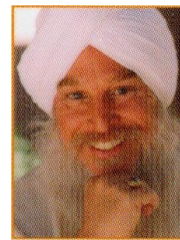


How Meditation Affects Your Body and Mind



Feeling Good - Virtually all of my patients who try meditation for the first time are astonished at how good it makes them feel. One of my patients told me that if he meditated for 10 to 15 minutes before he left for work in the morning, it was “like putting on suit of armor against stress.”

Another of my patients, a middle-aged man with age-associated memory impairment, received considerable benefit from doing his meditation at the *end* of his workday. Before he had started meditating, he told me, he had needed 2 or 3 cocktails to relax after work. But after he meditated, he said, he had no desire for alcohol. After meditating, he told me, alcohol just made him “feel dull.”

Several experiments have shown that meditating allows people to reach a condition of slowed metabolism, which is also called a *hypometabolic* state. Only two other activities commonly create this state. One is sleep, and the other is hibernation. (Of course, humans do not hibernate.)

During the hypometabolic state, there is a significant decrease in the body’s consumption of oxygen. When we sleep, our oxygen consumption drops by 8 percent. During meditation, it drops by 10 to 20 percent. This decreased use of oxygen reflects the deeply relaxed state that meditation creates, and also reflects the rest that is given to the entire physical system. This temporary decrease of oxygen use accounts, in part, for the increased physical energy imparted by meditation.

Another physical effect of meditation is a decrease in *blood lactate*. Lactate is a substance secreted by the muscles, and it contributes to feelings of anxiety. In a fascinating experiment, one group of patients with anxiety disorder was injected with lactate. Another group, with the same disorder, was injected with a placebo. Almost every patient in the group that got the lactate quickly experienced an anxiety attack. None of the people in the placebo group experienced such an attack.

In a related experiment, people with *no* history of anxiety disorder were injected with lactate, and 20 percent of them experienced an anxiety attack. During meditation, blood lactate levels drop significantly within 10 minutes.

Other effects of meditation are decreases in heart rate, blood pressure, and respiration rate. Studies indicate that heart rate slows by an average of 3 beats per minute during meditation.

Even the “sleep hormone” melatonin is increased by meditation. In a study at the University of Massachusetts Medical Center, researchers found that meditators regularly produced significantly more melatonin than non-meditators.

Of significance to brain longevity patients is the fact that meditation also causes decline in cortisol production. Cortisol is one of the hormones secreted by the adrenal glands. It is secreted in response to stress. In moderate amounts, cortisol is not harmful. But when produced in excess, day after day – as a result of chronic, unrelenting stress – *this hormone is so toxic to the brain that it kills and injures brain cells by the billions.*

The observed decline in the production of cortisol usually persists long after the period of meditation ends. Furthermore, among people who meditate regularly, cortisol levels tend to remain low.

“Healthspan” - This medley of physical effects caused by meditation creates lifelong health advantages. Meditation has been shown to slow the aging process significantly, and to increase not just lifespan, but “healthspan.”

In one important study of meditation, researchers found that it had a powerfully positive influence on three important biological markers of aging: blood pressure, hearing ability, and vision of close objects. The study showed that if people meditated for 5 years or less, they had “biological ages” that were about 5 years younger than their chronological ages. If they had meditated for more than 5 years, their biological ages were about 12 years younger than their chronological ages.

In another study, meditators showed a uniform superiority over non-meditators in 13 major health categories and disease conditions. The meditators, for example, had 80 percent less heart disease and 50 percent less cancer.

Another important marker of aging that is improved by meditation is the level of the steroid DHEA (dehydroepiandrosterone). As cortisol is secreted throughout life, the body’s supply of DHEA gradually becomes depleted. By the end of a person’s life, he or she often has only 5 or 10 percent as much DHEA as he or she did at age 25. Thus, people’s DHEA levels indicate *how much stress* they have endured during their

lives. A study of meditators, however, showed that men over 45 had an average of 23 percent *more* DHEA than non-meditators, and women had an average of 47 percent more.

In another fascinating study, researchers found that another significant marker of aging – a chemical that corresponds to free-radical production – was lower in subjects aged 60 to 69 who meditated than in an age-matched group that did not meditate. This marker was even lower in a group of subjects aged 70 to 79.

In a study of nursing-home residents, one group meditated, and a control group did not. After 3 years, none of the meditators had died, but 33 percent of the control group had.

Other studies have shown that by using meditation, 75 percent of insomniacs were able to sleep normally, 34 percent of people with chronic pain were able to reduce their analgesic medication, and 35 percent of women diagnosed with infertility were able to become pregnant.

Still another benefit of meditation is that it apparently decreases the need for mood-enhancing substances, such as drugs and alcohol. In one study of beginning meditators who tended to be recreational drug users, use of marijuana declined precipitously. When they began meditation, 78 percent of the group used marijuana, but after only 6 months of meditation, only 37 percent used it. Further, the *amount* of marijuana those meditators used dropped tremendously. In the beginning, 28 percent used marijuana every day, but by the end of the 6 months, only .001 percent used it daily.

As we have seen, meditation can help in eliminating negative conditions. But it can also create positive conditions. It can, for example, significantly heighten learning ability and creative problem-solving. It does this, in part, by altering brain waves.

Brain Waves- Your brain is the most complex and capable entity in the universe, far more chemically intricate and variegated than any star, and vastly more capable of fact storage than the world's most sophisticated computer. It is all powered by electricity. Every second, trillions of neurons in your brain are firing their electrical impulses.

Like most regular, repeated impulses in nature, these neuronal firings naturally organize themselves into rhythmical patterns, or *waves*. Like all other waves, brain waves occur at varying speeds, or "frequencies." There are 4 frequencies of brain waves:

Beta waves are the most common brain waves, and they occur at the highest frequency. We experience beta waves during our waking moments, when our eyes are open and our minds are racing with thoughts. These waves are associated with normal cognition, and also with anxiety.

Alpha waves are slower in frequency, and occur when we are in a state of mild relaxation. A *lack* of alpha-wave activity usually reflects anxiety and stress. These waves are associated with a pleasant feeling.

Theta waves are about two to four times slower than beta waves, and reflect the meditative state, which lies between wakefulness and sleep. Often, when people experience theta waves, they have access to information in their subconscious minds. They frequently see images from the past, or have vivid daydreams. They also sometimes experience deep personal insights. They frequently have creative ideas, and are adept at problem-solving. Theta brain waves combine a pleasant, relaxed feeling with extreme alertness.

Delta waves occur when you fall asleep. They are the slowest brain waves.

As you can see, the brain waves that offer the most potential for enhanced cognition are the theta waves, the waves that come from meditation. But theta waves are not strictly confined to periods of formal meditation. Theta waves can occur at various moments throughout the day. Experienced meditators frequently experience periods of theta waves even when they are not meditating. For the most part, the more a person practices meditation, the more adept he or she becomes at producing theta waves just by focusing on them.

Obviously, there is great power to be gained from the meditative state. It can help make you stress-free, and can help you accomplish extraordinary mental and physical feats.

Adapted from **Brain Longevity** by Dharma Singh Khalsa, MD, published by Warner Books. This is the first work of its kind to be written for the general public. It has been translated into twelve languages. Dr. Dharma is the founder, president and medical director of the Alzheimers Research and Prevention Foundation (www.alzheimersprevention.org). He has been honoured as a pioneer by the integrative medical establishment, the media and the public. Dr. Dharma is a longtime meditator and practitioner of Kundalini Yoga as taught by Yogi Bhajan. He is also the author of the best-selling **Meditation as Medicine**.