

Yes, You Do Sweat Out Toxins

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✓ Fact Checked

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STORY AT-A-GLANCE

- › Sweating in a sauna is one of the simplest strategies to reap big health rewards, including releasing heavy metal toxins, urea, bisphenol-A and phthalates as well as improving blood flow, reducing blood pressure and improving cognition
- › Sauna use improves mitochondrial biogenesis, optimizes heat shock proteins and reduces your risk of cardiovascular events and stroke
- › Research data finds chemicals in your sweat may communicate fear or disgust to those around you
- › Sweating is not a fitness end goal; this means while sweating in a sauna may feel the same as sweating during your workout, it does not translate to the same cardiovascular and muscular fitness benefits

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When it comes to your health, sometimes the simplest strategies can have a tremendous impact. Sweating in a sauna is one simple change with many health benefits, including the ability to reduce cardiovascular risk and improve mitochondrial function. It also correlates well with a reduction in the risk for dementia.

A Finnish proverb says, "The sauna is Finland's medication ... and a poor [person's] apothecary."¹ Saunas have been used for nearly 2,000 years in Finland for stress relief and to improve health. Not surprisingly, much of the research on the health benefits of saunas comes from Finland, a country where saunas are nearly as common as

television sets.² They're often found in private homes, offices and factories, and are an integral part of Finnish life.

In addition to offering cardiovascular and neurological benefits, they are being used by athletes for post-workout muscle relaxation and as a means of improving athletic performance. Another important aspect to sauna use has been detoxification.

While there has been more than adequate research demonstrating the ability of sweating in a sauna to detoxify the body of heavy metals and other toxins, one letter published in the Journal Environmental International has renewed the debate over its effectiveness.³

Experts Call Detox Sweating a Myth

Some experts teach that your liver and kidneys are the only way your body has of removing toxins.⁴ In essence, they believe using a sauna to detoxify from environmental toxins and heavy metals is nothing more than a myth. In making the argument, some have indicated there is usually a grain of truth to the heart of every myth, believing toxic sweat is no exception.

The authors of the correspondence⁵ published in the journal Environmental International suggest the amount of toxins the body is capable of releasing through sweat is minuscule, and that the amount of pollutants – such as persistent organic compounds such as pesticides, flame retardants and now-banned polychlorinated biphenyls (PCBs) – in the human body is so low they're essentially meaningless.

Yet these toxins and known carcinogens are banned from use because they trigger disease. According to the lead author, a typical person doing 45 minutes of high-intensity exercise could sweat a total of 2 liters each day, including normal everyday perspiration. This sweat would contain less than one-tenth of a nanogram of the pollutants discussed.

Hence, he believes there is no way to sweat enough to get rid of even 1% of the chemicals you ingest in your food in a single day.⁶ Ironically, and perhaps tellingly, this

statement completely contradicts the claim that the toxic burden is essentially meaningless to begin with.

Another writer wrote an infrared sauna was nice and left her feeling euphoric after sitting in 30 minutes, but she believed the feeling was similar to an endorphin rush after working out,⁷ and that aside from the feelings of euphoria there was no science to back up the idea the sauna aided in detoxification.

While these articles are circulated and read, they do not reflect the body of scientific and research evidence demonstrating the effectiveness of saunas to assist the body in eliminating environmental toxins and heavy metals.

Sweating Does Release Toxins From Your Body

Mixed with your sweat is a substance called urea, for which urine is named. In a paper published⁸ in the Journal of Biological Chemistry, researchers estimated up to 1.12 milligrams (mg) of urea is dissolved in every cubic centimeter of sweat. While this sounds like a small amount, the average person sweats up to 700 cubic centimeters of liquid each day, which means urea excreted in your sweat is responsible for up to 7% of your daily elimination of urea.⁹

Research has also determined that metals are excreted in measurable amounts, and many researchers consider sweating a safe and effective way to eliminate arsenic, cadmium, lead and mercury.¹⁰ This meta-analysis considered 24 published studies in which sweat collection and concentration were analyzed. They found individuals with a higher burden of toxins would generally sweat amounts exceeding plasma or urine concentrations.

These studies determined dermal excretion through sweating could match or surpass urinary excretion. Notably, cadmium was more concentrated in sweat than in blood plasma and mercury levels could be normalized with repeated sauna use.¹¹ Another study evaluated the blood, urine and sweat from 20 individuals and analyzed them for

approximately 120 compounds, which were found in varying amounts in each of the different fluids. According to the authors:¹²

"Many toxic elements appear to be preferentially excreted through sweat. Presumably stored in tissues, some toxic elements readily identified in the perspiration of some participants were not found in their serum. Induced sweating appears to be a potential method for elimination of many toxic elements from the human body."

Bisphenol-A (BPA) is a ubiquitous chemical contaminant associated with a number of adverse human health conditions. In a study designed to assess the relative concentration of BPA in blood, urine and sweat, researchers found BPA could be identified in the sweat or 80% of the participants, even in some who had no BPA detected in serum, blood or urine.¹³

They concluded biomonitoring using blood or urine may underestimate the total burden, and sweat analysis should be considered as it appeared to be useful for elimination of BPA.

Chemicals in the phthalate family are found in everyday consumer products, resulting in high exposure for some individuals and groups. Multiple studies have demonstrated statistically significant relationships between exposure to phthalates and disease. In one study,¹⁴ researchers evaluated the effectiveness of excretion of phthalates and metabolites through sweat.

They found some phthalates were measurable in sweat but not serum suggesting retention and bioaccumulation. They concluded induced perspiration could be useful to facilitate elimination of toxic phthalate compounds, and that sweat analysis may help establish the existence of the bioaccumulation of 2-ethylhexyl phthalate.¹⁵

Sweating Communicates Emotions

Although sweating is an important method of excreting waste products, researchers have discovered it also serves another function. Sweat leaves the body through one of

three types of glands – apocrine, eccrine and apoeccrine glands. The latter were first discovered in 1987 and found only in the same places where apocrine glands exist.¹⁶

The human body will sweat as a means of regulating temperature. However, you may also begin to sweat when eating something spicy, or experiencing a highly charged emotional situation. Researchers have discovered emotion-induced sweating is a tool used for communication, as the scent you detect in the sweat will tell you how others are feeling.

In an experiment by Utrecht University,¹⁷ psychologists collected sweat samples from 10 men as they watched videos designed to stimulate feelings of fear or disgust. Thirty-six women were then asked to detect any emotional cues from the sweat samples.

The scientists found when women smelled sweat produced during fearful situations, their own facial expressions suggested fear as well. The same was true when they smelled the sweat samples produce during situations meant to evoke disgust.

This suggested the sweat was an effective means of communicating an emotional state. Interestingly, the facial expressions made by the women while sniffing the sweat was independent of their subjective perception of the odor. Thus, a woman may show a look of disgust even if they reported the sample as pleasant.

Similar results were found in other experiments, including one from Rice University when women exposed to sweat samples produced in a fearful situation performed better on word association tasks.¹⁸

In an experiment conducted by German psychologists and neuroscientists,¹⁹ sweat produced by men who were in an anxious state triggered women to make riskier decisions in a computer game. None of the studies determined whether people were aware of changes in their own behavior or decision-making as a result of exposure to sweat, but they do suggest sweat may communicate information about your mental state.

Sweating Cannot Replace Exercise

You sweat during intense exercise and while using a sauna, which may lead you to believe you can experience some of the same benefits using a sauna as you would doing intense exercise. Unfortunately, you're not going to sweat off the pounds or build muscle in a sauna.

Sweating is not, in and of itself, a fitness goal. Sweating during intense exercise regulates internal temperature. Using the sauna may help improve athletic performance and recovery by boosting growth hormone secretion naturally,²⁰ and definitely has additional benefits beyond excreting waste products from your body. However, it is important to include movement, strength training, flexibility and cardiovascular training in your fitness routine.

Saunas Do More Than Detoxify

Inside most of your cells are mitochondria that produce nearly 90% of the energy generated in your body, which is necessary for every muscle contraction and relaxation, biochemical cascade, cellular regeneration and more.

Your mitochondria also act as coordinators for programmed cell death, which helps rid your body of damaged cells that might otherwise turn into cancer. However, mitochondria are susceptible to damage from free radicals and require consistent regeneration. Sauna use places stress on your body in short bursts, which boosts mitochondrial biogenesis.²¹

Elevating your core temperature helps activate genes important for optimizing heat shock proteins (HSP) inside your cells. An accumulation of damaged HSP can lead to plaque formation in your brain or other vascular systems.²²

HSP are involved in longevity and are important for preventing skeletal muscle atrophy. Researchers in Finland²³ found men who use a sauna four to seven times per week for an average of 15 minutes had a 66% lower risk of developing dementia and 65% lower risk of Alzheimer's disease, compared to those who use the sauna only once a week.

Sauna use may also improve brain function by lowering inflammation and blood pressure, thus improving vascular function and enhancing your feeling of relaxation and well-being. Research data²⁴ demonstrates a link between heat exposure and brain-derived neurotrophic factor (BDNF).

This factor activates brain stem cells to convert into new neurons and triggers other chemicals promoting neural health. Exercising in the heat increases BDNF even further, suggesting heat stress, including sauna use, is beneficial for brain health.

Further research reveals men who used a Finnish-style, dry heat sauna seven times per week cut their risk of death from fatal heart problems in half, compared to those who used it only once a week.²⁵ When confounding factors such as smoking, blood pressure and cholesterol levels were factored in, the findings remained the same. The greatest benefits were found in those who stayed in a sauna for 19 minutes or more each session.²⁶

This suggests the adaptations your body makes to heat stress, including improved blood flow to your heart and muscles, positively impact your heart health. Another study²⁷ evaluating the effects of a sauna on over 1,600 men and women found it helps reduce stroke risk by lowering inflammation, reducing arterial stiffness and improving blood flow through the circulatory system. Those who used the sauna up to seven times per week reduced their risk by 62%.²⁸

Choose Your Best Sauna Option and Take Precautions

There are several sauna options from which you can choose, including a Finnish sauna, far-infrared saunas and near-infrared saunas. The difference between the infrared saunas and the traditional Finnish sauna is the Finnish-style heats you from the outside in, where the infrared heats from the inside out. Near-infrared saunas have additional benefits as they penetrate your tissues more effectively and at wavelengths not absorbed by water.

The near-infrared range affects your health primarily through interaction with chromophores, light-absorbing molecules found in your mitochondria and water molecules. Near-infrared light also has healing and repairing properties, helping optimize other biological functions.

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