

Excess caffeine intake may be linked to an increased risk of osteoporosis

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University of South Australia researchers have a bone to pick when it comes to drinking too much coffee as new research finds that excess caffeine may be linked to an increased risk of osteoporosis.

Investigating the effects of coffee on how the kidneys regulate [calcium](#) in the body, researchers found that high doses of caffeine (800 mg) consumed over a six-hour period almost doubled the amount of calcium lost in the urine.

This is the first study to report the impact of high-dose, short-term caffeine intake on renal clearance of calcium, sodium, and creatinine in healthy adults.

UniSA's Dr. Hayley Schultz says with the emergence of an increasing "coffee culture" it's important for people to understand the impacts of what they are putting into their bodies.

"Caffeine is one of the most widely used recreational drugs in the world, with 80 percent of adults consuming at least one caffeinated beverage per day," Dr. Schultz says.

"It's a common stimulant, consumed by professionals, parents, shift workers, and teenagers alike to start their day and stay alert—even the military use caffeine to help combat sleepiness.

"But while coffee has its perks, it's also important to acknowledge its fallbacks—one of them being how our kidneys handle calcium.

"Our research found that people who consume 800 mg of caffeine over a typical working day will have a 77 percent increase in calcium in their urine, creating a potential deficiency that could impact their bones."

Osteoporosis is a chronic, painful, and debilitating disease which makes your bones less dense and more susceptible to fracture. More common in women, it occurs when bones lose calcium and other minerals faster than the body can replace them.

In Australia, an estimated 924,000 people have osteoporosis.

The double-blind clinical study saw participants chew caffeine or a placebo gum for five minutes at two-hour intervals over a six-hour treatment period (total caffeine 800 mg). While the primary research objective was to examine the impact of caffeine consumption on wakefulness and other factors, this sub-study aimed to evaluate the impact of caffeine consumption on the renal clearance of calcium.

Co-researcher, UniSA's Dr. Stephanie Reuter Lange says understanding the long-term impacts of high caffeine consumption is especially important for higher risk groups.

"The average daily intake of caffeine is about 200 mg—roughly two cups of coffee. While drinking eight cups of coffee may seem a lot (800 mg of caffeine), there are groups who would fall into this category," Dr. Reuter Lange says.

"People at risk could include teenagers who binge-consume [energy drinks](#) are at are at risk because their bones are still developing; professional athletes who use caffeine for performance enhancement; as well as post-menopausal women who often have low blood calcium levels due to hormonal changes and lack sufficient daily dietary calcium intake.

"Increasingly, we are also seeing high levels of caffeine among shiftworkers who need to stay alert over the night-time hours, as well as those in the military who use caffeine to combat sleep deprivation in operational settings.

"Caffeine in moderation certainly has its pros. But understanding how excess consumption could increase the risks of a highly preventable disease such as osteoporosis, is important."

From here, researchers will explore and predict the impact of different levels of [caffeine](#) intake on short- and long-term [bone](#) health, with the aim to inform dietary guidelines in Australia.

More information: Stephanie E. Reuter et al, The effect of high-dose, short-term caffeine intake on the renal clearance of calcium, sodium and creatinine in healthy adults, *British Journal of Clinical Pharmacology* (2021). [DOI: 10.1111/bcp.14856](https://doi.org/10.1111/bcp.14856)

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