

First Endurance PreRace 2.0: A Smarter Endurance Supplement

written by PricePLOW Staff | November 30, 2022

Over the years of covering dietary supplements here on the PricePLOW Blog, we've noticed a consistent pattern: supplements marketed towards *endurance athletes* have generally been poorly-formulated and underdosed. While the rest of the sports nutrition industry has made improvements based on clinically-validated science, **endurance athletes are subjected to nothing but *sugar, carbs, and fillers***. From our perspective, it's practically embarrassing.



First Endurance PreRace 2.0 is a major upgrade from the original PreRace and PreRace Caps, with better blood flow thanks to Nutrition21's Nitrosigine! It's unflavored and unsweetened, so add it to your favorite sports drink or amino acid beverage and get after it!

Today, we look at a *better* way to support endurance athletes. A company named *First Endurance* has created a pre-training supplement to support *blood flow* – and they've done it with *clinically-supported* ingredients like Nutrition21's *Nitrosigine*.

Nitric oxide: A better approach to endurance supplements

Although the power of your cardiovascular “engine” is largely determined by genetics, there *is* still some significant marginal improvement to be gained with proper supplementation.

There are two things we want from a good aerobic pre-race supplement:

The first is *optimized nitric oxide (NO) production and function* – this is crucial for peak aerobic performance since the *vasodilation* caused by NO can *significantly* improve blood flow, tissue oxygenation, and nutrient delivery.

But we also want to be in an *optimized neurological state* – we want a good mood, sharp focus, and *tons* of motivation to push ourselves to our limits.

Competing in an aerobic sport is all about *winning on marginal gains*. In an hours-long race, the difference between first and second place often comes down to mere seconds.

PreRace 2.0: Upgraded with Nitrosigine for more nitric oxide production



That's what the recently-upgraded **PreRace 2.0** from *First Endurance* is designed to do, and we're big fans of this formula. It's powered by a full 1500 milligram dose of Nutrition21's *Nitrosigine* to support nitric oxide production – a benefit we believe more endurance athletes need to understand.

The formula is built as a *pre-workout additive*, meaning it's *unflavored* and *unsweetened*, and is designed to be added to your existing flavored carbohydrate or amino acid drink!

We'll get into the nitty-gritty, but first let's check the PricePLOW news and deals:

First Endurance PreRace 2.0 – Deals and Price Drop Alerts

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First Endurance PreRace 2.0 Ingredients

In a single *1-scoop* (4.9 gram) serving of **Pre Race 2.0** from First Endurance, you get the following:

- **Taurine – 2,000 mg**

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First Endurance kicks things off with one of the most commonly-used ingredients in sports nutrition, **taurine** – and it's a very good dose of taurine at that. The beneficial effects of this compound are dose-dependent once getting past 1,000 milligrams, much of the industry seems stuck on a 1-gram dose for some reason. Not here – we're glad to see First Endurance using

more than the “typical” amount.

Taurine’s ergogenic effects: increased cellular hydration

In the context of an endurance-boosting formula, the first thing to note about taurine is that it’s an *osmolyte*. [1] Osmolytes are so called because they affect the dynamics of *cellular osmosis*. Specifically, they *increase osmotic pressure* around cells.

Cells with better access to *water* also have better access to *nutrients*, can clear metabolic waste more efficiently, and are much more resilient in the face of *heat stress*. All of these benefits enable your cells to work *harder* for *longer*, which manifests at the whole-body level as *increased aerobic and anaerobic endurance*. [2]

Taurine (as well as Nitrosigine, discussed below) both have an interesting edge on other performance-targeting ingredients. For instance, creatine must be “loaded” to saturation with a few weeks of megadosing before it takes full effect. *Taurine*, on the other hand, can have an effect after the first dose. A 2018 meta-analysis found that a single, 1,000-milligram dose of taurine, which is less than what’s used in First Endurance’s PreRace, can significantly improve athletic endurance. [3]

Taurine is a potent *antioxidant* [4,5] and can help support *calcium* signaling in muscle cells. [6] Calcium signaling is important for strong muscle contractions, and problems with it can cause issues like *muscle cramps*, which is definitely not something we want to deal with during a workout.

Serving Size: 1 scoop (4.9g) Servings per Container: 30		
	Amount Per Serving	%DV
Taurine	2000mg	*
Inositol-Stabilized Arginine Silicate (Nitrosigine®)	1500mg	*
VitaCherry® Sport (Prunus cerasus var. Montmorency)(fruit)	500mg	*
Cacao Extract (Theobroma cacao) (seed)(minimum 6% theobromine)	500mg	*
Caffeine Anhydrous	200mg	*

*Daily Value Not Established

Other Ingredients: There are no other added ingredients. No artificial colors, flavors or sweeteners.

Nitrosigine® is a registered trademark of Nutrition21
VitaCherry® Sport is a registered trademark of Futureceuticals.

Nitrosigine brings a major upgrade from the original PreRace formula. Note that it's still *unflavored* and *unsweetened*, so get ready to bring your own flavor/carbs/amino!

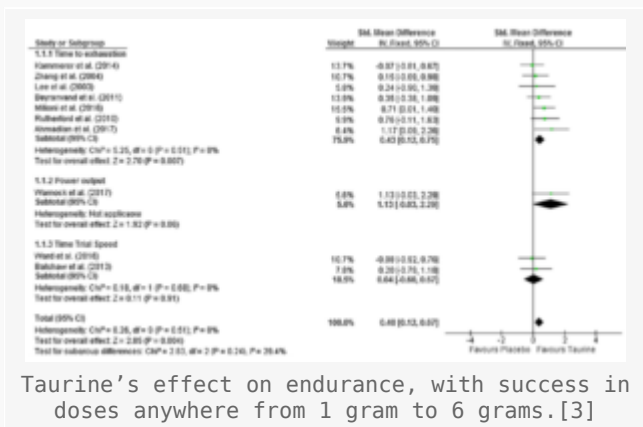
Taurine's effects on the brain

Its effect on calcium in the central nervous system (CNS) is why we often describe taurine as a GABAergic compound, meaning it *imitates the action of the neurotransmitter gamma-Aminobutyric acid*, abbreviated as GABA. The effects of GABA on neurons are *calming* and anti-inflammatory, as are taurine's.[7] Taurine can also drive the creation of *new mitochondria* in the brain,[7] which is an incredible benefit given the mitochondria's importance in cellular energy production.

Besides being neuroprotective, taurine is also *dopaminergic*,[8] helping increase dopamine production and activity. This makes it a great choice for a pre-workout formula like First Endurance's PreRace. *Feeling good* emotionally and being sharp *mentally*, as any serious athlete knows, goes a long way toward having a successful race.

Taurine's anti-obesity effects: WAT vs. BAT

Endurance athletes know that maintaining a healthy body composition with a high power-to-weight ratio is very important. One of the ingredient's coolest effects is its ability to *increase the expression of brown adipose tissue* (BAT).[9] BAT is a type of fat cell with *high mitochondrial density*. The extra mitochondria in BAT drive a process called *non-shivering thermogenesis* (NST), in which *calories* are burned as *heat*.



Taurine actually converts *white adipose tissue* (WAT), which is comparatively devoid of mitochondria and does *not* host NST, *into* BAT. The more BAT you have compared to WAT, the higher your daily caloric expenditure.[10] What's more, taurine can selectively prevent the growth of new WAT cells while permitting new BAT cells to differentiate.[11]

Lastly, taurine can alleviate unwanted metabolic effects of being overweight

by decreasing the inflammation and high blood sugar typically associated with carrying excess body fat.[12]

Taurine can help you feel and perform well both *mentally and physically*. The *conditionally essential* status of taurine makes it particularly important to supplement for people with heightened metabolic requirements – *athletes* definitely fall into this category.[3,7,13]

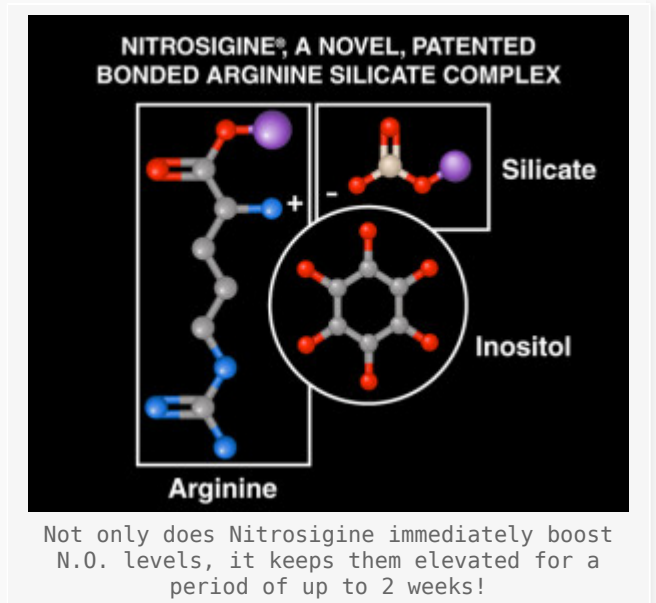
- **Inositol-Stabilized Arginine Silicate (as Nitrosigine) – 1500mg**



Next up we have a premier *nitric oxide boosting* ingredient, Nutrition21's **Nitrosigine**. We frequently see it in pre-workout supplements built for athletes in weight training, but are *very* excited to see it in a serious endurance supplement.

The backstory: Several decades ago, it was discovered that the amino acid *arginine* was a direct precursor to *nitric oxide* (NO). This is why the supplement industry used it as the *go-to* NO-boosting ingredient. Gradually, though, data came out showing that supplemental arginine's oral bioavailability was quite poor,[14-17] so the industry switched to *citrulline*, which is an *arginine* precursor and significantly more bioavailable than straight L-arginine itself.[18]

Citrulline works well, but there's a problem with it: you need a pretty big dose to get the maximal effect. Studies show that gains on dose-dependent citrulline effects don't start to diminish until you start taking *10 grams or more*.[19,20] That's a *lot* of material to mix with water, which ultimately adds expense, inconvenience, and discomfort for the consumer.



Nutrition21 came up with a better idea: a *more bioavailable form of arginine*, patented and trademarked as **Nitrosigine**.^[21] It's a *chemical complex* of arginine, *inositol*, and *potassium silicate*, and is often abbreviated as ASI in the research literature.

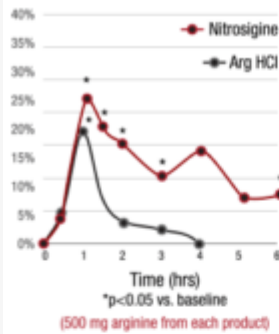
Inositol and *potassium silicate* protect the arginine molecule by buffering it against enzyme *arginase*,^[22] which ordinarily breaks down arginine before it's absorbed through the intestinal wall.^[23] This enables arginine to reach your intestine mostly intact, which is what gives Nitrosigine its *huge NO-boosting abilities* – which go *beyond* athletic performance.

Let's start with our performance reasons for wanting increased nitric oxide first, then get into the cognitive side.

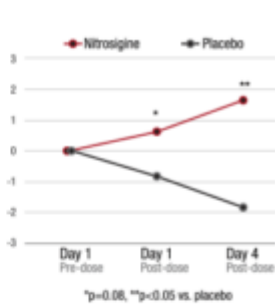
The athletic benefits of increased nitric oxide production

So why do we want more nitric oxide? More NO circulating in your blood means *vasodilation*, a mechanism that causes the diameter of your arteries to expand.^[24] Greater arterial diameter means better circulation, and with that comes a host of powerful benefits: *increased tissue oxygenation, improved nutrient delivery, more efficient metabolic waste removal, lower blood pressure, and lower heart rate*.

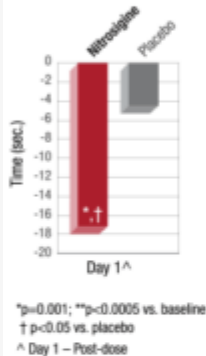
Increases Blood Arginine Levels
Comparative PK Study¹



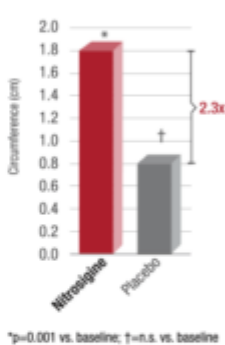
Increases Energy Levels
Change in Energy Level²



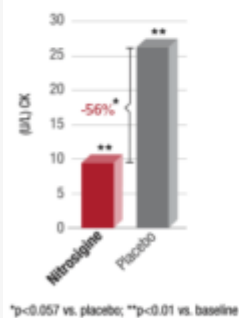
Improves Focus and Mental Acuity
Change in Time to Complete Trail Making Test B
(15 minutes after Supplementation)⁴



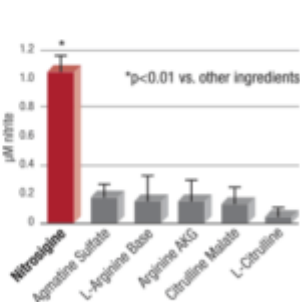
Boosts Muscle Pump
Increase in Upper Leg Pump
After Workout⁴ – Day 4



Combats Muscle Damage
Change in Creatine Kinase Levels After
Exercise with Supplementation³



Increases Nitric Oxide Production
Nitrosigine vs. Other Ingredients:
In Vitro Study³



§ References: 1. Komorowski J, Perez Ojalvo S. A pharmacokinetic evaluation of the duration of effect of inositol-stabilized arginine silicate and arginine hydrochloride in healthy adult males. The FASEB Journal. 2016;30(1):690-17. 2. Rood-Ojalvo S, Sandler D, Komorowski J. The benefits of inositol-stabilized arginine silicate as a workout ingredient. J Int Soc Sports Nutr. 2015;12(Suppl 1):P14. 3. Kalman D, Perez Ojalvo S, Komorowski J. Comparison of cellular nitric oxide production from various sports nutrition ingredients. J Int Soc Sports Nutr. 2016;13(Suppl 1):P33. 4. Kalman D, Harvey PD, Perez Ojalvo S, Komorowski J. Randomized prospective double-blind studies to evaluate the cognitive effects of inositol-stabilized arginine silicate in healthy physically active adults. Nutrients. 2016;8(11):736.

† Results compared to baseline. *These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

Nutrition 21's claims have stood the test of time with Nitrosigine. Image courtesy Nutrition21

All of that adds up to a *big* potential boost in athletic performance. NO upregulation from a large dose of Nitrosigine can help you *do more work*, which is a huge advantage for endurance athletes.

Nitrosigine has been shown to act quickly, and for quite a while. Subjects taking Nitrosigine can see increases in NO blood levels as soon as 30 minutes after ingestion, which then stay elevated for as long as 6 hours.[22,25]

It turns out that we may have some effects that may help with “bonking” as well:

Nitrosigine’s effects on cognition

The brain is just as dependent on healthy blood flow than every other organ in your body – in fact, arguably, it’s the *most* dependent on blood. Ounce-for-ounce, your brain consumes *more* blood, oxygen, and glucose than any other organ in your body.

So it’s probably not a huge surprise that upregulating NO can lead to some major cognitive benefits. Even compared to other NO boosters, Nitrosigine seems to be one of the best for this purpose.

For example, Nitrosigine has been shown to prevent the temporary cognitive impairment that can accompany physical exhaustion, and is typically observed after a hard workout.[26]

Even in healthy young men who hadn’t recently exercised, Nitrosigine improved *multitasking*. [27,28] A study from 2021, conducted in healthy young men and women, found that taking Nitrosigine helped participants perform better on a *memory test* than the placebo control. [29]

This can definitely help you *manage the stress of your training load* – with a supplement like Nitrosigine, tough workouts are less likely to leave you feeling drained, even as you complete the rest of your day’s activities.

A New Study Published in Nutrients Supports
the Cognitive Benefits of Nitrosigine®

Nitrosigine® enhances working memory and cognitive function in healthy adults.

A double-blind,
placebo-controlled
crossover study.Participants:
**Young Healthy
Adults**
Ages:
18-28Cognitive tests
performed:**3**(RBANS, Digital Image Pairs,
and Digital Symbol Match)

THE COGNITIVE TESTS

**Repeatable Battery for the Assessment
of Neuro-psychological Status (RBANS)**
measures immediate memory, visuospatial construction,
language attention, and delayed memory.**Digital Image Pairs**
measures visual recognition and memory.**Digital Symbol Match**
tests processing speed and executive functioning.

WHAT THE RESULTS SHOW

Nitrosigine® supplementation resulted in

11% ↑ Increase in total
RBANS scores.**27%** ↑ Increase in
immediate
memory scores.

When compared to the placebo group, Nitrosigine®:

 Significantly improved
working memory
performance. Maintained delayed
memory scores.The results align with previous findings where
Nitrosigine® supplementation increased nitric
oxide levels, which improved mental focus,
working memory, and acuity.**Nitrosigine® is a patented complex of Banded Arginine
Silicate that is designed to deliver benefits essential to peak
sports performance.**To learn more and find products featuring Nitrosigine®, visit
Nutrition21.com/Nitrosigine.

A nitric oxide booster that improves cognition?! Yes – Nutrition21 passed around this helpful infographic after the Nitrosigine cognition study on healthy young adults was published.[29]

We've covered Nitrosigine and its many studies numerous times in the past – you can read the details in our article titled *Nitrosigine: The Nitric Oxide Booster That Enhances Brain Function*. What we're excited about here is that it's in a supplement made for *endurance athletes*, who quite frankly, don't always get the best supplements pushed in their direction. First Endurance seems to be changing that, and Nitrosigine is one of the main reasons why.

- **VitaCherry Sport® (Montmorency Tart Cherry Powder) – 500mg**

VitaCherry Sport is a trademarked *cherry powder* that contains a *huge* amount of powerful *phytochemicals* derived from Montmorency tart cherries.[30]

The idea behind this ingredient is to help limit the extent of muscular and metabolic stress from exercise. A 2016 study found that supplementation with powdered Montmorency tart cherries decreased markers of muscle damage, improve redox balance, and boosted physical performance.[31]

Most of these benefits can probably be attributed to the high amount of *anthocyanins* present in Montmorency tart cherries.

Why anthocyanins are awesome

There are plenty of other Montmorency tart cherry supplements on the market, but the distinguishing characteristic of VitaCherry is its *incredibly high concentration of anthocyanins*. VitaCherry is stated to have *15 times* as many anthocyanins than the leading tart cherry powder product[30].

Since *anthocyanins* are the focus of conversation surrounding VitaCherry, let's take a minute to talk about why we love this ingredient so much.



Anthocyanins are *pigmented polyphenol antioxidants* that are responsible for the red and blue hues in plants.[32] Examples of anthocyanin-rich foods include *blueberries, grapes, cherries and currants*, which all have a certain section of the color spectrum in common.

Although anthocyanins' purpose is to protect the health of the plants that

synthesize them,[32] they're exceptionally beneficial for *humans* as well. They're incredibly powerful *antioxidants*, a class of molecules that help protect our DNA and cells from damage caused by *oxidative stress* from reactive oxygen species and free radicals.[33]

Anthocyanins also have strong *anti-inflammatory* activity and work by actually downregulating genes that control your body's synthesis of inflammatory cytokines.[33] One study found that anthocyanin-rich extracts actually did better than an over-the-counter pain medicines at preventing systemic inflammation.[34]

There are other effects as well, and many of the underlying mechanisms can help serious endurance athletes maintain their training load and stay adapted to exercise.

- **Cacao Extract (*Theobroma cacao*) (seed) (minimum 6% theobromine) – 500 mg**

Cacao is rich in the alkaloid *theobromine* and the flavonoid polyphenol *epicatechin*, two compounds with incredible health benefits for anyone, but particularly athletes:

- **Theobromine**

This extract is standardized for theobromine, a methylxanthine alkaloid that's similar in its effects to *caffeine*. [35] It has *stimulant*, *bronchodilatory*, and *vasodilatory* effects. [35]

PRERACE 2.0

HIGH-OCTANE PR FUEL

A potent additive that primes body and mind for demanding workouts and races. Lower perceived effort, optimized energy use, sharper focus – PreRace catalyzes more days without limits.

- Increases energy & time to exhaustion
- Supercharges circulation & oxygen delivery
- Enhances focus & motivation

LIGHT THE FUSE

With the ideal balance of caffeine and taurine, PreRace lets you stay in the red longer and with less perceived effort. The new formula also enhances ATP production and mobilizes fat for additional energy, conserving glycogen so you still have fuel in the tank when everyone else is empty.

TURBOCHARGED

Stimulating the Nitric Oxide (NO) system is clinically shown to increase blood flow, clear lactate, and deliver more oxygen to working muscles. PreRace fires the afterburners without blowing up your heart rate, keeping your engine running hotter, longer, with less recovery time between demanding efforts.

MENTAL TAILWIND

PreRace's precise blend of nootropics puts you in the zone, driving alert motivation without twitched-out jitters. It syncs body and mind to fire on all cylinders in decisive moments instead of self-sabotaging with indecision, because the pain of hitting your limit isn't all mental, but the will to push through is.

PreRace delivers 200mg caffeine (Red Bull has 80mg caffeine) and 2,000mg taurine (2x the amount in Red Bull)

PUSH YOUR LIMITS

F

Like caffeine, theobromine *inhibits phosphodiesterase*, the enzyme responsible for breaking down *cyclic adenosine monophosphate* (cAMP).[36] Higher cAMP levels through phosphodiesterase inhibition translates to *upregulated mitochondrial function*[37] and *increased cellular energy production*, from fat and glucose substrates alike.

Through its effects on cAMP, theobromine can activate AMP-activated protein kinase (AMPK),[38] an important sensor of *ATP levels* that tells your body to produce *more* energy.

These metabolic effects of methylxanthines are why *caffeine* is often used as a pre-workout ingredient (and indeed, we'll be discussing that point in the next section).

Importantly, theobromine seems to help optimize *nitric oxide* production and function, by protecting endothelial cells from stress.[39]

• Epicatechin

The first thing to say about *epicatechin* is that it inhibits the enzyme *arginase*,[32,33] the enzyme that breaks arginine down in the body, which

is a shared effect with Nitrosigine. This means *more* NO, with all the usual cardioprotective and performance-boosting effects of NO upregulation.

Animal studies show that epicatechin can improve muscular endurance,[40] and also *decrease* the amount of fitness lost during a detraining period (taking an extended rest from training).[41] For athletes cycling on and off in periodized training, this can be a huge benefit. However, since we don't know how much epicatechin is in this cacao extract, we can't extrapolate too much.

The ultimate point is that cacao has some incredibly beneficial compounds inside that we enjoy seeing in an endurance-minded supplement.

- **Caffeine anhydrous – 200 mg**

PreRace finishes off with a pre-workout supplement mainstay: **caffeine**.

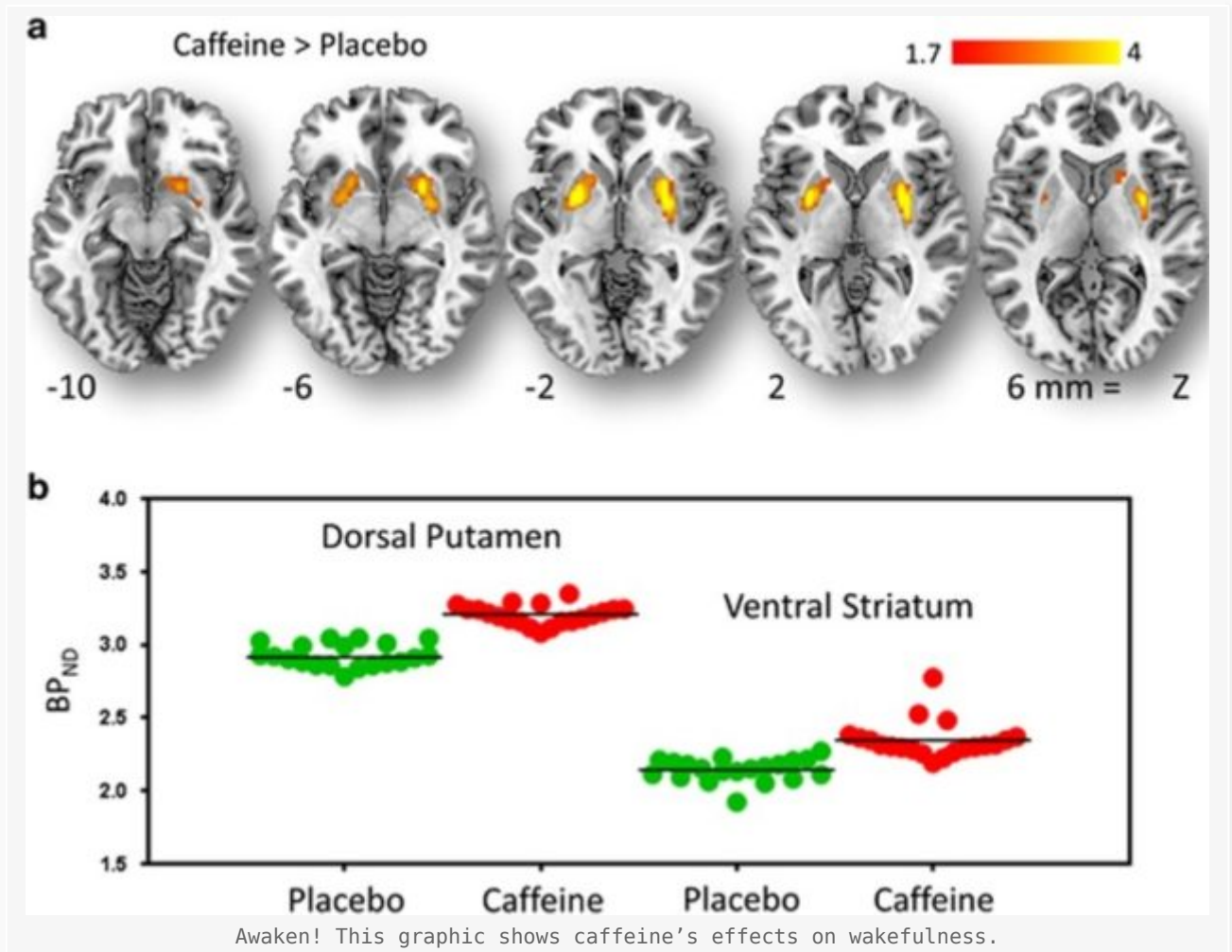
Caffeine's multiple *energy-increasing* mechanisms

Ask a group of American adults why they use caffeine and most will probably say something like, "*It gives me energy.*" And indeed, caffeine *does* give you energy.

But when it comes to human beings, *what is energy?* What does it mean to *have energy?* Are we talking about an objective metabolic reality, or a *feeling?* As it turns out, caffeine improves *both*.

Caffeine's primary anti-fatigue mechanism is to inhibit *adenosine*, a metabolic byproduct that accumulates in the brain while you're awake. The higher the concentration of adenosine in your brain, the more tired you're liable to feel.[42,43]

Caffeine doesn't prevent adenosine from building up, but it *does* block the adenosine receptor, which means the adenosine in your brain has significantly less of a fatigue-inducing effect so long as caffeine is active.



This is how caffeine can give you the *feeling* of being more energized – which is, to be clear, not an illusion. Mental and neurological states matter a lot in determining how much work a person can do.

But caffeine can also give you more energy in a *literal* sense, by increasing metabolic function.

As we alluded to in the previous section, caffeine and other *methylxanthines* inhibit an enzyme called *phosphodiesterase*, which breaks down *cyclic adenosine monophosphate* (cAMP).[42,43] Since cAMP tells your cells to burn calories for energy,[44] more cAMP means a faster metabolism and larger daily caloric expenditure.[44]



Caffeine is also good at promoting *fat oxidation*, with research showing that the rate of fat oxidation in caffeine-treated subjects can increase by as much as 50%. [45]

This means more fuel for your workouts, but also an easier time reaching and maintaining body-composition goals.

Caffeine's mental and physical performance benefits

Caffeine is one of the most studied *ergogenic aids*, a category of substances that are intended to increase physical performance, stamina, and recovery. That's because for athletes, caffeine's *pro-metabolic effects* consistently translate into at least slight improvements to *strength, athletic endurance, and top-end power*. [46]

But caffeine can also improve *cognition* – it has been shown to decrease reaction times, [47] improve focus [47,48] and alertness. [48]

Caffeine can also improve *working memory*, [49] a key factor in fluid intelligence. [49]

At 200 milligrams, this is a very fair dosage for most endurance athletes. While heavy-lifting weight trainers often prefer more these days, 200 milligrams is a strong yet smart amount for the endurance and cardio community.

Directions and Timing: It's *unflavored* and *unsweetened*!

As an unflavored, unsweetened *additive* pre-workout supplement, you'll want to find something to mix this with. Many will simply add it to a sports drink, but we're partial to full-spectrum amino acid blends in addition.

Two different ideas from the sports supplement world are to:



1. Add it to *AstroFlav's Full Tank*, which has carbohydrates, electrolytes, and essential amino acids; or
2. Add it to *STORM Revive*, which has the amino acids and bolsters their uptake using another novel ingredient from Nutrition21 named *Velositol*. This is an excellent carb-free option.

Timing up

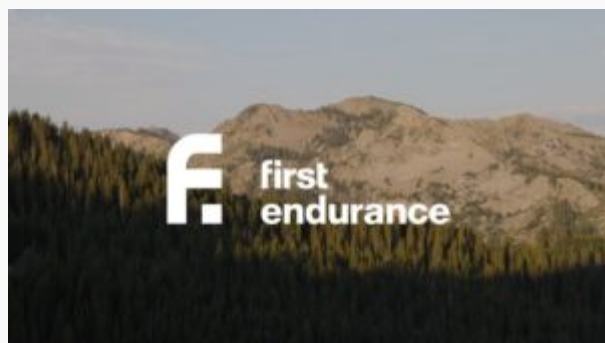
Timing strategies will vary depending on your training length. Normally, pre-workout supplements are taken *entirely* before training, especially if the workout is going to be around an hour long.

However, if you're planning on going for a couple hours or more, you may want to drink half pre-workout, then the rest through the first half of your workout to space out the effects of the caffeine.

But no matter what, you'll want to get at least half of PreRace 2.0 in before starting your workout to get nitric oxide production leveled up. You can then tweak the rest to coincide with your carbohydrate intake and stimulant tolerance.

If you're competing, supplement timing is something that should be practiced and refined *well* before an actual race, so that you know what works best for you on race day! The day of a competition is *not* the day for diet or supplement experimentation!

Conclusion: Nitrosigine comes to the endurance world



PreRace 2.0 from **First Endurance** is a focused and efficient *pro-endurance* formula to add to any sports drink or amino acid supplement. Its flagship ingredients, taurine and Nitrosigine, are no-nonsense performance boosters, as is *caffeine*. VitaCherry adds *recovery support*, which is arguably even more important than boosting performance.

We've long discussed that some supplement companies do not market the best products to endurance athletes, so we're glad to see a company like First Endurance that *is*. Far too often, all we see are dextrose, maltodextrin, sucrose – carbs, carbs, and more carbs! This is the first modern pre-workout in the space focusing on the *science* of performance and endurance beyond sugar.

Most cyclists, swimmers, and runners have never tried Nitrosigine, but we think they certainly should. PreRace 2.0 is a fantastic opportunity to make that happen.

First Endurance PreRace 2.0 – Deals and Price Drop Alerts

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