



THIS INFORMATION COMES FROM THE EXCLUSIVE FILES OF INTEGRATED SPORTS SCIENCE.



EXCLUSIVE. THIS REPORT HAS BEEN PREPARED FOR ATHLETES.

INSIDE INFO 07

MAXIMIZING THE STIMULUS FOR MUSCLE GROWTH THROUGH PROPER PRE & POST WORKOUT SUPPLEMENTATION (PART II)

In Part I of this two-part series we discussed how proper pre-workout supplementation can dramatically improve the effectiveness and results of your training. To recap the main take home message, precision formulated products such as Satur8 Rush® by ISS® allow you to train harder and with more intensity by providing your body with crucial cell volumizers, focus and energy enhancers, and electrolytes. In the long run, these better workouts lead to faster and greater results.

But as you can probably guess (otherwise there wouldn't be a part II), pre-workout supplementation is only half of the equation. The other (and potentially more important) requirement for optimal recovery and growth is ideal post-workout supplementation. In this article, we're going to discuss why and how a new product called RE-Satur8® was formulated to help ensure you optimize your post-workout recovery. To see why such supplementation is not just desirable but absolutely critical for effective adaptation to exercise, let's look at what happens to your body once you done the actual workout.

Once you set down that dumbbell or barbell after your last rep of a grueling training session, your body is physically depleted. Most importantly, energy (glycogen) stores in the muscle and possibly the liver are likely extinguished. Now while that might not sound so bad at first, let's think of the role of glycogen in the body. Glycogen is the storage form of glucose. When it is needed for energy, it is broken down into glucose to eventually generate ATP and creatine phosphate, which are immediate energy sources used for the growth and remodeling process. When you don't have the required amount of glycogen present for a particular cellular function, one of two things can



happen depending on how important your body thinks that function is. Either (1.) your body won't perform that function, or (2.) your body will choose another energy substrate to create glucose. For our purposes, both choices are bad. That function the body wants to perform after a workout is

to repair the damaged muscle fibers. If you don't supply the necessary nutrients to your body following a workout, this adaptation may not occur. The second scenario isn't any better. If your glycogen levels are depleted and you don't replenish them, your body may choose to convert an alternative energy source such as protein to glucose. Not a good thing either.

So how do we ensure that our body gets the necessary nutrients to ensure optimal recovery following an exhaustive bout of exercise? Simple, we utilize proper post-workout supplementation. In designing an effective post-workout formula, there are a number of points to address. First, it has to work quickly. Your body is catabolic after a workout- especially when it is depleted of nutrients. Studies have shown that a short window of opportunity exists following exercise in which your body is able to efficiently uptake more nutrients than it could under normal resting conditions. This means we can get more glycogen into our muscles and in effect "super compensate" them. Also related to this point is that our post-workout nutrition is in the form of a liquid. Fluids are assimilated much more quickly by the body than solid food. Solid meals take much longer to break down and digest before your body can utilize those nutrients.

Also related to the topic of fluids, ISS deliberately made the flavoring of RE-Satur8® strong, so that you would be encouraged to drink it in a large volume of water. Why? Because a more dilute solution (which has a lower osmolarity – Yuck – science term!) has been shown to promote nutrient transport and facilitate rehydration better than a concentrated solution containing the same ingredients (1).

Next we need fast-acting (= high glycemic index or GI) carbohydrate sources to quickly replenish muscle glycogen stores. As most of you know, some carbohydrates such as simple sugar are typically released into the bloodstream much quicker than a complex carbohydrate such as a potato, which has a slower pattern of digestion and release. The carbohydrates included in RE-Satur8® (maltodextrin, dextrose, and sucrose) are fast-acting and thus are able to replenish glycogen stores rapidly. So why have all of them in the formula? Well, while it's true each has slightly different digestion kinetics and could give you a moderate time-release effect, the most important reason is that the combination of certain carbohydrates has been shown to increase gastric emptying (the process of digesting and clearing food from the digestive system)(2). This means that not only will those carbs be quickly utilized for energy, but also that you will be able to consume another meal sooner without still being full from your post-workout shake.

In addition to carbohydrates, RE-Satur8® also contains critical electrolytes that are lost during sweating and exercise. Since the body is very specific as to the cellular environment in which it will function properly, replenishment of these electrolytes is essential to normal cellular activities and homeostasis. Of course it doesn't stop there! ISS® has also included three forms of creatine: esterified creatine, dicreatine malate, and creatine monohydrate. These three versions have different time release and breakdown properties and thus provide multiple waves of creatine replenishment. Also don't forget that creatine is an energy source so this means that our ingested creatine may serve cellular functions in recovery as well. We finish off with the amino acids L-glutamine, L-taurine,

and two forms of AKG (L-glutamine and L-arginine bound). Most of these ingredients have been discussed in Part I of the series so will not be covered again here.

One last thing that you may want to consider adding to RE-Satur8® is a fast-acting protein such as whey (ISS offers several). Protein is absolutely required for anabolism to occur and unlike fat and carbohydrates; it cannot be synthesized by other energy substrates. Also, muscle glycogen recovery has been shown to be enhanced by the inclusion of protein in the post-workout shake (3, 4). Finally, protein + carbs may promote faster glycogen storage and gastric emptying (5, 6). These are good things!

Well, that's it. Hope you enjoyed the two-part series. To summarize both articles, we have learned that by taking an effective pre-workout supplement (Satur8 Rush®) and post-workout product (RE-Satur8®), you greatly increase your chances of optimizing your training, recovery, and long-term progress. Now get to work!



Author: Jason Wojciechowski

1. Shi et al. (1995) *Med Sci Sports Ex.* 27:1607.
2. Brouns et al. (1993) *Sports Med.* 15:242.
3. Berardi et al. (2006) *Med Sci Sports Ex.* 38:1106.
4. Luy et al. (2002) *J App Physio.* 93:1337.
5. Zawadzki (1992) *J App Physio.* 72:1854.
6. Jentjens (2001) *J App Physio.* 91:839.