



# Max PTN



## Maximum Post Training Nutrition

Amino, GHboost, and MRP LoCarb Combo

### **Post Exercise Nutrition - Maximizing the Anabolic and Fat Burning Effects of Exercise**

The nutrients you take in after you exercise are almost as important as the exercise itself in deciding the effects of exercise on body composition and performance.

In my view the ideal post training nutrition is different from the general consensus of carbohydrates alone or a combination of carbohydrates and protein. For some of my reasons see the article below – Post Exercise Carbohydrates are Counter Productive.

As such, I feel that post exercise supplements miss the mark and can actually be counter productive for maximizing body composition (improving muscle mass and decreasing body fat), improving performance, and enhancing recovery.

That's why I put together a post training combo that combines three of my supplements and is meant to maximize the beneficial effects of exercise and improve recovery.

I've dubbed the new supplement combo **Max PTN**, short for Maximum Post Training Nutrition.

Max PTN consists of three supplements, Amino, GHboost, and MRP LoCarb. The combination of the three supplements will supply you with high levels of amino acids growth hormone, IGF-1, testosterone, and insulin, in your system, providing you with potent anabolic, fat burning, and performance effects.

While it's the ideal post training nutritional combo for those who follow my phase shift diets, it's also the ideal post training combo for those that don't, and for both power and endurance athletes.

### **Amino**

High levels of amino acids in the blood (hyperaminoacidemia) are a powerful stimulus for muscle protein synthesis after exercise. **Amino** provided a complex array of amino acids that acutely enhances the anabolic response to exercise. As well, amino acid supplementation has been found to be effective in maintaining the free androgen index as well as reducing the potential risk of sports anemia.

The use of Amino confers many benefits, especially to athletes that are overreaching including those in the pre-competition phase of training. These benefits included an increase in recovery, free testosterone, protein synthesis, muscle strength and force production, and a decrease in protein breakdown and anemia.<sup>1, 2, 3</sup> (Note that Amino is far superior and much more effective than the amino acid products used in these three studies.)

For more info on Amino see <https://www.mdplusstore.com/pdfs/amino.pdf>.

## **GHboost**

However, it's also been shown that GH and IGF-I levels can be compromised by hard training and that the use of an amino acid supplement alone has little effect on this. As such there is also a need to boost the levels of these hormones when the athlete is training hard and likely overreaching.

GHboost provides that boost and increases GH and IGF-1 levels (serum IGF-I levels are controlled by growth hormone, insulin and nutrition) and provides a synergistic anabolic response with the increased insulin levels and sensitivity, while dissociating the metabolic effects of insulin on fat metabolism (because of the crosstalk between growth hormone and insulin signaling), and increasing the fat burning post training response. GHboost has several other benefits including working synergistically with Amino and the insulin response to increase musculoskeletal blood flow.

For more info on GHboost see <https://www.mdplusstore.com/pdfs/GHboost.pdf>.

## **MRP LoCarb**

I formulated MRP LoCarb as a meal replacement for those following the low carb phase of my phase shift diets. One serving contains 45 grams of protein (42 grams of whole proteins and 3 grams of amino acids and glutamine peptides), less than one gram of sugar, and dozens of extra nutrients meant to support the anabolic and fat burning processes in the body.

There are several protein types in MRP LoCarb, including amino acids, peptides, and whole proteins, which are meant to supply you with progressive amino acid release over both the short and long term.

MRP LoCarb also contains 6-7 grams of fat (depending on the flavor), including the essential fatty acids. The fat is important in order to increase intramuscular triacylglycerol (IMTG) levels, a form of fat that is used by skeletal muscles along with glycogen to provide quick energy for muscular contraction. We'll cover the ins and outs of IMTG, an important topic for all athletes, in an upcoming newsletter.

For more info on MRP LoCarb see [https://www.mdplusstore.com/pdfs/mrp\\_locarb.pdf](https://www.mdplusstore.com/pdfs/mrp_locarb.pdf).

## **After Using the Max-PTN combo**

For the rest of the day and before bed I suggest you have high protein, moderate fat, low carb meals and snacks as needed to keep the anabolic and fat burning effects going until at least the next morning. The chart of foods allowed on my Radical Diet (see \*\*\*\*\* put link into chart) gives you an idea of the foods that are best. Of course the portions should be increased to keep the calorie intake at normal levels for you.

## **Night Time Combo**

To augment the effects of Max-PTN and the low carb diet following training, you may also want to use something before bed to keep the processes going. I formulated NitAbol in part to augment the low carb anabolic and fat burning response to exercise. It can be used to keep all of the beneficial processes in high gear at night on the days that you train. For more info on NitAbol see <https://www.mdplusstore.com/pdfs/nitabol.pdf>.

## **The Best Time to For Carbs**

The morning following training is the best time to increase your carb intake if your goal is to maximize muscle and hepatic glycogen levels.

## **Summary**

Overall, the lack of carbohydrates, the high levels of amino acids and proteins, and increased levels of testosterone, GH and IGF-1, work synergistically to increase the anabolic effects of insulin, while at the same time negating the effects of insulin on fat metabolism and increasing fat breakdown and oxidation. As well, hyperaminoacidemia with an increase in insulin at a time when blood flow is increased (secondary to insulin, GHboost, certain amino acids such as arginine in Amino, and exercise) appears to offer the maximum stimulation of muscle protein synthesis.

Power athletes will benefit from the anabolic and body composition effects secondary to increases in lean body mass and decreases in body fat, giving them a pound for pound edge in strength and performance.

For endurance athletes keeping post training carbs low provides the positive anabolic and fat burning effects, prolongs insulin sensitivity for several hours, and in the long run results

in enhanced glycogen stores since delaying carb intake keeps insulin sensitivity and levels high so that increasing carb intake provides the same glycogen enhancing response as when carbs are taken immediately after training.

By delaying carb intake endurance athletes will get more anabolic and fat burning effects from their training while still maximizing glycogen levels once they start taking in more carbs.

## Max-PTN Info

One order of Max PTN will last a variable amount of time for each of the products as outlined below. Depending on training frequency they can last up to three months. Each of the supplements is also available on their own so it's easy to top up any of them as needed.

- Amino – 12 tablets immediately after training – 180 tablets per bottle.
- GHboost – 5 tablets immediately after training – 150 tablets per bottle.
- MRP LoCarb – 1 packet an hour or so after training – 20 packets per box.

# Post Exercise Nutrition for Maximizing the Anabolic Effects of Exercise

There is no doubt that the timing protein nutrition after exercise is crucial for increasing skeletal muscle protein synthesis and an overall net balance.<sup>4</sup> Exercise provides an adaptive response so that the body is able to make use of any nutrition supplied post exercise.

Nutrient intake on its own provides a storage response so that if one is fed or receives an infusion of mixed amino acids after a fasted period, protein synthesis increases, whereas protein breakdown remains the same or decreases slightly, which is different from the response after exercise.

Without nutrient intake after exercise protein synthesis and protein breakdown are increased but net balance does not become positive as it does after amino acid intake after fasting. Because of the exercise stimulus, when amino acids are provided after exercise protein synthesis increases more than what normally occurs after exercise or AA feeding alone, and protein breakdown remains similar to exercise without feeding. Thus the provision of AA enhances protein synthesis and leads to a positive net protein balance and an overall increase in protein accretion.<sup>5</sup>

In addition, while the increase in protein synthesis after feeding is a transient storage phenomenon, physical exercise stimulates a longer-term adaptive response. Providing nutrition after physical activity takes advantage of the anabolic signaling pathways that physical activity has initiated by providing amino acid building blocks and energy for protein synthesis.

Glycogen compensation and super compensation (after glycogen depleting exercise) after exercise requires a substantial carbohydrate load that results in a quick and large increase in glycogen levels in both liver and skeletal muscles. Once the stores are full, or even super full, the stimulus declines dramatically. However, if no carbohydrates are given post exercise the muscle will maintain a capacity to fully compensate or supercompensate glycogen until enough carbs are either available through the diet or by gluconeogenesis to fill the glycogen stores as much as possible.<sup>6</sup>

## Overemphasis on Post Exercise Carbohydrate Intake

Because of the over-emphasis placed on maintaining glycogen stores to maximize exercise performance, much of the research has centered around the effects of post exercise carbs, and post exercise carbs combined with protein,<sup>7</sup> and the effects these have on glucose transporters (GLUT1, GLUT2, GLUT4), glucose metabolism, including levels of hexokinase and glycogen synthase, and insulin,<sup>8,9</sup> there's not much out there dealing with just the use of protein and fat after exercise.

The usual advice is that carbs, with some protein thrown in, are a necessary part of post exercise nutrition regardless of diet that you're following, including a low carb diet.<sup>10,11,12,13,14</sup> However, that's not true. In fact the use of carbs post training can be counter productive and eliminating post training carbs can have added anabolic and fat burning effects.

That's because the intake of carbs after exercise blunts the post exercise insulin sensitivity. That means that once muscle has loaded up on glycogen, which it does pretty quickly on carbs, insulin sensitivity decreases dramatically.

This statement runs counter to present thinking and research about post exercise nutrition. As such, let's take it step by step so that I can make my reasons for the above statements clear and easier to understand.

## **Muscle Glycogen and Insulin Action**

First of all it's well known that a single session of exercise increases insulin sensitivity for hours and even days.<sup>15, 16</sup>

It's also known that bouts of resistance and endurance exercise result in a significant decrease in glycogen and that total energy content and CHO content are important in the resynthesis of muscle and liver glycogen.<sup>17</sup>

Glucose uptake and glycogen synthesis are enhanced in the presence of insulin following an acute exercise bout that lowers the muscle glycogen concentration and activates glycogen synthase.<sup>18, 19</sup>

Muscle glycogen concentration dictates much of this acute increase in insulin sensitivity after exercise.<sup>20</sup> Therefore, an increased availability of dietary carbohydrate in the hours after exercise and the resultant increase in muscle glycogen resynthesis reverses the exercise-induced increase in insulin sensitivity.<sup>21</sup>

## **Dissociation of Insulin's Effects on Glucose and Protein Metabolism**

Along with glucose uptake, amino acid uptake and protein synthesis also increase. As well, the use of fatty acids as a primary fuel also rises after exercise since glycogen resynthesis takes priority over the use of glucose for aerobic energy.

However, as liver and muscle glycogen levels get replenished, insulin sensitivity decreases, as does amino acid uptake, protein synthesis and the use of fatty acids as a primary fuel. Fatty acids, preferably from the breakdown of body fat, can provide the fuel needed secondary to the prolonged increased metabolic rate that occurs after vigorous exercise, especially resistance training.<sup>22, 23</sup>

By increasing insulin levels and not providing carbs you shunt your body's metabolism to the use of more fatty acids for energy while at the same time keeping muscle glycogen levels below saturation and amino acid influx and protein synthesis elevated for a

prolonged period of time post exercise. In essence, by limiting glycogen synthesis you prolong the beneficial effects of insulin on protein synthesis and degradation and decrease the dampening effects of insulin on fatty acid breakdown and oxidation. At the same time although you delay glycogen synthesis you still maintain the capacity for rapidly increasing glycogen stores once you increase your carb intake.

This increased capacity for glycogen synthesis, and everything that goes with it, can persist for several days if the muscle glycogen concentration is maintained below normal levels by carbohydrate restriction. By keeping carbs low and protein and energy high after training, you can increase protein synthesis over a prolonged period of time and get long term anabolic effect.<sup>24</sup>

A recent study looked at the effects of post training carbohydrate deficit while keeping calorie intake constant, on insulin action and on fat oxidation. The study showed that carbohydrate deficit post exercise resulted in increased fat oxidation and enhanced insulin action. The enhanced insulin action was proportional to the degree of carbohydrate deficit – i.e. the further the post exercise carbs were decreased, the greater the insulin action.<sup>25</sup>

## **Insulin and Nutrient Delivery to Skeletal Muscle**

As mentioned above in the discussion on insulin, we've seen that one of insulin's actions is to increase microvascular (nutritive) perfusion of muscle, which is enhanced by exercise.<sup>26,27</sup> This enhancement is crucial to maximizing the anabolic effects of exercise and targeted nutrition.

For example a review looked at the effects of insulin on the vascular system and on nutrient delivery to muscle.<sup>28</sup> The paper points out the fact that there are two flow routes in muscle: one in intimate contact with the muscle cells (myocytes) and able to exchange nutrients and hormones freely and thus regarded as nutritive, and a second with essentially no contact with myocytes and regarded as nonnutritive (felt to provide blood to muscle connective tissue and adjacent fat cells, but not muscle cells).

The point to take home here is that in the absence of increases in bulk flow to muscle, say after a training session, insulin may act to switch flow from nonnutritive to the nutritive route. This capillary recruitment results in an increase in nutritive blood flow so that muscles that have been stressed and are undergoing an adaptive response will have what they need to recover and grow.

## **Summary**

This information is another piece of the anabolic puzzle. Putting it all together can give us ways to dramatically improve body composition – increase muscle mass and decrease body fat. In my view, the best way to do this is to figure out ways to increase the potent anabolic effects of insulin, both on nutritive delivery to the muscle cells and into the muscle cells, while at the same time minimizing the undesirable effects on body fat.

One of these ways is to increase insulin in a pulsed manner along with an increase in amino acid availability, but minimal carbs, at the times when the body is primed for growth and repair, for example in that window of opportunity that exists for several hours after training. It would also be desirable to maintain elevated androgen levels, and increase growth hormone (GH) and insulin-like growth factor-I (IGF-I) levels at the same time as insulin, in order to further enhance the anabolic effects of insulin and decrease, and actually reverse, the undesirable effects of insulin on fat metabolism.

The bottom line is that the key to maximizing body composition, and to increase performance in fat adapted athletes is to keep carbs low and energy and protein intake high for several hours or even more after exercise.

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