



S P O R T M E D I C I N E & S C I E N C E
C O U N C I L O F M A N I T O B A

SIMPLE SPORT SCIENCE

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THE PRIORITIES FOR RECOVERY NUTRITION

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Recovery is a huge challenge for athletes who train two or more times a day, train for prolonged period of time, or compete in multiple events. When it comes to training, it is critical to plan the workload and the recovery time. However, in competition, this is not always an option. The goal at this point is to be as fit and healthy as possible.

To optimize the recovery from training, meals need to be timed so that they can be eaten immediately after a workout, or recovery snacks need to be slotted in to cover nutrient needs until the next meal can be consumed. The key components to the recovery process include:

- Refueling the muscle and liver glycogen stores (carbohydrates).
- Replacing fluid and electrolyte losses.
- Manufacturing new muscle protein, red blood cells and other cellular components.
- Allowing the immune system to handle damage and challenges caused by the exercise.

A proactive recovery means providing the body with all the nutrients it needs in a timely and practical matter. This will optimize the desired processes following each workout session.

REFUEL

The main fuel used by the body during moderate to high intensity exercise is muscle glycogen. If the athlete does not replace glycogen stores used up during the workout, performance in the next training session will be compromised. So, how do you refuel? Depending on the fuel cost of the training session, typically 6-10 g of carbohydrate per kg body weight each day is needed to ensure adequate glycogen store. Essentially, glycogen stores equates to your money in the bank. Exercise is you taking money out of your account. Eventually your bank account will have nothing in there unless you replace the carbohydrate you spent in that training session. In the immediate post-exercise period, athletes are encouraged to consume a carbohydrate rich meal or snack providing 1 to 1.2 g of carbohydrate per kg body weight within the first hour of finishing. The sooner, the better!

50 g Carbohydrate:

- 700 ml Sport Drink
- 500 ml fruit juice
- 2 cereal bars
- 1 cup thick veggie soup + large dinner roll
- 1 large muffin
- 2 pancakes + 2 T syrup

REHYDRATION

The research is in...the majority of athletes fail to adequately drink sufficient fluids to restore fluid balance. The impact of this is on the athlete's performance in subsequent training sessions that day. Athletes should aim to consume 150% of their estimated fluid losses in the 4-6 hours after exercise to cover the continued losses through sweating and urine losses. However, fluid replacement alone does not guarantee re-hydration! Unless there is replacement of electrolytes at the same time, consuming

large volumes of fluid results in large urine losses. Adding sodium via food or liquid sources will reduce urine losses and preserve thirst (enhancing voluntary intake), thereby allowing for fluid balance in the post exercise period. It is important to consider the time before the next session, the degree of fluid loss, taste preferences, daily calorie budget and personal recovery goal(s). An estimation as to how much fluid was lost in a workout, the athlete can weigh before and again after training. For every 0.5 kg lost, an approximate 16-24 ounces of fluid are required to re-hydrate.

16 oz or 500 ml of Chocolate milk is a great recovery drink as it includes fluid (16 oz), carbohydrate (60), protein (16 g) and more electrolytes than typical sports drinks!

MUSCLE REPAIR & BUILDING

High intensity and prolonged exercise leads to breakdown of muscle protein. During the recovery phase there is a gradual increase in the anabolic or building processes, which continues for at least 24 hours after exercise. Recent studies have shown that early intake after exercise (within the first hour) of essential amino acids from quality protein foods helps promote the increase in protein rebuilding. Food sources in meals or snacks after the “window of opportunity” further promote protein synthesis, but the rate at which it occurs is less.

The timing and amount of protein required to maximize the desired adaptation from the training stimulus is beneficial in both resistance and endurance athletes. Consuming 10-20g of high quality protein in the first hour after exercise plus the addition of carbohydrate will further enhance the training adaptation by reducing the degree of muscle protein breakdown.

~ 10 g Protein:

- 300 ml milk
- 200 g yogurt
- 2 eggs
- 120 g tofu
- ¾ cup cooked beans/lentils
- 40 g cooked lean meat
- 4 slices bread

50 g Carbohydrate Plus at least 10g Protein:

- 250 ml fruit smoothie
- Large bowl cereal with milk
- 500 ml milk
- 2 cereal bars and yogurt
- English muffin, peanut butter
- 250 ml fruit salad and 250 ml fruit flavoured yogurt

IMMUNE SYSTEM

The immune system is suppressed by intensive training which can be impacted during the hours following the workout. ***The most recent evidence points to carbohydrate as one of the most promising nutritional immune protectors - even compared to supplementing with vitamin C and E, glutamine, zinc and probiotics!*** Making sure carbohydrate stores are topped off before exercise and consuming carbohydrates during and after prolonged or high-intensity workouts, has been shown to reduce the disturbance of immune system markers by reducing the stress hormone response. Real food is always best, unless constrained by poor availability or lack of time to consume foods between events. Real food is typically easier on the budget too!

FINAL THOUGHTS...

For endurance and strength training the amount and timing appear to be the critical parts of the recovery nutrition plan for carbohydrate, protein and hydration. When it comes down to an athlete's optimal recovery one must consider the 4 Rs:

- ➡ Restore muscle glycogen
- ➡ Replace sweat losses
- ➡ Repair muscle damage
- ➡ Rest