

Ibuprofen Alters Human Physiology

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STORY AT-A-GLANCE

- › Taking 1,200 mg of ibuprofen for six weeks, commonly used in chronic pain, induced compensated hypogonadism, a condition in which a reduction in luteinizing hormone causes the body to work harder to produce testosterone, a situation which may lead to overt hypogonadism where testosterone levels drop
- › Data demonstrates human sperm count and concentration is dropping worldwide, likely related to multiple factors, including exposure to endocrine disrupting chemicals, temperature, lifestyle factors and weight, to name a few
- › Many take ibuprofen in amounts higher than recommended on the bottle, in spite of multiple studies demonstrating it is associated with heart, muscle, kidney and liver damage
- › Drug-free pain control is possible in many cases; begin with ensuring you get at least eight hours of quality sleep each night and radically reduce your grain and fermentable carb intake to minimize inflammation; optimize your vitamin D level and try the Emotional Freedom Techniques (EFT)

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Pain is one of the most common reasons people access the health care system. It affects more people than diabetes, heart disease and cancer.¹ While it's the leading cause of disability and a major contributor to rising health care costs, not all pain triggers a doctor's visit. Some instead choose to use over-the-counter pain killers to treat their pain.

According to an analysis by the National Institutes of Health (NIH),² more than 25 million American adults suffer from chronic pain lasting three or more months. These are individuals with chronic back pain, headaches or neck pain, and 40 million report severe pain.

According to recent research,³ many are taking dangerously high doses of ibuprofen and other **nonsteroidal anti-inflammatory** (NSAIDs) medications, and 15% are taking more than the maximum dose. According to lead author Dr. David Kaufman from Boston University:⁴

“These drugs can have serious side effects, including gastrointestinal bleeding and heart attacks, and are often taken without medical oversight because many products are available over-the-counter.

The attitude that users can choose their own dose regardless of label directions, along with poor knowledge of dosing limits, is associated with exceeding the daily limit.”

Common over-the-counter pain relievers are not as safe as you may imagine. Although used frequently, they come with a long list of long- and short-term side effects, including hearing loss, heart attack and now an alteration in male testicular physiology.⁵

Sperm Quality and Quantity Declining Worldwide

According to several studies, sperm counts are plummeting throughout the Western world. An initial study published in 1992, known as The Carlson study,⁶ was a meta-analysis of 61 studies done worldwide. It found a trend of decreasing sperm count and volume of seminal fluid over a 50-year period ending in 1991.

However, many did not accept the results, based on some limitations of the study. Since the Carlson study, other analyses have produced mixed results. In this latest study⁷ published in Human Reproduction Update, Dr. Hagai Levine of Hebrew University in Jerusalem conducted a meta-analysis of 185 studies that included nearly 43,000 male participants who provided samples between 1973 and 2011.

The studies were distributed over 40 years and 50 countries. The results showed a decline in sperm concentration of 1.4% per year, with an overall drop of 52.4% during the study period for men living in industrialized Western countries.⁸

Total sperm count also declined 1.6% per year, and 59.3% overall. However, by comparison, there were no significant declines in count or concentrations in men living in South America, Asia and Africa.

This study did not address why sperm count and concentration are plummeting around the world. However, previous studies have demonstrated exposure in utero and after birth to endocrine disrupting chemicals can harm male reproductive system and fertility potential.⁹

Other factors that can influence sperm count or concentration include body mass index (BMI), temperature, tight underwear, lifestyle choices and geography – even within the U.S., different states and regions have different counts.¹⁰ Levine commented on the results, saying:¹¹

"Given the importance of sperm counts for male fertility and human health, this study is an urgent wake-up call for researchers and health authorities around the world to investigate the causes of the sharp ongoing drop in sperm count, with the goal of prevention."

Ibuprofen Responsible for Compensated Hypogonadism

Concerns over evidence showing sperm quality is falling globally has resulted from studies evaluating count and concentration. Here, the main focus was a different measure of the male reproductive system – testosterone production. Researchers began the study with men under the age of 35 in Denmark and France.

The group was split into two; one took 1,200 mg of ibuprofen each day for six weeks, while the second group took a placebo. The Physician's Desk Reference (PDR) recommends 400 mg by mouth every four to six hours as needed, and warns adult doses should not exceed 3,200 mg per day.¹²

The 1,200 mg dose used in the study may be in the midrange for those using the medication for general aches, pains and fever. However, it is not unusual for those suffering chronic injury to take more than the recommended dose,¹³ and for doctors to prescribe twice as much for athletes.

Disturbingly, the results showed men who took ibuprofen suffered a condition known as compensated hypogonadism, which occurs when men have normal levels of testosterone in the blood but higher levels of luteinizing hormone (LH), used to regulate the production of testosterone.

The increased levels of LH indicated ibuprofen triggered problems in the testicles, preventing the production of testosterone. Data also showed changes in the pituitary gland, forcing the production of more testosterone.¹⁴

The net result were stable levels of testosterone as the body stressed to compensate for the detrimental impact of ibuprofen. The researchers also found compensated hypogonadism triggered a temporary reduction in sperm count.

While this study did not prove an association, the researchers suspect long-term use may lead to primary overt hypogonadism, a condition resulting in reduced libido, changes in mood and decline in muscle mass.¹⁵

The researchers wrote ibuprofen appears to affect the hormonal balance in adult men and alters testicular physiology, creating a situation in which the body has to work harder to maintain a normal level of testosterone.¹⁶

Low Sperm Counts Are Associated With Increased Risk of Early Death

Compensated hypogonadism and a reduction in fertility may only be the tip of the iceberg when testosterone levels fall. In one study¹⁷ performed by a group of Italian researchers, over 4,100 heterosexual men were evaluated for hypogonadism and erectile function.

The data revealed 75% of the men appeared to have healthy functioning gonads, 20% had overt hypogonadism, and just over 4% fell into the category of compensated hypogonadism. The researchers discovered men in the compensated and overt hypogonadal groups were at higher risk for cardiovascular events than men in the group who had healthy functioning gonads.¹⁸

Another study¹⁹ from Stanford University School of Medicine found men who had two or more abnormalities in their semen were twice as likely to die over an eight-year period as men who had normal semen. The researchers wrote diabetes also doubles the risk of death. The study's lead author, Michael Eisenberg Ph.D., commented,²⁰ “[H]ere we are seeing the same doubled risk with male infertility, which is relatively understudied.”

Semen Quality Associated With Cardiovascular and Metabolic Changes

A study²¹ from the Endocrine Society shows sperm count is a general marker associated with metabolic alterations, higher cardiovascular risk and low bone mass.

Researchers evaluated semen quality, reproductive function and metabolic risk in over 5,000 men, and found infertile men were likely to have important coexisting health problems or factors impairing quality of life and shortening their lives.

Half of the men with low sperm counts were 1.2 times more likely to have greater body fat, **high blood pressure** and lipidemia. This group also had a higher frequency of metabolic syndrome, increasing their risk for diabetes, heart disease and stroke.

The data also revealed a 12fold risk of hypogonadism in men with low sperm count. Researchers suggested low sperm count resulting from hypogonadism was associated with poor measures of cardiometabolic health.²²

How Testosterone Affects the Whole Body

Testosterone is an androgen hormone produced primarily in the testicles and thought to regulate a number of functions, including bone mass, fat distribution, muscle size and strength, and red cell production.²³

In a study published in the New England Journal of Medicine,²⁴ researchers tested testosterone supplementation in a group of 400 healthy men, age 20 to 50 years. Participants were seen every four weeks to measure hormone levels and fill out questionnaires to assess physical function, health status, vitality and sexual function.

Body fat and muscle measurements were also taken at the beginning and at the end of the 16-week study. Data revealed the dose of testosterone required to produce different effects in the body varied widely.

As the dose was reduced, participants experienced reductions in lean mass, muscle size and leg press strength. However, increases in body fat were related to declines in estradiol, as small amounts of circulating testosterone are normally converted to estradiol, a form of estrogen.

Both reduced testosterone and estradiol levels were associated with libido and erectile function. The team was led by Dr. Joel Finkelstein from Massachusetts General Hospital, who commented on the results:²⁵

"[T]he biggest surprise was that some of the symptoms routinely attributed to testosterone deficiency are actually partially or almost exclusively caused by the decline in estrogens that is an inseparable result of lower testosterone levels."

Commonly Used NSAIDs Like Ibuprofen Increase Your Cardiovascular Risk

NSAIDs, like ibuprofen, are prescribed extensively throughout the world. While many consider the medication innocuous, the truth is, by conservative estimates, over 105,000 people are hospitalized each year from the side effects and over 16,000 of those die.²⁶

Side effects from long-term use range from hearing loss to gastrointestinal (GI) bleeding. Unfortunately, there's no specific antidote for NSAIDs poisoning, which may lead to metabolic acidosis, multiple system organ failure and death. Short-term use of NSAIDs also increase your risk of heart attack when you take the medication consistently.

In 2005,²⁷ the U.S. Food and Drug Administration (FDA) warned these drugs may increase your risk of heart attack or stroke. In 2015²⁸ they took the additional and unusual step of strengthening this warning based on the advice of an expert panel.

The FDA points out heart attack and stroke risk increases even with short-term use, and while the risk is greater for those who already suffer from heart disease, even those without heart disease may be at risk. In one study,²⁹ researchers analyzed over 60,000 cases of myocardial infarction (MI) before concluding NSAIDs were significantly associated with a risk of an acute Michigan.

Specifically, ibuprofen exhibited an additional increased risk of MI between Day Eight and Day 30 of consuming the drug. Some NSAIDs show a single wave of increased risk in the first week. The researchers speculated the differences between the drugs may have been related to the drug's effect on the renal system.³⁰

Additional risks include higher rates of miscarriage when taken in the first 20 weeks of pregnancy,³¹ atrial fibrillation in those who previously had a myocardial infarction,³² increased risk of upper and lower GI tract bleeding,³³ and increased mucosal permeability and inflammation in the lower GI tract.³⁴ Ibuprofen may also trigger:³⁵

Clotting problems so you bruise or bleed easily	Serious (possibly fatal) liver disease	ringing in your ears (tinnitus)
Mental or mood changes	Stiff neck	Kidney problems
High blood pressure	Vision changes	Heart failure

Drug-Free Pain Control

Pain control without addressing the underlying physical issue may increase your risk of experiencing side effects from medications you're taking, or lead you to resort to even stronger medications with more dangerous side effects. I strongly recommend you exhaust other, safer options before resorting to consistent use of painkillers, even in the short term.

The truth is many drugs used to treat pain may increase your risk of heart attack, change your brain chemistry and possibly your behavior. Your pain experience is affected by several factors, of which sleep may be the most important. Sleep, pain and depression are a strongly interconnected triad where a change in one impacts the other two. Getting eight hours of quality sleep on a nightly basis may help you cope with the discomfort you experience.

If you have trouble getting to sleep, or staying asleep, you'll want to check out my [33 tips to a better night of sleep](#).

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