

# LCS SPORTS PERFORMANCE

*Athletic Nutrition and Wellness Manual*

## MAXIMIZING YOUR PERFORMANCE

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This guide is designed to help Liberty athletes maximize their God given abilities by improving their nutrition, sleep, and wellness habits



Welcome to the LCS Sports Performance Nutrition and Wellness Manual. This manual is designed to provide athletes and their parents with information on how to best take care of their bodies while competing as a Liberty Christian Athlete.

In this manual we will cover a variety of nutrition topics including basic nutrition guidelines, how to calculate proper calorie loads, how to time calorie intake around competition and practice, along with many other topics. All of these are designed to help athletes perform and recover at their absolute best.

We will also be going over proper rest and recovery methods, the importance of sleep and hydration, along with nutrient timing.

As a strength and performance staff we believe that no matter how well we run our programs at school, only through a partnership with parents can our athletes truly reach their potential. Proper nutrition and recovery are the keys that unlock an athletes full ability.

Although this manual will cover a fairly extensive number of topics in detail, you are always welcome to reach out to us as a sports performance staff to receive more information.

## **SECTION GUIDE**

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# CARBOHYDRATES

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Carbohydrates are your body's main source of fuel and energy. Carbohydrates, commonly referred to as "carbs", include a wide variety of foods including breads, pastas, starches, beans, rice, corn, and potatoes. Carbs are an extremely important macronutrient for athletes because they give athletes the energy they need to compete at their best and assist with the recovery process after exercise.

## Complex vs Simple

Carbohydrates generally fall into two categories: simple and complex.

Simple carbs are going to be more quickly digested by your body and give your body more immediate energy. If taken during exercise, this can give you an immediate boost of energy. If consumed outside of exercise, an excess amount of simple carbs can cause the body to produce extra fat tissue.

Complex Carbs are going to take longer to digest and are more likely to be stored in your body as **glycogen**. Think of the glycogen in your body like a battery that your body can store energy for later use, such as during a race or a game. Because of this, athletes often do something called a **carb load** 24-48 hours before an athletic event in order to maximize the amount of glycogen stored in their bodies. This gives them more energy for a longer period of time during an athletic event than they might have otherwise.

Simple Carbs	Complex Carbs
White Bread, Pasta, Pastries, Cookies, Cakes, and other sweets.	Whole grain breads, bagels, pastas, and oats.
High sugar content drinks such as cokes, Gatorade, fruit juices, Starbucks, etc	Starchy vegetables such as potatoes, carrots, and beets
Sweet fruits such as strawberries, blueberries, bananas, watermelon etc.	Rice, beans, peas, and other legumes.

## Carb Loading Parameters

To properly carb load, in the 24-48 hours leading up to a game, race, or match athletes should increase their carb intake to 2.3g-5.5g per pound of bodyweight. During this time an athlete may

decrease their fat intake in order to keep their calories at an appropriate level. Athletes should increase their water and electrolyte intake during this time.

### **Daily Intake**

Total daily intake of carbohydrates should be anywhere from 40-60% of your daily calories. This should adjust based on how much activity you're doing, and whether you are trying to gain or lose weight. The majority of carbohydrate intake should come from complex carbohydrates. It can also be a good practice to eat the majority of your carbs earlier in the day so your body will burn them off rather than store them as fat.

## **PROTEIN**

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Proteins can be thought of as the building blocks of your body. Your muscle, hair, skin, nails, and other tissues are all made of proteins. Consuming an adequate amount of protein allows your body to maintain and build these tissues. This means that for athletes, the task of building muscle and repairing damage(soreness) requires athletes get an increased amount of protein. Proteins are made up of amino acids, which your body then uses to repair and build tissue.

### **Complete VS Incomplete**

Protein sources can be divided into two categories: complete and incomplete

Complete proteins are found in meats, eggs, and dairy, and contain the 9 essential amino acids. These amino acids are considered essential because your body cannot produce them on its own and must get them from diet. Complete proteins are your best source of protein when it comes to building muscle and recovering from exercise.

Incomplete proteins are found in plants and contain only a portion of the 9 essential amino acids. This means that for vegans and vegetarians, they must eat an appropriate complementary balance of vegetables in order to get all 9 of the amino acids their bodies need.

### **Protein Requirements**

Protein needs change based on the current goals and need of the individual athlete, but in general an athlete needs to consume between 65%-100% of your body weight in grams per

day(110-180g protein for a 180 lb athlete). When in doubt, aim on the high end of protein intake because there is little danger in consuming extra protein.

### **Quality Protein Sources**

**Eggs-** Protein content: 35% of calories in a whole egg. 1 large egg has 6 grams of protein, with 78 calories.

**Chicken Breast-** Protein content: 80% of calories. 1 roasted chicken breast without skin contains 53 grams, with only 284 calories.

**Lean Beef and Steak-** Protein content: 53% of calories. One 3-ounce (85 g) serving of cooked beef with 10% fat contains 22 grams of protein, with 184 calories.

**Tuna-** Protein content: 94% of calories, in tuna canned in water. A cup (154 g) contains 39 grams of protein, with only 179 calories.

**Salmon-** Protein content: Salmon is 46% protein, with 19 grams per 3-ounce (85 g) serving and only 175 calories.

**Milk-** Protein content: 21% of calories. 1 cup of whole milk contains 8 grams of protein, with 149 calories.

**Greek Yogurt-** Protein content: Non-fat Greek yogurt has protein at 48% of calories. One 6-ounce (170-gram) container has 17 grams of protein, with only 100 calories.

**Almonds-** Protein content: 13% of calories. 6 grams per ounce (28 g), with 161 calories.

**Lentils-** Protein content: 27% of calories. 1 cup (198 g) of boiled lentils contains 18 grams, with 230 calories.

**Peanuts-** Protein content: 16% of calories. One ounce (28 g) has 7 grams, with 159 calories.

### **Protein Shakes**

Protein shakes should not be your sole or primary source of protein, but can be a great supplement to protein intake from your diet. Protein shakes are most effective post workout, because your body digests liquids faster than solids which allows the protein to be delivered more quickly.

# FATS

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Fats are the most nutrient dense macronutrient that our body uses and have more than 2x the calories per gram that carbs and proteins do. Fats are incredibly important for many biological processes including brain function, hormonal function, heart health, and vitamin absorption. While fats are good and necessary, an excess of fat intake can lead to weight gain and heart issues.

## Healthy vs Unhealthy Fats

Trans fats and saturated fats are generally considered unhealthy fats. Eating these in excess will cause you to gain unhealthy weight, slow your performance down, and hurt your cardiovascular health in the long run. Fatty red meats, full fat dairy products and fried foods are common unhealthy fats and should be eaten in limited quantity.

Monounsaturated and polyunsaturated fats are considered healthy fats. These are necessary for many bodily functions, including hormone production, brain function, and heart health. Healthy oils(olive, peanut, etc.), nuts, avocados, fish, and seeds are sources of healthy monounsaturated fat.

## Omega 3's and Omega 6's

Omega 3s and Omega 6s are important fatty acids because our bodies cannot produce them on our own. They are used by our bodies for many processes including immune response and anti-inflammation. Most of us ingest plenty(too much) Omega 6 fat in our diet, but not nearly enough Omega 3 fat. High omega 3 intake is associated with lower risk of heart health, along with many other health benefits.

Omega 3's are found mostly in fatty fish such as salmon, tuna, or mackerel. If your diet is low in seafood, consider taking an Omega 3 fish oil supplement.

## **Fat Timing**

Although you need adequate healthy fat intake in your diet, high fat foods are a poor choice prior to competition. Fat is the slowest digesting macronutrient. This means that it has a high possibility of upsetting your stomach, and is a poor energy source for competition and practice. Consider leaving your healthy fats for your evening meal especially if you know fat heavy foods upset your stomach before practice and games.

# **CALORIES**

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A calorie is the unit of measurement typically used to describe the energy content in food. It is defined as the amount of energy needed to raise 1g of water by 1 degree Celsius. Calories are important to athletes because it helps measure the amount of energy your body is taking in and spending.

## **Why Calories are Important**

Your body is a tremendously complicated machine. Many factors impact your performance, body composition, and weight gain/loss. The three biggest factors that affect these things are total calories consumed, the quality of those calories, and when you consume them. The quality of your food and when you eat it are both important factors, but total calories will always be the most important factor when trying to accomplish your goals

## **Counting Calories**

Although counting calories can be time consuming and isn't always necessary to properly fuel the body, learning how to count your calories can be a great tool for dialing in your nutrition as an athlete. Every body needs different daily calorie intake. Age, gender, height, weight, activity level, and genetics all play a role in factoring how many calories you need per day.

## **Basal Metabolic Rate**

Your basal metabolic rate(BMR) is the estimate of how many calories you personally need to maintain your current weight. It factors in height, weight, age, gender, and activity level. If you would like to find your BMR in order to get a good guesstimate on how many calories you need in a day, go to:

<https://www.thecalculatorsite.com/health/bmr-calculator.php>

and fill in the information.

### Safely Lose or Gain Weight

To safely gain or lose weight, find your Basal Metabolic Rate(BMR) and then increase or decrease your calorie load by 10%. So if I wanted to safely gain weight and my BMR was 3000 Calories, I would aim for 3,300 calories per day. I would then track my weight daily in the morning. If after 2 weeks I noticed my weight steadily going up, then I want to stay around 3300 calories. If my weight did not increase, then I would slowly add calories to the plan, making 5% increases.

Your goal when gaining or losing weight should always be 1 pound per week. Any more than that and you are endangering your health!





## Helpful Phone Apps

When counting calories, certain phone apps can be extremely helpful with the process. Apps like “My Fitness Pal” and “My Macros” can help you estimate the calories on your plate, can read labels and barcodes to automatically put in prepackaged food, have fast food and restaurant calories pre loaded, and can track your total calories throughout the day and week.



“Eat 2 Win” is another useful app that can help calculate your BMR and gives you healthy food options that fit within your goal.

## VITAMINS & MINERALS

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Vitamins and Minerals are organic(vitamins) and inorganic(minerals) compounds which are essential for bodily functions, yet cannot be produced by the body on its own. These compounds are used in everything from brain function to hormone production to heart health. Eating a wide variety of fruits, vegetables, and meats ensures you get the full array of vitamins and minerals your body needs!

### Vitamins Vs Minerals

Vitamins are organic compounds your body needs to survive but cannot produce on its own. There are currently 13 known vitamins that your body requires and they include vitamin A, D, E, K, B1, B2, B3, B6, B12, Pantothenic Acid, B7, Folate, and Vitamin C.

Minerals are inorganic compounds your body needs to survive but cannot produce on its own. There are currently 15 minerals your body requires and they include: Calcium, Phosphorus, Magnesium, Sodium, Potassium, Chloride, Sulfur, Iron, Manganese, Copper, Iodine, Zinc, Cobalt, Fluoride, and Selenium.

### **How to ensure you're getting your vitamins and minerals**

The most basic advice for getting your vitamins and minerals is to eat lots of color on your plate. Eating wide variety of green and colorful fruits and vegetables will give you most of the nutrients you need. In addition you'll need a variety of meat and egg sources to ensure you get your Iron and B12. Multivitamins and supplements can help with serious deficiencies but food should always be your go to when fueling your body.

### **Common Vitamin and Mineral Deficiencies in Athletes**

**Iron-** The most common mineral deficiency is iron, and it occurs most often in females. Iron is essential for transporting oxygen throughout the body and a lack of iron can lead to tiredness, poor sports performance, and even anemia. Iron can be found in red meats, organ meat, spinach, beans, and broccoli.

**Vitamin D-** Vitamin D is essential for many bodily functions including immune health and bone strength. Up to 42% of the U.S. may be deficient in vitamin D. Vitamin D can be found in fish, eggs, and by spending time in the sunlight(your skin produces vitamin D when exposed to sunlight).

**Vitamin B12-** B12 is used in blood formation, brain and nerve function, along with many other bodily processes. It can only be found in animal products including meats, fish, eggs, and dairy. Vegetarians should consider supplementation.

**Calcium-** Calcium is essential for bone strength and muscle contraction. A lack of calcium in the diet can lead to cramping and osteoporosis. Less than 22% of teenagers get the recommended intake of calcium. Athletes should be getting lots of dairy and dark green vegetables to enhance their calcium intake.

**Magnesium-** Less than 50% of the population gets the recommended amount of magnesium in their diet, and magnesium plays an essential role in bone and teeth structure, hormone production, and over 300 other enzyme reactions. Low magnesium levels can also lead to insulin resistance and high blood pressure long term. Whole grains, nuts, and leafy green vegetables all are high in magnesium.

## HYDRATION

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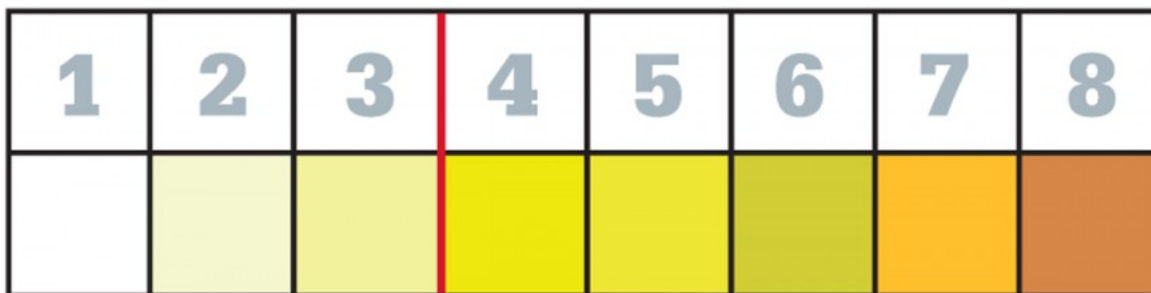
Hydration is the amount of water you currently have in your body. The human body is 60% water with muscle tissue being composed of up to 80% water. Low hydration levels negatively affect performance, cognitive function, and can be an extreme danger to your health.

Athletes should be consistently intaking fluids throughout the day & evening in order to prepare their bodies for the demands of training & competition. When training outdoors, fluid intake should be even higher. Although every athletes' specific hydration needs are different, an easy way to identify whether you are properly hydrated or not is through the color of urine. Light to clear urine shows proper levels of hydration while yellow to brown shows dehydration.

### Are You Properly Hydrated?

If your urine matches the colors 1, 2, or 3, you are properly hydrated. Continue to consume fluids at the recommended amounts. If your urine matches the colors past the **RED** line, you are **DEHYDRATED** and at risk for cramping and/or a heat illness!

**You Need  
to Drink  
More Water  
ASAP!**



**Electrolytes-** Electrolytes are minerals that help with muscular function in conjunction with water. Without electrolytes, your body cannot properly use water to replenish its energy systems leading to increased risk of cramping & further dehydration. Important electrolytes to include in your hydration toolbelt are:

- Sodium
- Magnesium
- Calcium
- Potassium
- Chloride

These can be found in sports drinks such as Gatorade, Pedialyte, & Body Armor, but are more abundantly found in food sources.

## NUTRIENT TIMING & FUELING FOR COMPETITION

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Nutrient timing is essential when trying to maximize your athletic potential. Proper nutrient timing improves performance, reduces injury, and maximizes muscle growth. Here are some simple guidelines to keep in mind when fueling and refueling before and after competition.

**Before Training/Competition-** Prior to training it is important to fuel with a combination of complex & simple carbs, along with protein. The simple carbs will give you quick energy, the complex will sustain you later into training, and the protein will jumpstart the muscle building process. The amount can vary based on nutrition needs but a good average intake is 20g of protein+ 40g of carbs.

Never train on an empty stomach. This not only hurts performance but can lead to nausea, vomiting, & passing out. If training happens early in the morning & you are not used to eating, stick to low fat high carb meals because the higher fat content is more likely to cause indigestion.

**During Training/Competition-** During prolonged training or competition it is best to take in simple carbs, fluids, & electrolytes. Your body needs quick energy and simple carbs will deliver this energy the fastest. Many companies make drinks & snacks that can deliver quick carbohydrates to athletes with very little stomach issues.

**After Training/Competition-** After training & competition (up to 1 hour) it is time to rehydrate, refuel, & repair! This means an adequate amount of protein (at least 20g) & carbs (40-60g) that will give the body the building blocks it needs to repair & build muscle, along with the energy it needs to support that process and restore glycogen that has been depleted. Hydration is also important at this time and allows the other processes to function along with preparing the body for future training & competition.

## **SLEEP**

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Sleep is your body's most effective tool for recovery, muscle building, and mental preparation. Adequate sleep can enhance your mental performance, increase strength and muscle gains, and reduce the risk of injury. A lack of sleep hurts your performance and causes your body to breakdown over time.

### **How much sleep do I need?**

Teenagers in general but especially athletes need 9-10 hours per night to optimize growth and performance. Studies show that less than 8 hours of sleep can increase your risk of injury by as much as 60%! Sleep also enhances performance in the classroom, and helps your body's immune system function. The average student gets less than 6.5 hours of sleep per night! At this level, your body is suffering dramatically from exhaustion and you will see a negative impact in your athletic AND academic performance.

### **Dos and Don'ts**

DO- Consume protein before sleep to enhance muscle recovery and growth.

DO- Find a routine. A consistent bed time routine & time allows your body to fall into a rhythm, and allows for faster and deeper sleep.

DON'T- Stimulate your mind with electronics before bed. Blue light from phones and TV's disrupts your body's ability to fall asleep. Avoid caffeine after 4pm.

Do- Include relaxing activities such as meditation, prayer, stretching, and belly breathing before bed. As you drop your heart rate and turn off your CNS, your body will fall into sleep faster.

Do- Keep your room dark and cold (between 60-68 degrees). Studies show this encourages healthy sleep.