

Transcript Season 5 Episode 5

Dave DeSteno: From the moment we're born, to the moment we die, one thing's constant. We breathe. But how we breathe can vary a lot. Maybe we need to get somewhere quickly, or we just had a really satisfying meal. Or maybe we're not feeling so great. When we breathe, we're doing a lot more than just taking oxygen in and pushing carbon dioxide out.

The form our inhaled and exhaled air take can say a lot about what's happening in our minds and throughout our bodies. But it's not just a window into how we're doing. It can also be a tool to change it. That's right, the way we breathe can change how our bodies work, and as a consequence, how we feel.

Everything from digestion and blood pressure, to memory, and even our emotions, is linked to our breath. As the Buddhist teacher Thich Nhat Hanh once said, Breath is the bridge which connects life to consciousness, which unites your body to your thoughts. And that's one reason why spiritual traditions the world over have used breathwork, long before modern health gurus started using that term.

To help us build balance into our lives, and pave the path towards better well being, and feelings of connection and peace.

On today's episode, we'll explore the neurophysiology of how breathing affects the mind body connection with Dr. Steven Porges, creator of polyvagal theory.

Stephen Porges: The accessibility of certain parts of our brain or our consciousness are really quite dependent upon our physiological state. So even if people think that they can do it by thinking alone.

They ought to start monitoring their breath, because as they think they're thinking it into that state, they're probably changing their breath.

Dave DeSteno: And we'll talk to Dr. Emilia Barilli, who's been teaching yoga, qigong, and meditation for over 40 years, about how these ancient practices can teach us to work with our breath and our whole cells to find health and healing.

Amelia Barili: Breath has always been connected with spirit and with God. I mean, without breath, there is no life.

Dave DeSteno: I'm Dave DeSteno, and this is How God Works.

Steven Porges is a neuroscientist and professor of psychiatry at the University of North Carolina. And over the years, he's made lots of contributions to our understanding of the mind body connection. But he's probably best known for developing something called polyvagal theory. Which centers on the big role played by one specific nerve in our body, the vagus.

Stephen Porges: It's literally the conduit that connects our brain to our body. Basically, it goes to every visceral organ.

Dave DeSteno: Just to give our listeners a sense, is that... The heart, the lungs, the stomach, keep going, keep going. You tell me, where does it, where does it go? What is my Vegas effect?

Stephen Porges: First of all, it goes to all those major organs, both the diaphragm, the gut is really very big, the heart's big, the lungs, the pancreas, it goes to all your organs, but it also goes to.

The larynx and the pharynx. So it is actually, it's an interesting nerve because a branch of it goes above the diaphragm, including to the nerves that regulate intonation of voice. And another branch goes primarily below the diaphragm and they come from different areas of the brainstem. Thus, Polyvagal, the vagus that we all have heard about.

In reality, it's literally two separate branches coming from different areas of the brainstem.

Dave DeSteno: That's pretty interesting to me because I often think, well, there are certain nerves that control the muscles in my hand, or there are certain nerves that control what I taste. Evolutionarily speaking, why would you have a nerve that affects the voice intonation as well as my digestion?

Stephen Porges: Well, basically. This is the interesting, the evolutionary journey from the asocial, more solitary reptile to a social and a dependent mammal. The mammal had to signal their bodily state to another. So long before there was language, there were always vocalizations. And mammals use vocalizations to broadcast their physiological state.

So we think of the roar of the lion, but we also think of the purring of a cat, the mother's lullaby and the baby relaxing, and then we hear people screaming and crying. The sounds themselves fit different types of genetically pre programmed templates literally that decode what those sounds mean to our bodily state, meaning are those signals of safety or are they signals of threat?

And mammals evolved with this amazing portal, literally, to broadcast their physiological state in the intonation of their voice, long before humans evolved with speech. I think the paradox in our modern society is that we think the words carry the meaning as opposed to the intonation carrying the meaning.

In a way, one is carrying meaning to our intentional intellectual part of our brain, but the other one is carrying meaning to the more primitive foundational survival circuits lower in our brain.

Dave DeSteno: You've probably heard about how technology is making us worse at communicating with each other. This is part of the reason why.

Reading a text message or DM is a little like reading one of those classified documents with much of the text blacked out. Without being able to hear or see the person who wrote to you. You're missing out on so much information that might help you understand what the person really means or how they're feeling when they say it.

Information our bodies are used to getting through our senses.

Stephen Porges: You know when someone's anxious near you. You know when someone's accessible. You pick up these cues. You're listening to the intonation of voice. You may not think you are, but you are, and you're looking at facial expressivity. You're looking to see if there's activity in the upper part of the face or is the face flat.

You're looking at muscle tone to see if the body is tense. You're reading the person and that impacts upon you whether you're aware of it or not to shift your own physiological state.

Dave DeSteno: I've said before on this show that your brain is pretty much a prediction machine. It's always trying to guess what's coming next, so that it can prepare you to respond quickly to what the situation calls for, which is especially important if you're in danger.

But what Steve is saying here is that much of that decision making process isn't conscious. It's happening below the surface.

Stephen Porges: If you're tense, the word tension or anxiety isn't really working to describe what you're feeling. Your body is feeling that it's under threat, and when your body feels under threat, what does it try to do for you?

Mobilize you to fight or flee, to protect. It's doing what it's supposed to do.

Dave DeSteno: Of course, our brain doesn't always listen to the wisdom of our body.

Stephen Porges: Now, in your aware brain, intelligence, uh, brain says, I don't really care what you want, body. I have to get my work done. And you try to impose something on it.

And over time, what you kind of learn is that you don't listen to the body and you numb yourself out and get your work done. Now there is a cost to pay for that. And that causes you're really destroying or dampening your feedback loops of what the body is trying to communicate to the brain. It's saying, I need relaxation, I need safety, I need calmness, I need social nourishment.

It's screaming that to you.

Dave DeSteno: Learning to ignore these messages. Doesn't mean that we actually stop feeling stress. And over long periods of time, living with our body constantly diverting as many resources as it can to be prepared to respond to danger, that can take a major toll on our health and well being. So, what do we do? Well, we can try to think ourselves out of the problem, tell ourselves that we shouldn't be worried about whatever's bugging us, or we could try to get away from the source of our stress, and maybe that'll work, sometimes.

But if you're in a situation you can't get out of so easily, or you've reached the point where your body is chronically stressed, how effective is that likely to be? That's where breath comes into the picture. It's not just a gauge to how we're feeling. The way we breathe can actually influence our physiology and our emotions.

Stephen Porges: If we take a inhalation for a relatively short period of time and then exhale very slowly, that inspiration exploration ratio is giving permission to the vagus to basically calm us down. If we increase the duration of the exhaling phase of breath. That's when the vagus has its, uh, calming effect. It doesn't have it on inspiration.

And in fact, if you watch anxious people, you'll start watching how they breathe. And then there's longer inspiration and rapid exhalations. They huff and puff and that gets really worked up. But if they reverse that and took a deep breath and exhale slowly. The vagus can start doing its job.

Dave DeSteno: A lot of people think of the vagus as a break on our heart rate.

It can slow it down, making us feel more safe and open to connection. But breathwork isn't always about calming yourself down. Huffing and puffing has its place too.

Stephen Porges: We can manipulate breath to provide, literally trigger the metabolic resources we need. We're really focusing solely on calming. We just didn't focus on.

A peak performance, like you're an athlete, you need to run. You don't necessarily want to be so calm that you think you're the observer and not the actor. If we breathe more rapidly and we shift the inhalation to be longer than the exhalation, it will be basically physiologically energize us. I was a sprinter in high school and I was a runner and the sprinters were really quite amazing because they would huff and puff before they got into the blocks.

They would get themselves really worked up because the race was 10 seconds. You know, it's not a long race. And you have to get all your energy up.

Dave DeSteno: So as you look at practices from yoga or from meditation, many of them work on extending the exhale. What wisdom do you see there?

Stephen Porges: You know, I, I'm going to, I don't mean to be critical, but the, the point is you skip an important assumption.

The real mechanism of these practices is the awareness of it. Not, not the instruction said of changing it, but the awareness of it.

Dave DeSteno: What do you mean by the awareness of it?

Stephen Porges: The feelings of what breath is doing, the, uh, feeling of the air coming in or feeling of the shifting your diaphragm becoming re embodied in your physiological reaction.

When people experience severe trauma and we can generalize that to chronic stress. They become numb to what their body is trying to tell them. They lost the sense of their own feelings. And it's a very interesting point to have a discussion when you ask someone, how do they feel? And there's a blank, blank stare.

There's just dead silence. And they're trying to figure out what a feeling is. So feelings are the first thing that get basically suppressed. So the first part of these interventions, whether we talk about yoga or any, or meditation, is this degree of awareness of one's own body.

Dave DeSteno: That's interesting. So it's not just the fact that I'm having a longer exhale.

It's actually that I have to be paying attention.

Stephen Porges: Well, but Dave, first of all, you're now inviting me into a very interesting dialogue because you are really setting the basic cues of our society, which goes like this. If something's wrong, we can fix it. Now that externalizes the responsibility and the action from inside the body to outside the body.

A physician fixes it, a guru fixes it, a teacher fixes it. The reality is the state that the nervous system is in, that intervening variable, is either going to be more accessible to that intervention or less successful, more welcoming. To the treatment, less welcoming, not merely the verbal instructions, but even medication and even surgery.

So if you're, if your body is in a state of defense, it doesn't mean that some mechanic can now fix you because you're locked into a state of defense, your outcomes are going to be better. If you're welcoming to those treatments,

Dave DeSteno: this is a critical point, especially nowadays when it seems like so many people are treating well being like a productivity issue that needs to be optimized, trying to hack the Vegas with breathwork or even electrical vagal stimulators. Yep, those exist. Might seem like the easiest thing to do to get the result you want, but the true picture is much more complicated.

Mental work is just as important as body work, and vice versa. The trick is to get the mind and body in sync. A state where they're not sending opposing messages to each other. If you're not careful about that, if you don't have guidance to help personalize the approach for you, it's not going to work well.

In fact, that's the reason why meditating on your own leads about 1 in 10 people to have more anxiety and depression, not less.

Stephen Porges: Not everyone can cope with slow exhalations because remember what we're talking about is the Vegas coming on and the physiological feelings are that of connection and accessibility.

If you carry with yourself, if your own personal history is that of vulnerability. So whenever you've been accessible, you've been vulnerable. Then those slow breaths is a trigger to get the hell out of that environment. So like when people suffer from severe trauma and get diagnosis, PTSD, and they're prescribed to do mindfulness and go into these sessions and they freak out because they have to close their eyes because their bodies are tuned to be threat reactive. And so going into a strange place or a place with others, they want to know what's going on behind them. They can't just focus it out and close their eyes. So the welcoming of the physiology to the practice is critical. And the awareness of one's physiology is really where it all starts.

Dave DeSteno: Stress and trauma have always been part of existence. So, too, has been the desire to connect with others, and with something greater. That's a reason why almost all spiritual traditions, in one way or another, have practices that combine focusing our minds while altering our breathing. Um, uh, Um, Uh, Just think about what it takes to recite a prayer, sing a hymn, or chant the OM.

Relatively short inhales and long, relaxing exhales, all combined with a focus on symbol or concept. And science is now showing that these practices are even more fine tuned than you might think. For example, researchers in Italy put sensors on people while they recited yogic mantras or Catholic rosary prayers.

And they found that breathing rates were always somewhere around six breaths per minute. Other teams measured prayers from other traditions around the world and found similar breathing rates.

That's not just a coincidence.

It turns out that around 6 breaths per minute is the ideal breathing rate to help reduce cardiovascular stress and boost positive feelings.

The point here is that unlike purely cerebral practices like reading, all of these are embodied experiences. They focus our minds while also using our bodies to help. They're also not just mechanical actions like simple breath work that allow our minds to wander or even worse, to keep replaying stressful thoughts.

They're true mind body practices, ones that can help us physically and psychologically. But of all the spiritual traditions out there, few have as great a focus on breath as yoga. From its very beginnings, working with the breath was at its center.

Amelia Barili: The interest in breath goes as far back as the Rig Veda, which is the oldest scripture in Sanskrit.

And they already talk about breath, and breath has always been connected with spirit and with God.

Dave DeSteno: That's Amelia Birilli, a professor emerita from the University of California at Berkeley, and an internationally renowned teacher of yoga, qigong, and meditation. And as she's pointing out, Yoga isn't only about doing downward dog and child pose.

Amelia Barili: What happened was, I think, that by observing the processes in themselves, the yogis and the ancient teachers, and also observing everything around, breath is the most essential part of life. I mean, without breath, there is no life. And so it was always related to somehow the connection with God, too, is a presence within us.

And all around us of life, but there is also a strong component of how it influence our whole organism, our nervous system, our body, our mind. When we concentrate in the breath, we give the mind a moment to withdraw from the rest of the pool of the external world and come inward. To the present moment and to the sense in how we are at that moment.

And so it's, it's very powerful for coming into a different dimension of ourselves. That's more quiet and that opens us to intuition and connection with grace. It's about giving the. Uh, whole organism, a sense of safety. So, how do you give your heart, your viscera, the sense of safety? You can use breath, you can also use touch, prayer, etc.

Dave DeSteno: That sense of safety is exactly what Steve Porges was talking about. If we're going to be able to open our minds... We have to feel supremely safe. We have to trust that we're not under threat. That we're protected. That we can be at peace. Yoga uses our bodies to help get our minds in the right place.

Amelia Barili: So in yoga, there are eight limbs, eight stages.

The four first ones are physical, so observances and restraints, asanas and pranayama, and they are preparation towards peace towards meditation. So there is a fifth limb of Prajahara, withdrawal of the senses, and then the three last limbs are meditation, are concentration, contemplation, and state of samadhi, bliss.

So the whole of yoga, It's really a preparation so that we can come to these states of peace. If you go to the Yoga Sutras of Patanjali, which is like the Bible of yoga, yoga is defined as the cessation of the fluctuations of the mind. That was the aim of yoga. So it was calming the mind and the body so that they could come into these states of peace and grace.

Dave DeSteno: Like Steve Porges said. We can't just will ourselves to calm down if our body feels under threat. So yoga starts by preparing the body with early stages like the asanas, which are the yoga poses you're probably familiar with, and pranayama, or breathwork. Together, They're kind of like the bridge that helps us move inward.

Amelia Barili: Breath is a tool to bring us into greater calmness, more in the present moment, and more connected to that dimension that's already within us, but it's usually covered by the clouds of our worries and concerns. It's a cessation of the fluctuations of the mind so that the higher self, the universal consciousness doesn't take itself for being the solo self that's struggling.

Dave DeSteno: I think in the West, people often think about this, this is a way for me to calm down. to calm my nerves, to reduce my stress, but it sounds like what you're saying is, yes, breath work and the other parts of these practices will do that, but there's also something much more they can open you up to.

Amelia Barili: Right.

And, and that's the thing. I mean, we were discussing that with Steve Porges too, that you don't hack your nervous system. You don't hack the vagus nerve. What you need to do is work with your, your whole organism, which is the same that. The ancient traditions are telling us, you know, we go a lot for the external achievements, thinking that they will give us peace, but it's, we need to really realize that that peace comes from inside out.

So how do we work with that? It's like a puzzle, you know, with many pieces. And so one of the pieces is, uh, asanas and another piece is breath and another piece can be touch. Uh, meditation is including this, but also with a sense of ease and with love and self acceptance, because you can be meditating and you can be getting even more stress.

If you're thinking, am I there yet? Why am I not relaxing? Why am I being assaulted by all these ideas? Meditation is like, expanding a picture. So if you are very upset, do something else to calm yourself, uh, gardening, being with your grandchild, with your pet, whatever, and then sit for meditation.

Dave DeSteno: So I, I want to get a little granular here.

So what are some of the basic yoga breathing practices that, that people do and what are their functions?

Amelia Barili: So pranayam is like the extension of prana, the extension of your life force is the expansion. So what happens with slow breathing is that you calm your nervous system, but also increase the volume of air that you are working with because you are breathing more deeply.

Dave DeSteno: Increasing that volume of air, over time, helps build and maintain lung capacity. Something medical research has shown is one of the biggest predictors of how long we live. More air moving in and out of our lungs means more healthy years on this planet.

Amelia Barili: In yoga, pranayama breath practices are expansion of the vital prana, of the vital energy, are based on the four stages of breathing.

So it's inhale, retention, exhale, retention. That doesn't mean we need to force the retention to control, to stay longer. It means we need to become aware when we are inhaling to complete the inhale and have some kind of a pause there. And then when we are exhaling to complete the exhale and have some kind of a natural pause there.

Because often we are in such a state of excitement that we haven't finished exhaling and we are already inhaling again. And that contributes to our restlessness. So we want to find a way of working into these processes without forcing anything. If you inhale like sign, in a relaxed way, there seems to be a silence there at the end, right?

A slight pause. And then you wait, and when the time comes to exhale, you exhale, and let the air go out slowly. also in a relaxed way and it seems to echo into some kind of a silence and you wait until the desire to inhale again like sign comes and there is a slight retention. So that's a way that you are working with the deep.

breath and with your nervous system at the same time and with giving your mind a focus of attention on something so subtle and so present and so embodied that it calms the mind.

Dave DeSteno: (interstitial music)

But pranayama isn't only about slow, deep breathing. It has many practices. For many purposes, one I always wondered about was breathing through one nostril at a time.

Amelia Barili: Alternate breathing is very interesting because it tends to balance both the activity and the restfulness within the body. So it's, you inhale through the left nostril, exhale through the right. Inhale through the right, exhale through the left. When you inhale through the left is you are activating Ida Nadi. Ida is the river of energy or pathway of nervous energy that has to do with resting. So it would be more like the parasympathetic. And then you exhale that moon energy, you exhale it on the right side. And then you inhale in the right side the warm energy of the early morning sun.

Uh, up to the third eye, and then you exhale it through the left. So there is this balancing of activity and rest, and that's very, very good for the nervous system. It's not that we want to be all the time in a state of super relaxation. Polyvagal tells us that too much numbness is even dangerous, so you have to find a way of working with both.

Dave DeSteno: Okay, I know this might sound strange. In fact, I was a little dubious of the notion that breathing through one nostril at a time had any benefits. But there is scientific evidence that breathing through different nostrils affects different parts of our brain and our nervous system. For example, breathing through the right nostril ramps up the sympathetic nervous system, the one that increases arousal, more than breathing through the left.

Science also shows that pranayama techniques that focus on nasal breathing increase the release of nitric oxide into the bloodstream, a chemical that helps boost cardiovascular health, immunity, and mood. But that doesn't mean there aren't benefits to focusing on how we breathe through the mouth, too.

Amelia Barili: There is also breathing at the throat, ujjayi, which is really wonderful and very calming. And of course, he's working in all the area of the beginning of the vagus nerve, which is so powerful at the brain stem and in connection with other cranial nerves. And the ujjayi is almost oceanic breath and it's inhaling and taking the air in.

Do you want me to demonstrate? Yes, please. So we can first try it with the mouth open and exhaling like you are fogging a glass.

So what happens there is that there is this vibration also that happens in the area of the beginning of the vagus nerve and the connection with all these other

cranial nerves that are very powerful. This Ujjayi or victorious breath is something that you can also do laying down and it's very good for going to sleep.

Dave DeSteno: When I tried that, I kind of felt like my my throat loosen. Is that part of it?

Amelia Barili: Yeah. Uh huh. Because you were able to relax. So the important thing is when people are trying to think how to inhale and exhale through it, it's very important to keep that area relaxed. So it's not about constricting your vocal cords for that.

It's nice to think like fogging the glass. And sometimes we do it, right? And then there is the um.

Um itself is also a long exhale, and it can start at the area of the abdomen and start, oh, right, coming up, oh, through all these different chakras, vortexes of energies, oh, through the throat also, and then the um, the head and out. And the um is a sound that resonates particularly With the Ajna chakra, the third eye vortex of energy.

And so it's one that, um, helps us a lot to relax and to go into a deeper state and of relaxation.

Dave DeSteno: And that humming, data show, causes a vibration in the sinuses that also amps up the transfer of nitric oxide. But according to Amelia, better health and psychological well being aren't the only benefits of these yoga practices.

They can, if you're open to it. Help you to grow spiritually too.

Amelia Barili: It makes you more available to yourself and to others. Now, no theology is needed, but there is some kind of philosophical approach. I am embodied spirit, and I want to work through my body to find these moments of peace and calmness. That's already spirituality.

Because when you, when you find a sense of acceptance of yourself and stop judging yourself, you are more available to yourself. I mean, we are so hard with ourselves. If one is able to forgive oneself and practice this inner peace. then it radiates out. If you can forgive yourself, you probably will be a little bit more able to forgive other people.

It doesn't mean that we don't get upset, doesn't mean that we don't get judgmental or discerning or whatever you want to call it, but more quickly we can come back to states of That's the way that the nervous system and the brain learn by repetition. So that's the problem we have right now is that we are under so much challenges and stress, ecological, political, economical, relational, you name it.

That then we have this habit to go towards the negative because we are scared and we are trying to figure it out and we can't figure it out because we cannot control it. Life is impermanent. And so, we need to work with our inner space to see how we respond to this. Instead of, why me? Why now? Why not?

You know, this is life. You don't need to talk about God if God is a term that for whatever reason, it's not something that helps you to relax. We are talking about basically about being kind to yourself and to others, and that's already spirituality in a big way that, you know, it can be boiled down to that.

Dave DeSteno: So Amelia, for some of our listeners who may be interested in trying a breath practice and experiencing, at least in a very initial way, what it might do for them, would you be willing to lead us through a little practice?

Amelia Barili: I'd love to, and it will integrate yoga, qigong, and polyvagal in the sense that we are using a release point that comes from qigong, it's called sea of tranquility point.

I love the name. And it's right here at the breastbone, more or less at the height of the nipples. So if you breastbone, you'll find there is an indentation there, more or less at the height of your nipples. So I invite you to rub your hands, bring the center of your palm to the sea of tranquility point.

And feel that contact of your hands on the area of your heart and lungs, already giving you an anchoring. And then inhaling slowly, gently, and deeply, like sighing, feeling how your chest expands.

It's a slight pause at the end of the inhalation without forcing. And when the time comes to exhale, You let go of the air through the nose or the mouth as you prefer. Slowly, gently, completely. Letting go of what burdens you. This is a slight pause at the end of the exhale and one more time. Inhaling through the nose.

Inviting what you want to cultivate in your life, smiling to yourself and your present circumstances. Pause and the time comes to excel. Exhaling letting go.

Shedding layers and layers. Ah, what you want to let go. And one last time, taking in the new inviting breath. What you want to cultivate in your life, what you want to experience, it's a slight pause to receive that.

When the time comes to excel, letting go slowly of the air, and relinquishing any layers of what might be burdening you.

This you can do anywhere, anytime, you can teach it to your children, to your patients, to anyone.

Dave DeSteno: With each passing year, it's becoming ever more clear that the mind and body are intricately linked. Your body isn't just a vessel that carries around your brain. It's not like driving a car. We can't just overrule our bodies by ordering them to calm down, or even get energized if that's what we want. We have to speak to the body in a language it recognizes.

Breath is a way to do that. One that wisdom traditions have been making good use of for thousands of years. And one that you can too, anytime you want. Breath is always with you, until the very end.

Next time on How God Works.

Dr. Raina Awaad: I would even describe myself as being somebody who held a lot of internalized stigma towards mental health. I really thought to myself, you know, what good Muslim girl needs that garbage?

Dave DeSteno: Religion and psychiatry have long seemed to be at odds with one another.

Dr. David Rosemarin: Psychiatrists are less likely, even than surgeons, and then all other forms of medical doctors, to be involved in spirituality, to have positive views of spirituality, not to pathologize spirituality and religion.

Dave DeSteno: But now many, across psychiatry and religion, are beginning to realize there is a deep connection.

Dr. Raina Awaad: It's incredible how much Islam as a religion absolutely promotes mental health and wellness.

Dave DeSteno: We'll learn why more and more people are seeking treatment that connects the science with the spiritual, and why mental health professionals are starting to listen.

That's next time on How God Works. How God Works is hosted and written by me, Dave DeSteno. Our senior producer is Josie Holtzman. Our producer is Sofie Isenberg. Executive producer is Genevieve Sponsler. Merrit Jacob is our mix engineer and composed our theme, which was arranged by Chloe DeSteno. The executive producer of PRX Productions is Jocelyn Gonzalez.

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