



50 Ways to Heal a Yogi

Yoga Journal's Medical Editor Explains How Yoga Improves Health

by Timothy McCall, MD

Just weeks before my trip to India in 2002 to investigate yoga therapy and Indian research on yoga, I developed intermittent numbness and tingling in my right hand. After briefly considering scary things like a brain tumor and multiple sclerosis, I figured out that the cause of these symptoms was thoracic outlet syndrome, a nerve blockage in my neck and chest.

I quickly came to appreciate that, in a funny way, the symptoms were a gift. I had planned to visit various yoga therapy centers in India to observe their work. Now, instead of just watching, I would, whenever possible, submit myself for evaluation and treatment by the various experts I'd arranged to observe. This would allow me to try their suggestions and to see what worked for me. While this wasn't exactly a controlled scientific experiment, I knew from experience that such hands-on learning can teach you things you might not otherwise understand.

One thing that was striking about the different teachers I consulted was how different their recommendations were. At the Vivekananda ashram just outside of Bangalore, the physician in charge, Dr. Nagaratha, recommended breathing exercises during which I imagined bringing prana, or life force, into the area of my right upper chest. Their therapeutic approach included asana, pranayama, meditation, chanting, lectures on philosophy, and various kriya (internal cleansing techniques). At the Krishnamacharya Mandiram, and then in a similar approach followed by A.G. Mohan and his wife Indra, who practice just outside of Chennai, I was told to stop practicing headstand and shoulderstand and prescribed sets of gentle asana coordinated with the breath. In Pune, Dr. Karandikar recommended a series of practices in which ropes and belts put traction on my spine as well as exercises which taught me to use my shoulder blades to open my upper back.

Although on the surface the practices were very different, I found all of them useful. Thanks to these approaches and others from teachers in the United States, and some things I figured out on my own, my chest is much more flexible than it was, my posture has improved, and for more than a year, I've been symptom-free.

The experience got me thinking about how yoga works. This wasn't just stress reduction or the placebo effect. There were strengthening and awareness



exercises, visualizations and practices designed to change my posture. It became clear to me that there are dozens of different tools in the yoga toolbox, which work in a variety of different ways. When I returned from my travels, I began to pore over the stack of scientific studies I'd collected in India, as well as some from the West, to identify mechanisms of action that help explain how yoga can both prevent disease and facilitate recovery from illness.

50 Ways that Yoga Heals

Here are 50 ways that yoga works that are supported by evidence and which are consistent with a Western scientific worldview. While it would have been possible to choose others, these 50 provide a broad overview of how different yoga practices can improve health. For the sake of convenience, I've divided the mechanisms of action into seven categories: musculoskeletal, circulatory, metabolic, nervous system, organ function, psychological/spiritual, benefits of specific practices and, at the end, a few miscellaneous stragglers.

Musculoskeletal

Yoga's effects on the physical body come primarily, though not exclusively, from asana practice. While greater strength and flexibility, improved posture and better balance can be ends in themselves, they also can both prevent many medical conditions and complement their treatment.

1. Greater Flexibility. Think back to the first time you took a yoga class. You were probably asked to stretch in ways you would have never even thought of. But if you stayed with it, you probably also observed that over time tight areas become looser, and that the "impossible" poses eventually became possible. Scientific studies have confirmed this—regular yoga practice increases flexibility of muscles and increases the range of movement in different joints. But the question remains, how might this benefit health? Consider a few examples.

A lack of flexibility in the hips--which yoga can remedy--may put strain on the knee joint due to improper alignment of the thigh and shin bones. Back pain can be caused by tightness in the hamstrings that leads to a flattening of the lumbar spine. A lack of flexibility in muscles and connective tissue, including fascia and ligaments, can contribute to poor posture and frustrate efforts to improve it. This was my situation prior to studying yoga.

2. Stronger Muscles. Many people desire strong muscles for aesthetic reasons. But consider this: Muscle weakness contributes to numerous problems including arthritis, back pain, and falls in the elderly. Fortunately, asana practice not only strengthens muscles, it does so in a functional way, by balancing strength with



flexibility. In contrast, some weight lifters have routines that aren't well balanced, resulting in uneven strength and a loss of flexibility.

3. Healthier Joints. The cartilage in joints such as the knee acts like shock absorbers and allows the bones to glide over one another. Asana practice systematically takes joints through their full range of motion, which may help prevent degenerative arthritis or lessen disability by “squeezing and soaking” areas of cartilage that normally wouldn't be used. Functioning something like a sponge, joint cartilage only receives fresh nutrients when its fluid is squeezed out with movement, allowing a new supply to be soaked up. Lacking sustenance, neglected areas of cartilage can eventually wear out, allowing the underlying bone to be exposed like brakes with worn-out pads.

4. Nourishes Intervertebral Discs. Like articular cartilage, spinal discs—the shock absorbers between the vertebrae that can herniate and compress nerves—require movement to receive nutrients. A well-balanced asana practice that includes backbends, forward bends and twists helps keep discs supple.

5. Improves Posture. Poor posture can cause back, neck, and other muscle and joint problems and was a contributing factor to the nerve condition I developed in my arm. When I began yoga, I slouched from years of reading and starting at computers. I also tended to carry my head several inches in front of my spine, a common postural problem. When a person slumps, the body tends to compensate by flattening the normal inward curves in the neck and lower back, contributing to pain and degenerative arthritis of the spine.

The head can be likened to a bowling ball—it's big, round, and heavy. When that ball is balanced directly over an erect spine, it takes much less work for the neck and back muscles to support it. When it's held several inches farther forward, the support muscles endure strain. The head-forward position can even exacerbate another major problem in the modern world—fatigue. Hold up that bowling ball for eight or 12 hours a day and you may have less energy to do whatever else you need to do.

6. Strengthens Bones. Many yoga poses involve weight bearing, which is well-documented to strengthen bones and help ward off osteoporosis. Unlike most other forms of exercise, poses such as Downward Facing Dog and arm balances place weight on the arm bones, which are common sites of osteoporotic fractures. An unpublished study done at California State University, Los Angeles found that yoga practice increased bone density in the vertebrae in part due to weight-bearing in asana. In addition, yoga's documented ability to lower levels of the stress hormone cortisol (see # TK), may help keep calcium in the bones.



Circulatory Asana practice, in particular, can stimulate blood flow throughout the body. The heart gets stronger, blood vessels relax improving blood flow and even the blood itself is changed in health promoting ways.

7. Improves Oxygen Delivery to Cells. Cells function better when they get a good supply of oxygen which is delivered via the blood. Yogic relaxation has been shown to increase blood flow to the periphery of the body, such as the hands and feet. Twisting poses are thought to wring out venous blood from internal organs, allowing oxygenated blood to flow in once the twist is released. Yoga also boosts levels of hemoglobin and red blood cells, the carriers of oxygen to the tissues.

8. Improves Return of Venous Blood. Veins depend on movement of adjacent areas of the body as happens in asana to milk blood back from the periphery to the center. Due to gravitational effects, inversions encourage venous blood from the legs and pelvis to flow back to the heart where it can be pumped to the lungs to be freshly oxygenated. This can be especially beneficial for people with swelling in the legs due to heart or kidney problems.

9. Increases Drainage of Lymph. When you contract and stretch muscles, move organs around and come in and out of yoga postures, lymph flow improves. This benefits the lymphatic system in fighting infection and cancer and disposing of toxic waste products of cellular functioning.

10. Conditions Cardiovascular System. From lowering the risk of heart attacks to relieving depression, aerobic exercise is a powerful force for prevention and healing. Not all asana is aerobic, but when done vigorously it certainly can be. Even yogic exercises that don't bring the heart rate into the aerobic range in intensity, however, can improve cardiovascular conditioning. Studies have found that yoga practice lowers the resting heart rate and increases endurance as well as the maximum uptake of oxygen during exercise, which are all reflections of improved aerobic conditioning. One study found that subjects who were taught only pranayama could do more exercise with less need for oxygen.

11. Lowers Blood Pressure. The exercise and the weight loss that commonly accompany regular yoga practice tend to reduce blood pressure. Yogic relaxation, in particular, appears to lower elevated blood pressure. Two studies of people with hypertension, published in the British medical journal *The Lancet*, compared the effects of Savasana to simply lying on a couch. After three months of practice, Savasana was associated with a 26 point drop in systolic blood pressure (the top number) and a 15 point drop in the diastolic blood pressure (the



bottom number). Of note, the higher the initial blood pressure, the bigger the drop with yoga.

12. Thins Blood. Heart attacks and strokes are two of the top three killers in the modern industrial world. In most case it is a clot that blocks the blood flow. Yoga thins the blood by making platelets less sticky and by cutting the level of clot-promoting proteins in the blood.

Metabolic

Although I've focused on cortisol below, there are dozens of other hormones in the body and preliminary evidence suggests that yoga affects the levels of many of them. Yoga also lowers cholesterol and helps facilitate weight loss.

13. Lower Levels of the Stress Hormone Cortisol. The adrenal glands secrete cortisol in response to an acute crisis. The result is a temporary boost in immune function, but if cortisol levels stay high, immune function becomes compromised. Cortisol also aids the formation of long-term memory but chronically high levels undermine memory and may lead to permanent changes in the brain. An excess of cortisol is also linked with major depression. Elevated cortisol can also contribute to osteoporosis by extracting calcium and other minerals from bones and interfering with the laying down of new bone.

Chronically high levels of cortisol can increase systolic and diastolic blood pressure and insulin resistance—all risk factors for heart disease. In rats, high cortisol levels lead to what researchers call “food-seeking behavior” and cause the body to lay down fat in the abdomen, further contributing to weight gain and the risk of a diabetes and heart attack. By lowering cortisol levels, yoga can help with all of these problems.

14. Weight Loss. Yoga programs may also lead to weight loss by burning calories, encouraging a moderate intake of vegetarian food and by bringing a more conscious approach to eating. There can also be a spiritual and emotional dimension to weight problems that yoga practice may address.

15. Lower Blood Sugar. Yoga has been found to lower blood sugar in people with diabetes. The effect may in part be due to lowering cortisol and adrenaline levels. Higher blood sugar levels increase the risk of such common diabetic complications as heart attacks, kidney failure and blindness. Yoga may also help lower high blood sugar levels via weight loss and improved sensitivity to the effects of insulin.



16. Improved Levels of Cholesterol. Yoga can lower blood cholesterol, a major risk factor for heart disease, as well LDL “bad” cholesterol, and boost the level of HDL “good” cholesterol.

17. Lower Levels of Triglycerides. Levels of triglycerides, another form of blood fat linked to heart disease as well as other problems, have been shown to drop with yoga practice.

The Nervous System

Yogis believe that when the breath is calmed, the nervous system relaxes, as does the mind. In just the last few years, new technology such as functional MRI scans and more sensitive measurements of brain waves are increasing our understanding of how yoga works.

18. Balances the Nervous System. By facilitating relaxation, slowing the breath and encouraging a focus on the present moment, yoga can shift the balance from the sympathetic nervous system (SNS) to the parasympathetic nervous system (PNS). The SNS is designed to cope with emergencies, and is commonly referred to as the “fight or flight” response and is chronically activated in many people. The PNS is more calming and restorative in nature, lowering the breathing and heart rates, decreasing blood pressure and increasing the blood flow to internal organs such as the intestines and reproductive organs. These effects comprise what Dr. Herbert Benson has dubbed the relaxation response.

19. Improves Proprioception. Proprioception is the ability to feel where parts of your body are in space, even with your eyes closed. Most people with bad posture or with dysfunctional movement patterns are unaware of them and poor proprioception has been linked to knee problems and back pain. The regular practice of asana, however, steadily builds the ability to feel what your body is doing. With awareness comes the possibility of making different choices.

20. Improves Balance. While strength can help an old person avoid a fall, you’re probably a lot less likely to trip on the way to the bathroom in the middle of the night if you’ve improved your balance by regularly practicing asana like the tree pose. Better balance may not seem like a big deal, until you consider that falls are a leading cause of hip fractures, the loss of independence and admission to a nursing home.

21. Increases Control of Bodily Functions. Some advanced yoga practitioners can control their bodies in extraordinary ways, many of which are mediated by the nervous system. Scientists have monitored yogis who on request could induce unusual heart rhythms, generate specific brain waves patterns and,



using a meditation technique, raise the temperature of their hands by 15 degrees F. If they can use yoga to do that, perhaps you could learn to improve blood flow to your pelvis if you're trying to get pregnant or induce relaxation when you're having trouble falling asleep.

22. Changes Neurotransmitter Levels. A study at Benares Hindu University in India found that three and six month practices of yoga improved depression and lead to a significant rise in serotonin levels and a decrease in levels of monoamine oxidase and cortisol. All of these changes are in the direction we would expect to improve mood. Similar results have been documented with Transcendental Meditation (TM), a type of mantra meditation.

23. Changes Activity in the Brain. Using a sophisticated type of brain scan called a functional MRI, which gauges blood flow to different areas of the brain, Dr. Richard Davidson of the University of Wisconsin found that the left prefrontal cortex showed heightened activity in people who meditate, a finding that has been correlated with greater levels of happiness and better immune function. More dramatic left-sided activation was found in dedicated, long-term practitioners. As this area of investigation is just beginning, expect to hear more about it in coming years.

24. Builds Awareness of Muscular Tension. Have you ever noticed yourself, for no apparent reason, holding a pencil, a telephone or a steering wheel with a death grip? Do you scrunch your face up when you stare at a computer? These unconscious habits can lead to chronic tension in the wrists, arms, shoulders, neck and face. Unnecessary gripping leads to muscle fatigue and soreness, which in turn can worsen your stress level and mood. The goal should be to only use the minimum amount of muscular tension necessary for any particular job.

As you practice yoga, you begin to notice where you hold tension as well as areas that you unconsciously contract when you concentrate. It might be in your tongue, your eyes or the muscles of your face and neck. With the tongue or the muscles around the eyes, if you simply tune in, you may be able to release some tension. With other muscles like the quadriceps, the trapezius and the buttocks, it may take years of asana practice to learn how to relax them.

25. Provides Respite from Sensory Overload. Many people in the modern world are constantly overstimulated by sights and sounds, which can be jarring to the nervous system. Yoga is often done in a quiet setting with the lights dimmed. Such practices as restorative asana, yoga nidra (a form of guided relaxation), savasana (corpse pose) as well as pranayama and meditation encourage



pratyahara, a turning inward of the senses, that provides a kind of down-time for the nervous system. Yogis insist that the calm that you find in your practice can spread to the rest of your life.

Organ Function

Yoga seems to help a number of organs and systems in the body function more optimally.

26. Improves Immune Function. Many yoga practices including asana and pranayama are likely to improve immune function but, to date, meditation has the strongest scientific support. Meditation appears to both increase immunity in instances where that's helpful, for example increasing antibody levels in response to a vaccine, and lower it in the case of autoimmune diseases, such as psoriasis, marked by inappropriately aggressive immune function.

27. Improves Lung Function. Yogis tend to take fewer breaths of greater volume which is both calming and much more efficient for the body. A 1998 study, published in the *Lancet*, taught a yogic technique known as “complete breathing” to people with lung problems due to congestive heart failure. After one month, their average respiratory rate decreased from 13.4 breaths per minute to 7.6. Meanwhile, their exercise capacity increased significantly, as did the oxygen saturation of their blood. In addition, yoga practice has been shown to improve various measures of lung function including the maximum volume of the breath and the efficiency of the exhalation--in part explaining why it appears to be useful in asthma.

28. Improves Brain Function. Yoga has been shown to improve coordination, reaction time, memory, and even IQ scores. Students of TM have demonstrated improved problem-solving ability, better recall, and quicker acquisition of information. Besides helping the brain work better, yoga teaches how to focus attention. When we are less distracted by our thoughts, which can play over and over like an endless tape loop, we are better able to tune into the present.

29. Improves Bowel Function. Stress reduction helps with intestinal problems like ulcers and irritable bowel syndrome. As with any physical exercise, asana practice can be beneficial for constipation—and theoretically lower the risk of colon cancer--because moving the body facilitates more rapid transport of food and waste products through the bowels. Although it has not been studied scientifically, yogis suspect that twisting poses may be especially beneficial in this regard.



Psychological/Spiritual

From quieting the mind to helping the practitioner to find spiritual meaning, yoga has a number of benefits which not only are ends in themselves but which also can improve health.

30. Reduces Mental Tension. Patanjali began the Yoga Sutras by stating that yoga quells the fluctuations of the mind. In other words, it slows down the mental tape loops of frustration, regret, anger, fear and desire that can dominate thoughts and undermine well-being. Conventional medicine has increasingly recognizing the role of stress in medical problems and not just the obvious ones like migraines and insomnia. It's now implicated in lupus, MS, eczema, high blood pressure, heart attacks and dozens of other conditions.

31. Fosters a Therapeutic Relationship. Just as a good doctor-patient relationship can be healing, a good partnership with a yoga teacher is likely to confer therapeutic benefit. Often teachers adjust students or touch them in ways to facilitate relaxation or moving more deeply into the posture. Part of the benefit is related to the distinctly unscientific concept of love, which while hard to measure, undoubtedly facilitates healing.

32. Encourages Sangha (Involvement in a Community). The emotional support of friends, family and one's community has been demonstrated repeatedly to improve health and healing.

33. Increases Mental Strength/Willpower. The ability to motivate students to make changes in their life may be one of yoga's greatest strengths. Tapas, the Sanskrit word for heat, is the fire, the rigor, the discipline that fuels yoga practice and which regular practice builds. Tapas developed in yoga can be extended to the rest of one's life, helping to overcome inertia and change dysfunctional habits.

34. Increases Psychological Self-Awareness. A key aspect of yoga as described by Patanjali is self-study. As psychotherapist and yogi Stephan Cope put it in his book *Yoga and the Quest for True Self*: "Here is a systematic exploration of the unconscious that predates Freud by thousands of years." This monitoring can happen in asana practice but it is in meditation where self-study and the opportunity to transcend what the Dalai Lama calls "destructive emotions" is probably the greatest.

35. Reduces Anger and Hostility. Studies suggest that chronic anger and hostility are as strongly linked to heart attacks as smoking, diabetes and elevated cholesterol. Yoga appears to both reduce anger by increasing feelings of



compassion and interconnection and, by calming the nervous system and the mind, lessening the likelihood of fanning the flames.

36. Increases Equanimity. One of the most striking effects of yoga practice is the heightened ability to step back from the drama of your own life, to not be so rocked by bad news or an unsettling event. You can still react quickly when you need to--and the evidence is that yoga speeds reaction time--but it also allows you that split second to decide not to react or to choose a more thoughtful approach--reducing suffering for yourself and others.

37. Increases Self-Esteem. People who have what used to be called an “inferiority complex” may numb their pain by overindulging in transient pleasures like drug use, overeating or promiscuity, and may pay a price in poorer health physically, mentally, and spiritually. Yoga gives regular practitioners the sense, initially in brief glimpses, and later in more sustained view, that they are worthwhile or, as its philosophy teaches, that they are manifestations of the divine.

38. Encourages Spiritual Growth. The regular practice of yoga, particularly when it is done with an intention of self-examination and betterment--and not just as a substitute for an aerobics class--can put practitioners in touch with a different side of themselves. Among the spiritual aspects that yoga fosters are feelings of gratitude, empathy, forgiveness and the sense that you’re part of something bigger than yourself. While better health is not the goal of spirituality, repeated scientific studies have documented this effect.

39. Improves Relationships. Among the benefits that Patanjali attributes to regular yoga practice are friendliness, compassion and, as mentioned, equanimity. Moral injunctions to avoid harming others, tell the truth and only take what you need can lead to smoother sailing in interpersonal relationships and in the workplace.

40. Improves Habits. Studies confirm what many people who practice yoga discover: their habits improve. Sometimes without making a particular effort to change things, they start to eat better, walk regularly or finally quit smoking after years of failed attempts.

41. The Placebo Effect. Just believing you will get better can make you better. Unfortunately, many conventional scientists act as though if something works by eliciting the placebo effect that it somehow doesn’t count. But most patients just want to get better. If chanting a mantra facilitates healing, even if it is “just the placebo effect,” why not do it?

42. Ownership In Your Own Healing. In much of conventional medicine, patients are passive recipients of care. In yoga, the essential element is not what is done to you but what you do for yourself. Yoga gives people concrete steps they can take and most people start to feel better the very first time they try it. They also observe that the more they commit to the practice, the greater the benefits tend to be. This not only involves them in their own care, it gives them the message that there is hope, and hope itself can be healing.

Benefits of Specific Practices

In addition to the benefits of asana, pranayama and mediation discussed above, certain yoga practices such as chanting, imagery and selfless service have specific benefits.

43. Effects of Sound. Chanting tends to prolong exhalation, which shifts the balance more toward the parasympathetic nervous system. Particularly when it's done in a group, chanting can be a powerful physical and emotional experience. A recent study from Sweden's Karolinska Institute suggests that the humming sounds--like those one makes while chanting Om--open the sinuses, facilitating drainage.

44. Effects of Imagery/Visualization. Contemplating an image in the mind's eye, as is found in yoga nidra and other practices, can effect change in the body. Studies have found that guided imagery reduced postoperative pain, cut headaches and improved quality of life in people with cancer and HIV.

45. Effects of Selfless Service. While not everyone who does yoga adopts this ethic, the concept of "karma yoga" is integral to yogic philosophy. A University of Michigan study found of older people who volunteered a little under an hour per week were three times as likely to be alive seven years later. Doing service can give meaning to your life and your problems may not seem so daunting when you see what others are dealing with.

46. Neti Kriya Cleans Nasal Passages. Yoga includes in its toolbox many kriyas, or cleansing practices. They include everything from rapid breathing exercises to elaborate internal cleansings of the intestines. One that many Western yoga students have taken to is jala neti, a gentle lavage of nasal passages with salt-water. Often done with a small ceramic neti pot, this kriya removes pollen and viruses from the nose, keeps mucus from building up and helps the sinuses drain.

And a Few More...

Below are a few therapeutic and preventive benefits of yoga practice that don't fit neatly into the other categories.

47. Cuts Mouth Breathing. Yoga promotes breathing through the nose, which filters, warms and humidifies the air, removing pollen, dirt and other things you'd just as soon not take into your lungs. Cold, dry air is more likely to trigger an asthma attack in people who are sensitive.

48. Improves Sleep. Studies suggest that yoga can improve one's ability to sleep. Better sleep can have ripple effects on health, as insomnia can lead to fatigue, accidents and higher levels of stress.

49. Relieves Pain. Various studies have found that either asana, meditation or a combination of the two reduces pain in people with arthritis, back pain, fibromyalgia, carpal tunnel syndrome and other chronic conditions. Pain relief facilitates healing by lifting mood, encouraging activity and reducing the need for medication.

50. Lowers Need for Medication. Studies on people with asthma, high blood pressure, Type 2 (formerly called adult-onset) diabetes and obsessive-compulsive disorder have demonstrated that yoga can allow patients to lower their dosage of medications and sometimes to get off of them entirely. In addition to lowering expenses, fewer drugs means less risk of side effects and dangerous drug interactions. As you read through these 50 ways yoga benefits health, you probably noticed a lot of overlap. While for the purposes of understanding I've separated the mechanisms, in reality they are intensely interwoven. Change your posture and you change the way you breathe. Change your breathing and you change your nervous system. This, of course, is one of the great lessons of yoga: Everything is connected--your hip bone to your knee bone and you to your community and world.

Interconnections are also vital to understanding how yoga works. This holistic system simultaneously taps into dozens of mechanisms that have additive and even multiplicative effects. This kind of synergy may be the most important way of all that yoga heals.



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