

Viva! Vegan SPORTS NUTRITION



How to supercharge your performance

By Veronika Charvátová MSc

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YOUR HEALTH AND DIET:

Viva!

Vegan for Health guide

This easy-to-read guide summarises the huge health benefits of a vegan diet; reducing your risk of disease and providing everything you need to thrive. With a clear definition of what it is to be a healthy vegan, it provides a guided tour through all the nutrients you need as well as a trip through the body showing how we are naturally vegan.



Expect myth-busting facts and a few surprises along the way! This guide will leave you in no doubt that a vegan diet is the best way to improve and protect your health.

Order yours for £3 from vivashop.org.uk/vegan-for-health-guide or call 0117 944 1000 (Mon-Fri, 9-5)

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ABOUT VIVA! HEALTH

Viva! Health is the health and nutrition slice of Viva! – the vegan charity at the forefront of campaigning for a vegan world. It is the number one source for information on vegan health and nutrition for health professionals and the public.

We are on-hand to support people on their journey into veganism. We take the latest scientific studies and make them accessible to all, producing reports, guides and factsheets. We challenge and correct misinformation about diet, health and nutrition. In our ground-breaking reports and health campaigns – from dairy to zoonotic diseases – we provide all the evidence on why a vegan diet protects against all the major diseases and can help keep you happy and healthy.

Viva! Health is also a prolific producer of nutrition advice – have a look at our A-Z of Nutrients at viva.org.uk/health/a-zs. It's great!



Sports NUTRITION GUIDE

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The Vegan edge

The world of sports nutrition is undergoing a revolution, bringing to light the many advantages a fully plant-based diet can offer. Vegan athletes all over the world are demonstrating just how amazing plants are as a sports fuel – and they have top-level results to prove it. Gone are the days of egg white omelettes and mountains of chicken meat!

According to studies examining the impact of diet on our health and athletic performance, a vegan diet not only offers a wealth of health benefits, it can also improve your performance, recovery and stamina (Song *et al.*, 2016; Lynch *et al.*, 2018; Wirnitzer *et al.*, 2018; Barnard *et al.*, 2019; Gazzani *et al.*, 2019; Boutros *et al.*, 2020).

As for the health benefits, a vegan diet lowers your risk of heart disease, type 2 diabetes, some types of cancer, obesity and kidney disease (Grant, 2013; Tantamango-Bartley *et al.*, 2013; Bradbury *et al.*, 2014; Le and Sabaté, 2014; Appleby and Key, 2016; Satija *et al.*, 2016; Dinu *et al.*, 2017; Haring *et al.*, 2017; Benatar and Stewart, 2018; Chen *et al.*, 2018; Kahleova *et al.*, 2018; Segovia-Siapco and Sabate, 2018; Najjar and Feresin, 2019).

For any kind of sport, a wholesome vegan diet is the best fuel – full of healthy proteins, complex carbohydrates, low in harmful fats and brimming with damage-limiting antioxidants and other health-boosting phytochemicals (Rizzo *et al.*, 2013; Clarys *et al.*, 2014; Orlich *et al.*, 2014; Miles *et al.*, 2019; Parker and Vadeloo, 2019).



STAMINA

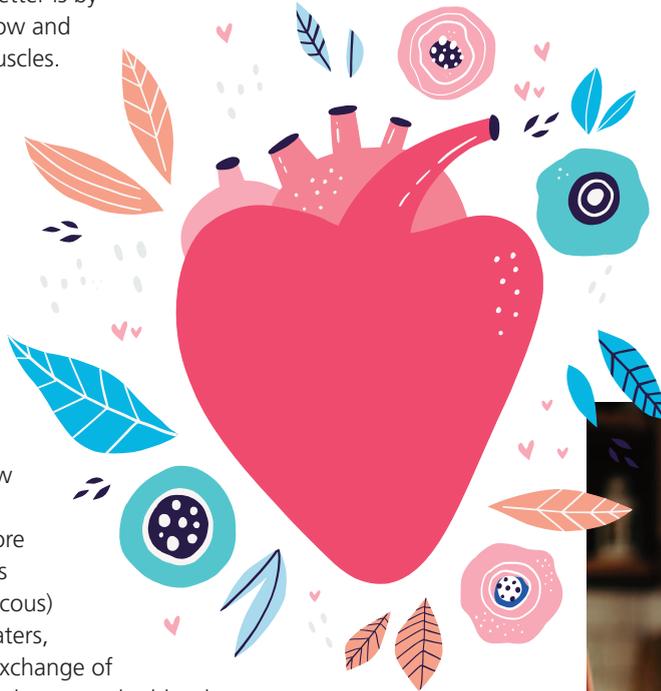
Research shows that plant-based diets increase athletes' aerobic capacity, which leads to a greater time to exhaustion and to performance improvement (Lynch *et al.*, 2016; Boutros *et al.*, 2020) – which is helpful for both strength and endurance training. Other studies have revealed that runners fuelled by plants have better-quality diets overall and increased stamina when compared to their meat-eating counterparts (Turner-McGrievy *et al.*, 2016; Wirnitzer *et al.*, 2018).

All the complex carbohydrates from plants help to maintain glycogen (energy) stores in your muscles whilst also providing sustained energy release. At the same time, the lack of hard-to-digest animal protein makes you less tired. A healthy vegan diet is the best diet to help you improve your performance.

BLOOD FLOW AND OXYGEN SUPPLY

One of the important mechanisms underlying how plant-based diets make your body work better is by improving your blood flow and oxygen supply to the muscles. This happens because:

- Your blood vessels are healthier when you eat plant foods naturally low in saturated fats, and high in antioxidants and fibre. They contract and relax better and faster, regulating blood flow more precisely.
- Your blood flows more smoothly because it's slightly less thick (viscous) than that of meat-eaters, leading to a better exchange of oxygen and nutrients between the blood and body tissues.
- The natural nitrates from vegetables slightly widen your blood vessels, meaning more blood supply to the performing muscles, improving the athletic endeavour. They also stimulate faster energetic recharging of your muscles and delay fatigue. Vegetable or beetroot juice nitrates are better than a supplement or other sources in achieving this advantage.



Kerley, 2018; Domínguez *et al.*, 2018; Barnard *et al.*, 2019.

RECOVERY

Wholesome vegan diets significantly lower the levels of inflammation in the body which is important for recovery (Sutcliffe *et al.*, 2015). The micro damage that naturally happens in the muscles and other tissues when you're physically active is being constantly repaired – but any damage within the body also triggers small inflammatory reactions. A plant-based diet, with its antioxidants, phenols, polyunsaturated fats and fibre, lowers these inflammatory reactions, limits damage and helps a faster recovery (Barnard *et al.*, 2019).

Plant foods can also aid athletic recovery by facilitating better sleep, leading to improved muscle regeneration. Complex carbs are one of the cornerstones of plant-based diets and science shows that a carb-rich dinner helps you sleep better – you fall asleep faster and wake up less often in the night (Doherty *et al.*, 2019). Certain plant foods containing



the amino acid tryptophan can also help to improve the quality of your sleep – pumpkin seeds, sunflower seeds, mushrooms, broccoli, peas, beans, soya beans (eg tofu and tempeh), buckwheat, oats, dates, peanuts and leafy green vegetables – and the result is a more efficient repair of your body tissues. Some animal products contain tryptophan too but less of it is absorbed. The carbohydrates and antioxidants in plant foods increase tryptophan's absorption and transport in the body (Doherty *et al.*, 2019). A breakfast rich in tryptophan, coupled with daytime exposure to sunlight, boosts production of the sleep hormone melatonin at around midnight and can help you get a good night's sleep. An ideal breakfast then, could be scrambled tofu or tempeh on wholemeal toast or porridge sweetened with chopped dates.

HIGHER METABOLIC EFFICIENCY

Plant foods are easier for us to digest than animal foods so your body works better when it runs on plants and has more energy to direct at building and repairing muscle.

Plant wholefoods also help regulate blood sugar thanks to the complex carbs they contain, providing long-lasting energy. Research suggests that vegans have better insulin sensitivity than meat-eaters too, which helps to prevent type 2 diabetes (Cui *et al.*, 2019).



Nutrition basics

A varied, wholesome vegan diet is the best choice for anyone who wants their body to perform at its best. However, a vegan diet is not automatically healthy – there are plenty of vegan processed foods out there too! Just as it is not healthy to eat lots of meat and animal products, it's not the best strategy to eat lots of processed vegan foods as they tend to contain high levels of fat and salt. The main difference from a health perspective is the vegan alternatives are not linked to cancer! It's a good idea to be aware of nutrition essentials – what we need and where we can get it from.

We all need the same set of nutrients but when you're active, you need a little more of some of them. The nutrients we need in large amounts – carbohydrates, protein and fat – are called macronutrients – or macros in the world of sports nutrition. And those we only need in tiny quantities are called micronutrients (or micros) – better known as vitamins and minerals. Both groups of nutrients are equally important and essential to our health.

CARBOHYDRATES

Our bodies are built to use carbohydrates as a primary source of energy. When carbohydrates are digested, they release glucose – sugar – into the bloodstream. Glucose is the principal fuel that every single cell in your body needs, in order to perform all the vital reactions. That's why carbs are so important



for our health and for any kind of physical activity. However, not all carbs are equal – there are three types:

- 1 **Simple carbs** – sugars that your body digests quickly. They give you a sugar rush but the energy doesn't last. In general, we don't need these but if you're in the middle of an intense workout and need an immediate energy boost, they can be useful. Simple carbs are mostly in refined foods – sugar, white flour, processed snacks and cakes. These foods have had most of their nutrients stripped away and can lead to weight gain and huge energy highs and lows.
- 2 **Complex or starchy carbs** – these carbs combine many molecules into very long chains so your body breaks them down slowly and releases glucose gradually. These provide the best source of long-lasting energy throughout the day so should be your carbs of choice. They are found in wholefoods such as wholemeal bread, oats, brown rice, fruit, vegetables, beans, lentils and sweet potatoes. These foods provide a healthy package deal – their complex carbs come with fibre, protein, vitamins, minerals and antioxidants. It means they give you healthy energy and performance-boosting nutrients. Diets based on complex carbs also help to keep your body fat down and improve blood sugar control (Kahleova *et al.*, 2018).
- 3 **Fibre** – a group of many types of complex carbs that we cannot digest but they keep our guts healthy, slow down energy release from foods and regulate blood sugar and fat. Fibre is absolutely crucial to a healthy diet. The good news is that it's an essential component of plant wholefoods so if you base your diet around them, you won't have to worry about a lack of fibre!

How about fruit? It contains some simple carbs – fruit sugar – but also a lot of fibre, which slows down its digestion, so fruit is great for gradual energy release too! Don't limit your fruit intake.

In case you're wondering about the importance of healthy carbs – in an eight-week resistance training study, athletes ate diets equal in calories and protein but with different percentages of carbs. The results showed a clear divide – those eating a normal amount of carbs



gained 1.3 kg of lean muscle mass but those in the low-carb, ketogenic group gained none (Vargas *et al.*, 2018). It has a simple explanation – carbs enable your body to perform at its best and allow protein to be efficiently used for muscle repair and growth. Low-carb diets force the body to get its energy from fat and protein which is less efficient, so there's less left for actual muscle maintenance.

Your body has a special storage system for carbs in the muscles and liver. They are stored there as glycogen – a ready-to-use energy store. These stores get depleted after 1.5-2 hours of exercise, depending on intensity, which is when you start to feel tired. If you don't have enough carbs in your diet, your glycogen stores will be low, so you will experience fatigue earlier on. Later, after your training, low carb intake will also hinder your recovery (Murray and Rosenbloom, 2018).

To find out how many carbs you need based on your training and goals, see **Fuelling Your Performance**.

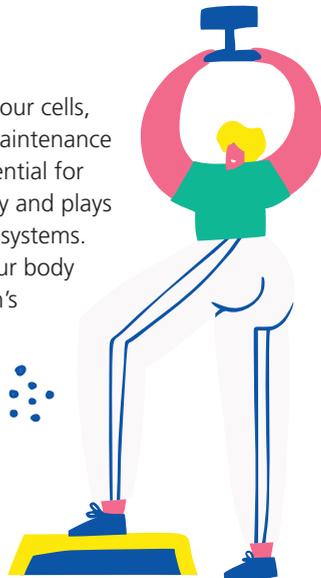
HOW ABOUT LOW-CARB DIETS?

Low-carb, ketogenic or paleo diets are usually based around foods high in protein and fat, and very low in carbohydrates. This forces your metabolism to switch gears and draw energy mostly from fat and protein, which makes you less hungry and may lead to weight loss. Your body can do this for a while but it's not a natural way for your metabolism to work. It's why these diets are effective only for short-term weight loss but if followed for long periods of time, they have a whole range of adverse effects such as constipation, headaches, kidney fatigue, bad breath, increased cholesterol levels, increased risk of heart disease, cancer and even premature death (Bilsborough and Crowe, 2003; Fung *et al.*, 2010; Banach, 2018; Farhadnejad *et al.*, 2019; Mazidi *et al.*, 2019).

PROTEIN

Protein is a vital part of every single one of our cells, which means it's needed for the growth, maintenance and repair of our muscles, but it is also essential for thousands of everyday reactions in the body and plays a crucial role in the immune and hormonal systems. It forms collagen (the protein that holds your body together) and is needed to make your brain's messengers (neurotransmitters).

Every molecule of protein consists of different amino acids; they are the building blocks of protein. Our bodies can manufacture some of them but there are nine that we cannot make – they are called essential amino acids and we need them in our diet. Worry not, a varied



vegan diet provides more than enough protein and all the essential amino acids in sufficient amounts (Marsh *et al.*, 2013; Clarys *et al.*, 2014; Karlsen *et al.*, 2019; Mariotti and Gardner, 2019).

Foods that contain all nine essential amino acids in perfect proportions are often viewed as better protein sources and you may have heard them referred to as 'complete protein'. Plant examples include soya, buckwheat, quinoa, cashew nuts, chia seeds and pistachios. However, modern nutrition science considers this outdated thinking because if your diet includes a variety of foods and you eat enough calories in a day, you will automatically get all the amino acids you need (Mariotti and Gardner, 2019).

All plants contain protein and all of the essential amino acids (McDougall, 2002; Hever and Cronise, 2017). Certain foods contain more – pulses (soya, chickpeas, beans and lentils), wholegrains (oats, wholemeal bread and pasta, quinoa), nuts and seeds – but all plant-based foods have some protein, unless they are extracts such as oil or sugar.

Plant protein usually comes as a package deal along with some healthy carbs and a generous portion of health-boosting micronutrients – which means it's not just healthy but also provides all the right nutrients; perfect for supercharging your athletic performance (Ahnen *et al.*, 2019; Gazzani *et al.*, 2019).



Contrary to the aggressive marketing of companies selling protein products, it's not difficult to get enough protein from foods alone. In fact, most of us get too much without even trying (Rizzo *et al.*, 2013)! A regular, moderately active person doesn't need to worry about the protein content of foods – that's how easy it is. Only when you start training more seriously or you specifically want to gain muscle would you want to increase your intake from foods like beans, lentils, tofu, nuts, seeds, peanut butter, meat alternatives, wholegrains and protein bars. Protein shakes and powders are a good solution if you need something quick post-workout, you prefer liquid meals or have a demanding training schedule.

Consuming protein evenly throughout the day rather than having a large protein dose in one meal is better because that way your muscles have a steady supply of amino acids to work with. Post-workout, you need some protein to maximise muscle repair and for new muscle synthesis – 20 to 40 grams is ideal. Anything more than that isn't effective as your body has limits to how much protein it can process at a time.

To find out how much protein you need based on your training and goals, see **Fuelling Your Performance**.



FAT

Fat is an essential component of cell membranes and brain tissue, it helps the body to absorb fat-soluble vitamins (A, D, E and K) from the diet, provides energy, insulation and protects the body's vital organs.

Fat is the most energy dense of all the macronutrients. It contains more than twice as many calories weight-for-weight as protein or carbohydrate. That's why it's a good source of energy but also why we don't need too much of it.

Plants tend to store their fats in seeds (nuts, seeds, soya beans and sweetcorn), and sometimes in the fleshy layer protecting the seed inside (eg avocados, olives and coconuts). Animals, including humans, mostly store fat within and between their muscles, under the skin and around the organs.

Some fat is healthy and necessary, yet other fat is unhealthy and unnecessary. There are four types of fat we should know about:

1. **Saturated fats** – fats that are solid at room temperature and come mostly from animal foods, coconut and palm oil. We have no nutritional need for this type of fat because our bodies can make it. Diets high in saturated fat raise blood cholesterol levels and increase the risk of heart disease, stroke, obesity, type 2 diabetes and some types of cancer, such as prostate cancer (Allott *et al.*, 2017; Sacks *et al.*, 2017; Korakas *et al.*, 2018; Luukkonen *et al.*, 2018).
2. **Trans/hydrogenated fats** – these fats are bad news as they increase your risk of heart disease and stroke by raising harmful cholesterol levels. Their effect on blood cholesterol is twice that of saturated fats! Smaller amounts of trans-fats are naturally found in dairy products, lamb and beef fat. Larger amounts can often be found in processed foods. These fats are made by the hydrogenation process, which converts liquid vegetable oils into solid fats. The final product is called hydrogenated vegetable oil/fat – which is essentially just a different term for trans-fats. They are to be avoided at all costs so always check the ingredients on processed foods.

Note on margarine: margarine used to contain hydrogenated/trans-fats and that's why some people believe it's unhealthy. However, most manufacturers have since changed their product ingredients so margarine usually doesn't contain trans-fats anymore (always check the ingredients to be certain).

3. **Monounsaturated fats** – offer a range of health benefits. Monounsaturated fats are found in many plants and vegetable oils. Probably the most common one is oleic acid – an omega-9 fat – the main component of olive, macadamia, avocado and sunflower oil.
4. **Polyunsaturated fats** – these are the essential omega-3 and omega-6 fats. Plants contain plenty – in particular, nuts, seeds and pulses. It's easy to get all the omega-6 fats you need from plants, so our attention should be focused more on omega-3s. Rich sources are flaxseed, hempseed, chia seeds and walnuts – and oils made from them (use cold to preserve nutritional value). The best oils to use for cooking are cold-pressed rapeseed (because it's high in omega-3s) and olive oil.



Omega-3s from plants come in the form of ALA (alpha-linolenic acid) which our bodies convert to EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid). Fish oils contain ready-made EPA and DHA which is why some people think they are better sources of omega-3s but fish are so contaminated with heavy metals (mercury, cadmium, lead) and pesticide residues that fish oil is not a smart choice – it's the reason pregnant women and small children are warned against their consumption (Marcotrigiano and Storelli, 2003; Guéguen *et al.*, 2011; Bosch *et al.*, 2016; Savadatti *et al.*, 2019). If you'd rather take a supplement than rely on foods alone, go for algal omega-3s – marine algae manufacture EPA and DHA (that's where fish get theirs from) and supplements made from them are a super-healthy choice.

To find out how much fat you need based on your training and goals, see **Fuelling Your Performance**.

VITAMINS AND MINERALS

Vitamins and minerals are natural compounds that we need in tiny amounts – which is why they're also called micronutrients. These small amounts, however, are vital to our health. Vitamins and minerals play a crucial role in our metabolism, hormone production and regulation, as part of our cells and tissues and in regulating muscle and nerve function. Some are also antioxidants which protect our bodies from damage caused by free radicals – unstable compounds that can harm our DNA, cells and tissues. Free radicals are a by-product of our metabolism (they are produced naturally in the body) but they also result, in much higher levels, from alcohol consumption, cigarette smoke, environmental pollution, stress and lack of sleep.

Antioxidants disarm free radicals – think of them as sending in the cavalry! There are countless antioxidants in plant foods, such as vitamins A (beta carotene), C and E, selenium, lycopene and



polyphenols but there are many, many more. The best strategy to ensure you get enough is to eat plenty of brightly coloured plant foods – fresh fruit and vegetables, black beans, red lentils, wholegrains, nuts with skin on (eg almonds, walnuts, Brazil nuts), edamame, cinnamon, turmeric and even mushrooms.

A varied plant-based diet will automatically provide you with almost all the nutrients in sufficient amounts (see the table below for an overview). The only two to watch out for are vitamins B12 and D as with our modern lifestyles, we tend to not get enough – vegans and meat-eaters alike! Studies show that some populations have 30-40 per cent of people with inadequate B12 levels (Allen *et al.*, 2018) and almost as much as 50 per cent of the world's population is lacking vitamin D (Nair and Maseeh, 2012).

Vitamin B12 is produced by bacteria in the soil – and before sanitation we used to get it from contaminated fruit and veg – but nowadays even the soil is depleted so we're best off taking a supplement. It's a common misconception that meat is naturally rich in vitamin B12; farmed animals are actually given B12 supplements – so instead of eating recycled B12 in their flesh, you can go straight to the source! People over the age of 50 are advised to take a supplement, regardless of their diet.

Vitamin D is produced in our skin when it's exposed to sunlight in spring and summer, but during autumn and winter we tend to cover up more, and the sun doesn't shine so strongly. Also, with increasing numbers of people living and working in cities, we are more shielded from the sun, even in the warmer months. The official advice is to supplement vitamin D at least from October to April, but if you spend most of



your time indoors, or always use a sun-cream or cover up, you may need a supplement throughout the year. People with dark skin from African, Afro-Caribbean and South Asian backgrounds, may also need to take a supplement all year round.

Eating a varied plant-based diet makes you thrive and boosts your health better than any other diet. If you want an additional nutritional boost you can always add some powerful natural aids, such as turmeric, ginger, ashwagandha, matcha green tea, moringa leaf powder, ginseng, maca or acai, all of which are strong antioxidants, anti-inflammatory and help you combat stress, but they are not a must.

The following table provides an overview of all the essential nutrients and where to find them. It can be your handy go-to reminder – you can even print it and keep it in the kitchen for reference!

Nutrients in a Vegan diet

NUTRIENT Carbohydrates

FUNCTION Energy, healthy digestive system

HOW MUCH DAILY 2.3-5.4 g/lb of body weight (or 5-12 g/kg)

SOURCES Oats, wholemeal bread, brown rice, fruit, vegetables, beans, lentils, chickpeas, peas, sweet potatoes, pumpkin, squash, quinoa, wholegrain or buckwheat pasta/noodles

NUTRIENT Protein

FUNCTION Muscle and tissue structure and repair, hormones, immune system, vital for biochemical reactions in the body, nerve signal transmission

HOW MUCH DAILY 0.36-1 g/lb of body weight (or 0.8-2 g/kg)

SOURCES Beans, lentils, chickpeas, peas, soya, tofu, tempeh, plant-based meat alternatives, seitan, nuts, seeds, nut butters, wholegrain products, plant-based protein powders

NUTRIENT Fat

FUNCTION Energy, insulation, organ protection, cell membranes, transport of molecules

HOW MUCH DAILY 0.2-0.7 g/lb of body weight (or 0.5-1.5 g/kg)

SOURCES Nuts, seeds, pulses, avocado, cold-pressed oils. Best for omega-3s: flaxseed, hempseed, chia seeds, walnuts

NUTRIENT Vitamin A (Beta-carotene)

Beta-carotene is found in plants and the human body converts it to vitamin A according to its needs – it's a natural safety measure because you can't get too much this way (high doses of vitamin A are toxic)

FUNCTION Eye health and vision, skin and mucous membranes, immune system

HOW MUCH DAILY 0.6-0.7 mg

SOURCES Carrots, pumpkins, butternut squash, sweet potatoes, peppers (red, yellow, orange), spinach, kale, watercress, romaine lettuce, tomatoes, mangoes, apricots, cantaloupe melons

NUTRIENT B1 Thiamine, B2 Riboflavin, B3 Niacin, B5 Pantothenic Acid, B6 Pyridoxine, B7 Biotin, B9 Folic Acid

FUNCTION B group vitamins have similar functions to each other – production of energy from food, protein and fat metabolism, cell division and growth, nerve function, red blood cell production

HOW MUCH DAILY

B1 Thiamine: 0.8-1 mg

B2 Riboflavin: 1.1-1.3 mg

B3 Niacin: 13-17 mg

B5 Pantothenic Acid: 5-7 mg

B6 Pyridoxine: 1.2-1.4 mg

B7 Biotin: 30-40 µg (mcg)

B9 Folic Acid: 200-400 µg (mcg)

SOURCES Nuts, seeds, wholegrains, wheatgerm, pulses, soya products, corn, green leafy vegetables, yeast extract, bananas, avocados, mushrooms

NUTRIENT Vitamin B12

FUNCTION Nerve cell maintenance, DNA formation, red blood cell production

HOW MUCH DAILY 50 µg

SOURCES 1 daily supplement of 50 micrograms (or take a higher dose less often – up to 2,000 micrograms a week)

NUTRIENT Vitamin C

FUNCTION Healthy skin, teeth, bones, cartilage and connective tissue, immune function, wound healing, iron absorption

HOW MUCH DAILY 40 mg

SOURCES Strawberries, raspberries, blackcurrants, oranges, grapefruits, lemons, kiwi, mango, papaya, pineapple, peppers, spinach, kale, spring greens, Brussels sprouts, broccoli, cabbage, watercress, tomatoes, potatoes



NUTRIENT Vitamin D

FUNCTION Regulation of calcium levels in the blood, healthy bones, teeth and muscles

HOW MUCH DAILY 10 µg/ 400 IU

SOURCES Made by sunlight on the skin. If you live in the UK, take a vitamin D supplement during the winter months (no matter what your diet)

NUTRIENT Vitamin E

FUNCTION Skin and cell membrane protection and maintenance, immune function

HOW MUCH DAILY 11-15 mg

SOURCES Nuts and seeds (hazelnuts, almonds, sunflower seeds, peanuts, pistachios), wheat germ, sunflower oil, safflower oil, rapeseed oil, margarines and spreads, avocado, butternut squash, tinned tomatoes, mango, broccoli, spinach, kale

NUTRIENT Vitamin K

FUNCTION Healthy blood clotting, strong bones

HOW MUCH DAILY 60-100 µg

SOURCES Kale, spinach, broccoli, cabbage, Brussels sprouts, lettuce, asparagus, watercress, green beans, peas, cauliflower, runner beans, leeks

NUTRIENT Calcium

FUNCTION Bone structure, muscle function, nerve transmission, cell signalling, hormone formation

HOW MUCH DAILY 700-1200 mg

SOURCES Sesame seeds and tahini (sesame seed paste), almonds, tofu (made with calcium sulphate), tempeh, beans, dried figs, kale, collard/spring/mustard greens, watercress, plant-based milks fortified with calcium

NUTRIENT Chromium

Blood sugar regulation, insulin function, protein and fat metabolism

HOW MUCH DAILY 25 µg

SOURCES Wholegrains (wholemeal and rye bread, oats), peppers, onion, cabbage, broccoli, romaine lettuce, tomatoes, celery, peaches, bananas, unpeeled apples



NUTRIENT Copper

Enzyme function, connective tissue formation, brain and nervous system function

HOW MUCH DAILY 1.2 mg

SOURCES Wholegrains and products made from them, nuts, seeds, beans, lentils, dried apricots, mushrooms, spinach

NUTRIENT Iodine

HOW MUCH DAILY Production of the thyroid hormones, metabolism regulation, development of the nervous system in infancy and childhood

HOW MUCH DAILY 140 µg

SOURCES Seaweed (kombu, arame, wakame and nori), iodised salt.

Varying iodine content (depends on iodine levels in the soil): wholegrains, green beans, courgettes, kale, spring/ collard greens, watercress, strawberries, organic potatoes with skin

Some plants milks also contain iodine

NUTRIENT Iron

Component of the oxygen-carrying molecules haemoglobin and myoglobin, an essential part of many proteins in the body

HOW MUCH DAILY 14.8 mg for women under 50 and 8.7 mg for men (and women over 50)

SOURCES Wholegrains (wholegrain bread and pasta, quinoa, some fortified breakfast cereals), beans, lentils, peas, tempeh, tofu, pumpkin and chia seeds, tahini, dried apricots, prunes, figs, broccoli, spinach, cabbage, black treacle, cocoa, turmeric, thyme

NUTRIENT Magnesium

Bone formation, healthy metabolism, production of DNA, energy, muscle and nerve function

HOW MUCH DAILY 270-300 mg

SOURCES Green leafy vegetables, nuts (eg cashews, almonds, Brazil nuts, peanuts, hazelnuts), seeds (pumpkin, sunflower, sesame), oats, pulses, bananas, apricots, apples, prunes, spinach

NUTRIENT Manganese

FUNCTION Healthy bones, skin, cartilage, nervous system, immune system, sugar metabolism

HOW MUCH DAILY 3 mg

SOURCES Wholegrains (wholewheat pasta, bread, oats, brown rice), nuts, seeds, pulses, soya products, green leafy vegetables, berries

NUTRIENT Phosphorus

FUNCTION Healthy bones and teeth, cells, DNA, energy, metabolism

HOW MUCH DAILY 550 mg

SOURCES Nuts, seeds, pulses, corn, parsnips

NUTRIENT Potassium

FUNCTION Body fluid balance, nerve signal transmission, heart muscle contractions, kidney health

HOW MUCH DAILY 3,500 mg

SOURCES Pulses (beans, lentils, soya), potatoes and sweet potatoes, pumpkins and squashes, dried fruit (apricots, figs), avocado, spinach, broccoli, bananas

NUTRIENT Selenium

FUNCTION Cell defence, antioxidant, healthy thyroid gland function, fertility

HOW MUCH DAILY 60-75 mg

SOURCES Brazil nuts, sunflower seeds, sesame seeds, wholegrains, tofu, asparagus, mushrooms

NUTRIENT Sodium

FUNCTION Nerve impulses, muscle contraction, fluid balance

HOW MUCH DAILY No more than 2.4 g (6 g of salt)

SOURCES Salt

NUTRIENT Zinc

FUNCTION Cell division, enzymes, processing carbohydrates, fats and protein from food, wound healing, immune system, healthy vision, male reproductive health

HOW MUCH DAILY 7-9.5 mg

SOURCES Pumpkin and sesame seeds (including tahini), tofu and tempeh, cashews, wholegrains



Fuelling your performance

When you switch to plants as your main fuel, your body will reward you with more energy, better stamina, easier breathing and faster recovery. The best part is that there's nothing complicated about a vegan diet. The key is to focus on these food groups: fruits and vegetables, wholegrains, pulses, nuts and seeds.

As an athlete, you need long-lasting energy and that means healthy complex carbohydrates. The best sources include wholegrains (eg wholemeal bread, wholewheat pasta, brown rice, muesli/granola/oatmeal, buckwheat, quinoa), starchy vegetables (eg sweet potatoes, root vegetables, squashes, pumpkins, peas and sweetcorn) and fruit (fresh and dried). These foods are important whether you're training for strength, endurance, weight-loss or general fitness – without them, your energy will be flagging.



Your hard-working muscles also need protein and antioxidants for efficient and speedy repair. The best sources of these are pulses (eg beans, lentils, chickpeas and soya) and products made from them (eg burgers, falafel and hummus), nuts and seeds, and wholegrains. Yes, wholegrains like oats and wholemeal bread pack a decent protein portion! Plant-based protein powders may be a useful addition to your diet if you have higher protein requirements or no time to eat – they offer some clean lean protein – but you don't necessarily need them, as long as you eat enough calories.

Lastly, you also need some healthy fats. We don't need much fat but we do need the right kind as it's crucial to your performance and blood pressure regulation. To get the all-important omega-3 unsaturated fats, add some chia seeds, flaxseed, hemp seed or walnuts to your daily regime.

When you power your body with plants, all their antioxidants and health-protective phytochemicals truly help you to thrive. The bright colours of fruit, vegetables, beans and lentils are not just nice to look at, all of these pigments have some pretty powerful disease-busting properties and they help you achieve faster recovery times after training (Cook and Willems, 2019).

There's a lot of discussion about the best macronutrient ratios and you'll find our recommended ranges below. These recommendations will supply your body with exactly what it needs according to modern nutrition science – but we are all different, so you'll have to fine-tune your diet to suit your particular needs. We have outlined the nutrient and calorie requirements for four different activity patterns:

- 1 **Moderately Active Person** – 2-3 moderate workouts per week, some activity at weekends
- 2 **Active Person** – daily physical activity, some aerobic exercise (runs up to 5k, cycling, swimming), muscle toning, hiking, rock-climbing
- 3 **Endurance Athlete** – prolonged (60min+) training 4-5 times per week: running, cycling, ball games, swimming, kayaking/rowing
- 4 **Strength Athlete/ Bodybuilder** – resistance training with the goal of increasing muscle mass and strength, weight-lifting, intense CrossFit

DAILY REQUIREMENT OF MACRONUTRIENTS

Moderately Active Person – 2-3 moderate workouts per week

CARBS	2.3-2.7 g/lb of body weight (5-6 g/kg)
PROTEIN	0.4 g/lb of body weight (0.8 g/kg)
FAT	0.2-0.7 g/lb of body weight (0.5-1.5 g/kg)
TOTAL ENERGY	2,000-2,500 kcal

Active Person – an hour of moderate exercise daily

CARBS	2.3-3.6 g/lb of body weight (5-8 g/kg)
PROTEIN	0.4-0.5 g/lb of body weight (0.8-1 g/kg)
FAT	0.2-0.7 g/lb of body weight (0.5-1.5 g/kg)
TOTAL ENERGY	2,200-2,900 kcal

Endurance Athlete – running, cycling, swimming, ball games, kayaking for 1+ hours at a time, some strength training

CARBS	2.7-5.4 g/lb of body weight (6-12 g/kg)
PROTEIN	0.5-0.7 g/lb of body weight (1.2-1.4 g/kg)
FAT	0.2-0.7 g/lb of body weight (0.5-1.5 g/kg)
TOTAL ENERGY	2,500-3,500 kcal

Strength Athlete/ Bodybuilder – resistance training 4+ times weekly

CARBS	2.7-5.4 g/lb of body weight (6-12 g/kg)
PROTEIN	0.7-1 g/lb of body weight (1.6-2 g/kg)
FAT	0.2-0.7 g/lb of body weight (0.5-1.5 g/kg)
TOTAL ENERGY	2,500-4,500 kcal

Now you know how much of each macronutrient you need, and how many calories, it's time to put this knowledge into practice. It's easy to get the right amounts of all these nutrients from the plant food groups mentioned above, but we've made it super-easy for you with our chapters on **How to Plan Your Meals** and **Sample Meal Plans**.

RULES FOR PRE-, DURING AND POST-EXERCISE SNACKING

- **Before** – focus on carbs. Exercising on a full stomach is a big no-no, so always leave at least 2-3 hours after a main meal before you start any kind of exercise. However, a small snack around 30 minutes before you start training can be helpful. It should be carb-based for an energy boost – a piece of fresh fruit, a few pieces of dried fruit, an energy bar or a smoothie.
- **During** – focus on hydration and electrolytes. During 60-minute workouts, you only need water to stay hydrated. If you train for longer though, or extra hard, have an isotonic drink to replenish your electrolytes – minerals lost through sweating – and some sugar for an energy boost. You can easily make your own: combine 300 ml water with 200 ml fresh/cold-pressed fruit juice, and a small pinch of salt. To make it more exciting, you can add some ginger or fruit slices – or a teaspoon of brown sugar for added energy.

If you are an endurance athlete, you may also need a quick snack during your training – please check the **Snacks** chapter for some exciting ideas!

- **After** – focus on protein and carbs. To support your muscle recovery and energy restoration, you should eat or drink something you digest quickly within 45 minutes of finishing your training. Your muscles need protein and your glycogen energy stores need carbs. The easiest option is a smoothie/shake or a protein bar and some fruit. You need about 0.45 g of carbs per pound of bodyweight (or 1 g per kg) and 20-40 g of protein. Be prepared and make a fresh smoothie at home before you get started; throw in some protein powder, nut butter or chia seeds and you're sorted! A good old sandwich, wrap or a pack of nuts and dates are also good options. See our **Snacks** chapter for a lot more ideas.



STAY HYDRATED

Making sure you are well hydrated is as important as a healthy diet. The human body is about 60-65 per cent water and we need to keep replenishing it to maintain blood volume, joint lubrication, kidneys flushing out waste and toxins, body temperature regulation through sweating, and breathing. Water is also essential for all our cells, mucous membranes, saliva, digestive juices and many vital reactions.

You need at least two litres every day. When you're active or it's extra hot outside, you need even more. It's a simple equation: the more you sweat, the more water you need to drink to replace it.

Water is generally best during moderate workouts whilst an isotonic drink can be helpful for endurance athletes (as mentioned above). Outside of training, tea is also a great option – herbal tea is perfect for hydration and contains no caffeine. Caffeine can slightly

increase stamina, however, so many of us do turn to caffeinated drinks for a boost. Your body absorbs caffeine from drinks very quickly and peak concentration in the blood occurs 15-120 minutes after ingestion. The effect lasts for up to six hours – but doubles in women taking oral contraceptives! Caffeine sensitivity varies from person to person, so it's difficult to prescribe an effective dose. Coffee contains the most caffeine, followed by black tea and then green tea. The good news is that coffee and tea are also good sources of antioxidants, so a sensible consumption of up to five cups a day is not bad!

If you prefer caffeinated soft drinks, we have some bad news – they are full of sugar and chemicals and usually devoid of antioxidants or anything healthy, so you're best off staying away from those.

Next on the drinks list are juices and smoothies. These drinks range from super healthy to super unhealthy. A glass of fresh or cold-pressed juice daily is a sound choice. A freshly made smoothie is even better because it contains whole fruits and vegetables. The key word is 'fresh' and it means these drinks contain vitamins, minerals, antioxidants and some beneficial compounds such as flavonoids – and fibre if it's a smoothie.

Any other option is not so great. The juice you buy in 'normal' shops may or may not be made from concentrate but it's almost always pasteurised. That means the juice (or smoothie) is exposed to high heat which kills off any potentially harmful microbes, but it also kills off much of the goodness in the juice. It retains little of its vitamin content and there isn't much else left aside from some sugar. All the fruit drinks sold in cartons have undergone pasteurisation; many are made from concentrate and sweetened too so, not worth your money. The best option is to take a few pieces of fruit (and veg), throw them in a blender and make a fresh smoothie to go – it's the healthiest and often cheapest option.

For more information on fuelling your lifestyle and sport of choice, see **Nutrition by Sport**.



Natural diet

The question of what a natural diet for humans is pops up very often. Many fad diets claim to be tapping into our primal nature and promising amazing results. Let's take a closer look at what our bodies truly need.

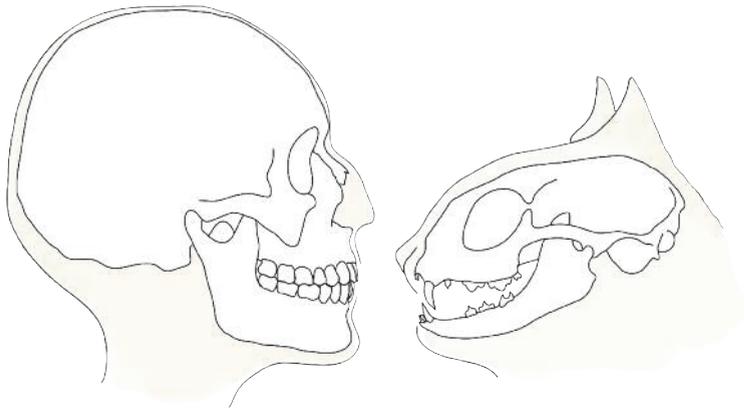
Humans have evolved on predominantly plant-based diets. Just like our ancestors and fellow apes alike, we are perfectly adapted to eating fruit, vegetables, nuts, seeds and grains (Jenkins *et al.*, 2003). Even though we have eaten animals and their eggs during our evolution, those were simply additions to the diet but plants – their fruit, leaves, seeds, nuts and roots – have always been the staples we relied on for daily energy and nourishment (Milton, 2000; Jenkins *et al.*, 2003; Melamed *et al.*, 2016; Crittenden and Schnorr, 2017; Whiting, 2020).

"Plants were the staples. They were the foods that formed the basis of our calories in most environments" according to Dr Amanda Henry, a paleobiologist and associate professor at Leiden University in the Netherlands (Whiting, 2020).

When we started cooking, grinding and fermenting foods, some nutrients became better available and gradually our digestive tracts shortened a little to accommodate for this. However, our intestines are still too long to cope well with meat (allowing it time to rot) so if we eat a meat-heavy diet, it brings about a number of serious health issues – including an increased risk of colon cancer (Bouvard *et al.*, 2015). The fact that we have not evolved to eat a diet based on animal foods is also reflected in our inability to regulate blood cholesterol. If we eat more than small amounts of animal products, our blood cholesterol levels increase and gradually form sticky plaques in our arteries that can eventually kill us. When scientists (Jenkins *et al.*, 2003) recreated several versions of our ancestral diets and fed them to volunteers, the fully plant-based one worked better than modern medications in reducing people’s cholesterol levels!

When we look at other parts of our anatomy, it becomes obvious we are not predators: our canines are short and blunt, and molars square and flattened to crush and grind food; we have soft fingernails rather than sharp claws; our jaws move sideways unlike those of carnivores; and our saliva contains the enzyme amylase that helps us to digest starchy carbohydrates.

Some people argue that meat-eating was what allowed our brains to increase in size – a theory meat-eaters love – but this isn’t an



accepted concept. Another theory is much more plausible – that human brain evolution was fuelled by better food availability, which included cooking and farming, alongside the development of cooperative social structure – in other words, people helping each other and working together (Milton, 2000; Navarrete *et al.*, 2011).

The fact that we aren’t supposed to drink milk after infancy is fairly obvious – all other mammals only ever consume their mother’s milk as their first food and never past weaning. And never the milk of a different species! Just like other mammals, most humans gradually lose the ability to digest lactose (milk sugar) during childhood – globally, about 70 per cent of people are lactose-intolerant (Bayless *et al.*, 2017). The fact that some people can digest lactose in adulthood is the result of genetic mutations that occurred in Europe, Central Asia and Africa several millennia ago and spread among the populations. It means that many people with European heritage, including white populations in North America and Australia, some people with African heritage and certain Asian populations can digest lactose but most people from Asia, South America, Australia and Africa cannot – consuming it causes them great digestive discomfort and makes them ill (Bayless *et al.*, 2017). Nature simply never intended for adults to need breastmilk so being unable to digest lactose in adulthood is perfectly normal.

It has been questioned whether a vegan diet is natural, given that we have to supplement vitamin B12. This vitamin naturally comes from bacteria in the soil and both people and animals would traditionally have got it from eating unwashed plants. We not only wash fresh produce before eating (and for good reason) but food production is now so sanitised there’s not a trace of B12 left. There’s even a lack of B12 bacteria in the soil. The need for B12 supplementation arises from these modern production methods. As stated earlier, most farmed animals are given B12 supplements too, and that’s how the vitamin eventually ends up in their flesh.

A vegan diet is perfectly natural for us – evolution shaped us to live on plants and modern nutrition science concurs that the more plant-based our diets are, the better our health. A vegan diet fulfils all our nutritional needs and makes us flourish like nothing else!

ESSENTIAL FOOD GROUPS

A healthy vegan diet that supports your athletic endeavours and boosts your performance consists of **four essential food groups**. They are crucial to your meal planning so make sure you don't skip any of them!

FRUIT AND VEGETABLES

What's included:

- Fresh whole fruit or blended in a smoothie/shake
- Dried unsweetened fruit for snacks and desserts
- Fresh vegetables with meals, as a salad or blended in a smoothie
- Steamed, cooked or baked veggies – try not to overcook them so they retain some nutritional value
- Starchy vegetables – sweet potatoes, potatoes, pumpkins, squashes, root vegetables, sweetcorn
- At least one serving of dark green leafy vegetable daily – kale, broccoli, rocket, watercress, Brussel's sprouts, bok choy, collard/spring/mustard greens, etc – they are exceptionally good for you and may even help prevent cancer
- If fresh produce is not an option or is too expensive, go for frozen fruit and veg as it retains most of the nutritional value

Why?

- Fruit and vegetables are the perfect source of healthy carbohydrates, fibre, antioxidants, flavonoids (antioxidant and health-promoting compounds), minerals (such as iron, calcium, magnesium, potassium), vitamins C, K and most of the B group
- They provide healthy energy and nutrients vital to muscle recovery and damage limitation

Avoid:

- Tinned fruit and vegetables – they offer mostly just sugar
- Pasteurised and juices made from concentrate – same as above
- Sweetened or candied dried fruit



PULSES (LEGUMES)

What's included:

- Beans, peas, lentils, chickpeas – cooked from dried, out of a can, roasted and added to trail mix snacks
- Products made from these – burgers, patties, dips, soups, stews, hummus, falafel, lentil or bean pasta
- Soya and products made from it – edamame, tofu, tempeh, miso, mock meats, soya milk and yoghurts
- Peas – fresh or cooked, roasted as a snack

Why?

- Pulses are a great low-fat source of protein, complex carbohydrates, fibre, B group vitamins, many minerals (including iron, zinc and calcium), antioxidants and flavonoids
- They are the main source of protein in a vegan diet and provide healthy energy

Avoid:

- Undercooked beans – if they aren't well-cooked, they may cause digestive upset



WHOLEGRAINS

What's included:

- Wholemeal, wholegrain or wholewheat products – bread, pasta, noodles, tortillas
- Brown rice and other wholegrain varieties, such as wild or red rice
- Other wholegrains – quinoa, buckwheat, barley, spelt, oats
- Oat-based products – muesli, granola, oat energy bars, power cookies, oat cakes etc. (but beware of lots of added sugar and fat – always check the ingredients)
- Wholegrain crispbreads and crackers

Why?

- Wholegrains are an amazing source of healthy, complex carbohydrates, protein (unlike refined grains such as white bread, biscuits or cornflakes), many minerals and vitamins (depending on the type of grain), and a big family of antioxidants
- They are an essential source of energy for us, help top-up our protein intake and aid post-training recovery

Avoid:

- Sugary and fatty products with some wholegrains in masquerading as healthy, such as flapjacks or sugary breakfast cereals



NUTS AND SEEDS

What's included:

- Nuts and seeds, preferably unsalted
- All nuts are great but aim for a regular intake of almonds for calcium, walnuts for omega-3s and Brazil nuts (two a day) for selenium
- Seeds – pumpkin seeds are great for zinc, sesame seeds for calcium, ground flaxseed, shelled hempseed and chia seeds for omega-3 fats
- Nut butters and tahini (sesame seed paste/butter) – used as a spread, nutrition booster in smoothies/shakes or to thicken sauces

Why?

- Nuts and seeds are excellent for protein, healthy unsaturated fats (apart from coconut), fibre, antioxidants, minerals including zinc and selenium, vitamin E and B group vitamins
- They are an excellent nutrition booster and can be eaten with and in-between meals

Avoid:

- Eating too many salted nuts as they can easily send your salt intake through the roof
- Relying on peanut butter too much – it can be a healthy addition to your diet but do eat other nuts and seeds too



SUPPLEMENTS VITAMIN B12

Vitamin B12 naturally comes from bacteria in the soil and both people and animals would traditionally have got it from eating unwashed plants as explained on page 35. As it's not possible for us to get vitamin B12 this way anymore, it is absolutely necessary that we have a reliable source of it. We need it to make red blood cells, for a healthy heart and circulation, and it's essential for the nervous system. It can take years to develop a B12 deficiency so on one hand, you don't need to worry too much about not having taken B12 for a while, but on the other hand, you do need to pay attention to it as by the time symptoms develop, it's usually serious.

To ensure adequate intake you should have at least 50 micrograms (μg) daily from supplements or fortified foods. The B12 used in both foods and supplements is produced commercially by growing bacterial cultures in large vats – and it's always suitable for vegans.

There are two forms of B12 in supplements – cyanocobalamin (cheap) and methylcobalamin (expensive). Cyanocobalamin is the stable 'inactive' form of B12 and is used in supplements and to fortify foods and drinks. Once ingested, it's activated in your stomach so it can be used by the body. Methylcobalamin is the 'active' form of vitamin B12 as it does not require any activation. It costs more and is not so stable. So which one to choose? Unless you're a heavy smoker, have kidney failure or any other serious condition affecting your metabolism, cyanocobalamin – the cheap form of B12 – is perfectly fine. Intakes of up to 2,000 micrograms a day are safe and you can take either a lower dose daily or a higher dose a couple of times a week.



VITAMIN D

We need vitamin D for healthy bones, teeth and muscles and it also performs other essential functions in our metabolism. It is produced in the skin when exposed to sunlight and this is the main source of vitamin D for most people. However, if you always use sun-cream, cover most of your skin or live in a country, like the UK, where we don't get enough sunlight over the winter, you need a supplement, regardless of diet.

The UK Government now recommends that we all take a supplement from October to April and, if you protect your skin with sunscreen or stay covered up over the sunnier spring and summer months, you should take a supplement all year round. Otherwise, just 20 minutes a day of sunlight on the face and arms is all that is required for the body to manufacture sufficient vitamin D – people with darker skin need slightly longer.

Fortified breakfast cereals, bread, plant milks and vegan margarines can be useful sources if exposure to sunlight is not practicable but it may not be enough. When it comes to supplements, there are two types and your body can use both but it's advisable to check the source – vitamin D2 is always vegan but vitamin D3 can be of animal origin. Many vegan foods are fortified with vitamin D2 and labelled so but if not specified, especially on cereal products, vitamin D tends to be of animal origin. If you choose to supplement your diet, there's a range of quality and affordable vegan supplements with vitamin D2. There also those made from algae or mushrooms that contain D3 and these are recommended if you need a higher dose. When deciding on your dosage, 10 micrograms per day is enough and you shouldn't go above 100 micrograms.

IODINE

Iodine is a mineral necessary for thyroid function and helps to regulate how energy is produced and used in the body. The amount of iodine in plants depends upon the iodine content of the soil in/on which they are grown. The closer to the sea food is grown, the more iodine it is likely to contain. Vegans can get enough from plant foods

but there's no guarantee. Seaweed, which of course grows in seawater, is always a good source and includes nori, laver, dulse and the kelp family (kombu, arame, wakame). But be warned – kelp absorbs far more than other seaweeds and you can get too much iodine from it. So, whilst seaweed consumption is encouraged, kelp should only be consumed sparingly.

It's best to use a kelp supplement so you know exactly how much iodine you're taking – it's cheap, reliable and you don't have to worry about taking too much. The recommended daily intake for iodine is 140 micrograms and intakes of up to 500 micrograms are considered safe. In many countries, iodised salt is commonly used to ensure iodine intake but it's not the norm in the UK and too much salt can increase your blood pressure.

See **Nutrition Basics** for more information on foods and nutrients.



How to plan your meals

Now you know what foods to eat using the **Essential Food Groups** chapter, and how many calories and macronutrients you need from the **Fuelling Your Performance** chapter, it's time to put it all into practice!

Following our guidelines will ensure your diet increases your energy levels, speeds up your recovery after training, improves your digestion, helps you build strength, and makes you feel more balanced.

The best strategy for supercharged meals is to always build them from these three food categories:

- 1 **Wholegrains or starchy vegetables** – for healthy complex carbs (energy), some protein, essential B vitamins and minerals
- 2 **Pulses, soya products or nuts and seeds** – for quality protein, healthy complex carbs, essential unsaturated fats, vitamins and minerals
- 3 **Fruit and vegetables** – for healthy complex carbs, antioxidants, vitamins and minerals crucial to your recovery

Here are some examples of simple, yet nutritious, meals assembled from the above:

BREAKFAST

- A bowl of muesli with nuts and seeds, fresh and dried fruit, and plant milk
- Wholegrain bread with nut butter and natural jam OR nut butter, yeast extract and peppers/tomatoes. Both versions go well with a fruit smoothie.
- Big breakfast smoothie made from banana, berries, oats, protein powder, chia seeds, plant milk and any spices you like (ginger, cinnamon, turmeric)
- Scrambled tofu on wholemeal toast, some greens and tomatoes

LUNCH

- Wholemeal bread sandwich with smoked tofu/tempeh/sandwich slices, veggies and vegan mayo or margarine
- Salad bowl with different greens (lettuce, spinach, rocket, broccoli), peppers, tomato, beans or lentils, some seeds and a dressing. Either have it with bread or throw in some wholegrains such as brown rice, barley, quinoa or couscous
- Wholegrain wrap with black beans or falafel, some veggies and salsa/pesto/hummus
- Tomato soup with added lentils, wholemeal bread and fresh vegetables on the side

DINNER

- Stir-fry made with vegetables, tofu/tempeh/seitan/meat alternative, garlic, onions and soya sauce, with brown rice or soba noodles
- Wholewheat pasta with lentils or plant-based mince, greens (kale, spinach, broccoli), tomato and basil sauce and optional chopped nuts or roasted seeds on top
- Brown rice risotto with peas, leeks, greens and chopped almonds or pumpkin seeds, drizzled with tahini
- Kidney bean chilli with sweet potatoes and veggies
- Chickpea curry with veggies and fresh ginger, served with brown rice



See? It's quite easy and you can just tweak the meals you already like, no need to invent super-complicated dishes.

If you always combine this trio of foods, you'll have a well-balanced intake of protein, healthy carbs and fats. Depending on your training regime and nutrient requirements, you may need more than one serving of each per meal. For the amount of nutrients in common vegan foods see **Food and Nutrient Cheatsheets**. Fine-tuning what your body needs is a personal process but you won't go wrong with our guidance!

Having these three groups at each meal also helps you to make the most of the nutrients in the foods. For example, vitamin C from fruit and vegetables increases the absorption of iron from pulses and to utilise protein properly, your body needs some healthy energy from complex carbs.

To complement your meals, you may want to add some healthy fats (avocado, plant-based spread, mayo, virgin olive oil), plant milks and yoghurts, and some treats of your choice (dark chocolate, cashew ice cream, occasional chips). When it comes to snacks, there are countless options – see the Snacks section for ideas based on your goals.

See our **Sample Meal Plans** for many more ideas based on various athletic levels, including nutrient breakdown. And to find out more about nutritional values of common foods, check out the **Food and Nutrient Cheatsheets**.



Snacks

We often have go-to meals and know what makes them great for us but when it comes to snacks, we sometimes struggle. Either we always have the same ones or we forget to prepare anything and end up grabbing something on the go. Snacking is important for your athletic game so it pays to do it well.

The key to performance-enhancing snacking is to get the right kind of energy at the right time. If you eat a big meal before training, it'll make you feel uncomfortable or even sick during your exercise, you won't digest the food well and it'll make you feel tired. On the other hand, if you feel weak because you haven't eaten for hours, it's not ideal to go ahead and burn a lot more energy.

Your muscles have their own store of energy – glycogen. This

storage form of glucose will fuel any kind of exercise for about 90 minutes before you start 'hitting the wall'. That means you don't necessarily need a snack before training but if you've been running around, stressed or perhaps didn't have enough sleep, it's a good idea to have something to give you a boost.

SNACKS AND DRINKS — PRE-EXERCISE

Whether you're preparing for a run, a game of football or a gym session, you need something light. It should be mainly carbohydrates, possibly some protein, but very little fat. Fat takes longer to digest so it's not your pre-workout friend. Good carbs will give you a lasting energy boost, which is exactly what's needed. Here are a few ideas:

- **Smoothie** – easy to digest and full of healthy energy; freshly made is always best
- **Piece of fruit** – banana, orange, apple, pear, peach, mixed fruit bowl – choose your favourite
- **Energy bar** – made from dried fruit and nuts or oats, avoid fatty oat bars
- **Oat biscuit** and a few dried apricots
- **Muesli** – a small serving with low-fat plant-based yoghurt
- **A few dates** – as they are or you can simply blend them with water for a sweet energy drink (requires a high-speed blender for a non-chunky experience!)
- **A glass of beetroot juice** – increases the level of nitric oxide in your blood which helps to dilate your blood vessels, improving blood flow to the muscles. It means your muscles work more efficiently and their contraction is stronger. However, if your diet already contains plenty of vegetables, which also increase your nitric oxide levels, drinking beetroot juice won't offer much more of an advantage.
- **Caffeine** – not a must by any means but if you need a boost, having a coffee or tea 15-60 minutes before your workout can improve your stamina

SNACKS AND DRINKS — DURING EXERCISE

If your workout or training lasts around 60 minutes, all you need is water to stay hydrated. If training continues for longer and is making you sweat, have an isotonic drink – a drink that contains some sugars to keep your energy levels up and mineral salts to replenish those minerals lost through sweating. You can make your own by combining 300 ml water with 200 ml fresh/cold-pressed fruit juice, and a small pinch of salt. For extra energy, you can add a teaspoon of brown sugar.

If you're an endurance athlete, you'll need some extra carbs to provide energy during long training – 30-60 grams of carbs per hour. Try one of the following:

- A banana
- A small bunch of grapes
- Mashed sweet potato with raisins and cinnamon
- A small handful of raisins or dates – on their own or blended with water to make an energy drink
- Plant-based energy bar
- Rice or corn cakes covered with dark chocolate
- Diluted fruit smoothie



SNACKS AND DRINKS — POST-EXERCISE

Your muscle glycogen stores get used up during training and your muscles suffer microscopic tears. That's why it's important to nourish your body after a workout – to help it recover in the best possible way. You need protein for muscle repair and some healthy carbohydrates to replenish glycogen.

For optimal muscle repair and growth, it's recommended that we consume 0.14-0.23 grams of protein per pound of body weight (0.3-0.5 g/kg) within 45 minutes of training – that would be 20-40 grams for most people (Kersick *et al.*, 2017).

To refuel your glycogen stores, you need about 0.45 grams of carbs per pound of bodyweight (or 1 g/kg) post-exercise. This is important mostly for people who train daily and work hard. If you train less than that, you don't have to worry about the exact amount.

Here are some examples of post-workout snacks:

- Plant protein shake and a banana
- Oatmeal with protein powder and fruit
- Protein bar and fruit
- Wholemeal pitta bread, hummus and tomato
- Rice or corn cakes with peanut butter
- Wholegrain toast with nut butter and fruit
- A handful of nuts and dried fruit
- Baked beans on toast



SNACKS FOR ANYTIME

We don't always eat around exercise times so let's look at snacks for anytime. Healthy snacks throughout the day support our overall fitness. Even when trying to lose weight, it's best to choose the right snacks, rather than skip them. So depending on what your goal is, snack accordingly:

GAIN WEIGHT THE HEALTHY WAY

- Wholemeal bread/bagel with nut butter and veggies or dried fruit
- Rich smoothie with nuts/seeds/nut butter and oats
- Avocado on wholemeal toast
- Trail mix – dried fruit and nuts
- Wholegrain tortilla wrap loaded with hummus and beans, or salsa and smoked tofu
- Oat snack bar – sweetened with dried fruit rather than sugar
- Protein bar and some fruit

MAINTAINING WEIGHT

- Plant yoghurt with fruit
- Fruit slices with nut butter
- Roasted chickpeas, beans or edamame
- Rye crispbread with hummus/bean dip and veggies
- Dried fruit and nuts
- Fresh fruit smoothie

LOSE WEIGHT

- Fruit and vegetables – fresh, in a salad, or blended in a smoothie
- Rye crispbread, low-fat spread and veggies
- Vegetable soup
- Miso soup
- Unsweetened dried fruit
- Low-fat plant-based yoghurt



BEST DIY SNACKS

Finding what works for you may be a bit of a journey. Sometimes, the perfect snack is not out there so we have to make it ourselves. You can make your own snack bars or energy balls by combining dried fruit, nuts, oats and spices (cinnamon, ginger, cacao) or protein/superfood powders. Making a smoothie for the day ahead is also an excellent habit to cultivate and so is keeping a jar of nut butter at hand and dipping veggie sticks or fruit slices in it. If you've had enough of hummus, make a different spread/dip – blend beans/chickpeas/tofu with a little oil, salt, spices and anything else you like (eg peppers or olives). Not only are these snacks to your taste, they are cheaper than shop-bought!

BEDTIME SNACKS

Many of us don't manage to eat enough during the day or simply feel like eating more at night. You shouldn't eat a full-blown meal right

before bed but a snack or protein shake an hour before sleep is ok. It's certainly better than waking up after midnight and raiding the fridge!

You don't have to be perfect all the time – biscuits and ice cream can be a nice treat and you can always make them healthier. Get wholemeal or oat biscuits and instead of scoffing half a pack in one sitting, have just a few and eat them with some dark chocolate and a piece of fruit. Or spread some peanut butter on top!

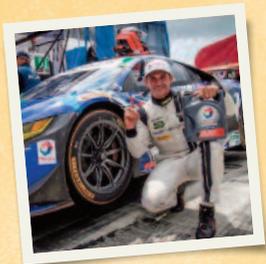
If crisps are your weakness, try chickpea ones or poppadums – they have more protein and less fat than potato crisps. Even better, combine them with olives and tomato salsa and you have a healthy evening snack!

Fine-tuning your snacking can make a world of difference to your health, energy levels and athletic endeavours. Be prepared and always have some healthy snacks with you so you're not caught hungry.



"I've been vegetarian for 16 years and vegan for over 10 years. At 45 years old I am still at the top of my game in a very competitive industry that requires a lot of cardio, endurance and fast reactions with quick thinking under pressure in very high temperatures. A plant based diet has kept me sharp and healthy so I can always push the limits."

Andy Lally, multiple racing driver champion, multi-athlete



"Choosing a vegan lifestyle, back in 2011 was a life changing moment for me. Even though I didn't choose this way in order to become a better long distance runner, from that moment I could train and race much harder and my performance skyrocketed."

Ariel Rosenfeld, multiple ultra-running champion and record-holder

"If I can summit the highest mountain in the world without using a single animal product then you can make some simple changes in your day to day life. Go vegan, for yourself, for the planet, for the animals."

Dean Maher, mountaineer, summited several Himalayan peaks including Mt Everest



Sample meal plans

These meal plans are meant to serve as inspiration for your daily menu. They follow the rule to always build main meals from wholegrains or starchy vegetables, pulses or nuts and seeds, and fruit and vegetables as outlined in **How to Plan Your Meals** – but they are not exact prescriptions.

Based on the level and type of your physical activity, we have created four categories with two meal plans for each to illustrate what your daily menu can look like. However, there are many variables, such as age, gender and body composition, that play a role in your metabolism, so you will need to find out what works for you and tweak our suggestions to suit your needs. Bon appétit!

MODERATELY ACTIVE PERSON

You do 2-3 moderate workouts per week and some activity at weekends. Nutrient requirements summary:

CARBOHYDRATES	PROTEIN	FAT	CALORIES
2.3-2.7 g/lb of bodyweight (5-6 g/kg)	0.4 g/lb of bodyweight (0.8 g/kg)	0.2-0.7 g/lb of bodyweight (0.5-1.5 g/kg)	2,000-2,500 kcal

For example, if you weigh 155 pounds/70 kg, you need 350-420 grams of carbs, 56 grams of protein and 35-105 grams of fat.

Here's what your daily meal plan might look like:

Option 1 — MODERATELY ACTIVE PERSON

Muesli breakfast

WHOLEGRAINS OR STARCHY VEGETABLES	1 cup* muesli (with plant milk)
PULSES OR NUTS AND SEEDS	1 tbsp chia seeds
FRUIT AND VEGETABLES	A handful of raspberries, 1 banana
NUTRIENTS	552 kcal / 102 g carbs / 16 g protein / 13 g fat

Snack

PULSES OR NUTS AND SEEDS	A small handful of nuts
FRUIT AND VEGETABLES	1 apple
NUTRIENTS	269 kcal / 31 g carbs / 5 g protein / 16 g fat

Bean burrito lunch

WHOLEGRAINS OR STARCHY VEGETABLES	Wholewheat tortilla
PULSES OR NUTS AND SEEDS	½ cup black beans. 1 tbsp pumpkin seeds
FRUIT AND VEGETABLES	½ sweet pepper, ½ avocado
NUTRIENTS	430 kcal / 58 g carbs / 16 g protein / 18 g fat

Snack

WHOLEGRAINS OR STARCHY VEGETABLES	3 rye crispbreads
PULSES OR NUTS AND SEEDS	3 tbsp of hummus
FRUIT AND VEGETABLES	1 medium tomato
NUTRIENTS	207 kcal / 39 g carbs / 7 g protein / 5 g fat

Pasta dinner

WHOLEGRAINS OR STARCHY VEGETABLES	2 cups (cooked) wholewheat pasta
PULSES OR NUTS AND SEEDS	1 cup boiled lentils, 1 tbsp toasted sesame seeds
FRUIT AND VEGETABLES	1 cup cooked kale, 1 cup tomato and basil sauce
NUTRIENTS	750 kcal / 146 g carbs / 40 g protein / 7 g fat

After dinner snack

WHOLEGRAINS OR STARCHY VEGETABLES	2 oat biscuits and 2 squares of dark chocolate
NUTRIENTS	207 kcal / 24 g carbs / 3 g protein / 11 g fat

Total calories and nutrients	2,415 kcal
400 g carbs / 87 g protein / 70 g fat	

*1 cup = 236 ml



OPTION 2 — MODERATELY ACTIVE PERSON

Toast & smoothie breakfast

WHOLEGRAINS OR STARCHY VEGETABLES 2 slices of wholemeal or rye bread

PULSES OR NUTS AND SEEDS 1 tbsp nut or seed butter and yeast extract to taste

FRUIT AND VEGETABLES Sliced tomato on top, Smoothie: 1 banana, 1 orange, 1 cup spinach leaves, 1 tbsp hemp seed

NUTRIENTS 568 kcal / 93 g carbs / 20 g protein / 17 g fat

Snack

PULSES OR NUTS AND SEEDS / FRUIT AND VEGETABLES Dried fruit and nut snack bar

NUTRIENTS 135 kcal / 18 g carbs / 3 g protein / 5 g fat



Super salad lunch

WHOLEGRAINS OR STARCHY VEGETABLES 1 cup* cooked brown rice

PULSES OR NUTS AND SEEDS ½ cup green peas, 3 tbsp walnut pieces

FRUIT AND VEGETABLES A handful of salad leaves, 1 tomato, ¼ cucumber + seasoning to taste

NUTRIENTS 487 kcal / 78 g carbs / 16 g protein / 15 g fat

Snack

WHOLEGRAINS OR STARCHY VEGETABLES 3 oat cakes

PULSES OR NUTS AND SEEDS 125 g serving of unsweetened soya yoghurt

FRUIT AND VEGETABLES 1 peach, 1 tbsp raisins

NUTRIENTS 279 kcal / 44 g carbs / 10 g protein / 9 g fat

Burger roasted dinner

WHOLEGRAINS OR STARCHY VEGETABLES 1 medium potato, 1 sweet potato, 1 carrot, 1 parsnip – all baked using 1 tbsp of oil

PULSES OR NUTS AND SEEDS 1 soya or tofu burger, baked with the root vegetables

FRUIT AND VEGETABLES 1 cup lightly cooked broccoli

NUTRIENTS 670 kcal / 100 g carbs / 29 g protein / 21 g fat

After dinner snack

PULSES OR NUTS AND SEEDS Chickpea puffs

NUTRIENTS 130 kcal / 18 g carbs / 4 g protein / 5 g fat

Total calories and nutrients 2,269 kcal

351 g carbs / 82 g protein / 72 g fat

*1 cup = 236 ml

ACTIVE PERSON

You're active daily, do some aerobic exercise (runs up to 5k, cycling, swimming), muscle toning, hiking, rock-climbing.

Nutrient requirements summary:

CARBOHYDRATES	PROTEIN	FAT	CALORIES
2.3-3.6 g/lb of bodyweight (5-8 g/kg)	0.4-0.5 g/lb of bodyweight (0.8-1 g/kg)	0.2-0.7 g/lb of bodyweight (0.5-1.5 g/kg)	2,200-2,900 kcal

For example, if you weigh 155 pounds/70 kg, you need 350-560 grams of carbs, 56-70 grams of protein and 35-105 grams of fat.

Here's what your daily meal plan might look like:

OPTION 1 — ACTIVE PERSON

Muesli breakfast

WHOLEGRAINS OR STARCHY VEGETABLES 1 cup* muesli (with plant milk)

PULSES OR NUTS AND SEEDS 1 tbsp ground flaxseed, 8 walnut halves

FRUIT AND VEGETABLES A handful of berries, 1 banana

NUTRIENTS 647 kcal / 102 g carbs / 18 g protein / 24 g fat

Snack

PULSES OR NUTS AND SEEDS Small handful of nuts

FRUIT AND VEGETABLES An apple

NUTRIENTS 269 kcal / 31 g carbs / 5 g protein / 16 g fat

Supercharged sandwich

WHOLEGRAINS OR STARCHY VEGETABLES 2 slices of wholemeal bread, thinly spread with vegan margarine

PULSES OR NUTS AND SEEDS 100 g smoked tofu drizzled with a spicy sauce

FRUIT AND VEGETABLES A small handful of rocket, 1 tomato, sliced

NUTRIENTS 387 kcal / 44 g carbs / 22 g protein / 14 g fat

Snack

WHOLEGRAINS OR STARCHY VEGETABLES 3 oat cakes

PULSES OR NUTS AND SEEDS 3 tsp of peanut butter

FRUIT AND VEGETABLES 3 dried apricots, 1 kiwi fruit

NUTRIENTS 317 kcal / 43 g carbs / 8 g protein / 15 g fat

Bean chilli dinner

WHOLEGRAINS OR STARCHY VEGETABLES 1 medium sweet potato – baked

PULSES OR NUTS AND SEEDS 1 cup kidney beans

FRUIT AND VEGETABLES 1 cup tomato chilli sauce, 3 tbsp sweetcorn, 1 sweet red pepper, chopped

NUTRIENTS 646 kcal / 132 g carbs / 25 g protein / 3 g fat

After dinner snack

WHOLEGRAINS OR STARCHY VEGETABLES 2 digestive biscuits and 2 squares of dark chocolate

NUTRIENTS 207 kcal / 24 g carbs / 3 g protein / 11 g fat

Total calories and nutrients 2,473 kcal

376 g carbs / 81 g protein / 83 g fat

*1 cup = 236 ml





OPTION 2 — ACTIVE PERSON

Bread, nuts and seeds breakfast

WHOLEGRAINS OR STARCHY VEGETABLES 2 slices of wholemeal bread

PULSES OR NUTS AND SEEDS 2 tsp tahini (spread on the bread),
8 cashews to put on top

FRUIT AND VEGETABLES 2 tsp of pure fruit jam for sweet option

OR Lightly fried spinach and mushrooms (no or minimum oil)

An orange on the side with either option

NUTRIENTS 424 kcal / 63 g carbs / 15 g protein / 13 g fat

Snack

PULSES OR NUTS AND SEEDS 10 walnut halves

FRUIT AND VEGETABLES Snack smoothie: 1 banana, 1 cup* kale,
4 inch/10 cm chunk of cucumber, 4 dates

NUTRIENTS 326 kcal / 52 g carbs / 6 g protein / 14 g fat

Falafel wrap lunch

WHOLEGRAINS OR STARCHY VEGETABLES 1 wholegrain wrap

PULSES OR NUTS AND SEEDS 3 tbsp hummus, 3 falafels, 1 tbsp chilli sauce

FRUIT AND VEGETABLES 1 sliced tomato, ½ cup grated carrot,
any greens you have. 5 dried apricots as a dessert

NUTRIENTS 553 kcal / 87 g carbs / 15 g protein / 19 g fat

Snack

WHOLEGRAINS OR STARCHY VEGETABLES 3 rye crispbreads

PULSES OR NUTS AND SEEDS 1 cup three-bean salad (240 g)

FRUIT AND VEGETABLES 2 celery sticks

NUTRIENTS 266 kcal / 60 g carbs / 10 g protein / 1 g fat

Tofu stir-fry dinner

WHOLEGRAINS OR STARCHY VEGETABLES 1.5 cups brown rice

PULSES OR NUTS AND SEEDS 150 g firm tofu + 1 tbsp rapeseed oil,
soya sauce and seasoning

FRUIT AND VEGETABLES ½ onion, garlic, ½ sweet pepper (chopped),
1 cup broccoli pieces/ chopped bok choy

NUTRIENTS 648 kcal / 100 g carbs / 31 g protein / 17 g fat

After dinner snack

FRUIT AND VEGETABLES Blended banana ice cream: 1 frozen banana,
4 tbsp frozen blueberries, 2 dates, Splash of oat milk

NUTRIENTS 190 kcal / 47 g carbs / 2 g protein / 1 g fat

Total calories and nutrients

2,407 kcal

409 g carbs / 82 g protein / 65 g fat

*1 cup = 236 ml

ENDURANCE ATHLETE

Your training is usually longer than an hour and you train 4-5 times per week: running, cycling, ball games, swimming, kayaking/rowing, triathlon, some muscle conditioning as well. Nutrient requirements summary:

CARBOHYDRATES	PROTEIN	FAT	CALORIES
2.7-5.4 g/lb of bodyweight (6-12 g/kg)	0.5-0.7 g/lb of bodyweight (1.2-1.4 g/kg)	0.2-0.7 g/lb of bodyweight (0.5-1.5 g/kg)	2,500-3,500 kcal

For example, if you weigh 155 pounds/70 kg, you need 420-840 grams of carbs, 84-98 grams of protein and 35-105 grams of fat. Here's what your daily meal plan might look like:

OPTION 1 — ENDURANCE ATHLETE

Porridge breakfast

WHOLEGRAINS OR STARCHY VEGETABLES 1 cup* oats cooked with water or plant milk

PULSES OR NUTS AND SEEDS 6 walnut halves, 1 tbsp ground flaxseed (added when porridge is already cooked)

FRUIT AND VEGETABLES 1 tbsp raisins, 1 apple, 1 banana on the side

NUTRIENTS 613 kcal / 116 g carbs / 15 g protein / 14 g fat

Snack

PULSES OR NUTS AND SEEDS Small handful of pumpkin seeds

FRUIT AND VEGETABLES Smoothie: 1 banana, 1 orange, 1 carrot, 1 tsp fresh ginger, pinch of cinnamon

NUTRIENTS 360 kcal / 54 g carbs / 12 g protein / 15 g fat

Power soup lunch

WHOLEGRAINS OR STARCHY VEGETABLES ½ multigrain wholemeal baguette

PULSES OR NUTS AND SEEDS 1 cup lentils (add to the soup)

FRUIT AND VEGETABLES 300 g (½ pot) ready-to-eat tomato soup,

A handful of rocket, 1 small sweet pepper on the side

NUTRIENTS 499 kcal / 115 g carbs / 32 g protein / 7 g fat

Snack

PULSES OR NUTS AND SEEDS Plant protein snack bar

FRUIT AND VEGETABLES A handful of grapes

NUTRIENTS 336 kcal / 45 g carbs / 14 g protein / 14 g fat

Chickpea curry dinner

WHOLEGRAINS OR STARCHY VEGETABLES 1 cup brown rice

PULSES OR NUTS AND SEEDS 1 cup chickpeas, 100 g curry sauce,

1 tsp tahini

FRUIT AND VEGETABLES 1 chopped tomato, ½ onion, garlic,

1 cup spinach leaves

NUTRIENTS 673 kcal / 113 g carbs / 23 g protein / 17 g fat

After dinner snack

PULSES OR NUTS AND SEEDS 15 almonds

FRUIT AND VEGETABLES 3 dried figs, 3 squares of dark chocolate

NUTRIENTS 299 kcal / 30 g carbs / 6 g protein / 19 g fat

Total calories and nutrients

2,780 kcal

473 g carbs / 102 g protein / 86 g fat

*1 cup = 236 ml



OPTION 2 — ENDURANCE ATHLETE

Tofu scramble breakfast bowl

- WHOLEGRAINS OR STARCHY VEGETABLES** 1 medium potato, cubed/wedged and roasted in the oven (while you're making the scramble) + 1 small/medium sweet potato, cubed and boiled
- PULSES OR NUTS AND SEEDS** 100 g tofu, mashed to make the scramble (season with turmeric, salt, garlic, black pepper, paprika), 1 tbsp of cold-pressed rapeseed oil for frying
- FRUIT AND VEGETABLES** 1 spring onion, 1 tomato – fresh or roasted, 1 handful of watercress
- NUTRIENTS** 542 kcal / 76 g carbs / 21 g protein / 20 g fat

Snack

- WHOLEGRAINS OR STARCHY VEGETABLES** 3 oatcakes
- PULSES OR NUTS AND SEEDS** 125 g unsweetened soya yoghurt
- FRUIT AND VEGETABLES** 1 apple
- NUTRIENTS** 288 kcal / 47 g carbs / 9 g protein / 9 g fat

Couscous pot lunch

- WHOLEGRAINS OR STARCHY VEGETABLES** 100 g dry whole wheat couscous (prepared by soaking in boiling water)
- PULSES OR NUTS AND SEEDS** 1 cup* lentils, seasoning to taste
- FRUIT AND VEGETABLES** 4 sundried tomatoes (chopped), 1 cup rocket (chopped), 1 small pepper (chopped)
- NUTRIENTS** 688 kcal / 117 g carbs / 34 g protein / 9 g fat

Snack

- PULSES OR NUTS AND SEEDS** A small handful of almonds
- FRUIT AND VEGETABLES** 1 banana, 5 dried apricots
- NUTRIENTS** 354 kcal / 55 g carbs / 9 g protein / 15 g fat

Barley risotto dinner

- WHOLEGRAINS OR STARCHY VEGETABLES** 100 g pearl barley (uncooked weight), spices and seasoning to taste
- PULSES OR NUTS AND SEEDS** 1 cup green peas, 1 tbsp pine nuts to sprinkle on top
- FRUIT AND VEGETABLES** 1 cup kale (chopped and cooked), ½ a courgette
- NUTRIENTS** 578 kcal / 109 g carbs / 23 g protein / 8 g fat

After dinner snack

- WHOLEGRAINS OR STARCHY VEGETABLES** 2 digestive biscuits
- FRUIT AND VEGETABLES** 1 tbsp dark chocolate covered raisins
- NUTRIENTS** 192 kcal / 29 g carbs / 3 g protein / 8 g fat

Total calories and nutrients 2,642 kcal
433 g carbs / 99 g protein / 69 g fat

*1 cup = 236 ml



STRENGTH ATHLETE / BODYBUILDER

You do resistance training with the goal of increasing muscle mass and strength, weight-lifting, intense CrossFit or other demanding training such as calisthenics. Nutrient requirements summary:

CARBOHYDRATES	PROTEIN	FAT	CALORIES
2.7-5.4 g/lb of bodyweight (6-12 g/kg)	0.7-1 g/lb of bodyweight (1.6-2 g/kg)	0.2-0.7 g/lb of bodyweight (0.5-1.5 g/kg)	2,500-4,500 kcal

For example, if you weigh 155 pounds/70 kg, you need 420-840 grams of carbs, 112-140 grams of protein and 35-105 grams of fat. Here's what your daily meal plan might look like:

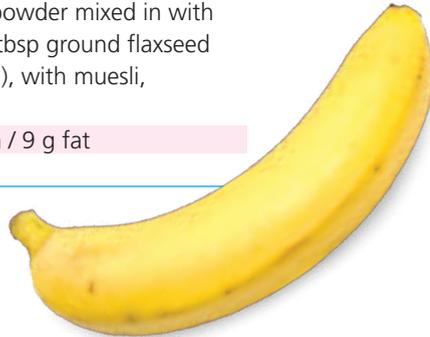
OPTION 1 — STRENGTH ATHLETE

Muesli protein breakfast

- WHOLEGRAINS OR STARCHY VEGETABLES** 1 cup* natural muesli with plant milk
- PULSES OR NUTS AND SEEDS** 1 scoop of protein powder mixed in with the muesli (providing around 25 g protein), 1 tbsp ground flaxseed
- FRUIT AND VEGETABLES** 5 strawberries (chopped), with muesli, 1 orange on the side
- NUTRIENTS** 617 kcal / 99 g carbs / 43 g protein / 9 g fat

Snack

- PULSES OR NUTS AND SEEDS** A handful of almonds
- FRUIT AND VEGETABLES** Smoothie:, 1 banana, 1 cup pineapple chunks, a handful of fresh or 3 chunks of frozen spinach, 4 slices of mango
- NUTRIENTS** 380 kcal / 62 g carbs / 9 g protein / 15 g fat



Loaded Buddha bowl

- WHOLEGRAINS OR STARCHY VEGETABLES** 1.5 cups cooked brown rice
- PULSES OR NUTS AND SEEDS** 100 g marinated tofu pieces, 4 tbsp chickpeas
- FRUIT AND VEGETABLES** ½ avocado, ½ carrot (grated), a handful of salad leaves, 1 tomato (chopped)
- NUTRIENTS** 884 kcal / 110 g carbs / 34 g protein / 37 g fat

Snack sandwich

- WHOLEGRAINS OR STARCHY VEGETABLES** 2 slices of wholemeal bread
- PULSES OR NUTS AND SEEDS** 1 tbsp peanut butter 1 tbsp natural jam
- FRUIT AND VEGETABLES** 1 kiwi fruit on the side
- NUTRIENTS** 354 kcal / 53 g carbs / 14 g protein / 11 g fat

Butternut squash boat dinner

- WHOLEGRAINS OR STARCHY VEGETABLES** ½ medium butternut squash, roasted and filled with the other ingredients (it may not all fit in so have the remaining mixture on the side)
- PULSES OR NUTS AND SEEDS** 1 can kidney beans in chilli sauce
- FRUIT AND VEGETABLES** ½ red pepper, chopped, 2 chopped sundried tomatoes, 1 spring onion, 1 cup broccoli on the side
- NUTRIENTS** 637 kcal / 140 g carbs / 29 g protein / 5 g fat

After dinner snack

- WHOLEGRAINS OR STARCHY VEGETABLES** 2 oat biscuits, crumbled in the yoghurt
- PULSES OR NUTS AND SEEDS** 125 g unsweetened soya yoghurt
- FRUIT AND VEGETABLES** 5 dried apricots
- NUTRIENTS** 281 kcal / 42 g carbs / 8 g protein / 9 g fat

Total calories and nutrients 3,153 kcal
506 g carbs / 137 g protein / 86 g fat

*1 cup = 236 ml

OPTION 2 — STRENGTH ATHLETE

Breakfast wraps

WHOLEGRAINS OR STARCHY VEGETABLES 2 wholemeal wraps (filled with the other ingredients)

PULSES OR NUTS AND SEEDS 10 tbsp baked beans (5 tbsp per wrap), 2 vegan sausages

FRUIT AND VEGETABLES 2 tomatoes (sliced), a handful of spinach or salad leaves

NUTRIENTS 461 kcal / 90 g carbs / 28 g protein / 9 g fat

Snack

WHOLEGRAINS OR STARCHY VEGETABLES 150 ml oat milk and a pinch of cinnamon (pour it in a jar, add chia seeds and raisins and let it soak for at least 30 min – if you make it in the morning and take it to work, it'll be ready by snack-time)

PULSES OR NUTS AND SEEDS 3 tbsp chia seeds

FRUIT AND VEGETABLES 1 tbsp raisins, 1 apple on the side

NUTRIENTS 348 kcal / 60 g carbs / 9 g protein / 11 g fat

Pasta salad lunch

WHOLEGRAINS OR STARCHY VEGETABLES 1 cup* wholewheat pasta

PULSES OR NUTS AND SEEDS ½ cup sweetcorn, 1 cup peas, 10 cashews (broken into pieces)

FRUIT AND VEGETABLES 1 tomato (chopped), 1 large chunk of cucumber (chopped), a handful of lettuce leaves

NUTRIENTS 600 kcal / 112 g carbs / 25 g protein / 10 g fat

Snack

WHOLEGRAINS OR STARCHY VEGETABLES 2 rice cakes (brown rice)

PULSES OR NUTS AND SEEDS A vegan protein shake (providing 25-30 g protein)

FRUIT AND VEGETABLES 1 orange

NUTRIENTS 278 kcal / 36 g carbs / 31 g protein / 2 g fat

Power dhal dinner

WHOLEGRAINS OR STARCHY VEGETABLES 1 cup brown rice, ½ cup quinoa (cooked together)

PULSES OR NUTS AND SEEDS ½ cup red lentils (uncooked volume), 1 tbsp tahini

FRUIT AND VEGETABLES ½ cup chopped tinned tomatoes, 1 cup chopped kale, ½ onion, garlic

NUTRIENTS 695 kcal / 133 g carbs / 34 g protein / 14 g fat

After dinner snack

PULSES OR NUTS AND SEEDS 1 tbsp peanut butter, 4 squares of dark chocolate

FRUIT AND VEGETABLES 1 banana

NUTRIENTS 331 kcal / 41 g carbs / 7 g protein / 18 g fat

Total calories and nutrients 2,713 kcal

472 g carbs / 134 g protein / 64 g fat

*1 cup = 236 ml





Making the change: how and where to start

If you're excited about kick-starting your health and athletic performance with the power of plants but you're not sure where or how to start, it's okay, you don't need to do everything at once. With our help, you'll be a pro in no time!

When you decide to change your diet, it'll take a bit of time for you to learn what suits you, find new favourites and get into a new shopping routine. Soon, you won't be making new decisions every day because you'll have built new habits. And that's what a successful change is about – new and better habits replacing the old and creating your 'new normal'.

1. START ON FAMILIAR GROUND

Some people are able to change their lifestyle overnight, others need gradual steps. There's no one-size-fits-all and it also depends on what your current diet is like – if it's mostly plant-based already you won't have to change as much as you would if you eat hardly any plant foods at all.

It's best to start with foods you like and tweak your usual meals to make them vegan, rather than invent new ones. Many foods you probably already eat are plant-based – fruit, vegetables, bread, peanut butter, baked beans, pasta, lentil soup, breakfast cereal, etc. Other meals you like can be easily adapted by simple swaps – lentils instead of ground beef, plant-based burgers instead of meat burgers, chickpeas instead of chicken in a curry, marinated tofu instead of fish in sushi (or instead of meat in a stir-fry), plant-based milks instead of dairy milk, same for ice cream, yoghurt, mayo, protein powders, etc. No need to go for exotic and fancy ingredients, start where you are and see where it takes you!

Just remember to be mindful of the **Essential Food Groups** (see page 37) to make sure you're eating healthily. **Our How to Plan Your Meals and Sample Meal Plans** will also help to get you started in the best possible way.

If changing too much too fast isn't for you, start by replacing one daily meal with a vegan one for a week, then two meals a day for another week, and then go all the way.

In any scenario, remember that any new habit takes about three weeks to build and then it becomes automatic. So be patient and give your body time to adjust.

2. EAT ENOUGH

One of the big changes when you go vegan is that you will most likely have to eat more – meaning bigger portions. This is because animal-based foods don't contain any fibre but usually have more fat, and so more calories, in smaller portions. Plant-based wholefoods naturally contain fibre and are lower in fat (with some exceptions like nuts) so you'll need to increase your 'normal' portions to make sure you eat enough. And there's a delicious bonus to this – eating plant-based means you can eat more than before and still lose fat! A wholefood vegan diet fuels you with healthy carbs, provides an excellent protein package and small doses of essential fats, all of which contribute to optimising your metabolism so it works as efficiently as possible and helps you shed any excess fat you may not need (Najjar and Feresin, 2019). So eat up and enjoy!



3. BE CURIOUS

It's good to start with familiar foods but don't be afraid to experiment. Try new ingredients and spices, make tofu delicious with proper seasoning, try different breakfast options and make your own smoothies – you really can't go wrong there.

When you're stuck for ideas, just type a few ingredients you already have at home into the search bar on our Vegan Recipe Club app or website (veganrecipeclub.org.uk) to search for recipes and you'll know what to do in a minute.

To assemble healthy, nutritious vegan meals you don't need to be a great cook – all it takes is some very basic cooking skills, such as being able to boil rice or pasta. Over time, you'll find new tricks, such as adding tahini in sauces for creaminess and added nutrition value, blending beans to make a thick sauce for pasta (or anything else), or using chickpea flour to make protein-rich brownies.

"The biggest, strongest and longest-lived animals all eat PLANTS!"

Paul Kerton, vegan fitness and nutrition YouTuber



"Vegan isn't a compromise it's a choice, and one that made me stronger than ever."

Maayan Eliasi, professional bodybuilder and trainer, multiple champion

"Every-time I talk to people about going Vegan, I am asked – if I don't drink milk, or eat eggs, or meat, then where will I get my protein from? Well, I climbed Everest to debunk this very myth.

Yes, protein is important.

But stating that protein can only be obtained from

animal sources is very much

fake news. I have never eaten meat in my entire life and I have successfully been able to build top of the world level muscle and endurance and not only survive but thrive in the -50C temperatures on top of Everest, not just once, but twice! Goes to show that no animal needs to suffer or die for our dreams to come true."

Kuntal Joisher – mountaineer, summited several Himalayan peaks, Mt Everest twice



4. STOCK UP

Be prepared and always have some back-up foods in your cupboard, freezer or day bag so you're not caught hungry. It can be simple things like baked beans, nut butters, frozen bean-burgers, peas, muesli, trail mix, protein snack bars, dark chocolate, a bag of nuts and whatever else tickles your fancy.

It not only makes you more prepared in general, it's also handy when you're not feeling well or have to work late and don't manage to buy food. In those situations, we tend to reach for an easy option and it doesn't always support our health or athletic goals. By stocking up, you will always have food to hand that will help you be your best. See the **Shopping** section for more tips.

5. DON'T BEAT YOURSELF UP IF YOU SLIP

When you're finding your vegan feet, discovering new meals, food combinations and what suits you, it's natural to make the odd mistake and you may eat something non-vegan. Don't beat yourself up. Just carry on with your supercharged vegan sports diet and learn from your mistakes! Just because you slipped up, it doesn't mean you can't jump straight back on your new diet track. Focus on all the positive steps you've made and don't judge yourself or sink into negative thinking. It takes time to change habits!

6. EXPLORE THE SHOPS LIKE YOU'VE NEVER BEEN THERE BEFORE

We tend to have our shopping routines and often miss foods that are in a different aisle. Do at least one shop in your regular supermarket/shop when you go through all the aisles and see what vegan options they have. You will discover there's more than you thought and may discover new favourites and convenience options. It's priceless to have some comfort foods, easy combinations and go-to options in stores.

You might even invent new ways to spruce up convenience food – add some greens and cubed tofu to a shop-bought curry, get a frozen pizza base and layer on your favourite veggie toppings and drizzle with tahini or add lentils and fresh veggies to a humble tomato soup.

7. MAP OUT ON-THE-GO OPTIONS NEAR YOU

Chances are you don't always want to make your own lunch so it's good to find what other options you have. Reliable on-the-go options usually include falafel wraps or pittas, a growing number of vegan sandwiches, wraps and baguettes from the usual high-street shops, couscous or quinoa salad pots, pasta pots, salad boxes, tomato and lentil soup, some bean and pea soups, veg sushi rolls and bowls, etc.

8. TRACK YOUR NUTRITION

To make sure you are hitting your target nutrient amounts, it may be a smart idea to use one of the food-tracking apps. It is not a must but if you're substantially changing your diet, it can help you get used to the amounts of foods needed to fulfil your nutrient requirements. If you want to check what they are, go back to **Fuelling Your Performance**.



TAKE HOME MESSAGE

Changing what you eat day in, day out, may seem daunting and sometimes we don't know where to start. It's absolutely normal. As you start eating better, you'll also feel better, have more energy and recover faster after your training. All that will bolster your motivation, create positive feedback for yourself and make you more confident. Changing your diet is not about the foods you're not eating anymore, it's about a whole new world of food possibilities and exciting options, helping to make you the best athlete you can be!

"I was plant-based for most of my pro hockey career and continue to live that lifestyle today. Once I made the change, I felt healthier, had more energy, and had less inflammation which leads to quicker recovery."

Michael Zigomanis, retired NHL player, Stanley Cup champion



"The initial benefits I enjoyed as a vegan athlete were the boosts in energy, performance and recovery. I enjoy breaking the stereotype that athletes need to consume animal products to be successful. However I receive the most satisfaction by living my values as an athlete. I am doing the least amount of harm by respecting all living beings while also actively working to protect our environment. Every athlete

should want to protect our natural resources so we can continue to do what we love."

Laura Kline, multiple duathlon and triathlon champion, ultra runner and cyclist

"Having been vegan for 15 years I feel I have given myself every chance for it not to work, yet I have been able to maintain my physique and consistently improve my performance. It is one of the best things I have ever done and would never go back."

Joel Kirkilis, bodybuilder and powerlifting champion



WHAT TO EXPECT FROM YOUR DIET CHANGE

Changing your diet to a wholefood vegan one will boost your energy levels, stamina, digestion, recovery and it will even improve your lung capacity and sleep. See all about the exciting benefits you can expect in **The Vegan Edge** chapter.

The more plants you eat, the better your body will function but it won't happen overnight as your body needs a little time to adjust. When you eat meat, dairy and eggs – foods that are hard to digest – your body produces more bile, which, together with the remains of the animal foods, supports certain bacteria in the gut that produce nasty by-products like TMAO – a dangerous artery-clogging substance. When you start feeding your body more plants providing fibre, complex carbs, plant protein and less saturated fat than animal foods, your body goes through a transition period. That means your gut bacteria are changing: meat- and fat-eating toxic bacteria reduce in numbers, while carb- and fibre-munching, plant-protein-thriving bacteria multiply and help you digest plants (Rinninella *et al.*, 2019). These bacteria that prosper on plant-based foods are incredibly beneficial to your health, keeping the gut wall strong and healthy, boosting the immune system, lowering levels of inflammation in your body and making you feel good. They may even protect against some cancers.

When you switch to a vegan diet, based on wholegrains, pulses, fruit and vegetables, and nuts and seeds, the good bacteria start increasing in numbers and eventually take over. However, if you change your diet overnight, you may experience a 'flatulent' period of perhaps a couple of weeks whilst your gut bacteria are changing but not fast enough to cope with your new diet. It's absolutely normal and will settle down. As your body adapts, you'll experience better digestion, more energy and much more pleasant bathroom visits than with a meaty diet. Just be patient, don't give up and you'll see for yourself!

Shopping

As an athlete, you need to eat well and also more than the average person. Shopping can be a little challenging if you've just decided to go vegan but don't worry, we've got you covered with our shopping hacks! It's not just about supercharged, healthy foods – we'll also tell you how to save money.

1. GET YOUR STAPLES

Stock up on cupboard essentials you will need on a regular basis:

- Brown rice
- Wholewheat pasta
- Quinoa, barley, buckwheat and/or other grains
- Red lentils
- Tinned beans, chickpeas, lentils
- Pasta sauce
- Chopped tomatoes
- Soya sauce
- Tahini
- Nut butters
- Oat cakes or crackers
- Rye crispbread
- Nuts and seeds – although you may be better off ordering those online – see point 7
- Fruit and nut/seed energy bars
- Healthy treats – oat biscuits, dark chocolate or cashew ice cream



- Wholemeal bread, wholemeal pitta bread or wholemeal tortilla wraps – buy an extra pack and freeze it
- Plant milks – if there's a special offer, get a few so you don't have to re-stock every few days
- Spices and seasonings

2. FRUIT AND VEG

It's best to buy local, or at least from the same country or continent, and seasonal fruit and vegetables but there are also a few other tips:

- Reach to the back of the shelf – that's where you find the freshest produce because shops move fruit and veg near their expiry date to the front
- Bananas – great for a snack and an excellent thickener for smoothies, choose Fair Trade whenever possible. If you buy too many, cut them into chunks and freeze to use in smoothies or to turn into ice cream
- Fresh is not always best – frozen fruit is often cheaper and retains its nutritional value because it's flash frozen immediately after harvesting, frozen berries or mango and pineapple chunks are usually the best bet and so are frozen green beans
- Some fruit and veg absorb more pesticides than others so it's best to buy these organic when possible: strawberries, apples, pears, grapes, nectarines, peaches, cherries, spinach, tomatoes, celery, potatoes and peppers
- Other fruit and veg don't absorb so much pesticides or we peel them/discard the outer layers so there's no need to splurge on organic with: avocados, cabbage, broccoli, cauliflower, aubergines, onions, peas, sweet corn, kiwi fruit, melons, papaya, pineapple, mango and sweet potatoes



3. HIT THE FREEZERS

Freezers offer a lot of healthy staples that will help to fuel your performance:

- Frozen fruit and vegetables
- Edamame beans
- Peas – they deserve a special mention because frozen is better than tinned or even fresh (unless you eat them right in the field)
- Bean-burgers, other veggie burgers, veggie sausages and falafels
- Some shops have frozen vegan ready meals, burritos, veggie spring rolls etc.
- Cashew or almond ice cream for special occasions

4. CHILLED FOODS

This varies shop by shop so you'll have to investigate a little. Some shops have 'free from' or vegan fridge sections but there are other healthy vegan products in the chilled aisles so make sure you don't miss:

- Hummus
- Sandwich spreads, bean dips and similar
- Falafels
- Tofu – go for smoked or marinated to use in savoury dishes
- Mock meats – check the ingredients for nutritional value, these products vary a lot
- Soups
- Salad pots
- Lentil dhal
- Vegan sushi
- Plant-based yoghurts
- Margarine



5. CHECK OUT THE 'FREE-FROM' SECTION

This section tends to offer a lot of gluten-free products but there are also some vegan gems to be found:

- Healthy energy bars – made with nuts and dried fruit
- Dairy-free chocolate – for special occasions!
- Pesto without cheese
- Lentil, quinoa and chickpea crisps
- Rice and oat cakes
- Vegan mayo and salad dressings (use sparingly as they can be high in fat)



6. DON'T FORGET ABOUT THE 'WORLD FOODS' AISLE

Again, this will vary by shop but here are some reliable favourites:

- Soy sauce
- Sriracha – spicy chilli sauce
- Silken tofu – perfect for blending with melted dark chocolate for a healthy chocolate mousse
- Nori seaweed sheets – for making sushi
- Miso paste – for seasoning and making soups
- Tahini – sesame seed paste
- Wholewheat and soba noodles
- Chickpea flour – great for healthy frittatas, omelettes or brownies
- Curry sauces and bases
- Big packs of nuts – only some shops have these

7. ORDER IN BULK

When you eat a lot of foods that are normally only sold in small packs, it pays to order online, save some money and packaging:

- Nuts
- Seeds
- Dried fruit – the non-sweetened natural variety, think apricots, figs, dates, prunes, mango etc. They are not just for snacking but you can blend them into smoothies for added sweetness or make your own energy bars with them
- Brown rice
- Oats
- Quinoa
- Nut butters – unless you have a good shop nearby!

8. HEALTH FOOD SHOPS

Almost everything is available in supermarkets or online but don't shun the good old health food shops. They are great for discovering new things or stocking up on hard-to-find products:

- Nutritional yeast flakes – they add a savoury, slightly cheesy flavour to your dishes
- Snack bars
- Chilled foods – tofu, tempeh, seitan, plant-based yoghurts
- Healthy ice cream and a variety of frozen foods
- Sandwiches
- Spreads
- Many varieties of healthy pasta
- Tea
- Supplements – see **Essential Food Groups** for detailed information



Eating out and on-the-go

Eating out brings new decisions and conversations but you may be surprised how quickly times are changing. Many restaurants, bistros and cafés have plant-based options and you can usually ask for a meal to be tweaked to your needs. Check the menu online before you go but also don't be afraid to ask, many places even have a separate vegan menu!

When in doubt, Asian restaurants are a good bet – Chinese, Thai, Indian and Japanese, for example – and so are Mexican ones. Do check that your chosen meal is vegan or simply ask for it to be made without dairy (Indian) or without fish sauce (Thai) or oyster sauce (Chinese). Fast food chains are keeping up too, although you may not

want to eat there on a daily basis for your health's sake!

As mentioned above, reliable on-the-go options usually include falafel wraps or pittas, a growing number of vegan sandwiches, wraps and baguettes from the usual high-street shops, couscous or quinoa salad pots, pasta pots, salad boxes, tomato and lentil soup, some bean and pea soups, vegan sushi rolls and bowls, etc.

If you're grabbing something on the go and think it may be lacking in some nutrients, improvise and improve it! Add lentils to a soup, get a bean salad with your sandwich, or add nuts and seeds to a rice bowl.

But what about the social aspect of eating out? How do you talk about your lifestyle choices with your family and friends? Chances are, some of them already have health issues that a wholefood vegan diet could help, they've seen undercover footage from farms, or they have heard of the heavy impact of animal farming on the planet. Not that you should bring these things up immediately when you see them but be positive about your food choices and if they ask about them, tell them how it makes you feel better, mention some health or performance improvements or talk about scientists and experts advocating a diet change for all of us towards a plant-based diet. Over time, they will see how well you look and may become more curious, and may be even willing to try veganising their diet too!



Food and nutrient cheatsheets

Since we recommend to always assemble your meals from these three groups of foods: wholegrains and starchy vegetables; pulses, nuts and seeds; and fruit and vegetables – as described in How to Plan Your Meals, we've made tracking your energy and nutrient intake extra easy with our Food and Nutrient Cheatsheets!

Of course there are many food tracking apps but if you're planning what to have for lunch or wondering how much protein a handful of almonds will provide, our Cheatsheets are your best friend!

Most of the nutrition information comes from Cronometer – the most comprehensive nutrition database – and the rest is from food manufacturer's own data provided with their products.

Wholegrains and starchy vegetables	Carbs (g)	Protein (g)	Fat (g)	Energy (kcal)
Muesli – 1 cup* (85 g)	50-66	8-10	4-9	280-340
Granola – 1 cup (100 g)	60-80	9-12	10-30	400-600
Oats (dry) – 1 cup (81 g)	55	11	5.3	307
Weetabix – 2 biscuits	26	4.5	0.8	136
Wholemeal bread – 2 slices	30-38	9-11	2.5-3.1	180-220
Tortilla wrap – wholemeal	18.8-28	3.7-5.5	2.4-4	119-170
Pitta bread – wholemeal, medium size	27-32	5-6	0.7-1	140-150
Rye bread – 2 slices	31-37	5.4-7	1-2	166-186
Brown rice, cooked – 1 cup (202 g)	48.6	4.8	1.3	228
Wholewheat pasta, cooked – 2 cups (220 g)	67-79	12.5-15.8	1.6-3.2	340-370

Lentil pasta, cooked – 2 cups (200-220 g)	50-63	25-26	0.8-1.7	334-355
Bean pasta, cooked – 2 cups (200-220 g)	40-65	23-42	1.8-3.5	320-370
Sweet potato – 1 large	42	3.2	0.3	179
Potatoes – 2 medium	72-74	6.4-8.7	0.4	304-322
Butternut squash – 1 cup, cubed (205 g)	21.5	1.8	0.2	82
Crispbread – Ryvita (3 pieces)	20	2.7	0.6	105
Oatcakes – Nairn's (3 pieces)	12.9	2.6	4.7	108
Quinoa, cooked – 1 cup (185 g)	39	8-9	3.6	222
Buckwheat, cooked – 1 cup (168 g)	33.5	5.7	1	155
Sweetcorn – 1 cup (164 g)	23.5	3.8	2	110

* If you're using a 'normal' coffee mug, one cup would be about ¾ of the mug, or around 236 ml in volume.

Pulses, nuts and seeds	Carbs (g)	Protein (g)	Fat (g)	Energy (kcal)
Black beans – 1 cup* (172 g)	44.8	14.2	1.1	240
Kidney beans – 1 cup (177 g)	38	14.1	1.9	220
Butter (giant) beans – 1 cup (170 g)	40.2	11.6	0.5	209
Baked beans in tomato sauce – ½ can (210 g)	23-26	8.8-9.7	0.4-1.3	150-162
Chickpeas – 1 cup (164 g)	45	14.5	4.2	269
Lentils – 1 cup (198 g)	40	18	0.8	230
Green peas – 1 cup (160 g)	22.8	8.2	0.4	125
Edamame soya beans, shelled – ½ cup (75 g)	9	10	3	100

Tofu – 100 g	2.8-6	12-21.7	5.5-11	104-187
Tempeh – 100 g	7.6	20.3	10.8	192
Soya burger/tofu burger/ veggie burger	Almost all supermarkets sell their own as well as branded products – please see packaging for nutrition information, there's an ever-increasing variety of these foods. They are great convenience options!			
Soya/tofu sausages, hotdogs				
Mock meats – mince, pieces, sandwich slices, rashers, 'meat' balls				
Beanburgers and chickpea patties				
Falafels				
Nut cutlets				
Hummus				
Vegan spreads/pâtés				
Seitan (wheat-based 'meat', it's not made of pulses or nuts and seeds but belongs here because it's high in protein)	3.5	21.2	1.2	106
Almonds – 30 g (small handful)	6.5	6.3	15	174
Cashews – 30 g	9.1	5.5	13.2	166
Peanuts – 30 g	6.4	7.3	15	176
Brazil nuts – 30 g	3.5	4.3	20	198
Walnuts – 30 g (great for omega-3s)	4.1	4.6	19.6	196
Pecan nuts – 30 g	4.2	2.8	21.6	207
Pumpkin seeds – 2 tbsp	2.2	4.4	7.2	85
Chia seeds – 2 tbsp (great for omega-3s)	8.4	3.3	6.1	97
Ground flaxseed – 2 tbsp (great for omega-3s)	5	3	3.5	60
Shelled hemp seeds – 2 tbsp (great for omega-3s)	1.7	6.3	9.7	111
Sesame seeds – 2 tbsp	2.2	3.8	11.5	118

+ Nut and seed butters made from all of these, including tahini (sesame seed paste)

* If you're using a 'normal' coffee mug, one cup would be about ¾ of the mug, or around 236 ml in volume.

Fruit and vegetables	Carbs (g)	Protein (g)	Fat (g)	Energy (kcal)
Apple – medium (182 g)	25	0.5	0.3	95
Pear – medium (178 g)	27	0.6	0.2	101
Orange – medium (131 g)	15.4	1.2	0.2	62
Tangerine/satsuma/ clementine (76 g)	10	0.6	0.2	40
Grapefruit – one half (128 g)	13.6	1	0.2	54
Banana – medium (118 g)	27	1.3	0.4	105
Kiwi – medium (69 g)	10	0.8	0.4	42
Mango – 1 cup of pieces (165 g)	24.7	1.4	0.6	99
Pineapple – 1 cup of chunks (165 g)	21.6	0.9	0.2	82.5
Strawberries – 1 cup of halves (152 g)	11.7	1	0.5	49
Blueberries – 1 cup (148 g)	21.4	1.1	0.5	84
Raspberries – 1 cup (123 g)	14.7	1.5	0.8	64
Cantaloupe melon – 1 cup of chunks (160 g)	13	1.3	0.3	54.4
Watermelon – 1 cup of chunks (98 g)	7.4	0.6	0.1	29.5
Honeydew melon – 1 cup of chunks (191 g)	17.3	1	0.3	68.6

Plus any other fruit!

Tomato – medium (123 g)	4.8	1.1	0.2	22
Sweet/bell pepper – medium (119 g)	7.2	1.2	0.4	31
Salad leaves – generous handful (28 g)	1	0.6	0.1	9
Cucumber – ¼ of a medium one (55 g)	2	0.4	0.1	8
Green olives – 10 pieces (30 g)	1.3	0.4	5.2	49
Broccoli – 1 cup of pieces (97 g)	7	2.3	0.4	34
Kale – 1 cup chopped, cooked (118 g)	6.3	3.5	1.4	43
Cabbage – 1 cup chopped, raw (89 g)	5.2	1.1	0.1	22.3
Cauliflower –1 cup of florets (124 g)	5.1	2.3	0.6	29
Brussels sprouts – 8 whole pieces (168 g)	12	4.3	0.8	60
Carrot – medium (61 g)	5.8	0.6	0.1	25
Celery stalks – 2 medium (80 g)	2.4	0.6	0.1	11
Spinach –fresh, 1 cup/generous handful (30 g)	1.1	0.9	0.1	7
Green (string) beans – 1 cup, cooked cut pieces	8.7	2	0.2	37.8

Plus any other vegetable! (avoid tinned fruit and veggies)

For more information, including nutrition requirements by sport, videos, FAQs and recipes, go to viva.org.uk/health/sports-nutrition



Check out the new Viva! sports nutrition website



It features all the information from this guide and then some! You'll learn nutrition key points for a variety of sports, your meal planning will be super easy with the food and nutrient cheatsheets and you'll be inspired by our supercharged recipes!

GO TO [VIVA.ORG.UK/SPORTS](https://viva.org.uk/sports) Viva!

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"I started cycling and racing as a vegetarian, so the only comparisons I can make are between vegetarian and vegan diets. Shortly after I turned vegan, I noticed that I could immediately breathe better. This was in stark comparison to my first pro race when I was still vegetarian. During that fateful race, I was wheezing so badly that my competitors asked me if I was okay as they all left me behind. But once the vegan diet kicked in, I went from the back of the peloton – even dropping out of races – to winning them! The only factor that changed was my diet.

Since turning vegan, I no longer get sick, my skin is much brighter with no more blotches, and my mood lifted – along with my energy level. My recovery is simply magic now. This means more days in a row where I can train hard. It also means that during multi-day races like the women's Tour de France, I wake up every day as fresh as a daisy whereas my meat-eating teammates and competitors slowly dwindle away as the days tick by."

Christine Vardaros, former US National Team member, multiple cyclocross champion



"Follow your dreams and never stop exploring."

Catra Corbett, vegan ultra running champion and record-holder



This comprehensive easy-to-read guide equips you with the know-how to **make your diet the best fuel for your athletic endeavours**. It explains not just how and what to eat for different levels of activity and sports but also **why being vegan offers many performance and health advantages**. It explores **why plant-based foods make your body work better, speed up muscle recovery and give you more energy**, and also offers practical advice including **meal plans!**

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