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Common Medical Myths And Misunderstandings

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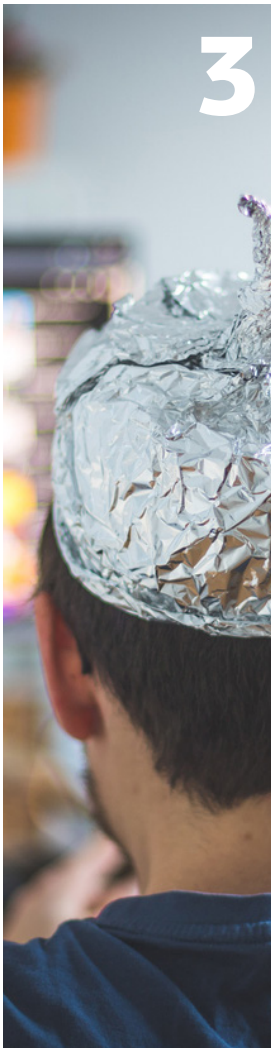

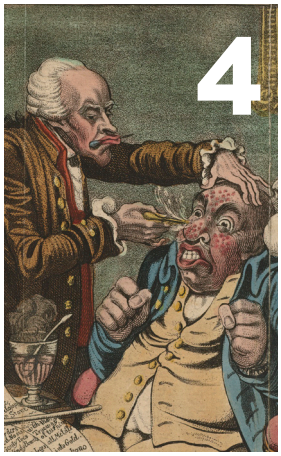

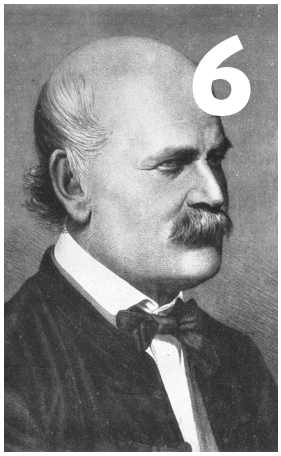

Introduction

Medicine has advanced in leaps and bounds over the last few centuries. However, the past has been littered with myths and misunderstandings surrounding the way our bodies and treatments work.

Come along on a journey as we explore remarkable unfounded theories of the past and present, why people may believe these intriguing myths, and the science that has debunked them.

The world is constantly evolving and the foundation of scientific questioning and advances in technology may mean that theories we believe now will be proven to be untrue in the future.

WHY DO SOME PEOPLE BELIEVE IN CONSPIRACY THEORIES?

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Image credit: Patrick Daxenbichler/ iStock

Conspiracy theories reject the standard explanation for an event and place the blame on a group. They can range from fun and light-hearted explanations to descriptions with a more sinister origin. Unfortunately, some people can take them completely seriously to the detriment of their mental well-being.

There have been many conspiracy theories that have cropped up in recent times, such as the rise of the anti-vax communities, the belief that vapor trails behind airplanes are **harmful substances** that are being sprayed onto populations, or that the Vatican may be covering up the existence of **giants**.

But, why do people believe in some of these weird conspiracy theories?

It all has to do with how our brain is **wired**. Human brains are wired to see patterns – this pattern searching has helped us to survive. Pattern processing itself is something that became more sophisticated with the cerebral cortex expansion, more specifically the prefrontal cortex and regions involved in the processing of an image.

This ability for us to find patterns can run a bit wild at times and sometimes humans can find patterns in completely unconnected data. People who are more likely to believe in conspiracy theories tend to have brains that are susceptible to finding connections where there are none.

It is thought that dopamine could be the main culprit in this: people who have genetically higher levels of free dopamine tend to be more likely to believe in conspiracy theories. Often, when these beliefs have taken root, confirmation bias may strengthen them.

In uncertain times, people are more likely to believe in conspiracy theories as they may feel powerless and try to find order, which could lead them to find patterns when there are none.

There are ways to get people to turn away from conspiracy theories and this involves empowering people to take action in their personal lives. This action can eventually make people feel less hopeless and reduce their reliance on diving into conspiracy theories.

Click here to find out more.

MYTH MAKING IN MEDICINE: PERKINS' METALLIC TRACTORS

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Image credit: Wellcome Images via Wikimedia Commons/ CC BY 4.0

The history of medicine is full of dubious claims and outlandish ideas. We have all heard of quack practitioners who claim medical expertise in order to promote and sell nonsense treatments and nostrums. These individuals experience various levels of success, but usually, their bogus claims are discovered before too long. But what about instances where medical professionals genuinely believe a treatment or therapy is real?

In 1796, Elisha Perkins, a physician in Connecticut, started selling an usual device – two stretched tear-drop shaped metal rods, one made of iron and the other brass – which he claimed produced miraculous healing effects. According to Perkins, simply touching these so called "Tractors" to your skin could potentially cure a range of ailments, including inflammation, epilepsy, and rheumatism.

The Perkins' Metallic Tractors, as they became known, were sold as a pair (for 25 Continental dollars in the US and 5 guineas in Britain) and could be used by anyone. This was part of their appeal. Not only where they promoted as a simple cure-all device, you didn't even need to be a doctor to use them – as long as you could apply them to the injured or painful area then you were ready to go.

Perkins learnt his medical trade from his father, Joseph Perkins, who graduated from Yale College in 1727 and established a practice in Norwich, Connecticut. It was here that Elisha gained his medical knowledge as an assistant before he moved to Plainfield, Connecticut, where he started his own practice and created a medical academy. He became the Chairman of the Windham County Medical Association in 1795, and also was selected as a delegate to the Connecticut Medical Society. In short, Perkins looked to be a star on the rise who would have a successful medical career ahead of him. That is, until his "discovery" of the Tractors eventually turned him into a renowned quack. But this is not a tale of a charlatan waiting to be discovered.

The rising physician first became aware of the phenomenon he would eventually patent while performing a surgical operation where he noted how a muscle would contract whenever he touched it with the point of a metallic instrument. He then experimented with other materials, such as wood, and found that only metal objects elicited the perplexing result.

Apparently, around the time he was poking people with different instruments, Perkins also noted how, when cutting gums with a metal knife ahead of a tooth extraction, the patient seemed to experience a lessening of pain. He also observed a similar response when applying metallic instruments to inflamed tumors before he cut into them. As a good empiricist, Perkins then experimented with different metals to see which worked best and eventually settled on a combination of two rods, one of brass and one of iron.

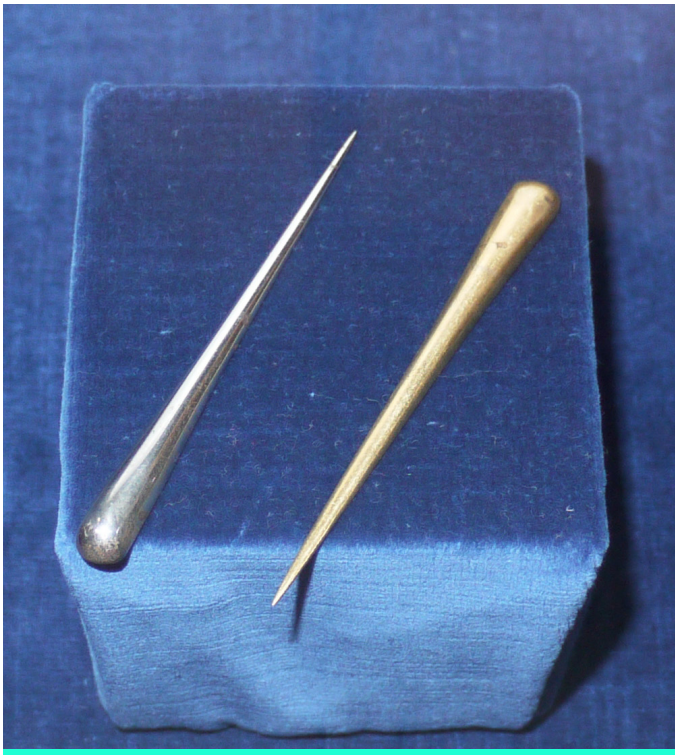
Initially, the Tractors were met by ambivalence and hostility within some medical circles, especially among those who were already suspicious of claims made by contemporary proponents of **Animal Magnetism**. But for many more people and doctors in America and Europe, his patented rods were a sensation.

He and his son set off on a successful promotional tour in 1796 and published various pamphlets celebrating the discovery and the Tractor's efficacy. Positive testimonies from high profile doctors and public officials, including George Washington who had allegedly bought a pair of Tractors for his family, quickly bolstered their credibility. They became so successful, in fact, that they became a currency of exchange in themselves – people even used property, horses, and carriages to pay for certain numbers of Tractors.

Despite the public enthusiasm for the Perkins' Metallic Tractors, skepticism remained. In 1797, the Connecticut Medical Society expelled Perkins from their number on the grounds that he was a quack, while **others sought to understand** what made the Tractor's work in the first place.

Experiments were performed with metal instruments and magnets to see if they would produce the same outcome – which they did – while, in 1800, an English physician attempted to test the "fictitious tractors" by using two wooden rods disguised as metal. John Haygarth, a physician in Bath, England, found that he could produce the same effects with these fake objects. **He concluded** that the "whole effect undoubtedly depends upon the impression which can be made upon the patient's imagination."

Today, we would regard this as one of the earliest experiments to demonstrate the placebo effect, but it was just one of the many tests conducted by physicians to debunk the hype behind the Tractors. Anything, it seemed, could be used to produce the same effects Perkins claimed as his own, just as long as the patient believed they were being treated with official Perkins' Tractors.



Perkins' Metallic Tractors | Image credit: user:geni. CC BY-SA 4.0

After this, Perkins' Tractors became a source of ridicule. They were lambasted by cartoons and in newspapers and eventually the rods fell from fashion. But despite this, they still enjoyed commercial popularity for some time after Perkins' death in 1799.

While it might be tempting to regard Perkins as a simple quack, that is not really accurate or fair. Not only did he generate his ideas in good therapeutic faith, but they were also enthusiastically greeted by many of his medical peers. Instead, his story tells us lots about how medical ideas can sometimes generate their own mythology and that history is filled with ideas that seem too good to be true until they are proven to be just that.

THE TROUBLE WITH SEMMELWEIS 6

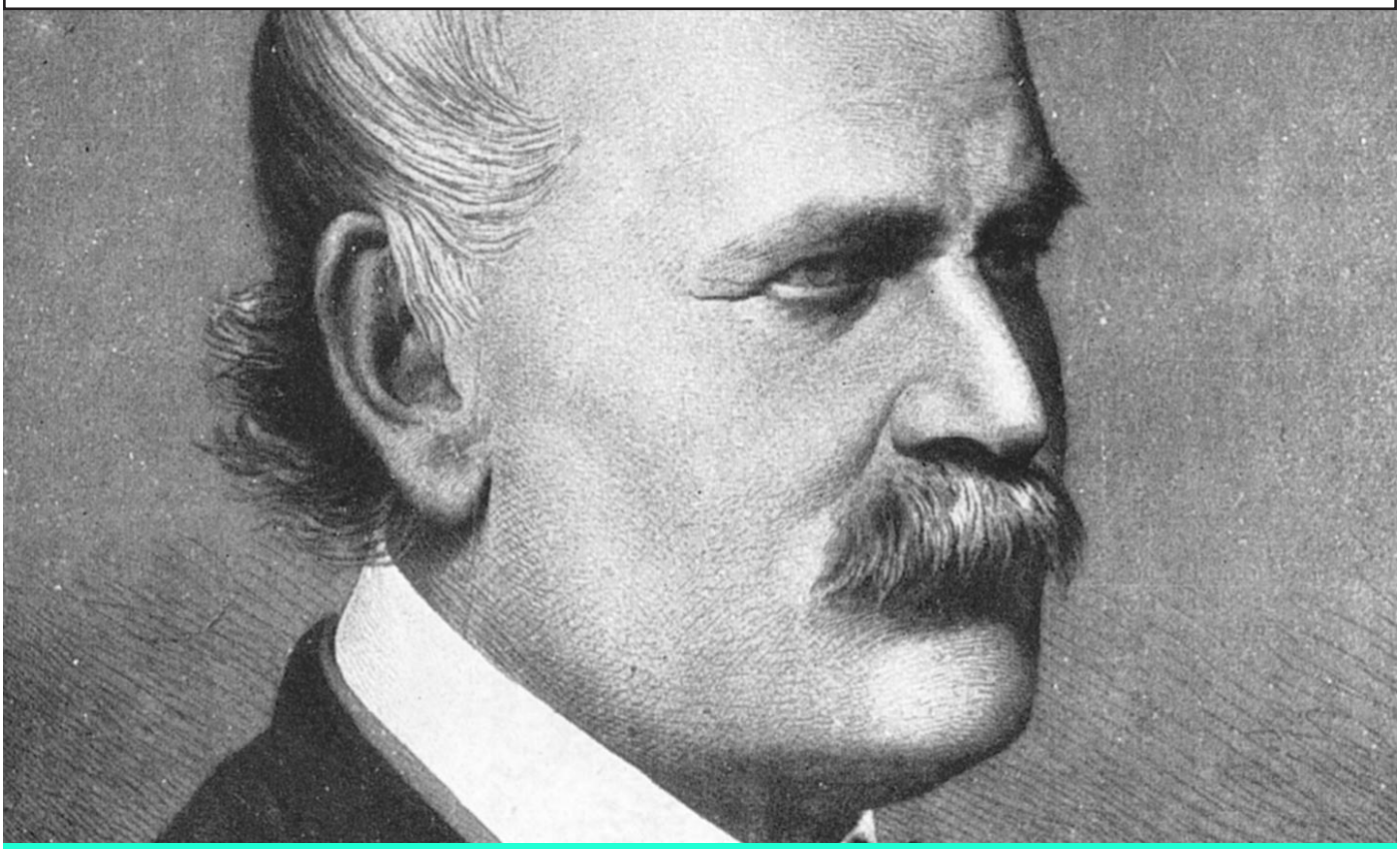


Image credit: Wikimedia Commons / public domain

In the history of medicine, there is one story that is a fantastic example of how observation and experimentation can lead to significant changes and discoveries. The same story, however, is also an extreme example of how some scientific ideas can nevertheless be dismissed in favor of tradition.

During the 1840s, at the Vienna General Hospital's maternity clinic, the largest in the world at the time, a strange and perplexing phenomenon was taking place. The maternity clinic was divided into two wards: if you were a pregnant woman admitted to Ward One, there was a 29 percent chance that you would die during your stay, but if you were admitted to Ward Two, you only had a 3 percent chance of dying. So, what was going on here?

During the 18th and 19th centuries, childbed fever, or **puerperal fever**, was an infection contracted during or after childbirth and was a common cause of death in hospitals with maternity wards. The disease tended to affect women within the first three days after giving birth and had a rapid progression, leading to abdominal pain, fever, debility and, more often than not, death. For contemporary physicians, the disease was a mystery. For one thing, **germ theory** of disease had not been established, so people had no concept that bacteria could be a cause of infection. This made it difficult to comprehend how epidemic childbed fever was being spread to different patients.

Enter Ignaz Semmelweis, an assistant physician at the Vienna General Hospital. Semmelweis observed the strange, uneven number of deaths occurring between Wards One and Two and concluded that the only difference was that the former was managed by medical students and the latter by trainee midwives. In order to test his observations, Semmelweis had the two wards **swap staff** and he found that, much like angels of death, the high mortality rates followed the medical students.

Another piece of the puzzle came when Jakob Kolletschka, a professor of forensic medicine, died after a student accidentally cut his finger during an autopsy. Semmelweis noted that the sepsis that had killed Kolletschka left similar pathological signs in the body to the women who died of childbed fever.

"Day and night I was haunted by the image of Kolletschka's disease", Semmelweis **recorded**, "and was forced to recognize, ever more decisively, that the disease from which Kolletschka died was identical to that from which so many maternity patients died."

Semmelweis believed that, as the medical students would go straight from performing autopsies, often with the same clothes and soiled instruments, they were somehow passing infectious matter to the pregnant women with their hands. In May 1847, Semmelweis institutionalized a policy where all staff had to wash their hands with chlorinated water before attending to their patients. The mortality rates plummeted in both wards.

Yet while it would be tempting to regard this as a prime example of the scientific method in practice, the story is not that straightforward. Unfortunately, Semmelweis's ideas were challenged by his colleagues who believed the deaths were caused by miasmas – bad air that was entering the wards through the ventilation system. Out of frustration, Semmelweis resigned his position in Vienna and moved to Budapest where he became the head of obstetrics at St Rochus Hospital. Once in his post, Semmelweis taught his new colleagues the virtues of washing hands and instruments, which had the same outcome for mortality rates.

He later published a book in 1861 explaining his views on childbed fever, but it was **not well received**. Semmelweis soon fell into obscurity and became embittered against the medical community who doubted him. He became increasingly unstable and was eventually forced into an asylum where he lingered until he died at the age of 47.

Semmelweis's story is an instructive example of how some scientific ideas and discoveries can still be passed over due to established traditions. However, Semmelweis is also an active player in this narrative of rejection. He was known to be arrogant and difficult, often being openly insulting to his colleagues and opponents. Nevertheless, his work eventually received greater appreciation after **Robert Koch** and **Louis Pasteur** produced their research into bacteria as causal agents of disease. Though even then, the much acclaimed "**bacteriological revolution"** took some time to convince everyone.

Birthplace of Ignác Semmelweis.
Image credit: User:KovacsDaniel. CC BY-SA 3.0

SIMPLICITY IS KEY: POPULAR THERAPY DEBUNKED BY 9-YEAR-OLD USING CARDBOARD AND A TOWEL

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Image credit: izusek/ istock

In 1998, an 11-year-old American girl became the youngest person in history to co-author a scientific peer-reviewed paper after she achieved what others had failed to do: persuading practitioners of "Therapeutic Touch" to undergo scientific testing.

"Therapeutic Touch" is a form of alternative medicine based on the belief that bodies have an invisible vital energy flowing around them. According to its proponents, illness can occur in the body when this "energy field" goes out of whack. But practitioners believe they can restore the balance of these energies through careful manipulation. This is achieved, they claim by moving their hands above a patient to help direct the vital energies to where they need to be.

It was this claim that caught Emily Rosa's attention. Emily noted that practitioners of Therapeutic Touch said they could feel the energy field above human skin. Emily designed an experiment to test this which was subsequently published in the Journal of the American Medical Association two years later.

The experiment was simple. Emily persuaded practitioners to sit behind a cardboard screen with their heads covered in a towel. Their hands and arms were then placed through two holes in the screen so they could not see what was going on. She then flipped a coin and placed her hand a few centimeters above either their left or right hand, depending on the coin toss. The practitioner then had to identify which of their hands Emily was hovering hers over, which should have been straightforward if they could indeed sense "human force fields".

"If they go to a clinic and they heal people, then you would expect them to feel the energy field all the time," Emily told the **Washington Post**.

Emily managed to convince 21 people to take part in her experiment. Fourteen were given 10 chances to prove their powers, while seven were given 20 chances. The results revealed that they were correct half the time, which is about the same as a random guess attempt.

Click here to find out more.

MYTH: URINE IS STERILE SO IT IS PERFECTLY FINE TO PEE IN THE SHOWER

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Image credit: Alexander Vorotyntsev/ istock

There are some people that believe urine to be a sterile bodily fluid. To be sterile means that the liquid or object needs to be free from bacteria and dirt while being completely clean.

Most of the time, the liquid that is excreted from your bladder is made up of 95 percent water, but it can also contain other elements like urea, creatinine, various salts and proteins, and there may be very low levels of bacteria. Bacteria love our bodies as humans are the perfect habitat for many organisms. They can range from being harmful to beneficial – some bacteria aid with our daily functions that help keep us healthy.

The number of bacteria present in urine can vary as well, and a higher bacterial load can be associated with a urinary tract infection.

Some people really love to believe in the sterile urine concept, especially those that think it is perfectly acceptable to pee in the shower. But along with being a gross practice, this may cause infections if there are any wounds present on the legs.

Peeing in the shower can also cause other troubles. For people who may suffer from incontinence or an overactive bladder, creating the association of peeing and running water can make the condition worse. It is also thought that this can impact people with uteruses as the pelvic anatomy is not designed to encourage a stood-up urination position. When standing, the muscles may struggle to contract or relax, which means that the bladder may not be completely emptied and this could cause infections.

On a side note, if you decide to guzzle down some urine, you should probably call your local poisons information centre for advice.

Click here to find out more.

MYTH: TAMPONS CAUSE TOXIC SHOCK SYNDROME

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Image credit: Adene Sanchez/ istock

There has long been a fear for many menstruating people that tampons can give you toxic shock syndrome if you leave them in for too long.

But is this really the case?

Back in the 1980s, **thousands** of people in the US fell ill with toxic shock syndrome (TSS). TSS is a life-threatening condition that can cause a wide array of **symptoms**, including, rash, confusion, seizures, and potentially death.

The majority of these people were experiencing Aunt Flo and were using tampons. Despite the fears, it wasn't the tampons that were causing the horrific illness but a certain type of bacteria that was living and growing on the tampons – *Staphylococcus aureus* or *Streptococcus pyogenes*.

This rise in cases was to do with a new tampon from the brand **Rely**. This brand used compressed polyester beads instead of the typical cotton. While it was fantastic for absorbency, it meant that people were leaving them in for longer and it was also causing micro cuts whenever they were inserted or removed. It was also thought that these tampons could release **oxygen** into the vaginal environment, which made the ecosystem even more favorable for these bacteria. All of these factors led to the perfect environment for opportunistic bacteria to grow and enter the bloodstream.

Nowadays, there are strict regulations regarding the materials that tampons are made from. In the United States, the Food and Drug Administration (**FDA**) requires manufacturers to use accurate labeling for the standard absorbency measurement on all boxes. The tampons also need to be evaluated for safety before they ever go onto market.

Today, it is very rare to get TSS and it **occurs** at a rate of 0.8-3.4 per 100,000, - most cases are not related to menstruation at all.

Click here to find out more.

MYTH: YOU NEED TO DETOX YOUR BODY

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Image credit: Daniel de la Hoz/istock

The beginning of the year is the traditional time for setting ambitious goals for slimmer bodies, improved fitness, and overall better health. This sudden spike in resolve usually reflects guilt following a period of indulgence during the holiday season. Anyone who has considered a "new year, new you" approach will have likely encountered many recommendations for detoxing, but do these health promoting fads actually work?

The short answer is no, they are a myth. In fact, depending on your overall health, some detoxes and cleansers can actually be **harmful**.

It is not clear where the idea of an in-depth body cleanse or "the detox cure" comes from, but these increasingly numerous (and often spurious) regimens share the same core idea – that "toxins" accumulate and the body needs to be purified.

These fads are widespread and cover everything from colonic irrigation, enemas, **lemon juice detox,** and water fasting, to purging herbs, avoiding certain foods, sweat lodges, and relying on large amounts of dietary supplements. Radical versions have even been recommended by **anti-vaxx groups as a cure for COVID-19**. Generally speaking, **they are waste of money and effort**.

In medicine, the word detoxification **means** removing poisons or the build-up of toxic substances when large amounts have been consumed or have entered the body through inhalation or skin exposure. The process is only used when our body's natural detoxification system is unable to clear it. This detoxification system uses the skin (through sweat and sebum), liver and gall bladder (bile), kidneys (urine), lungs, lymphatic systems (lymph), and intestines (feces) to get rid of toxins.

There are two types of **toxin sources**, internal and external. It is exposure to the latter sources that are the main reason for commercial detox programs, which are designed to pick up where the body's processes are struggling. But legitimate detox programs remove substances usually associated with industrial hazards, such as chemicals and heavy metals, not the results of a weekend binge. Usually, our bodies perform their own process to deal with what we consume on an everyday level. There is little scientific evidence showing the benefits of **these short-term programs**.

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MYTH: CRACKING YOUR KNUCKLES CAUSES ARTHRITIS

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Image credit: Patrick Daxenbichler/ iStock

Your carer may have shouted at you to stop cracking your knuckles, warning it may lead to arthritis when you are older. However, this notion may be more myth than fact.

So, what makes the popping noise?

In one study, nicknamed the “pull my finger study”, a participant was placed into the MRI machine and his fingers were pulled by a machine until they cracked, lasting less than 310 milliseconds.

They found that there is a rapid formation of a gas-filled cavity within the lubricating fluid that surrounds the joint. This bubble is visible after the noise is produced. The research team also saw a transient bright flash during the joint cracking experiment. This has never been seen before and may be the fluid rushing out of the joint cartilage, the authors speculate.

Does cracking your fingers cause arthritis?

A medical doctor called Donald L. Unger once did a self-experiment where he cracked the knuckles of one hand only for 60 years and found no difference in arthritis in both hands. Of course, this was an experiment with a sample number of one.

More formal research has also been conducted. A paper from **1990** looked at people who habitually cracked their knuckles. They found that there was no difference in arthritis in the different groups of people, but they did find that there was an associated swelling and reduced grip strength in some people.

In **2011**, there was another study that looked at the radiographs of people aged 50-89 with varying degrees of knuckle-cracking. It was found that the prevalence of osteoarthritis was similar between these two groups.

In conclusion, knuckle cracking does not seem to be a risk factor for arthritis in later years.

Click here to read more.

MYTH: COVID-19 VACCINES ARE NOT SAFE

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Image credit: william87/ istock

In July 2021, the medical community demonstrated the importance of reviewing and retracting unsubstantiated or flawed research when they found a widely cited COVID-19 study had drastically misrepresented data.

The study, called "The Safety of COVID-19 Vaccinations—We Should Rethink the Policy" erroneously claimed that COVID-19 vaccinations caused two deaths for every three lives they saved. It was originally published in the journal **Vaccines** on June 24, 2021, but was **retracted** only days later after several scientists highlighted serious methodological issues in the research.

According to the authors, "for three deaths prevented by [COVID-19] vaccination we have to accept two inflicted by vaccination." If this was true, they claimed, then "this lack of clear benefit should cause governments to rethink their vaccination policy." But their assertions were based on poor data, to say the least!

After its publication, scientists started pointing out errors in the study's methodology and its data. The authors had drawn on data from the Adverse Drug Reactions database of the European Medicines Agency and of the Dutch National Register, as well as data from a large Israeli field study, in order to judge the rate of severe side effects and fatalities following a COVID-19 vaccination.

The problem is that these reporting systems cannot determine causality, so they cannot say whether a vaccine explicitly resulted in side effects or deaths. They are simply collections of raw data that show possible side-effects. That's it. The Dutch database explains that some deaths were reported after vaccinations, but most of those had nothing to do with the vaccination and were likely coincidence. The retracted study ignored this caveat and presented its findings with unfounded confidence.

The study also worked on the premise of a misleading "number needed to vaccinate" metric, which is a metric used in the evaluation of vaccines, some other **scientists found**.

Unfortunately, the paper was quickly picked up by anti-vaxxers and COVID-skeptics who weaponized it

in their efforts to discredit vaccination. One popular conservative commentator discussed the paper in a Facebook post to her 1.4 million followers, **saying** "Essentially, this peer-reviewed scientific study shows that COVID-19 vaccine causes two deaths for every three lives it saves." The study was circulated by many prominent anti-vaccination activists to hundreds of thousands of their followers.

In the wake of the study's publication, several virologists and vaccinologists **resigned** as editors from the journal in protest. Katie Ewer, an immunologist at the Jenner Institute at the University of Oxford, was among them. Ewer was on the team that developed the Oxford-AstraZeneca COVID-19 vaccine. She **tweeted**: "I have resigned from the Editorial Board of [Vaccines] following the publication of this article. It is grossly negligent and I can't believe it passed peer-review. I hope it will be retracted."

Along with the paper's retraction, the Vaccines Editorial Office **stated** that the study used data that was "incorrectly interpreted which led to erroneous conclusions. The data was presented as being causally related to adverse events by the authors. This is inaccurate."

Contrary to the study's claims, only one in 10 people experience side effects following a COVID vaccination, and most of these are mild and temporary. The most common side effects include pain, redness, and swelling near the point of injection. In rarer cases, some may experience headaches, chills, fever, nausea, and general tiredness. More severe side effects are rarer still.

Click here to read more.