when she sang Christmas carols, to shut up. We sang corny old songs, like "Buffalo Gals, won't you come out tonight, come out tonight, come out tonight...." and classics we all knew, like "Amazing grace, how sweet the sound, that saved a wretch like me...."

To my ears, we got better with every song. Not everyone had the shy history I did. Karen Keltz, Poni Scofield, Leslie Schweitzer and Linda Posell were confident amateur singers, most of them having experience with church choirs or other choral singing. But Rueda, who only sings while riding her bike alone in isolated areas, was glad to have a soul mate like me. Neal Lemery plays the piano, but he says, "I find it really hard to sing with other people." And Sean Harvey plays the guitar and wanted more confidence to sing while he plays.

Many people think they can't match a note. But, like me, they are likely better than they think they are. With all due humility, when I sang alone, I sounded quiet but sweet to my own ears, following Wilder's bouncing hand with my voice. And when I sang with others, I had their voices to follow as well.

It's true, perfect pitch is a rare gift. (I'll grant you that, George, wherever you are.) Scientists now call it absolute pitch, and those who have it might be heard to casually say "E flat" when they hear a horn blare.

But about 40% of people have pitch memory, meaning they can accurately match the pitch of their favorite songs just by recalling it, according to research published in 1994 in the journal *Perception and Psychophysics* by Daniel J. Levitin, neuroscientist and author of "Your Brain on Music." Another 44% of the 46 people tested could come darn close, within two semitones. A semitone is the sound difference between two keys on a piano.

For my purposes, a semitone is close enough. As we sang through the weekend, the four more confident singers began to arrange themselves between the more hesitant four. Standing next to good singers helped me sing in tune, most of the time, and together, all of our voices got stronger and more sure.

That kind of staggering of good singers and inexperienced voices is likely what people throughout the world have been doing for millennia. Everyone in the tribe, or village — maybe even the cave — sang, and children would be strategically placed in front of, behind, or next to an

accomplished singer so they could take their cues from people who knew how to carry a tune, says Wilder.

Unfortunately, in the industrialized West, community singing rarely happens any more. "We're in an era now which is very artificial when you consider our evolution as a species," says Levitin. "For the last few hundred years, Western culture has created a division between performer and audience."

A few people sing. Most people listen.

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### **Natural remedy**

Singing feels good, in part, because it's primal. "You're tapping into something that has an ancient, evolutionary origin," says Levitin. "We're thinking with brains that have had music in them for tens of thousands of years."

Equal parts neuroscience and rock 'n' roll, Levitin played guitar in his youth with Van Morrison. He worked with Stevie Wonder in compiling his greatest hits and was a producer and sound engineer for the Grateful Dead and Santana. His fascination with sound eventually led him to Stanford University and a second career in research. His laboratory at McGill University in Montreal is equipped with pianos and guitars as well as functional magnetic resonance imaging equipment.

"There's evidence from my lab and others that listening to music produces endorphins and the neurotransmitter dopamine, the so called feel-good hormone," he says. In one experiment, he put 13 non-musicians in the MRI and had them listen to classical music. In results published in the July 2005 online journal *NeuroImage*, he reported that regions of the brain that modulate dopamine, including the nucleus accumbens and ventral tegmental, grew active. True, the volunteers were listening, not singing. But it's only a short step to apply the results to vocalizing. "You can't sing without hearing music," Levitin says.

Some researchers, including Walter J. Freeman, a neurobiologist at UC Berkeley, think that when people sing, oxytocin is released. A handful of small studies provide evidence to support the theory. Oxytocin is the hormone that surges through new mothers after they give birth and when they breast feed, through both men and women when they have sex and through couples when they gaze romantically into each others' eyes. It increases bonding and it helps imprint memory. Oxytocin peaks during adolescence — probably one reason that the songs we hear and sing during teen years are the ones we always remember.

The hormone's release is likely part of the reason that group singing forms bonds. "When we sing and dance together, our emotions are synchronized," says David Huron, a musicologist at both Ohio State University's school of music and center for cognitive science. "Everyone is on the same emotional page." The military undoubtedly understands that, readying troops to act in unison in part through rhythmic marching songs.

It's not just that singing fosters fuzzy feelings. It can boost the body's immune response. Researchers at UC Irvine had local chorale members chew on dental cotton, then measured levels of an immunoglobulin, IgA, which is present in saliva and helps the body fight infections. About 30 singers from the Pacific Chorale were tested before and after rehearsals and a performance. Results were published in the fall 2000 journal *Music Perception*. Levels of IgA in the singers increased an average of 150% after rehearsals and 240% after a public performance of Beethoven's *Missa Solemnis*. "We can't say it's going to fight off colds," says UC Irvine's Beck, lead author of the paper. "But under proper conditions, singing does arouse the immune system."

Prompted by such biological studies, Gene Cohen, director of the center on aging, health and humanities at George Washington University and author of "The Creative Age" and "The Mature Mind," led a study to test whether untrained elderly people showed any signs of practical benefit from singing. In one of the most specific studies on singing and health, researchers compared two groups of socially active adults age 65 and older. One group sang weekly, led by a professional conductor. The other group remained active in their usual ways but weren't part of the choir. The National Endowment for the Arts-funded study, "Creativity and Aging," released in April 2006, reported that after a year the singers rated their health higher than did the non-singers. They had fewer doctor visits, used less medication and fell less often.

The singers' grown children noticed the improvement in their parents. "After every concert, I'd be mobbed by adult children, saying, 'Please. This must never stop,' " Cohen says. "Two years after the study ended, the chorale is still going, and the group is twice its original size."

At least one cognitive scientist, Steven Pinker, is skeptical of a primal human need for music. Instead, he sees music and singing as a kind of linguistic dessert — delicious but not necessary. In his 1997 book, "How the Mind Works," he wrote, "I suspect music is auditory cheesecake."

But a raft of other research findings point to better mood among elders, college students and homeless men who sing in choirs; to breathing improvements in emphysema patients after singing lessons; and to better posture among amateur singers.

Watching all this research, with an eye on combining the arts and learning, is John Frohnmayer, former chairman of the National Endowment for the Arts and now a professor at Oregon State University. "Music is the right brain; language is the left," he says. "And those pathways are very robust. I can remember the words to almost every song I've ever sung. It's absolutely critical for children to be exposed to singing, and to sing. I think the studies are showing that the learning of art trains neural pathways that are significant for other areas of learning. That may be the silver bullet that those of us who have been arts activists have been looking for."

Just think about how you learned your ABCs for an example of robust memory pathways.

## **Feeling good**

But back in the Oregon woods, I wasn't thinking about left brain, right brain. In fact, I'd bet that no one in my little group of forest singers was thinking about which neurons were firing, how much IgA was in our saliva or whether the oxytocin was surging. We had found our voices and we practiced, all day and into a couple of moonlit evenings.

I learned a couple of things that will stick in my mind as I sing more — in my car, in the shower, to my grandchildren. Breathing is natural, and so is breathing for singing. Instead of "inhale," "exhale," think "inhale," "phonate." Singing is just inhaling and then making sound with the exhale — nothing more complicated than that. And volume is largely in the mind. Think "louder" and your voice will be louder.

Most important, I learned that I've got a voice, like everyone does, that blends with others.

At the end of our weekend workshop, we gathered outside the forest shelter, in the misty Oregon rain, for one final round.

*Oh, how lovely is the evening,*

*is the evening,*

*When the bells are sweetly*

*ringing,*

*sweetly ringing.*

*Ding dong. Ding dong. Ding*

*dong.*

Claiming our birthright, we sang. And it felt good.