

VEGETARIAN EATING:

by Greg Cox, Sports Dietitian

Vegetarian diets for many people are all about what you miss out on. How do you get enough protein? What about iron? Is a vegetarian diet suitable for an athlete with higher daily nutrient demands?

THIS article will look at vegetarian diets a little differently. Rather than looking at vegetarian diets negatively, perhaps it is worth considering that a vegetarian diet may offer some potential advantages to an endurance athlete. Don't stress, I promise I won't put my vegetarian blinkers on and provide a biased view of the nutritional value of a vegetarian diet for endurance trained athletes!

Why do athletes choose a vegetarian diet?

It's hard to say for certain how many "vego" athletes are out there, although it's likely to be a small but increasing number. In a national survey of over 9,000 American runners, 8% of females and 3% of males reported following a vegetarian diet (8). Reasons for choosing a vegetarian or near-vegetarian diet among athletes may differ to those commonly given in the general population: reasons such as the proposed health benefits, cultural and religious beliefs, or animal right and environmental issues.

Some athletes adopt a vegetarian diet or near-vegetarian diet to meet increased carbohydrate requirements for training or to assist in weight control. This is commonly seen amongst endurance athletes such as runners, cyclists and triathletes - athletes who have a daily challenge to refuel muscle carbohydrate stores, yet maintain a low body weight. These athletes will typically replace the meat on their plate with bulky, high fibre carbohydrate foods. Other athletes will simply describe their dietary intake as vegetarian, to hide a restrictive dietary intake and/or mask a disordered eating behaviour. For instance, some athletes will eliminate red meat from their diet on the premise that it is high in fat, and then describe their intake as vegetarian. For these athletes, failing to include suitable vegetarian meat alternatives in their daily meal plan places them at risk of nutritional deficiencies.

What constitutes a vegetarian diet?

Vegetarian diets do not necessarily adhere to

What does it offer a runner?

The following table outlines the range of eating styles that reflect the term "Vegetarian Diets".

CATEGORIES OF VEGETARIAN DIETS

Type:	Comments:
Fruitarian:	Consists of raw or dried fruits, nuts, seeds, honey and vegetable oil.
Macrobiotic:	Excludes all animal foods, dairy products and eggs; Uses only unprocessed, unrefined, "natural" and "organic" cereals, grains and condiments such as miso and seaweed.
Vegan:	Excludes all animal foods, dairy products and eggs. In its purest form, excludes all animal products including honey, gelatine, silk, wool, leather, and animal-derived food additives.
Lacto-vegetarian:	Excludes all animal foods and eggs. Includes milk and milk products.
Lacto-ovo-vegetarian:	Excludes all animal foods. Includes milk, milk products and eggs.

the early rigid definitions, which described diets that were based exclusively on plant-based foods and excluded consumption of any animal foods or their products. Today, the term 'vegetarian' is used more broadly than these strict conventions. People who call themselves vegetarian may include some animal foods and their products in their diet

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Will a vegetarian diet improve your exercise performance?

Despite numerous studies investigating the health benefits of a vegetarian diet, few studies have examined any link between vegetarian diets and performance in well-trained athletes. To date, studies have failed to examine the true benefit, if any, of a vegetarian diet on exercise performance. Studies have either controlled for the inherent differences seen between vegetarian diets and non-vegetarian diets, or have used populations that are not representative of well trained athletes. In theory, if a vegetarian diet was high in carbohydrate and met or exceeded recommendations for other nutrients and energy, then it would match the ideal or recommended diet for training and recovery. Several reviews have confirmed that vegetarian diets are conducive to maximising performance and that

nutrient intakes of most vegetarians, with some exceptions, are adequate, compared with recommended nutrient standards (2,3).

In theory, the performance advantages of consuming a high-carbohydrate diet, which is achieved more easily with a vegetarian or near-vegetarian diet than an omnivorous diet, have been well documented (6). Athletes who consume vegetarian diets are likely to meet recommendations for carbohydrate and protein, while maintaining a low fat intake (4).

Given the heavy reliance on plant based foods, it's not surprising that current research findings suggest that vegetarians (non-athletes) have a superior anti-oxidant status compared with their omnivorous counterparts. Recently, Trent Watson from the University of Newcastle found that a diet rich in high antioxidant foods is capable of protecting against oxidative stress incurred during exercise (7).

It's impossible to make firm conclusions regarding the potential advantages of following a vegetarian diet on endurance exercise performance. However, it's likely that a vegetarian diet or near-vegetarian diet high in anti-oxidants and carbohydrate may provide some benefit compared to a mixed diet, based heavily on protein rich foods.

Dietary suggestions and issues to consider for the Vegetarian Athlete

■ It may be difficult to meet daily energy require-



In a recent study investigating the nutritional intakes of 10 elite Kenyan runners, researchers found that athletes followed a near-vegetarian diet (5). Eighty-six percent of daily energy intake was derived from vegetable sources (maize, rice, sugar, bread, potatoes, and beans) and only 14% from animal sources (meat and milk). The diet was very high in carbohydrate (76.5%, 10.4g/kg body mass per day) and very low in fat (13.4%). Despite current media messages promoting the virtues of high protein eating, these athletes managed to meet daily protein requirements (1.3g of protein per kilogram body mass per day) despite a heavy reliance on carbohydrate rich foods.

Daily carbohydrate intake totaled a whopping 600 plus grams per day, which is in line with daily carbohydrate recommendations for endurance athletes engaged in heavy training. This is in direct contrast to intakes of elite runners from industrialised countries who report a much lower carbohydrate intake (~50% on average). This difference in carbohydrate intake between athletes from industrialised and non-industrialised countries is likely due to food availability.

So maybe it's worth considering Kenya for your next training camp!!

ments for newly converted vegetarian athletes if food choices are predominantly bulky, high-fibre, wholesome carbohydrate foods. Increasing consumption of high-fibre meat alternatives - for example, legumes and beans - can make it difficult to meet high daily energy requirements can induce flatulence and abdominal discomfort in some athletes.

■ Including energy-dense, low-bulk foods such as gluten and soy meat alternatives, textured vegetable protein, tempeh, tofu, nuts, peanut or nut butter, fruit juices, dried fruits, honey and jams will assist athletes in meeting increased energy demands on heavy training days. For lacto-ovo-vegetarians, low-fat milk, reduced-fat cheese and other low-fat dairy products are also low in bulk and energy dense. Fortified soy products including soy milk, soy cheese, soy custard and soy yoghurt are a low bulk, high energy alternatives for vegan athletes.

■ Vegetable or plant proteins may be limiting in one or more indispensable (or essential) amino acids so food sources need to be combined in such a way to ensure all amino acids are consumed. Provided that the daily total protein intake is adequate, combining different types of plant foods (e.g. legumes and grains together, or legumes and nuts/seeds together) allows low levels of amino acids in one food to be complemented by high levels of amino acids in the other.

Although some vegetarians believe it is necessary to combine foods in this way at the same meal, this belief is not supported by scientific evidence (American Dietetic Association 1997).

■ Vegetarian meat alternatives include lentils, dried beans and peas (ready-to-use products are available), tofu, tempeh, textured vegetable (or soy) protein, and ready-made nut, soy or wheat-derived alternatives.

■ It's worth experimenting with new foods and hunting out suitable cookbooks specialising in vegetarian cuisine.

■ Sanitarium Health Food Company is the largest vegetarian company within Australia and New Zealand, and produces numerous nutrition resources including cookbooks, nutritional product analysis brochures and newsletters. Their current web page address is: <http://www.sanitarium.com.au>

■ Vegetarian diets usually provide macronutrients in amounts similar to those recommended for optimal sports performance. However, some athletes following a vegetarian diet may have a high fat intake if they consume full-fat dairy products and use large amounts of added fats, oils and salad dressings. It's worth using low-fat alternatives and low-fat cooking methods to help meet targets for low fat diets when required.

■ Certain vitamins and minerals that are commonly found in animal based foods such as iron,

riboflavin, vitamin B12, calcium and zinc can be provided in adequate quantities in a well-chosen vegetarian diet. Typically, these nutrients are not as well absorbed from plant based foods (i.e. have low bioavailability) so to accommodate for the low bioavailability of these nutrients, vegetarian athletes may need to exceed current recommendations to ensure adequate nutrients are absorbed.

■ Excellent dietary iron sources include products fortified with iron (e.g. breakfast cereals) bread, textured vegetable protein, legumes, dried beans, gluten-based vegetarian meat alternatives, nuts, dried fruits and green leafy vegetables. Iron supplements are only warranted where iron depletion or iron deficiency anaemia has been diagnosed.

■ Dietary intake of riboflavin may be limited in vegan athletes, particularly those who avoid consuming soy milk and its products. Rich sources of riboflavin for the vegan athlete include fortified breakfast cereals, grains, textured vegetable protein, soy milks, soy yoghurts, soy custards, soy cheeses and yeast extract spreads such as Marmite™ and Vegemite™.

■ Dairy foods and eggs provide sufficient vitamin B12 for lacto-ovo-vegetarians. Vegan athletes should include foods fortified with vitamin B12. In Australia, soy-based products are permitted

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under food regulations to add vitamin B12.

■ For vegan athletes, calcium fortified soy milks, soy yoghurts, and soy custards along with other suitable non-dairy calcium-rich alternatives such as tofu, breakfast cereals and low oxalate green vegetables such as broccoli, bok choy and kale should be consumed in order to meet daily calcium requirements.

“Vego” cooking and shopping tips

■ Many traditional meat dishes can be easily converted into a vegetarian dish. Mince is easily replaced in recipes by using either brown or green lentils or textured vegetable protein (TVP). Replacing mince in a lasagna with TVP or brown lentils provides a suitable alternative to meat.

■ Tofu is a great substitute for chicken in most recipes. Although some people complain that tofu is bland and tasteless, there are many seasoned options on the market. You can also season tofu yourself, prior to cooking. Spray a pan with an oil spray, add garlic, ginger, soy sauce and sweet chilli sauce. Add the tofu, turning frequently and cook until browned.

■ Tofu can also be marinated or coated in spices. Once you have cut the tofu into 1cm slabs, marinate in plum sauce, soy sauce and garlic. This is absolutely delicious when barbecued and served on a crusty bread roll with salad.

■ Don't be deterred by recipes using beef or chicken stock - vegetable stock is a suitable alternative. There are numerous ready-made vegetable stocks and vegetable stock cubes available in a variety of flavours.

■ When using TVP in a wet dish such as pasta sauce, don't rehydrate it before use. To cut down on preparation time, simply add it straight to the recipe. You will need to add additional fluid to the recipe as the TVP will absorb fluid and dry out the dish.

■ Nutmeat is a great substitute for beef in a stir-fry. Simply slice the nutmeat and then cut into cubes. As this is a ready prepared meat alternative it requires minimal cooking and should be added at the end of cooking.

■ Canned lentils, kidney beans and three bean mixes are nutritious options that are great to use in cooking. If you have the time to soak them, dried lentils and beans are a cheaper option. If you decide to soak lentils or beans, make a double batch and freeze half. They will keep for up to three months. Canned options are more expensive however definitely decrease the recipe preparation time. They are found in the canned vegetable aisle in most supermarkets.

■ The health food section of most supermarkets often provides an excellent array of vegetarian food options. Also check the fridge section for tofu, vegetarian sausages and lunch-con slices.

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BAKED BEAN BURRITOS

Serves: 4-5

Preparation time: 15 minutes

Cooking time: 20-25 minutes

INGREDIENTS:

BURRITO MIX

- > 450g refried beans
- > 2 x 425 g cans of mexe-chilli beans
- > 375 g enchilada sauce
- > 2 cups of cooked rice (brown or long grain rice is best)
- > 1 x 10 pack of burrito tortillas
- > chilli powder (optional)
- > ½ cup of grated low-fat cheese

SALAD

- > ½ iceberg lettuce, chopped
- > 3 carrots, grated
- > 4 tomatoes diced, cut in quarters
- > 2 Lebanese cucumber, diced
- > Alfalfa sprouts

Preheat oven to moderate 180°C (350°F). In a large mixing bowl add refried beans, mexe-chilli beans and half of the enchilada sauce. You can add chilli powder for extra spice (optional). Mix well.

Take one tortilla and add 1/10 of the mix across the centre. Spoon 1/10 of the rice and roll the tortilla.

Place the rolled tortilla into a large greased oven dish. Repeat this until all tortillas have been made. Cover with remaining enchilada sauce and sprinkle with cheese.

Cook for 20-25 minutes or until browned on top.

Mix together salad ingredients. Serve with burritos.

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