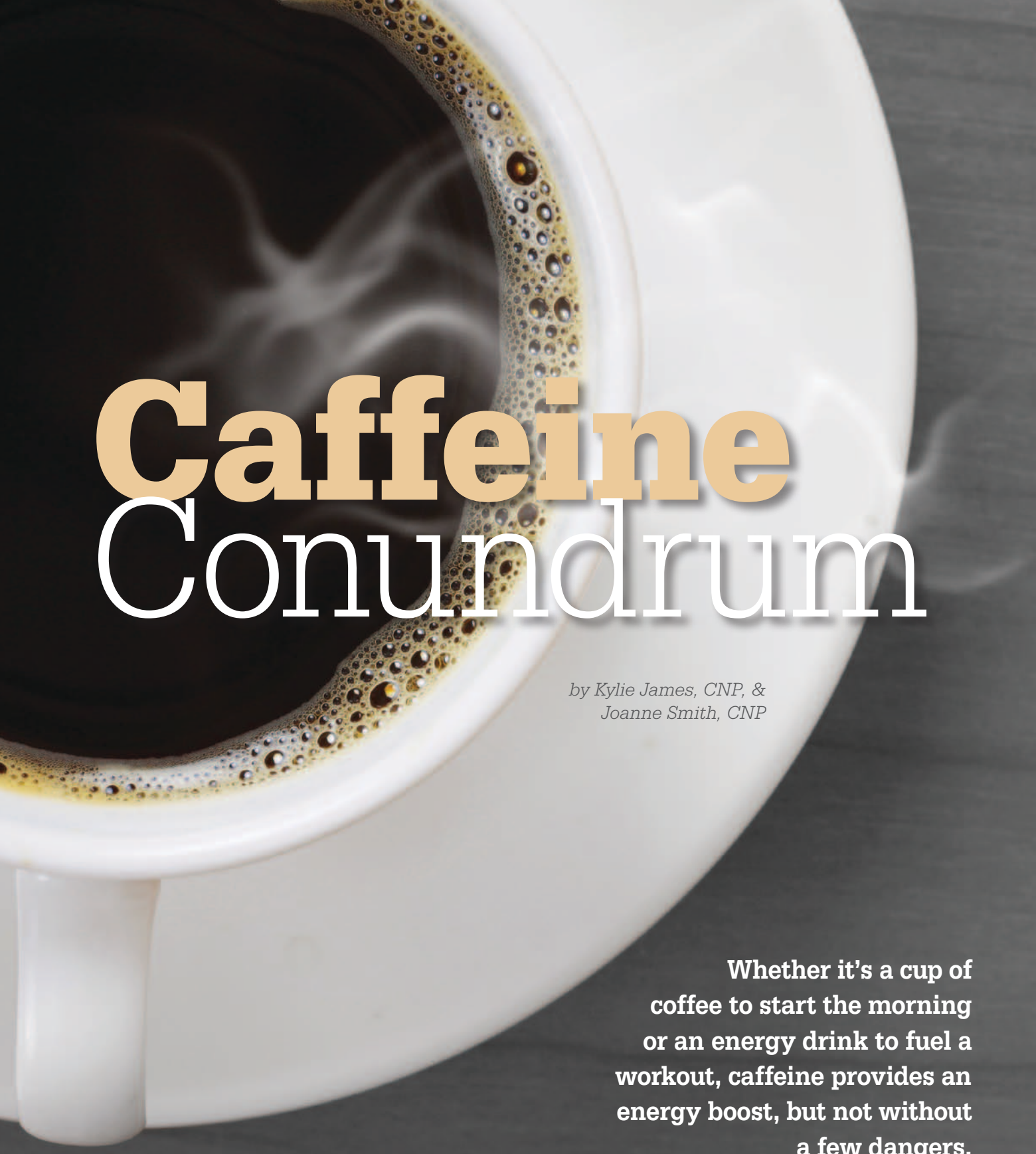

Caffeine Conundrum

by Kylie James, CNP, & Joanne Smith, CNP

Whether it's a cup of coffee to start the morning or an energy drink to fuel a workout, caffeine provides an energy boost, but not without a few dangers.

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Caffeine has become a big part of a daily routine for many people. The caffeine in our coffee helps get us going in the morning, sodas keep us going throughout the afternoon and energy drinks fuel us up for a calorie-busting workout.

You've probably heard or read a variety of contradictory information on this popular substance that leaves you wondering is caffeine good for you? And is caffeine good for someone with spinal-cord injury or disease (SCI/D)? So, let's look at the facts.

What is Caffeine?

Simply put, caffeine is a drug.

Caffeine acts on your central nervous system by helping shut out adenosine. Adenosine is responsible for making you sleepy by lessening the chatter between nerve cells and increasing the flow of oxygen in blood vessels. Your brain can't tell the difference between adenosine and caffeine. So, when caffeine is ingested adenosine is shut out, thereby allowing you to feel less drowsy and be more alert.

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Coffee makes up for 60% of caffeine consumption, but the substance is also found in energy drinks, soft drinks, tea and chocolate.

The caffeine content in food and beverages varies greatly, and it can be difficult to determine how much caffeine you're consuming in a day (see the chart on p. 39). This is where things can get dangerous. Even coffee and drinks that look or sound the same don't have the same amount of caffeine.

The question remains: does it matter?

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The Pros

Despite its sometimes maligned image, caffeine is proven to provide some health benefits and research shows there may be even more advantages to it.

The best-known benefits of caffeine are helping people wake up, become more alert and boosting the ability to concentrate. A dosage of 50–100 mg will produce a temporary increase in mental clarity and energy levels, which is great if you're cramming for a test or working late on a project. It also can enhance athletic performance by improving muscular coordination and energy levels.

Higher energy levels can motivate you to push harder at the gym, burning more calories.

In terms of weight loss, *The American Journal of Clinical Nutrition* identified that caffeine can speed up our Basal Metabolic Rate (BMR). In the short term, that increase can burn 75–110 extra calories per day, but doesn't appear to help once tolerance to caffeine is built up.

It's also a natural appetite suppressant, so it may be helpful in reducing portion sizes and the amount of food consumed during the day.

Caffeine can help stimulate the bowels, which is an important factor for individuals with SCI/D. However, if bowel incontinence is an issue, caffeine may not be the best way to go as it can increase the risk of further incontinence episodes.

The Cons

As with all things, moderation is key. With these benefits to caffeine intake, there are also drawbacks.

The more caffeine you consume, the harder the crash when you stop and dependence can start in as little as three days of regular intake. Even a low dose of 100 mg of caffeine can cause significant withdrawal symptoms.

Nutritionally speaking, one of the most significant impacts caffeine intake has on your health is when you consume caffeinated beverages in place of a healthy meal or a snack to fuel a workout. This isn't a good option as people with SCI/D are at risk of various nutrient deficiencies and this will help increase that risk.

For example, the problem with drinking coffee for breakfast, an energy drink alone as workout fuel or caffeinated drinks with refined carbohydrates such as a bagel, jam and bread, high-sugar cereals, etc., is that it causes major blood sugar spikes and insulin release. These eating habits can go a long way to contributing to other common secondary health problems in SCI/D — insulin resistance and diabetes. This can severely impact your health by creating unstable blood sugars, fatigue, dizziness and weight gain.

It can also be dangerous to replace water with caffeinated drinks, such as energy drinks, during a workout. It's important to stay hydrated when you're working up a sweat and because of the mild diuretic property of caffeine, consuming an energy drink instead of water could actually dehydrate you.

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These are examples of how much caffeine is contained in some common, everyday beverages.

DRINK	AMOUNT OF CAFFEINE (mg)
Arizona Iced Tea, all varieties (16 oz.)	30
Green tea, brewed for 3 minutes (8 oz.)	35-60
Pepsi (12 oz.)	38
Diet Coke (12 oz.)	47
Mountain Dew, regular or diet (12 oz.)	54
Keurig Coffee K-Cup, all varieties (8 oz.)	75-150
Red Bull (8.4 oz.)	80
Starbucks Espresso (2 oz.)	150
Monster Energy (16 oz.)	160
Dunkin' Donuts Coffee (14 oz.)	178
5-hour Energy (1.9 oz.)	208
Starbucks Coffee (16 oz.)	330

Information is from the Center for Science in the Public Interest (cspinet.org).

One of the most significant impacts caffeine intake has on your health is when you consume caffeinated beverages in place of a healthy meal or a snack to fuel a workout.

Caffeine's interference with adenosine, which helps us feel relaxed, disturbs sleep when it's ingested within 3–5 hours of bedtime. Sleep is important to help your body repair itself, build muscle and facilitate weight loss and appetite suppressant hormones. Therefore, poor sleep patterns because of caffeine intake can actually cause weight gain and carbohydrate cravings. It can also cause restlessness, irritability, anxiety, dizziness and fatigue.

It can also affect the absorption of vital vitamins (B and C) and minerals (potassium, magnesium and zinc). Caffeine's mild diuretic properties cause water-soluble vitamins to be excreted more readily in urine when a caffeinated drink is consumed at the same time or near the same time as foods containing these vitamins and minerals.

Calcium excretion may also be related to high doses of caffeine, especially if you consume three or more cups of coffee, tea, energy drinks or soda per day. This can cause a reduction in your bone mineral density and because calcium absorption is integral to bone building, consuming high amounts of caffeine

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could place people more at risk for brittle-bone diseases such as osteoporosis. This is a concern for individuals with SCI/D as the incidences of osteoporosis in this group can be as high as 88%.

People with SCI/D can have a number of stressors in their lives such as money, relationships, bladder infections, pressure sores and others. These stresses not only cause excess cortisol to be produced but caffeine increases production of this stress hormone.

The problem with excess cortisol is that it can cause muscle, ligaments, tendons and bones to break down. This isn't desirable for anyone with SCI/D, especially athletes, as it's crucial for them to maintain lean muscle mass and preserve bone density.

Course of Action

People have varying sensitivities to caffeine based on their liver's ability to clear it through the body in the detoxification process. Therefore, some people may experience very few of these symptoms while others may feel extremely affected by them. If you can drink coffee before bed and have no problem falling asleep then your liver can clear caffeine quickly.

Your reactions to caffeine and your health issues are dependent on how much you should consume. Those who feel addicted to caffeine could potentially have an intolerance or allergy to it, since we tend to be addicted to the foods that we're allergic to. If that's the case, it may be necessary to curb your caffeine habits.

Try giving it up for two weeks and seeing if you notice any significant differences such as improved energy, mental clarity, flatter stomach, sleeping better, etc. If you don't notice a difference, then a cup of coffee here and there isn't a problem. You may be pleasantly surprised (after your initial withdrawal symptoms have passed) how great you actually feel.

A healthy alternative to coffee, energy drinks and soda is green tea. It has less caffeine and contains the amino acid L-theanine, which provides a calming effect. This means you still get some energy, but without the jitters. It's also very high in antioxidants, which helps with free radical damage to the body and has fat burning properties.

For more information, visit eatwelllivewellwithsci.com.

Kylie James, CNP, and Joanne Smith, CNP, are co-authors of the Paralyzed Veterans of America-supported book Eat Well, Live Well with Spinal Cord Injury.

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