

Diet and arthritis

This booklet provides information and answers to your questions about diet and arthritis.



What is diet and arthritis?



There's a great deal of advice in magazines, in books, and on the internet about diet and nutritional supplements that claim to help arthritis. But how do you know which of these claims to believe? In this booklet we'll explain what's most likely to help, what might help, and what probably won't help. We'll also suggest where you can find out more.

At the back of this booklet you'll find a brief glossary of medical words – we've underlined these when they're first used in the booklet.

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A good diet

can help to protect you against some potential side-effects of drugs. For example, calcium-rich foods can help protect against osteoporosis, which can result from long-term steroid use.

Eat a balanced and varied diet

to maximise your intake of vitamins, minerals, antioxidants and other nutrients.

At a glance

Diet and arthritis

Changing your diet won't cure your arthritis but it may improve your symptoms.

How important is weight loss?

Losing weight is very important as it reduces the strain on your joints. Do this by:

- eating less sugar
- eating less fat
- taking regular exercise.

What are the important vitamins and minerals?

You get most of your vitamins and minerals from the food you eat rather than from supplements. The most important vitamins and minerals for people with arthritis are:

- calcium
- vitamin D
- iron.

Which are the good fats and bad fats?

You can help yourself by learning the differences between fats:

- Eat less saturated fat (found in animal products such as full-fat dairy products: milk, cheese, fatty meats). Use monounsaturated oils such as olive oil and rapeseed oil and choose low-fat dairy products and lean meats.
- Try to incorporate good fats such as omega-3 oils into your diet, for example by eating oily fish at least twice a week.

Should I eat my five a day?

You could improve your diet by eating lots of fruit and vegetables, especially the brightly coloured varieties.

What else might help?

Some people find these products helpful:

- omega-3 fatty acids (fish oil supplements) for inflammatory arthritis
- glucosamine for osteoarthritis.

Will changing my diet help if my pain is due to gout?

If gout is the cause of your pain these dietary changes might be helpful:

- losing weight – if you are overweight
- less alcohol (especially beer), more water
- less meat and oily fish, more fruit and vegetables
- low-fat dairy products.

Introduction to diet and arthritis

Although there are no diets or dietary supplements that will cure your arthritis, some people do find that their symptoms improve as a result of changing what they eat. But because people are all different and there are many different types of arthritis, what works for one person and one type of arthritis may not work for another.

On balance, altering your diet probably won't have as great an impact on your arthritis as your medical treatments, and we don't recommend stopping any of your medications without discussing it with your doctor first. However, it's still worth thinking about your diet for the following reasons:

- If you're overweight, losing some weight will reduce the strain on your joints so you may find you don't need to take painkillers quite so often.
- A good diet can help to protect you against some potential side-effects of drugs. For example, eating plenty

of calcium-rich foods can help protect against osteoporosis which can result from long-term steroid use.

- A healthy diet can also help to protect against heart disease (which can sometimes be a complication of certain types of arthritis).

How can changing my diet help my arthritis?

Research has discovered several links between arthritis and diet. The two most important things to think about are:

- whether you are a healthy weight
- whether your diet provides enough of the important vitamins and minerals.

If you have arthritis, of any type, the following measures taken together are likely to be beneficial.

- Eat a balanced and varied diet to maximise your intake of vitamins, minerals, antioxidants and other nutrients.
- Change the type of fats and oils you eat and include oily fish and olive or rapeseed oil.
- Eat a more Mediterranean-style diet with plenty of fruit and vegetables.
- Take regular exercise.

We'll look at each of these measures in more detail in the sections that follow.

Maintaining a healthy weight is important if you have arthritis.



Keeping to a healthy weight

The most important link between your diet and arthritis is certainly your weight. We know that being overweight puts an extra burden on the joints, especially weight-bearing joints – the back, knees, hips, feet and ankles. Because of the way joints work, the pressure on your knee joints is 5–6 times your body weight when you walk so even a small weight loss can make a big difference if you have arthritis.

i See Arthritis Research UK special report *Osteoarthritis and obesity*.

Having too much body fat may also increase inflammation in the body, making your joints more painful. Evidence shows that achieving a healthier weight can reduce inflammation, for example in rheumatoid arthritis.

Even a small weight loss can make a big difference if you have arthritis.

Am I overweight?

The chart opposite (Figure 1) will show whether you're in the healthy weight range for your height.

Another method of finding out whether you are a healthy weight is to calculate your body mass index (BMI):

1. Multiply your height in metres by itself.
e.g. $1.7 \text{ (m)} \times 1.7 = 2.89$
2. Divide your weight in kilograms (kg) by the number you got in stage 1.
e.g. $90 \text{ (kg)} \div 2.89 = 31.14$
3. The result is your BMI.
e.g. 31

For most people a healthy BMI is in the range 20–25.

How can I lose weight and eat a healthy diet?

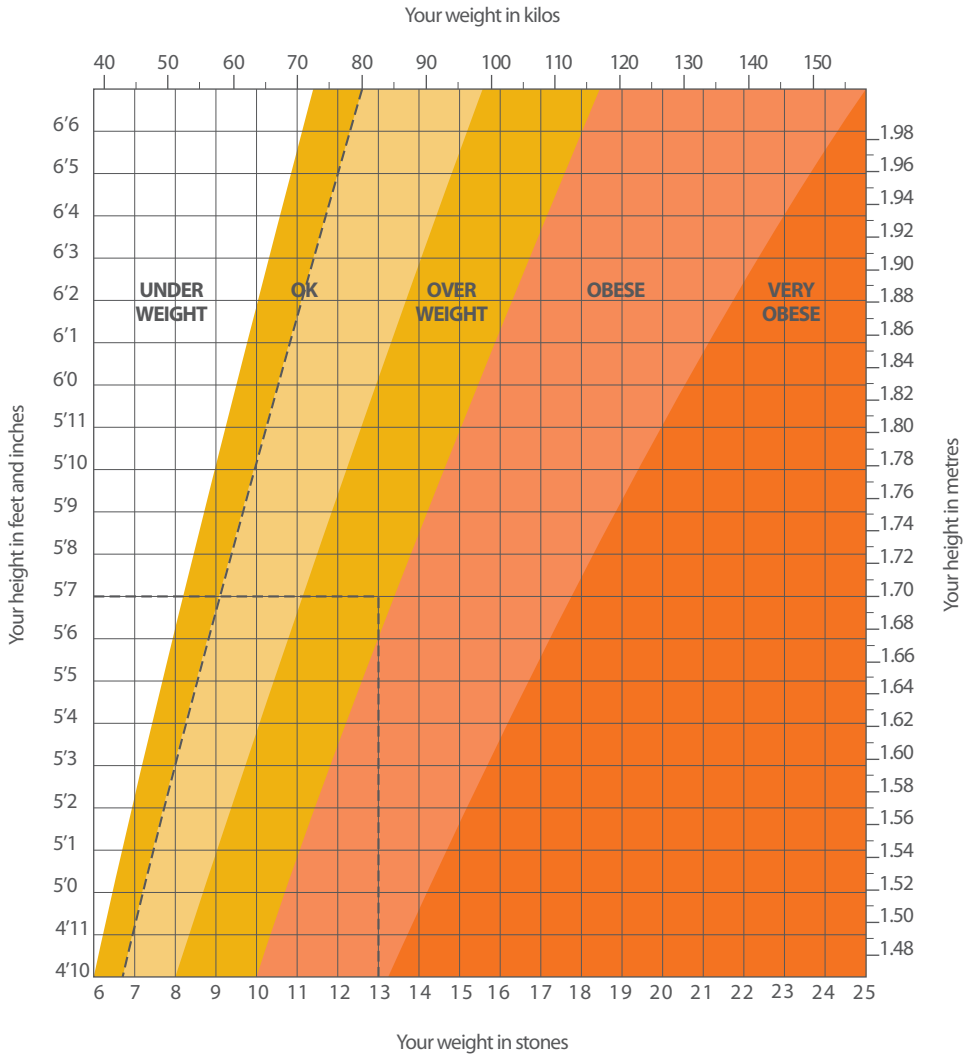
The only way to lose weight, and keep it off, is to make permanent changes to the way you eat and/or the amount of exercise you do. You need to balance your food intake against the energy you burn.

Your body needs food:

- to supply energy for your daily activities
- to provide a variety of vitamins and minerals to stay healthy.

The energy in food is measured in kilocalories (kcal), often just called calories. If your diet contains more calories than you use, your body will convert the surplus to fat, and you'll put on weight. Conversely, if your food contains fewer calories than you use, your body will burn stored fat, and you'll lose weight.

Figure 1 Height and weight chart



If you have arthritis you may find it hard to get as much exercise as you did before. And if you're burning less energy you are likely to put on weight unless you also reduce your calorie intake.

If you eat fewer calories, it's important to maintain a balance between different types of food so as not to lose out on important nutrients. For example, it's important to eat starchy foods like bread, potatoes, rice and pasta. Wholemeal versions of these foods are better as they contain more fibre and are therefore more filling, and they often provide more vitamins and minerals.

Fruit and vegetables are low in calories but will still provide plenty of the essential nutrients.

Cut down on fat

Fat has twice as many calories as the same weight of starch or protein and most people eat far more fat than they need. Eating 30 g (about 1 oz) less fat each day saves 270 calories.

There are three kinds of fats in foods:

- **Saturates** – These come mostly from animals and are found in:
 - full-fat dairy products
 - processed foods like cakes, biscuits and pastry
 - chips (if fried in animal fat)
 - Asian foods, especially meals cooked using ghee (clarified butter).

Some vegetable oils, such as palm oil and coconut oil, also contain a lot of saturates.

Saturated fats are the most important kind of fat to reduce since they can increase the pain and inflammation in the body.

- **Monounsaturates** – These are found in olive and rapeseed oil. They are neutral fats in that they do not worsen inflammation. However, they contain just as many calories as saturated fats, so limiting them is still important if you're trying to lose weight.



- **Polyunsaturates** – Softer fats and oils from corn or sunflower sources are high in omega-6 polyunsaturates and these can increase inflammation in the body. You should therefore aim to eat less of these types of oils and fats.
- **Omega-3 polyunsaturated fatty acids**
 - These are useful in the diet and are found in rapeseed oil, free range eggs, oily fish and fish oil supplements.

To eat less fat:

- avoid invisible fats in foods like biscuits, cakes, chocolate, pastry and savoury snacks – check the labels
- choose lean cuts of meat, which don't contain much saturated fat, and always trim off any excess fat
- choose fish and poultry more often
- use skimmed or semi-skimmed milk
- use low- or reduced-fat dairy products (e.g. yogurt, low-fat cheese)
- use low-fat, olive-oil-based or soya margarines
- grill instead of frying
- use a very small amount of olive oil if you need to for cooking (if you want to fry foods, use rapeseed oil which doesn't smoke as much)
- fill up on wholegrain breads, cereals, fruits and vegetables
- look for snacks that are naturally low in fat, such as fruit, vegetable sticks or plain popcorn. Small quantities of nuts and seeds provide beneficial fats but don't appear to cause weight gain.

Fruit and vegetables are low in calories but will still provide plenty of the essential nutrients.

Cut down on sugar

Sugar contains only calories and has no other food value so you can cut down on sugar without any loss of nourishment. Eating 30 g (about 1 oz) less sugar each day saves 120 calories.

Dried fruit like raisins can be used to sweeten cereals and puddings; unlike sugar and artificial sweeteners, they also provide vitamins and minerals. But go easy, as dried fruits are still fairly high in calories themselves. Try to get used to food being less sweet by not adding sugar or sweeteners to hot drinks.

Eat more fruit and vegetables

The World Health Organisation recommends at least five portions of fruit and vegetables every day (see Figure 2). This is to make sure the body receives the important nutrients – particularly vitamins, minerals and antioxidants – that it needs to maintain good health and to protect it during the stress of disease.

It's been suggested that antioxidants may help to protect the joints by mopping up some of the chemicals that cause inflammation. Choose more vegetables or salad to help fill your plate but lower your calorie intake.

Figure 2 What counts as one portion of fruit or vegetables?

- ½ grapefruit
- ½ pepper
- ½ avocado
- 1 medium apple
- 1 medium orange
- 1 medium banana
- 1 medium tomato
- 1 medium onion
- 2 medium plums
- 2 small tangerines
- 2 tinned pineapple rings
- 2 tinned peach halves
- 2 2-inch mango slices
- 2 broccoli florets
- 3 sticks of celery
- 3 heaped tablespoons of carrots (raw or cooked)
- 3 heaped tablespoons of fruit salad
- 3 heaped tablespoons of frozen peas
- 5 fresh asparagus spears
- 6 baby sweetcorn
- 7 fresh strawberries
- 8 cauliflower florets
- 14 button mushrooms
- 1 heaped tablespoon of sultanas or other dried fruit
- A handful of grapes
- 150 ml of fruit juice (counts only once however much you drink)

Fruit and vegetables are good sources of fibre and by choosing fruit and vegetables of different colours you'll be getting a variety of vitamins and minerals.

Brightly coloured vegetables and fruits are rich in antioxidants, as are leafy green vegetables.

Exercise regularly

Not only does exercise burn calories that would otherwise end up as fat, but it also increases your strength and suppleness. Of course, arthritis can make exercise difficult and painful – it's important to find something you can manage and enjoy so that you do it regularly.

Swimming is particularly good exercise if you have arthritis because being in water takes the weight off the joints. But cycling or walking are also good.

i See Arthritis Research UK booklet
Keep moving.

Vitamins and minerals

Deficiency in some vitamins and minerals seems to be associated with arthritis progressing more quickly. If you have arthritis, the most important vitamins and minerals to think about are:

- calcium
- vitamin D
- iron.

Other nutrients that may play a part are vitamin C and selenium.

A middle-aged man with a friendly smile is seated at a table. He is wearing a white polo shirt. In front of him is a white bowl filled with fresh, leafy green vegetables. To the left of the bowl is a clear glass of water. The background is softly blurred, suggesting an indoor setting with natural light from a window.

Brightly coloured vegetables and fruits are rich in antioxidants, as are leafy green vegetables.



Skimmed and semi-skimmed milk contain more calcium than full-fat milk.

Calcium

Calcium is important for maintaining healthy bones. Calcium deficiency increases the risk of osteoporosis (brittle bones), which is particularly common in women after the menopause. Many people with arthritis also have a risk of developing osteoporosis, especially if they're taking steroids on a long-term basis. Lack of calcium in the diet can also increase your risk of developing a condition called osteomalacia (soft bones).

The best sources of calcium are:

- dairy products such as milk, cheese, yogurt – low fat ones are best
- calcium-enriched varieties of milks made from soya, rice or oats
- fish that are eaten with the bones (such as sardines).

We recommend a daily intake of calcium of 1,000 milligrams (mg), possibly with added vitamin D if you're over 60. See Figure 3 for calcium contents of some common foods.

Skimmed and semi-skimmed milk contain more calcium than full-fat milk.

Figure 3 Approximate calcium content of some common foods

Food	Calcium content
115 g (4 oz) whitebait (fried in flour)	980 mg
60 g (2 oz) sardines (including bones)	260 mg
0.2 litre (1/3 pint) semi-skimmed milk	230 mg
0.2 litre (1/3 pint) whole milk	220 mg
3 large slices brown or white bread	215 mg
125 g (4 1/2 oz) low-fat yogurt	205 mg
30 g (1 oz) hard cheese	190 mg
0.2 litre (1/3 pint) calcium-enriched soya milk	180 mg
125 g (4 1/2 oz) calcium-enriched soya yogurt	150 mg
115 g (4 oz) cottage cheese	145 mg
3 large slices wholemeal bread	125 mg
115 g (4 oz) baked beans	60 mg
115 g (4 oz) boiled cabbage	40 mg

Please note: measures shown in ounces or pints are approximate conversions only.

If you don't eat many dairy products or calcium-enriched substitutes, then you may need a calcium supplement.

We recommend that you discuss this with your doctor or a dietitian.

Vitamin D

Vitamin D is needed for the body to absorb and process calcium and there's some evidence that arthritis progresses more quickly in people who don't have enough vitamin D.

Vitamin D is sometimes called the sunshine vitamin because it's produced by the body when the skin is exposed to sunlight. A slight deficiency is quite common in winter. Vitamin D can also be obtained from the diet (especially from oily fish) or from supplements such as fish liver oil. However, it's important not to take too much fish liver oil.

If you're over 60, dark-skinned or don't expose your skin to the sun very often and are worried about a lack of vitamin D, you should discuss with your doctor whether a vitamin D supplement would be right for you.

Iron

Iron is important to prevent anaemia. Many people with arthritis are anaemic. NSAIDs (non-steroidal anti-inflammatory drugs) such as aspirin, ibuprofen and diclofenac help the pain and stiffness of arthritis but may cause bleeding and stomach ulcers in some people, leading to anaemia. The other main cause of anaemia in arthritis is anaemia of chronic disease, which often occurs with rheumatoid arthritis and similar conditions, and doesn't improve with iron supplements.

Research has shown that some foods and food supplements really can help with arthritis, although the effects are fairly specific to the type of arthritis you have.

If you're anaemic your doctor can tell you if more iron is likely to help.

Good sources of iron are:

- red meat
- oily fish e.g. sardines
- pulses e.g. lentils and haricot beans
- dark green vegetables e.g. spinach, kale and watercress.

Iron is absorbed better if there is also vitamin C in the meal, so have a good portion of fruit or vegetables when you eat. It's best not to drink tea with your meal as it reduces the amount of iron that your body can absorb.

Dairy products like milk and cheese are very poor sources of iron. If you prefer not to eat red meat or fish, then you should make sure you get plenty of pulses and dark green vegetables.

Vitamin C

Poor vitamin C intake has been linked with arthritis. However, if you make sure you have your five portions a day of fruit and vegetables, then you're unlikely to have a problem with vitamin C, and shouldn't need supplements.

Selenium

Mild selenium deficiency is quite common in the UK and may be associated with more rapid progression of arthritis. The richest natural source of selenium is Brazil nuts, but meat and fish also contain some. Selenium is nearly always included in antioxidant supplements which you can buy in chemists and health food shops. However, current evidence suggests that selenium supplements aren't very effective in treating people with arthritis.

Foods and supplements that might help

Research has shown that some foods and food supplements really can help with arthritis, although the effects are fairly specific to the type of arthritis you have.

Omega-3 fatty acids for inflammatory arthritis

Omega-3 (also called n-3) polyunsaturated fatty acids have been shown to help some people with inflammatory types of arthritis such as rheumatoid arthritis, reactive arthritis, psoriatic arthritis and ankylosing spondylitis.

What are fatty acids?

When the fats and oils we eat are broken down by the digestive system they break down into fatty acids. Some fatty acids can be made by the body from other compounds; others cannot be produced in the body and must be obtained from food – these are called essential fatty acids (EFAs). These polyunsaturated fatty acids are divided into two main groups – omega-3 and omega-6.

Omega-3 fatty acids exist in two forms:

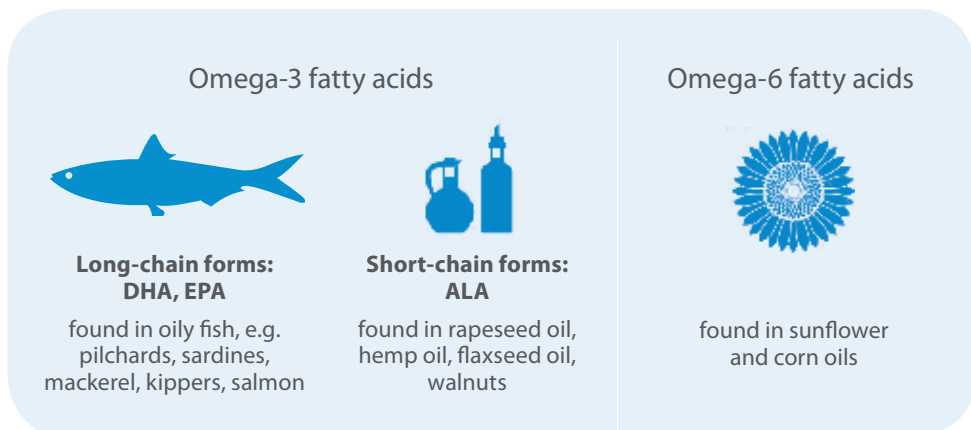
- long-chain forms such as EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) – found in high levels in oily fish such as pilchards, sardines, mackerel, kippers and salmon
- short-chain forms, such as ALA (alpha-linolenic acid) – found in rapeseed oil, hemp oil, flaxseed oil and walnuts.

Omega-6 fatty acids are found mostly in plant seed oils such as sunflower and corn oil (see Figure 4).

The body uses both these types of fatty acids to make chemicals called prostaglandins and leukotrienes; the right balance of these helps to control inflammation in the body.

Omega-3 fatty acids, especially the long-chain forms EPA and DHA, are thought to be of most benefit in inflammatory arthritis. It's possible that the short-chain forms may be converted within the body into the long-chain forms that benefit arthritis. However, it's not yet clear whether these are as beneficial as the long-chain omega-3 fatty acids found in fish oil.

Figure 4 Essential fatty acids (obtained from food)



Caution with fish liver oils

It's important not to confuse fish oil with fish *liver* oil (e.g. cod liver oil and halibut liver oil). Fish liver oils contain omega-3 polyunsaturated fatty acids as well as vitamin D (which helps the body to absorb calcium) and vitamin A.

But it's dangerous to take fish *liver* oils in the large doses recommended for arthritis because of the risk of overdosing with vitamin A. This is particularly important for pregnant women, or women who might become pregnant, because vitamin A can harm the unborn baby.

! If you're pregnant, or could become pregnant, you should **not** take fish liver oils or vitamin A supplements at all.

Adults shouldn't take more than 3,000 micrograms (µg) of vitamin A per day. If you eat liver, bear in mind that this also contains a lot of vitamin A and will need to be counted as part of your daily intake of vitamin A.

If you want to increase your intake of omega-3 fatty acids, we recommend taking pure fish oil rather than fish liver oil.

i For more information please see our report

Complementary and Alternative Medicines for the Treatment of Rheumatoid Arthritis; Osteoarthritis; Fibromyalgia. Or ask your GP or consultant to refer you to a registered dietitian.



Possible side-effects of omega-3 fatty acids

Some people may have digestive disturbances from taking high doses of fish oils. If this is a problem, try splitting the total dose into two or three smaller doses per day. If this doesn't work, try a lower dose, eating more oily fish (see Figure 5), or a combination of both.

In theory, polyunsaturated fatty acids can generate harmful substances called free radicals in the body. Free radicals can be eliminated by antioxidants. Vitamin E is an effective antioxidant for omega-3 fatty acids, especially those found in fish oil.

If you're eating a lot of oily fish you should also eat plenty of fresh fruit and vegetables and include foods with good levels of vitamin E – for example:

- sunflower seeds
- nuts, especially almonds
- avocado
- spinach
- breakfast cereals that have extra vitamin E added.

Combined preparations of antioxidant vitamins and minerals, which contain vitamin E, selenium and other antioxidants, can be found in chemists and health food shops. Extra vitamin E isn't necessary if you're taking fish oil supplements, as these have extra vitamin E already added.

Figure 5 Which are oily fish and which are not?

Oily fish	Non-oily (white) fish
Anchovies	Cod
Eel	Coley
Herring	Dover sole
Kippers	Haddock
Mackerel	Hake
Pilchards	Halibut
Salmon	Lemon sole
Sardines	Marlin
Sprats	Monkfish
Swordfish	Plaice
Trout	Red and grey mullet
Tuna (fresh)	Red snapper
Whitebait	Rock salmon/ dogfish
	Sea bass
	Sea bream
	Shark
	Skate
	Turbot
	Tuna (tinned)

Please note: these are examples and not all fish in each category are listed.

If you want to increase your intake of omega-3 fatty acids, we recommend taking pure fish oil rather than fish liver oil.

Figure 6 Showing the omega-3 fatty acid content of some fish and other seafood

Description	Omega-3 content per 100g (typical)
Kippers (raw)	3.00 g
Pilchards (tinned in tomato sauce)	2.97 g
Mackerel (raw)	2.78 g
Mackerel (grilled)	2.40 g
Herring (grilled)	2.30 g
Sardines (tinned in tomato sauce)	2.11 g
Salmon (tinned in brine, drained)	1.85 g
Herring (raw)	1.83 g
Rainbow trout (grilled, flesh only)	1.25 g
Crab (boiled)	1.10 g

Figure 7 Showing the omega-3 fatty acid content of some plant seed oils and nuts*

Description	Omega-3 content per 100g (typical)
Walnut oil	11.50 g
Rapeseed oil	9.60 g
Hemp oil	7.50 g
Walnuts	7.47 g
Soya oil	7.30 g
Blended vegetable oil	6.50 g
Flaxseed oil	6.50 g
Olive oil (virgin and extra virgin)	0.70 g
NB Olive oil is included for comparison purposes only.	
<i>*Note that the fatty acids in this case are mostly alpha-linoleic acid, whose benefits in arthritis are uncertain, not EPA and DHA which are known to be beneficial</i>	



How do I increase my intake of fatty acids?

Research suggests you need at least 2.7 g (2,700 mg) per day of the long-chain omega-3 fatty acids EPA and DHA. It's a good idea to eat oily fish at least twice a week. However, it's recommended not to eat oily fish more than four times a week, so you may want to consider a supplement. See Figures 6 and 7 for the omega-3 content of some foods. You can buy supplements from health food shops and some chemists, either in liquid forms or as capsules.

- ! The capsules are usually 1 g (1,000 mg) but check the label. You need to add up the total amount of EPA and DHA to work out how much you need. Even with high strength preparations you may need 4–5 capsules per day.

Fish oils act quite slowly so we recommend that you give them at least 3 months' trial. Research to find out whether fish oils can be helpful for osteoarthritis has so far been inconclusive.

What about omega-6 fatty acids?

Omega-6 (also called n-6) polyunsaturated fatty acids aren't thought to be of benefit in arthritis and they may even increase inflammation by competing metabolically with omega-3 polyunsaturated fatty acids.

In the UK, most people have diets that already contain more omega-6 than is needed, so it may help to cut down on the amount of omega-6 in your diet (such as sunflower oil, corn oil, and products made from these such as sunflower margarines).

By law, labels on pre-packaged foods now have to make it clear if the food contains ingredients (e.g. milk, wheat, gluten, nuts) that people may be allergic to – so check food labels carefully.

Glucosamine for osteoarthritis

Osteoarthritis is the most common type of arthritis and is often regarded as a mechanical or wear and tear form of arthritis. It particularly affects the weight-bearing joints of the legs and back. Changes to the cartilage mean that the bones in the joint can't move as freely and smoothly as they should.

Many people try glucosamine, sometimes combined with chondroitin, for osteoarthritis. Joint cartilage normally contains glucosamine and chondroitin compounds, and it's thought that taking supplements of these natural ingredients may help to improve the health of damaged cartilage.

Research on glucosamine has produced some mixed results but suggests that glucosamine sulphate is more likely to be beneficial than glucosamine hydrochloride. If you're thinking of trying glucosamine we suggest taking one 1,500 mg daily dose of glucosamine

sulphate. If you notice an improvement in your joint pain after 3 months you may wish to continue with them. There doesn't seem to be much extra benefit in taking glucosamine combined with chondroitin.

Glucosamine is available from chemists, health food shops or on the internet. You should avoid internet sites from non-UK organisations, as international regulations for supplements can vary.

Possible side-effects of glucosamine

You should bear in mind the following:

- There's some evidence that glucosamine may increase the level of sugar in the blood, so if you have diabetes be sure to check your blood sugar and discuss with your doctor if your readings seem to be higher.
- If you're taking warfarin your blood-thinning control may be affected, so make sure you have your regular blood checks and again discuss this with your doctor.



- Glucosamine is often made from shellfish. If you're allergic to shellfish make sure you take a vegetarian or shellfish-free variety.

Should I avoid certain foods?

Some people feel that certain foods are bad for arthritis and that cutting them out helps. These foods include:

- citrus fruits, such as oranges, lemons and grapefruit
- vegetables from the nightshade family (solanaceous plants) including potatoes, tomatoes, peppers and aubergines.

We don't recommend leaving these fruits and vegetables out of your diet because of the important nutrients they contain. There's no scientific evidence that cutting out these foods can help with arthritis. In fact, they are rich in antioxidants which may slow down the progression of arthritis.

What about food allergies?

Some people are allergic to certain foods such as peanuts or shellfish. Allergic reactions occur quickly after the food is eaten and there is no real evidence that food allergies are relevant to the development of arthritis or its treatment.

Some people are also intolerant of certain foods. Symptoms of food intolerance develop relatively slowly after eating a food – after hours or even days – so food intolerances can be difficult to identify without the help of an expert.

Research has shown that some people have an improvement in their symptoms if they cut out particular foods. The reasons for this aren't yet clear and the foods involved vary from person to person. Some books even suggest diets which could leave your body short of important vitamins and minerals if you followed them for a long time.

The only way to be sure that you have a food intolerance is to follow an elimination (or exclusion) diet where you leave out a certain food from your diet for a period of at least a week. This is followed by a challenge, where you reintroduce the food to see if it causes a reaction – if your arthritis is related to a food allergy you'll notice a flare-up of your symptoms within a few days.

It's important to be systematic in your testing, cutting out each food that you're testing completely and then reintroducing foods one at a time. We recommend that you speak to a registered dietitian who can make sure you're excluding foods completely and check that you're not excluding important nutrients.

! By law, labels on pre-packaged foods now have to make it clear if the food contains ingredients (e.g. milk, wheat, gluten, nuts) that people may be allergic to – so check food labels carefully.

Blood tests like [ELISA](#) and [RAST](#) can identify proteins called immunoglobulins in the blood. These can be useful as a guide to foods that might be worth testing in an elimination diet.



We *don't* recommend other methods of testing for food allergies such as:

- applied kinesiology – where a drop of the food is put under your tongue, and the strength of your arm tested
- dowsing or psionic medicine – using a pendulum and a witness such as a lock of your hair
- electrodermal (Vega) testing – where you hold an electrode while samples of different foods are placed in the testing device.

Do vegetarian or vegan diets help?

Some studies have shown that people who eat a lot of red meat seem to have a higher risk of developing inflammatory types of arthritis. And vegetarian diets have been shown to be helpful in the long term for some people with rheumatoid arthritis. A vegan diet, which doesn't include any meat, fish or other animal products, may also be helpful – possibly because of the types of polyunsaturated fatty acids included in the diet.

If you eat a vegan diet the important thing is to make sure you get all the nutrients you need – particularly calcium, vitamin B12, vitamin D and selenium:

Calcium – is present in leafy green vegetables (e.g. cabbage, kale, broccoli), watercress, beans and chick peas, and some nuts, seeds and dried fruits. Calcium is often added to white bread and to some soya milks.

Vitamin B12 – is also commonly added to soya milk, and yeast extract is another good source.

Selenium – can be obtained from Brazil nuts and is often included in multi-vitamin supplements.

Vitamin D – can be produced in the body through moderate exposure of the skin to sunlight if you're pale-skinned. If you are dark-skinned or prefer to keep your skin covered, then look for soya milks or vegetable margarines which have vitamin D added. Or you may need to consider taking a supplement – vegan supplements are available. Shiitake mushrooms provide some vitamin D, but you may need a vegetarian source (ergocalciferol) to take as well. Aim for 10–25 mcg, depending on whether you go out in the sun often or not.

Fasting for rheumatoid arthritis

Fasting for short periods can have a temporary beneficial effect on rheumatoid arthritis, although the arthritis quickly returns once you go back to a normal diet. We don't recommend fasting as a treatment for arthritis. However, if you do wish to try it, it should only be done for one day at a time and under expert supervision.

Foods and supplements that are unlikely to help

- Some people with arthritis find that cider vinegar and honey help; however, there's no scientific evidence to demonstrate that they're helpful. Still, there's no reason why you shouldn't try it if you want to.
- MSM (methylsulphonylmethane) is a sulphur-containing substance that has been recommended for various health problems, including arthritis. However, there's no strong evidence to support the effectiveness of MSM for treating the symptoms of arthritis.
- CMO (cetylmyristoleate) is a waxy substance made from beef fat, which some people claim can help arthritis. Again, there's little scientific evidence that it does so.

How can changing my diet help with gout?

Some foods do produce substances that may aggravate gout. This is a condition caused by a high level of urate in the body. Urate can form crystals in the joints, causing sudden attacks of severe pain and inflammation. Foods that contain a lot of purines may play a part in the build-up of urate, but there are a number of other factors involved.

If you're prone to attacks of gout the most useful changes you can make are:

- **Lose weight** (if you're overweight) as this can reduce urate levels in the body, but must be done gradually. Extreme weight loss or fasting can actually raise urate levels because it speeds up the breakdown of cells in the body.
- **Drink less alcohol** (especially beer), as excessive consumption is often associated with gout. If you suffer from gout you should aim to keep your alcohol intake to around 1 or 2 units per day. The government advises a normal maximum of 3–4 units per day for men and 2–3 units per day for women (see Figure 9).
- **Drink plenty of water** to avoid becoming dehydrated and help to flush out excess urate and prevent it from crystallizing in the joints. You should drink at least 1 litre (about 2 pints) of non-alcoholic fluids per day, or up to 3.5 litres (about 6 pints) if you have kidney stones.



! If you're trying to increase your fluid intake you can include other drinks besides water – but not too many sugary drinks, especially if you're also trying to lose weight.

There's some evidence that consumption of sugar-sweetened soft drinks and fructose-rich fruits and juices may be associated with an increased risk of gout. Diet soft drinks don't appear to increase the risk.

Cutting down on purine-rich foods may not have as great an impact on gout as the measures described above, but can still be helpful (see Figure 8). Aim to reduce the amount of protein you get from meat – for example, by eating one less portion of meat or fish per day. This can be replaced by other sources of protein, such as beans and pulses or low-fat dairy products.

Urate levels aren't affected by acidic fruits and there's some evidence that higher vitamin C intake can help to reduce the risk of gout attacks. So you can include fruits like oranges and grapefruit in your diet. There is some evidence to suggest that cherries – either as fruit or as juice, fresh or preserved – may be helpful for gout, and that drinking a glass of skimmed milk every day may help to prevent attacks of gout.

Figure 8 Foods which are high in purines

Meat	Fish	Other
Kidneys	Anchovies	Beer
Liver	Fish roes	Yeast extracts
Offal	Herring	(e.g. Marmite)
	Mackerel	
	Sardines	

Figure 9 Approximate units of alcohol in some popular drinks

<p>Beer, lager, stout</p> <p>Ordinary strength (4% abv)</p> <p>Bottle (330ml) = 1.3 units</p> <p>Can (440ml) = 1.8 units</p> <p>Pint (568 ml) = 2.3 units</p> <p>Premium strength (5% abv)</p> <p>Bottle (330 ml) = 1.7 units</p> <p>Can (440 ml) = 2.2 units</p> <p>Pint (568 ml) = 2.8 units</p>
<p>Lager</p> <p>Super strength (9% abv)</p> <p>Bottle (330 ml) = 3 units</p> <p>Can (440 ml) = 4 units</p> <p>Pint (568 ml) = 5.1 units</p>
<p>Cider</p> <p>Ordinary strength (6% abv)</p> <p>Bottle (330 ml) = 2 units</p> <p>Can (440 ml) = 2.6 units</p> <p>Pint (568 ml) = 3.4 units</p> <p>Strong (9% abv)</p> <p>Bottle (330 ml) = 3 units</p> <p>Can (440 ml) = 4 units</p> <p>Pint (568 ml) = 5.1 units</p>
<p>Wine, red or white</p> <p>13% abv</p> <p>Standard glass (175 ml) = 2.3 units</p> <p>Large glass (250 ml) = 3.2 units</p>
<p>Gin, rum, vodka, whisky</p> <p>(40% abv)</p> <p>Small measure (25 ml) = 1 unit</p> <p>Large measure (35 ml) = 1.4 units</p>
<p>Sherry, port</p> <p>(20% abv)</p> <p>Standard measure (50 ml) = 1 unit</p>
<p>Alcopops</p> <p>(5% abv)</p> <p>Bottle (275 ml) = 1.4 units</p>

Glossary

Anaemia – a shortage of haemoglobin (oxygen-carrying pigment) in the blood which makes it more difficult for the blood to carry oxygen around the body. Anaemia can be caused by some rheumatic diseases such as rheumatoid arthritis or lupus, or by a shortage of iron in the diet. It can also be a side-effect of some drugs used to treat arthritis.

Ankylosing spondylitis – an inflammatory arthritis affecting mainly the joints in the back, which can lead to stiffening of the spine. It can be associated with inflammation in tendons and ligaments.

Cartilage – a layer of tough, slippery tissue that covers the ends of the bones in a joint. It acts as a shock-absorber and allows smooth movement between bones.

ELISA (enzyme-linked immunosorbent assay) – a biochemical test which may be used to detect an antibody associated with an infectious disease or a substance which could potentially cause an allergic reaction.

Free radicals – atoms or molecules that react very readily with other molecules and can damage body cells or tissues. Free radicals are produced naturally in the body as a result of metabolism but disease, environmental pollutants, radiation, and stress can create extra free radicals leading to an imbalance. Free radicals are neutralized by antioxidants.

Inflammation – a normal reaction to injury or infection of living tissues. The flow of blood increases, resulting in heat and redness in the affected tissues, and fluid and cells leak into the tissue, causing swelling.

Leukotrienes – a group of compounds released in the body which play a part in allergic or inflammatory reactions.

Non-steroidal anti-inflammatory drugs (NSAIDs) – a large family of drugs prescribed for different kinds of arthritis that reduce inflammation and control pain, swelling and stiffness. Common examples include ibuprofen, naproxen and diclofenac.

Osteoarthritis – the most common form of arthritis (mainly affecting the joints in the fingers, knees, hips), causing cartilage thinning and bony overgrowths (osteophytes) and resulting in pain, swelling and stiffness.

Osteomalacia – softening and weakening of the bones, most commonly caused by lack of vitamin D. In children, it's known as rickets and can cause poor bone development.

Osteoporosis – a condition where bones become less dense and more fragile, which means they break or fracture more easily.

Prostaglandins – chemicals derived from fatty acids, some of which control inflammation.

Psoriatic arthritis – an inflammatory arthritis linked to the skin condition psoriasis.

RAST (radioallergosorbent test) – a blood test that uses radioactive isotopes to identify which substances a person may be allergic to.

Reactive arthritis – a specific type of inflammatory arthritis that usually occurs after a mild infection.

Rheumatoid arthritis – an inflammatory disease affecting the joints, particularly the lining of the joint. It most commonly starts in the smaller joints in a symmetrical pattern – that is, for example, in both hands or both wrists at once.

Warfarin – a drug used to prevent blood clots from forming or growing larger. It works by thinning the blood, making it less sticky and reducing the blood's ability to clot.

Further reading

Food Allergies and Food Intolerance: The Complete Guide to their Identification and Treatment, by Professor Jonathan Brostoff and Linda Gamlin, published by Inner Traditions Bear & Company, Vermont USA, 2000. ISBN 978 0 8928 1875 4.

Nutrition and Arthritis, by Dr Margaret Rayman and Alison Callaghan, published by Blackwell Publishing 2006. ISBN 978 1 4051 2418 8.

References

Used as a source of information for Tables 5 and 6:

McCance and Widdowson's The Composition of Foods, published by The Royal Society of Chemistry and Food Standards Agency 2002. ISBN 978 0 8540 4428 3

Fatty Acids, Supplement to McCance and Widdowson's The Composition of Foods, published by The Royal Society of Chemistry and the Ministry of Agriculture, Fisheries and Food 1998. ISBN 978 0 8540 4819 9

Where can I find out more?

If you've found this information useful you might be interested in these other titles from our range:

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- *Osteomalacia*
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Arthritis Research UK

PO Box 177
Chesterfield
Derbyshire S41 7TQ
Phone: 0300 790 0400
www.arthritisresearchuk.org

Related organisations

The following organisations may be able to provide additional advice and information:

Arthritis Care

18 Stephenson Way
London NW1 2HD
Phone: 020 7380 6500
Helpline: 0808 800 4050
www.arthritiscare.org.uk

British Dietetic Association

5th Floor, Charles House
148/9 Great Charles Street Queensway
Birmingham B3 3HT
Phone: 0121 200 8080
www.bda.uk.com

Food Standards Agency

Aviation House
125 Kingsway
London WC2B 6NH
Phone: 0845 606 0667
Helpline: 020 7276 8829
www.food.gov.uk

NHS alcohol information website

www.nhs.uk/Livewell/alcohol/Pages/Alcoholhome.aspx

NHS Direct

Phone: 0845 4647
www.nhsdirect.nhs.uk

National Rheumatoid Arthritis Society (NRAS)

Unit B4, Westacott Business Centre
Westacott Way
Littlewick Green
Maidenhead SL6 3RT
Phone: 0845 458 3969 or 01628 823524
Helpline: 0800 298 7650
www.rheumatoid.org.uk

Vegetarian Society

Parkdale, Dunham Road
Altrincham
Cheshire WA14 4QG
Phone: 0161 925 2000
www.vegsoc.org



We're here to help

Arthritis Research UK is the charity leading the fight against arthritis.

We're the UK's fourth largest medical research charity and fund scientific and medical research into all types of arthritis and musculoskeletal conditions.

We're working to take the pain away for sufferers with all forms of arthritis and helping people to remain active. We'll do this by funding high-quality research, providing information and campaigning.

Everything we do is underpinned by research.

We publish over 60 information booklets which help people affected by arthritis to understand more about the condition, its treatment, therapies and how to help themselves.

We also produce a range of separate leaflets on many of the drugs used for arthritis and related conditions. We recommend that you read the relevant leaflet for more detailed information about your medication.

Please also let us know if you'd like to receive our quarterly magazine, Arthritis Today, which keeps you up to date with current research and

education news, highlighting key projects that we're funding and giving insight into the latest treatment and self-help available.

We often feature case studies and have regular columns for questions and answers, as well as readers' hints and tips for managing arthritis.

Tell us what you think of our booklet

Please send your views to:
feedback@arthritisresearchuk.org
or write to us at:
Arthritis Research UK, PO Box 177,
Chesterfield, Derbyshire S41 7TQ.

A team of people contributed to this booklet. The original text was written by Dr Peter Fisher, who has expertise in the subject. It was assessed at draft stage by consultant physician and rheumatologist Dr Gail Darlington, and honorary lecturer of rheumatology Dr Dorothy Pattison. An **Arthritis Research UK** editor revised the text to make it easy to read, and a non-medical panel, including interested societies, checked it for understanding. An **Arthritis Research UK** medical advisor, Kate Gadsby, is responsible for the content overall.

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Published April 2011 2010/DIET/11-1

