

Recovery Improves Performance

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How well you recover today will be a huge factor in how well you perform tomorrow.

Once you've finished training, you're still not finished with training! You must consider the recovery process as part of the training process.

It's important to start replenishing carbohydrates as soon as possible after exercise.

This is because the enzyme that controls glycogen storage, glycogen synthetase, is highly active immediately after exercise when muscle glycogen stores are low.

Several studies have shown that the most important fuel, the one that will determine exercise performance, is the level of glycogen in the muscles before exercise.

In simple terms, what you do in recovery today can greatly determine how you are able to perform tomorrow.

According to Dr. Ed Burke, studies from the University of Texas at Austin demonstrated that glycogen synthesis was highest when subjects were given carbohydrate immediately after exercise.

This suggests that glycogen synthesis from carbohydrate intake takes place most rapidly the first hour after exercise, but may occur up to 4-6 hours, less rapidly from hours 3-6 post.

The best glycogen replacement form is complex carbohydrates from glucose polymers (maltodextrins).

According to Dr. Michael Colgan, skiers should take 225 grams glucose polymers for 2-4 hours post-exercise.

Much more than that will add to body fat stores.

Other research studies suggest that on average 650 total grams carbohydrate is about all the carb volume that the body can regenerate into muscle glycogen stores each day.

The chart below shows the variations of this average figure based on body weight and length of training.

This includes everything pre, during, and post workout regarding carbohydrate consumption.

By taking in ample amounts of carbohydrate immediately after training and again within the next three hours, athletes can get a head start on re-fueling their muscles after workouts.

Additionally they will also tip the scales in the direction of protein creation and less towards protein catabolism.

In other words, ample carbohydrates are an essential factor in the rebuilding of muscle cells.

A possible reason for this, based on studies, is that the inflow of carbs may give the muscle cells the necessary fuel to begin the process of rebuilding.

Using the energy derived from carbohydrates, the muscles could absorb amino acids from the bloodstream and kick-start the process of creating new proteins.

Carbohydrates also boost the production and release of insulin from the pancreas.

A University of Texas study showed plasma insulin values were three to eight times higher after the workout for those ingesting carbohydrates, compared to the placebo.

Insulin is a noted anabolic (tissue-building) hormone, which has a profound positive impact on protein synthesis in muscles. Insulin also tends to suppress protein breakdown.

Insulin plays such a vital role in replenishing glycogen stores after exercise, it's important to focus on how to make it work optimally.

Studies show that protein, when combined with carbohydrates, almost doubles the insulin response.

This makes it seem logical to include some protein along with your complex carbohydrates. A ratio of 4:1 is a good recommendation; any more is believed to interfere with rehydration.

Supplements to aid in the recovery process should address replenishing basic vitamins, minerals and other nutrients depleted during exercise while also providing antioxidant protection.

Because athletes consume several hundred times more oxygen than sedentary people excess free radical production is almost a certainty.

Left unchecked, free radicals can damage cell membranes and suppress the immune system.

By devoting as much attention to your recovery as you do in the actual training you may just find your performance is greatly enhanced, something we're all striving to do!

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