Dear Alice,

I lift weights for strength and body conditioning. I've taken a supplement called creatine monohydrate. I'd like to know if there are any known adverse effects of long term (several months or years) usage of this supplement.

**Answer**

Dear Reader,

You might say the knowledge base on the effects of creatine is a bit... slim. About half of the creatine humans need is made in the body by the liver and kidneys. Outside of the body, the other half is typically obtained from a person’s diet (from eating red meat and seafood). There are also creatine supplements in many forms, including powders, tablets, liquids, and energy bars. Though the use of creatine has been studied for a number of conditions, many people use the supplement to increase muscle mass and boost athletic performance. To that end, there is some evidence that it can — but, not in all cases, in all dosages, and not reliably across studies. With long-term use, it’s accepted that creatine supplements are “likely safe” when used in the recommended dosage — but, how long-term is defined also doesn’t appear to be consistent. That said, there other concerns with creatine supplementation around health risks and it may not be appropriate for everyone. Knowing what’s right for you may be best informed by a medical professional.

Creatine has been used by athletes and amateurs alike. Organizations including the Olympic Committee and the National Collegiate Athletic Association (NCAA) have allowed (to some degree or have not actively banned) its use. And, it’s been reported that Americans spend about $14 million dollars on creatine supplements a year. But, the purported benefits are not equal across all activities and conditions. Further, there’s quite a bit of variation in the recommended dosage depending on the type of activity or purpose. Some studies have found that creatine supplementation has demonstrated enhancements in athletic performance for short bursts of anaerobic activity, such as weightlifting. However, people doing aerobic activities, such as running or cycling, won't likely see the same improvement. In addition, non-meat eaters may respond better since their natural creatine stores may lower than meat-eaters.
Though the supplement is seen as safe and some may be experience benefits, there are still safety concerns associated with its use. For instance, using creatine is not without possible side effects, which include muscle cramps and strains, high blood pressure, and gastrointestinal symptoms (e.g. nausea and diarrhea). A central concern surrounding creatine use is exceeding the recommended dose, because people may be seeking to gain weight and add muscle mass quickly, which can result in damage to the kidneys, liver, or heart. High doses may even signal to the body to stop making its own creatine. There have also been reports of contaminated creatine supplements, which is of concern since dietary supplements in general are not regulated for safety and effectiveness by the U.S. Food and Drug Administration (FDA) in the same way in which medications and medical devices are regulated. What’s more, it’s advised that people who have liver or kidney conditions, have diabetes, or take certain medications and supplements (e.g. caffeine and ephedra in particular) avoid taking the supplement because of potential complications and harmful interactions.

Reader, you don’t mention your age, but there are also safety concerns with creatine supplement use for those with developing bodies. In fact, the American Academy of Pediatrics [4] doesn’t encourage the use of performance-enhancing substances, including creatine supplements, for adolescents. There’s currently a lack of research to inform user safety in this age group. In studies that have been conducted in the adolescent population, no significant gains or benefit to athletic performance due to its use was noted, and it may even negatively impact performance in endurance sports for adolescent athletes. Adolescent use (particularly amongst young folks assigned male at birth) has also been influenced by the interest in seeking bigger muscles for aesthetic reasons, rather than for enhancing athletic performance.

All this to say, while creatine supplements are considered safe — why and how it’s used can impact how safe it is for you in particular. Speaking with a health care provider can give you more insight about this supplement; having an honest conversation with them about your current use, as well as any conditions you have and medications you take will help them make personalized recommendations about safe use of these supplements — in the short- and long-term. It’s worth emphasizing that fully disclosing your reasons and methods of use is critical; providers want to help, not pass judgment. And, doing so can help avoid unintended harm associated with supplement use. They may also be able to advise you on alternative ways to get the gains you seek without dietary supplements. You can read up on even more information to enhance your muscle and strength-building strategy by taking a look at the related Q&As and the Go Ask Alice! Nutrition and Physical Activity [5] archives.

Here’s hoping this information helped beef up your knowledge about creatine supplements!

Alice!

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