1AND1 LIFE

Nutrition 101

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Table of Contents

Good Nutrition is for Everyone

This book will help you understand the importance of making healthy food choices while teaching you how to eat a well-balanced diet. You will learn how to structure your own meals, while incorporating all the foods groups, and consuming a variety of nutrients.

Some of us are lucky enough to consume any food without having to adhere to a special diet plan, while others experience gluten or lactose intolerance issues, or need to have a special eating plan due to health conditions such as diabetes. Some of us are omnivores, consuming foods of both plant and animal origin, while others are vegetarians, or vegans, consuming strictly plant-based foods.

Whatever your case, one thing is certain: You need to nurture your body with the foods it needs to perform at its best. That includes a well-balanced diet each day full of fresh fruits and vegetables, whole grains, lean proteins, dairy, and healthy fats. Eating a variety of foods will help ensure that you are consuming all the essential vitamins and minerals needed to fuel your activities and help protect against diseases. The good news is that nowadays, even if your dietary needs are restricted, it's really easy to find alternative foods that are both healthy and delicious; the process becomes even easier as you learn how to structure the best meal plan for you.

So Many Food Choices

There are so many choices to make when it comes to eating. Decisions about what to have for breakfast, lunch, dinner, a snack, dessert, or takeout - the list goes on and on. Although you may not realize it, you are making decisions about food selections several times a day. These choices will either benefit or impair your health. Paying close attention to good eating habits each day supports health benefits throughout life. Conversely, making poor food choices regularly can lead to chronic conditions over time such as heart disease, diabetes, or cancer.

Variety Counts

Each meal should include a variety of foods from each of the food groups. This type of eating pattern will help keep your blood glucose stable and help prevent you from craving foods high in sugar. Since proteins and fats take longer to digest than carbohydrates, they will slow digestion to make you feel more satisfied at each meal, preventing you from over-indulging. The key to healthy eating is to nurture the body first, and then balance your indulgences. You should always consider nutrition when making food choices.

Calories vs Macronutrients

To better understand the difference between calories and macronutrients, let me tell you a story:

Sean used to be the tallest and skinniest kid in the class back in middle school, towering above all the other teenagers around him. Now, at 27 years old, he is six feet tall, and works a Fortune 500 company. On occasion, he still hears a similar remark from a new acquaintance:

*"Wow. You are so tall. And **so** skinny."*

He hated his scrawny and lanky body and loathed being introduced to new people because he knew he'd hear that dreaded comment he was all too familiar with his entire life. Last year, he decided enough was enough. He hit the gym nearly every day, strength trained hard, and worked on his diet. Over time, he steadily gained lean muscle and dropped his body fat percentage below 10%.

Paul (a short, slightly overweight 29-year-old guy) works in the same department as Sean and they run into each other on a daily basis. Paul noticed Sean's transformation and was shocked by his progress.

*"Sean, what's your secret? Tell me **exactly** what you did because I want to lose my belly fat and get into better shape."*

Enthusiastically, Sean shared his gym routine, what to eat, and what not to eat. Paul followed Sean's advice and adhered to all directions – especially his diet tips. After three months, Paul saw his own transformation. But not in the way you would expect.

He felt strong – he was able to lift a lot heavier than before. But he didn't look leaner. In fact, he appeared more overweight.

Paul was incredibly upset and demoralized: *"I followed everything Sean told me to do! I worked out regularly. I ate clean! I ate tons of chicken, rice, and broccoli! Why don't I have a fit body?"*

Why didn't Paul get the same results? What went wrong?
The simple answer: **calories**.

That said, at 1AND1 Life, We have been fortunate enough to help thousands of men and women with creating a better body image for themselves and stop the emotional eating. Simply put, having a good body starts with your mindset. During the summer months it tends to be even more important for you to be full of confidence and a high self esteem, but we want you to have that mindset all year around!

Myself and the rest of us over at 1AND1, teach the people that we work with, that it is not only about exercising your body, but focusing on the ability to exercise your mind will go a long way. This will ultimately help you to find the necessary appreciation and love towards your body.

Our mindsets should be completely different from what society is telling us to do. Society tends to do a bad job of telling us not to like ourselves purely from a marketing and advertising standpoint, so in turn we go buy their things to feel 'good enough'. The fact of the matter is that you are good enough right now at this very point and time, and the quicker you're able to teach yourself that having confidence in your body doesn't come from what you see in the mirror, but rather from your thoughts, I promise that you're half way there!

WHAT ARE CALORIES?

Historically, scientists have defined "calorie" to mean a unit of energy or heat that could come from a variety of sources. Simply put, a calorie is a unit of energy. In a nutritional sense, all types of food are important sources of calories. Our bodies can store calories for later use or "burn" calories as fuel.

A calorie in nutrition is actually 1,000 of these small calories. Some researchers use the term kilocalories to refer to the nutritional unit of 1,000 small calories. These units of 1,000 small calories are also sometimes called large calories, dietary calories, nutritional calories, food calories and Calories with a capital C.

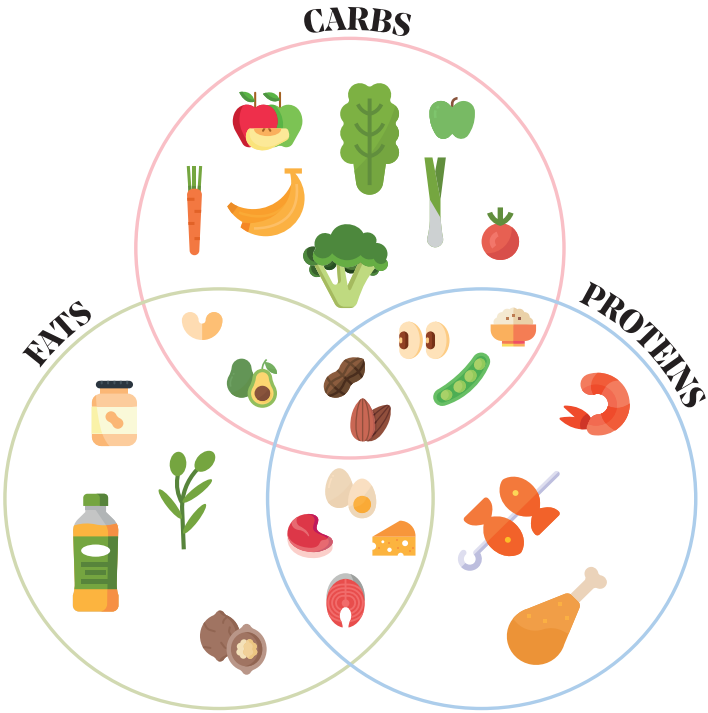
Therefore, what Americans see on food labels are actually kilocalories, or kilojoules. When the U.S. Department of Agriculture says, for example, that one medium-size apple contains 95 calories, it actually contains 95 kilocalories.

WHAT ARE MACRONUTRIENTS?

Calories are only one puzzle piece to the big picture. Another crucial factor that must be accounted for is macronutrients. Counting macronutrients (generally referred to as macros) has gained popularity over the past few years.

Here's the cold-hard truth: there is no perfect macro ratio. The human body is complex. A plethora of variables (such as sleep, accurate activity tracking, the quality of the food you eat, etc.) contribute to long term changes. What works for one person may not necessarily work for another. Everyone has different genes, lifestyles, and goals. The best approach to figuring out your macro ratio is to follow a guideline (based on your body type or 'phenotype') and tweak it as you go.

However, before figuring out which macro ratio is optimal for you, it's important to understand what macronutrients are and how they function in our bodies.



Macros are the chemical compounds you ingest. When you look at a nutrition label, it displays how many grams of each macro – carbohydrates, proteins, and fats – are in a single serving. Macros play numerous roles in the optimization of the body. All three of these macronutrients are needed equally for everything from growth and development to sustaining circulation and providing the brain with enough energy for cognitive functioning.

Major functions of each macro:
- Carbohydrates (glucose) – the body's number one source for energy. Used immediately. Stored away in muscles or fat for later use.
- Proteins (amino acids) – builds and maintains lean muscle mass.
- Fats (fatty acids) – regulates hormones.

Different types of macros have standard amounts of calories to fuel our bodies with energy:

- 1 gram of carbohydrate = 4 calories
- 1 gram of protein = 4 calories
- 1 gram of fat = 9 calories

From a weight gain or weight loss perspective, macronutrients correlate with calories. Body composition, on the other hand, may be altered by macro ratios.

DRI Recommendations

Recommendations will vary based on individual age, height, weight, activity level, and personal goals.

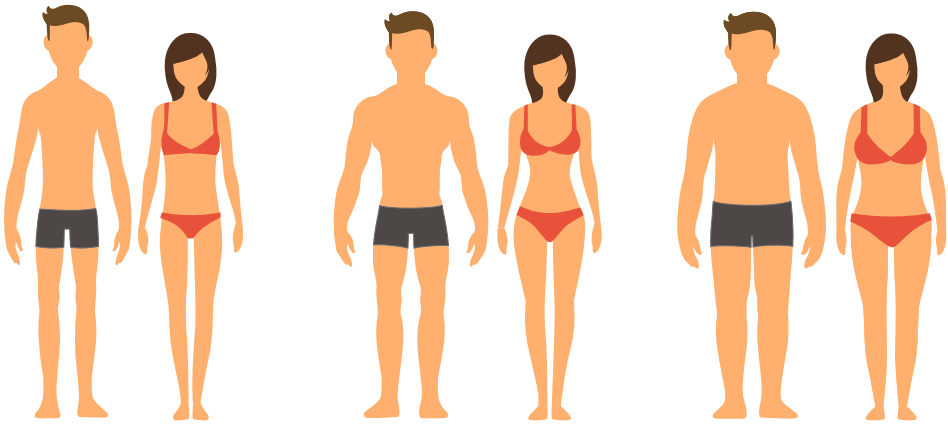
The Dietary Reference Intakes (DRI) set the ranges for macros as:
Carbs: 45-65%,
Protein: 10-35%
Fat: 20-35%.

These ranges are guidelines based on healthy adults to help prevent chronic disease. Therefore, individual adjustments should be made according to your body type. In the next section we'll help you calculate the best numbers for you.

The Best Macro Ratio Based on Your Phenotype

The physique of a 21-year-old male football player looks significantly different from a sedentary 52-year-old female. Every person fits into one of these body types: ectomorph, mesomorph, and endomorph. Some individuals are a combination, depending on their body composition. Therefore, it would be ineffective to apply a 'one size fits all' method to macro ratios. You may have to modify your macro numbers based on how your body reacts to different macronutrient percentages.

But everyone has to begin from square one. Where you start is just as important as taking the first step. These three macro ratios (based on your phenotype) can help save time and errors in your health and fitness journey. You can start with the macro ratios listed below as a foundation and adjust as you go.



ECTOMORPH MESOMORPH ENDOMORPH

BODY TYPE #1: ECTOMORPH

From the story above, Sean represents the classic ectomorph:

- Skinny
- Narrow frame
- Has difficulty gaining weight (muscle or fat)
- Speedy metabolism
- High carbohydrate tolerance

Macro Ratio for Ectomorphs:

- 55% carbohydrates
- 25% proteins
- 20% fats

Below you can find a guideline on how the DRI recommendations would look distributed into the day for four people with an Ectomorph body type, but with different calorie needs.

CALORIES	1500 CAL	2000 CAL	2500 CAL	3000 CAL
CARBS 55%	825 kcal 206g	1100 kcal 275g	1375 kcal 344g	1650 kcal 413g
PROTEIN 25%	375 kcal 94g	500 kcal 125g	625 kcal 156g	750 kcal 187.5g
FAT 20%	375 kcal 94g	400 kcal 44g	500 kcal 55.5g	600 kcal 67g

BODY TYPE #2: MESOMORPH

Mesomorphs have an athletic and muscular body:

- Wider shoulders & smaller waist
- Gains muscle easily
- Can gain fat more easily than an ectomorph
- Symmetrical frame

Macro Ratio for Mesomorphs:

- 40% carbohydrates
- 30% proteins
- 30% fats

Below you can find a guideline on how the DRI recommendations would look distributed into the day for four people with a Mesomorph body type, but with different calorie needs.

CALORIES	1500 CAL	2000 CAL	2500 CAL	3000 CAL
CARBS 40%	600 kcal 150g	800 kcal 200g	1000 kcal 250g	1200 kcal 300g
PROTEIN 30%	450 kcal 112g	600 kcal 150g	750 kcal 187.5g	900 kcal 225g
FAT 30%	450 kcal 50g	600 kcal 67g	750 kcal 83g	900 kcal 100g

BODY TYPE #3: ENDOMORPH

Using the story from above once again – Paul represents the endomorph:

- Gains fat easily
- Gains muscle easily
- Larger frame
- Has difficulty losing weight
- Low carbohydrate tolerance

Macro Ratio for Endomorphs:

- 25% carbohydrates
- 35% proteins
- 40% fats

Below you can find a guideline on how the DRI recommendations would look distributed into the day for four people with an Endomorph body type, but with different calorie needs.

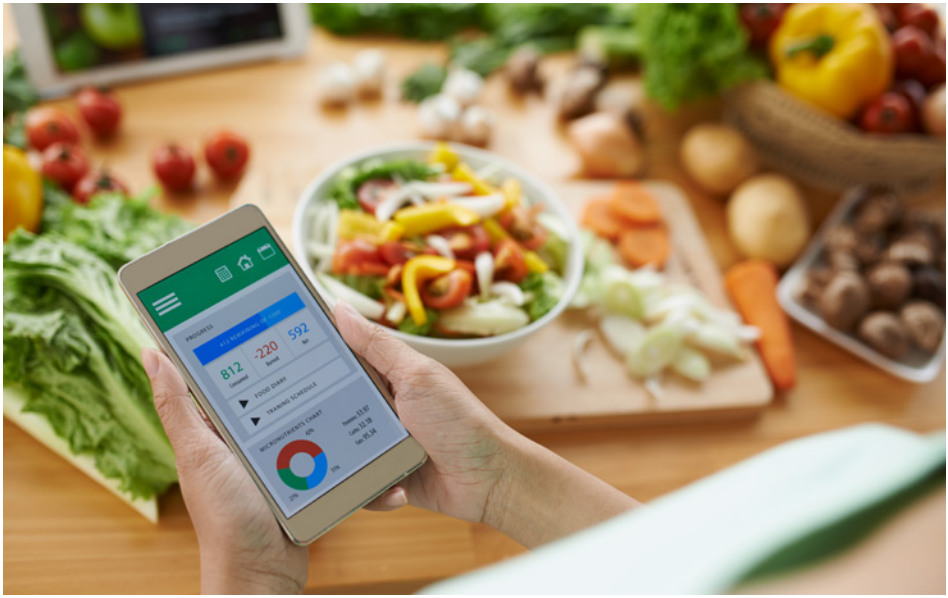
CALORIES	1500 CAL	2000 CAL	2500 CAL	3000 CAL
CARBS 25%	375 kcal 94g	500 kcal 125g	625 kcal 156g	750 kcal 187.5g
PROTEIN 35%	525 kcal 131g	700 kcal 175g	875 kcal 219g	1050 kcal 262.5g
FAT 40%	600 kcal 67g	800 kcal 89g	1000 kcal 111g	1200 kcal 133g

If your body type is similar to Paul's, don't eat like Sean. That's a formula for disaster.

Tools to Help Configure Your Calorie and Macro Numbers

One of the best ways to compute your macro numbers is through the Katy Hearn Fit online tool, which also takes your goals into consideration. You can use this as a guideline and adjust based on the numbers listed earlier. You can also read more about counting macros here.

It is entirely possible to calculate out by hand the number of carb, protein, and fat grams you need each day. This allows you flexibility and complete autonomy over the numbers you'd like to input. But this is also time-consuming and tedious for many. If you're not 100% sure you're doing it right, you can use an app like MyFitnessPal to plan your daily menu – you just log your meals and the app does the macro maths for you.



Learn How To Read Nutrition Facts Labels

The front of food packaging includes various health claims that are often misleading or even false. That's no surprise, as research shows that adding health claims to front labels affects consumer choices by making people believe a product is healthier than a similar product without such claims. The only way to make sure you're choosing healthy options is through a thorough inspection of the nutrition facts label and the ingredients list.

CALORIES & SERVING SIZE

Nutrition Facts

8 servings per container

Serving size **2/3 cup (55g)**

Amount per serving

Calories **230**

	% Daily Value*
Total Fat 8g	**10%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 37g	**13%**
Dietary Fiber 4g	**14%**
Total Sugars 12g	
Includes 10g Added Sugars	**20%**
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Serving sizes reflect the amount most commonly eaten. Some products may only provide this number, instead of including the calorie count for the whole package. Serving sizes are just a guide and some of them may be misleading and unrealistic. Manufacturers can list a smaller amount than what most people consume in one sitting to make products look healthier than they actually are. To be fully aware of the nutritional value of what you're eating, you need to multiply the serving given on the back by the number of servings you consumed.

HEART HEALTH

Nutrition Facts

8 servings per container
Serving size **2/3 cup (55g)**

Amount per serving
Calories **230**

	% Daily Value*
Total Fat 8g	**10%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
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Fat has a lot of calories and it's important to check whether the fat is saturated, unsaturated or trans-fat. Unsaturated fats, found in foods like avocado, nuts, seeds, oily fish and vegetable oils, are better for your heart health than saturated fats, found in butter, fatty meats, pastries, biscuits and cakes. Trans-fats, or trans-fatty acids, are a form of unsaturated fat and their artificial forms occur when vegetable oils are chemically altered to stay solid at room temperature, which gives products a much longer shelf life. Too much saturated fat can increase our cholesterol, which increases risk of heart disease.

A food is high in fat if it contains more than 17.5g of fat per 100g and it's low fat if it contains 3g of fat or less per 100g. Equally, a product is high in saturated fat if it contains more than 5g of saturated fat per 100g and it's low in saturated fat if it contains 1.5g of saturated fat or less per 100g. The fat section of the label helps you understand which type of fat you are consuming. Ideally, you should keep your total saturated fat intake to 10% of daily calories or less and keep trans-fat as close to 0 as possible.

Reduced-fat or low-fat versions of foods aren't necessarily better or healthier options. Sometimes manufacturers replace fat with sugar or even salt, so make sure you read the nutrition information to compare sugar, salt and fat content on the original and the reduced fat product; the healthiest option may be to simply have a smaller amount of the original product.

Nutrition Facts

8 servings per container

Serving size **2/3 cup (55g)**

Amount per serving

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Fat is not the only ingredient interfering with your heart's health. Too much salt can increase your blood pressure over time, which can increase the risk of developing heart disease and the risk of having a stroke. Most of us consume more than the recommended maximum of 6g per day which is the equivalent amount of a teaspoon. Salt is often referred to as sodium and in this case you need to multiply the sodium amount by 2.5 to work out the salt content.

For a food to be classed as low salt, it means that it contains 0.3g or less salt per 100g which is equivalent to 0.1g sodium, or 100mg sodium. All foods with 1.5g or more salt per 100g, which is equivalent 0.6g sodium, or 600mg sodium are classed as high salt.

ADDED SUGARS & FIBER

Nutrition Facts

8 servings per container
Serving size **2/3 cup (55g)**

Amount per serving
Calories **230**

	% Daily Value*
Total Fat 8g	10%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	20%
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%

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Sugar goes by many names, many of which you may not recognize. Food manufacturers use this to their advantage by purposely adding many different types of sugar to their products to hide the actual amount. In doing so, they can list a healthier ingredient at the top, mentioning sugar further down. So even though a product may be loaded with sugar, it doesn't necessarily appear as one of the first three ingredients.

To avoid accidentally consuming a lot of sugar look for the following alternative names of sugar in ingredient lists:

• Types of sugar: beet sugar, brown sugar, buttered sugar, cane sugar, caster sugar, coconut sugar, date sugar, golden sugar, invert sugar, muscovado sugar, organic raw sugar, raspadura sugar, evaporated cane juice, and confectioner's sugar.

• Types of syrup: carob syrup, golden syrup, high-fructose corn syrup, honey, agave nectar, malt syrup, maple syrup, oat syrup, rice bran syrup, and rice syrup.

• Other added sugars: barley malt, molasses, cane juice crystals, lactose, corn sweetener, crystalline fructose, dextran, malt powder, ethyl maltol, fructose, fruit juice concentrate, galactose, glucose, disaccharides, maltodextrin, and maltose.

If you see any of these in the top spots on the ingredients lists, or several kinds throughout the list, then the product is high in added sugar. Compare added sugars to dietary fiber - ideally you'd like to keep your fiber high and your added sugar low when you can.

NUTRIENTS

Nutrition Facts

8 servings per container
Serving size **2/3 cup (55g)**

Amount per serving
Calories **230**

	% Daily Value*
Total Fat 8g	10%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
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Iron 8mg	45%
Potassium 235mg	6%

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The list of vitamins and minerals on food labels have been updated to reflect changes in American food choices and eating patterns. Vitamins A and C are no longer required since most Americans consume an adequate amount of these nutrients. Vitamin D and Potassium are newly added to the label because many Americans do not consume adequate amounts of these nutrients. The actual amount (in milligrams or micrograms) in addition to the % Daily Value (%DV) must be listed for vitamin D, Calcium, Iron and Potassium. Other vitamins and minerals may be listed and both the actual amount and the %DV must now be on the label.

Daily value or Daily reference intake is calculated based on 2000 calories per day and is designed to give consumers quick, practical and usable information to make healthier food choices. Nutrients to consume in smaller amounts are total fat, saturated fat, trans-fat, cholesterol, and sodium; choose foods that contain 5% or less of the %DV more often. Nutrients to consume in larger amounts are fiber vitamins and minerals; foods with 10-19% of the %DV are considered a good source of that nutrient, while foods with 20% or more of the %DV are an excellent source of that nutrient.

Understanding The Food Groups

Understanding how food choices help the body function and knowing which foods are good sources of certain nutrients, will help guide you toward a nutritious diet. Making selections from a variety of sources will help supply you with all the nutrients needed to support all activities of life.

All food groups offer valuable nutrients, and a healthy diet consists of regularly choosing foods from all the groups. Selecting a variety from each group will ensure you are getting an array of nutrients. A healthy eating pattern emphasizes nutrient-dense options within each food group while keeping calories under control. Below are the Dietary Guidelines from the USDA's Food Patterns, which assigns recommendations on how to plan healthy meals. This is one good way to guide you in creating a well-balanced diet.

Fruits – 2 cups/daily

Fruits contribute folate, vitamin A, vitamin C, potassium, and fiber. Consuming a variety of whole or cut-up fruits over fruit juices will prevent sugar overload and will ensure you get all the healthful nutrients and fiber. A person eating a 2000 calorie diet should consume 2 cups of fruit per day. One cup of fruit equates to one cup of fresh, frozen, or canned fruit, or ½ cup dried fruit, or one cup of 100% fruit juice.

Good sources include: apples, apricots, avocados, bananas, blueberries, cantaloupe, cherries, grapefruit, grapes, guava, honeydew, kiwi, mango, nectarines, oranges, papaya, peaches, pears, pineapples, plums, raspberries, strawberries, tangerines, watermelon, dried fruits such as dates, figs, prunes, raisins, or 100% fruit juice.

Limit fruits that contain solid fats and added sugars such as canned or frozen fruits in syrup, juices, punches, fruit drinks with added sugar, or fried fruits like plantains.

Vegetables – 2-3 cups/daily

Vegetables contribute folate, vitamin A, vitamin C, vitamin K, vitamin E, magnesium, potassium, and fiber. Choose a variety of colors several times per week to reap the benefits of all the different nutrients. A person eating a 2000 calorie diet should consume 2-3 cups of vegetables per day. One cup of vegetables equates to one cup of cut-up raw or cooked vegetables, one cup cooked legumes, one cup vegetable juice, or two cups of raw leafy greens.

Dark-green choices include: broccoli, leafy greens such as arugula, beet greens, bok choy, collard greens, kale, mustard greens, romaine lettuce, spinach, turnip greens, and watercress.

Red and orange choices include: carrots, carrot juice, pumpkin, red bell peppers, sweet potatoes, tomatoes, tomato juice, and winter squash like butternut and acorn.

Legumes: black beans, black-eyed peas, garbanzo beans (chickpeas), kidney beans, lentils, navy beans, pinto beans, soybeans and soy products such as tofu, split peas, and white beans.

Starchy vegetable choices include: cassava, corn, green peas, hominy, lima beans, and potatoes.

Other vegetable choices include: artichokes, asparagus, bamboo shoots, bean sprouts, beets, brussels sprouts, cabbage, cactus, cauliflower, celery, cucumbers, eggplant, green beans, green bell pepper, iceberg lettuce, mushrooms, okra, onions, seaweed, snow peas, and zucchini.

Grains – 7 oz/ daily

Grains contribute folate, niacin, riboflavin, thiamin, iron, magnesium, selenium, and fiber. At least half of the grains should be whole grains. A person eating a 2000 calorie diet should consume seven ounces of grains per day. One ounce of grains equals one slice of bread, half a cup of cooked rice, pasta, or cereal, one ounce of dry pasta or rice, one cup ready-to-eat cereal, or three cups of popcorn.

Whole grain choices include: amaranth, barley, brown rice, buckwheat, bulgur, cornmeal, millet, oats, quinoa, rye, wheat, wild rice and whole grain products such as breads, cereals, crackers, pasta and popcorn.

Enriched refined products include: bagels, breads, cereals, pastas such as couscous, macaroni, and spaghetti. Also included are pretzels, white rice, rolls, and tortillas.

Limit grains that contain solid fats and added sugar such as biscuits, cakes, cookies, cornbread, crackers, croissants, doughnuts, fried rice, granola, muffins, pies, presweetened cereals, and taco shells.

Proteins – 6 oz / daily

High-protein foods contribute protein, essential fatty acids, niacin, thiamin, vitamin B6, vitamin B12, iron, magnesium, potassium, and zinc. Choose a variety of protein rich foods including seafood at least twice per week. A person eating a 2000 calorie diet should consume six ounces of protein foods per day. One ounce of protein foods equates to one ounce of cooked lean meat, poultry, or seafood, one egg, ¼ cup legumes or tofu, one tablespoon of nut butter, ½ ounce nuts or seeds.

Seafood protein choices include: fish such as catfish, cod, flounder, haddock, halibut, herring, mackerel, pollock, salmon, sardines, sea bass, snapper, trout, or tuna. Shellfish includes clams, crab, lobster, mussels, oysters, scallops, and shrimp.

Meat, poultry, and eggs include: lean or low-fat meats like fat-trimmed beef, game, ham, lamb, pork, veal, poultry without the skin, and eggs.

Nuts, seeds, and soy products include: unsalted nuts like almonds, cashews, filberts, pecans, pistachios, walnuts, flaxseeds, pumpkin seeds, sesame seeds, sunflower seeds, legumes, soy products like textured vegetable protein, tofu, tempeh, or nut butters and peanuts.

Limit protein foods that contain solid fats or added sugar such as bacon, baked beans, fried meats, seafood, poultry, eggs, tofu, refried beans, ground beef, hot dogs, luncheon meats, marbled steaks, poultry with the skin, sausages, and spare ribs.

Vitamins & Minerals

Water Soluble Vitamins

THE B VITAMINS

The B vitamins are water soluble and consist of Thiamin, Riboflavin, Niacin, Biotin, Pantothenic Acid, Vitamin B6, Folate, and Vitamin B12. The B vitamins are responsible for helping utilize the energy you consume from carbohydrates, fats, and proteins into useable fuel. They also play a key role in metabolism, making DNA and new cells. Deficiencies can cause a host of diseases. Fortunately, B vitamins can be found in many foods.

B

THIAMIN B1

- RDA (Recommended Dietary Allowance) for men is 1.2 mg/day, and 1.1 mg/day for women.
- Its main function is energy metabolism.
- Food sources include whole grains, fortified or enriched grain products, pork, soy milk, tomato juice, pinto beans, split peas, and acorn squash.
- Symptoms of deficiencies include muscular weakness, enlarged heart, cardiac failure, apathy, poor short-term memory, confusion, irritability, anorexia, and weight loss.
- Deficiency could lead to Beriberi.

RIBOFLAVIN B2

- RDA for men is 1.3 mg/day, and 1.1 mg/day for women.
- Its main function is energy metabolism.
- The best food sources come from milk and milk products, whole grain or enriched grains, dark leafy vegetables, liver, canned clams, mushrooms, and eggs.
- Symptoms of deficiencies include sore throat, cracks and redness at the corners of the mouth, painful smooth purplish red tongue, inflammation characterized by skin lesions covered with greasy scales.
- Deficiency could lead to Ariboflavinosis.

NIACIN B3

- RDA for men is 16 mg/day, and 14 mg/day for women.
- Its main function is energy metabolism. It is unique in that it can be made in the body from the amino acid tryptophan.
- Good food sources include meat, poultry, fish, eggs, liver, nuts, legumes, and enriched and whole grains. Mushrooms, potatoes, and tomatoes make good vegetable sources of niacin.
- Symptoms of deficiencies include diarrhea, abdominal pain, vomiting, inflamed swollen, smooth, bright red tongue, depression, apathy, fatigue, loss of memory, headache, rashes on areas exposed to sunlight.
- Deficiency could lead to Pellagra.

BIOTIN

- AI is 30 µg/day for adults.
- Its main functions are energy metabolism, fat synthesis, amino acid metabolism, and glycogen synthesis. It is made by the gastrointestinal tract.
- Good food sources include liver, egg yolks, soybeans, fish, whole grain products.
- Symptoms of deficiencies include depression, lethargy, hallucinations, numbness or tingling sensations in the arms and legs, red, scaly rash around the eyes, nose, and mouth, as well as hair loss.

PANTOTHENIC ACID

- AI (Adequate Intake) is 5 mg/day for adults.
- Its main function is energy metabolism.
- Good sources include chicken, beef, potatoes, oats, tomatoes, liver, egg yolks, broccoli, and whole grains.
- Symptoms of deficiencies include vomiting, nausea, stomach cramps, insomnia, fatigue, depression, irritability, restlessness, apathy, hypoglycemia, increased sensitivity to insulin, numbness, muscle cramps, inability to walk.

VITAMIN B6
(AKA PYRIDOXINE, PYRIDOXAL, PYRIDOXAMINE)

- RDA is 1.3 mg/day for adults.
- Its main function is used in amino and fatty acids, the body's metabolism, and helps convert tryptophan to niacin and to serotonin. In addition, it helps make red blood cells.
- Good food sources include meats, fish, poultry, potatoes and other starchy vegetables, legumes, non-citrus fruits, fortified cereals, liver, and soy products.
- Symptoms of deficiencies include scaly dermatitis, anemia (small cell type), depression, confusion, and convulsions.

FOLATE
(AKA FOLIC ACID, OLACIN, PTEROYLGLUTAMIC, PGA)

- RDA is 400 µg/day for adults.
- Its main function is DNA synthesis, making it important in new cell production.
- Good food sources are fortified grains, leafy green vegetables, legumes, seeds, and liver.
- Symptoms of deficiencies include anemia (large cell type), smooth, red tongue, mental confusion, weakness, fatigue, irritability, headache, shortness of breath, and elevated homocysteine levels.
- Deficiency could lead to neural tube defects in the fetus during pregnancy, and toxicity could mask vitamin B12 deficiency symptoms. Therefore, an upper limit has been set at 1000 µg/day for adults.

VITAMIN B12
(AKA COBALAMIN)

- RDA is 2.4 µg/day for adults.
- Its main function is new cell synthesis and to help maintain nerve cells. It also helps break down fatty acids and amino acids.
- Good food sources include products from animal sources such as meat, fish, poultry, shellfish, milk, cheese, eggs, fortified cereals and grains, fortified unsweetened dairy products, enriched nutritional yeast, and fortified energy bars.
- Symptoms of deficiencies include anemia (large cell type), fatigue, degeneration of peripheral nerves progressing to paralysis, sore tongue, loss of appetite, and constipation.
- Deficiency could lead to pernicious anemia.

C

Vitamin C (aka Ascorbic acid)

- RDA for men is 90 mg/day and 75 mg/day for women. Smokers need an additional 35 mg/day.
- Its main functions include collagen synthesis, thyroxin synthesis, amino acid metabolism, strengthening resistance to infection, helping in absorption of iron. It's also an antioxidant.
- Good food choices include citrus fruits, cruciferous vegetables, dark green vegetables, peppers, cantaloupe, strawberries, lettuce, tomatoes, potatoes, papayas, and mangos.
- Symptoms of deficiencies include anemia (small cell type), atherosclerotic plaques, pinpoint hemorrhages, bone fragility, joint pain, poor wound healing, frequent infections, bleeding gums, loosened teeth, muscle degeneration, pain, hysteria, depression, rough skin, and blotchy bruises.
- Deficiency disease could lead to scurvy.
- Toxicity symptoms can include nausea, abdominal cramps, diarrhea, headache, fatigue, insomnia, hot flashes, rashes, interferences with medical tests, aggravation of gout symptoms, urinary tract issues, and kidney stones. Therefore, an upper limit has been set at 2000 mg/day for adults.

Fat Soluble Vitamins

Vitamin A
(aka Retinol, Retinal, Retinoic acid, precursors are carotenoids such as beta-carotene)

- RDA for men is 900 µg/day and 700 µg/day for women.
- Its main functions include vision health, maintenance of the cornea, epithelial cells, mucous membranes, skin, bones and tooth growth, reproduction, and immunity.
- Good food sources include fortified milk, cheese, cream, butter, eggs, liver, spinach and other dark leafy greens, broccoli, deep orange fruits and vegetables such as squash, carrots, sweet potatoes and pumpkin.
- Symptoms of deficiencies include night blindness, dry eyes, grey spots on the eye, degeneration of the cornea and blindness, impaired immunity, and clogged keratin by the hair follicles forming white bumps (hyperkeratosis).
- Toxicity symptoms can be either acute or chronic which include blurred vision, nausea, vomiting, vertigo, pressure inside the skull, headaches, lack of muscle co-ordination, loss of bone density, liver abnormalities, and birth defects.

D

Vitamin D
(aka Calciferol, Ergocalciferol D2, Calciol)

- RDA is 15 µg/day (600 IUs) for adults, and 20 µg/day (800 IUs) for adults over 70 years old.
- Its main function is to regulate calcium blood levels in the body to ensure proper bone health.
- Good food sources include fortified milk, milk products and juices, cereals, veal, beef, egg yolks, liver, fatty fish, unsweetened fortified dairy products, enriched cereals and breads, and some mushrooms. However, most can be synthesized in the body with the help of sunlight.
- Symptoms of deficiencies include misshaping bones in children caused by Rickets and Osteomalacia in adults which results in soft flexible bones susceptible to breaking easily.
- Toxicity can occur and cause elevated blood calcium. Therefore, an upper limit has been set at 100 µg/day (4000 IUs).

Vitamin E (aka Alpha-tocopherol)

- RDA for adults is set at 15 mg/day.
- Its main function is an antioxidant to stabilize cell membranes, protect polyunsaturated fats and vitamin A, and regulate oxidative reactions.
- Good food sources include vegetable oils, dark green leafy vegetables, wheat germ, whole grains, liver, egg yolks, nuts, seeds, and fatty meats.
- Symptoms of deficiencies include red blood cell breakage, and nerve damage.
- Toxicity can interfere with blood anti-clotting medications. Therefore, an upper limit of 1000 mg/day has been set.

Vitamin K (aka Phylloquinone, Menaquinone Menadione, Naphthoquinone)

- RDA for men is 120 µg/day, and 90 µg/day for women.
- Its main function is synthesis of blood-clotting proteins and bone proteins.
- Good food sources include liver, dark green leafy vegetables, cruciferous vegetables, milk, and it is produced in the digestive tract via bacterial synthesis. Since bacterial synthesis does not occur in newborns, they are typically given an injection of this vitamin at birth.
- Deficiency symptoms can lead to uncontrolled bleeding.

Learn more about vitamins here.

Mighty Minerals

Like vitamins, minerals are vital to life and essential for all body processes. They are classified as major or trace minerals depending on how much is required. However, they are all equally important and function in unique ways, so just because you may need a larger quantity of one, doesn't mean it's more important than another. Since minerals are made up of inorganic material, they do not degrade and retain their chemical identity. This means when taken in excess, toxicity can easily occur. Therefore, understanding their function, food sources, RDA, and upper limit, is very important.

Major Minerals

SODIUM

- RDA is 1200 – 1500 mg/day depending on age.
- Its main function includes maintaining normal fluid and electrolyte balance, assisting in nerve impulse transmission and muscle contraction.
- Good food sources include salt, soy sauce, with moderate amounts found in meats, breads, vegetables, and large amounts found in processed foods.
- Deficiency symptoms usually occur from excessive losses (hyponatremia), not from inadequate intakes.
- Toxicity can cause edema, and acute hypertension, therefore an upper limit has been set for 2300 mg/day.

CHLORIDE

- AI is 1800 – 2300 mg/day depending on age.
- Its main function is to maintain normal fluid and electrolyte balance. It also makes up part of the hydrochloric acid in the stomach, and is necessary for proper digestion.
- Good food sources include table salt and soy sauce. Moderate amounts are found in meats, milk, eggs, with large amounts found in processed foods.
- Toxicity can cause vomiting. Therefore, an upper limit of 3600 mg/day has been set.

POTASSIUM

- AI is 4700 mg/day.
- Its main function is to maintain normal fluid and electrolyte balance, facilitating many reactions, supporting cell integrity, assisting in nerve impulse transmission and muscle contractions.
- Good food choices include meats, milks, fruits, vegetables, grains, and legumes.
- Deficiency symptoms include irregular heartbeat, muscular weakness, dehydration, and glucose intolerance.
- Toxicity can cause muscle weakness, and vomiting.

CALCIUM

- RDA is 1000 – 1200mg depending on age and gender.
- Its main function is mineralization of teeth and bones, as well as muscle contraction and relaxation, nerve functioning, blood clotting, and blood pressure.
- Good food sources include milk and milk products, small fish with bones, tofu, dark leafy greens such as bok choy, kale, broccoli, almonds, legumes, unsweetened fortified non-dairy products, along with almonds, sunflower seeds, fortified orange juice, and some enriched breads and cereals.
- Deficiency symptoms include stunted growth in children and bone loss in adulthood (osteoporosis).
- Toxicity symptoms can cause constipation, increased risk of kidney stones, kidney dysfunction, and interference with absorption of other minerals. Therefore, an upper limit has been set at 2000 – 2500 mg/day.

PHOSPHORUS

- RDA is 700 mg/day for adults.
- Its main function includes mineralization of bones and teeth and used energy transfer and buffer systems that maintain acid-base balance.
- Good food sources include animal products such as meat, fish, eggs, poultry, and milk products, along with some fortified grains, sunflower seeds, pinto beans, tofu, and nut butters.
- Deficiency symptoms include muscular weakness and bone pain.
- Toxicity can cause calcification of tissues other than the skeletal system. Therefore, the upper limit has been set at 4000 mg/day.

MAGNESIUM

- RDA is 400 mg/day for men, and 310 mg/day for women.
- Its main function is bone mineralization, building of protein, enzyme action, muscle contraction, nerve impulse transmission, maintenance of teeth, and functioning of the immune system.
- Good food choices include nuts, legumes, whole grains, dark green vegetables, seafood, chocolate, and cocoa.
- Deficiency symptoms can include weakness, confusion, eye or muscle spasms, hallucinations, difficulty swallowing, and growth failure in children.
- Toxicity can occur from non-food sources only, resulting in diarrhea, alkalosis, or dehydration. Therefore, an upper limit of 350 mg/day from non-food sources has been set.

SULFATE

- There is no RDA or AI set for this mineral since it is easily met through foods.
- Its main function is to support the structure of protein molecules, and is part of the vitamins biotin and thiamin, along with insulin.
- Good food sources include all protein containing foods such as meats, fish, poultry, eggs, and milk products.
- Deficiency only occurs when diet is lacking protein.
- Toxicity can only occur if sulfur containing amino acids are consumed in excess.

Trace Minerals

IRON

- RDA is 8mg/day for men and women over 51 years old, and 18 mg/day for women 19-50 years old.
- Its main function is to carry oxygen to the blood via hemoglobin, and to the muscles via myoglobin, which is necessary to use for metabolic energy.
- Good sources of iron include red meats, fish, poultry, shellfish, eggs. Plant-based iron-rich foods include: soy foods such as tofu and soybeans, legumes like lentils and kidney beans, nuts such as cashews and almonds, seeds like pumpkin and sunflower, fortified cereals such as cream of wheat and oatmeal, dried fruit like apricots and raisins, vegetables such as tomato juice, broccoli, potatoes and mushrooms, and certain herbs like parsley, as well as by cooking foods in a cast iron skillet.
- It's important to note that there are two types of iron from foods: heme coming from mostly animal products and non-heme coming from mostly plant sources. Heme iron is much more bioavailable and better absorbed. However, by pairing non-heme iron food sources with vitamin C rich foods, you can increase the bio availability.
- Deficiency can cause anemia, weakness, fatigue, headaches, impaired work performance and declined cognitive function, impaired immunity, pale skin and nail beds, concave nails, palm creases and inability to regulate body temperature.
- Toxicity can cause gastrointestinal distress, increased infections, fatigue, joint pain, skin pigmentation, and organ damage. Therefore, an upper limit has been set at 45 mg/day for adults.

ZINC

- RDA is 11 mg/day for men and 8 mg/day for women.
- Its main function is to assist with many enzyme functions. It also supports the hormone insulin, involved in making proteins and genetic material, immunity, transport of vitamin A, taste perception, wound healing and fetal and sexual development.
- Good food choices include protein-containing foods such as red meats, shellfish and whole grains, along with some fortified food products. Good sources of plant based zinc foods include: legumes, whole grains, tofu, nuts and seeds, vegetables, and fortified cereals.
- Deficiency can interfere with growth and development, impair immune function, cause hair loss, eye and skin lesions, and loss of appetite.
- Toxicity can result in low high-density lipoproteins (good cholesterol) levels and copper and iron deficiencies. Therefore, an upper limit has been set at 40 mg/day for adults.

IODINE

- RDA is 150 µg/day for adults.
- Its main function is to assist the thyroid gland hormones to help regulate growth, development and metabolic rate.
- Good food sources include iodized salt, seafood, bread, dairy products, plants grown in iodine-rich soil, and animals that feed on them.
- Deficiency symptoms can create an underactive thyroid gland, goiter, mental and physical retardation in infants (cretinism).
- Toxicity can cause underactive thyroid gland, elevated thyroid stimulating hormone levels, and goiter. Therefore, an upper limit has been set for 1100 µg/day for adults.

SELENIUM

- RDA is 55 µg/day for adults.
- Its main function is to defend against oxidation and regulate the thyroid hormones.
- Good food sources include seafood, meat, whole grains, eggs, milks, brazil nuts, fruits, and vegetables grown in selenium-rich soil.
- Deficiency symptoms include predisposition to heart disease (Keshan disease).
- Toxicity can cause brittle hair and fingernails, loss of hair, skin rash, fatigue, irritability, nervous system disorders, and garlic breath. Therefore, an upper limit has been set for 400 µg/day for adults.

COPPER

- RDA is 900 µg/day.
- Its main function is to assist with iron absorption in the formation of hemoglobin. It is part of several enzymes.
- Good food sources include seafood, nuts, whole grains, seeds, and legumes.
- Deficiency can lead to anemia and bone abnormalities.
- Toxicity can lead to liver damage. Therefore, an upper limit has been set for 10,000 µg/day (10 mg/day).

MANGANESE

- AI is 2.3 mg/day for men and 1.8 mg/day for women.
- Its main function acts as a cofactor for several enzymes and assists in bone formation.
- Deficiencies are rare but toxicity can cause nervous system disorders. Therefore, an upper limit has been set at 11 mg/day.

FLUORIDE

- AI is 4mg/day for men and 3 mg/day for women.
- Its main function is to strengthen teeth and prevent tooth decay.
- Significant sources come from drinking water, tea and seafood.
- Deficiency leads to tooth decay.
- Toxicity can lead to fluorosis, which is pitting and discoloration of the teeth. Therefore, an upper limit has been set at 10 mg/day.

CHROMIUM

- AI is 35 µg/day for men and 25 µg/day for women.
- Its main function helps enhance insulin activity and may improve glucose tolerance.
- Good food sources include meats (especially liver), whole grains, and brewer's yeast.
- Deficiency can cause diabetes-like conditions.
- No toxicity issues are known.

MOLYBDENUM

- RDA is 45 µg/day for adults.
- Its main function is to act as a cofactor for many enzymes.
- Good food sources include legumes, cereal, and nuts.
- Deficiency and toxicity symptoms are unknown, but an upper limit has been set at 2 mg/day.

Omega-3 Fatty Acids

Omega-3 fatty acids should be a staple in everyone's diet due to their well-researched positive effects, including lowering one's risk for developing heart disease or having a stroke. This super nutrient helps to protect the heart by reducing blood triglyceride levels, stabilizing plaque, lowering blood pressure, and reducing inflammation.

Most omega-3 fatty acids are found in fatty fish such as salmon and tuna, however there are some good sources to be found in plants for those following a vegan or vegetarian diet. For vegetarians, that includes eggs and dairy. Grass-fed animal products will provide the greatest amounts of omega-3, while good sources of plant-based omega-3 fatty acids include: flaxseeds and oil, walnuts, soy, and canola oil.

Understanding how food choices help the body function and knowing which foods are good sources of certain nutrients, will help guide you toward a nutritious diet. Making selections from a variety of sources will help supply you with all the nutrients needed to support all activities of life.

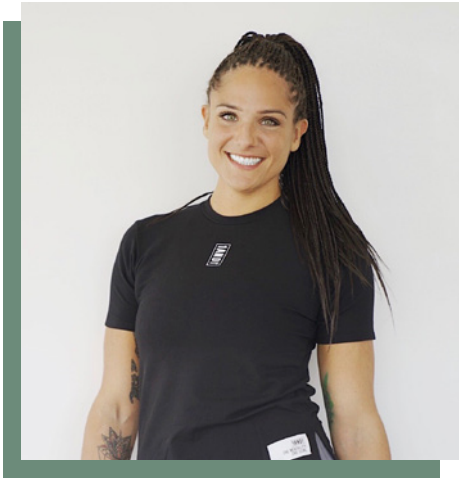
Have questions while you're reading Nutrition 101? The 1AND1 LIFE Community, including our in-house nutritionist, Silvia Carli, can be found in our private Facebook group. The group is totally free to join and gives you access to industry experts who can answer your questions and motivate you as you start this journey toward better nutrition. Join us today and become part of the 1AND1 Fam.

Soji James

Certified personal trainer
(AFAA-CPT, NSCA-CSCS, AFAA-Group Fitness)

I grew up as an overweight kid who used video games and food as a crutch—to help find some measure of "control" within my chaotic childhood. Needless to say, my relationship with food spiraled out of control—and I developed a deep lack of self-confidence. But when I picked up a basketball for the first time, everything changed.

I played basketball at SUNY New Paltz, where I discovered the profound benefits of the weight room. Through my fitness studies, I met a network of truly powerful human beings, and helped everyone from celebrity chefs to soccer moms to high school athletes live their best lives. I realize fitness goals vary from person to person—but that's no barrier; I'm passionate about helping all people learn to master their minds and bodies.



Silvia Carli

MS, RD, CSCS

I started my career as a clinical dietitian in the acute care setting. After almost two years, my chance to enter the sports nutrition world presented itself and led me to move to New York, where I recently created and managed the sports nutrition program at Wagner College in Staten Island. At Wagner, I have been a resource for all twenty-two varsity teams. There, I provided them with individual nutrition education, pre- and post-workout snacks and shakes, and counseling. I helped athletes with eating disorders, using a multidisciplinary approach to recovery. I also worked with the food service company on campus to help optimally fuel our student-athletes, and served as a strength coach.

With my experience as a professional and collegiate volleyball player and my diverse professional and academic background, I believe in a holistic approach to fitness, wellness and nutrition. I value science-based nutrition education as a precious tool to empower clients in finding their own way to reach performance and health goals.

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