

The only aspect of bodybuilding more important than training effort is attention to adequate recovery.

Recovering from your workout begins the moment you end your last set, and it's recovery, **not the workout itself**, that is vital for making progress. If you blast several muscle groups in a workout, recovery actually begins **during your workout**, when you transition from one muscle group to another! As a matter of fact, recovering **between sets** dictates the nature of training stimulus, so recovery actually starts **after your very first set**.

The vital nature of recovery for making gains is why we've created **Recovery Factor X™ (RFX)**: A precise combination of electrolytes, carbohydrates, essential amino acids (EAAs), and pump enhancing ingredients to ensure **hydration**, preserve precious muscle **glycogen**, and get an **anabolic / anti-catabolic** jump start on recovering from your workouts.

Activate... Recovery Factor X™!

To prepare for battle, a warrior arms himself **before** stepping on the battlefield. Therefore, we suggest you start consuming Recovery Factor X™ 10-15 minutes **before** and **throughout** your workout to enhance recovery from start to finish. And because these sessions can be brutal (and long), we've added the major electrolytes lost in sweat¹ to help keep you well hydrated^{2,3}. Additionally, electrolytes help with taste⁴, and we've balanced our flavoring system with a variety of mineral salts to make sure Recovery Factor X™ tastes ridiculously good.

You'd be mistaken if you think we've just concocted a fruity drink you might order on the beach with a cocktail umbrella. The meat n' potatoes components of **Recovery Factor X™** triage **recovery** and **anabolism** with carefully chosen carbohydrate, EAAs and pump-enhancing ingredients:

- Performance **Carbohydrate** And Neurogenic Fuel Blend
- **Essential Amino Acid** Myotropic Matrix
- Vasoactive **Pump** Matrix

Recovery Factor X™ Triage



Recovery Factor X™: Supplement Synergy Strategy

When it comes down to it, making muscular gains is about going beyond simply recovery: Building muscle size, day by day, inch by inch, requires a **net positive** effect on muscle protein balance. Reducing **muscle breakdown** [probably by increasing **insulin** levels^{5,6}] is one way that including **carbs** in your peri-workout⁷⁻¹⁰ recovery drink gets this done. Intra-workout carbs also reduce post-exercise **cortisol**¹¹, a important predictor of muscle growth over the long haul^{12,13}. Admittedly though, the science is a actually bit fuzzy as to the acute^{14,15} and long haul benefits¹⁶ of peri-workout carbs for packing on size per se, but including carbs in a recovery drink primes your muscles for restoring **glycogen**^{17,18} (see [Cyclic Dextrin®](#) below) and there's certainly **no disadvantage** to intra-workout carbohydrate¹⁹.

Before we get into the details of **Recovery Factor X™**, be sure you don't lose sight of the **big picture** when crafting your intra- and post-workout **strategy**. Intra-workout nutrition is just one piece of the puzzle: Substantial gains may very well mean consuming **more carbohydrate** and/or **protein** (and **calories!**) than subjects following most research protocols. For example, supersizing your post-workout carbohydrate (e.g., with 90-100g) may⁸ or may not²⁰ inhibit protein breakdown. However, a glycogen-filled muscle cell is generally a more anabolic one⁷ and a brutal weight training workout dramatically elevates metabolic rate^{21,22}, and can even temporarily prohibit glycogen replenishment despite eating a high carbohydrate diet²³. This may be why one study found that hard training plus massive (>350g) carbohydrate supplementation (even without additional protein!) produces substantial gains in muscle mass without increased body fat²⁴.

Obviously protein has its role, too. While consuming more than ~40g of post-workout **protein** may not further increase protein **synthesis**²⁵⁻²⁷, doubling this amount^{28,29}] creates the **positive protein balance** we want by blunting protein **breakdown**. While adding more and more protein to the diet beyond a certain point^{30,31} isn't a magic bullet for building more muscle, there is also little risk of adverse health effects or gaining body fat from simply from eating large amounts of protein³²⁻³⁴.

Essentially, **Recovery Factor X™** is a great way to jumpstart a recovery strategy based on a sound diet replete with carbs, protein, and calories.

Performance Carbohydrate And Neurogenic Fuel Blend

- Recovery Factor X™ contains **highly branched cyclic dextrin** (as [Cyclic Dextrin®](#)) to enhance gastric emptying³⁵ and minimize gastrointestinal discomfort during exercise [including burping and gas, which your training partner benefit will appreciate³⁶]. By more rapidly ushering glucose from the stomach^{37,38} to the small intestine and blood stream³⁹, [Cyclic Dextrin®](#) can improve performance⁴⁰⁻⁴², and maintain higher glycogen levels⁴³, giving you a head start on recovering for your next workout⁴⁴.
- To ensure sustained blood glucose during your workout, we've also included 6 grams of **Isomaltulose** (as [Palatinose®](#)), a disaccharide that produces a steady blood glucose, much lower than even table sugar⁴⁵.
- **N-Acetyl L-Tyrosine** is Recovery Factor X™'s soluble source of L-tyrosine⁴⁶⁻⁴⁸, a precursor for catecholamine synthesis (e.g., noradrenaline and dopamine)⁴⁹⁻⁵¹, thus supporting brain neurotransmitter levels⁵² and cognitive performance^{53,54}. When under duress (e.g., during a killer workout), tyrosine supplementation may actually promote the aggressive mentality⁵⁵ needed to drive through previous performance barriers.

Essential Amino Acid Myotropic Matrix

- We included the **Essential Amino Acid (EAA) Myotropic Matrix** because it's the **essential** [not the non-essential⁵⁶] **amino acids** that trigger muscle protein synthesis⁵⁷⁻⁵⁹. Leucine (3g) sits atop this EAA stack because of its primacy in triggering protein anabolism⁶⁰⁻⁶². We were sure focus on the other branched chain aminos (BCAAs; Isoleucine and Valine at 1.5g each) as well, because the BCAAs are known to reduce muscle breakdown and post-exercise soreness and damage^{63,64}.
- The other EAAs blended in the Myotropic Matrix are based on the anabolic EAA mixture used extensively in research^{57,65-68}, adjusted slightly to take advantage of the anabolic signaling⁶¹ and insulin-releasing⁶⁹ effects of lysine and phenylalanine.

Vasoactive Pump Matrix

- **Recovery Factor X™** contains 3g of **L-Citrulline**, which if consumed alongside **ArcReactor™** (our preworkout formula containing 6g of L-

- Citrulline) or some other 3-6g source L-Citrulline, provides an adequate dose^{70,71} to bolster nitric oxide synthesis [elevating both arginine⁷² and nitrite⁷³!], open up blood vessels, drive more blood into muscle, improve exercise performance^{70,74,75}, and perhaps even reduce muscle soreness⁷⁴. L-Citrulline gives you a pump, performance enhancement and recovery potential⁷⁶, all in one!
- **Taurine** is a β -amino acid vital for a plethora of cellular processes^{77,78} including **maintaining cell volume**^{79,80}. Adequate taurine stores are necessary for optimal muscle force production⁸¹⁻⁸³ and useful to prevent muscle cramps^{81,84}. Although endurance exercising rodents seem to get an ergogenic boost from taurine⁸⁵⁻⁸⁸, differences in taurine metabolism⁸⁹ probably explain why this hasn't generally panned out in humans, at least during endurance events⁹⁰; Rutherford, 2010 #10715}. On the other hand, a 1-2 gram dose of taurine was **ergogenic** in an all-out 11 min effort⁹¹ and increased fat burning during a 90 min bout⁹². Still, taurine's a perfect fit in **Recovery Factor X™**: Daily supplementation with taurine and BCAA (in our Mytropic Maxtrix) can speed recovery by reducing post-exercise muscle damage⁹³ and oxidative stress⁹⁴, **without** sacrificing the normal⁹⁵ adaptive free-radical quenching adaptations sent in motion by training⁹⁴.
 - The **casein-derived tripeptides** in **VasoDrive-AP™** have been demonstrated to normalize blood pressure⁹⁶ by inhibiting angiotensin converting enzyme (ACE)^{97,98}. Inhibiting ACE and/or blocking the angiotensin II receptor also improves insulin sensitivity – vital for muscle blood flow and a good pump^{99,100} - and protects your muscle cells (and their mitochondria) against age and free-radical related dysfunction¹⁰¹⁻¹⁰³. However, it's the potential **ergogenic effects** of lowering ACE activity¹⁰⁴⁻¹⁰⁷ that have prompted the suggestion ACE inhibitors be scrutinized as doping agents¹⁰⁸!
 - **Capros®** is a concentrated extract from **Indian gooseberry** (a.k.a. amla) with powerful antioxidant properties^{109,110}. **Capros®** improves markers of cardiovascular risk (e.g. C-protein levels)¹¹¹ and blood vessel function^{109,112,113}, vital for a skin-splitting pump. [We've intentionally limited the dose of **Capros®** to ensure that it's anti-oxidant quenching power (**ORAC** value) is roughly that of a few oranges¹¹⁴, i.e., far less than what could endanger your gains^{95,115,116}.]

Disclaimer: L-Tyrosine may interact with certain drugs (such as MAOIs, Levodopa and thyroid medications).

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