NUTRITION FOR ROWING

FROM

PrecisionNutrition

JOHN M. BERARDI, PHD, CSCS

BRIAN G. ST. PIERRE, MS, RD, CSCS

REVIEWERS

Alex Schwartz, PhD

Adam Feit, PhD, CSCS, SCCC, PN2

Helen Kollias, PhD

EDITORS

Krista Scott-Dixon, PhD

Meghan Crutchley, MEd

CONTENTS

PARTS

INTRODUCTION

Sports nutrition can sometimes seem confusing. “Experts” preach wildly different eating styles. Or endorse weird supplements. Or give ridiculously impractical advice.

It’s natural to be left wondering:

‘What, exactly, should I do?’

So how can you cut through it all? Decide which strategies to use? Figure out what’s *really* important—for getting the performance, health, and body composition edge you want?

This step-by-step guide has your answers.

It’ll show you how to eat for high performance and your peak athletic physique—using an evidence-based approach that’s backed both by science and our experience working with over 100,000 clients.

Are you ready to level up?

Let’s get started.

Why Nutrition Is Crucial for Rowers

(According to a 3-Time Olympian)

"You need the strength and power to move not only yourself, but also the mass of the boat," says Laurel Korholz, a three-time Olympian and head coach at the US Rowing training center. "What's more, you need to do that while overcoming water resistance and whatever Mother Nature throws at you."

As a result, rowers tend to spend a lot of time training. "We start the day on the water, and typically have two rowing sessions," says Korholz, explaining that, in total, her athletes log about 1,000 minutes per week in the boat. "But we're also strength training two to four times per week depending on the season."

Peak performance isn't just about strength and fitness, though: It's also about coordination, mental focus, and adjusting to environmental conditions. If you aren't fueled properly, those abilities deteriorate quickly. "Everything starts breaking down—your energy drops, your focus wanes, you become fatigued, and then you start slowing down," says Korholz.

"Nutrition cannot be overvalued in rowing—it's vital," she says. "If you don't fuel yourself properly, you cannot recover adequately; if you cannot recover adequately, you can't train effectively; and if you can't train effectively, you can't race successfully—it's that simple."

How to Use This Guide

This guide is divided into 4 parts. They're presented in order of importance, with the first 3 parts building on the one before.

So Part 1? It's not only where you begin, it also forms the foundation for everything else you do. Without this ground floor, none of the other parts hold up.

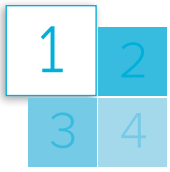
Think of Part 1 as the single most important step you can take.

In fact, for the majority of athletes, implementing the Part 1 strategies are *enough*. The more advanced tactics that come in Parts 2 and 3 add further additional benefits, but they pale in comparison to the Part 1 strategies. (Part 4 provides advice and resources that help you solve specific challenges that may arise during any part of your journey.)

Once you've nailed the guidelines in Part 1, though, you can use the subsequent sections to further personalize and elevate your nutrition, if desired.

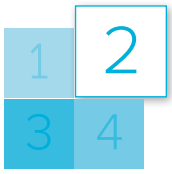
PARTS

HERE'S A QUICK RUNDOWN OF EACH SECTION.



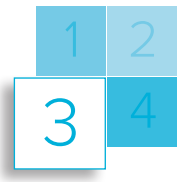
THE ESSENTIALS

Start here and build a strong foundation by mastering the essential skills of performance nutrition. We'll show you how to get the protein, carbohydrates, fats, vitamins, minerals, phytonutrients, and fluids you need to perform your best. This alone will give you an advantage over 90 percent of your competitors.



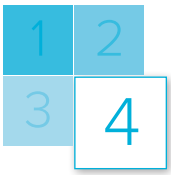
FINE TUNING

In this section, you'll learn how to eat for your specific body composition goals. Whether you want to lose fat or gain muscle, you'll be able to adjust your eating approach to speed up progress, overcome plateaus, and optimize energy intake for any given activity level.



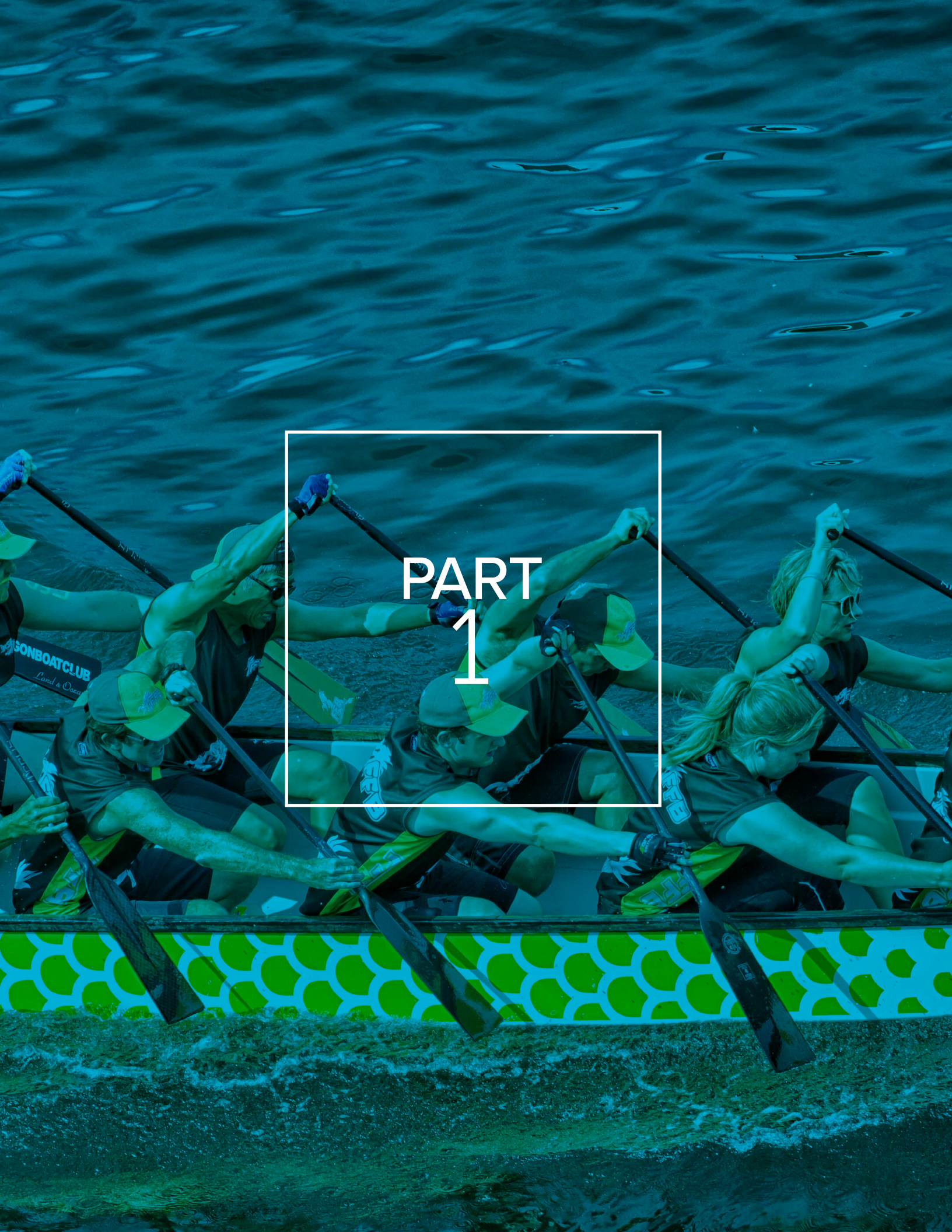
HIGH PERFORMANCE

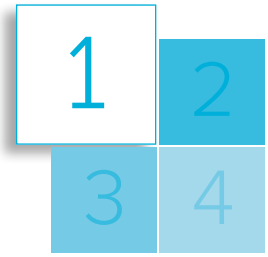
Here you'll move beyond the essentials—even beyond individualization—and learn more advanced nutrition strategies that help you make progress at the fringes. This means eating the right nutrients before, during, and after practices, workouts and races. We'll also cover supplements in this section.



SPECIAL TOPICS AND CONSIDERATIONS

The final section is filled with tips and tricks that can help you with special circumstances—for instance, you have a tight budget or food allergies, or you don't eat meat. It also shows you how to better incorporate quality nutrition into your personal routine, whether you want to eat well while traveling or need healthy on-the-go snacks.


PART
1



THE ESSENTIALS

HOW TO BUILD A STRONG FOUNDATION

Here's an important (and maybe surprising) fact: Research shows that athletes rarely meet all their nutritional needs. Even those who try to eat a healthy diet may not get enough water, calories, protein, quality carbohydrates, healthy fats, vitamins, minerals, and/or phytonutrients. (Yes, that's a long list.)

These nutrient deficiencies can:

- reduce endurance
- decrease muscle strength and power
- increase recovery time after races
- reduce muscle mass
- increase body fat

That's why nailing the essentials of nutrition is so important—and can be such a game-changer, for both performance and health.

But covering all those bases—from hydration to protein to vitamins—sounds complicated, right?

Well, it's not—provided you use the right system.

We have that system.

Before we explain, a quick reality check: Nutrition for rowing is critical, but getting it right shouldn't require as much effort as mastering the sport itself. That'd be unsustainable. It might even prevent you from getting started.

As an athlete, you're busy and have lots of demands on your time. You don't need to spend that time meticulously measuring your food or worrying about unnecessary details to meet your needs.

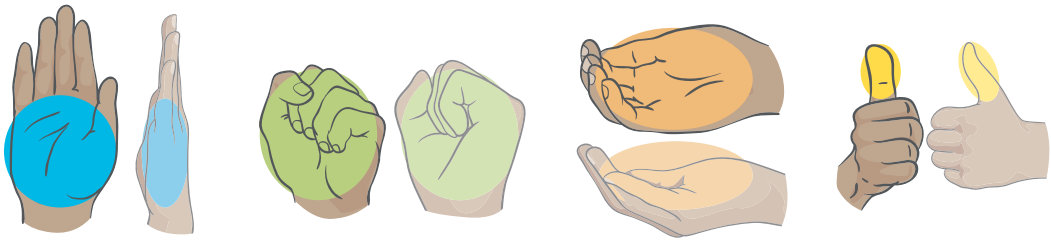
Enter: hand portions.

With this system, you can use your hand for easy, convenient portion-sizing and meal planning.

You're not actually measuring your food, but rather using your hand to gauge portion size. And because each hand portion provides a certain number of proteins, carbs, and fats, this method counts calories, macros, and even micronutrients (like vitamins and minerals) *for* you.

Here's how it works:

- Your **palm** determines **protein** portions.
- Your **cupped hand** determines **carbohydrate** portions.
- Your **thumb** determines **fat** portions.
- Your fist determines vegetable portions.



A portion of protein = 1 palm

A portion of vegetables = 1 fist

A portion of carbs = 1 cupped hand

A portion of fats = 1 thumb

This handy portion-measuring system works well for many reasons.

- **Hands are portable**. They come with you everywhere you go: restaurants, cafeterias, social gatherings, the gym.
- **Hands are always the same size**. So they serve as a reliable reference point—without the need for measuring cups or a food scale.
- **Hands are proportional to your body size**. Bigger people generally need more food and tend to have bigger hands—therefore they get larger portions. Smaller people generally need less food and tend to have smaller hands—therefore they get smaller portions.
- **Hand portions can ensure adequate nutrition**. Following hand-portion guidelines helps you get the right amount of calories, protein, carbohydrates, fats, vitamins, minerals, and phytonutrients.
- **Hand portions are easy to track**. This eliminates the time-consuming—and often unnecessary—task of weighing and measuring your food, or entering everything you eat into a calorie- and macro-tracking app.

Now that you know how the hand portion system works, let's get to the good part...

What to Eat (and How Much)

There are five key nutrition categories that are crucial for athletes. If you consistently follow the guidelines for each, you'll be well-fueled, well-nourished, and well-prepared to perform your best.

You might notice: We don't say a word about calorie intake in this section. Isn't that pretty important, too?

For sure. But by nailing these five essentials—using the recommended hand portions—you'll automatically meet your calorie needs. It's built into the system, without you having to think about it.

That said, if you need to adjust your intake—because you want to lose fat or gain muscle—we'll show you how to modify your hand portions for those goals in Part 2.

Remember: Mastering the essentials here in Part 1 is your first and most important step. Everything else is secondary.

ESSENTIAL ONE

Optimal Hydration

This isn't the most exciting topic, but it's an important one. That's because if you don't drink enough water—and you become dehydrated—your health will decline, your metabolic rate will slow, and your performance will tank.

Case in point: When you lose more than 1-2 percent of your body water—which can happen from just one hour of exercise in the heat—brain function diminishes, endurance drops, and strength and power decrease. What's more, your heart can start racing during even relatively easy activities.

So it's critical you drink enough.

Your guideline: Aim for 96 to 128 ounces (3-4 liters) every day.

Here's how:

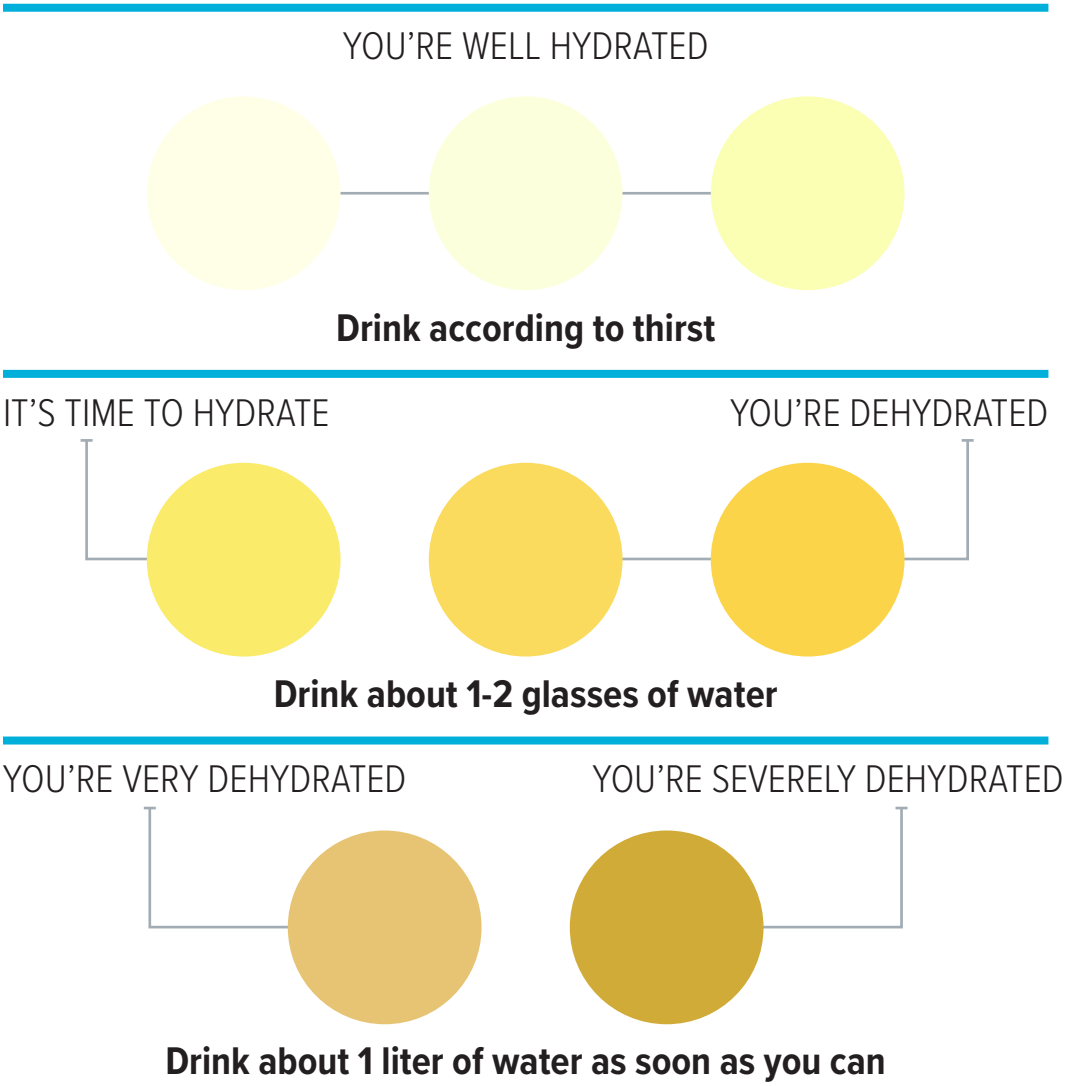
- **Step 1:** Drink a 32-ounce (1 liter) bottle of water during practices, workouts, and races.
- **Step 2:** Drink another 32-ounce (1 liter) bottle of water right after practices, workouts, and races.
- **Step 3:** Each time you eat a meal, drink 8 to 16 ounces (0.25-0.5 liter) of water.

For basic hydration, plain water is fine. But if you're training hard (and sweating a lot), you could add a powdered sports or recovery drink to these bottles. To learn more about this, see Part 3: High Performance.

Use the chart below to assess your hydration level.

Are you Hydrated?

Your urine color is an indication of your hydration level.



Toilet water dilutes urine by 1-2 shades

The colors above assume you've peed in a cup. If you don't want to do that (who does?), just know that the toilet water will dilute your urine color by 1 or 2 shades.

Urine color isn't your only indicator of dehydration, though. If you've been going hard and start feeling a little confused, get a headache, tire quickly, become dizzy or light-headed when standing up, or feel really moody, these are early warning signs of dehydration. You need to start drinking. (Refer to "Nutrition During Training and Races" in Part 3 for more guidance on specific hydration strategies.)

ESSENTIAL TWO

Lean Protein

As a rower, you need more protein than the average person.

If you don't eat enough of this nutrient, it's harder to build muscle, lose fat, and recover from practices, workouts and races.

Protein also helps you:

- digest your food better
- make hormones (like growth hormone)
- maintain a healthy immune system

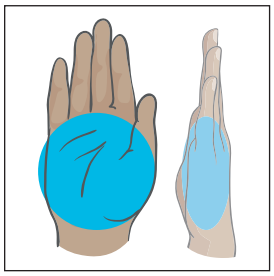
Your guideline: Eat 0.8 to 1 gram of protein for every pound you weigh (1.8-2.2 grams per kilogram). This ensures you've optimized protein intake. (It's based on research showing this is the upper range needed to maximize muscle growth.)

For example, if you weigh:

- 150 pounds (68 kg):
  Eat 120-150 grams of daily protein.
- 200 pounds (91 kg):
  Eat 160-200 grams of daily protein.
- 250 pounds (113 kg):
  Eat 200-250 grams of daily protein.

Once you've done the math to calculate your intake, you can figure out how many hand portions you need.

As you've already learned, hand portions make it easy to track your intake.



For example, one portion of lean protein—say, lean steak, chicken breast, or tofu—is the diameter and thickness of your palm and provides about 25 grams of protein. A scoop of protein powder is usually the same. (Check the product label to be sure.)

Based on this, a 150-pound (68 kg) rower would need about 5-6 palms of protein each day.

Here's the math:
150 pounds of body weight
x 0.8-1.0 gram of protein
= 120-150 g protein.

Then 120 g or 150 g of total protein
÷25 g protein per palm-sized serving
= 5-6 palms of protein per day.

To make it even easier, you'll probably get enough protein if you simply eat around 1-2 palm-sized portions of protein-dense food with each meal.

That brings us to the obvious question...

What kind of protein?

Primarily, we recommend you emphasize minimally-processed sources of lean protein. That includes animal protein such as lean beef, chicken, turkey, and fish, and plant-based protein such as lentils, beans, edamame, tempeh, and tofu.

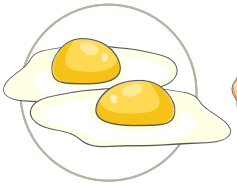
But you don't need to rigidly eat chicken breasts at every meal. Instead, think of your protein choices on a continuum, as shown in the graphics that follow.

The idea: Most of your protein—about 80 to 90 percent—should come from the "Eat More" and "Eat Some" categories. The other 10 to 20 percent can come from which category you prefer, including the "Eat Less" category. This provides you with flexibility while still allowing you to nail the essentials.

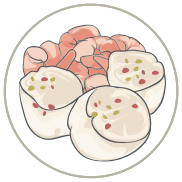
Start viewing your choices on the next page.

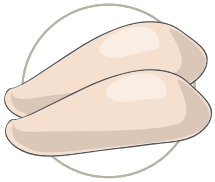
EAT MORE

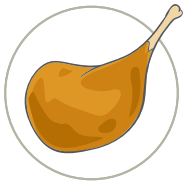
ANIMAL-BASED

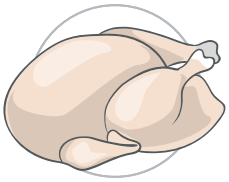

Eggs and egg whites

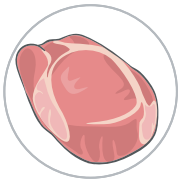

Fish

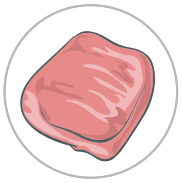

Shellfish

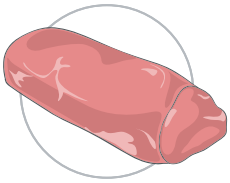

Chicken

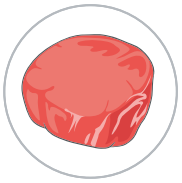

Duck

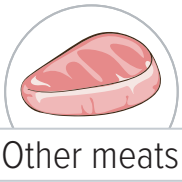

Turkey


Lean beef

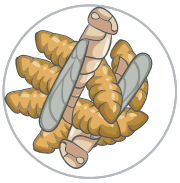

Bison


Lean pork


Wild game


Other meats

goat, camel, kangaroo, crocodile, horse


Insects

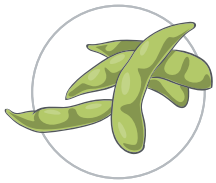

Plain Greek yogurt

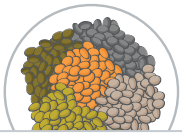

Cultured cottage cheese

PLANT-BASED

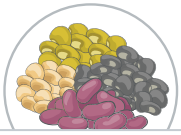

Tempeh


Tofu

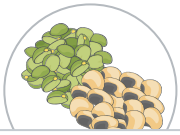

Edamame


Lentils*

French, red, green, black, brown


Beans*

Navy, Lima, kidney, black, great northern, garbanzo, etc.


Peas*

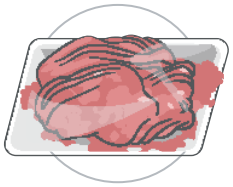
Split, Black-eyed

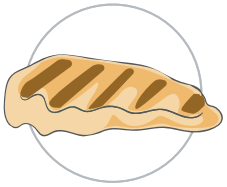
* These only count as a protein source if you do not consume the other protein sources in this category. Otherwise, they count as a carbohydrate, as they contain more carbohydrate than protein.

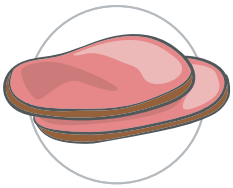
EAT SOME

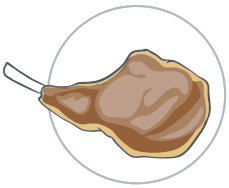
ANIMAL-BASED

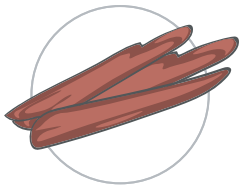

Uncultured cottage cheese

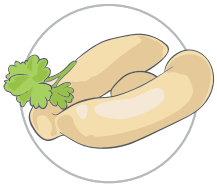

Medium-lean meats (85-92% lean)

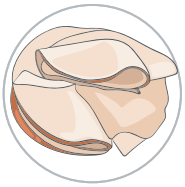

Medium-lean poultry (85-92% lean)


Canadian bacon


Lamb

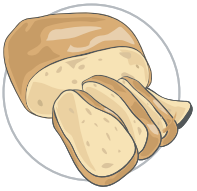

Meat jerky

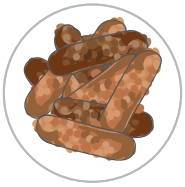

Poultry sausage


Minimally-processed lean deli meat


Protein powders

PLANT-BASED

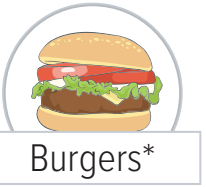

Seitan


Tempeh bacon


Textured vegetable protein


Plant-based protein powders

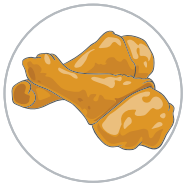

Soy yogurt, unsweetened


Burgers*
Black bean, traditional veggie

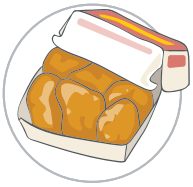
* These only count as a protein source if you do not consume the other protein sources in theis category. Otherwise, they count as a carbohydrate, as they contain more carbohydrate than protein.

EAT LESS

ANIMAL-BASED

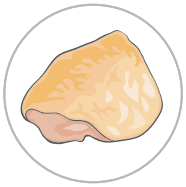


Fried meats

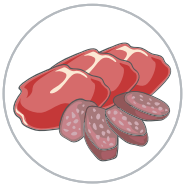


Chicken fingers, nuggets, and wings

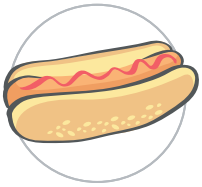
High-fat meat (<85% lean)



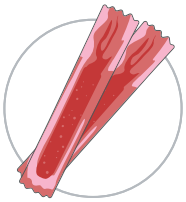
High-fat poultry (<85% lean)



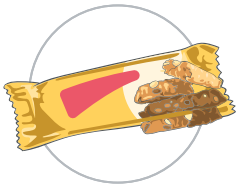
Processed deli meats



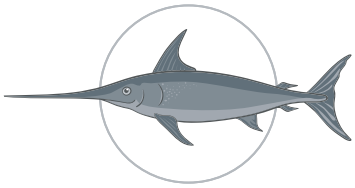
High-fat sausages



Pepperoni sticks

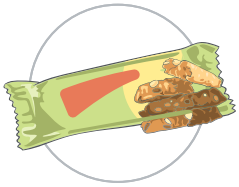


Protein bars



High-mercury fish (albacore tuna, shark, swordfish)

PLANT-BASED



Plant-based protein bars

Plant-based meats**

Burgers, sausage, hot dogs, etc.

** This includes items such as Impossible, Beyond, Gardein, Boca, Tofurky, Quorn, etc. Most of these are made from a highly-processed protein, along with added oils, salts, sugars, flavors, and colors.

ESSENTIAL THREE

Quality Carbohydrates

Rowers need carbs to be at their best. While you might have heard low-carb diets help athletes, the scientific evidence just doesn't support that. Rather, getting enough carbs is crucial for optimizing your performance, recovery, and body composition.

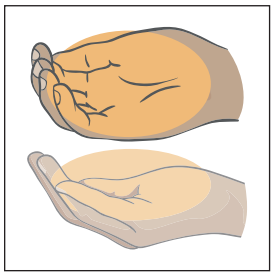
Eating enough carbs can also help you:

- Keep your thyroid functioning well
- Maintain healthy levels of sex hormones (testosterone for men; estrogen and progesterone for women)
- Regulate your mood and emotions
- Sleep better

Your guideline: Eat 2 to 3 grams of carbs for every pound you weigh (5-7 grams per kg).

For example, if you weigh:

- 150 pounds (68 kg):
  Eat 300-450 grams of carbs every day.
- 200 pounds (91 kg):
  Eat 400-600 grams of carbs every day.
- 250 pounds (113 kg):
  Eat 500-750 grams of carbs every day.



As with protein, you can use your hand to track your intake. A portion of carbohydrate-rich foods—fruit, potatoes, grains, beans—is the size of your cupped hand and provides about 25 grams of carbs.

Based on this, a 150-pound (68 kg) rower would need about 12-18 cupped handfuls of carbs each day.

Here's the math:
150 pounds of body weight
x 2-3 grams of carbs
= 300-450 g carbs.

Then 300 g or 450 g of total carbs
÷ 25 g carbs per cupped-hand serving
= 12-18 cupped handfuls of carbs per day.

To make it even easier, you'll probably get enough if you eat around 3-5 cupped handfuls of carbohydrate-dense foods with each meal.

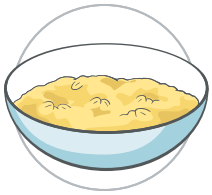
What kind of carbs?

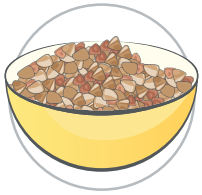
Choose high-quality carbohydrate-rich foods that are minimally-processed. This includes any whole fruit, starchy vegetables—such as whole potatoes and corn—a variety of whole grains and beans.

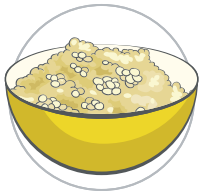
Use our continuum to guide your choices: About 80 to 90 percent of your carb intake should come from the "Eat More" and "Eat Some" categories. The other 10 to 20 percent can come from whichever category you prefer, including the "Eat Less" category.

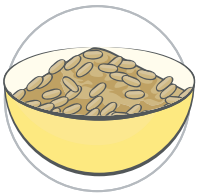
EAT MORE

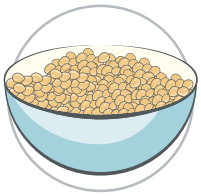

Beans and lentils

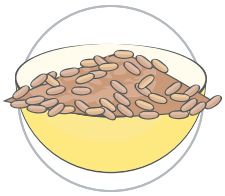

Steel-cut, rolled, and old-fashioned oats

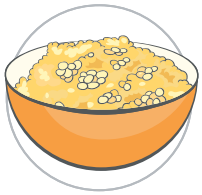

Buckwheat

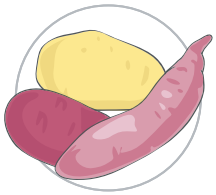

Quinoa

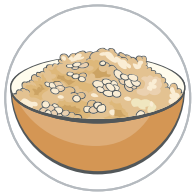

Whole-grain, black, and wild rice


Sorghum


Farro

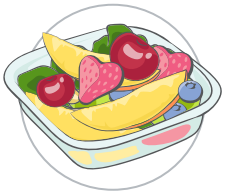

Millet


Potatoes

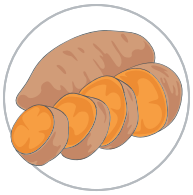

Amaranth

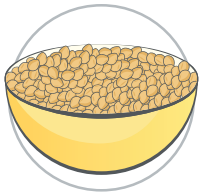

Plain non-Greek yogurt

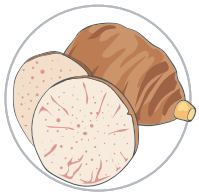
Plain kefir


Fresh and frozen fruit

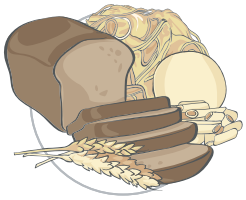

Corn


Sweet potatoes

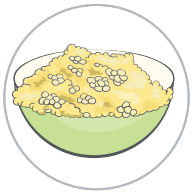

Barley

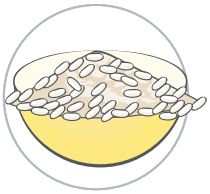

Taro

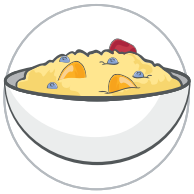

Yams


Whole or sprouted grain bagels, breads, English muffins, pastas, and wraps

EAT SOME


Couscous


White rice


Ganola

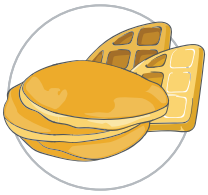

Instant or flavored oats

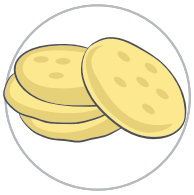

Milk


Vegetable juices


Flavored yogurt


Flavored kefir

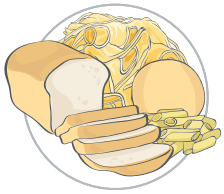

Pancakes and waffles


Whole-grain crackers

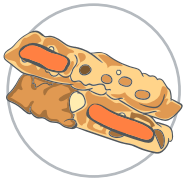

Oat-based geranola bars


Canned, dried, and pureed unsweetened fruit


Bean and pulse pasta


White bagels, breads, English muffins, pastas, and wraps

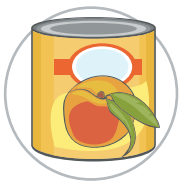
EAT LESS


Cereal bars


Fruit juices


Flavored milk


Honey, molasses, syrups, and jellies

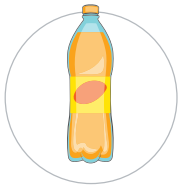

Canned, dried and pureed sweetened fruit

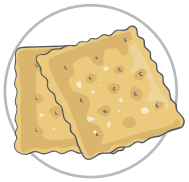

Sweetened sports drinks


Juice drinks

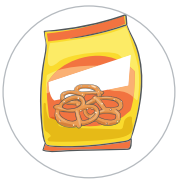

Sweetened energy drinks


Sweetened plant milks


Soda


Crackers

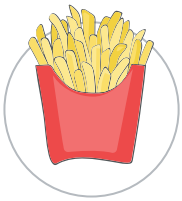

Sugar


Pretzels

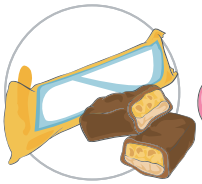

Foods with 10+g added sugar

THESE FOODS ARE ALSO RICH SOURCES OF FATS, SO THEY COUNT AS BOTH A SERVING OF CARBOHYDRATE AND FAT.

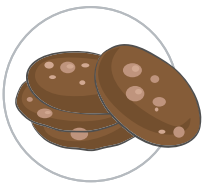

Chips


Fries


Ice cream and frozen yogurt


Candy bars


Donuts


Cookies


Pastries


Muffins


Cakes

ESSENTIAL FOUR

Healthy Fats

People used to think dietary fat made you fat, slowed you down, and caused heart attacks. But that's not true: Especially if you focus on the right kind of fat.

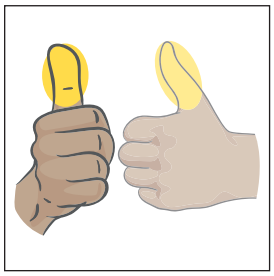
In fact, you need healthy fats to help:

- burn body fat and build muscle
- your cells work properly
- make sex hormones (like testosterone and estrogen)
- build a strong immune system
- absorb important nutrients like vitamins A, D, E and K

Your guideline: Eat about 0.5 gram of fat for every pound you weigh (1.1 grams per kg).

For example, if you weigh:

- 150 pounds (68 kg):
  Eat about 75 grams of fat every day.
- 200 pounds (91 kg):
  Eat about 100 grams of fat every day.
- 250 pounds (113 kg):
  Eat about 125 grams of fat every day.



You can use your thumb to track your intake. A portion of fat—for instance, nuts, peanut butter, olive oil—is the size of your entire thumb and provides about 10 grams of fat.

Based on this, a 150-pound (68 kg) rower would need about 7-8 thumbs of healthy fats each day.

Here's the math:
150 pounds of body weight
x 0.5 gram of healthy fats
= 75 g healthy fat.

Then 75 g of total health fat
÷10 g fat per thumb-sized serving
= 7-8 thumbs of fat per day.

To make it easier, you'll likely get enough fat if you eat 1-2 thumbs of fat-dense food with each meal.

What kind of fats?

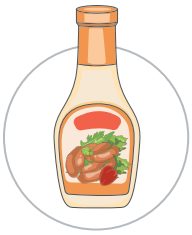
You want to eat mostly minimally-processed, healthy fats. Aim for a mix of whole-food fats (like nuts and seeds), blended whole foods (like nut butter and guacamole), and pressed oils (like olive and avocado). This doesn't mean, however, that you can't enjoy butter or bacon (in moderation).

Your goal: to consume 80 to 90 percent of your fat intake from the "Eat More" and "Eat Some" categories of the eating continuum below. The other 10 to 20 percent can come from whichever category you prefer.

EAT MORE-

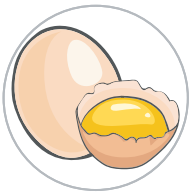

Extra virgin olive oil

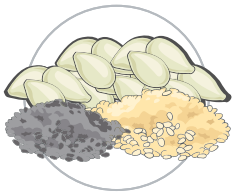

Walnut oil

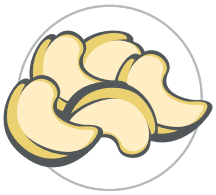

Marinades and dressings with oils in this category


Avocado and avocado oil


Aged cheese


Egg yolks

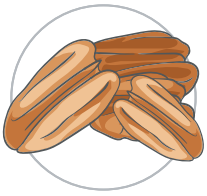

Seeds: chia, flax, hemp, pumpkin, pepita, and sesame

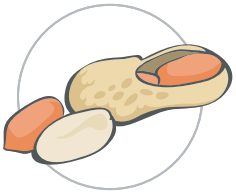

Cashews

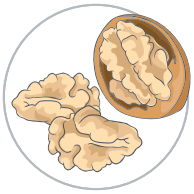

Pistachios


Almonds

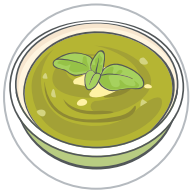

Brazil nuts

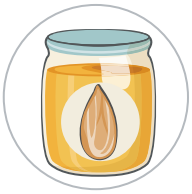

Pecans


Peanuts and natural peanut butter


Walnuts


Olives


Pesto made with extra virgin olive oil


Nut butters from other nuts in this category


Fresh, unprocessed coconut

EAT SOME


Virgin and light olive oil

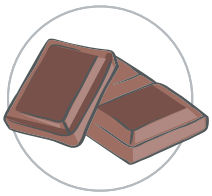

Expeller pressed canola oil


Sesame oil


Flaxseed oil


Coconut oil / milk

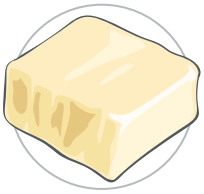

Peanut oil and regular peanut butter


Dark chocolate


Marinades and dressings with oils in this category

Fish and algae oil


Cream


Fresh cheese


Flavored nuts and nut butters


Trail mix

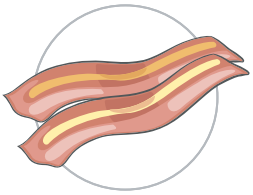
Often rich in carbohydrate as well, with sources of varying quality.

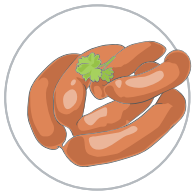

High oleic safflower oil

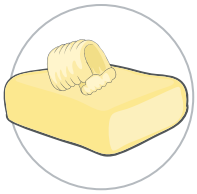

High oleic sunflower oil

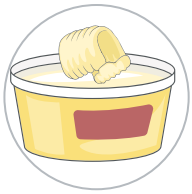
These naturally-bred oils are high in heart-healthy monounsaturated fats and contain little saturated fats and no trans fats.

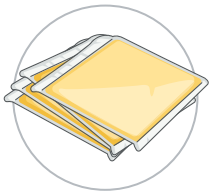
EAT LESS


Bacon*


Sausage*


Butter


Margarine


Processed cheese


Corn oil


Cottonseed oil


Sunflower oil


Canola oil

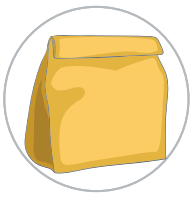

Soybean oil

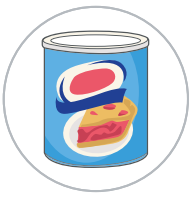

Safflower oil


Marinades and dressings with oils in this category


Vegetable oil


Fat-rich foods with 10+g added sugar


Hydrogenated oils and trans fats


Shortening

* Also sources of protein, though usually higher in less desirable fats.

ESSENTIAL FIVE

Vitamins, Minerals, & Phytonutrients

To help ensure you get all the vitamins, minerals, and phytonutrients (plant nutrients) you need for optimal health and performance, we gave colorful, nutrient-dense vegetables their own category.

That's because vitamins, minerals, and phytonutrients are the unsung heroes of the performance world (and colorful vegetables are loaded with them). These micronutrients are involved in hundreds of metabolic processes that influence energy levels, appetite, strength, endurance, and mood.

Without enough of these micronutrients:

- you'll get sick more often
- your brain function and coordination will decrease
- your muscle (and heart) contractions will be less powerful
- you'll be weaker and your endurance will suffer
- you'll suffer muscle cramps
- you'll increase your risk of heart disease, cancer, diabetes, and more

Most athletes don't meet all of their vitamin and mineral needs. Specifically, they're often deficient in vitamin D, magnesium, zinc, and calcium.

What's more, they also tend to come up short in phytonutrients. One clue: Their plates aren't very colorful.

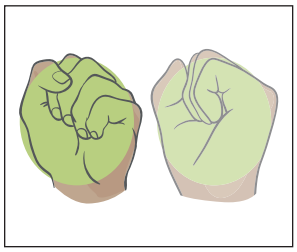
Turns out, the colors and aromas in plants signify the presence of phytonutrients—and virtually all athletes are deficient in one color or another. In fact, only 12 percent of athletes consume enough purple/blue-colored vegetables (and fruits), and only 14 percent get enough white-colored produce.

How to get the right amount

By eating an appropriate amount and variety of lean proteins, quality carbohydrates, and healthy fats, you'll likely meet most of your vitamin and mineral needs.

And by "eating the rainbow" of vegetables (and fruits), you should get plenty of each plant color—and the remainder of your vitamins and minerals.

Hard-training rowers should try to eat at least 1 cup of each color (green, red, orange/yellow, blue/purple, white) of vegetables every day.

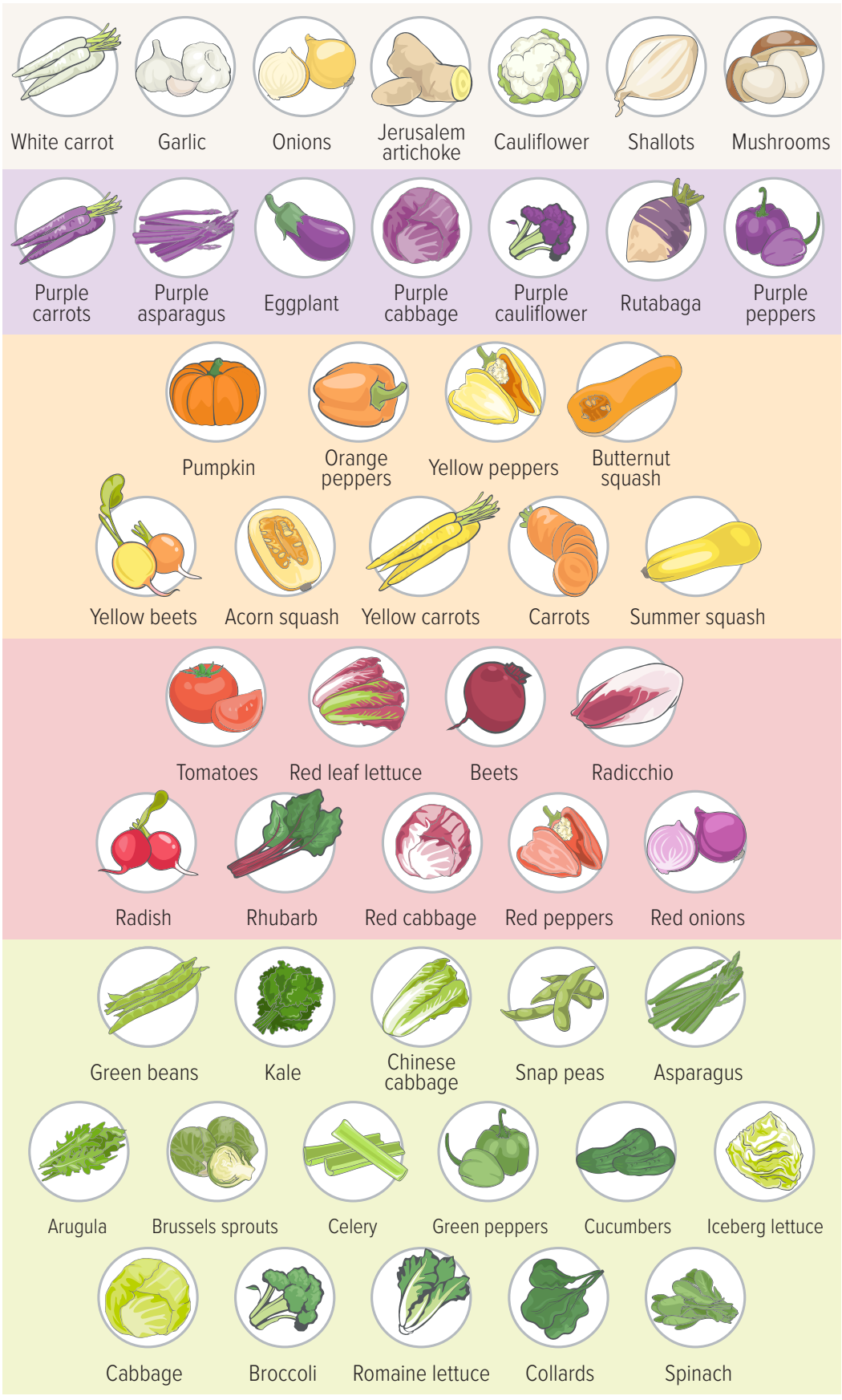


A portion of vegetables—spinach, tomatoes, cauliflower—is equal to the size of your full fist (which is about 1 cup). To make things easy, you'll probably get enough if you simply eat around 1-2 fists of vegetables with each meal.

Try to "eat the rainbow." Different colors imply different nutrients and health benefits.

Eating a variety of colorful fruit and starchy vegetables (like potatoes) also helps you "eat the rainbow," though these foods live in the Carbohydrate category.

Eat the Rainbow



Essential Knowledge

Food Labels: How to Read Them

The Nutrition Facts label can help you make better choices. Here's how to read it.

Nutrition Facts

Serving Size: 1 cup (228g)
Servings per Container: 2

Amount per Serving
Calories 250 Calories from Fat 110

	% Daily Value
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%

* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Serving Size: 1 cup (228g)
Servings per Container: 2

1. Start with serving size. What's the actual serving size? How many servings per container? You may assume a package is one serving only to find it's two or more. For example, if it's two servings versus one, it has double of everything listed on the label, including calories.

Amount per Serving
Calories 250 Calories from Fat 110

2. Check the calories. This is the number of calories per serving. Multiply this by the number of servings you eat to know your total calorie intake. Are the calories high, low, or just right for your needs? Here are some general guidelines for calorie ranges:
MEALS: 400-850 Calories
SNACKS: 150-350 Calories

Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	

3. Scan the label for trans fat. Trans fat intake should be kept as close to 0 g as possible. (Saturated fat and cholesterol don't need to be limited unless you have a medical condition.)

	% Daily Value
Total Fat 12g	18%
Saturated Fat 3g	15%

4. Understand "% Daily Value." Five percent or less is low. Twenty percent or more is high. These percentages show how much of each nutrient is provided for a 2,000 Calorie diet. Your nutrient needs may be higher, but this helps you know how nutrient rich a product is.

Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%

5. Look for these key nutrients. Aim for 25-40 grams of dietary fiber each day, as it's important for overall health. So products with more fiber are preferable. Vitamins A and C, as well as calcium and iron, are also crucial for health and performance. (If you follow our hand portion recommendations, you won't even have to think about this.)

Protein 5g

6. Note the protein amount. Protein makes meals and snacks more filling; it also helps you build muscle and lose fat. Here are good targets for protein: MEALS 30-60g / SNACKS 10-20g

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

7. Skip the footnotes. This section describes how much of each nutrient is recommended for a person if they're eating 2,000 or 2,500 Calories. However, each person has different needs, and these numbers are only very rough guidelines. As an athlete, your calorie, vitamin, mineral, and protein needs will likely be much higher.

Grocery Shopping 101

HOW TO NAVIGATE THE SUPERMARKET

To grocery shop effectively and efficiently, use a trusted system: Shop the perimeter.

This tip has been around since the 1990s, and it's still generally true today.

Most supermarkets are set up the same way: The fresh, minimally-processed foods are located on the outside aisles, while the highly-processed options tend to reside in the middle.

For example, you'll find fruits and vegetables, fresh seafood, fresh beef, fresh poultry, eggs, tofu, and yogurt around the store's edges.

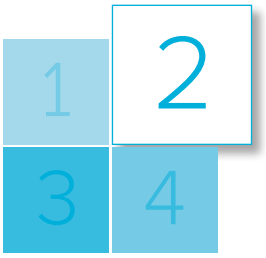
Central aisles are typically full of pre-packaged, nutrient-poor, ultra-processed food products.

There are exceptions, of course. So you can make quick forays into the aisles for a specific purpose, like getting beans, natural peanut butter, nuts, whole grains, and tuna.

But don't linger. Instead, get back to the "safe" perimeter as soon as possible.

The best approach: Make a list before you go, and stay focused on it—so you aren't persuaded by impulse and marketing.

PART 2



FINE TUNING

HOW TO CUSTOMIZE YOUR DIET

Your body is unique, and so are your goals. In this section, we'll show you how to individualize your nutrition plan to an even greater extent.

A reminder: If you haven't yet mastered the essentials, there's probably no benefit in trying to customize your diet.

But if you're consistently getting enough lean protein, quality carbohydrates, healthy fats, vegetables, and water, you can now get a little more "personal."

Take the Next Step

In "Part 1: The Essentials," you calculated the number of hand portions for your needs. So based on that, you're eating anywhere from 3-5 meals a day and getting:

- 1-2 palms of protein with each meal
- 3-5 cupped handfuls of carbs with each meal
- 1-2 thumbs of fat with each meal
- 1-2 fists of vegetables with each meal

Consider that your starting point.

Now ask yourself: How's it going so far? Have you lost or gained weight? Are you recovering and performing better? Are you making progress toward your goals?

Depending on your answer, you may or may not need this section right now.

If everything's great, keep doing what you're doing. You can come back to this section whenever you want (or need) to make tweaks to your nutrition.

But for those who are ready, we'll show you how to use portion tracking and strategic nutrition adjustments to improve your performance, recovery, and body composition even more.

Portion Tracking

HOW TO DIAL IN YOUR NUTRITION

Whether you're looking to maximize performance, improve recovery, lose body fat, or gain muscle, tracking your food intake is a proven way to make faster and more reliable progress.

There's one caveat, though: Research also shows that tracking food intake on apps may actually be unhealthy for some people. That's because it can lead to obsessive and disordered eating behaviors, such as:

- **Binge eating**: the overwhelming urge to consume as much food as possible, as fast as possible
- **Cognitive dietary restraint**: feeling constantly preoccupied with thoughts of restricting and controlling food
- **Moralizing food**: labeling what you eat as "good" and "bad" and attaching your self-worth to your food choices

Those at highest risk: People who are overly self-critical, get mired in details (rather than seeing the big picture), are prone to disordered eating, or have had an eating disorder in the past.

That's why we recommend hand portion tracking.

Sound familiar? You've already started using hand portions to gauge portion sizes. But now we'll show you how to tap into a more advanced benefit of this method.

With the help of our hand portion tracking sheet, you'll be able to get even more precise with your protein, carb, fat, and vegetable intake—but without becoming fixated on exact calorie, macronutrient, or vitamin and mineral numbers.

Your goal...

Track your portions daily (using the "Hand Portion Tracker" we've provided) and be as consistent as you can—within about 90 percent of your chosen hand portion targets—but not obsessive.

You can use your tracker in many ways. Examples:

- Check off each box as you eat the portion.
- Place numbers in each portion box to indicate the meal at which you ate those portions. (This tells you where and when you're hitting your portion targets.)

- Use letters in each portion box to indicate what foods you ate that fulfilled that portion. (Example: “C” for chicken under protein, or “F” for fruit under carbs.)
- Do all of the above. (Example: “C3” for chicken eaten at your third meal.)
- Create your own process for tracking consistency.

Ultimately, it’s about finding an approach that works for you.

Note: Once you have a regular intake that’s meeting your needs, tracking should no longer be a daily endeavor. Instead, it’s a tactic you’d use whenever your intake dramatically changes, you aren’t recovering well, or you want to change your body weight or body composition.

Once you become familiar with tracking, you can easily adjust your nutrition intake to better match your current needs and goals.

IMPORTANT CALLOUT

Adjusting your intake is often a process of trial and error. There’s no formula or calculator that can tell you the exact right amount to eat.

So the trick? Make a very specific adjustment to your food intake, do it every day, and monitor your results over a certain period of time. Then, based on the outcome, repeat the process if needed.

Don’t worry: It’s not as complicated as it sounds. Let’s walk through three key adjustments that are most helpful for athletes.

NUTRITION ADJUSTMENT ONE

Eat for Your Activity Level

As a rower, chances are your activity levels fluctuate throughout the year. You'll likely have some periods when you're training all-out, and others where you're not pushing as hard or even taking a break.

A smart approach: When your activity goes up, eat more. When your activity goes down, eat less. Don't overthink it. Keep it simple, see how you respond, and adjust as necessary.

This allows you to match your intake to your activity level—in order to maintain the body weight and composition you want, and continue to properly fuel recovery and performance.

For the most part, you should only have to adjust your carbohydrate intake. But in times of significant changes in activity, you can certainly modify your protein and fat intake as well.

Here's how.

When Your Activity Is High

When your activity levels are higher than normal (such as during times of intense training), your calorie and carbohydrate needs go up.

If you don't adjust your intake, you may experience unwanted weight loss and sub-par recovery. (Either one is a sign you need to bump up your food intake.)

Here's what to do *first*:

- Add 3-6 cupped handfuls of carbs to your daily intake. (For instance, you could eat 1-2 more cupped handfuls at a few meals.)

See how you respond for 1-2 weeks. If you lose weight or struggle to recover, it's time to add protein and/or fats. You could start with both, or even just one at first:

- Add 1-2 more palms of protein to your daily intake. (You could eat 1 more palm at a couple of meals.)
- Add 2-3 more thumbs of fat to your daily intake. (You could eat 1 more thumb at two or three meals.)

When Your Activity Is Low

When you're less active, eat less to reflect that. This will prevent you from gaining unwanted body fat and feeling sluggish and slow.

Here's what to do *first*:

- Remove 3-6 cupped handfuls of carbs from your daily intake. (You could eat 1-2 fewer cupped handfuls of carbs at a few meals.)

See how you respond for 1-2 weeks. If you gain weight and still need to cut more, reduce your fat intake.

- Remove 2-3 thumbs of fat from your daily intake. (You could eat 1 fewer thumb of fats at a few meals.)

NUTRITION ADJUSTMENT TWO

Eat to Lose Weight and Body Fat

If you want to lose fat, you have to eat a little less. (Or increase activity levels, or both.)

However, if you just eat less—of everything—you risk losing both fat *and* muscle. Which means you end up as a smaller, weaker version of your current self. That's probably not what you're after.

When trying to lose weight and/or body fat, maintain your protein intake while adjusting carbs and fat. This will help preserve your strength, power, and endurance.

What to Do

To lose fat, here's what to do *first*:

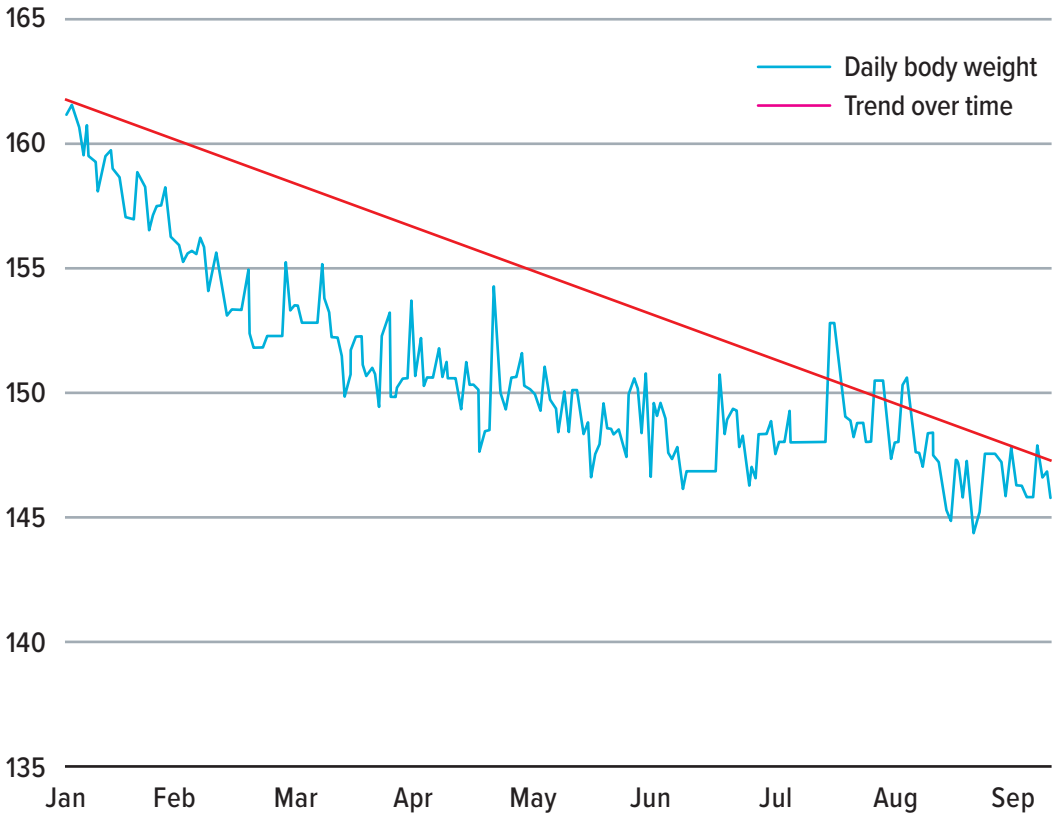
- Remove 3 cupped handfuls of carbs daily. (Keep protein and fats the same.) So if you were previously eating about 20 cupped handfuls of carbs per day, you'd now be aiming for 17 handfuls per day. (You could accomplish this by eating 1 fewer cupped handful at three meals.)

Then...

Monitor your results for 2 weeks.

This allows enough time to determine whether you're getting closer to your goal—or if you need to make further adjustments.

It's important to realize that weight loss is rarely linear. It fluctuates from day to day and week to week.



So keep that in mind if you're using the scale to measure your progress. (This fluctuation is another reason you want to monitor your results for a couple of weeks—it gives you a better idea of what's *really* happening, versus just a few days.)

If you're not seeing results, or you want to lose fat faster...

- Lower your fat intake by about 2-3 thumbs per day. So if you were previously eating about 10 thumbs of fat-rich foods per day, now you'd be aiming for a total of 7-8 thumbs.

Again: Monitor your results for 2 weeks. **Aim to lose no more than 1-2 pounds per week**. Losing more than that may lead to muscle and strength loss.

If you're losing more than 2 pounds per week...

- Increase your protein intake by 1-2 palms daily to slow the weight loss.

If your weight loss slows or stalls...

- Recalibrate. Lower your daily carbs and/or fats by another portion or two. Monitor for 2 weeks, and modify again as needed.

NUTRITION ADJUSTMENT THREE

Eat to Gain Muscle and Strength

Gaining muscle means training hard and eating more food.

But you can't just eat more. You have to eat more of the right things. Otherwise, you'll gain both muscle *and* fat.

What to Do

To gain muscle, here's what to do *first*:

- Add 3 cupped handfuls of carbs daily. So if you were previously eating about 20 cupped handfuls of carb-rich foods per day, now you'd be aiming for 23 handfuls per day.
- Add 1-2 palms of protein-rich foods daily. So if you were previously eating 4 palms of protein-rich foods per day, now you'd be aiming for 5-6 palms per day.

Then...

Monitor your results for 4 weeks.

Building muscle takes time. It'll take longer to see progress than it does for weight loss.

Your goal is to gain 1-2 pounds per month, but no more. Gaining faster than that will likely increase body fat and slow you down.

If you're gaining too much...

- Decrease your carb intake a bit (remove 1-2 cupped handfuls a day) to slow the weight gain.

If you're not seeing results, or want to gain faster....

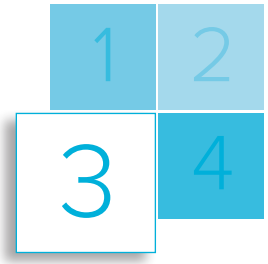
- Increase total fat intake by 2-3 thumbs daily. (So if you were eating 8 thumbs of fats per day, you'd now be aiming for 10-11 thumbs per day.)

Continue to monitor your results closely. You want a slow and steady gain.

If your gains are too slow...

- Recalibrate. Increase carbs, protein, and/or fats by another portion or two. Wait 4 weeks, and modify again as needed.


PART
3



HIGH PERFORMANCE

ADVANCED STRATEGIES FOR NEXT LEVEL NUTRITION

In this section, we'll walk you through the "little extras" that can give you a performance, recovery, and body composition advantage.

At the risk of sounding like a broken record: None of these strategies work well if you don't master—and consistently follow—the first two sections of this book.

Checked those boxes? You're in the right place.

Take the Next Step

When it comes to advanced nutrition strategies, we use a three-pronged approach, with a focus on how you eat:

- Before practices, workouts, and races
- During practices, workouts, and races
- After practices, workouts, and races

Over the next few pages, we'll share detailed instructions for each strategy. Plus, we'll wrap this section up by giving you our top recommendations for performance and recovery-enhancing supplements.

ADVANCED STRATEGY ONE

Before Practices, Workouts, and Races

Consuming the right foods and fluids anywhere from a few hours to right before a practice, workout, or race can help you:

- Sustain energy
- Boost performance
- Stay hydrated
- Preserve muscle mass
- Speed up recovery

What to Eat (and When)

To ensure you're optimally fueled, you have two options.

OPTION A

Eat 2 to 4 hours before your practices, workouts, and races.

Sports drinks won't cut it here. You need a balanced meal of "real" foods you eat regularly and that won't upset your stomach. Here's how to build it:

- 1-2 palms of protein
- 3-6 cupped handfuls of carbs
- 1-2 thumbs of healthy fats
- 1-2 fists of vegetables
- A low-calorie beverage like water

This covers everything you need for pre-workout nutrition. As you can see, it could just be one of your regular daily meals, only timed 2 to 4 hours prior before your practices, workouts, and races. The timing is important as it gives your body a chance to digest the food and regulate your blood sugar levels.

However, if you're like some athletes, and would rather consume a smaller meal closer to go-time, try the option below instead of—or even in addition to—Option #1.

OPTION B

Eat 0-60 minutes before your practices, workouts, and races.

As you get close to your practices, workouts, and races, there's less time for digestion. So any food eaten within an hour should be liquid (which your body can break down more quickly). Think: shake or smoothie. Yours might look like this:

- 1 scoop of protein powder
- 1-3 cupped handfuls of carbs
- 1 thumb of healthy fats
- 1 fist of vegetables
- 8 oz (250 mL) low-calorie beverage like water

(For 6 delicious done-for-you recipes, see "Super Shakes" in Part 4.)

ADVANCED STRATEGY TWO

During Practices, Workouts, and Races

What you eat (or drink) during activity should help accomplish some of the same goals—staying hydrated, keeping energy levels high, boosting performance—as what you eat before practices, workouts, and races.

As far as which foods or drinks you choose, that depends on the length and type of your practices, workouts, and races.

What to Eat (and When)

Competitions, training sessions, and workouts lasting less than 2 hours

For competitions, training sessions, and workouts less than 2 hours long—focus on hydration. This is especially true if you're using good pre- and post-event nutrition. So make sure you bring plenty of water.

What about sports drinks? They don't offer much benefit for practices, workouts, and races less than 2 hours long. Especially if you had a good pre-event meal beforehand.

There are some exceptions, though.

- If you're in the heat and sweating a lot, sports drinks may be useful since they have carbohydrates and electrolytes that help speed hydration and recovery. Your heart and muscles need enough of these electrolytes to function, so when sweating a lot, consider a sports drink.

- If you're going to be competing or training again in less than 8 hours, sports drinks can jumpstart recovery before the next session. (In this case, especially if your activity lasts 1-2 hours, using the guidelines for "Competitions and training sessions lasting more than 2 hours" below won't hurt and could be helpful.)

Competitions and training lasting more than 2 hours

For competitions and training longer than 2 hours, sports drinks that have both protein and carbs can be a huge help. (You can find these pre-made, or you can add protein powder to an appropriate carb-based sports drink.) Every hour you'll want to drink:

During training:

- 15 g protein (15 g essential amino acids powder or ½ scoop protein powder)
- 30-45 g carbs (usually 16-24 ounces, or 0.5-0.75 liters, of a sports drink)

During competition:

- 5 g protein (5 g essential amino acids powder or ¼ scoop protein powder)
- 30-45 g carbs (usually 16-24 ounces, or 0.5-0.75 liters, of a sports drink)

ADVANCED STRATEGY THREE

After Practices, Workouts, and Races

Athletes often wonder about both post-workout nutrition and what they should eat after a competition.

These are important questions. Why? Because not eating within 2 hours after an event can slow your recovery and crush next-day performance. While you don't have to eat immediately after, make sure you're on it within those 2 hours.

During that 2-hour window, you need to consume adequate protein, carbohydrates, fluids, and electrolytes (this is particularly true after a race).

What to Eat (and When)

0-2 hours after practices, workouts, and races

Just like beforehand, you want a balanced meal of real food. Here's how you might build it:

- 2 palms of protein
- 3-10* cupped handfuls of carbs
- 1-2 thumbs of fats
- 1-2 fists of vegetables
- water, sports drink, sweetened plant milk or chocolate milk*

Sometimes, you may not feel hungry. And that's okay.

If you don't feel like eating, you can go with liquid nutrition to start, followed by a regular meal an hour or so later.

Here's how you might build a shake:

- 2 scoops of protein powder
- 3-4* cupped handfuls of carbs
- 1-2 thumbs of fats
- 1-2 fists of vegetables
- 8-12 oz (250-360 mL) water, sweetened plant milk or chocolate milk*

(Learn to build the ultimate shake in Part 4.)

Your goal is to eat enough to refuel and rehydrate. But not so much that you're stuffed and sluggish.

* For carb intake after most practices or training, aim for a usual carb intake of about 3-5 cupped handfuls. After races, especially if you compete in multiple heats, aim for up to 6-10 cupped handfuls. Beverages such as sports drinks and sweetened milks can help you reach your needs when carb requirements are higher, otherwise water is sufficient for hydration.

How to perform your best

What you eat on race day can have a big impact on your performance.

Start learning and practicing these strategies now. Good nutrition for race day is training nutrition. Meaning: You eat the same way on race day as you do day in and day

out while preparing to compete. This way, there won't be any unwanted surprises.

On race day, you have 4 goals.

1 Do what you've practiced.

Practice and rehearse your competition-day routine. Warming up at 8 a.m. with a race at 10 a.m.? Then do a trial run well before your race day.

Wake at the same time, eat the same foods, and perform the same type and level of activity. Race day nutrition should be a familiar routine.

Learn your body and your needs; leave nothing to chance. Then, all you have to do is show up and perform.

2 Give your body the energy it needs.

On race days, you want to ensure that your nervous system is stimulated for performance, and that you have a constant supply of blood glucose to prevent bonking.

Therefore, your nutrition strategy is simple: Eat regular, easily digested meals throughout the day.

Ensure that these meals contain lean protein, quality carbohydrates, healthy fats, and colorful vegetables (just like every other day).

Also, you should eat familiar foods—the kinds you've been eating all along to get to race day. No one wants indigestion.

3 Avoid foods that make you uncomfortable.

Many athletes are hyper-stimulated on race day, and they find it more difficult to tolerate large meals or slowly-digested foods (such as vegetables).

If you find this is an issue for you, choose foods that don't aggravate your stomach and that make you feel "light."

During the suggested practice run (from tip #1, above), experiment with different foods until you find a routine that works well for you. Even foods that aren't part of a usual "good nutrition" plan are acceptable here as long as you get adequate carbohydrate and energy intake, and you feel comfortable.

4 Fuel up after the race.

The adrenaline rush and energy demands of competition can wreak havoc on your appetite. But don't let that get the best of you.

While you can loosen the reins a bit after a big event, keep following the practices you just learned in Advanced Strategy Three the best you can.

Supplements: How to Get an Edge

Let's be clear: Although supplements can be a helpful addition to your diet, they won't make or break your results. Especially if you haven't mastered Parts 1 and 2 of this guide. (Are you sick of hearing that yet?)

But if you're not getting enough of certain nutrients, supplements can be particularly useful. They can also be beneficial when you're traveling and don't have access to your usual foods.

The bottom line: There's no magic to supplements. But they can fill in your nutritional gaps, and ensure you've optimized your intake. And that can give you a competitive advantage.

(Worried about safety? We've got you covered: Read "How to Avoid 'Tainted' Supplements")

Here are five proven supplements we recommend for most athletes.

SUPPLEMENT 1

Multi-Vitamin / Multi-Mineral

A basic multi-vitamin / multi-mineral can help prevent deficiencies in key nutrients. Look for a product that contains around 100 percent of most nutrients listed on the label.

SUPPLEMENT 2

Protein Powder

It's critical to eat enough protein for optimal recovery. Protein supplements—including whey, casein, egg, soy, brown rice, and pea—make it easier to consume what you need. When choosing powders, look for a product with a minimal ingredient list and around 25 grams of protein per scoop.

SUPPLEMENT 3

Omega-3 Fats

Healthy fats are crucial for health and performance. The most important of all: Omega-3 polyunsaturated fatty acids. Marine oils (fish, krill, algae) are your best sources of these fats. By taking 1-2 grams per day, you'll optimize your intake.

Important point, though: Not all products are created equally. While there are multiple types of Omega-3 fatty acids, you're looking for products specifically rich in EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid). In other words, most of the Omega-3 fat content should be EPA and DHA.

Check the label: It'll list the amount of EPA and DHA per serving. You want 1-2 grams of total EPA + DHA.

SUPPLEMENT 4

Caffeine

Caffeine has been shown to improve all types of athletic performance. Supplement with 3-6 mg/kg of bodyweight

30-60 minutes before your race. This is about 200-400 mg for most. Start low, at 100-200 mg, to assess your tolerance.

Research shows that 200 mg in one sitting (and 400 mg across an entire day) can induce anxiety in some people. What's more, those who are "slow metabolizers" of caffeine may experience this effect at lower intakes. (This means caffeine stays in their system longer than those who are "fast metabolizers.")

If you respond well, you can increase as needed (up to 600 mg) to maximize the performance benefits.

A word of caution: Employ caffeine supplementation strategically. It's best saved for races. If you use it too often, you can become less sensitive to its effects. And like the rest of your nutrition, make sure you've tested it out a few times before employing it on race day.

SUPPLEMENT 5

Creatine

Creatine is easily the most researched nutritional supplement. It's safe, can help increase strength, power, and muscle mass, and may even protect your brain health. The best type is creatine monohydrate.

Our recommendation: Take 3-5 grams (or 1 teaspoon) daily. (Doses up to 10 g/d might be necessary for larger athletes, such as those who are over 200 pounds.)

How Does Creatine Improve Athletic Performance?

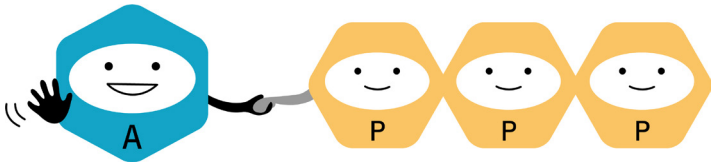
This is a bit tricky because there's likely more than one mechanism.

But for this explanation, we're going to stick with the main way scientists think creatine helps you build strength and muscle.

First, we need to talk about **adenosine triphosphate**, or **ATP**. (Biochemistry! Fun!)

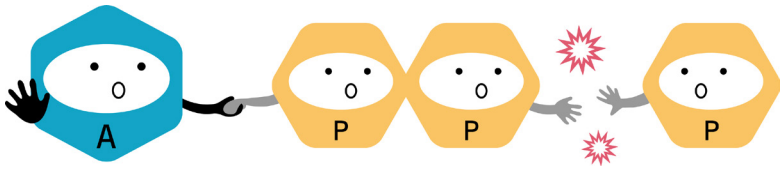
Think of ATP as your body's main energy source.

As the name suggests, it's:
1 adenosine molecule + 3 phosphate molecules.



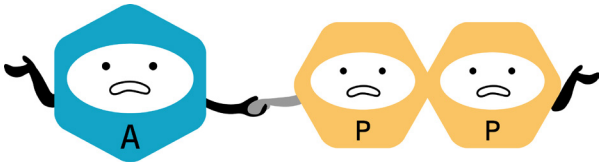
Now here's why this matters: For a muscle to contract, it has to cleave one of those phosphate molecules off of ATP. (Side note: People should really use the word "cleave" more.)

This creates a chemical reaction that fuels muscle contraction, allowing you to lift weights or sprint at a high intensity. (And by high intensity, we're talking short duration max efforts, like 5 reps with the heaviest weight you can lift, or an all-out sprint for 100 meters.)



But... that ATP now becomes **adenosine diphosphate** (adenosine + 2 phosphate molecules), or ADP.

The amount of ATP stored in your muscles is limited, and your muscles can't use ADP for energy.

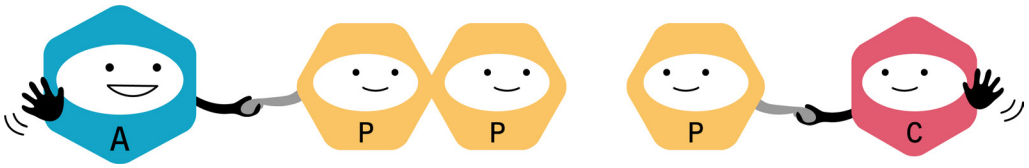


So... if you want to maintain your lifting intensity, your body has to figure out where to get another phosphate molecule.

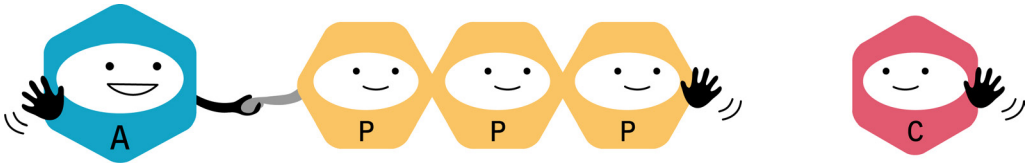
This is where creatine comes in.

When you consume creatine—whether from meat, fish, or a supplement—many of the creatine molecules bond with a phosphate molecule.

This forms creatine phosphate, which is stored in your muscle (but also elsewhere in your body).



To form more ATP quickly, ADP can take the phosphate molecule from the creatine phosphate.



Now you have more energy to train intensely.

The upshot: With creatine supplementation, you store more creatine phosphate in your muscles than you would otherwise, which means there are more phosphate molecules available to turn ADP into ATP.

This extra ATP can help you pump out more reps of a heavy weight, and over time, that extra work can also result in more muscle and strength.

Avoid "Tainted" Supplements

It's important for competing athletes to know exactly what's in their supplements, including protein powder, on the off-chance it might contain a banned substance.

No supplement is worth a disqualification after months of training.

Because of the varying levels of regulation, it's a good idea to choose third-party tested supplements when possible—particularly if you live somewhere with less pre-market testing.

Identify the Safest Products

NSF International's Certified for Sport does the most comprehensive third-party certification/testing of nutritional supplements for sport.

In fact, here at PN, we advise our coaches and clients—even those who aren't necessarily athletes—to use supplements that have been certified by NSF because of their high standards.

USP is also a reputable third-party tester.

Another organization, LGC Group, runs an independent drug surveillance laboratory providing doping control and banned substance testing for supplements through the Informed-Sport and Informed-Choice programs.

Check Before You Buy

Products that have been tested by the organizations listed

above usually clearly state this on their websites and often on their product packaging. The organizations also have databases of approved supplements to choose from.

Third-party tested supplements may be more expensive. This is partially because the testing process is quite expensive.

At the same time, investing in third-party testing shows that a supplement company is committed to protecting the health and reputation of their customers.

While it's preferable to opt for a validated supplement, if third-party tested options are outside your price range, another option is to visit ConsumerLab or LabDoor. These websites are devoted to reviewing purity and label claims for a variety of nutritional supplements on the market today.

PART 4

SPECIAL TOPICS

SPECIFIC NUTRITION STRATEGIES FOR WHEN YOU NEED THEM

Up to this point we've covered how to:

- Master the essential skills of performance nutrition
- Customize and track your diet based on activity level and goals
- Boost performance with high-level eating and supplement strategies

As you master each step in the process, you'll be creating a nutrition plan that meets 95 percent of your needs. But what about that other 5 percent?

That's when special topics come into play. This section looks at the unique challenges many athletes face when trying to improve their diets. We'll provide nutrition strategies for:

- Recovering from injuries and concussions
- Avoiding food allergies and intolerances
- Plant-based (or vegetarian) diets
- Eating in-season, pre-season, and off-season
- Eating well on a budget
- Eating well on the road
- Choosing healthy snacks

SPECIAL TOPIC ONE

Injuries and Concussions

Protect yourself and recover faster with nutrition

When you're injured, most doctors recommend rest, ice, and pain relievers. But you can get back to training much faster if you also implement these strategies.

Limit pain relievers.

Tylenol and Advil (and other anti-inflammatory drugs) can reduce pain and swelling. But taking them for too long can slow healing.

That's why we advise using them for only 3-5 days after an injury (simply as a way to manage the initial pain).

After that, consider the following...

Eat more anti-inflammatory fats.

Your fat intake can have a big impact on your recovery. A diet high in fats from the "Eat Less" choices (Part 1) can slow healing, while a diet high in fats from the "Eat More" and "Eat Some" choices can speed it up.

For non-head injuries, supplementing with 2-3 grams of Omega-3 fats (DHA + EPA) every day for up to 4 weeks can be helpful.

Eat enough protein.

Protein is crucial for healing—so adequate amounts are even more important when injured. To optimize recovery, add 1-2 palm-sized portions of protein-rich food to your usual intake.

Eat enough total food.

When injured (and less active), you should eat less than during training. However, if you're losing weight, you're probably not eating enough to heal.

That's why the goal should be weight maintenance when you're injured. You don't want to gain or lose weight during this time. Monitor your weight and, if needed, adjust your carb and/or fat intake using the instructions in "Part 2: Fine Tuning."

Take helpful supplements.

In addition to Omega-3s, a daily multi-vitamin / multi-mineral (use according to label recommendations) and curcumin powder (2 grams of curcuminoids) supplements can be extremely helpful during injury recovery.

Curcumin, the bioactive compound in turmeric, has anti-inflammatory properties that could help speed healing. (Look for a product that includes piperine, a black pepper extract that may improve your body's ability to absorb and use curcumin.)

Get strategic about concussions.

Left untreated, concussions can lead to serious health

complications. These daily nutrition and supplement strategies, added to your strong foundation of essentials, can help speed recovery.

- Omega-3 fats: 2-3 grams/day
- Vitamin D: 1,000-2,000 IU/day
- Curcumin: 2 grams/day
- Creatine monohydrate: 5 grams/day
- Green tea: 2-3 cups/day
- Fruits and vegetables: 7+ servings/day

SPECIAL TOPIC TWO

Food Allergies and Intolerances

Signs you have a problem—and what to do about it

Some foods just don't agree with us.

We eat them and feel sluggish. We get overly gassy and bloated. There can also be diarrhea, stomach cramping, and nasal and throat congestion. Maybe even acne and skin rashes.

This might sound like a normal part of life. But it shouldn't be.

That's because if you're eating foods that agree with you, you'll rarely experience any of these symptoms.

This isn't just an issue of feeling uncomfortable; these symptoms indicate a problem.

For example, food digestion and absorption can be impaired. So you get less nutrition from your food. Your immune system can also become compromised, causing you to be sick more often.

And, as a result of all the above, your performance suffers.

Here's the good news, though: If you can identify your food allergies, sensitivities, and intolerances, you can start to feel better immediately.

What's a Food Allergy?

When you eat a food you're allergic to, your immune system—which mistakenly sees that food as harmful—overreacts.

Symptoms include a quick drop in blood pressure and hives and swelling (of your lips, mouth, tongue and throat).

The 8 most common food allergens are: milk, eggs, peanuts, tree nuts (almonds, walnuts, cashews), fish, shellfish (shrimp, lobster), soy, and wheat.

Food allergies are pretty rare—they affect 5 percent of children and 2 percent of adults—but they can be severe. In some cases, your throat can swell closed and threaten your air supply. (Report these symptoms to your doctor immediately.)

What's a Food Intolerance or Sensitivity?

There's a big difference between food allergy and a sensitivity or intolerance.

According to the American Academy of Allergy Asthma & Immunology, "A food intolerance or a food sensitivity occurs when a person has difficulty digesting a particular food."

Unlike food allergies—which involve the immune system—food intolerances and sensitivities occur when the gut reacts poorly to specific foods and ingredients. These reactions generally unfold in a couple ways:

- Inflammation: Certain foods irritate gut tissues, leading to symptoms throughout the body. For example, the

amines naturally present in red wine can expand blood vessels, triggering migraines in some people.

- Indigestion: Other times, the digestive tract fails to properly break down certain foods. For example, you've probably heard of lactose intolerance. Some people's intestines don't produce enough of the enzyme lactase to digest lactose, a sugar present in dairy. The result: gas, bloating, and diarrhea.

Compared to a food allergy, intolerances and sensitivities are less severe. So you don't feel as bad; it's just a little uncomfortable.

However, left untreated, food sensitivities and intolerances can lead to problems.

Signs and symptoms include: excess gas and bloating, diarrhea, stomach cramping, abdominal pain, stuffy nose, nausea, fatigue, skin rashes like eczema or dermatitis, and headaches or migraines.

Common food intolerances and sensitivities include:

- lactose (dairy, especially milk)
- gluten (wheat, barley and rye)
- yeast (bread)
- fructose
- monosodium glutamate (MSG)
- lectins (beans)
- caffeine
- FODMAPs (certain carbs)

- salicylates (plant foods)
- sulfites

If you think you have a sensitivity or intolerance, keep a food log.

From there, try an "elimination" diet. With an elimination diet, you essentially cut out a certain food (or type of food) entirely for 3-4 weeks to see if your symptoms improve.

If your symptoms do improve, you then introduce that food back into your diet. Then, if the symptoms immediately return, you can be pretty sure you're sensitive or intolerant to that food and should eliminate it permanently (or at least limit it).

If, on the other hand, you eliminate a food and your symptoms don't improve, you can add that food back and try eliminating other foods.

Does that sound like a lot to do? Well, yes, it is. But by taking this systematic approach, you can actually identify the problem far more accurately than any tests that are out there (despite what their ads say).

Good news: We have a FREE guide to help you through the process and answer every question you may have. You can download it right here.

SPECIAL TOPIC THREE

Plant-Based Diets

What to eat when you're avoiding meat

Plant-based diets (often called vegetarian or vegan diets) can definitely improve your health. Eating more fruits, vegetables, and whole grains is usually a good idea.

That said, adopting a fully plant-based diet can create some unique challenges, especially for athletes. That's because meat and dairy contain crucial nutrients like iron, calcium, zinc, and vitamin B12 that are harder to get in adequate amounts from plant foods.

So how do plant-based eaters get enough of these nutrients?

- **Iron**: eat more beans, lentils, spinach, seeds, nuts and fortified foods
- **Calcium**: eat more spinach, broccoli, nuts, seeds, beans and fortified foods
- **Zinc**: eat more beans, lentils, whole grains, nuts, seeds and dark chocolate
- **Vitamin B12**: this is harder to get from plants so supplements are needed

Here's something else to keep in mind: When following a plant-based diet, eat mostly plant foods that are minimally-processed—versus just meat-free substitutes. This will help ensure you're getting the actual benefits of a plant-based diet versus only avoiding animal products.

Just as before, the same portion recommendations apply:

- 1-2 palms of protein (tempeh, tofu, seitan, beans, and lentils, plus dairy and eggs if vegetarian)
- 3-5 cupped handfuls of carbs
- 1-2 thumbs of fat
- 1-2 fists of vegetables

You might also consider the following daily supplements:

- Vitamin B12: 100 mcg
- Vitamin D: 1,000-2,000 IU
- Calcium: 500 mg
- Iodine: 150 mcg
- Iron: Get tested and supplement as recommended by your doctor (supplementing with iron can be dangerous if not done under medical supervision)

A smart plants-only diet is just as healthy and physique- and performance-friendly as a smart diet that includes meat. It just takes more effort, attention, and planning to cover all of your nutritional needs.

SPECIAL TOPIC FOUR

In-Season vs. Off-Season

What you should be doing differently

Depending on your goals, practice schedules, and off-season training, your nutrition may need to change throughout the year. Here's what to focus on during each season.

OFF-SEASON

Adaptation and Body Composition

The off-season is about getting better for your upcoming schedule. That means training for muscle adaptations—speed, size, strength, power, and endurance—and improving your body composition by losing body fat and gaining muscle.

To accomplish this, you'll need to apply everything you've learned so far: mastering the essentials, eating for your activity level and goal, and even applying some advanced before, during, and after training strategies.

TRAINING CAMP/PRE-SEASON

Hydration and Energy

If you've prepared well, you'll be in awesome shape and ready to show off the hard work you put in during the off-season.

As the intensity and/or duration increase, watch for dehydration. It can quickly sabotage everything.

Make sure your fluid intake is in check by revisiting Parts 1 and 3 of this guide. That's the best way to keep performance from dropping off during the shift to a more rigorous schedule.

Also, watch how much energy you expend. With all that training, especially if in the heat, you'll be burning lots of calories. So take in some extra food. Liquid nutrition (Super Shakes) is especially useful when high heat and a high volume of activity decrease your appetite.

IN-SEASON

Maintenance

The prep is done; now it's time to perform. At this point, your training volume is relatively low.

The goal is to simply maintain your body weight, strength, speed, and power.

(You're not going to have the training time for building muscle or increasing strength qualities during the season. Likewise, don't try to lose weight; it'll put you at risk for injury and poor performance.)

Nutritionally, you should be eating enough to recover from training and races, heal injuries, and maintain your body weight. This means focusing on the essentials, eating for your activity level, and paying attention to injury recovery nutrition.

SPECIAL TOPIC FIVE

Good Nutrition on a Budget

How to eat well when resources are limited

Most people think eating better means spending more money on food. But that's not always true. Here are some ways to make performance nutrition affordable.

Cook your own meals.

Buying ready-to-eat prepared foods is generally much more expensive than buying whole ingredients, which you can then prepare yourself. A little more time in the kitchen can yield big savings compared to take-out orders and the drive-thru lane.

Buy in bulk.

Wholesale clubs like BJ's, Costco, or Sam's Club—even Walmart—sell groceries in bulk. Buying meat, eggs, whole grains, and other foods in larger quantities can cut down on costs. Freeze extra meat and frozen fruits / vegetables to use later. But plan ahead to avoid throwing away rotting food.

Select the store brand.

"House brands" in grocery stores are usually just as good as brand name products without the extra price. Check out the ingredients and food labels; they're often the

exact same thing. You're just paying more to offset the advertising costs of brand name products.

Eat foods with lower unit pricing.

Unit pricing is how much a food costs for a given weight or amount. If beef is $8/pound and tuna is $3/pound, the tuna is cheaper, regardless of how much you actually pay at the register.

Products like eggs, light tuna, tofu, plain oats, plain rice, potatoes, dry beans and lentils, bananas, apples, citrus fruit, carrots, onions, romaine lettuce, extra virgin olive oil, and peanut butter are less expensive than many other options. Most grocery stores list unit pricing (such as cost per pound) on the price label on the package or shelf.

Watch for sales and coupons.

Foods like bulk chicken breast, beef stew meat, and/or lean pork are usually on sale every month. Look for coupons in the Sunday paper or on the food company's website.

Don't stress about organic.

Sure, organic foods are often better for you. But if money is tight, spend it on regular meat, fruits, and veggies. Most people do better when eating more whole foods—such as meat, whole-grains, beans, fruits and veggies—whether organic or not.

Bottom-line: Eating healthy isn't necessarily expensive. If you're a smart shopper, you can improve your nutrition while saving some cash.

SPECIAL TOPIC SIX

Good Nutrition on the Road

How to eat well while traveling

When you're on the road for races—or even vacations—good nutrition can be a challenge. Most people swing by fast-food places for quick, convenient, cheap meals. But that's not your only option.

When traveling, just like you pack extra shoes and underwear, take along easily portable food. These are items that don't need refrigeration but provide quality nutrition.

Foods That Travel Well

PROTEINS	CARBS	FATS	VEGGIES
Meat jerky	Bananas	Almonds, walnuts, cashews, or other nuts	Baby carrots
Tuna / salmon pouches	Oranges	Peanut butter or other nut butters	Cauliflower
Protein bars	Apples and pears	Sesame, pumpkin or other seeds	Celery sticks
Protein powder	Dried fruit (unsweetened)		Broccoli
Edamame (pre-cooked / packaged)	Bagels		
	Oat-based granola bars		

If you have these in your suitcase or travel bag, you're always prepared. For instance, you could have:

- a protein shake with an apple and peanut butter
- edamame with carrots and dried apricots
- beef jerky with a pear and almonds

Of course, you *will* still be eating at restaurants. When you do, go with the hand-sized portions you learned in Parts 1 and 2.

Good examples are turkey with rice and veggies. Salmon with roasted potatoes and veggies. Chicken with pasta and veggies.

With some creativity, you can often build a combination of protein plus vegetables, fruits, and/or whole grains.

For instance:

- Subway offers a salad or whole-grain bread options
- Starbucks has oatmeal and boiled eggs
- McDonald's has a salad you can pair with a burger patty

Check out the menus of your usual fast-food options, and see where you can get inventive about healthy meal combinations.

Bottom-line: Eating great on the road is completely possible; it just takes a little planning.

SPECIAL TOPIC SEVEN

Quick and Healthy Snacks

What to eat on the go

When your schedule is busy, it feels harder to eat well. Especially when fast foods and pre-packaged convenience foods are usually full of highly-processed, low-quality ingredients.

To create your own snacks on the go, pick one option from each category below. (You'll note they're similar to "Foods That Travel Well" in the previous section, but also include some refrigerated options.)

Portable Foods

PROTEINS	CARBS	FATS	VEGGIES
Protein powder	Bananas	Almonds, walnuts, cashews, or other nuts	Baby carrots
Plain Greek yogurt	Oranges	Peanut butter or other nut butters	Celery sticks
Hard-boiled eggs	Apples and Pears	Sesame, pumpkin or other seeds	Cauliflower
Meat jerky	Dried fruit (unsweetened)	Hummus	Cucumber slices
Edamame (pre-cooked / packaged)	Bagels	String cheese	Bell pepper slices
	Oat-based granola bars		Broccoli

Here are some of our favorite snacks:

- 1 apple with 1 string cheese
- 1 cup plain Greek yogurt with walnuts and a pear
- 2 hard-boiled eggs with baby carrots and hummus
- Any Super Shake recipe (See "Special Topic #8")

For most snacks, this is a good combination:

- 1 palm of protein
- 1 fist of vegetables or 1 cupped handful of fruit
- 1-2 cupped handfuls of other carbs
- 1 thumb of fat

SPECIAL TOPIC EIGHT

Super Shakes

Delicious liquid meals that save time, nourish and satisfy

By now, you know quite a lot about nutrition. But you won't always have time to create an ideal meal or snack. That's where Super Shakes come in.

Super Shakes are a blend of protein, veggies, fruits, and fats that provide a healthy dose of good nutrition and taste... awesome.

HOW TO MAKE A SUPER SHAKE

STEP 1

Pick a liquid.

If you're trying to lose weight, use water or other lower calorie drinks like unsweetened almond milk or skim milk. If you're trying to gain weight, use whole milk or whole fat plain yogurt.

STEP 2

Pick a protein powder.

Whey is the most common option and has the best tasting products. Casein, rice, pea, soy, and hemp proteins can all work, too.

STEP 3

Pick a fruit.

Bananas, berries, pineapple, apples (core removed), and dark cherries (pits removed) are all great options. You can use fresh or frozen fruit.

STEP 4

Pick a vegetable.

This may sound weird (or even gross), but spinach is usually the best vegetable to use as it doesn't affect the taste at all. Other options are cooked or canned squash or pumpkin, beets (cooked), cucumber, and celery.

STEP 5

Pick a healthy fat.

The best options in shakes are nuts and seeds, such as walnuts, almonds, cashews, flax seeds, chia seeds and hemp seeds. Avocado, unsweetened coconut, and dark chocolate—along with almond, cashew, and peanut butter—all work well, too.

STEP 6

Pick an extra.

If you used fresh fruit, you may want to add ice for a thick and refreshing shake. If you need extra carbs, you can include more fruit or a handful of uncooked oats. You can also add cinnamon and other spices for more flavor and health benefits.

You can replace 1-2 meals each day with a Super Shake—although you're best limiting it to 1 on most days.

Also, even with Super Shakes, you should still use the meal structure that best fits your goals and activity. The exact amounts of each food you use depends on your activity level and whether you're looking to gain or lose weight. So if you usually have two palms of protein at a meal, you'll want to use two scoops of protein powder.

Here are a few Super Shake recipes you'll love...

VANILLA AND PUMPKIN PIE SHAKE

- 6-12 oz (180-360 mL) water, unsweetened almond milk, whole milk, etc.
- 1-2 scoops vanilla flavored protein powder
- 1-2 fists of pureed pumpkin, unsweetened
- 1-2 thumbs of walnuts
- Add 2 cupped handfuls of uncooked oats
- Add ice, cinnamon, and nutmeg as desired

BERRY AND BANANA SUPER SHAKE

6-12 oz (180-360 mL) water, unsweetened almond milk, whole milk, etc.

1-2 scoops vanilla or strawberry flavored protein powder

1 banana

2-3 cupped handfuls of berries (any berry you like or a mix of them)

1-2 fists of spinach

1-2 thumbs of avocado slices

Add ice if using fresh fruit and uncooked oats if you need more carbs

APPLE AND GREAT GRAINS SHAKE

6-12 oz (180-360 mL) water, unsweetened almond milk, whole milk, etc. (use less fluid with apples)

1-2 scoops vanilla flavored protein powder

2 apples (core removed), sliced into wedges

1-2 fists of spinach

1-2 thumbs of almonds

Add 1 cupped handful of uncooked oats

Add ice and cinnamon as desired

CHOCOLATE, PEANUT BUTTER AND BANANA CLASSIC SHAKE

6-12 oz (180-360 mL) water, unsweetened almond milk, whole milk, etc.

1-2 scoops chocolate flavored protein powder 2 bananas

1-2 fists of spinach

1-2 thumbs of peanut butter

Add ice if using fresh fruit and uncooked oats if you need more carbs

APRICOT YOGURT SHAKE

6-12 oz (180-360 mL) water or unsweetened almond milk

1-2 scoops vanilla flavored protein powder

15-20 dried apricot halves, unsweetened

1-2 fists of spinach

1-2 thumbs of ground flax

1 cup plain yogurt or vegan alternative

Add ice as desired and uncooked oats if you need more carbs

CHOCOLATE CHERRY AWESOMENESS SHAKE

6-12 oz (180-360 mL) water, unsweetened almond milk, whole milk, etc.

1-2 scoops chocolate flavored protein powder

3-4 cupped handfuls of sweet dark cherries, pits removed

1-2 fists of spinach

1-2 thumbs of walnuts

Add ice if using fresh fruit and uncooked oats if you need more carbs

*Note: All smoothie recipes use standard portion sizes. Adjust to your needs and preferences.

WHAT'S NEXT?

In this guide, we've covered:

- how to master the essentials
- how to eat for your activity level and goals
- what to eat before, during, and after training and competition
- how to eat on the road
- and more...

That's a lot. But remember: This guide is laid out in order of importance. So just take it one step at time.

Begin with Part 1. And then stop. Re-read it, learn it, practice it, master it. And once you're really consistent with the essential strategies...

Move on to Part 2. And then stop again. Re-read it, learn it, practice it, master it. And once you're really consistent with the individualization strategies...

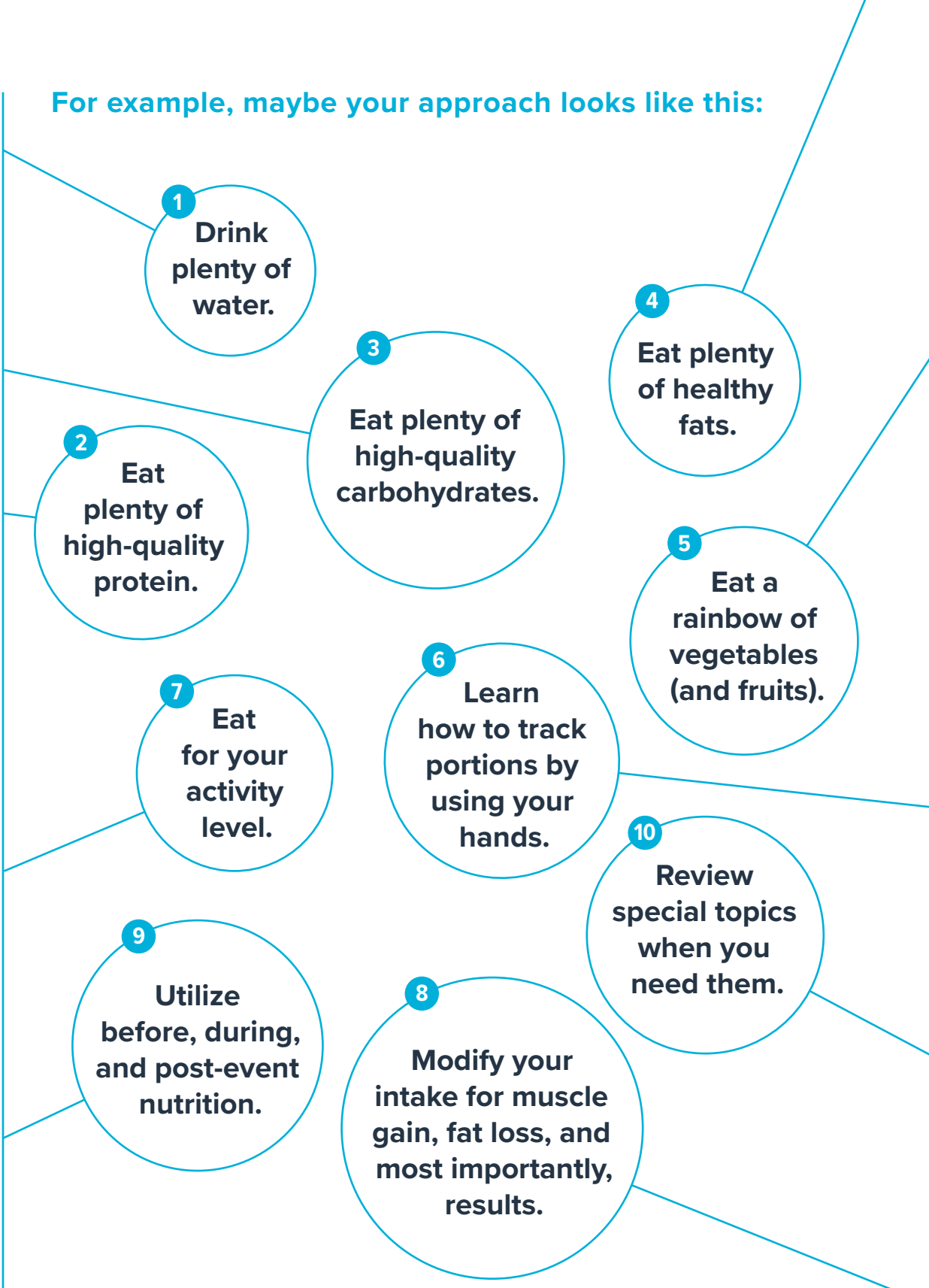
Move on to Part 3...

You get the picture.

Keep in mind, though, starting with Part 1 doesn't mean you need to adopt everything in Part 1 at once. In fact, most athletes probably shouldn't. (Same with Parts 2 and 3.)

Instead, just add one new nutrition practice every 2-4 weeks, get good at it, and then add another. That's how you build a lifetime of healthy and high-performance habits and skills.

For example, maybe your approach looks like this:



By mastering one of these practices every few weeks or month—in order—you'll be a totally different athlete. And not only that, you'll have turned your entire eating program around without much hassle or stress.

Achieve Elite Performance with Precision Nutrition

Optimize Nutrition | Maximize Results | Unlock Greatness

With 15 years of experience and over 150,000 graduates, Precision Nutrition is the global leader in teaching the art and science of nutrition coaching.

Learn from the very best—so your clients perform their very best.

We've worked with the **Cleveland Browns**, the **Seattle Seahawks**, the **Carolina Panthers**, the **San Antonio Spurs**, the **Houston Rockets**, the **Brooklyn Nets**, the **Toronto Maple Leafs**, the **Calgary Flames**, and six world champions, including US Open Winner **Sloane Stephens** and UFC all-time-great **Georges St-Pierre**.

We know Sports Nutrition.

And now you can, too.

Gain the knowledge, tools, and confidence to help anyone maximize their performance through nutrition with our state-of-the-art coaching programs.

Precision Nutrition Level 1

NUTRITION COACHING CERTIFICATION

Rated the world's #1 nutrition coaching certification by *Business Insider*, you'll earn the industry's most respected credential. LEARN MORE

Specialist in Nutrition

COACHING FOR ATHLETES

This advanced specialization gives you the training to create customized programs that help any athlete achieve optimal results.

LEARN MORE

RESOURCES

Hand Portions FAQ

QUESTION ONE

"Can I do hand portions with Paleo, keto, plant-based eating, and other diets?"

No matter the eating style, the answer is almost surely yes.

The guidelines in this e-book provide a balance of lean protein, quality carbs, and healthy fats. This is ideal for most athletes. But some athletes prefer to follow a specific diet, ranging from low-fat vegan to low-carb keto.

If that's your situation, you can adjust your hand portions to account for this, replacing equal portions of fats with carbs (low fat) or equal portions of carbs with fats (low carb).

For instance, let's say you prefer a low-fat diet, and you eat four meals a day. At two of your meals, you might nix the thumb of fats, instead adding equivalent handfuls of carbs.

The bottom line: The hand portions system is endlessly adaptable to a variety of eating styles, with no math required.

QUESTION TWO

"Do I gauge my portions before or after cooking?"

One of the most common questions asked about using

your hands to measure portions is whether the hand portions are for cooked or uncooked foods.

The answer is both.

Hand portions are for *plating* your food, not *cooking* it. For foods you eat cooked, you gauge them once cooked (e.g., meat, pasta, rice). For foods you eat raw, you gauge them raw.

And if a food can be eaten both cooked or raw (such as spinach, for example) then you would use your hand to gauge the amount that is going onto your plate, whether you cooked it or not. (While there is a calorie difference between the cooked and uncooked version, that only really matters for folks with the most advanced aesthetic goals, such as bodybuilders).

That way, hand portions can be used anywhere: home, restaurants, buffets, conferences, at a friend's house, the office.

QUESTION THREE

"How do I handle foods that don't fit?"

Most foods clearly fit into the hand portion categories: protein, carbohydrates, fat, and vegetables.

But some foods and drinks don't seem like they fit well into the hand-size portion system.

The good news: There are workarounds.

Most notably problematic are liquids and foods made

from multiple ingredients (as opposed to whole foods).

Here's how to handle them. And no, you don't have to pour drinks into your cupped hand to measure them!

Dairy

Cow's milk, non-Greek yogurt, and kefir are tricky as they're a pretty even mix of protein, carbohydrates, and fat, or can vary depending on the fat level you choose (for instance, whole, low fat, skim).

We suggest making the decision of how to count a specific type of milk or yogurt based on the fat or carbohydrate content.

- Generally, consider 1 cup (8 ounces) of whole milk products a "thumb" of fat. (Yes, even though it's larger than a thumb and also provides some protein and carbs.)
- Anything lower in fat (0 to 2 percent) is generally considered a cupped hand of carbs (while also providing some fats and protein).
- A cup of anything highly-sweetened (chocolate milk, strawberry yogurt) is generally considered a cupped hand of carbs (while also providing fats and protein).

So what happens in this situation: You have a full-fat yogurt or whole milk that's highly sweetened? Is it a fat or is it a carb?

Think of it this way: If it's already full-fat, you know it's a thumb of fat. But if a lot of sugar is also added to it, then it's *also* a cupped hand of carbs.

The key here is to pick an approach, and apply it consistently. For most people, this is probably more important than the actual classification itself.

That's because the hand portion system already has built-in buffers: It assumes your protein, fat, and carb sources contain smaller amounts of the other macros.

What's more, if you're consistent with how you gauge foods, you can more easily adjust based on the results you're getting.

Plant milks

Plant milks are much like cow's milk above. They tend to provide a mix of macros, depending on the source, and classification would also depend on whether or not they're sweetened.

Generally, unsweetened versions (like plain almond milk) don't count as anything, as they typically only have about 30 to 40 calories in a whole cup (8 ounces), and are often consumed in relatively small amounts.

A sweetened version, however, would be considered a cupped hand of carbs.

Again, the key is to pick an approach and follow it consistently.

Eggs

Eggs are considered a protein, but because they're liquid in their raw form, people are sometimes unsure about how to measure them.

In general, two cooked whole eggs are the size of a palm. Four cooked egg whites are also the size of an average palm.

Of course, actual amounts may vary based on the size of your individual palm.

One question we've gotten about eggs: Why do two eggs count as a palm of protein when they only have about 6 grams of protein each? (So 12 grams of protein in total.)

It's a good question. First, it's important to remember:

With hand portions, we're using our hands to gauge the portion size. We're not reverse-engineering the portions based on how many macros are in a given food.

2 eggs are the size of an average palm, which is why they're counted as one palm of protein.

If you're wondering how this impacts your total protein intake, the answer goes back to the idea of assuming a mixed intake of a variety of different protein sources.

Overall, we estimate that each palm of protein is approximately 20 to 30 grams of protein. It's true two eggs provide less protein than, say, a palm of chicken breast. But... a palm of chicken breast is actually *above* that 20- to 30-gram range.

The idea: *Most* sources—but not all—will land in that 20- to 30-gram range. And the *average* of all the different protein sources you eat will certainly end up in that range, even if there are some individual exceptions (like eggs and chicken breast).

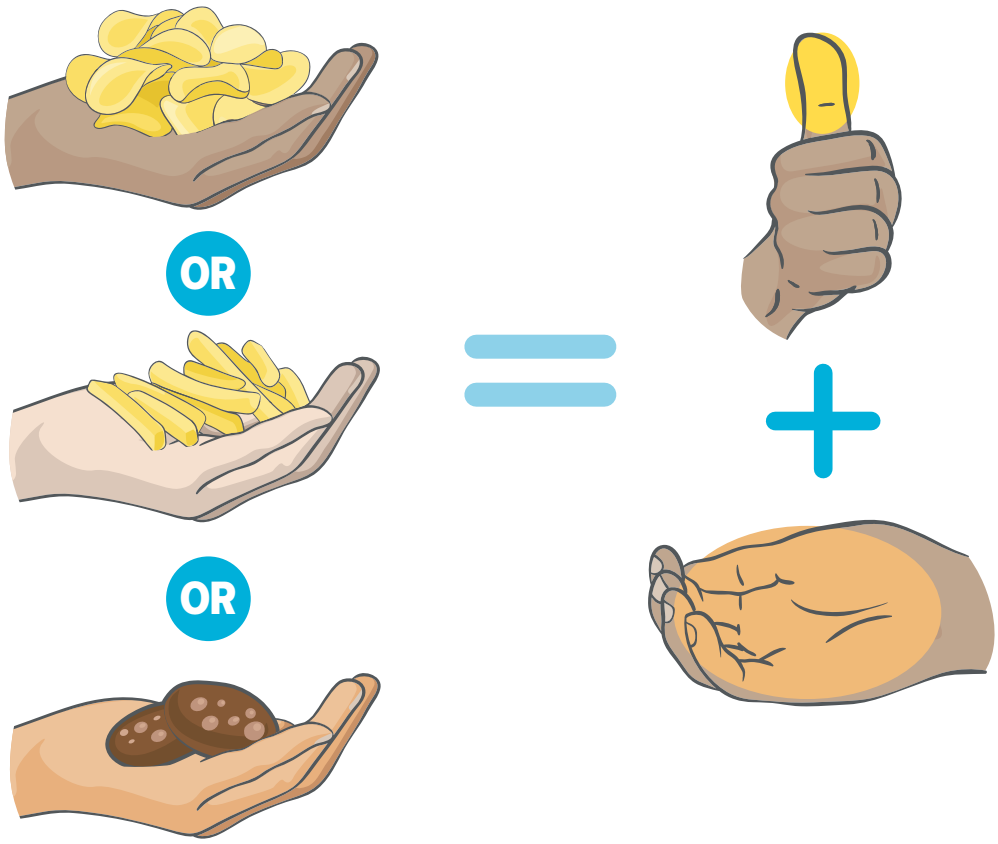
Cookies, ice cream, chips (and other compound foods)

With naturally-occurring or minimally-processed foods, it's usually best to assign only one hand portion to a food.

But with these highly-processed "compound" foods, you'll want to assign two (or more) hand portions. Because just like dairy products that are full-fat and highly sweetened, they count as both fat and carbs.

Here's an easy way to account for highly-processed and compound foods: one handful is equal to one thumb of fat and one cupped hand of carbs.

How to Gauge Highly-Processed Foods



Soda and juice

Unfortunately, a serving of soda doesn't really fit into a cupped hand. Regardless, consider a 12-ounce can of non-diet soda as one cupped hand of carbs.

Certainly, eight ounces would be preferable from the standpoint of physical size (and carbohydrate total), but 12 ounces really simplifies the process, as these beverages most often come pre-packaged this way.

(This is similar to how we account for bananas, apples, oranges, pears, and other fruits of different sizes, since they're "pre-packaged" by nature.)

Again, the consistency of how you gauge your hand portions is actually the most important factor.

As for juice, consider an 8-ounce glass of juice to be one cupped hand of carbs.

Alcohol

In many ways, alcohol should be its own portion category, as the vast majority of its calories are derived from its alcohol content (7 kcal/gram), not its carb, protein or fat content.

This applies to pretty much all alcohol, be it light beer, microbrew/craft beer, wine, hard ciders, and spirits.

A “serving” of alcohol is about 5 ounces for wine, 1 ounce for spirits (example: vodka, whiskey, tequila), and 12 ounces for beer.

However, with the rise of craft beers, such as double IPAs that have much higher alcohol content than “regular” beer, the standard “beer serving” doesn’t hold up as well as it once did.

Most “regular” beer is about 4 to 5 percent alcohol by volume (ABV). Many craft beers can be as high as 9 percent ABV, some even reaching 15 to 20 percent ABV.

And since alcohol itself provides calories (again, 7 kcal/gram), doubling or tripling the alcohol content dramatically increases the calorie content.

Additionally, many craft beers have higher amounts of

carbs than “regular” beers. The amount of carbs in a beer depends on how it’s made.

If the beer has a thicker mouthfeel, darker appearance, and sweeter flavor, it will most likely have more carbs. The amount of carbs in a 12 ounce “serving” of beer ranges from 2 to 16 grams. Plus, many craft beers come in 16 ounce sizes, or pints, which means they are 33 percent larger, and thus provide 33 percent more alcohol, carbs, and calories.

Is your head spinning yet? Don’t overcomplicate. Like we said, simpler is better.

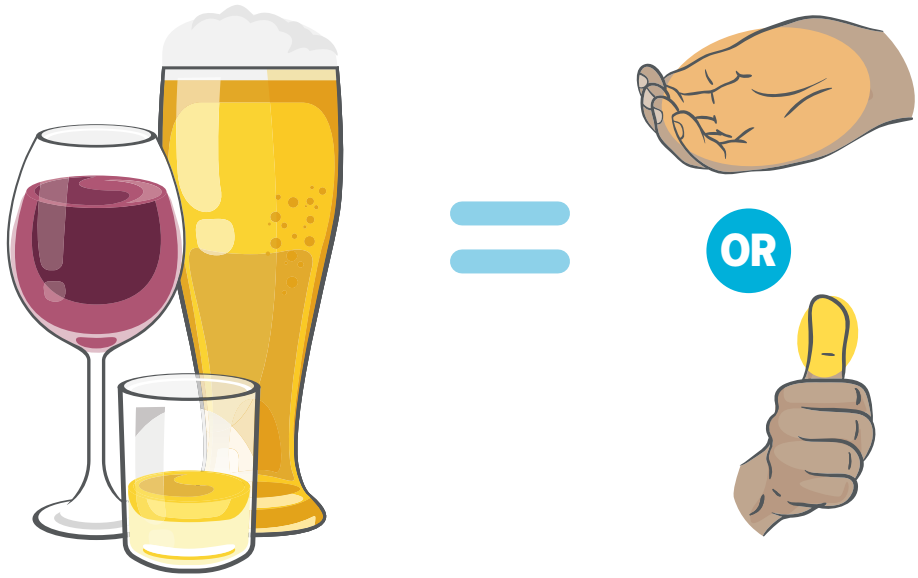
So...

For hand portion purposes, we recommend counting them as follows:

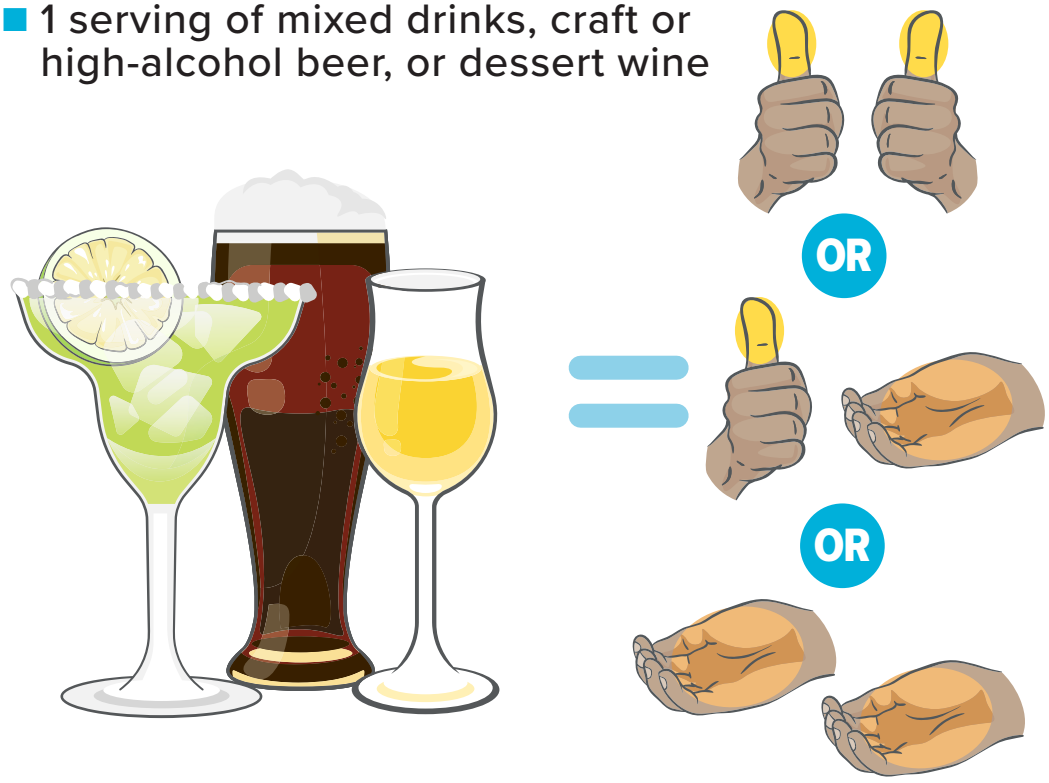
- A serving of wine, spirits or “regular” beer counts as one cupped hand of carbs or 1 thumb of fat.
- A serving of dessert wine, sweetened spirit (e.g. gin and tonic, margarita), or sweeter/high-alcohol/craft beer counts as two portions—either 2 cupped hands of carbs, 2 thumbs of fat, or 1 of each.

How to Gauge Alcohol

- 1 serving of wine, light beer, or spirits



- 1 serving of mixed drinks, craft or high-alcohol beer, or dessert wine



One last note on alcohol: While you can count your alcohol intake with hand portions, it is still important to be mindful of your overall number of drinks.

QUESTION FOUR

"How do I account for mixed-food meals?"

Mixed-food meals, like soups and chilis, can also be tricky when trying to assign hand portions. (Just like it's difficult to measure these foods when tracking macros or counting calories.)

You simply have to eyeball it, and make your best guess, especially if you didn't make the meal yourself.

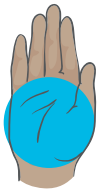
Ultimately, the general goal is to get a portion of protein, veggies, quality carbs, and/or healthy fats in each serving. This is relatively easy to do when cooking for yourself. When eating meals made by others, simply guesstimate as well as you can.

Most importantly, if the goal is anything other than weight gain, eat slowly and mindfully, until satisfied.

Often, mixed-food meals like this are a combination of protein, carbs, and fats, but are a bit lower in veggies. Adding a vegetable on the side can be very helpful. And adding additional protein can also be helpful if the meal seems to have a greater proportion of carbs and fats (which they often do).

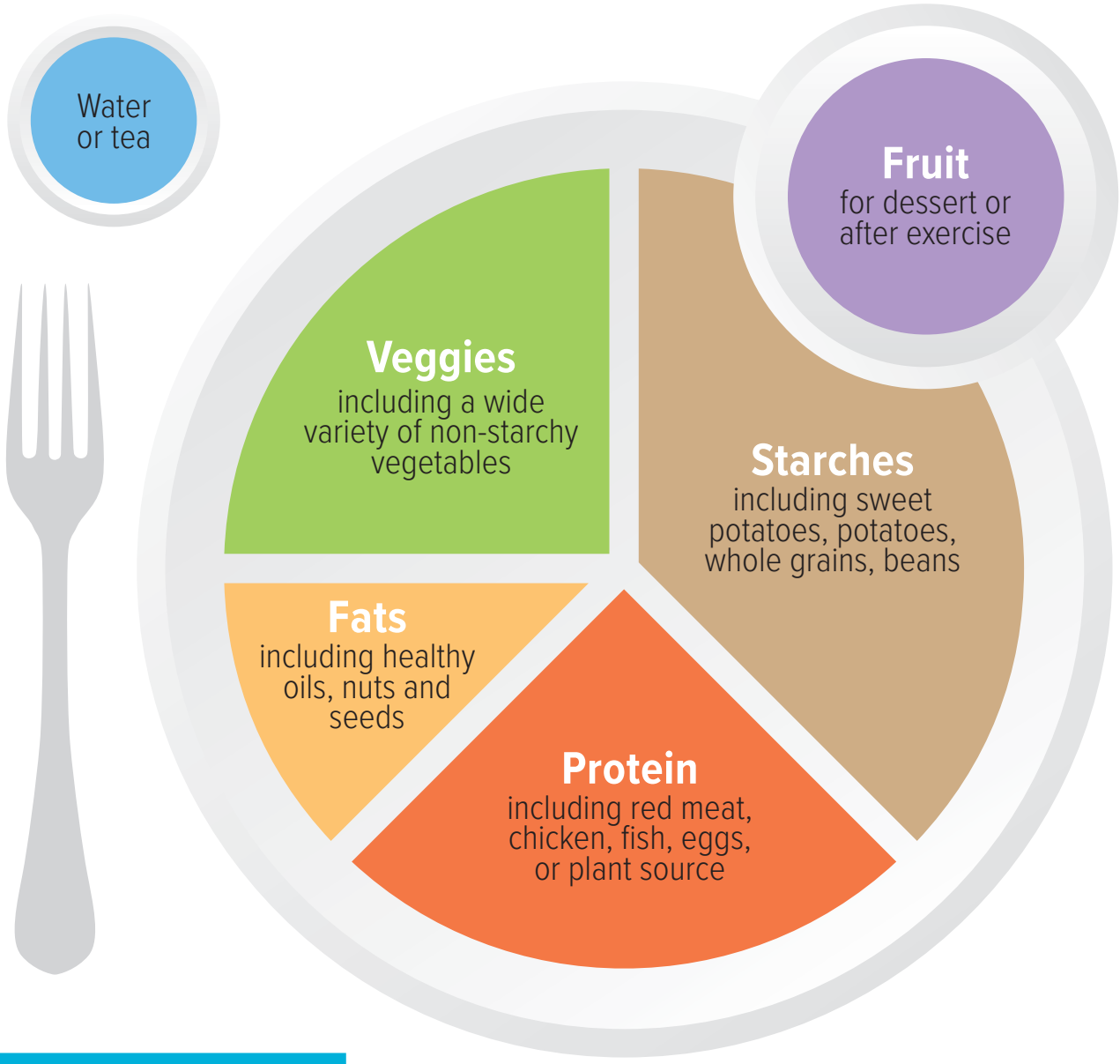
One thing to remember here: For meals you have often, "set it and forget it." Meaning, establish how you'll gauge the hand portions, and consistently follow that approach. That way, if you ever want to adjust your intake, you'll know how to count the hand portions. (If you decide to eat half the usual amount of a soup, you'd then only count half the usual hand portions.)

DAILY PORTION TRACKING SHEET




	PROTEIN	VEGETABLES	CARBS	FATS
PER MEAL				
PER DAY				
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				

NUTRITION FOR ROWING HANDOUT



PN ATHLETE PLATE

- **Eat 1-2 palms of protein** with every meal
- **Eat 1-2 fists of vegetables** with every meal
- **Eat 3-5 cupped handfuls of starches / fruit** with every meal
- **Eat 1-2 thumbs of healthy fats** with every meal
- **Eat within 1-4 hours before and 0-2 hours after** training, practice, and competitions
- **Choose mostly whole foods** with minimal processing

Pn PrecisionNutrition

SUPER SHAKES:
A SUPER SHOT OF DELICIOUS NUTRITION

Super Shakes are a blend of protein, veggies, fruits, and healthy fats that provide all the required nutrients and taste great. They're easy to make. All you need is a blender. Here's how to make a Super Shake:

1. PICK A LIQUID

Weight loss? Use water, unsweetened almond milk or skim milk.

Weight gain? Use whole milk, whole fat plain yogurt or non-dairy alternative.
Use 6-12 oz (180-360 mL).

2. PICK A PROTEIN POWDER

Whey, casein, milk bend, rice, pea and hemp proteins all work. **Use 1-2 scoops.**

3. PICK A FRUIT

Good options would be bananas, berries, pineapple, apples (core removed), and dark cherries (pits removed). You can use fresh or frozen fruit.
Use 3-4 cupped handfuls.

4. PICK A VEGETABLE

The best vegetable to use is usually spinach, as it doesn't affect the taste at all. Other options are canned pumpkin, beets (cooked), cucumber, and celery. **Use 1-2 fists.**

5. PICK A HEALTHY FAT

Best options are nuts and seeds, such as walnuts, almonds, cashews, flax seeds, chia seeds, and hemp seeds. Avocadoes as well as almond, cashew, and peanut butter all work well too. **Use 1-2 thumbs.**

6. PICK AN EXTRA

Ice, uncooked oats, yogurt, cinnamon and other spices can all be added to improve taste, add calories, and meet your needs. **As needed or desired.**

POST-WORKOUT

Super Shakes are perfect to have after training, practices, and races. They provide you with the protein, carbs, calories, and nutrients you need to recover and improve.

Need to gain weight? Add uncooked oats and extra healthy fats to your smoothie.

Need to lose weight? Reduce carbs by 1 cupped handful and healthy fats by 1 thumb.

Pn PrecisionNutrition

HYDRATION, TRAVEL & SLEEP

Hydrate to perform

Aim for 12-16 cups (3-4 liters) of water per day

- Fill a 32 oz (1 liter) bottle and drink it during workouts and practices
- Fill another 32 oz (1 liter) bottle and drink it right after workouts and practices
- Each time you eat a meal, drink another 1-2 cups (0.25-0.5 liter) of water

Sleep is critical

Strive for 7-9 hours of sleep per night

- Create a nightly sleep routine
- Limit alcohol and caffeine
- Keep your room as dark as possible
- Download a white noise app on your phone
- Get lots of bright outside light during the day

Travel well

Fight jet lag and recover faster

- When travelling by aircraft, move around as much as possible
- Hydrate well during plane trips
- Limit caffeine and alcohol
- When crossing multiple time zones, get on your destination time schedule as soon as you can—if possible, even before you leave

PROTEIN SOURCES

We recommend you emphasize minimally-processed sources of lean protein. Most of your protein—about 80 to 90 percent—should come from the "Eat More" and "Eat Some" columns. The other 10 to 20 percent can come from whichever column you prefer.

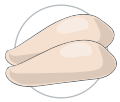
EAT MORE

ANIMAL-BASED


Eggs and egg whites


Fish


Shellfish

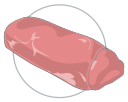

Chicken (>92% lean)


Duck


Turkey (>92% lean)


Lean beef (>92% lean)


Bison


Lean pork (>92% lean)


Wild game


Other meats
goat, camel, horse, kangaroo, crocodile


Insects


Cultured cottage cheese


Plain Greek yogurt

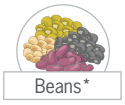
PLANT-BASED


Tempeh


Tofu


Edamame


Lentils*
French, red, green, black, brown


Beans*
Navy, Lima, kidney, black, great northern, garbanzo, etc.

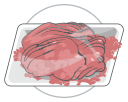

Peas*
Split, Black-eyed

*These only count as a protein source if you do not consume the other protein sources in this category. Otherwise, they count as a carbohydrate, as they contain more carbohydrate than protein.

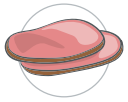
EAT SOME

ANIMAL-BASED

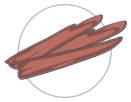

Uncultured cottage cheese


Medium-lean meats (85-92% lean)


Medium-lean poultry (85-92% lean)


Canadian bacon


Lamb


Meat jerky

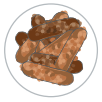

Poultry sausage


Minimally-processed lean deli meat


Protein powders

PLANT-BASED


Seitan


Tempeh bacon


Textured vegetable protein


Plant-based protein powders


Soy yogurt, unsweetened


Burgers**
Black bean, traditional veggie

**These only count as your protein source if a more protein-rich option (such as above) is not in the meal. Otherwise, they count as a carbohydrate source as they contain more carbohydrate than protein.

EAT LESS

ANIMAL-BASED


Fried meats


Chicken fingers, nuggets, and wings


High-fat meat (<85% lean)


High-fat poultry (<85% lean)


Processed deli meats

High-fat sausages

Pepperoni sticks

Protein bars

High-mercury fish (albacore tuna, shark, swordfish)

PLANT-BASED

Plant-based protein bars

Plant-based meats***
Burgers, sausage, hot dogs, etc.

***This includes items such as Impossible, Beyond, Gardein, Boca, Tofurky, Quorn, etc. Most of these are made from a highly-processed protein, along with added oils, salts, sugars, flavors, and colors.

Pn PrecisionNutrition

CARBOHYDRATE SOURCES

Choose high-quality carbohydrate-rich foods that are minimally-processed. About 80 to 90 percent of your carb intake should come from the “Eat More” and “Eat Some” columns. The other 10 to 20 percent can come from whichever column you prefer.

EAT MORE


Beans and lentils


Steel-cut, rolled,and old-fashioned oats


Buchwheat


Quinoa


Whole-grain, black, and wild rice


Sorghum


Farro


Millet


Potatoes


Amaranth


Plain non-Greek yogurt

Plain kefir


Fresh and frozen fruit


Corn


Sweet potatoes


Barley


Taro


Yams


Whole or sprouted grain bagels, breads, English muffins, pastas, and wraps.

EAT SOME


Couscous


White rice


Granola


Instant or flavored oats


Milk


Vegetable juices


Flavored yogurt


Flavored kefir


Pancakes and waffles


Whole-grain crackers


Oat-based granola bars


Canned, dried, and pureed unsweetened fruit


Bean and pulse pasta


White bagels, breads, English muffins, pastas, and wraps.

EAT LESS


Cereal bars


Fruit juices


Flavored milk


Honey, molasses, syrups, and jellies


Canned, dried, and pureed sweetened fruit


Sweetened sports drinks


Juice drinks

Sweetened energy drinks

Sweetened plant milks

Soda

Crackers

Sugar

Pretzels

Foods with 10+g added sugar

These foods are also rich sources of fats, so they count as **both** a serving of carbohydrate and fat.

Chips

Fries

Ice cream and frozen yogurt

Candy bars

Donuts

Cookies

Pastries

Muffins

Cakes

Pn PrecisionNutrition

FAT SOURCES

You want to eat mostly minimally-processed, healthy fats. About 80 to 90 percent of your fat intake should come from the “Eat More” and “Eat Some” columns. The other 10 to 20 percent can come from whichever column you prefer.

EAT MORE


Extra virgin olive oil

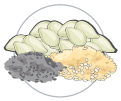

Walnut oil


Marinades and dressings with oils in this category


Avocado and avocado oil


Aged cheese


Egg yolks


Seeds: chia, flax, hemp, pumpkin, pepita, and sesame


Cashews


Pistachios


Almonds


Brazil nuts


Pecans


Peanuts and natural peanut butter


Walnuts


Olives


Pesto made with extra virgin olive oil


Nut butters from other nuts in this category


Fresh, unprocessed coconut

EAT SOME


Virgin and light olive oil

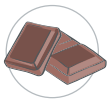

Expeller pressed canola oil


Sesame oil


Flaxseed oil


Coconut oil / milk


Peanut oil and regular peanut butter


Dark chocolate


Marinades and dresssings with oils in this category

Fish and algae oil


Cream


Fresh cheese


Flavored nuts and nut butters


Trail mix

Often rich in carbohydrates as well, with sources of varying quality.


High oleic safflower oil


High oleic sunflower oil

These naturally-bred oils are high in heart-healthy monounsaturated fats and contain little saturated fats and no trans fats.

EAT LESS


Bacon


Sausage

Also sources of protein, though usually higher in less desirable fats.


Butter


Margarine


Processed cheese


Corn oil


Cottonseed oil

Sunflower oil

Canola oil

Soybean oil

Safflower oil

Marinades and dressings with oils in this category

Vegetable oil

Fat-rich foods with 10+g added sugar

Hydrogenated oils and trans fats

Shortening

Pn PrecisionNutrition