In a world dominated by texts, emails and Facebook chats, information overload is commonplace. We want success, and we want it fast. Likewise, we want to formulate the best pre-workout, and we want to formulate it fast.

So, we often check the pre-workout boxes:

- Anabolism/catabolism
- Pump
- Stim
- Neuro

Unfortunately, it’s not as easy today to just “check the boxes” and succeed in this highly competitive market. It’s so difficult, in fact, that the pre-workout market has segmented into three distinct categories.

We’re in an ambitious industry with ambitious customers. Customers want to be the best versions of themselves. In this pursuit of “one more rep” or a faster sprint time, we eat whole foods, supplement with heavy amounts of protein, and train hard and often. But in our rush to win, we often overlook the simplest questions. For example, why do muscles fail in the first place? And, what is the psychology of physical performance?

Why do muscles fail? It’s best explained by these four verticals:

1. Depletion of ATP and/or glycogen
2. Accumulation of hydrogen ions from lactate
3. Muscle contraction failure due to ATP-dependent calcium release/uptake
4. Oxidative stress (excess free radicals) causing muscle damage
10 YEARS OF PRE-WORKOUTS
Before we hit these four verticals, it’s valuable to take a step back and review the last decade of the pre-workout category. Essentially, why are we just now circling back to the basics of why muscles fail?

We started the last decade in sports nutrition with N.O.-Xplode, which contained a heavy dose of actives and revolutionized the category. It actually started the category. Then, about eight years ago, Jack3d hit the scene with a “concentrated” pre-workout.

The total dose of Jack3d was around 4g and it took the pre-workout category to new heights. It used DMAA (dimethylamylamine) (aka 1,3-DMAA) in addition to caffeine. DMAA provided a euphoric feeling and complemented caffeine extremely well. Unfortunately, DMAA was not regulatory-compliant and was largely removed from the market.

Five years ago, Muscle Tech started a line that fully disclosed its ingredient quantities. Then, three years ago, Jim Stoppani took it a step further and focused on really large, clinical doses of several key actives, all fully-disclosed. The formula was simple, but effective, and it led to an industry focus on label transparency and ingredients with claims at validated doses.

Nearly two years ago, some people started taking out the “pump” portion of pre-workouts and putting them in a non-stimulant, “pump pre-workout” category. That history preceded what we have today, a category that has been divided into three unique categories.

THOSE 3 CATEGORIES ARE:
1. Stim pre
2. Pump pre
3. Fully-dosed pre

It’s these three differentiated sub-categories that have led us back to the basics of why muscles fail.

THE SCIENCE BEHIND MUSCLE FAILURE
One reason muscles fail is ATP depletion. When people talk of ATP depletion, they are usually talking about creatine. With glycogen depletion, it’s typically a conversation about the use of carbs. Beta-Alanine dominates discussions about excess hydrogen ions from lactate, and no one typically discusses muscle contraction failure. Any talk of free radical damage to muscles is most often a back-burner issue for R&D. The consumer can be overwhelmed by these details about why muscles fail, so brands often take an easier, non-educational path. The consumer just wants immediate results. They want a sensory effect, something they can feel.
SO, AS A BRAND, WHAT DO YOU DO?

Well, history tells us that you add caffeine for a quick burst of energy, then add enough beta-alanine to make your skin tingle. That doesn't mean the beta-alanine or caffeine are helping you set Personal Records at those doses, just that you get a sensory experience. Below are additional options for the pre-workout category:

You can add PeakO₂™, a patent-pending blend of adaptogens clinically proven to decrease lactate and improve peak power, VO₂ max and time-to-exhaustion in 7 to 28 days. Its mechanism of action is the increased uptake and efficient utilization of oxygen. Because we get more ATP from oxygen than any other source, PeakO₂ is a fast-acting solution to ATP depletion. Additionally, its beta glucans and l-ergothioneine make it a free radical scavenger, limiting muscle damage. In other words, PeakO₂ can help delay muscle failure in three of the four verticals about why muscles fail, and its positive effects are felt nearly acutely, within one week if you load at least 28 grams.

To buffer hydrogen ions, the most common choice is to add beta-alanine. The upside is that it can work to delay muscle fatigue in exercises predominantly from about 1-10 minutes in duration. If the activity is in spurts in this time range, like soccer, rowing, or middle-distance sprinting, beta-alanine can also help. The downside is that it takes a minimum of 3.2 grams per day for a minimum of 4 weeks to see these performance benefits. Most people simply don't wait that long, and for some people, the itching sensation is too much to handle at efficacious doses. Additionally, one appropriately-sized dose of beta alanine can rapidly alter pH, increase excretion of beta-alanine/carnosine, and/or fail to appropriately load within the muscle. To efficaciously supplement beta-alanine, the consumer must take several small servings per day. Because most pre-workouts don't contain the effective dose of beta-alanine and pre-workout is not taken multiple times per day (or even once daily), beta-alanine is often relegated to an amount at which a tingling sensation occurs, making the consumer “believe” beta-alanine is actually aiding performance when the reality is that it may not without more frequent consumption.

For power, you can also add Creatine. It’s an ATP donor, and clinically proven to improve power in the first 1-2 reps of explosive exercise, or even fast sprints. You can hit the glycogen issue with a dose of a low glycemic carb like Carb10, which is a “cleaner” calorie helping replenish muscle glycogen in a healthier way. Lower glycemic carbs ensure your energy is sustained and you don’t “bonk” in 60 minutes, like most people do from maltodextrin.
WHEN FORMULATING A PRE-WORKOUT OR ANY PERFORMANCE-ENHANCING PRODUCT, THESE ARE THE QUESTIONS TO CONSIDER:

1. Why do muscles fail? Which of the four verticals do I want to attack?
2. Who is my target market?
3. Which of the three pre-workouts does my target want: stim, pump or fully-dosed?
4. Does my target market want a beta-alanine tingle, no tingle, or effective beta-alanine dosing?

REFERENCES


WHEN FORMULATING YOUR PRE-WORKOUT, OR YOUR WHOLE LINE, PLEASE CONTACT US FOR FURTHER DETAIL ON TRENDS AND ADDITIONAL EFFECTIVE INGREDIENTS.

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