

FEMME FATALE *Physique*



Caffeine:

Do Stupid Things Faster with More Energy AND Improve Your Workouts

By Anna Lepeley, M.S., CSCS, CISSN

Caffeine is widely consumed in the U.S and across the world, primarily with drinks (i.e. coffee, tea, soda) and it's probably one of your best friends. I mean you can't live without it, can you? Did you know caffeine could be a huge benefit to your workouts and not just part of your morning "survival" ritual? Taken before a workout, caffeine can increase your work time with your cardio sessions, even the high intensity ones. [1] It will also decrease your rate of perceived exertion, meaning your workouts will feel easier! [2] Consuming caffeine thirty minutes to one hour before initiation of an endurance (i.e. cardio) exercise bout increases fat breakdown, making fat a more feasible energy source! [2, 3, 4, 5] For low to moderate loaded weightlifting, caffeine also adds on a few reps to your lifts! [6, 7] Caffeine is also advantageous for revving up your metabolism! [4, 8] You can't beat that! The research on caffeine is much more consistent than a politician.

Caffeine indirectly stimulates the central nervous system as an inhibitor of adenosine. Adenosine is the 'Debbie Downer' of exercise. As it's produced during exercise, adenosine increases serotonin levels while decreasing levels of dopamine; both subsequent constituents of central nervous system fatigue from exercise. By inhibiting adenosine receptors in the brain, you can sustain from feeling tired and maintain your arousal levels. Speaking of arousal, caffeine also enhances the release of β -endorphins during your workout. You know that "runner's high"? Yup, you can get high without getting stoned (or getting cottonmouth). [9]

In addition, if you're working out under emotionally stressed and/or sleep-deprived conditions caffeine can actually counteract all of that to enhance your cognitive function (i.e. mood, memory, learning, vigilance, reaction time, concentration). [10, 11] I'm not condoning exercise in a sleep-deprived state because that's not good for you and is pretty much pointless, however, once in a while we all experience our sleep pattern mishaps. All in all, caffeine compliments the mental state of your workouts by keeping your arousal and mood levels optimized, therefore, there'll be less of a chance you'll turn into a narcoleptic or let your cranky-ass give up and leave. If it works for the Navy SEALs on "Hell Week" [11] imagine what it could do for you [you pansy]. Your workouts will become enthralled by caffeine's wonders to your workouts and you don't have to worry about any physiological or psychological risks, unless you're crazy as it is.

Caffeine's relationship with your central nervous system brings about a plethora of additional benefits. As aforementioned, exercise will feel easier. This is due to caffeine's analgesic effect, minimizing your pain perception [12-14]. This is advantageous to weightlifting as well, lessening the pain perceived from that burning sensation you get from lifting. Don't worry nothing is on fire when that happens, it's just lactic acid accumulating, it clears after you finish the exercise bout (faster if you move around [light jog, dynamic stretch] a bit versus sitting down). The relationship between your brain and muscles also becomes enhanced with facilitated neuromuscular transmission [15], optimizing weightlifting capacity and adding reps to your sets.

Caffeine also stimulates release of epinephrine, a notorious foe of fat cells, allowing free fatty acids (fat) to be used in a more lavish fashion for energy. [16] This allows endurance athletes (i.e. marathon runners, long distance rowers) to work at a high intensity for a longer period of time due to the enhancement of substrate utilization (i.e. use of fats for energy). Liver and muscle glycogen (stored carbohydrate) is spared, delaying fatigue caused by glycogen depletion. [17] For those of you not training for Ironman or some crazy, long distance event, this increased availability of free fatty acid is still of benefit to you for losing weight.

So drink up before your workouts, a cup of coffee or two, a green tea or three (don't forget about the diuretic effects [similar to water] [18], you may need to pee once or twice during your workout if you're drinking *that* much liquid, as opposed to a standard caffeine pill) and enjoy the almighty benefits of caffeine!

A few pointers about caffeine intake:

Timing of Intake

- If you work out late at night you may want to reconsider or lessen the amount of caffeine you take in so it won't affect your sleep that night (Luckily, caffeine clears relatively quickly out of the body (three to six hours to clear blood concentrations by one half). [17])

Desensitize

- Try to desensitize! Cut down on caffeine when you can absolutely stand being without. If you have to have coffee in the morning, have it. But try to not have caffeine until your workout. The more sensitive to caffeine you are, the less you'll need and the more you'll get from its effects! [19] If you're not accustomed to caffeine at all start with a low dose of 30-60 mg before your workout and see how you feel with that. Don't overdo caffeine from the beginning! Once you become accustomed to your personal caffeine sensitivity range you can stick to a range between 3-8mg/kg of bodyweight, starting with the lower end of that range prior to exercise. Caffeine sensitivity varies from person to person so if you are not a habitual caffeine user you may want to start with minimal dose of 30-60 mg, less than that of the aforementioned range (3-8 mg/kg/BW). Minimize or eliminate your caffeine intake on your off days from training, it's really hard to do if you're accustomed to caffeine but it will you give your receptors a little break.

- If you work long days, instead of taking that one primary dose before your workout you can take small doses and interspersed throughout the day to keep you on your toes.
- To figure out mg/kg/BW (milligrams per kilogram of bodyweight) simply take your weight in pounds and divide it by 2.2 to get your weight in kilograms. Then multiply your weight in kg by milligram dosage you prefer.
 - Example: Bodyweight $125 \text{ lbs} \div 2 = 62.5 \text{ kg}$
 $62.5 \text{ kg} \times 4 \text{ mg} = \text{dosage of } 250 \text{ mg}$

Caffeine does *not* dehydrate!

- Contrary to what you may have been told, caffeine does not contribute to dehydration. Research has proven that caffeine intake (even with a dose as high as 10 mg/kg/BW) does not disrupt fluid-electrolyte balance *and* does not induce hyperthermia or offset your body's thermoregulation (ability to maintain normal body temperature) in the heat. [18, 20-22]

If you participate in competitive athletics:

- Dosages above 9 mg/kg can interfere with sports regulation levels. So if you have to pee in a cup, take a careful look at how much caffeine you're taking in. [23]

Starbucks vs. energy drinks

While everyone banters about how bad energy drinks are and how much caffeine it has, don't forget your 'love of life' Starbuck's coffee can have up to 5 times the caffeine content of most energy drinks (the ones the FDA throw hissy fits over). Most importantly, check labels! If you do not know how much caffeine is in something (and you're as sensitive as a Lifetime channel viewer), don't take the chance or you'll be awake for 48 hours and people will think you're a meth addict! Feel free to call/email the company's customer service or visit their website. Also, if the caffeine content is noted, it is crucial that you notice its 'per serving' notation. Some caffeine drinks are divided into a few doses so you may only want to drink 1/3 or 1/4 to get your fix. Once again, if you drink the whole bottle (unknowing of its caffeine content), your next of kin may mistakenly consider sending you to A&E's *Intervention*. Here's an example of the relative amount of caffeine certain beverages/foods contain to give you a better idea:

Starbucks™

Ice Brewed Coffee

- Tall – 140 mg
- Grande – 190mg
- Venti – 265 mg

Espresso

- Solo – 75 mg

Starbucks Doubleshot™ on Ice

- Grande – 225mg
- Venti – 375mg

Espresso Frappuccino® Blended Coffee

- Grande – 145 mg
- Venti – 195 mg

Coffee of the Week (flavor varies weekly)

- Grande – 330 mg
- Venti – 415 mg

Rockstar® Energy drink

- 8 oz. can – 80 mg
- 16 oz. can – 160 mg (divided in 2 servings)
- 24 oz. can – 240 mg (divided in 3 servings)

Coca-Cola®

- Coke (8 oz. serving) – 23 mg
- Diet Coke (8 oz. serving) – 31 mg
- Full Throttle (16 oz. can)– 144 mg

Red Bull®

- 8 oz. can – 80 mg

Monster Energy ® Drinks

- Lo Carb (16 oz. can) – 135 mg
- All other Monster Energy® products (16 oz. can) – 160mg

Other products

Coffee ice cream (i.e. Starbucks, Haagen-Dazs, Ben and Jerry's-1 cup servings) -40-85mg
Green tea, brewed - 30-50mg

JavaFit®

- Energy Extreme – 250 mg
- Diet Plus – 250 mg
- Focus Plus – 100mg
- Immune Plus – 100mg
- Original – 100mg

Prolab

- Caffeine tablets – 200mg (you can use a cutter to divide/minimize the dosage)

Sources of info for caffeine content: Starbucks Corp. 2008, Rockstar Corp. 2008, Monster Energy Corp., JavaFit Corp. 2008, Coca-Cola Corp., <http://www.mayoclinic.com/health/caffeine/AN01211>, Prolab Corp. 2008.

References Available Upon Request