

PRINCIPLES OF RESILIENT NUTRITION

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METHODS ARE MANY, PRINCIPLES ARE FEW. METHODS MAY CHANGE, BUT PRINCIPLES NEVER DO.





Have you been struggling to lose weight?

Perhaps you have a chronic health condition that is hampering your quality of life?

Or do you just feel like you've reached a seemingly unpassable performance plateau?

What you eat each day strongly affects how you look, feel, and perform, so if these types of frustrations are familiar, honing your nutrition may be key to improving your life.

The problem is that nowadays there's a lot of nonsense out there about what constitutes a healthy diet. Unfortunately, as the quality of nutrition science is often poor, we're repeatedly faced with conflicting advice from scientists about nutrition - it seems as if one week moderate alcohol intake is good for us and the next week it isn't - and many of us don't know who to believe.

Salespeople capitalise on this confusion by using slick marketing to popularise poorly formulated diets, food products, and supplements, which is especially problematic given that false information online often spreads faster than the truth.

So, if you're like me, you've at some point got lost and confused in this quagmire of BS, wasting time, effort, and money while growing frustrated at your lacklustre results.

The good news is that there is a better way.

Apply the state-of-the-science principles in this e-book and you may soon be on your way to more energy, better health, a more sculpted body, and new personal bests. In this science-backed guide you'll find nutrition guidance to live by, whether you're an athlete or an armchair athlete, well or sick, on a keto diet or a vegan diet, whether you're a shift worker or retired.

Use the table of contents to jump to sections you want to find out more about any subject you're especially interested in. Or if you're as geeky as I am, you might prefer to read the whole thing.

Ooh, and if you find this guide useful, please feel free to share it around and tag us on social media [@resilientnuts!](#)

Be well and crack on,

Greg Potter

KEY PRINCIPLES

WE HAVE STONE AGE BODIES BUT LIVE IN A SPACE AGE WORLD

- If we can re-engineer our lifestyles to better mimic certain aspects of those of our distant ancestors, we may be able to protect ourselves against chronic diseases.
- A range of dietary patterns can improve health, including “Mediterranean” diets, “paleo” diets, low-carb diets, vegetarian and vegan diets, and others.
- We thrive when we eat minimally-processed foods and drinks.
- Certain dietary compounds potently enhance health and performance only when consumed in quantities above what our ancestors would likely have been able to consume.

WHAT YOU EAT IS IMPORTANT

- Unless you have a disease that warrants a low protein intake, consume at least 1.2 g protein per kg bodyweight per day.
- Choose less-calorie-dense foods if hunger is a problem, and more-calorie-dense foods if you’re struggling to consume enough calories.
- Most dietary supplements are rubbish, but smart supplementation has its place. This is particularly true of vegans and vegetarians.
- Dietary variety helps minimise any risk of nutrient insufficiency or toxicity.
- Healthy eating doesn’t have to be expensive. Using food markets, shopping online for certain items, cooking in bulk, and minimising food waste can help.
- Drinking to thirst usually does the trick, but people with certain medical conditions may benefit from increasing their fluid intakes.

WHEN AND HOW YOU EAT ARE IMPORTANT

- Wait until at least 30 minutes after your natural wake time (the time you’d wake without an alarm) before consuming anything that isn’t water. Stop consuming any calorie-containing items at least 2 hours before bedtime. Keep your diet timing as regular as possible from day to day. In general, front-load your carb and fat intakes - consume most of them at breakfast and/ or lunch. And save carb-rich items for the end of meals and snacks, when practical.
- Eating mindfully can reduce calorie intake and problematic eating behaviours. Eating with others can make life better, and if you eat with people who eat well, you’ll find it easier to eat well too.

MAKE EATING HEALTHFULLY AS EASY AS POSSIBLE

- When choosing diet changes to make, pick a change that is likely to be effective, easy to implement, and positively affect other behaviours. Be as specific as possible when setting the change to make to your nutrition (what will you do, where will you do it, how often will you do it, and with whom will you do it?). If you want to sustain this diet change, make a small change. Identify obstacles in the way of you undertaking this change, and plan ways around these obstacles. Make foods and drinks you want to consume more of more visible, make those you want to consume less of less visible. Use social networks to help you stick to your nutrition habits. And regardless of the change you're making, habit tracking is generally very helpful.
- Finally, your diet is just one pillar of your health and performance - you probably shouldn't micromanage it at the expense of other key aspects of your life!

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**THE RESILIENT
NUTRITION APPROACH
TO SUSTAINABLE
PERFORMANCE
NUTRITION**

Have you ever noticed that the Resilient Nutrition logo is “R” to the power of “n” (Rⁿ)?



That’s because at Resilient Nutrition we believe you are resilient to the power of your nutrition - what you eat and drink is key to your ability maintain robust health while adapting to stressors, rising to overcome adversity. Challenged by a global pandemic, your resilience is more critical than ever.

So, our goal at Resilient Nutrition is to make sustainable performance nutrition products. To us, sustainable performance nutrition products must meet three criteria:



The products are practical and delicious. To reap the rewards of a healthy diet, you have to be able to stick to it - it has to be sustainable. While extreme approaches to nutrition can produce dramatic results initially, such strategies generally aren’t sustainable. So, your nutrition also has to be practical (hence the formats of Resilient Nutrition products) and delicious (to make it easier to consume things that are good for you).



The products are as environmentally sustainable as possible. This is why Resilient Nutrition products don’t contain certain ingredients (such as palm oil), why they come in recyclable packaging, and why Resilient Nutrition donates a fixed proportion of its sales to a charity that is effective in helping to protect the natural world.



The products help optimise your performance in both the short term and the long term. This is why Resilient Nutrition products contain clinically-proven doses of their special-sauce ingredients. It’s also why we base our products on whole foods that humans have been consuming for a very long time... more on this in the next section!

**WE HAVE STONE AGE
BODIES BUT NOW LIVE
IN A SPACE AGE WORLD**



For the vast majority of our species' time on our planet, humans existed as preindustrial people, hunting and foraging for food in the wild. Life then changed dramatically about 12,000 years ago when, at the dawn of the Neolithic Revolution, humans settled and began using agriculture. Agriculture resulted in a surplus of food and sparked many changes, from rapid population growth to a rise in the burden of infectious diseases. Importantly, the Neolithic Revolution also led to a drop in dietary quality, as evidenced by people getting shorter.

Since this time, humans have been through remarkable additional cultural overhauls, including the Industrial and Digital Revolutions. These transitions have progressively diverged our environments from those in which our bodies evolved to thrive. Whereas humans once lived in alignment with sunrise and sunset and depended on physical activity to acquire foods (which were minimally processed, if they were processed at all, we now live 24/7 lifestyles in built environments in which we can order processed foods round

the clock at the mere click of a button).

This mismatch has contributed to the rise in “diseases of civilisation”, such as obesity. Interestingly, such diseases are all-but non-existent in the few remaining bands of pre-industrial people that have been studied.

The implication?

If we can re-engineer our lifestyles to better mimic certain aspects of those of our distant ancestors, we may be able to protect ourselves against chronic diseases, reinstating the kind of boundless energy we enjoyed when we were kids.

One thing to note here is that the diets of preindustrial people depended heavily on where they were in the world. Humans therefore evolved to thrive on a range of diets. As discussed in the next section, this means that no one diet is a panacea.

WHAT TO EAT

From omnivore to vegan...lots of dietary patterns can be healthy!

Your dietary pattern is the amount and combination of different foods and drinks you consume in your diet over time. The question of which dietary pattern is best for health and performance is impressively divisive - there are people who believe in the superiority of certain dietary patterns with the same kind of fervour that some save for religious beliefs.

This kind of nutrition dogmatism is stupid - **there is quite strong evidence that a range of dietary patterns can improve health, including “Mediterranean” diets, “paleo” diets, low-carb diets, vegetarian and vegan diets, and others.** The dogmatic people would frankly do us all a favour if they invested their time and effort in more pressing issues!

There are a few key details here though:

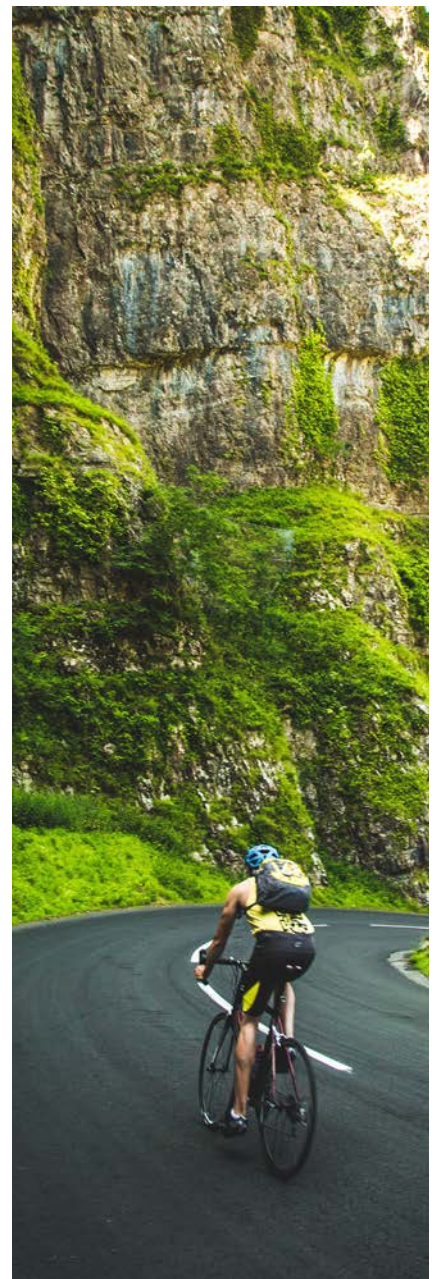
First, **some dietary patterns are not necessarily mutually exclusive.** For example, you could decide to follow a low-carb, animal-food-rich paleo diet, or take paleo diet principles and apply them to a vegan diet.

Next, **whether a given dietary pattern improves health depends on how it is formulated** - a vegan diet based on a couple of types of vegan sausages and a handful of varieties of vegan pizzas is likely to be less healthy than one based on a broad range of minimally-processed plants.

And then we need to bear in mind that **we can tune what we eat and drink in accordance with other lifestyle factors to help us reach specific goals at different times.** For example, informed athletes are increasingly applying the concept of nutritional “periodisation”, which entails aligning changes in diet with exercise sessions to support specific adaptations to said sessions.

An example of this is doing some endurance training sessions in a state of low carb availability. One way of doing this is to eat normally up until a hard session in the afternoon, which will somewhat deplete carb stores in the exercised muscles. Then minimise carb intake the rest of the day and wake up the next day and do a fasted session in the morning. In this example, the overnight period and morning session is therefore done in a state of low carb availability. Such training may boost the effect of the exercise on the number of new mitochondria made (mitochondria function a bit like powerhouses) and help people better use fat for energy.

Finally, **some foods are objectively good for some people but detrimental for others.** Take dairy, for example. For people who continue to produce the enzyme lactase into adulthood (which is true of most people of North European ancestry), regular consumption of dairy from healthy animals is probably quite good for key facets of health, such as body composition. However, people who do not produce this enzyme into adulthood may find that eating dairy leaves them in a world of digestive discomfort.



**RESILIENT NUTRITION
CASE STUDY:
MAX THORPE**



Max is best known for breaking the World Record with his friend Dave Spelman in the 2019 Talisker Whisky Atlantic Challenge. But Max has never been one to rest on his laurels. He's therefore reinventing himself as an athlete, and at the time of writing he's about halfway through preparing himself to do his first IRONMAN... the twist is that Max has only given himself 100 days to get ready for the event.

If you saw Max, you'd realise that he is not your typical IRONMAN. In fact, he began his preparation for the event weighing about 98 kg - a little on the large side for a triathlete! As he'll only have 100 days to prepare for the event, he needed to shed as much fat mass as possible as quickly as is healthily possible at the start of his event preparation. So, we came up with a periodised nutrition plan comprising three phases for him.

The first phase was dedicated to rapid fat loss. While Max changed his nutrition in a few ways at this time, a key change was switching to a high-protein modified-paleo diet. At this time, he purposely primarily chose foods that are not very calorie dense, such as lean meats, fish, raw fruits, and vegetables. Meanwhile, he temporarily excluded very calorie-dense foods, such as cooking oils.

The results?

Max lost about 10 kg in under 7 weeks, and judging by his eight-pack and strength training performance, he surely lost very little fat-free mass! He's now switching gears to the next phase of his nutrition plan, and I'm excited to see how he gets on.

Another salient example here is foods rich in FODMAPs (Fermentable Oligosaccharides, Disaccharides, Monosaccharides, And Polyols) - types of carbs that promote gut microbiota diversity and health in some people but digestive distress and associated consequences in others (hence why low-FODMAP diets are often recommended to people who have disorders such as irritable bowel syndrome).

Basically, it's true that we're all special snowflakes, hence the relatively recent surge in interest in personalised medicine. This said, we can use research on large groups of people to make informed inferences about what's likely to help us as individuals. After that, we can benefit from continued tinkering to identify what works best for each of us. The real nerds among us can use sophisticated methods such as N-of-1 trials for this, but these trials aren't essential and most people have neither the time nor the inclination to micromanage their lifestyles in this way. Just being mindful of how your body feels after eating different foods is often all that's needed.

It's probably okay to eat foods that have been on our planet for hundreds of thousands of years

As obvious as this may seem, **we thrive when we eat real foods**. A study published last year exemplified this nicely. A group of adults went through two conditions. In one condition they only had access to unprocessed foods for two weeks. In the other they only had access to processed foods for two weeks. In both conditions the diets the participants were presented with had the same number of calories and quantities of carbs (including sugar), fats, proteins, and fibre. While consuming the processed-food diet, the adults ate about 500 more calories each day, with the extra calories coming from both carbs and fats. And whereas people gained about 1 kg on the processed diet, they lost about 1 kg on the unprocessed diet.

Here are some examples of groups of foods and drinks that have been on the planet for many millennia that you should probably base your diet on:

- **Water**
- **Vegetables**
- **Fruits**
- **Fungi**
- **Meat**
- **Eggs**
- **Fish**
- **Seafood**
- **Nuts**
- **Seeds**
- **Herbs**
- **Spices**





If in doubt, if you start with the above, you can't go far wrong. By sticking to consuming these foods, you'll avoid certain foods and food constituents that sometimes cause grief. But your diet will still include a diversity of food groups, helping you get all the nutrients you need. And it's also fine to use minimally-processed versions of foods in these categories - think tomato purée (that only contains tomato) and extra-virgin olive oil (handy when cooking).

This said, some people, such as vegans, choose not to consume some of the food groups listed above. Other people, such as athletes, may need very high calorie, carb, and fat intakes, which may be difficult to meet by only consuming the types of filling foods listed above. And other people - including yours truly - just love foods such as cheese. Would life without cheese be worth living? I'm not sure.

Anyway, in such cases, adding other food groups may be helpful. There is quite strong research showing that **consuming high-fat dairy, pulses and even grains (I especially like oats) can be perfectly healthy**. And I recognise that health probably isn't your sole concern. If, for example, you're an athlete on a high-calorie, high-carb diet, the likes of rice come into their own as easy-to-digest foods that crank up your carb intake.

I'll also mention salt here. Excessive salt intake can impair the function of blood vessels, increase blood pressure, and contribute to other cardiometabolic health problems in some people. At the same time, however, judiciously salting food can be helpful - the athletes among you will know the importance of salt intake in hydration. And while many organisations focus their guidance on the importance of reducing salt intake, please note that **increasing potassium intake (by eating lots of fruits and vegetables, for instance) counters the negative effects of excessive salt intake**. So, if you're consuming a diet that is rich in minimally-processed plant foods, adding a little salt here and there is fine and can actually be beneficial, particularly around strenuous exercise.

Whole foods have magic that scientists don't currently fully understand

Many scientists are studying foodborne compounds with the goal of isolating special health-enhancing supplements and drugs. This approach has sometimes paid off. However, in many instances it has become clear that eating whole foods produces beneficial effects that scientists cannot currently explain on account of the nutrients in foods.

As an example of this, the protein content of a meal or snack is a key determinant of how it affects your muscles - up to a point, the more high-quality protein you eat, the more you'll help your muscles regenerate. However, there has been some research showing that, counterintuitively, when a food is modified to increase its proportion of calories that comes from protein, it does not necessarily help muscles regenerate.

For example, a [study](#) divided people into a group that consumed whole milk 1 h after weight training and another group that consumed the same number of calories from skimmed milk 1 h after weight training. Because skimmed

milk has had almost all its fat removed, the skimmed-milk group consumed more protein than the whole-milk group. Unexpectedly though, in the group that drank whole milk, the exercised muscles took up more of the amino acids in the milk than the group that drank the skimmed milk.

The lesson?

Ironically, people who try to make whole foods healthier by morphing them into products such as "low-fat" versions may be making some such foods less healthy. **So, if in doubt, consume foods and drinks that are as close to their natural state as possible.** (As we'll come to later, gently cooking foods is generally a good idea though - raw diets are ill-advised.)

Basically, if you look at a food product's ingredient list and there are dozens of ingredients, you might want to pick something less processed.



We can enhance our diets with “supra-natural” nutrition products

It makes sense to base your diet on whole foods. However, there are foods, drinks, and dietary compounds that are therapeutic (“nutraceutical”) only at intakes above what our ancestors would have been able to routinely find in the natural world. At Resilient Nutrition, we call this “supra-natural” nutrition (as opposed to supernatural nutrition, which sounds like something to do with what ghosts eat).

What’s an example of this?

Cocoa beans contain compounds named flavanols that have consistently been shown to improve numerous facets of cardiovascular health and brain function when consumed in large quantities. For example, when elderly people who have mild cognitive impairment (including poor memory) regularly consume supranatural quantities of cocoa flavanols they

soon experience reduced blood pressure, improved insulin sensitivity (a key determinant of risk of many diseases), enhanced ability to switch their attention between tasks, and improved verbal fluency (the ability to recall as many words as possible related to a given category (words beginning with “p”, for example) within a limited amount of time).

Cool, right?

So, we may be able to enhance the positive effects of whole-food based diets with judicious use of high doses of specific dietary compounds. **This is why Resilient Nutrition products are bolstered with clinically-proven doses of the best-studied versions of performance- and health-enhancing nutraceuticals.**

How much should you be eating?

When people stick to the heuristic of consuming minimally-processed foods, they tend to inadvertently eat an appropriate amount of food for themselves.

So, if you're like most people, you probably don't need to worry being neurotic about how much you eat, which is great!

This said, some people go a step further and plan their macronutrient and calorie intakes, which can be particularly helpful in unusual circumstances, such as when planning nutrition for ultra-endurance exercise events or going on a very targeted fat loss or muscle building diet. Please be aware that this type of meticulous planning is sometimes ill-advised though - it may promote disordered eating in certain people, for instance. But if you do want to plan your macronutrient intakes, read on!

First establish your baseline nutrient intakes

When I work directly with people to improve their nutrition, I usually have people track their nutrition using a web app (such as [MyFitnessPal](#)) for 3 or 4 days (including a weekend day) within a 1-week period, just to get a sense of what they eat and drink. When tracking, the goal is to continue eating as normal - sometimes tracking a behaviour leads people to behave differently. Alongside this, I have people weight themselves on tracking days, under standardised conditions (first thing after waking, nude, after going to the toilet, before consuming any foods or drinks). And I'll sometimes **use a simple equation, such as [this one](#), to approximate calorie needs**. Using myself as an example, I'm a 30-year-old, 194-cm tall, 85-kg man who is "heavily" active, using the definition on the website. Based on this, my body probably needs about 2,003 calories a day at rest to maintain my weight, and 3,405 calories a day when I'm as active as I normally am. Based on my experience, these numbers are about right.

After establishing a calorie target after a week of tracking, the next thing I usually have people do is optimise their protein intakes.

Then optimise your protein intake

Next, set a target protein intake. The reasons for this are many, but [protein is particularly important to supporting muscle regeneration, immune function, and helping with appetite regulation](#).

The optimal protein intake for a given person depends on the quality of the protein someone is eating. Scientifically, protein quality depends on a food or drink's amino acid profile and digestibility. Animal sources of protein such as meat, eggs, dairy, fish, and seafood are almost all higher quality than plant-based sources. (The protein quality of insect sources of protein is quite variable but likely a bit lower than foods such as meat, fish, and dairy.) This all means that people on vegan diets may need to pay closer attention to consuming sufficient quantities of complementary sources of protein (such as rice and peas) at meals and snacks.





Anyway, how much protein should you eat?

When choosing macronutrient intakes (carbs, fats, proteins, and fibre), set these *relative to your bodyweight*.

For protein, you'll likely benefit from distributing your protein intake quite evenly across the day. So, **focus on nailing your per meal/snack protein intake - about 0.4 g protein per kg bodyweight per meal/snack is generally about right**. Note that this refers to the total amount of protein in the meal, and there are small amounts of protein in foods such as fruits and vegetables.

Amounts of protein in commonly-consumed protein-rich foods and drinks (weights are before cooking)

Food or drink	Protein (g)
1 medium whole chicken egg	5.5
100 ml whole cow's milk	3.2
100 g Atlantic salmon	19.8
100 g prawns	20.3
100 g chicken leg, with skin	18.2
100 g boneless pork chop, with fat	21.3

Regarding daily protein intake, unless you have a disease that means you must restrict your protein intake, consume at least 1.2 g protein per kg bodyweight per day.

If you're athletic and want to build muscle and/or lose fat, a target daily intake of 1.6 g protein per kg bodyweight is a good starting point.

Slightly higher intakes (perhaps 2.4 g protein per kg bodyweight) may be better for lean people on diets (physique athletes, for example).

Please note that as plant protein is generally lower quality than animal protein, vegans and vegetarians may, if anything, need slightly higher intakes than those listed above.

And since elderly people typically become less responsive to the muscle-building effects of protein intake with age - which is particularly problematic when sarcopaenia is so common and so debilitating - getting enough protein is particularly key later in life.

**RESILIENT NUTRITION
CASE STUDY:
PIP HARE**



At the time of writing, Pip is deep into her preparation to compete in the 2020 Vendée Globe, a race in which she'll single-handedly sail 24,000 miles round the world, without stops.

Only seven women have ever finished this grueling event... so I guess you could say she's a resilient nutter!

The Vendée Globe is very physically demanding, requiring great stamina, strength, and skill. We've therefore been helping Pip with her nutrition and strength training in the buildup to the race. Pip's training has focused heavily on gaining muscle tissue and strength in key movement patterns, including various types of squats and pulling exercises.

When I began working with Pip, she was consuming a relatively low-protein diet. To ensure that she provides her body with the building blocks needed to construct new

muscle tissue, Pip has since substantially increased her protein intake so that she gets at least 0.4 g protein per kg bodyweight at breakfast, lunch, and dinner, respectively. To meet this goal in a way that is practical for her in the context of her demanding schedule, she now often uses:

- A protein powder in her smoothie at breakfast.
- A 100-g pouch of [Calm & Rebuild Long Range Fuel](#) as a meal replacement at lunch, alongside some vegetables and a piece of fruit.

Pip's dinner has changed less than these two meals, for she usually has time to cook in the evening.

These simple changes have supported consistent increases in her strength training performance, and I'm confident she'll arrive at the race start in superb shape!

Only then decide carb and fat intakes

After optimising your protein intake, calculate how many calories you have left to play with and decide how you want to apportion these between carbs and fats. The optimal amounts of carbs and fats for you will depend heavily on your food environment, dietary preferences, and goals.

If you're an athlete or exercise enthusiast, you'll probably find that your daily needs fluctuate wildly depending on your training. Optimal carb intakes for endurance athletes on high carb diets, for example, may fluctuate between very little carbohydrate and north of 12 g carbs per kg bodyweight per day. Conversely, athletes on keto diets generally attempt to restrict their carb intakes to less than 1 g per kg bodyweight per day, with over 75% of calorie intake coming from fat.

So, it's hard to be prescriptive here. Instead, I'll just recommend that you **assess your baseline intakes, optimise your protein intake, then tweak your carb and fat intakes from there according to your preferences, goals, and how your body responds.**

Always hungry or finding it hard to eat enough food? Change the energy density of your diet

Some people who are trying to lose weight find it hard to stick to their diets because of hunger pangs and a lack of satisfaction with eating smaller amounts of food. Conversely, it's common for people who need very high calorie intakes to struggle to consume enough calories.

One relevant factor here is the calorie density of the diet - how many calories there are in a given mass of the diet.

At one end of the spectrum there are foods such as the green leafy vegetables. These have a low calorie density - not many calories at all per unit of mass. As much as 1 kg broccoli only contains about 340 calories, for example.

At the other end of the spectrum are calorie-dense foods. These are generally high in fat and low in water. For instance, 1 kg olive oil contains about 8,800 calories - nearly 26 times as many calories than that in the same mass of broccoli.

While there isn't perfect scientific consensus on this, it seems that changing the calorie density of the diet may influence calorie intake. This means that people who are struggling because they often feel hungry may benefit from choosing less calorie-dense foods (such as lean cuts of meat and non-starchy vegetables and whole fruits), whereas people struggling to consume enough calories may benefit from consuming more calorie-dense foods (such as fatter cuts of meat, starchy vegetables, and dried fruits).

Of boys and girls: variables such as biological sex influence nutrient needs

I just mentioned that some variables influence our protein needs, and this is true of many nutrients. These variables include goals, body composition, age, biological sex, dietary pattern, the presence of certain clinical conditions, physical activity, and more. You can see the current Dietary Reference Intakes for females and males of different ages here. For brevity, I won't go into details now, but suffice it to say that this variation in nutrient needs is one reason that dietary supplements are sometimes helpful.

Historically, the supplement industry has got a bad rap... and for good reason. When independent scientists have tested off-the-shelf sports supplements for the presence of banned substances such as prohormones and stimulants, they've found that 12-58% of them have been tainted.

Whoa.

Terrible, I know. And this is one reason we only use clinical-grade active ingredients in Resilient Nutrition products (KSM-66 Ashwagandha®, Suntheanine® L-theanine, etc).

Nevertheless, certain supplements definitely are helpful for some people. When you hear someone say, "don't take supplements unless you're already eating well", you should remember that in the kinds of scientific studies used to assess the efficacy of supplements, the interventions are the supplements and nothing else. This means that a well-conducted study that shows effects of a supplement shows that the effects are independent of other variables. So, why would you not want to gain the advantages of smart supplementation?

There are certain supplements that most people seem to benefit from. Magnesium is a good example of these. Magnesium deficiency is remarkably common, even in “developed” countries, and if you have high blood pressure, poor blood sugar regulation, or have blood lipid concentration that would concern most doctors, the odds are that supplementing with magnesium will help you improve these health parameters. And the nice thing about magnesium is that if you consume a bit too much of it, there’s likely no real downside - you’ll probably just feel a more urgent need to go to the toilet.

There are lots of versions of magnesium supplements out there, but people in most studies have used magnesium citrate. If you want to try supplementing with it, 200 mg magnesium citrate with a meal each day is usually a good way to go.

Veganism as an example of the utility of smart supplementation

Supplementation is arguably most important for people whose medical conditions or lifestyle choices dispose them to nutrient insufficiencies. Given that interest in “plant-based” diets has surged of late, veganism seems like a good example to use to demonstrate this. I’ve therefore tabulated a few of the key nutrient considerations for vegans below - in some instances, vegans may need to supplement with these nutrients.



Nutrient considerations for vegans

Vitamins

B12

Vitamin B12 deficiency is rife in vegans and vegetarians in many parts of the world. This is a problem, for vitamin B12 is essential to make DNA and is needed for normal nervous system function and homocysteine metabolism (raised blood homocysteine is a tell-tale sign of vitamin B12 deficiency).

Other than plants contaminated with manure from animal waste (not ideal), vitamin B12 is hard to come by in plants. Supplementing with 50 µg vitamin B12 a day may be a good place to start for vegans and vegetarians.

Another option for vegans and vegetarians is to add small amounts of bivalves such as oysters, mussels, and clams to the diet. Bivalves don't seem to be sentient, so adding them shouldn't affect animal suffering, and bivalves are very dense in several nutrients that vegans and vegetarians commonly struggle to get enough of, including vitamin B12, iron, and zinc.

D3

Vitamin D is important for numerous biological processes, from bone mineralisation to immune system regulation.

On exposure to ultraviolet radiation from the sun, our skin can make its own vitamin D from stores of 7-dehydrocholesterol. This means that many people who live at high latitudes have low vitamin D stores during the winter. Using sunscreen use can reduce vitamin D synthesis. And people with darker skin may require more sun exposure to raise their bodily vitamin D stores.

We can also consume vitamin D in our diets. Vitamin D2 is present in some plants, yeast, and dried mushrooms, whereas vitamin D3 is mostly found in oily fish. This is important, for vitamin D3 is better absorbed than vitamin D2, putting vegans and vegetarians at higher risk of vitamin D deficiency.

For all of the reasons above, many people have suboptimal vitamin D status. While it's generally better to raise vitamin D levels through moderate exposure to the sun, supplementation is sometimes necessary to raise blood levels to the optimal range, which is probably about 40-60 ng/mL (100-150 nmol/L).

Supplementing 1,000 IU vitamin D3 daily (taken with a meal) may be a good starting point, although some people will need more than this. Vitamin D3 supplementation is complemented by vitamin K2 supplementation.

<h1>K2</h1>	<p><u>Vitamin K2 is important to directing calcium into calcium's rightful compartments in your body (your bones, not your arteries), and vitamin K2 is hard to come by in plants.</u></p> <p>Natto, a fermented soy product, contains vitamin K2-producing bacteria, making it particularly rich in vitamin K2.</p> <p>Vitamin K2 supplementation in vegans has not been thoroughly studied. However, there is a strong rationale to try it if you're a vegan.</p> <p>Supplementing with 15 mg menaquinone-4 (MK-4) daily (taken with a meal) may be a good starting point.</p>
<h2>Minerals</h2>	
<h1>Iron</h1>	<p>Your body needs iron to make haemoglobin, which shuttles oxygen to tissues and is thereby key to energy production. Iron deficiency leads to anaemia, a lack of haemoglobin that results in fatigue and other symptoms.</p> <p>Non-haem iron (the type found in plants) is less bioavailable than haem iron (the type found in animals). Furthermore, <u>certain compounds in plants such as tannins (in coffee, tea, and cocoa) and phytates (in grains and pulses) impair iron absorption.</u> This means vegans - particularly vegans experiencing large menstrual blood losses - may need to supplement iron. It is important to note, however, that excessive iron stores can lead to increased oxidative stress, damaging cells.</p> <p>I generally recommend that instead of supplementing iron, people tweak their food intakes to increase their iron stores. You can do this by consuming more iron-rich leafy greens alongside vitamin C-rich foods (such as citrus fruits and berries), for vitamin C increases iron absorption. Avoid tannins and phytates at these meals.</p> <p>If this isn't enough though, medically-supervised iron supplementation may be warranted.</p>
<h1>Iodine</h1>	<p>Iodine is crucial for healthy thyroid function and hence metabolism, growth, development, and more.</p> <p>Common symptoms of hypothyroidism include fatigue, cold intolerance, weight gain, constipation, and dry skin... some of which might be familiar to you if you're a vegan.</p> <p>Cont...</p>

	<p>The tricky thing is that, counterintuitively, primary <u>hypothyroidism</u> can result from either inadequate or excessive inadequate iodine intake. While widely-consumed animal-foods such as fish and dairy are iodine-rich, the best plant-food sources of iodine (sea vegetables are very high in iodine) aren't so widely consumed in many parts of the world. The other issue is that some plants (cruciferous vegetables, especially) also contain goitrogens, which impair iodine use by your body. Goitrogens are mostly destroyed by cooking, so if you are a vegan who eats lots of raw vegetables and you have symptoms of hypothyroidism then simply cooking your vegetables may be enough to overcome your problems.</p> <p><u>If you still struggle to meet your iodine needs (for example, if you don't like iodine-rich foods), using iodised table salt may be helpful.</u></p>
<h2>Zinc</h2>	<p>Zinc is necessary for enzymes involved in many processes, from immune function to protein metabolism.</p> <p>A bit like iron, there's quite a lot of zinc in some plants, but it's less well absorbed than zinc in animal foods, so <u>vegans and vegetarians may need to consume about 50% more zinc than omnivores to meet their needs.</u></p> <p>By consuming zinc-rich foods such as hemp and pumpkin seeds and using food preparation methods such as soaking and fermenting, vegans can improve their ability to absorb zinc.</p>
<h2>Other</h2>	
<h2>DHA</h2> <p>(docosahexaenoic acid)</p>	<p>You've probably heard lots about omega-3 fatty acids, and DHA seems to be the most important of these. <u>DHA makes up over 90% of the omega-3 fatty acids in the brain and is involved in all sorts of biological processes,</u> from brain development to regulation of inflammation. So, many scientists argue that consuming enough dietary DHA is key to optimising cognition and other processes.</p> <p>Our bodies aren't efficient at all at making DHA from its precursors, which is only worsened by the fact that consuming omega-6 fats (which are abundant in most Western diets) increases competition for the enzymes that are key to making DHA from these precursors.</p> <p>Marine animals such as oily fish are the richest dietary sources of long-chain omega-3 fats such as DHA, and most omnivores don't consume enough DHA, let alone vegans.</p> <p>It stands to reason then that most vegans would benefit from both moderating their consumption of oils rich in omega-6 fats (including corn, cottonseed, soybean, and sunflower oil) while supplementing with a daily algae-based DHA supplement containing at least 200 mg DHA.</p>

Creatine monohydrate

Unlike the nutrients mentioned above, creatine is not an essential nutrient.

It is important though.

Our bodies make creatine from the amino acids arginine, glycine, and methionine, and about 95% of this creatine is stored in skeletal muscle, where it acts as an energy source for brief, high-intensity physical activity. Creatine is also stored in other energy-hungry organs such as the brain and testes.

Supplementation with creatine has repeatedly been shown to enhance exercise performance and how well people adapt to exercise, and some interesting research shows that creatine intake may also protect the brain and support its function.

The richest dietary sources of creatine are animal foods such as meat and fish, so vegans and vegetarians typically not only have lower creatine intakes and muscle creatine stores than omnivores, they also tend to benefit more from creatine supplementation.

To reap the rewards of creatine supplementation, I generally suggest vegans consume about 5 g creatine monohydrate per day as Creapure® (the best-studied form of creatine), preferably with breakfast. It's not very soluble, so stir it into a warm drink.

**RESILIENT NUTRITION
CASE STUDY:
CLAIRE SMITH**



Claire is one tough lady. Despite an injury that prevented her from doing much running at all in the weeks before the event, Claire recently completed the “JOGLE”, running from John o’ Groats (the northeastern-most tip of Scotland) to Land’s End (the southwestern-most tip of England). Most impressive of all, she did so unsupported, pushing her belongings in a pram and sleeping in a tent... she’s earned the nickname “Brutal Claire”!

As she was unsupported, she didn’t take much food with her. From the start of the attempt, she only took a couple of pouches of Long Range Fuel for each day (a pouch of [Energise & Rebuild](#) for each morning plus a pouch of [Calm & Rebuild](#) for each afternoon), plus some freeze-dried meals. She had to buy most of her food along the way, and given the volume of running she did, she needed lots of calories

- I estimated she’d needed more than 7,000 on some days, despite her diminutive stature!

The problem is that in these circumstances it’s difficult to source nourishing foods. And to eat enough calories, she needed very energy-dense foods. The quality of her diet was therefore never going to be the best.

We therefore made a simple plan to help her meet her micronutrient needs. Specifically, Claire supplemented her diet with a multivitamin and multimineral, an iron bisglycinate supplement (chelating iron with glycine seems to reduce the gastrointestinal side-effects some people get when they supplement with iron), and creatine to help her protect her muscles and her brain during the effort.



Variety isn't just the spice of life, it's a pillar of vitality

You've probably heard the advice to "eat the rainbow" of colours of fruits and vegetables. This is sage advice, for different plants contain different nutrients, and **colour tends to correspond with the presence of specific beneficial chemicals in plants.**

Please also realise that many herbs and spices are very nutrient-dense, so aim to consume a variety of different-coloured herbs and spices too.

This means that eating whole foods of many different colours is likely to reduce the likelihood of you either not getting enough of a nutrient or consuming too much of a nutrient. And maximising dietary variety isn't only relevant to plants in your diet - even if you don't consume many (or any) plants, you'll likely benefit from maximising your dietary variety. For example, different organs in animals contain different nutrients, **so it makes sense to eat "nose-to-tail" if you're an omnivore.**

Healthy eating doesn't have to break the bank

When, like yours truly, you're a nerd and spent far too long as a student, you quickly work out how to source inexpensive yet healthy food. Here are a few simple money-saving tips that have served me well:

- **Cook big batches of food.** Eating out sometimes comes at a large premium. We humans have been cooking for a long time - probably at least 275,000 years - and cooking has likely been key to our evolution as a species: Cooking makes the calories in food more available to our bodies, which as a species has improved our nutrition. Cooking also destroys many pathogens on foods such as meat, allowing us to consume nutrient-dense foods that might otherwise have been problematic. And cooking's fun. Not all cooking was made equal though.



In general, low-temperature methods that minimise burning such as steaming and braising are ideal, while methods such as deep frying and barbecuing are less healthy (sorry to be a killjoy!). The issue is that cooking at home also requires certain resources (gas and electricity). So, it makes sense to cook large amounts of food at once, when possible. Not only is making a big batch of food to use in later meals a time saver, it's also good for your wallet and the environment.

- It often makes sense to **buy certain items in bulk online**. I generally purchase items such as herbs, spices, and supplements in bulk.
- **Embrace food markets!** I've probably saved a lot of money over the years by getting most of my fruits and vegetables from markets. (Shout out to Kirkgate Market in Leeds and East Street Market in Elephant and Castle in London.)

- If you're an omnivore, **befriend your local butcher and fishmonger**. See if you can strike up a deal if you buy in bulk. Nice things about shopping at these types of places include both the fact you know where your food is coming from and that you can typically get a greater diversity of foods than what you'd find in a supermarket.
- **Minimise food waste**. Most people throw away an egregious amount of the food they buy. With some careful planning you can buck this trend!

Finally, the great news is that **some of the most nutrient-dense foods on the planet are cheap** (certain organ meats, canned oily fish in brine, etcetera)!

Hydration is important too

Many studies have reported beneficial health effects when people increase their fluid intakes beyond what they are accustomed to. It's probable that this is most likely to benefit people who have certain health complaints, such as poor cardiometabolic health, kidney stones, and/or urinary tract infections.

But how much should you drink?

Optimal fluid intake varies widely, both between people and even for the same person from day to day. While **drinking to thirst works fine for many people**, drinking an amount that results in 5-7 voids of a total of 2-3 L per day is usually about right for relatively healthy people. Urine colour charts can be helpful, and a colour of 1-3 or an 8-point scale such as the one in [this link](#) usually indicates adequate fluid intake.

As I know many of you reading this are athletes, I'll add some post-exercise rehydration guidance. Weighing yourself before and after exercise can reveal a lot about how much fluid you lost during the exercise, and to rehydrate you'll need more fluid than the amount of weight you lost. Consuming a volume of fluid equal to about 150% of weight loss during exercise is about right, and to ensure your body holds onto the water rather than just peeing it out, you'll need to consume some sodium with it. About 0.5 g sodium per L water is about right, and salt is roughly 40% sodium, so this equates to just over 1 g salt per L water. So, don't be afraid to add salt to your post-workout meal.

Filter your water too.

I suggest you use a high-quality water filter (for example, a reverse-osmosis one) and avoid drinking from plastic bottles, which not only suck for the environment but may contaminate water with some nasty chemicals thought to contribute to many health problems if consumed in excess.



**WHEN TO EAT: A
TIMELY APPROACH TO
CHRONONUTRITION**

Sometimes, making healthier food choices is hard and can require seemingly unsustainable willpower.

But what if you could improve your diet without changing what you eat - what if I told you that simply changing when you eat could profoundly affect your health?

The good news is that the new science of chrononutrition shows that this is often the case.

Chrononutrition is the relationship between your nutrition and your body's "clock". This clock programmes daily (roughly 24-hour cycles in all sorts of processes in your body, including your sleep/wake cycle, digestion, metabolism, and immune function. Chrononutrition has two important implications:

- **What and when you eat influence the function of your body's clock.**

- Because your clock optimises your body for specific processes at certain times of day, **you can use an understanding of your body's clock to adjust your diet to improve your responses to the foods and drinks you consume.**

So, my goal here is to help you apply the science of chrononutrition, and I've summarised some of its key tenets in the table below.

Chrononutrition principles	
Tenet	Explanation
Wait until at least 30 minutes after your natural wake time (the time you'd wake without an alarm of any sort) before consuming anything that isn't water.	If you wake to an alarm, it's still your <i>biological</i> night-time - a time when your body is not optimised to effectively digest and metabolise food and drink. For example, <u>when people eat breakfast shortly after being awoken early from sleep, their blood sugar regulation is substantially worse than when they eat after a full sleep.</u>
Space your meals 3-6 hours apart.	While <u>eating frequency doesn't seem to have a strong bearing on bodyweight</u> , having distinct 3-6-hour periods between meals (and snacks, if you have them) makes sense for multiple reasons. One of these is that more <u>regular meal patterns are good for cardiometabolic health.</u> Another is that if you want to support your muscle mass, it's best to wait (about 4 hours seems ideal) between consuming boluses of protein. This is because <u>after you saturate your muscles with amino acids from a protein-rich meal, your muscle-building machinery temporarily becomes relatively unresponsive to any additional amino acids.</u>

<p>Cap your habitual caffeine intake at no more than 3 mg caffeine per kg bodyweight per day, and stop consuming caffeine at least 8 hours before bedtime.</p>	<p>Judicious use of caffeine enhances <u>mental and physical performance</u>, both when well rested and <u>after sleep loss</u>.</p> <p>In general, while lower doses (about 1-4 mg caffeine per kg bodyweight) improve cognition, slightly higher doses (3-6 mg per kg) are better for exercise performance. So, while I recommend regularly consuming only up to 3 mg caffeine per kg bodyweight, there's definitely a time and a place for higher doses.</p> <p><u>Consume too much caffeine too late in the day and you will disrupt your sleep, however.</u></p> <p>So, how much caffeine is in commonly-consumed foods and drinks?</p> <p>The amount of caffeine in items such as coffee and tea is quite variable. Using coffee as an example, a cup of instant coffee typically has about 60 mg caffeine, an Americano often has about 150 mg caffeine, and certain large store-bought coffees contain over 300 mg caffeine.</p> <p>For a useful database of the caffeine content of various foods and drinks, check out <u>Caffeine Informer</u>.</p>
<p>Stop consuming alcohol at least 3 hours before bedtime.</p>	<p>Alcohol is toxic in large quantities, and it's <u>debatable whether any amount of alcohol is good for health</u>.</p> <p>However, I'm not going to be a massive downer and tell you not to drink, and I think that occasionally drinking moderate amounts of alcohol can be perfectly healthy for lots of people.</p> <p>Current <u>UK guidelines</u> suggest that adults consume up to 14 units a week (that's about 7 pints of beer or 7 medium glasses of wine), spread evenly over 3 or more days.</p> <p>If and when you do drink, it's better to drink relatively early. Contrary to hearsay, alcohol is <i>not</i> an effective sleep aid and consistently <u>disrupts sleep late in the sleep period</u>. What's more, <u>alcohol consumption disposes people to developing sleep apnoea</u>, a sleep-related breathing disorder that increases risk of diseases such as diabetes.</p>
<p>Stop consuming any calorie-containing items at least 2 hours before bedtime.</p>	<p>About 2 hours before the time you usually fall asleep, the pineal gland in your brain starts synthesising substantial quantities of a hormone named melatonin. This hormone weakly promotes sleep and acts on receptors in cells in many tissues to signal that it is night-time and hence to engage in night-time processes. Digesting and metabolising nutrients isn't really one of these processes. Your body is therefore optimised for fasting from about 2 hours before bed until about your natural wake time. So, it's no surprise that <u>consuming lots of calories late in the day tends to make sleep less restorative</u>.</p>



<p>Use a 6-12 hour eating window (caloric period) each day.</p>	<p>I define time-restricted eating (TRE) as limiting intake of all calorie-containing items to a period of 12 hours or less each day. I mentioned earlier that the timing of our diets may affect our bodies' clocks, and it seems that TRE may be beneficial in part by enhancing the function of these clocks.</p> <p>In the last few years there's been a flurry of research into TRE. While the research on TRE is preliminary, TRE has been shown to produce numerous cardiometabolic health benefits, <u>including reduced blood pressure, bodyweight, and fat mass, and improved blood sugar control.</u> Interestingly, setting the caloric period as early as is practical in the waking day may be most beneficial. One thing to note here is that we tend to consume different things at different times of day - not many people have wine at breakfast or cereal at dinner! This is one reason that an early caloric period is ideal.</p> <p>Results from studies of "early" TRE, such as <u>this study</u>, have been particularly impressive, so including breakfast and having an early dinner is likely optimal for many people...<u>provided that it's feasible in the context of family, work, and social commitments.</u> When having an early dinner isn't practical, keep your dinner relatively low in carbs and fats.</p>
<p>Distribute your protein intake relatively evenly between meals.</p>	<p>Changes in your muscle mass depend on the balance between the synthesis of new proteins and breakdown of existing proteins in your muscles. Each time you consume a sufficient amount of a high-quality protein, you tip this balance in favour of accumulating muscle tissue. As described above, you then need to wait a few hours before the protein you eat can have a similar effect. This means that <u>if you consume large quantities of protein infrequently (let's say every 8 hours) or small quantities of protein very frequently (let's say every hour), you won't stimulate the synthesis of new proteins in your muscles as effectively as if you eat moderate amounts of protein at an intermediate interval.</u></p> <p>So, if you want to support your muscle mass, a dose of about 0.4 g protein per kg bodyweight at each meal (or snack) within your caloric period is generally about right.</p>
<p>Consider bouts of strenuous exercise too.</p>	<p>While in the absence of exercise it's best to front-load your calorie intake, <u>strenuous exercise positively affects how your body disposes of nutrients such as carbs.</u></p> <p>So, if you exercise hard in the afternoon, don't be afraid to consume a substantial proportion of your daily carb and fat intake around the exercise.</p>

<p>Front-load your carb and fat intake on days when you're not exercising hard or are exercising hard in the morning.</p>	<p>Some fascinating research on overweight and obese women on weight loss diets has shown the advantages of front-loading daily calorie intake.</p> <p>In one <u>study</u>, one group of women consumed half of their calories at breakfast for 12 weeks (the big-breakfast group). Another group consumed half of their calories at dinner. Even though the quantities of calories, carbs, fats, and proteins consumed by the groups diets was equivalent, after 12 weeks the big-breakfast group lost more than twice as much weight, more than twice as many inches off their waists, and had greater improvements in blood sugar regulation and blood lipids.</p> <p>Neat!</p> <p>So, there really is merit to the old adage of eating breakfast like a king, lunch like a prince, and dinner like a pauper!</p>
<p>Consume carb-rich foods at the end of meals and snacks, when practical.</p>	<p>Multiple studies have shown that when adults who have <u>prediabetes</u> or <u>diabetes</u> eat carb-rich items 10-15 minutes after they eat fat-, fibre-, and protein-rich items at meals, they have dramatically better blood sugar responses to meals than when they consume the carb-rich items first.</p> <p>So, when practical, go for fat-, fibre-, and protein-rich items first at meals. Some cultures begin meals with a salad, which is a good idea!</p>
<p>Maintain regular diet, supplementation, and medication timing from day to day, when possible.</p>	<p>When adults <u>consume a fixed number of meals each day</u>, they have better <u>appetite regulation, improved blood sugar control, and burn more calories than when they consume a varying number of meals - even when the composition of the diets is identical</u>. What's more, there's some evidence that <u>when people use a fixed TRE caloric period their sleep also becomes more restorative</u>.</p> <p>It's also clear that <u>there is a best time of day at which to take certain medications</u>, for your body's clock influences how you absorb drugs, distribute them in your body, metabolise them, and excrete them. This means that you may be able to use lower doses of medications and reduce any side effects if you take them at the right time. The same is likely true of many supplements.</p> <p>If you're taking medication or get prescribed one, ask your healthcare practitioner for more info about this.</p>

**RESILIENT NUTRITION
CASE STUDY:
RESILIENT: X**



Max Thorpe competed in the 2017 Talisker Whisky Atlantic Challenge, an annual event in which people row across the Atlantic Ocean. Early in the race, he and his pair came unstuck and nearly lost their lives when their boat caught fire in the chaos of a tumultuous storm.

Max learned a lot of lessons from this experience, one of which was that nutrition would be key to success if he was going to return to complete the race. Showing extraordinary resilience, he signed up to compete in the 2019 event with Dave Spelman.

In early 2019, Ali (Resilient Nutrition CEO) and I began helping Max and Dave with their nutrition as they prepared to compete in the 2019 event. Max and Dave would be rowing round the clock, mostly in 1.5-hour shifts. To support their remarkably high levels of activity, they needed colossal

calorie intakes. At the same time, they would face weeks of disrupted circadian rhythms and sleep.

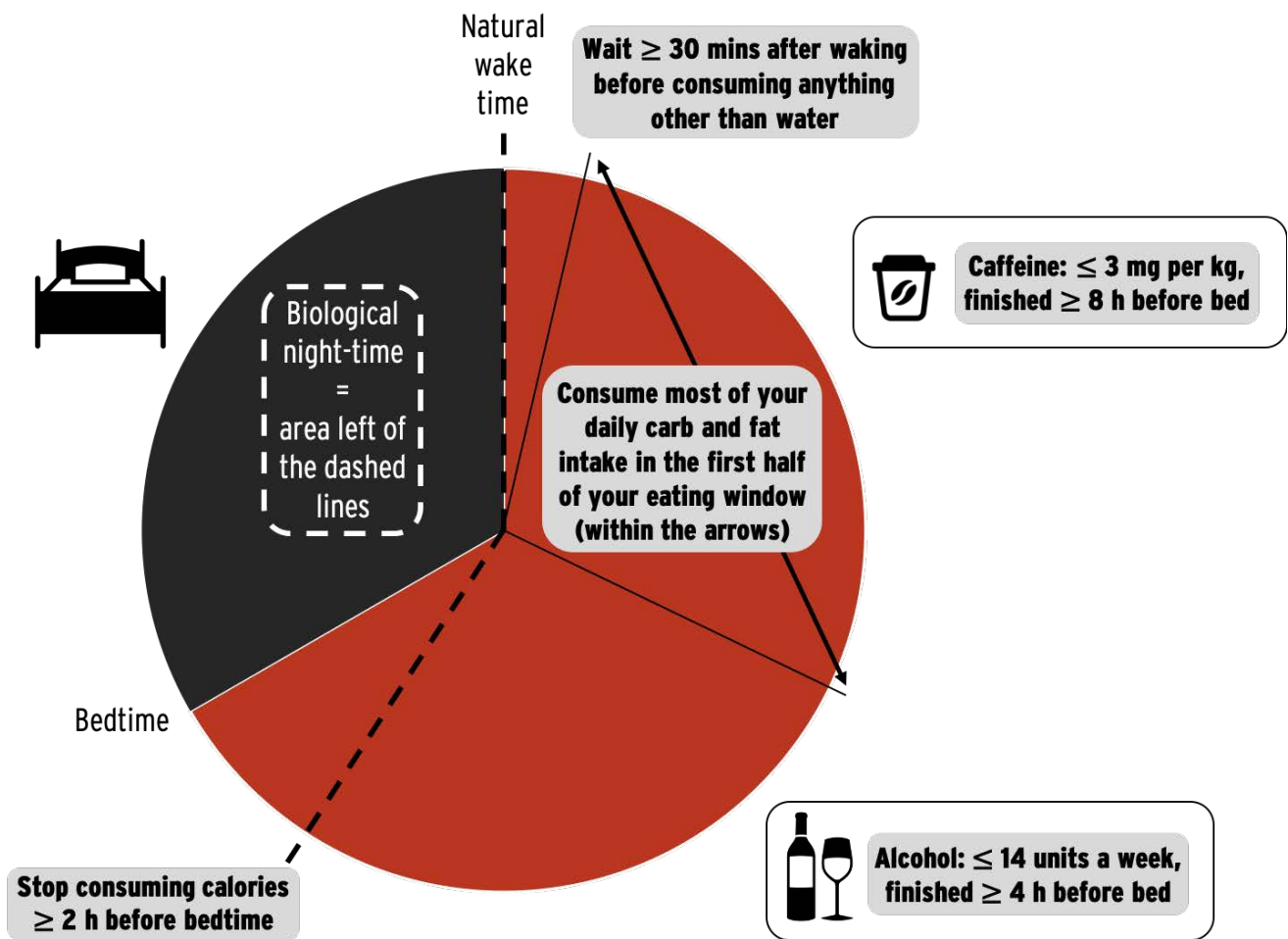
We needed to come up with a nutrition plan that would help them perform their best and stay as healthy as possible under astonishingly arduous conditions. When formulating their daily nutrition packs, we split each day's nutrition into a daytime pack and a night-time pack. Based on principles of chrononutrition, the daytime pack contained substantially more calories and carbohydrate than the night-time pack, which included early prototypes of [Long Range Fuel](#).

The results?

Max and Dave broke the World Record, completing the world's toughest row in just under 37 days and 8 hours.

<p>Intermittent fasting has its place.</p>	<p>Some people use TRE and intermittent fasting synonymously. I don't. Instead, I think of intermittent fasting as periodic use of a fast of at least 24 hours for example, doing one 24 hour fast each week.</p> <p>Intermittent fasting is useful in several scenarios. These include:</p> <ul style="list-style-type: none"> • As a tool to people remind people what true hunger feels like - many people have been eating round the clock for years, and a 24 hour fast at the onset of a fat loss diet can be a handy teaching tool. • As a way to shed fat. Intermittent fasting is especially helpful for people who have a lot of fat to lose, for these people generally lose little fat-free mass during fasting and can fast for longer than lean people. How's this for an epic fast: <u>Beginning in 1965, a 207-kg man fasted for 382 days straight, losing 125 kg!</u> • To help people during certain transitions. While this hasn't been rigorously studied, I sometimes use fasting to help get over jetlag. • To speed entry into ketosis. At the onset of a ketogenic diet, an extensive fast can help people enter ketosis faster. • As an adjunct treatment for certain disorders. These include <u>cardiometabolic diseases, some cancers, and certain neurodegenerative disorders.</u> <p>While purists may use fasts in which people consume no calories (only water, for example), others use "modified" fasting, which typically entails consuming only about 20-25% of the number of daily calories needed to maintain bodyweight.</p> <p>If you want to try intermittent fasting, perhaps begin with one 24 hour fast every seven days. You can then increase the frequency and/or the duration of the fast.</p> <p>If you want to try a modified fast, my favourite strategy is a "protein-sparing" modified fast, which will help you hold onto your fat-free mass while still shedding fat rapidly. To use this approach, only consume lean sources of protein (perhaps 1.2 g protein per kg bodyweight per day, evenly divided into 2-3 "meals"), plus small amounts of non-starchy, low-calorie vegetables, such as leafy greens. Like regular fasting, use modified fasting intermittently.</p>
<p>Shift workers may benefit from a small snack during shifts.</p>	<p>If you're a shift worker, try a TRE approach and confine your caloric period to when it feels like it's usually your "subjective" daytime (meaning that time of day when you think you feel most alert on most days).</p> <p>Then, if you get ravenous outside of this time (during a night shift, for example), choose a small, easy-to-digest, protein- and fibre-rich snack. <u>A small snack is likely to ward off hunger and support your workplace performance.</u></p>

Illustration of the key chrononutrition principles



An example of two meal patterns – one based on chrononutrition principles, one not



Pattern based on principles of chrononutrition	
<p>Breakfast (09:00)</p> <p>✓ Large, calorie-rich breakfast Carb-rich item (fruit) consumed last</p>	<ol style="list-style-type: none"> 1) Water 2) 4-egg omelette fried in extra-virgin olive oil with mushrooms, spinach, and onion. Served with avocado and black pepper 3) 50 g mixed nuts 4) 1 portion of fruit
Pre-lunch exercise	
<p>Lunch (13:30)</p> <p>✓ Carb-rich meal after intense exercise</p>	<ol style="list-style-type: none"> 1) Water 2) Grilled chicken leg topped with mixed herbs. Roasted sweet potato and parsnips, both drizzled a little with extra-virgin olive oil. Steamed broccoli 3) 2 portions of fruit
<p>Dinner (18:00)</p> <p>✓ Smaller dinner, still rich in protein and fibre Finished about 3.5 hours before bed</p>	<ol style="list-style-type: none"> 1) Grilled salmon with steamed beetroot and kale 2) 1 portion of fruit
Post-dinner walk and cup of peppermint tea	

Suboptimal pattern typical of many people

<p>Breakfast (07:00)</p> <p>⊗ Small breakfast, practically devoid of protein</p>	<p>1) Piece of toast with butter and jam 2) Coffee</p>
<p>Snack (10:00)</p> <p>⊗ Unplanned snack</p>	<p>1) Cereal bar</p>
<p>Lunch (13:30)</p>	<p>1) 2 cheese sandwiches 2) Pack crisps 3) 1 portion of fruit</p>
<p>Snack (15:00)</p> <p>⊗ Caffeine intake less than 8 hours before bed</p>	<p>1) 1 portion of fruit 2) Coffee</p>
<p>Dinner (18:00)</p> <p>⊗ Dinner is largest meal of the day</p>	<p>1) Steak, lots of mashed potato with lots of butter, asparagus 2) Pot low-fat yoghurt</p>
<p>Snack (21:00)</p> <p>⊗ Alcohol and caffeine 1 hour before bed</p>	<p>1) Glass wine 2) A few squares of dark chocolate</p>

What about snacking?

The final row in the table brings up the subject of snacking.

The tricky thing about snacking is that there's no real consensus about what constitutes snacking. But I also think we all have some intuitive sense of what it is, so let's not dwell on definitions.

There's nothing inherently wrong with snacking, it's just that most people don't snack very well. **Snacks are often unplanned and are therefore not especially nutritious.** Snacks also tend to disrupt meal pattern regularity.

And lots of us don't exactly snack mindfully.

So, planned snacks can be a perfectly good option ([Calm & Rebuild Long Range Fuel](#), anyone?), but mindlessly snacking on a tub of ice cream after dinner might not be in your best interests!

HOW TO EAT



With your mouth!...

... just kidding.

What I mean by “how to eat” is that it’s not only what and when you eat that matter... the way you eat (including how you chew your food), your attitude to your nutrition, and the context in which you eat are important too.

Eat mindfully

Mindfulness meditation has gained popularity in the last few years, and for good reasons. While some mindfulness resources are probably ineffective, well-formulated mindfulness training seems to be helpful for all sorts of health behaviours and outcomes. Interestingly, one of these is eating. When scientists compiled data from studies of mindfulness interventions in people who have obesity, for example, they found that on average people lost more than 4 kg, had healthier attitudes to eating, and felt less anxious and depressed after mindfulness training. Pretty cool, right?

The studies included were generally small and comprised lots of different types of mindfulness interventions, from

mindfulness meditation to acceptance and commitment therapy, so it’s a bit hard to interpret this result. Nevertheless, one consistent finding is that various forms of mindfulness training tend to reduce problematic eating behaviours.

The lesson is that you might find that a simple, brief daily mindfulness practice helps you stick to healthier eating habits. Just 10 minutes of mindfulness meditation per day is a good option. Since most of us have some control over our time at the start of the day, perhaps begin by meditating shortly after waking. Try a meditation app (I like [Waking Up](#), but there are several good ones).

You can also try some fun mindful-eating exercises. My favourites include:

- Holding a piece of food (dark chocolate is great) on your tongue and tuning into its flavours as you let it disintegrate.
- Taking a whole minute to chew a single piece of food, paying close attention to the food and nothing else.

Is it better to eat the “wrong” food with the right attitude than the “right” food with the wrong attitude?

If you’ve spent time hanging out with people who are obsessed with nutrition, you’ve probably heard people talk about “clean” eating and “clean” foods, whatever “clean” means. Some people take “clean” eating to an extreme, strictly following restrictive diets that they select because they believe extreme dietary purity is necessary. This type of disordered eating is named orthorexia nervosa, and I hope you don’t succumb to it!

One reason is that how you perceive what you eat and drink may have a surprisingly strong effect on how your body responds to it. One memorable example of this is that when people consumed a milkshake and were told it was an indulgent, 620-calorie shake, they rated it as more filling and had larger changes in an appetite hormone than when they thought it was a 140-calorie shake. (In both instances the drink contained 380 calories.)

Here’s another esoteric but fascinating example of the role of perceptions on responses to meals: When scientists changed how people with diabetes perceived time to be passing, the patients’ blood sugar responses to a meal followed their perceptions of time, not actual time.

The points I want to drill home are that:

- **Your mindset influences your responses to your diet.**
- **For almost everyone it’s fine to loosen up and indulge from time to time.**
- **When you do loosen up, it’s no big deal, so enjoy it and just continue to munch mindfully.**

I absolutely do not mean you should let the proverbial wheels fall off and going on some massive binge, undoing your usually-healthy dietary habits as you engage in another type of disordered eating. I just mean that if the lion’s share of the time you follow the principles in this guide then in the absence of certain medical disorders you shouldn’t think twice about enjoying a piece of cake at a birthday party!

The contexts in which you eat are key to your health too

You’ve probably noticed that you eat differently when you’re grazing in front of the TV or scrolling through your social media. That we tend to eat more when we’re distracted is but one example of how the context in which we eat affects what we ultimately consume.

Consider, for example, that most of us eat with others. Some people think that group eating and food sharing are the easiest way to strengthen connections with others, and these behaviours can provide key social and emotional support. So, enjoy your food with loved ones when you can.

Interestingly though, how others you dine with affects the way you eat is somewhat dependent on your perceptions of these people. For example, if you want to get on with them or if you feel in some way similar to them, you’ll tend to eat more similarly to them. Based on this, **when practical, you might benefit from eating non-distractedly with people you like – and preferably with people who eat well too!**

**MAKING EATING WELL
EASIER: HOW TO CHANGE
YOUR NUTRITION HABITS**

This brings us to the topic of behaviour change, which is by no means a subject I'm an expert in. But I think we can still cover a few helpful ideas. At its core, behaviour seems to come down to the interaction of a few key factors:

- **Capability:** This is your physical and psychological capacity to do a specific behaviour (behaviours require certain skills and knowledge).
- **Motivation:** This isn't just about consciously setting goals and making choices, it's about non-conscious processes such as your emotional regulation and how you direct your energy.
- **Opportunity:** This is largely about your physical and social environment - you're not going to become a world-class IRONMAN competitor if you have no way of accessing a body of water in which to practise swimming, let alone people with whom to train.

When changing behaviour, we need to first understand the behaviour in question, beginning with what you are trying to change. When selecting a change to make to your diet, the goal is to pick a behaviour (or multiple behaviours) that:

- **Is as effective as possible in moving towards your goal.**
- **Is as easy to implement as possible.**
- **Will positively influence other behaviours.**

Because of this, when working one-on-one with people on their nutrition, the first change I have them make is often one of the following:

- Optimise protein intake.
- Implement time-restricted eating.
- Increase intake of whole fruits and vegetables.

These changes are quite simple, but they tend to be effective, doable, and have a bunch of positive knock-on effects on other behaviours.

But when you've identified what you want to change, how can you most efficiently make the change?

There are at least [93 distinct behaviour change techniques](#), so I of course can't touch on them all here. And different techniques are better suited to different contexts. But I do think I can give you some generic strategies that you'll probably find helpful.

First, it's best to be as specific as possible about what you are trying to change. For example, "I will eat healthier" isn't particularly specific, whereas "I will consume at least 30 g protein at breakfast, lunch, and dinner" is. When picking a goal, consider:

- What you will do.
- Where you will do it.
- How often you will do it.
- With whom you will do it.

When selecting changes to make to your habits, don't bite off more than you can chew: **Most people do better when they keep diet changes small, and it's often a smart idea to make a single dietary change at a time.** For instance, if you're a bit of a caffeine junkie prone to an afternoon coffee or three and you want to restrict your intake, perhaps you begin by swapping the latest coffee of the day for a decaff. Ironically, however, in some instances it's easier to go cold turkey and cut something out entirely than it is to consume it in moderation.

When you've chosen a diet change to make, it's sometimes helpful to then use a technique named "mental contrasting". In this technique you **identify obstacles in the way of you undertaking the change you want to make.** Returning to the goal of consuming at least 30 g protein at meals, for example, perhaps one obstacle is sourcing protein-rich items that you can consume when you're on the go. Then, when you've listed the relevant obstacles, list what you will do to bypass the obstacles - in this instance, one solution is to source a high-quality protein powder (such as whey protein) and shaker bottle to take with you when you're out and about at mealtimes. This mental contrasting technique seems to be most effective when you're strongly motivated to change your behaviour.

Related to this, if you're trying to change your eating habits, you'll want to **make it easier to eat what you intend to eat and harder to eat what you don't want to eat.** To do this, you can modify your proximity to foods and drinks, as well as how visible they are. Let's say you want to increase your intake of whole fruits and vegetables and want to shirk ultra-processed food such as biscuits. If that's the case, having a bowl full of fruit and vegetables somewhere visible and near where you regularly pass might help, as might removing all ultra-processed foods from your home (perhaps give them to a food bank or to homeless people).



Here's another tip if you sometimes find yourself mindlessly eating while stood at the fridge, scanning the shelves for something to nibble: **only eat while sat at the kitchen table** (or equivalent). Our brains are very efficient at associating certain stimuli with certain behaviours. If you're driving and are approaching a red traffic light (the stimulus), you'll probably reflexively brake (the behaviour). If you eat in lots of places at lots of different times, retraining yourself to eat only in certain places at certain times will help you ingrain a more regular dietary pattern.

Next, regardless of the habit you're trying to change, **you can use your friends, family, and/or online networks to help keep you accountable and on track** - if you tell people what you're working on, you might be more likely to

actually do it. Feel free to reach out to Resilient Nutrition on social media ([Instagram](#), [Facebook](#)) if you're after an accountability buddy.

Finally, **of all the different behaviour change techniques used to improve eating behaviour, self-monitoring seems to be about the most effective.** So, you'll likely find it helpful tracking whatever you're trying to change, be that what you're eating, when you're eating, how you're eating, or something else. Returning to the protein example, you could track your diet and hence your protein intake using an app such as [MyFitnessPal](#). Or if you're starting to restrict your eating to between 08:00 and 18:00 each day, perhaps you use a simple habit-tracking tool for this. There are lots of habit-tracking apps out there for this type of thing.

**RESILIENT NUTRITION
CASE STUDY:
NICK BUTTER**



Nick Butter is the only person who has run a marathon in every country in the world. I don't know what you think, but I reckon that's pretty damn cool.

As he likes to joke, Nick's nutrition hasn't exactly been exemplary to date, and he's not had much success when he's previously tried to improve his eating habits. Now that he's preparing for a series of exceptionally cool running-related feats, however, he's keen to improve his nutrition so that he can stay healthy in years to come. We therefore recently started working with Nick to slowly and sustainably improve his diet.

Our immediate environments strongly influence our eating behaviours, and one hurdle Nick faces is that he lives out of a small van, along with his girlfriend and his dog. As a result, Nick has historically been prone to eating tasty, processed foods late in the evening while sat in bed.

One of the first habits Nick is therefore working on is simply not eating at all when in bed. This will reduce his tendency to eat mindlessly shortly before bed, which in the long term could be key to his health and hence his ability to do all the inspirational things he wants to do.

**KEEPING THINGS
IN PERSPECTIVE**



If you've read this document from start to finish, well done... you are truly a resilient nutter!

I've hurled a lot of info at you in the previous pages, so I'm going to end by pausing and trying to put it all into perspective. If you want to squeeze as much life into your years as possible, eating well is important. But your diet doesn't exist in a vacuum, and all sorts of factors influence your health and performance.

Simplistically, these include environmental factors - think air pollution, noise pollution, electric lighting, how much green and blue space there is where you live, and other characteristics of your neighbourhood - and individual factors, including substance (ab)use, circadian rhythms and sleep, physical activity, social connectedness, financial status, and mindset.

Notably, the relative importance of these variables varies a lot between people, and these factors interact with each other, meaning that when you improve any one of them there tend to be domino effects on others.

In short, nutrition is one of many pillars of health, and it inextricably interacts with other determinants of your health.

Nowadays, lots of people micro-manage their diets at the expense of other pillars of health...don't be one of these people!

Instead, recognise that your diet is one of many contributors to your health, and **occasional deviations from your normal healthy habits are probably fine.** (In fact, periodic exposure to stressful but subtoxic stimuli can trigger biological defence mechanisms that actually boost resilience.)

Closing thoughts

Eat minimally-processed foods.

In the middle of your waking day.

Enjoy what you eat and share it with others.

Be considerate in how you source your nutrition.

And don't fret when you occasionally indulge - remember, your diet is only a small part of your life.

I hope you've found this guide useful. If you have, please share it with friends, family, and followers, and don't forget to follow us on social media @resilientnuts for nutrition tips that are actually backed by science, not whim!

Yours in resilience,

Greg, on behalf of the Resilient Nutrition Team
Instagram, Facebook, website