

## POST-WORKOUT RECOVERY



For athletes training and competing full time, a solid nutrition protocol for recovery is vital to ensure optimal performance and training. Training volume, timing and intensity determines importance of the timeliness of your recovery. For hard daily training, research indicates timing proximity of recovery refueling and rehydrating to training is important to optimize recovery. For moderate training (daily single sessions) timing is also important however recovery can be successfully achieved easily within 24 hours following training.

Fluid and electrolyte loss, cell damage and inflammation, muscle breakdown and depletion of fuel stores (glycogen) are results of hard training. Recovery nutrition goals are to

correct these physiologic consequences and rehydrate and replace electrolytes, reinforce immune system, repair and regenerate muscle tissue, and replenish glycogen stores.

Muscle glycogen, the major source of carbohydrate in the body, is utilized most rapidly during the early stages of exercise and exponentially with exercise intensity. These glycogen stores are proportional to performance and endurance. Inadequate refueling afterward training can negatively impact performance, cause chronic fatigue, cramping and injury. Delaying carbohydrate intake after exercise reduces muscle glycogen storage and impairs recovery.

Fueling immediately after exercise starts replenishing glycogen at 2-3 times the normal rate. Immediately after training (within 20 minutes), when your muscles are most receptive to replacing the glycogen, eat carbohydrate rich food/drinks. This is particularly important for twice daily workouts or double events. High glycemic index carbohydrate foods enhance glycogen repletion. Too few carbohydrates delay and prevent glycogen recovery and too few total calories prevent adequate recovery and potential use of protein for fuel. Concentrate on carbohydrates in your recovery since only carbohydrate effectively gets stored as glycogen. Protein and fat do not get stored as glycogen. Too much protein also limits the amount of carbohydrate. Too many greasy, fatty foods slow down the carbohydrate availability for refueling.

Wholesome fruits, fruit juices and vegetables contain electrolytes, vitamins, minerals and fluid in addition to carbohydrate for recovery. Whole grains, breads and cereals, also concentrated sources of carbohydrate, offer vitamins and other essential nutrients needed for performance.

Having a strategy, planning and preparing in advance are vital to successful recovery. Identify and pack your recovery food/beverages the night before or prepare and organize them Sunday for the week. Determine a plan that will work to help you succeed in your recovery plan.

# Key Recovery Nutrients

**Carbohydrate**- 1 gram per kilogram/half a gram per pound body weight. Sources: fruit (fresh, dried, leathers), fruit smoothies, fruit bars, bread, crackers, pretzels, cereal bars, cereal, rice, quinoa, sweet potatoes/potatoes/yams, couscous, pasta, graham crackers, sherbet, etc.



**Protein**- 15-20grams high biological value from whey protein which contains leucine, the muscle protein synthesis trigger. Sources: greek yogurt, cheese, cottage cheese, sports bars, chocolate milk, certified whey protein powder, ie **BiPro** (USA Synchronized Swimming sponsor)

**Fluid**- Drink 24oz for every pound lost during training. Post workout beverage choice should be one which has more carbohydrate than sports drinks. Sources: juices, nectar, chocolate milk, smoothies. They provide more electrolytes including potassium as well as carbohydrate and vitamins which enhance recovery better than fluid replacement drinks which are more dilute and designed for use during exercise. If paired with a carbohydrate choice, sports drinks can work in a plan for recovery.



**Electrolytes**- if you crave salt you probably need it to replace losses. Salt loss can be easily replaced in a meal or snacks. Sprinkle a little on food or choose salty foods. Sources: soups, vegetable juices, salted pretzels, crackers, sports drinks, broth, pickles, baked potato/sweet potato chips.



- Helping with cell damage and inflammation are fruits, vegetables, whole grains, fish, nuts, olive oil, tart cherries and tart cherry juice.
- Championed as a recovery agent, chocolate milk provides fluid, electrolytes (sodium and potassium), carbohydrate and protein as whey protein. Athletes find it well tolerated, readily available, inexpensive and easily transportable.

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