PERFORMANCE

NUTRITION



Introduction

You may think of training as simply just hitting the gym or practice, but there is actually a lot more to training than meets the eye. Not only is it regular gym sessions, attending practices, and preparing the mind and body on an external level, but your nutrition also plays a major role in how you perform as an athlete.

If you're physical training is on point, but you're not getting the results you want, it may be time to take a look at your eating habits.

In this guide, we're going to cover the basics of performance nutrition to help you navigate through all the information available. We'll cover:

- Meal breakdown
  - Carbs
  - Protein
  - Fat
- Best food choices for athletic performance (and which you should avoid)
- Proper hydration

Your Meal Breakdown

In order to perform your best, both in and out of the gym, it's important that you meet your energy requirements. Failing to consume an adequate amount of calories can result in muscle loss, decreased performance, delayed recovery, imbalanced hormones, fatigue, injury, and illness — none of which are ideal for an athlete.

Your daily caloric needs will vary depending on several factors including your age, height, weight, body composition, daily activity levels, and your training program. As a general estimate, we can use the method below, which uses body weight and your activity factor to determine your total daily energy expenditure. Alternatively, completing a body composition test like the BodPod or hydrostatic measuring can be a more accurate way to determine your needs.

Weight (lbs) x 10 = RMR (resting metabolic rate)
RMR x activity factor (see chart below) = **TEE** (total energy expenditure)

PHYSICAL ACTIVITY FACTORS FOR VARIOUS ACTIVITY LEVELS

Very light	Seated and standing activities; working at a desk, cooking, driving; no vigorous activity	1.2 - 1.3
Low active	Sedentary activity (above) + 30 minutes of moderate activity per day	1.5 - 1.6
Active	Low active + additional 3 hours of activity; walking 4.5 mph, bicycling 10-12 mph	1.6 - 1.7
Heavy	Planned vigorous activity, physical labour, full-time athletes	1.9 - 2.1

Your TEE indicates the amount of energy you expend on a daily basis, i.e. an estimated number of calories you must consume daily to maintain. Depending on your training goals, this number may increase or decrease.

Carbohydrates — #1 Fuel Source

Carbohydrates are simple molecules comprised of carbon, hydrogen, and oxygen atoms, and are your bodies preferred source of fuel. Consuming a diet moderately high in carbohydrates is important for athletes because it allows for better endurance and high-intensity performance, as extra glycogen, the storage form of glucose, is stored in muscle cells and the liver and can easily be tapped into for a rapid source of energy.

It is well known that athletes must replenish glycogen stores in the body after intense exercise to maintain proper performance. This is especially important during periods of intense training or competitions, where glycogen stores are often depleted. So why carbohydrates? Compared to protein and fat, carbohydrates are more rapidly broken down and metabolized by the body to provide a quick source of energy.

As a general rule, it is recommended to tailor your carbohydrate intake to your activity levels. If there are days where your training is more intense, increase your carb load, whereas if you're taking a rest day, it may be good to decrease it slightly.

Activity Level	Recommended Carbohydrate Intake
Very light training (low intensity)	3-5g/kg of bodyweight daily
Moderate intensity training (~1 hour / day)	5-7g/kg of bodyweight daily
Moderate-high intensity training (1-3h daily)	7-12g/kg of bodyweight daily
Very high intensity training (>4h daily)	10-12g/kg of bodyweight daily

So why are carbs important for your athletic performance?

1. **Energy** — As we said, carbohydrates are quickly metabolized in the body to form glucose, the body's preferred source of fuel. They are also rapidly absorbed making for a good source of energy. Having a diet that includes carbs is essential to improving your athletic performance and delaying fatigue by constantly replenishing glycogen (energy) stores after being depleted during physical activity.

2. **Muscle growth** — Without sufficient levels of stored glucose to use as fuel, the body will turn to other sources to obtain it, namely protein and fat. In order to maintain muscle mass, it's crucial to supply the body with enough carbs that it will not tap into other sources. This will help to maintain muscle tissue and prevent breakdown.

Protein — The Muscle Builder

Amino acids are the basis of protein molecules, which form the building blocks for every muscle and tissue in the body. As an athlete, muscles are extremely important, and maintaining muscle strength is crucial to your performance. Protein is needed for the growth and formation of new body tissues, as well as tissue repair and fuel for energy production. Besides this, protein is also required for enzyme production, fluid balance within tissues, nutrient transportation, carrying oxygen, and regulating blood clotting.

Depending on the type of training you do, your protein requirements may shift.

Endurance Athletes — Prolonged and intense endurance exercises increase your protein requirement. When you train for long durations, protein breakdown increases, which means your intake also needs to increase to compensate. When muscle glycogen is depleted (generally after 60-90 minutes of activity), branched chain amino acids can jump in to provide energy, which then must be replaced. Increased intake is also needed to help with repair and recovery of muscles.

Strength and Power Athletes — Compared with endurance athletes, strength and power athletes have additional protein requirements. After resistance training, the rate of protein breakdown and synthesis increases, which means that protein intake must also increase to help stimulate muscle growth.

As a rule, protein requirements are as follows to maximize performance:

Type of Athlete	Daily Protein Requirements / kg bodyweight
Endurance athlete - moderate to heavy training	1.2 - 1.4
Strength and power athlete	1.4 - 1.8
Athlete on fat-loss program	1.6 - 2.0
Athlete on weight-gain program	1.8 - 2.0

Fat — The Stabilizer

Often times, sports nutrition focuses on protein and carbs as the main components of the diet but ensuring you're consuming enough healthy fats is equally important to your athletic performance. Fat makes up an important component of your cell membranes, brain tissue, nerves, bone marrow, and acts as protection for your organs.

Fat also provides many essential nutrients that are key to keeping your body in top shape. Vitamins A, D, E, and K all rely on fats for absorption in the body. Fat also acts as an important source of energy when carbohydrate levels are depleted.

For athletic performance, you'll want to keep in mind that fat is useful for a few reasons:

1. **Caloric and energy value** — Whereas carbohydrates and protein both supply the body with 4 calories per gram, fats supply more than double. Caloric intake is important when you're in training mode, and fats can be a good way to get in those extra calories.

Additionally, fats can be used as an energy source during longer duration endurance activities. It's suggested that up to 75% or energy demand is met by fat for endurance athletes.

2. **Hormone production** — Hormones control nearly every aspect of your body function, from growth and development and reproduction, to stress response and red blood cell production. But hormones also play a function in your athletic performance. Steroid hormones, which are derived from fatty acids, play a crucial role in how the body responds to energy demands and maintenance of mineral balance. Sex hormones, which are also derived from fat, drive muscle growth, which is critical when you're an athlete. So adequate amounts of fat in the diet is key to optimizing performance and recovery.

3. **Inflammation** — While it's true that certain types of fats can cause inflammation, others types can help inflammation subside. Exercise tends to cause damage to the muscles, which is beneficial for muscle strength and endurance. However, this damage also causes muscle inflammation, and inflamed muscles decrease range of motion and limit strength. Ensuring sufficient intake of anti-inflammatory omega-3 fatty acids helps to regulate the amount of inflammation in the body.

Additionally, fat also helps to:

- Improve delivery of oxygen and nutrients to cells
- Enhance aerobic metabolism
- Increase energy levels and stamina
- Improve release of growth hormone
- Increase exercise duration and intensity

For athletes, it's recommended that fats comprise approximately 20-35% of your diet, coming from healthy sources like avocados, cold-pressed oils (olive, coconut, avocado), nuts and seeds, and fatty cuts of meat.

What Should I Eat?

We know that fuelling your body with everything is needs can be difficult, so this section is designed to help guide you through what you should be eating to increase your athletic performance. With all the conflicting information available regarding sports nutrition, we're going to outline some of your best and worst choices when it comes to eating. Keep in mind, everybody will react to foods differently — some will work for you, while others will not — so experiment with different options and find what makes you feel and perform best.

Eat This

In this category are foods that you can consume on a regular basis. They are full of nutrients that will help build a strong body and improve your athletic performance and recovery.

Carbohydrates

Grains — It's best to consume minimally process grains in the form of rice, quinoa, oats, barley, spelt, etc. Try to avoid consuming wheat based products, as they are often highly processed and refined.

Vegetables — Most vegetables are not a significant source of carbs but are part of a balanced and healthy diet. However, root vegetable do provide a good source of both carbohydrates and fibre. Some good choices include sweet potatoes, yams, white/yellow/red potatoes, squash (all varieties), rutabaga, turnip, and carrots.

Fruits — Most fruits are good to consume on a regular basis. However, try to avoid consuming high sugar and high glycemic fruits on a regular basis, as they impact your blood sugar. This includes fruits like mango, pineapple, melons, cherries, grapes, and any dried or concentrated fruit source. Good options include bananas, apples, oranges, berries, and pears.

[Design: in a bubble of some sort] Glycemic Index — Describes the effect that different foods have on blood sugar levels. The higher the glycemic index of a food, the fast the rise in blood sugar.

Beans and legumes — Also a significant source of fibre, beans provide an adequate source of carbohydrates. In order to get maximum benefit from them, combine with a grain to provide a complete protein. For example, white or brown rice and black beans.

Proteins

Unprocessed meats are you best choices for proteins, as they supply all the essential amino acids needed to form proteins within the body. However, as some people follow a vegetarian or vegan diet, minimally processed meat alternatives are suitable. This includes:

- Poultry (chicken, turkey, duck)
- Beef
- Pork
- Fish (salmon, sardines, mackerel, tuna, cod, haddock, etc.)
- Shellfish (shrimp, crab, lobster, oysters, mussels, clams)
- Wild game (venison, boar, elk)
- Eggs
- Tofu and tempeh (always opt for organic and GMO when it comes to soy products)

Fats

Fats can sometimes be a tricky area to navigate when it comes to choosing healthy ones. Omega-3, omega-6, saturated, unsaturated — there's a lot to consider. It's best to stick to the purest fats available to limit consumption of any unhealthy or rancid fats and oils. Your best option is omega-3 fatty acids. Saturated fats are a highly debated topic in the nutrition world, but consuming saturated fats from healthy sources like coconut and wild, organic meats can be part of a healthy diet.

Nuts and seeds — Nuts and seeds provide a great source of healthy fats, as well as an adequate source of protein. Walnuts, pecans, almonds, peanuts, cashews, sunflower seeds, pumpkin seeds, hemp seeds, and chia seeds are all great choices.

Cold-pressed oils — To avoid oxidation and rancidity of oils that contributes to free-radical formation in the body, always opt for cold-pressed oils, and try to avoid seed oils. Avocado, coconut, olive oil are good options.

Butter and ghee — If you're sensitive to dairy, you may want to avoid these.

Avocados

Olives

Coconut



Avoid That

1. **Processed foods** — If there is anything on the label that you're unsure of what it is and can't pronounce it, put it back. Processed foods are full of preservatives, additives, and other fillers that don't contribute positively to your health. As a rule of thumb, stick to the outside of grocery stores when buying food; the majority of processed foods are in the middle aisles.

2. **Refined sugars** — Not only are they empty calories, but refined sugars harm the body more than they do good. This includes things like baked goods, sodas and fruit juices, high sugar cereals, and the like. Excess sugar is stored in the body at fat, leading to weight gain and a whole slew of other health issues.

3. **Low-fat products** — Low-fat products are usually laden with additives and fillers to replace the fat, so avoid these. Opt for the full-fat versions to get all the nutrients naturally present in the food.

4. **Artificial sweeteners** — Many athletes take sport supplement drinks to keep them going, but more often than not, they're filled with additives and artificial sweeteners. Artificial sweeteners have been linked to various diseases, as well as weight gain, blood sugar imbalances, and gut bacteria disturbances, which can compromise the immune system.

5. **Trans fats** — Consuming trans fats is a big no-no. Not only are they completely unnatural, they are responsible for increasing the risk of developing cardiovascular disease. Trans fats are naturally found in some dairy products like butter, which is okay to consume, but avoid things like baked goods, margarine, ready to pop popcorn, fried foods, and frozen pizza.

Hydration

We all know that hydrating is important, but sometimes it can be challenging to get all the fluid you need. As an athlete, staying hydrated is crucial to how you train and perform.

How much fluid you lose will depend on a few factors:

1. Exercise intensity
2. Exercise duration
3. Environmental temperature
4. Individual body chemistry

To maintain proper physical performance, it's important to hydrate before, during, and after physical activity. Water, for the most part, is fine to consume to replace lost fluid, but it may be beneficial to include a sports drink containing electrolytes to replace those that are lost during vigorous activity.

It is recommended that sedentary adults consume a minimum of 2.5 - 3L of water per day, with needs increasing as physical activity levels increase. For every 20 minutes of activity, 6 - 12 oz. of fluid should be consumed, and for activity exceeding 60 minutes, consider consuming a sports drink with electrolytes and small amounts of carbohydrates to help replace muscle glycogen stores.

So why is it important to stay hydrated? Here's what happens when you don't:

- Decreased blood volume
- Decreased performance
- Decreased sweat rate
- Increased core temperature
- Increased heart rate
- Sodium and water retention
- Decreased cardiac output
- Decreased blood flow to the skin
- Increased use of muscle glycogen

Your body can survive without food for an extended period of time, but it cannot survive without water. A key part of your training routine should focus on adequate fluid consumption in order to feel and perform at your best.

Conclusion

Eating to achieve maximum performance can sometimes be difficult, but if you know what foods you should be working with, it can make it a little bit simpler. Always remember that your body recognizes whole, unprocessed foods best, so consuming those will provide your body with adequate fuel to improve performance and recovery.