



**Dear Dr. Hoo,**

**I'm training for a marathon and would like to know how to support myself nutritionally. Any ideas?**

Optimum nutritional habits are essential during your marathon training. Fundamental components include hydration status, carbohydrate and protein intake as well as electrolyte repletion, and joint health. To ensure muscle recovery post-exercise and to reduce your risk of injury, consider the following points:

Restore electrolytes and water (essential electrolytes being: sodium, potassium, magnesium) in the form of a sports re-hydration drink. Electrolyte repletion is essential as trace minerals promote post-exercise recovery while ingredients such as citric acid and malic acid are essential factors required for energy production. Drinking plenty of water before during and after your run will prevent dehydration as well as overheating, both of which may lead to nausea and lightheadedness.

Replenish glucose stores (glycogen) rapidly to promote muscle/protein rebuilding; research indicates a 4:1 carbohydrate to protein ratio optimizes glycogen replenishment and enhances aerobic endurance performance by 24%. Carbohydrate is the most efficient source of energy and endurance athletes maintain a high carbohydrate diet. While carbohydrate loading is great for providing energy for the race, include some protein to provide the building blocks for muscle.

Reduce muscle injury and oxidative stress with antioxidants. Antioxidants such as vitamin C are essential for both muscle energy and recovery as well as for immune support during physical stress and exercise. In general, endurance athletes are more susceptible to infections especially after heavy or prolonged exercise. Immunity can also be supported by ensuring adequate intake of amino acids like L-glutamine which is the primary source of fuel for the cells in the intestinal tract which make up about 60% of your immune system.

Last but certainly not least, support your musculoskeletal system which includes our bones, muscles, ligaments, tendons and cartilage. Without a healthy musculoskeletal system, endurance athletes are often prone to injury and or debilitating pain. Nourishing the various tissues with nutritional supplements like glucosamine and chondroitin sulfate as well as zinc, manganese and silica support the ability of these tissues to heal and prolong their vitality. In addition, maintaining a healthy diet with essential fatty acids like fish oil or flax seed oil can not only reduce inflammation but also provide the nourishment for cells to maintain their optimal health status.

In essence, maintaining a healthy balanced diet with adequate rest in between your runs will help prevent injury, reduce muscle recovery time and allow you to meet your marathon goals with confidence.

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