HOLIDAY SURVIVAL GUIDE

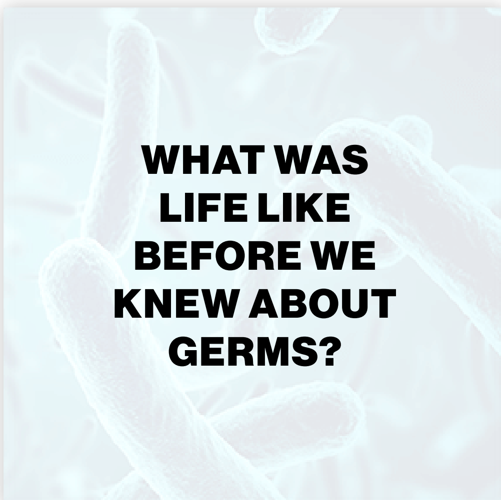
Keep these 5 fascinating facts up your sleeve as you enter the season of holiday parties, family gatherings, and awkward virtual hangouts. Revive, redirect, and re-engage any conversation with these timely tidbits.

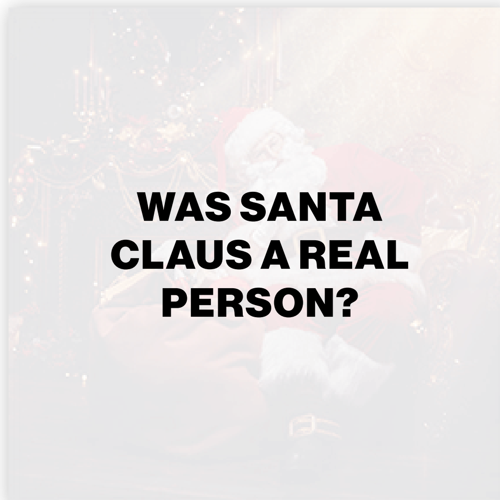
Britannica Digital Learning

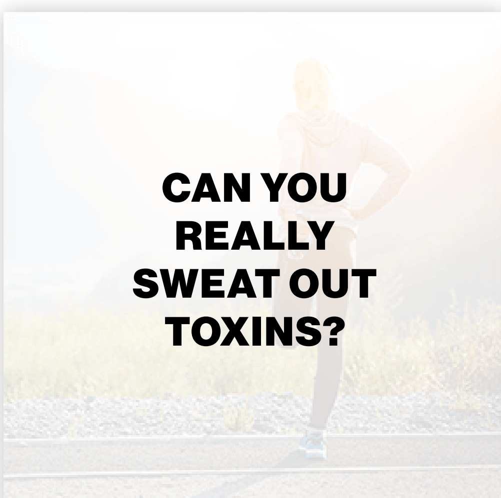
britannicalearn.com

Survival Guide Topics

Click on a question to learn more.







Why do we drop a ball on New Year's Eve?

"The Times Building will be especially illuminated to-night in honor of the birth of 1908," announced The New York Times on December 31, 1907. "The exact moment of the New Year's arrival will be signalized by the dropping of an electrically illuminated ball above the tower. The ball will be five feet in diameter, and light for it will be supplied by 216 electric lamps."

That ball, powered by its 216 electric lamps, was the first of what immediately became an annual tradition. But while New Year's Eve celebrants still flock to Times Square in New York City to see the ball drop, it's likely that few contemporary viewers know where the ritual comes from.

Times Square was already a mecca for New Year's Eve revelers by 1904, when hundreds of thousands of people chose to celebrate in Midtown Manhattan near the brand-new New York Times building (after which the square itself was named). At midnight, pyrotechnics were set off that made the building look as if it were literally on fire. The next day the Times reported that "from base to dome the giant structure was alight...never was a New Year's Eve more joyously celebrated." The same article described Times Square as packed by 9 PM, and by midnight "the crush was so great that progress was well nigh impossible in any direction."

The pyrotechnics made for an extraordinary show. But they also rained hot ash onto the New York City streets, a liability that worried city officials so much that fireworks were banned in 1907. Not to be deterred from putting on a fabulous show, the Times introduced a new gimmick to bring partyers to Times Square: the New Year's Eve Ball.

The first ball bore little resemblance to today's crystal one. Crafted in iron and wood, it weighed about 700 pounds (317 kg) and was decorated with 25-watt light bulbs. Its designer was Jacob Starr, an electric sign designer and manufacturer who supervised when, at the stroke of midnight, the ball was lowered by an elaborate pulley system. And though the ball's design changed over the years—from iron and wood to aluminum to Waterford Crystal—the tradition itself did not. With the exceptions of the World War II "dimouts" in 1942 and 1943, the New Year's Eve Ball hasn't missed a year since its 1907 debut. Since 2009 it's been the "Big Times Square New Year's Eve Ball" (or the "Big Ball," for short) that drops: an almost six-ton geodesic sphere covered in 2,688 Waterford Crystal triangles.

Each iteration of Times Square's celebratory sparkling ball is modeled on a much older practice. Sometimes called time balls, the concept was originally a practical one: a ball descended from a pole or pulley system to alert passersby as to the time of day. One of the first time balls, installed at 1833 at the Royal Greenwich Observatory outside London, England, dropped daily at 1 PM so that captains of ships passing on the River Thames could verify the time on their chronometers. Since typically only the rich owned personal clocks and watches, the rest of the population relying on local sundials, time balls provided a solution to standardizing what time it actually was.

Other institutions followed the Royal Greenwich Observatory's example, and soon enough about 150 public time balls were installed worldwide. But, like the Sony Walkman bridging the gap between a record and a CD, the time ball wasn't necessary for long. As time zones became standardized and watches and clocks became less expensive, most of the original time balls were dismantled. Only a few remain today, including the Royal Greenwich Observatory's original model, a reinstalled time ball at the U.S. Naval Observatory in Washington, D.C., and—once a year, at midnight—the ball in Times Square.

What was life like before we knew about germs?

"It was the summer of 1880. It was August. It stank to high heaven. The sewers had been uncorked, and all the filth came out in a flood. All manner of waste was on display."

So reads an article in the French daily newspaper Le Figaro. Purporting to be written by novelist and critic Émile Zola (though not written by him in actuality; Le Figaro merely copied his style), the piece references the Great Stink of 1880: a period from August to September when a horrific odor enveloped Paris and caused a panic about public health.

To a Parisian in 1880, a bad smell signified disease. Fears of an epidemic, groundless rumors of widespread death, and citizens' protests spread throughout the city; in response, a government commission announced that "these odors [could] pose a threat to the public health."

At the time of the Great Stink, fear of contamination overrode the newly developing tenets of germ theory in the public mind. It took the end of the Great Stink, with no deaths incurred, for Parisians to fully accept germ theory's tenet "tout ce qui pue ne tue pas, et tout ce qui tue ne pue pas" ("not everything that stinks kills, and not everything that kills stinks"). When another foul odor beset the city 15 years later, news coverage and public reactions treated the smell as a joke. Germ theory had taught them that an unpleasant smell alone was not a health hazard.

Developed, verified, and popularized between 1850 and 1920, germ theory holds that certain diseases are caused by the invasion of the body by microorganisms. Research by Louis Pasteur, Joseph Lister, and Robert Koch contributed to public acceptance of the once-baffling theory, proving that processes such as fermentation and putrefaction, as well as diseases such as cholera and tuberculosis, were caused by germs. And since the Great Stink was not accompanied by germs, it could not possibly start an epidemic.

Before germ theory was popularly understood, the methods taken to avoid illness and infection were based on guesses rather than facts. In ancient Rome, the association of illness with foul odors may have influenced the creation of a complex infrastructure intended to usher clean water into the city and stinky sewage out by way of separate pipelines. The ancient Roman writer Marcus Terentius Varro described his rudimentary—but not entirely far-fetched—understanding of how contamination occurred in Res Rusticae, published in 36 BCE:

Precautions must also be taken in the neighborhood of swamps...because there are bred certain minute creatures which cannot be seen by the eyes, which float in the air and enter the body through the mouth and nose and there cause serious diseases.

Still, total lapses of sanitation were common. In the United States during the Civil War, severed limbs were allowed to pile up next to operating tables as doctors performed amputation after amputation; as late as the 19th century, physicians didn't remove bloodstained clothing between one operation and the next. Hand washing was not a requirement in the hospital or in the home, and improper disposal of sewage resulted in the contamination of water used for drinking, cooking, and cleaning.

People ignorant of germ theory were not unconcerned with hygiene. They simply did not know the proper ways to protect themselves against germs. After germ theory's development and popularization, effective sanitation practices resulted in cleaner homes, hospitals, and public spaces—as well as longer life spans for the people who had never before known how to avoid getting sick.

Was Santa Claus a real person?

For many children living in the United States, especially those who have behaved well all year, the most exciting part of Christmas is the discovery of wrapped packages tucked under the Christmas tree and sweets hidden in stockings hung by the fireplace. Kids are often told that the gifts were left by Santa Claus during his annual nocturnal journey around the world in a sleigh pulled by nine flying reindeer. How have so many people agreed on this story?

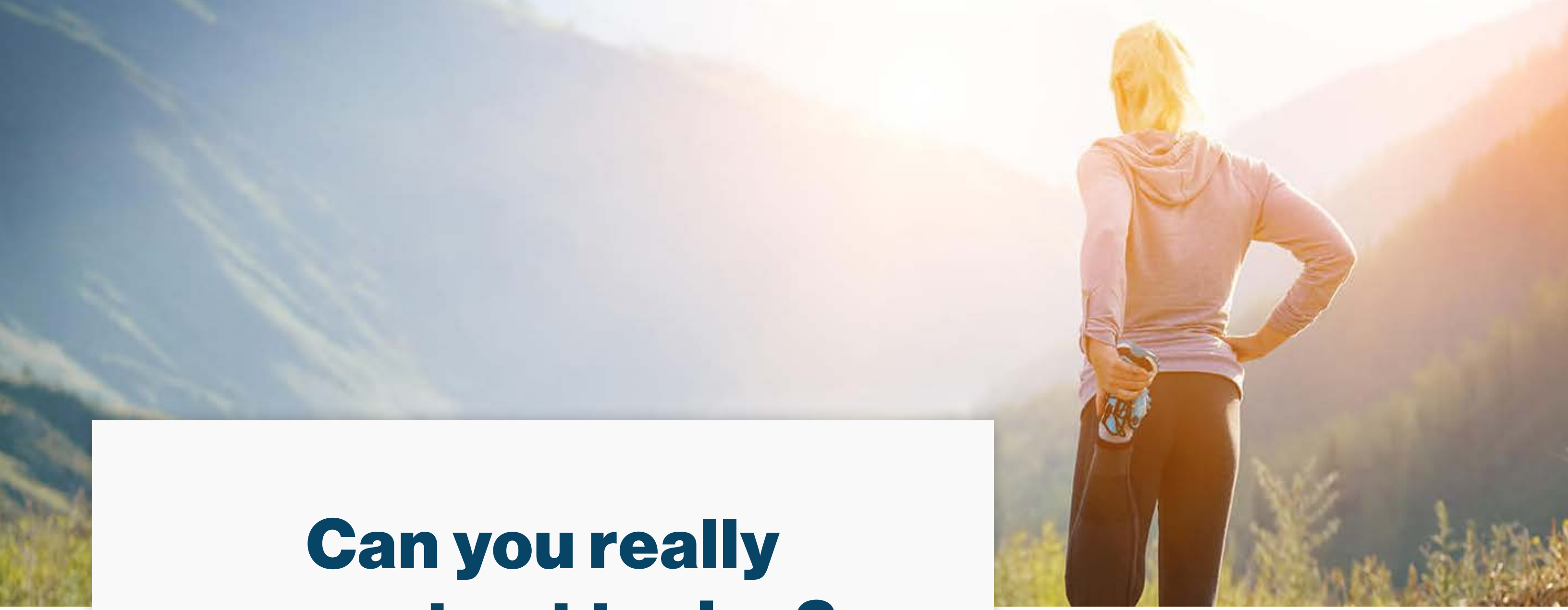
Whether or not you believe that Santa Claus is a real person who enters every child's house by way of a chimney to leave presents, the legendary figure and the tradition of gift giving can be traced back to the Dutch colonists. When they settled in what is now New York City during the 17th century, they brought their legend of Sinterklaas and the custom of leaving presents for children on the eve of December 6. From there, such 19th-century literary works as the poem known as The Night Before Christmas and a mid-20th-century Coca-Cola ad campaign transformed Sinterklaas from a saintly bishop to the white-bearded, red-capped Santa Claus that Americans recognize today.

But who is Sinterklaas, the elder gentleman dressed as a bishop who brings Dutch children gifts in early December? He is based on St. Nicholas of Myra, who, according to Christian tradition, was a bishop in that small Roman town during the 4th century. Nicholas's reputation for generosity and kindness gave rise to legends of miracles he performed for the poor and unhappy. According to one story, Nicholas restored to life through prayer three children who had been chopped up by a butcher and put into pickling barrels. Another story describes how a young Nicholas secretly provided marriage dowries by dropping gold down the chimneys of three girls whom poverty would otherwise have forced into prostitution and that the gold landed in a stocking left to dry on the fireplace. Nicholas's death on December 6 is now celebrated as his feast day. His alleged remains were removed from his church at Myra in 1087 to Bari, Italy. The site subsequently became a popular destination for pilgrims, partly because his shrine developed a liquid substance thought to have healing properties.

Such stories about St. Nicholas grew throughout the 2nd millennium and mixed with other traditions—as well as with the deeds of another St. Nicholas (of Sion)—so that he became as legendary a figure as Santa Claus is now. During the 20th century, however, several historians attempted to untangle the historical Nicholas from the myth. Their investigation led them to doubt the bishop's very existence. He left no writings and had no disciples. His name was not mentioned in any contemporary texts; the earliest reference is more than 200 years after his purported death, and the first biography was written some 300 years after that.

While the uncertainty surrounding his existence was reflected in revised entries on Nicholas in books of saints, several historians maintained that St. Nicholas had lived and had performed many acts of kindness and generosity. They argued that a lack of documentation during his lifetime was not proof of his absence and called for a reconsideration of the texts that had been disregarded. Other devotees assert that the construction of churches dedicated to him during the early Middle Ages is evidence enough. The 2017 dating to the 4th century of a piece of pelvic bone attributed to St. Nicholas (now housed in the United States) offers a tantalizing piece of the puzzle. Interestingly, St. Nicholas's alleged remains at Bari are missing part of a pelvic bone.

The arguments and discoveries offer some compelling reasons not to completely disregard Nicholas's existence. So after all is said, can we determine if Santa Claus was a real person? The answer depends on whether you believe.

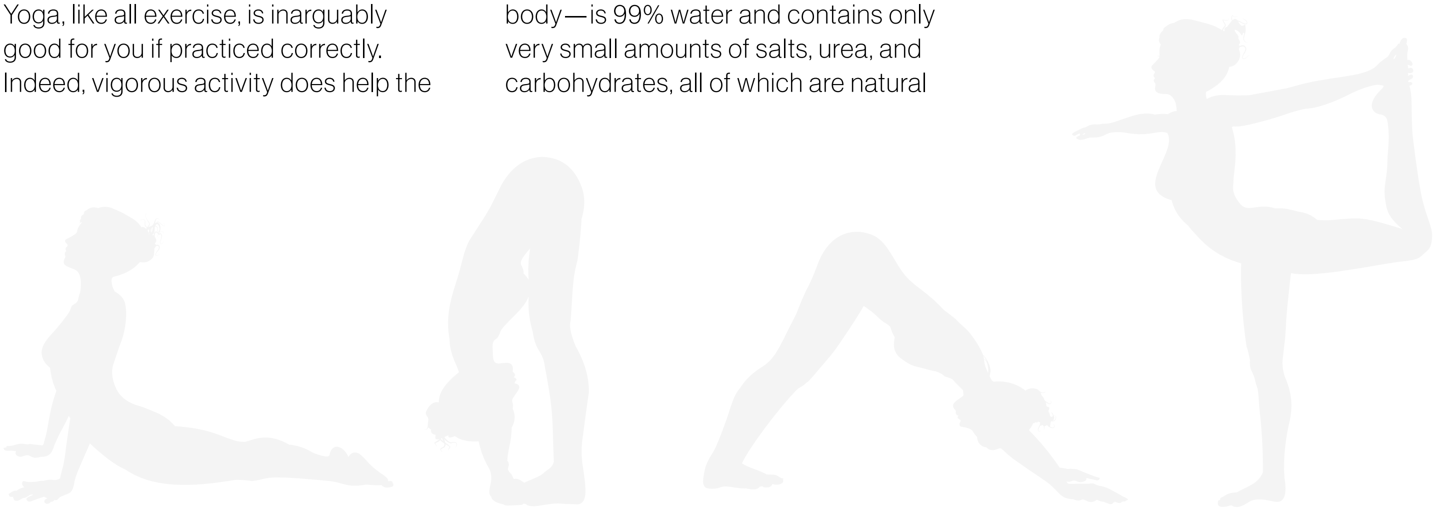


Can you really sweat out toxins?

You're in your weekly yoga class, inverted and stretching out your body as piped-in sitar music plinks soothingly in the background. Concentrating, you ease further into the position. A drop of sweat slides down the bridge of your nose and pools on your yoga mat. The instructor croons, "That's right, sweat out all of those toxins." Obligingly, your pores dilate and your skin is soon slick with perspiration. You work through the rest of the routine and leave feeling lighter. Cleansed, even. Surely some of that euphoria is due to your body's newly toxin-free state, right?

Er, one problem with that notion: Your skin isn't actually an excretory organ. Yoga, like all exercise, is inarguably good for you if practiced correctly. Indeed, vigorous activity does help the body rid itself of toxins by increasing the circulation of lymph fluid and blood, which are filtered by the lymph nodes and kidneys respectively. (Any toxins filtered out by the lymph nodes are redeposited in the bloodstream and eliminated by the kidneys.) The liver also filters out some waste products, which are released into the intestine in bile.

The fact is, though, the end of the road for these poisons—both metabolic and environmental—is covered by most bathing suits. The purpose of sweating is not to purge the body of toxins but to cool it down through evaporation. Sweat from eccrine sweat glands—those covering most of the body—is 99% water and contains only very small amounts of salts, urea, and carbohydrates, all of which are natural by-products of bodily processes. Apocrine sweat glands, associated with hair follicles in the axillary and groin regions, release some fats along with water. When broken down by skin bacteria, these substances account for the characteristic ripe smell of someone who is stressed or has strenuously exercised. The fats may contain incidental amounts of fat-soluble toxins, but apocrine sweat glands are not a major route for removing them from the body. Any harmful substances that may have been collected by your body's filters are, to put it delicately, percolating downward inside you, not drenching your yoga togs. So, the next time an instructor parrots that pseudoscientific canard about poisonous sweat, perhaps you can point to a physiology textbook (or this post) and shed a little enlightenment of your own.



Why does salt melt ice?

More than 20 million tons of salt are used every year to melt snow and ice in cold northern regions. But how does salt do it?

First, it's important to understand a bit about H_2O in the winter. Thirty-two degrees Fahrenheit (0 degrees Celsius) is its freezing point—that is, when water reaches 32 °F, it turns into ice. At this temperature, your icy road generally has a thin layer of water on top of the ice, and the ice molecules and water molecules are interacting. This water is constantly melting some of the ice, while the ice beneath it is freezing some of the water. At this temperature, the exchange rate is pretty constant, meaning the amount of water and the amount of ice stay the same. If it gets colder, more water becomes ice. If it gets warmer, more ice becomes water. When the ionic compound salt is added to the equation, it lowers the freezing point of the water, which means the ice on the ground can't freeze that layer of water at 32 °F anymore. The water, however, can still melt the ice at that temperature, which results in less ice on the roads.

But you may be asking how salt lowers the freezing point of water. This concept is called "freezing point depression." Essentially, the salt makes it harder for the water molecules to bond together in their rigid structure. In water, salt is a solute, and it will break into its elements. So, if you're using table salt, also known as sodium chloride (NaCl), to melt ice, the salt will dissolve into separate sodium ions and chloride ions. Often, however, cities use calcium chloride ($CaCl_2$), another type of salt, on their icy streets. Calcium chloride is more effective at melting ice because it can break down into three ions instead of two: one calcium ion and two chloride ions. More ions mean more ions getting in the way of those rigid ice bonds.

Unfortunately, chloride is super bad for the environment. It can kill aquatic animals, and that can thereby affect other animal populations in their food web. Chloride also dehydrates and kills plants and can alter soil composition, making it harder for vegetation to grow. While some other compounds that can melt ice and snow don't include chloride, they are much more expensive than sodium chloride or calcium chloride.