"The inhalation is heating and the exhalation is cooling." Is this actually true?

by Timothy McCall, MD

Years ago, a famous professor of medicine announced to his graduating class that half of what he had taught them was wrong, but that he didn't know which half. Much of what we learn in yoga has been passed down from a line of teachers, and from ancient yoga texts. And as much credence as we tend to give them, it is the job of yoga practitioners and teachers to not simply take everything they've learned at face value. Instead yoga teaches, you bring the ancient wisdom into your own practice to see what feels true for you. Direct experience, according to yogic thinking, is the highest form of knowing. It trumps the testimony of the masters and the ancient scriptures.

Like many of you, I was taught that the inhalation is heating and the exhalation is cooling. In a way, this makes sense because it has been demonstrated that the inhalation is tied to the activating sympathetic nervous system, aka the "fight or flight" system, and the exhalation to the relaxing parasympathetic nervous system. The deeper I got into my own practice of *asana* and *pranayama*, though, the more I found this piece of ancient yogic lore wasn't true for me. So I decided to do an informal study of the mostly yoga teachers and health care professionals who take the Yoga As Medicine Seminars my wife Eliana and I teach.

Over the course of several workshops we asked attendees to sit in a relaxed upright position and initiate gentle *Ujjayi* (Victorious) breathing with inhalation and exhalation of equal length. After they'd settled into a comfortable rhythm, we asked them to tune into the sensations of warmth they felt in their bodies, particularly in the head area, first during the inhalation, then during the exhalation. Then we asked them to check a box on a questionnaire whether the inhalation or the exhalation felt more warming, or whether they felt more or less the same.

Results

Here are the results of the 144 completed questionnaires:

Inhalation Warmer	13
Exhalation Warmer	95
The Same	36

So more than seven times as many people found the exhalation more heating than the inhalation. The last time I was in India, I asked Chandukkutty Vaidhyar, the Ayurvedic master I've been studying with for the last ten years, which he thought was more heating to the body. His answer: "The exhalation."

My experience also suggested to me that the longer the exhalation relative to the inhalation, the more heating it was to the body. So we asked workshop attendees to return to the *Ujjayi* breath they'd just done with a 1:1 ratio, i.e. the inhalation equal in length to the exhalation. We asked them to again tune in a notice how heating this felt. Then we asked them to gently lengthen the exhalation, ideally coming to a 1:2 ratio, as long as they remained perfectly comfortable doing so, with no breath hunger or gasping. For example, if they'd been inhaling for 3 seconds, they would exhale for 6. Again we asked them to notice how heating it felt, and compare that to what they'd just experienced with the 1:1 breathing. We suggested, if they had any doubts, to go back and forth between 1:1 and 1:2 breathing a few times.

Here are the results:

1:1 Inhalation Warmer	34
1:2 Exhalation Warmer	90
The Same	20

More than 2.6 times as many people found the longer exhalation more warming to the body.

Discussion

The reason the exhalation appears to be more warming may be due to the contraction of the abdominal muscles on the exhalation that comes with yogic breathing. Both Ayurveda and Traditional Chinese medicine believe that the body's heat comes primarily from the solar plexus area or "hara." The compressive effects on this region during the exhalation may render it more heating, while the expansive effects of the inhalation make it more cooling, as both these ancient medical traditions suggest.

We cannot rule out the effects of climatic conditions on the results. These workshops were taught in indoor settings, usually within a narrow range of "comfortable" room temperatures. Perhaps in India on a broiling hot day, the inhalation would feel more heating to most people. Ujjayi is also an inherently heating practice, though we instructed participants to do it mildly. It is also possible that while the exhalation may *feel* more heating to many yoga practitioners that in the longer-term, stressing the exhalation is more cooling. N.B. This study did not examine the relative heating effects of breath retention (*kumbhaka*) or *bandhas*.

I don't pretend this is a definitive study, yet the results suggests that we may need to revisit the notion that the inhalation is heating and the exhalation is cooling that so many of us have heard in yoga classes and teacher trainings. This could have an effect on what practices we recommend to yoga therapy clients with particular imbalances, e.g. *pitta dosha* increases could be exacerbated by heating practices, and which yoga practices we emphasize in different seasons.

From a broader perspective, the results might also be a cause for more humility and less certainty about the correctness of various dogma that get passed down from our teachers and the tradition in general. I, for one, for years taught precisely what I no longer believe. The biggest take home message I believe is that the deeper we go into this practice, the more we can trust our own direct experience — even when it doesn't match the theory.

Dr. Timothy McCall is an internist, yogi and meditator, author of *Yoga as Medicine*, long-time medical editor of *Yoga Journal*, and co-editor of forthcoming medical textbook of yoga therapy *The Principles and Practice of Yoga in Health Care*. Timothy and his wife Eliana Moreira McCall co-direct The Simply Yoga Institute in Summit, NJ, near Manhattan, where they teach Yoga as Medicine (YAM) seminars and teacher trainings, as well as classes, workshops and yoga therapy privates. They also teach YAM seminars at yoga studios and retreat centers around the U.S. and internationally.