



**SANFORD SPORTS SCIENCE INSTITUTE**

# NUTRITION FOR THE INJURED ATHLETE

It is quite rare to find an athlete that has not been injured. Injuries can be minor, such as a scratch or bruise, or much more severe, such as a torn knee ligament (e.g., ACL) or broken leg. Serious injuries, those that limit limb or whole-body mobility (such as a fracture or ligament tear), will over-time cause a decrease in muscle growth and an increase in muscle protein loss. This, in turn, will lead to a reduction in strength and neuromuscular control. The consequent period of rehabilitation to regain performance often means that an athlete will also have to sit on the sidelines for a while.

Nutrition plays an important role in an athlete's health and performance. Key nutrients are utilized daily to assist muscle growth, as well as ongoing recovery and repair. But what happens when an athlete can no longer train or perform due to an injury? Is there something that can help an athlete to heal faster and get back in the game sooner? Yes! Nutrition is vital during the post-injury and rehabilitation period. The right diet, in concert with proper therapy and an appropriate re-training regimen, can get you back in the game stronger and faster!

## Three healing processes occur after an injury:

- Inflammation - Occurs immediately and continues up to 5 days post-injury.
- Proliferation - Occurs at 5 days through 3 weeks post-injury. During this phase, there is a tissue rebuilding and repairing process.
- Maturation - Occurs from 3 weeks to 2 years post-injury (depending on severity of injury). During this phase of recovery, considerable remodeling occurs to build a stronger tissue structure.

## Based on these healing processes, we can divide nutrition recommendations into two phases:

- Injury and Immobilization – (Inflammation and proliferation of healing) Most of the muscle loss occurs during this phase.
- Rehabilitation – (Maturation of healing) Exercise is re-introduced in the form of therapy and athletes are advanced to full practice when they are cleared by a trained medical staff.

## NUTRITION RECOMMENDATIONS FOR THE INJURY AND IMMOBILIZATION PHASE

- Energy (calories): Energy needs are slightly higher to assist with the healing process. If the injury is severe, resting energy expenditure can increase by 20%. When using crutches, energy expenditure can be 2-3 times higher compared to normal walking. Sometimes - a small weight gain is beneficial - because, without enough calories, muscle growth is limited and muscle loss can be greater.
- Protein: During the immobilization phase there is a tendency to lose muscle mass, which then causes an athlete to lose strength. Protein helps athletes to build and repair muscle; therefore, the need for protein is higher. The precise number of grams/Kg(lb) needed each day is very individual. But, it is safe to assume that it's more than the dietary reference intake (DRI) of 0.8 grams/kg (0.35 grams/lb). While research suggests that the protein need is close to 1-1.2 grams/kg (0.45-0.55 grams/lb), since the majority of athletes eat more protein than they need, sufficient protein intake is typically not an issue.
- Carbohydrate: This macronutrient is an athlete's main source of energy for physical activity. However, following an injury that limits activity, carbohydrate intake can be slightly lowered to prevent excessive weight gain. Sports beverages, gels, sodas and concentrated sweets are highly discouraged during this time.
- Fat: Fats are essential for healing, and the type of fat is critical. Omega 3's (found mainly in fatty fish such as salmon, mackerel or tuna) help to increase muscle protein synthesis (muscle building), as well as play a role with recovery and decreasing inflammation.
- Vitamins and minerals:
  - Vitamin C - Assists with wound healing, tissue repair and optimal immune function. Foods rich in vitamin C include: citrus fruit, strawberries, red bell peppers, watermelon, etc.
  - Vitamin A - Assists with cell growth and development, as well as immune function. Examples of foods rich in vitamin A include: sweet potatoes, tomatoes, carrots, papaya (i.e., orange/red fruits and vegetables).



- Zinc - Assists with wound healing, protein synthesis and immune function. Good choices of foods for getting enough zinc include: beef, almonds, seeds (e.g., sunflower, flax, pumpkin, etc.) and seafood.
- Vitamin D - Important for bone health and immune function. Vitamin D is the sun vitamin - Get 5-30 minutes of sun exposure between 10 a.m. - 3 p.m. (time is based on skin color the darker the skin the more time you need) or it can be found in dairy products, fatty fish or fortified foods.
- Fluids: Proper hydration supports the delivery of nutrients to all organs and tissues. Moreover, it helps support joints and soft tissues. Athletes should be drinking approximately half of their body weight in ounces (preferably water) each day — and more if they sweat more than this.

## NUTRITION RECOMMENDATIONS FOR THE REHABILITATION PHASE

The emphasis in this phase should be on getting enough energy and protein, as well as healthy fats and plenty of vegetables and fruits.

- Energy: Energy needs increase to support strength training. Exact needs are based on frequency, duration and intensity of daily rehabilitation, weight status, goals and athlete build.
- Protein: Protein needs increase to support tissue recovery and repair, as well as muscle growth. Between 1.2-1.7 grams/kg (0.55-0.77 grams/lb) is recommended.

- Carbohydrates: Depending on the rehabilitation regimen's intensity and duration, along with body weight goals, carbohydrate intake may need to be increased during this phase.
- Anti-inflammatories: As with the previous phase of recovery, omega 3's and vitamins and minerals found in vegetables and fruits help with healing and immune function.
- Fluids: Same as in previous phase of recovery.

## FOODS/BEVERAGES THAT CAN INTERFERE WITH HEALING OPTIMALLY

Food can not only assist athletes in healing faster, it can also interfere with healing optimally. Especially during the post-injury healing and rehabilitation period, athletes should avoid:

- Fried/ fatty foods (e.g., pizza, fried chicken, French fries, etc.)
- Added sugars and concentrated sweets (e.g., soda, candy, ice-cream, etc.)
- Alcohol - it inhibits muscle protein synthesis and it increases muscle loss.
- Less than optimal sleep (athletes should sleep 8-10 hours/day)

Remember, the right nutrition helps to hasten post-injury recovery to get athletes back into the game sooner and healthier! See your Sport Dietitian to help you recover faster and better!

“LET FOOD BE THY MEDICINE”.

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