# Optimal Post-Exercise Nutrition

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Silicon Valley fosters a fast-paced, high-achieving and multi-tasking culture. Many feel crunched for time and wish there were a couple more hours each day to fit everything in, including time for some weekly workout sessions. You decided to invest in a personal trainer to help you get the most out of the 3 to 4 hours you managed to carve out each week, but are you sabotaging that effort because of less than optimal nutrition timing and choices?

When you exercise, insulin levels in your blood drop and stress hormones like cortisol increase. These hormonal changes deplete stored glycogen in your muscle cells and liver and breakdown your muscle fibers, taking your body into a catabolic (i.e. breakdown) state. In this state, you may feel prolonged muscle soreness, lower energy and fatigue. In order to reap the benefits from your workout and be ready bring your A-game to the next one, it is critical to bring your body from catabolic to anabolic (i.e. buildup) state as quickly as possible. This is where the science of your post-exercise meal comes into play.

The extent of hormonal changes and muscle breakdown certainly varies with the intensity and duration of your workout. If you are just out for a leisurely stroll after dinner or some light weightlifting lasting less than 30 minutes, a post-exercise meal is not necessary. For higher intensity and longer duration workouts, research has shown that the best time to have your post-exercise meal is 30 to 45 minutes after your workout. This time frame, also called the metabolic window, allows your body to go from catabolic to anabolic state quickly so you can recover from your workout within a 4 to 10 hour window. Outside of this window, the effectiveness of the post-exercise recovery meal declines steadily and after 2 hours, the benefit will be minimal and you may be looking at a 24 to 36 hour recovery time!

A well-rounded fitness routine should incorporate both strength and cardio-respiratory training, and an optimal post-exercise meal should include both carbohydrates and protein. In a study that measures serum myoglobin, an indicator of muscle damage, it was found that the group who had carbohydrate plus protein in their post-exercise meal had the lowest myoglobin levels, compared with carbohydrate only group and the placebo group, indicating that muscle damage was minimized as well as repair and recovery time.

Now that we've got the timing and the macronutrient content down, let's take a look at how much and what to eat. If you are extremely active, it's recommended that you take in 20 to 25 grams of high quality protein and a 3:1 or 4:1 carbohydrate-to-protein ratio. However, if caloric intake or weight management is a concern for you, a 2:1 ratio of carbohydrate to protein will suffice.

Examples of foods that contain 25 to 30 grams of carbohydrates:

1 cup of juice or one large piece of fruit
1 bagel or 2 slices of bread
1 cup of most cereals
1 large baked potato
2 cups of milk
1 cup of rice
2/3 cup of dried beans

Examples of foods that contain 20-25 grams of protein:

3 eggs or 6 egg whites
2 cups of milk
¾ cup of cottage cheese
3 ounces of chicken, fish, pork or beef
3 ounces of cheese
6 tablespoons of peanut butter

Note that some choices are a lot more calorie dense than others. For example, if you choose to have 2 bagels and 6 tablespoons of peanut butter to make the 2:1 ratio, you're taking in over 1,200 calories versus 2 large apples and ¾ cup of cottage cheese will only set you back 350 calories. So, choose wisely based on your fitness goals.

To sum it up, if you are serious about getting results from your workouts, be sure to include post-exercise nutrition as part of your plan. So go ahead and grab

that piece of fruit and hardboiled egg or sports nutrition bar, compliments of our well-stocked pantry after your next workout. Work hard, eat well and get lean!

**Reference**

Wheeler, K.B., 2013. Optimal Recovery After Exercise: Nutrient Timing. IDEA Fitness Journal, 10(3).